

100
YEARS
1915-2015



Walter+Eliza Hall
Institute of Medical Research

DISCOVERIES FOR HUMANITY

Annual Report

2013-2014

CANCER | IMMUNE DISORDERS | INFECTIOUS DISEASE

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Produced by the Walter and Eliza Hall Institute's
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UNSW HonDSc *LaT* HonDSc *McMaster* HonDSc *Oxon*
FRCP FRACP FRCPA FRACOG(Hon) FRCPATH FRACGP
FRSE FTSE FAA FRS

Cover image

Still from the *Life on Earth* iBooks textbook.
Microtubule assembly inside a living cell.
(Magnification x 5,000,000)
Image created by Mr Drew Berry, WEHI.TV.

We acknowledge the traditional owners
and custodians of the land on which our
campuses are located, the Wurundjeri
people of the Kulin nation, and pay our
respects to their elders past and present.





OUR MISSION

Mastery of disease through discovery

OUR VISION

To be an **innovative** medical research institute that **engages** and **enriches society** and **improves health outcomes** through **discovery, translation** and **education**.

KEY OBJECTIVES

Discovery: to make discoveries in medical biology that shape contemporary thinking and paradigms and enhance the understanding and treatment of disease

Translation: to convert our discoveries into improvements in disease diagnosis, prevention and treatment

Education: to develop and enrich the skills and experience of students and staff, allowing each person to realise their potential and contribute to a vibrant campus

Engagement: to engage with the community and develop support for medical research generally and the institute's mission specifically

Sustainability: to build an infrastructure, funding and research capacity that enables the institute to fulfil its mission in a sustainable manner

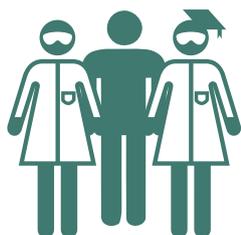
ABOUT THE INSTITUTE

The Walter and Eliza Hall Institute is Australia's oldest medical research institute, and will celebrate its centenary in 2015. For almost 100 years we have been making discoveries for humanity, improving the health of people in Australia and around the world.

The institute has more than 750 researchers who are working to understand, prevent and treat diseases, with a focus on cancers, immune disorders and infectious disease.

Our past discoveries include identifying colony stimulating factors (CSFs), which have helped more than 20 million cancer patients recover from chemotherapy; treating immune disorders with drugs that suppress abnormal immune responses; and developing techniques for growing flu viruses at sufficient quantities for flu vaccines.

The institute offers postgraduate training as the Department of Medical Biology of The University of Melbourne, and is affiliated with The University of Melbourne and The Royal Melbourne Hospital.



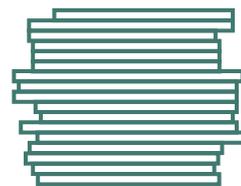
931

staff and students



40+

diseases impacted by institute research



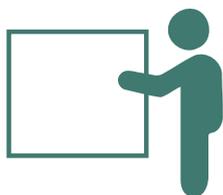
381

publications



100

national and international trials based on institute discoveries



130

institute and visiting speakers



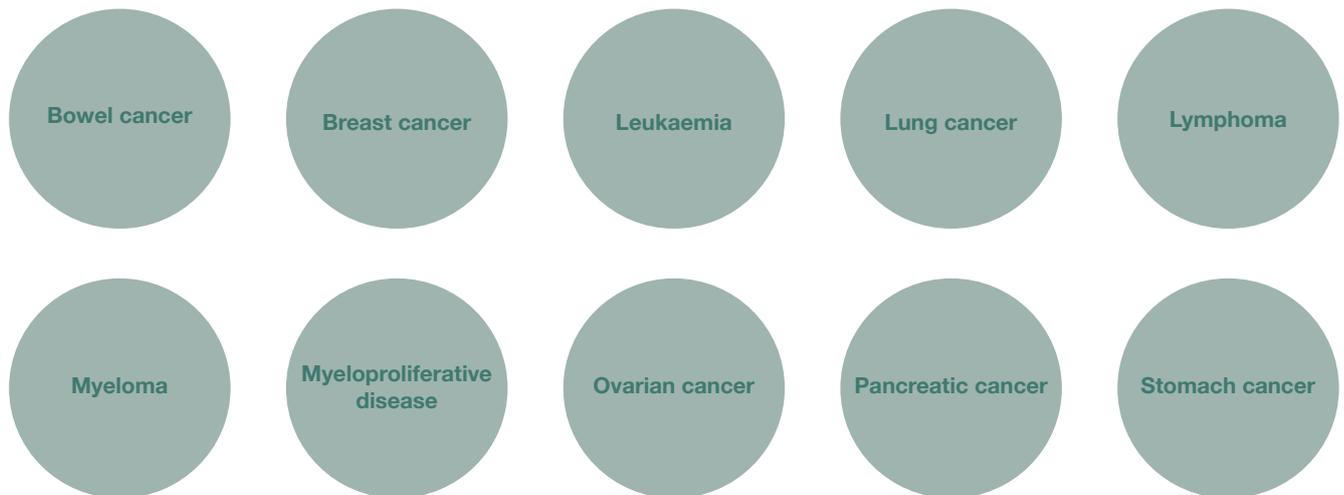
5516

people came to an event at the institute

Health impact

The institute is committed to making fundamental scientific discoveries that can be translated to better treatments, bringing real benefits to the community on a global scale. Clinical trials based on discoveries made at the institute include trials of vaccines for rheumatoid arthritis, coeliac disease, diabetes and malaria; and trials of a new class of anti-cancer drugs, called BH3-mimetics, for treating people with leukaemia and other cancers.

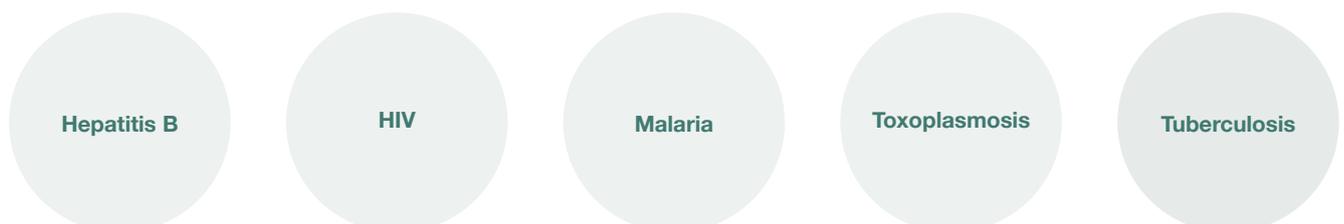
Cancer



Immune disorders



Infectious disease



PRESIDENT'S REPORT

It is a pleasure to report to our stakeholders that your institute is in excellent shape.

As the largest recipient of National Health and Medical Research Council funding outside the universities, we will enter our centenary year in 2015 with confidence and a refreshed strategic vision for the future.

Preparing for the future

The past 12 months have particularly focused on ensuring that the marvellous facilities we gained at our extended and redeveloped Parkville campus, which was opened in late 2012, are fully utilised. We have also ensured that the services supporting our scientists have been refreshed and are truly up to the task.

The environment in which medical research institutes operate all around the world is one with many challenges. The industry is under considerable pressure as the pharmaceutical industry changes its priorities; demographic profiles and morbidities change rapidly; translation barriers persist; the need for prevention grows ahead of intervention; technology advances accelerate; and funding sources face increasing pressure. The announcement by the federal government earlier this year of the proposed Medical Research Future Fund offers great hope to the Australian institutes if the legislation can finally be passed in parliament.

Changes to the institute board

As noted, the organisation is in good health as is its governance. All at the institute are very conscious of our responsibility to governments, trusts and foundations, and to individuals who provide funding in various forms. This is not only appropriately understood by the institute's management, but also by the board.

The institute and its board continue to evolve and there have been a number of changes to the board's composition since the last annual report. Mr Roger Male, our honorary treasurer, retired in June 2014 after 16 years of exemplary service, most recently being responsible for the Investment Committee managing the institute's endowment. Ms Linda Nicholls, who joined the board in 2001, will retire prior to the annual general meeting. She has led the Audit and Risk Committee for several years, working closely with our auditors Deloitte to ensure financial controls are at listed company standards. The other director leaving the board this year was Professor James Angus, former Dean of the Faculty of Medicine, Dentistry and Health Sciences at The University of Melbourne. In his 11 years Professor Angus acted as a most effective bridge between the university and the institute. To all of them our most sincere thanks.

Welcoming new board directors

As the board transitions, its size has increased and we are delighted to welcome some outstanding new board members. These include Professor Stephen Smith, who replaced Professor Angus in his role at The University of Melbourne, and who has already been a positive contributor. His background details, and those of other new directors, are included in the Sustainability section of the annual report. Others joining the board are (in order of their appointment) – Associate Professor Rufus Black, Master of Ormond College; Mrs Jane Hemstrich, director of several major listed companies; Mr Terry Moran, former secretary of the Department of Prime Minister and Cabinet in Canberra; Mr Rob Wylie, a former senior partner of Deloitte in Australia and the US; and, since the end of the financial year, Mr Malcolm Broomhead, also a member of several listed company boards.

These diverse appointments ensure a continuing deep understanding of the institute's activities by the board, and the highest standards of governance.



Mr Christopher Thomas
President
Walter and Eliza Hall Institute



“The past 12 months have particularly focused on ensuring that the marvellous facilities we gained at our extended and redeveloped Parkville campus, which was opened in late 2012, are fully utilised.”

DIRECTOR'S REPORT

It has been an exciting year for the institute.

In May the federal government announced its plans to establish a Medical Research Future Fund. The fund represents a strategic and long-term investment in Australia's future health. For a number of years we have been making the case to government for this investment, and to have the Australian Government acknowledge medical research as a priority in the budget was welcome.

The Medical Research Future Fund is nation-defining. There is no doubt that Australia needs a perpetual fund to support medical research.

We will be encouraging the federal government and all political parties to think broadly about how to implement and fund this ambitious idea.

Scientific and community recognition

We were proud to be the highest-ranked medical research institute in Australia in the 2013 Nature Publishing Index Asia-Pacific report.

The institute also won the Committee for Melbourne's 2014 Melbourne Achiever Award for our contributions to the city's global reputation in health and medical research. The Committee for Melbourne cited the institute as a 'cornerstone of Melbourne's internationally renowned medical research sector', playing a 'vital role in Melbourne's future positioning as a centre for research and bio-medicine'.

Our scientists have been making waves nationally and internationally. Professor Terry Speed was awarded the 2013 Prime Minister's Prize for Science for his influential work using mathematics and statistics to help biologists understand human health and disease. Terry introduced the discipline of bioinformatics to the institute more than 20 years ago, and we now have a staff of more than 40 bioinformaticians helping to unlock the mysteries of the genome. Malaria researcher Professor Alan Cowman received the Victoria Prize for Science and Innovation, Professor Peter Colman was elected a fellow of

the Royal Society UK for his work in structural biology, and Professor Jerry Adams was elected to the Academy of the American Association for Cancer Research.

Dr Marnie Blewitt, Associate Professor Lynn Corcoran and Associate Professor Clare Scott were winners in the *Australian Financial Review* 100 Women of Influence in 2013. Professor Andrew Roberts was elected the Metcalf Chair of Leukaemia Research, a joint appointment between the institute, The Royal Melbourne Hospital and The University of Melbourne. Past PhD student Dr David Riglar won a Chancellor's Prize for Excellence in a PhD Thesis from The University of Melbourne. Dr Riglar is now undertaking postdoctoral training at Harvard Medical School.

The future of health care

The institute and its researchers are making significant efforts to realise the potential of personalised medicine and genomics for future health care. Personalised medicine, which uses a person's genome to predict disease or guide individual treatment, is becoming a reality and we want to ensure Australians have access to these new treatment opportunities. The institute is a founding partner in the Melbourne Genomics Health Alliance, a collaboration between seven of Victoria's major research organisations and health care providers to advance personalised medicine in Victoria.

The Walter and Eliza Hall Institute is also a member of the Victorian Comprehensive Cancer Centre (VCCC), which aims to deliver better outcomes for cancer patients. The institute brings unique expertise to the VCCC as our research has led to improved cancer treatments for millions of people.

Thanking our donors

Continued philanthropic investment in medical research remains vital to ensure Australia reaches its full potential and continues to make discoveries that improve health outcomes for all of humanity.

I would particularly like to acknowledge and thank the institute's many generous donors. We think of our donors as a vital part of our research teams. Without our supporters we would not be able to pursue innovative blue-sky research, fund the challenging initial phase of drug discovery, or support the early work of our most promising young scientists.

In 2014 our donors funded fellowships, allowed us to purchase equipment, provided support and encouragement to our young researchers, and helped us to plan for the future. Thank you to the individuals, community groups and trustees who contributed so generously to our success. It is a pleasure to be sharing this challenging, exciting, demanding, inspiring journey with you.

Some of my best days as director are spent with our supporters, talking about the progress of our research. You will find some of our supporter stories featured throughout this report as part of the divisional updates.

I would also take the opportunity to salute our beloved institute friend and supporter Mr Eddie Brownstein, who passed away in May. Eddie was part of the institute for almost 50 years. He was a true gentleman and, whatever he did, he did with integrity, compassion and good humour. We will miss him dearly.

In 2015, the institute will celebrate 100 years of discoveries for humanity. I am honoured and excited to be hosting a series of events in celebration of the Walter and Eliza Hall Institute's centenary in 2015, and look forward to seeing many of you help us reflect on our past 100 years, and look to our next 100 years.



Professor Douglas Hilton
Director
Walter and Eliza Hall Institute



“Without our supporters we would not be able to pursue innovative blue-sky research, fund the challenging initial phase of drug discovery, or support the early work of our most promising young scientists.”

Working towards reconciliation

Aboriginal and Torres Strait Islander peoples have a life expectancy that is 10 years lower than other Australians.

As Australia's leading medical research institute, the Walter and Eliza Hall Institute is in a unique position to contribute to improved health outcomes for Aboriginal and Torres Strait Islander peoples.

The institute's goal is to support reconciliation through activities that work towards 'closing the gap' in life expectancy and disease incidence and mortality between Aboriginal and Torres Strait Islander peoples and Australians of other descent.

Reconciliation is a national movement dedicated to bringing together Aboriginal and Torres Strait Islander peoples and other Australians, and addressing the barriers and inequality faced by Aboriginal and Torres Strait Islander peoples.

In 2014 the institute published its first Reconciliation Action Plan, which

has been endorsed by Reconciliation Australia. The institute's plan focuses on three key areas: relationships, respect and opportunities. It will build the foundations necessary for the institute to implement effective and mutually beneficial initiatives.

The Walter and Eliza Hall Institute is in a unique position to contribute to improved health outcomes for Aboriginal and Torres Strait Islander peoples.

One important relationship we have recently developed is with the Lowitja Institute, Australia's National Institute for Aboriginal and Torres Strait Islander Health Research. Through the partnership we have collaborated on issues related to genetic research and best practice for involving Aboriginal

and Torres Strait Islander peoples in medical research.

We are currently undertaking two projects that are addressing health issues affecting Aboriginal and Torres Strait Islander peoples. Dr Tony Papenfuss is undertaking a project to sequence the genome of the scabies mite. Scabies infections can lead to severe health problems and the genome map for this parasitic mite could accelerate the search for a vaccine (read more on page 32).

Dr Willy-John Martin is developing improved diagnostic tests for acute rheumatic fever, a consequence of bacterial infection, to decrease the long-term, severe health problems that result from this disease (read more on page 62).

We will continue to develop our plan to identify ways in which the institute can contribute to reducing health inequality for Aboriginal and Torres Strait Islander peoples.

Aboriginal Australians have some of the highest rates of acute rheumatic fever and rheumatic heart disease in the world. Dr Willy-John Martin is working on a new diagnostic test that would reduce the burden of these diseases in Aboriginal and Torres Strait Islander communities.





 **Walter+Eliza**
Institute of Medical Research

DISCOVERY

DISCOVERY

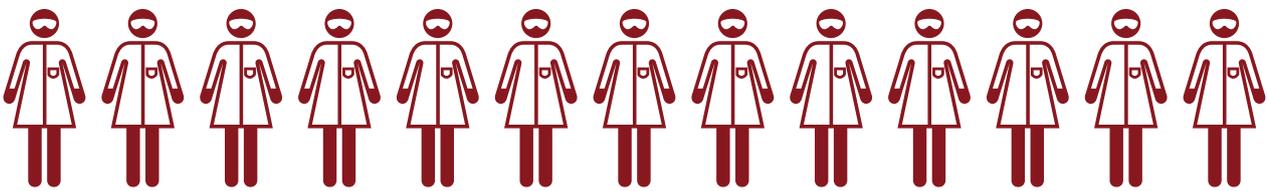
The Walter and Eliza Hall Institute has more than 750 researchers and students who are working to solve basic science questions through curiosity-driven research.

Our researchers are committed to innovative science that expands and improves our understanding of basic human biology and the systems that go awry to cause disease. Our scientists also undertake blue-sky research that creates and explores new paths in human biology.

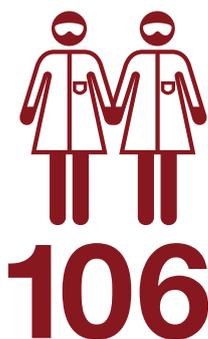
Our research programs include:

- | | | |
|----------------------|-------------------------|-----------------------|
| Bioinformatics | Genomics | Personalised medicine |
| Cancer biology | Haematology | Proteomics |
| Cell death | Infection | Structural biology |
| Cell signalling | Inflammation | Stem cells |
| Clinical translation | Immunology and immunity | Systems biology |
| Epigenetics | Medicinal chemistry | Vaccine development |

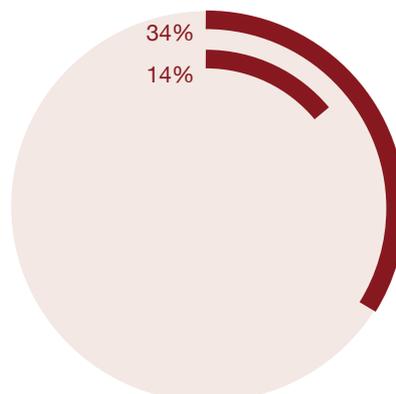
750+ researchers working on cancer, immune disorders and infectious disease



84 research programs



106 publications included researchers from more than one institute division



1 in 3

of publications were in the top 10% of their field

14%

of publications had an impact factor of 10 or greater



The medical researchers and clinician-scientists at the Walter and Eliza Hall Institute are working to understand, prevent and treat diseases including cancers, immune disorders and infectious diseases.

CANCER AND HAEMATOLOGY

The Cancer and Haematology division is working to understand the production and function of the billions of blood cells used each day to fight infections and repair tissues, and how they are regulated at the molecular level. Our aim is to understand how this process is disrupted in disease, in order to develop new therapies for immune disorders, inflammatory diseases, blood clotting disorders and cancers.

Understanding blood disorders

Problems in producing platelets, tiny blood cells essential for clotting, can cause blood disorders to develop.

Dr Ashley Ng and colleagues showed the receptor for the potent hormone thrombopoietin could both stimulate platelet production and regulate platelet numbers by 'mopping up' excess thrombopoietin. This prevented excessive stimulation of blood stem cells and their 'daughter' progenitor cells.

Understanding this mechanism of platelet regulation will help us to learn more about essential thrombocytopenia and other disorders where there are too many platelets, which can clog blood vessels causing heart attacks and stroke.

Defects in blood cell production

Platelets are generated from 'parent' cells called megakaryocytes. Until recently, it was believed megakaryocytes underwent a form of programmed cell death, apoptosis, to produce platelets.

Dr Emma Josefsson and colleagues have shown that megakaryocytes do not activate this pathway to produce platelets. Rather, megakaryocytes must actively restrain apoptosis to survive and produce platelets.

The researchers showed that viral infections impair platelet production by triggering the death of platelet-producing cells. This discovery has important implications for our understanding of human diseases and pinpointing the pathways cytotoxic drugs might trigger in megakaryocytes and their precursors that cause them to die.

Understanding leukaemia development

Acute lymphoblastic leukaemia is a cancer of the blood that is most common in children.

Dr Matthew McCormack and colleagues discovered how a gene involved in childhood leukaemias contributed to cancer development.

The team previously demonstrated the role of a gene called *Lmo2* in T-cell acute lymphoblastic leukaemia (T-ALL). With colleagues at Monash University and in the UK, Dr McCormack showed a second gene, *Lyl1*, interacted with *Lmo2*, acting as an essential catalyst driving leukaemia development in T-ALL. The discovery will help in developing new diagnostics and treatments.

Health impact

Cancers: leukaemia, lymphoma, myeloproliferative disease

Immune disorders: asthma, Crohn's disease, rheumatoid arthritis

Other areas: blood clotting diseases, heart attack and stroke, personalised medicine

Faculty

Division heads

Professor Warren Alexander
Professor Nick Nicola

Lab heads

Dr Jeff Babon
Dr Stefan Glaser
Professor David Huang
Dr Emma Josefsson

Dr Matthew McCormack
Professor Don Metcalf
Professor Andrew Roberts
Dr Samir Taoudi

Finding new targets to treat chronic diseases

Chronic inflammatory diseases such as rheumatoid arthritis and Crohn's disease are increasing in incidence in the Australian community.

Researchers from the institute have revealed the structure of a protein that is essential for triggering a recently discovered form of programmed cell death called necroptosis.

A team led by Dr James Murphy from the Cancer and Haematology division and Associate Professor John Silke showed a protein called MLKL plays a crucial role in the signalling pathways that trigger necroptosis.

“This could directly lead to treatments that will help patients who have chronic inflammatory diseases.”

Cells that are infected by a virus or bacteria, or have other irreparable damage, use the necroptosis pathway to send an ‘SOS’ to the immune system to tell it something has gone wrong. However the pathway can also be inappropriately activated, leading to disease.

Dr Murphy said the team had provided the first genetic proof that MLKL was required for necroptosis. “These discoveries are really exciting because they give us a new target to look at for developing treatments for people who suffer from an inflammatory disease,” he said.

The three-dimensional images of MLKL, which were obtained using the Australian Synchrotron, revealed an interesting detail about the protein, Dr Murphy said. “MLKL needs to be ‘switched on’ before it can activate necroptosis,” he said. “It could be a perfect target because it is different from almost every other cell-signalling protein, making it easier to develop highly specific drugs and limiting potential side-effects.”

Associate Professor Silke said the team was now trying to determine the ‘on’ and ‘off’ states of MLKL and how it could be modified to treat disease. “This could directly lead to treatments that will help patients who have chronic inflammatory diseases including rheumatoid arthritis, inflammatory bowel syndrome, Crohn's disease and psoriasis,” he said.

Collaborating organisations: Monash University and University of Canterbury (NZ).

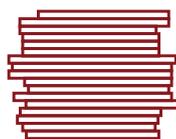
Funding partners: Australian National Health and Medical Research Council, Australian Research Council and Victorian Government.

More information: Murphy JM *et al.* The pseudokinase MLKL mediates necroptosis via a molecular switch mechanism. *Immunity*. 2013 Sep 19; 39(3):443-53



Number of students

12



Number of publications

48

Dr Ashley Ng (left) and Dr Maria Kauppi are studying blood clotting cells called platelets. They recently discovered a mechanism used by the body to regulate platelet numbers, which will help to better understand blood disorders linked with excessive platelet numbers.

Understanding why leukaemia relapses

Acute myeloid leukaemia (AML) is a cancer that arises from the blood-forming tissue of the bone marrow.

Many patients with AML, including those with subtypes that have a good prognosis, will relapse and develop disease that is resistant to therapy. Unfortunately the mechanisms that drive therapy resistance remain poorly understood.

Dr Ian Majewski is using genomics to study how cancer cells become resistant to therapy, with the support of a \$22,000 Dorothy Hill Memorial Fellowship from The Cancer Research Trusts, as managed by Equity Trustees.

Dr Majewski said understanding how cancers become resistant to therapy was the next frontier in the quest to cure cancer.

“By understanding these differences we hope to develop new ways to identify patients who have a high risk of failing therapy,” Dr Majewski said. “In the longer term this knowledge will also assist in developing new treatments that overcome therapy resistance, providing new hope for desperately ill patients.”

The Dorothy Hill Memorial Fellowship is funded through the estate of Athol Joseph Anderson, which forms part of the Cancer

Research Trusts under Equity Trustees’ Medical Grants Program. This program is assessed by an external advisory committee who judged Dr Majewski’s application to be outstanding and commended him for his innovative and collaborative work.

Ms Tabitha Lovett, General Manager of Philanthropic Services at Equity Trustees, said the Medical Advisory Panel was impressed with Dr Majewski’s track record. “We were seeking to support an emerging scientist and are proud to award the Dorothy Hill Memorial Fellowship to such an accomplished recipient,” Ms Lovett said.



Dr Ian Majewski is using genomics to study how cancer cells become resistant to therapy. He is supported by the Dorothy Hill Memorial Fellowship from The Cancer Research Trusts, as managed by Equity Trustees.

Major national and international meetings

Professor Warren Alexander

6th Barossa Meeting; Cell Signalling in the Omics Era', *keynote speaker*, Barossa Valley, Australia, 11/13

25th Lorne Cancer Conference, *keynote speaker*, Lorne, Australia, 02/14

International Society for Stem Cell Research 12th Annual Meeting, *oral presentation*, Vancouver, Canada, 06/14

Dr Jeff Babon

Centre for Cancer Biology Seminar Series, *invited speaker*, Adelaide, Australia, 07/13

Interleukin 6 Biology-Pathophysiology-Therapy, *keynote speaker*, Kiel, Germany, 05/14

Dr Emma Josefsson

The 2013 Joint meeting of the Australian Vascular Biology Society & the Australia New Zealand Microcirculation Society, *oral presentation*, Adelaide, Australia, 09/13

24th Congress of the International Society of Thrombosis and Haemostasis, *oral presentation*, Amsterdam, Netherlands, 10/13

60th annual meeting of the SSC of the International society of thrombosis and Haemostasis, *invited speaker*, Milwaukee, US, 06/14

Dr Stanley Lee

ComBio 2013, *oral presentation*, Perth, Australia, 09/13

Dr James Murphy

Queenstown Molecular Biology Meeting, *invited speaker*, Queenstown, New Zealand, 08/13

ComBio 2013, *oral presentation*, Perth, Australia, 09/13

6th Barossa Meeting 'Cell Signalling in the Omics Era', *oral presentation*, Barossa Valley, Australia, 11/13

39th Lorne Conference in Protein Structure and Function, *oral presentation*, Lorne, Australia, 02/14

10th Banff Conference on Signalling in Normal and Cancer Cells, *oral presentation*, Banff, Canada, 03/14

Professor Andrew Roberts

4th Australia-China Biomedical Research Conference, *invited speaker*, Hangzhou, China, 09/13

Society of Hematological Oncology Scientific Meeting, *invited speaker*, Houston, US, 09/13

19th Congress of European Hematology Association, *invited speaker*, Viale Eginardo, Italy, 06/14

Dr Benjamin Shields

New Directions in Leukaemia Research 2014, *oral presentation*, Noosa, Australia, 03/14



Staff list

Sabine Kelly, BSc(Hons) *Monash* PhD *Monash*, scientific coordinator/alliance manager

Warren Alexander, BSc(Hons) *Melbourne* PhD *Melbourne*

Maria Kauppi, PhD *Helsinki*

Stanley Lee, BSc(Hons) *Auckland* PhD *Melbourne* (to 12/13)

Ian Majewski, BSc(Hons) *UWA* PhD *Melbourne*

Ashley Ng, BMedSc *Melbourne* MB BS(Hons) *Melbourne* PhD *Melbourne* FRACP FRCPA

Sandra Pilat-Carotta, PhD *Vienna* (to 11/13)

Takashi Ushiki, MD *Niigata* PhD *Niigata* (from 02/14)

Amandine Carmagnac, BSc *France*

Jason Corbin, BAppSc *Swinburne*

Christoffer Flensburg, PhD *Lund*, computational scientist (from 02/14)

Pradnya Gangatirkar, MSc *Nagpur*

Adrienne Hilton, BAppSc *RMIT*

Craig Hyland, BAppSc *RMIT*

Helen Ierino, BAppSc *RMIT*

Janelle Lochland, BSc *Deakin*

Sarah Miller, BSc(Hons) *Toronto* MSc *Melbourne* (from 09/13)

Dina Stockwell, BSc *LaTrobe*

Nick Nicola, AO BSc(Hons) *Melbourne* PhD *Melbourne* FAA

Nick Redpath, BSc *Heriot-Watt* PhD *Bristol*

Christine White, BSc(Hons) *Adelaide* PhD *Monash*

Jian-Guo Zhang, BSc *Xinjiang* PhD *Melbourne*

Phillip Morgan, BAppSc *FIT*

Priscilla Soo, BSc(Hons) *Melbourne*

Stefan Glaser, PhD *Germany*

Alexandra Ang, BSc(Hons) *Malaya* MMedSc *Malaya*, PhD student

David Huang, MB BS *London* PhD *London* MRCP *London*

Jianan Gong, BSc(Hons) PhD *Tsinghua* (from 11/13)

Lei Liu, MSc *China* PhD *China*

David Segal, BSc(Hons) *UWA* PhD *ANU*

Mark van Delft, BSc(Hons) *McMaster* PhD *Melbourne*

Andrew Wilks, BSc(Hons) *Liverpool* PhD *Glasgow*

Zhen Xu, BSc *Nanjing* PhD *Nanjing*

Chris Riffkin, BSc(Hons) *LaTrobe*

Hui Chin, BBiomedSc *Melbourne*, PhD student

Clea Grace, BSc(Hons) *Sydney*, PhD student

Sean Hewetson, BSc(Honours) student (from 02/14)

Emma Josefsson, MSc *Gothenburg* PhD *Gothenburg*

Marion Lebois, BSc *Marseille* MSc *Paris XI*

Starling Sim, BBiomedSc *Melbourne*, BSc(Honours) student (to 11/13)

Matthew McCormack, BSc(Hons) *Adelaide* PhD *Adelaide*

Ben Shields, BSc(Hons) *Melbourne* PhD *Melbourne*

Jacob Jackson, BSc(Hons) *Melbourne* GradDipArts *Melbourne*

Hesham Abdulla, BAppSc *RMIT* BSc(Hons), PhD student

Raed Alserihi, BSc *King Abdulaziz* MSc *RMIT*, PhD student

Don Metcalf, AC BSc(Med) *Sydney* MD *Sydney* FRACP HonDSc *Sydney* HonMD *Oslo* HonFRCPath *London* FRCPA FAA FRS, Carden Fellow

Ladina Di Rago

Sandra Mifsud, BAppSc *RMIT*

Andrew Roberts, MB BS *Qld* PhD *Melbourne* FRACP FRCPA

Seong Khaw, MB BS(Hons) *Adelaide* PhD *Melbourne*

Louise Cengia, BSc *UTAS*

Angela Georgiou

Mary Ann Anderson, MB BS *Melbourne*, visiting PhD student

Edward Chew, BMedSc *Melbourne* MB BS *Melbourne* FRACP FRCPA, PhD student (from 05/14)

Greg Corby, BBiology *Auckland* MB BS *Auckland*, visiting PhD student (from 02/14)

Simon He, MB BS *Melbourne*, visiting MD student

Sophie Lee, MB ChB *Auckland*, PhD student

Eric Si, BSc *Cornell* MS *Uni at Buffalo* MD *SUNY Upstate*, PhD student (from 05/14)

ACRF STEM CELLS AND CANCER

The ACRF Stem Cells and Cancer division is focused on breast, ovarian and lung cancers. Our aim is to understand the normal development of these organs, which cell types are predisposed to cancer, and find new diagnostic and therapeutic targets for these cancers.

Tumour 'bank' to test new drugs

Human tumours from patients can provide a wealth of information about how cancers behave.

Each human cancer is different, and tumour tissue can be analysed to understand the key changes that drive cancer development and, importantly, how the cancers respond to treatment.

Over the past three years, our research teams have developed an extensive bank of tumour models based on different subtypes of breast, lung and ovarian cancers. The tumour models, based on samples from real patient tumours, are being used for critical preclinical testing of new and existing drugs (read more on page 59).

Identifying 'markers' of breast cancer

Understanding how breast cancer develops requires us to investigate the molecular changes that drive cancer.

Our breast cancer research team has used the latest technologies to analyse single cells from the human breast, measuring the activity of thousands of genes at once. This analysis, called a gene expression profile, will help to identify breast cancer 'biomarkers' – proteins that are produced by breast cancers that can be used in blood tests and other diagnostic tests for early detection of breast cancer.

Personalised medicine in ovarian cancer

High-grade serous ovarian cancer is the most aggressive type of ovarian cancer.

Associate Professor Clare Scott and the ovarian cancer team are identifying the key genetic mutations found in high-grade serous ovarian tumours. This research will help to understand how ovarian cancer develops, how genetic changes impact on the tumours' response to treatment and identify potential targets for new anti-cancer drugs.

The program is also driving personalised medicine for people with ovarian cancer, using identified genetic mutations to search for the best treatment for the individual patient and their tumour.

Health impact

Cancers: breast cancer, lung cancer, ovarian cancer

Other areas: personalised medicine

Faculty

Division heads

Professor Geoff Lindeman
Professor Jane Visvader

Lab heads

Dr Marie-Liesse Asselin-Labat
Associate Professor Clare Scott
Dr Kate Sutherland



Ovarian cancer is the second most common gynaecological cancer in Australian women. Associate Professor Clare Scott is improving our understanding of high-grade ovarian cancers, the most aggressive ovarian tumours, which account for 70 per cent of ovarian cancers.

Do breast stem cells retain cancer legacy?

Breast cancer affects one in eight Australian women.

Despite improvements in survival, many types of breast cancer are still hard to treat, and have a poor prognosis.

Institute researchers have discovered breast stem cells and their 'daughters' have a much longer lifespan than previously thought, remaining active in puberty and throughout life. This longevity means the cells could harbour genetic defects or damage that doesn't progress to cancer until decades later, potentially shifting back the timeline of breast cancer development.

“Given stem cells – and their daughter progenitor cells – can live for such a long time ... damage to their genetic code could lead to breast cancer 10 or 20 years later.”

Professor Jane Visvader, Professor Geoff Lindeman and colleagues first isolated breast stem cells in 2006. In a paper published this year in *Nature*, the research team, with Dr Anne Rios and Dr Nai Yang Fu, showed breast stem cells actively maintain breast tissue for most of the life of the individual.

Professor Lindeman said the discovery would have implications

for identifying the cells of origin of breast cancers.

“Given stem cells – and their daughter progenitor cells – can live for such a long time and are capable of self-renewing, damage to their genetic code could lead to breast cancer 10 or 20 years later,” Professor Lindeman said.

The finding is also integral to identifying the cells of origin of breast tumours and the ongoing quest to develop new treatments and diagnostics for breast cancer.

Professor Visvader said understanding normal breast cell development was critical to understanding breast cancer. “Without knowing the precise cell types in which breast cancer originates, we will continue to struggle to develop new treatments and preventions,” she said. “These findings will hopefully have future applications for breast cancer.”

Funding partners: Australian National Health and Medical Research Council, Australian Cancer Research Foundation, Cure Cancer Australia, National Breast Cancer Foundation, Quattrough Research Fund and Victorian Government.

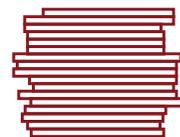
More information: Rios AC, Fu NY *et al.* In situ identification of bipotent stem cells in the mammary gland. *Nature*. 2014 Feb 20; 506(7488):322-7

Watch the video ▶



Number of students

12



Number of publications

45

Sustained support aids breast cancer research

Breast cancer is the most common cancer in Australian women.

The institute's breast cancer laboratory team is evaluating new models and targeted therapies for breast cancer patients, thanks to the generous and dedicated support of the Joan Marshall Breast Cancer Research Fund.

The Joan Marshall Breast Cancer Research Fund has committed to support this research for five years to ensure the research team has the opportunity to carry out early-phase clinical trials of potential anti-breast cancer drugs.

In the first year, Professor Jane Visvader, Professor Geoff Lindeman and their team have generated eight breast cancer models that will form

the basis of the genetic studies for the rest of the project.

Professor Visvader said the next step was to determine the 'gene profiles' of breast tumours from patients before and after therapy. "This will assist in identifying biological markers that indicate how well a patient will respond to different cancer treatments, and whether their tumour DNA encodes chemotherapy resistance," she said.

One of the major impediments to improving breast cancer outcomes is the 'one-size-fits-all' approach that is often applied to treatment. Professor Lindeman said many patients who received breast cancer drugs after their surgery were not given treatments that were specific to their cancer type.

"To derive maximal benefit from the new therapies that medical research is delivering, we must become more adroit at personalising therapy, by identifying specific genetic changes in the tumour that we can selectively target," he said.

The research team has identified potential new therapies and secured approval to investigate potential anti-breast cancer drugs in the laboratory and clinic. The early-phase clinical trials will be conducted in partnership with Clinical Trials Australia and The Royal Melbourne Hospital.

"This promising research is made possible because of generous philanthropic support," Professor Visvader said.

Late detection and resistance to existing therapies have made lung cancer the leading cause of cancer-related deaths worldwide.

Dr Kate Sutherland is developing preclinical models of human lung cancers to better understand how the disease develops, progresses and spreads.



Major national and international meetings

Dr Marie-Liesse Asselin-Labat

ComBio 2013, *invited speaker*, Perth, Australia, 09/13

Australasian Society for Stem Cell Research Conference, *invited speaker*, Brisbane, Australia, 10/13

Professor Geoffrey Lindeman

Gordon Research Conference: Hormone-Dependent Cancer, *invited speaker*, Smithfield, US, 07/13

35th Australia and New Zealand Breast Cancer Trials Group Annual Scientific Meeting, *invited speaker*, Brisbane, Australia, 07/13

2013 Translational Cancer Research Conference, *invited speaker*, Newcastle, Australia, 10/13

2013 Australian Breast Cancer Conference, *conference convenor*, Melbourne, Australia, 11/13

6th IMPAKT Breast Cancer Conference, *invited speaker*, Brussels, Belgium, 05/14

Associate Professor Clare Scott

The Gynaecological Oncology Research Collaborative of the Victorian Comprehensive Cancer Centre, Symposium on Ovarian Cancer, *conference convenor*, Melbourne, Australia, 08/13

Australia New Zealand Gynaecological Oncology Group ASGO Combined Annual Scientific Meeting, *plenary speaker*, Canberra, Australia, 03/14

Gynecologic Cancer InterGroup (GCIG), *invited speaker*, Chicago, US, 05/14

American Society of Clinical Oncology, *invited speaker*, Chicago, US, 05/14

Dr Kate Sutherland

15th World Conference on Lung Cancer, *invited speaker*, Sydney, Australia, 10/13

25th Lorne Cancer Conference, *invited speaker*, Lorne, Australia, 02/14

Professor Jane Visvader

American Association for Cancer Research Breast Cancer Conference, *co-chair*, San Diego, US, 09/13

2013 Shanghai International Symposium on Cancer Stem Cells, *invited speaker*, Shanghai, China, 10/13

Epigenetics 2013, *invited speaker*, Shoal Bay Resort, Australia, 12/13

25th Lorne Cancer Conference, *invited speaker*, Lorne, Australia, 02/14

Genomics and Stem Cell Based Therapies: Shaping the future of personalized medicine, *plenary speaker*, Guangzhou, China, 05/14

Ms Clare Weeden

15th World Lung Cancer Conference, *invited speaker*, Sydney, Australia, 10/13



Staff list

Rebecca Cook, BSc(Hons) *South Australia*, scientific coordinator (from 02/14)

Audrey Partanen, BSc *Washington*, project coordinator (to 07/13)

Kylie Shackleton, BSc(Nursing) *Deakin*, project officer

Geoff Lindeman, BSc(Med) *Sydney* MB BS(Hons) *Sydney* PhD *Melbourne* FRACP

Jane Visvader, BSc(Hons) *Adelaide* PhD *Adelaide*

Nai Yang Fu, BSc *Xiamen* MSc *Sun Yat-sen* PhD *Singapore*

Delphine Merino, MSc *Dijon* PhD *Dijon*

Ewa Michalak, BSc(Hons) *UWA* PhD *Melbourne*

Michal Milgrom Hoffman, PhD *Israel* (from 03/14)

Bhupinder Pal, MSc *Kurukshetra* PhD *Melbourne*

Anne Rios, PhD *Marseille*

Julie Taoudi, BSc(Hons) *Leeds* PhD *Edinburgh*

Francois Vaillant, PhD *Monash*

Julius Graesel, BSc *Germany*

Felicity Jackling, BSc(Hons) *Melbourne*

Paul Jamieson, BSc(Hons) (from 03/14)

Kevin Liu, BMed *Beihua* PhD *Melbourne*

Tamara McLennan, BAppSc(Hons) *QUT* BBIoSc *LaTrobe*

Catherine To, BSc(Hons) *Melbourne* (to 04/14)

Sarah Best, BSc(Hons) *Melbourne*, PhD student

Bianca Capaldo, BSc *Monash* BSc(Hons) *Melbourne*, PhD student

Jeffrey Kam, visiting Honours student (to 12/13)

Lily Lee, BSc(Hons) *Melbourne* LLB(Hons) *Melbourne*, PhD student

Emma Nolan, BSc(Hons) *Otago*, PhD student

Marie-Liesse Asselin-Labat, PhD *Paris*

Aliaksei Holik, BSc(Hons) *Edinburgh* PhD *Cardiff*

Laura Galvis Vargas, BSc(Hons) *Melbourne*

Julie Pasquet, BSc(Hons) *Lyon* MBIology *Toulouse*

Gaelle Tachon, overseas research trainee (to 09/13)

Clare Weeden, BA(Hons) *UWA* BSc(Hons) *UWA*, PhD student

Sebastian Zijl, BSc, overseas research trainee (from 03/14)

Clare Scott, MB BS *Melbourne* PhD *Melbourne* FRACP

Michele Cook

Emma Boehm, BSc *Melbourne*, visiting MD student

Alison Hadley, MB BS(Hons) *Sydney* MMedSc *Sydney* FRACP, PhD student (from 03/14)

Valerie Heong, MB BS *Adelaide*, PhD student

Venetia Khambatta, BBIomedSc(Hons), visiting MD student (from 01/14)

Elizabeth Lieschke, BSc(Honours) student (from 01/14)

Monique Topp, visiting PhD student

Louie Ye, BAppSc(Hons) *RMIT* PhD *Monash*, visiting MD student (from 04/14)

Kate Sutherland, BSc(Hons) *Melbourne* PhD *Melbourne*

Ariena Kersbergen, BAppSc *Rotterdam* (from 08/13)

MOLECULAR GENETICS OF CANCER

The Molecular Genetics of Cancer division is investigating how our cells normally die and how defects in this process cause disease, particularly cancer. Better understanding of cell death will help us to develop improved treatments for both cancers and immune disorders.

Genome editing accelerates research

An Australian-first genome engineering technology being established at the institute will fast-track research into cancers such as leukaemia and lymphoma.

The technology, called CRISPR/Cas9 genome editing, makes it possible to modify or delete specific genes of mammalian cells or mice in a quarter of the time previously possible.

Dr Marco Herold is heading the institute's genome editing facility. He has focused on adapting the technology for blood cancers to assess the impact of removing tumour-suppressing or tumour-promoting genes. The technology will help to clarify how specific genes contribute to cancer and drug resistance, and to trial drugs to ensure they do not have unexpected side-effects.

Advancing cancer treatment

Over the past 25 years, our division has significantly advanced understanding of how cell death is controlled and the key proteins governing it. This includes the Bcl-2 family of pro-survival proteins, which contribute to the survival and chemotherapy resistance of many cancers.

The division is proud of its contributions to the preclinical research involved in developing drugs that target these pro-survival proteins, which are now in clinical trials for blood cancers such as leukaemia and under study for treating other blood and solid tumours. We are continuing to investigate the function of other proteins in cell death pathways and the potential for targeting them to treat cancer and other diseases.

Professor Jerry Adams honoured

In 2014, Professor Jerry Adams received two significant honours. He was the only Australian elected a fellow of the American Association for Cancer Research Academy, and received the Australian Academy of Science's Macfarlane Burnet Medal, its premier award for biological science.

Professor Adams was recognised for his research achievements into cancer genetics and cell death. In the 1980s, he and his colleagues showed Burkitt's lymphoma was often caused by genetic damage to the 'switch' that controlled the *Myc* gene, driving the cells to become cancerous. Professor Adams and institute colleagues have also made seminal contributions to discovering the proteins governing normal cell survival and cell death, and their roles in cancer development.

Health impact

Cancers: leukaemia, lymphoma, myeloma, myeloproliferative disorders, stomach cancer

Immune disorders: lupus, rheumatoid arthritis, type 1 diabetes

Other areas: personalised medicine

Faculty

Division heads

Professor Jerry Adams

Professor Andreas Strasser

Lab heads

Dr Philippe Bouillet

Professor Suzanne Cory
(honorary distinguished research fellow)

Dr Daniel Gray

Dr Marco Herold

Dr Ruth Kluck

Targeting cell survival to kill lymphoma

Up to 70 per cent of human cancers, including many leukaemias and lymphomas, have unusually high levels of MYC.

MYC is a protein that causes cancerous changes in cells by forcing them into abnormally rapid growth. Dr Gemma Kelly, Dr Marco Herold and Professor Andreas Strasser led a research team investigating how cells with high levels of MYC stay alive and grow. The discoveries offer hope for treating the many types of cancer that are driven to grow and spread through the actions of MYC.

“This suggests drugs that block MCL-1 function would be an effective strategy for treating lymphomas with limited side-effects on the body’s normal cells.”

Dr Kelly said the team showed that lymphoma cells with high levels of MYC could be rapidly killed by disabling MCL-1, a cell survival protein that sustains the expansion of these cancer cells.

“When compared with healthy normal cells, the lymphoma cells were considerably more sensitive to being deprived of MCL-1,” she said.

“This suggests drugs that block MCL-1 function would be an effective strategy for treating lymphomas with limited side-effects on the body’s normal cells.”

Professor Strasser said the finding was exciting as there was hope that MCL-1 inhibitors may soon become available for clinical testing.

“Anti-cancer agents that target the protein Bcl-2, which is closely related to MCL-1, are already showing promise in clinical trials, including in Melbourne,” Professor Strasser said. “We are hopeful that inhibitors of MCL-1 will soon become available for clinical testing, and we will be very interested in determining whether these compounds could be used to treat MYC-driven cancers.”

Collaborating organisations: Cancer Centre Karolinska (Sweden) and The University of Birmingham (UK).

Funding partners: Australian National Health and Medical Research Council, Cancer Research UK (UK), EMBO, German Research Council (Germany), Kay Kendall Leukemia Fund (UK), Leukaemia Foundation, Leukaemia & Lymphoma Society (US) and Victorian Government.

More information: Kelly GL *et al.* Targeting of MCL-1 kills MYC-driven mouse and human lymphomas even when they bear mutations in p53. *Genes & Development*. 2014 Jan 1;28(1):58-70.

Watch the video ►

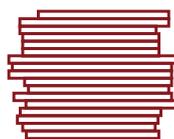


Dr Philippe Bouillet is studying the role of cell death and inflammation in diseases including chronic inflammatory arthritis, inflammatory bowel disease, cancer and epilepsy.



Number of students

10



Number of publications

34

Funding cancer discoveries

While travelling in the US, Ms Jeanette Haviland heard a news report about an exciting cancer discovery made at the Walter and Eliza Hall Institute.

Professor Andreas Strasser, Dr Gemma Kelly and Dr Marco Herold had discovered a promising strategy for treating lymphomas and other cancers driven to grow and spread through the actions of a cancer-causing protein called MYC (read more on page 19).

The team had discovered that the protein MCL-1 was essential for survival of cancers with high levels of MYC, which includes many leukaemias and lymphomas. Professor Strasser said the researchers had shown

blocking MCL-1 could rapidly kill lymphoma cells. “The cancers just melted away – it was astounding,” he said.

Ms Haviland, a trustee of the estate of Mr Anthony (Toni) Redstone OBE, contacted the institute on her return to Australia. “Toni had requested that his estate support further research into our understanding of and treatments for lymphoma, particularly non-Hodgkin lymphoma,” Ms Haviland said.

Mr Redstone, or Toni to those who knew him, was a pioneer in the wool industry. He had a long association with Norfolk Island, travelling back and forth for 53 years, from age 17, before settling there in 1999. Mr Redstone

made significant donations and contributions to the Norfolk community and other causes, and is fondly remembered by the community for his generosity and courage.

Co-trustee Ms Helen Price travelled from her home on Norfolk Island to visit the institute, meet with researchers and confirm a \$1 million gift from the estate to support Professor Strasser, Dr Kelly, Dr Herold and their team. “It is thrilling to be able to make a contribution that will enable this inspiring team to drive their work forward and hopefully help patients sooner,” Ms Price said. “We were delighted to be able to honour Toni’s wishes and support such promising and exciting research.”



Programmed (apoptotic) cell death is a vital process for all cells, but it can cause cancers and immune disorders when it goes awry. Dr Ruth Kluck is studying key proteins that irreversibly commit cells to die, to develop new strategies for blocking apoptosis to treat disease.

Major national and international meetings

Professor Jerry Adams

Australian Academy of Science, Science at the Shine Dome, *plenary speaker*, Canberra, Australia, 05/14

Ms Natasha Anstee

10th Cold Spring Harbor Laboratory Meeting on Cell Death, *oral presentation*, Cold Spring Harbor, US, 10/13

Professor Suzanne Cory

2nd Annual NHMRC Research Translation Faculty Symposium, *plenary speaker*, Sydney, Australia, 11/13

10th China Australia Symposium on Science and Technology Astronomy and Astrophysics, *keynote speaker*, Nanjing, China, 11/13

1st International Kloster Seeon Meeting on Mouse Models of Human Cancer, *invited speaker*, Kloster Seeon, Germany, 03/14

Mr Alex Delbridge

Melbourne Cell and Developmental Biology 6th Annual Meeting, *oral presentation*, Parkville, Australia, 10/13

Dr Daniel Gray

ThymOz: international workshop on T Lymphocytes, *oral presentation*, Heron Island, Australia, 04/14

Dr Marco Herold

Cancer Biology: BRIC 10-year anniversary symposium, *oral presentation*, Copenhagen, Denmark, 08/13

ComBio 2013, *invited speaker*, Perth, Australia, 10/13

Mr Colin Hockings

39th Lorne Conference on Protein Structure and Function, *oral presentation*, Lorne, Australia, 02/14

Ms Reema Jain

ThymOz: international workshop on T Lymphocytes, *oral presentation*, Heron Island, Australia, 04/14

Dr Lorraine O'Reilly

EMBO Conference - Cellular Signalling and Cancer Therapy, *oral presentation*, Cavtat, Croatia, 05/14

Professor Andreas Strasser

International Society for Hematology and Stem Cells - 42nd Annual Scientific Meeting, *plenary speaker*, Vienna, Austria, 08/13

10th Cold Spring Harbor Laboratory Meeting on Cell Death, *invited speaker*, Cold Spring Harbor, US, 10/13

15th American Society of Hematology Annual Meeting and Exposition, *plenary speaker*, New Orleans, US, 12/13

Minisymposium: Cell Death and Immunity, *invited speaker*, Cologne, Germany, 12/13

2014 Keystone Symposium on the Chemistry and Biology of Cell Death, *plenary speaker*, Santa Fe, US, 02/14

American Association for Cancer Research Annual Meeting 2014, *invited speaker*, San Diego, US, 04/14

Gordon Research Conference on Cell Death Mechanisms at the interface of Health and Disease, *invited speaker*, West Dover, US, 06/14

16th International p53 Workshop, *invited speaker*, Stockholm, Sweden, 06/14

Dr Dana Westphal

Signalling 2013: From Structure to Function, *invited speaker*, York, UK, 07/13

10th Cold Spring Harbor Laboratory Meeting on Cell Death, *oral presentation*, Cold Spring Harbor, US, 10/13



Staff list

Catherine McLean, BA *Melbourne*
GradDipGenetCounsell *Charles Sturt*,
scientific coordinator
Linda Scott, executive assistant to
Professor Suzanne Cory

Jerry Adams, BSc *Emory* PhD
Harvard FAA FRS

Rebecca Bilardi, B BiolSc(Hons)
LaTrobe PhD *LaTrobe*

Michael Dengler, MSc *Stuttgart* PhD
Stuttgart (from 02/14)

Max Tailler, BSc *Bordeaux 1* MSc
Bordeaux 1 PhD *Paris XI*

Cassandra Vandenberg, BSc(Hons)
Otago PhD *Otago*

Bin Wang, BSc *Beijing* PhD *Beijing*

Dana Westphal, MSc *Technical* PhD
Otago (to 01/14)

Leonie Gibson, BAppSc *RMIT*

Mikara Robati, BSc *Waikato*

Natasha Anstee, BSc(Hons)
Melbourne, PhD student

Andreas Strasser, MSc *Basel* PhD
Basel FAA

Silvia Alvarez-Diaz, BSc *Oviedo* MSc
Oviedo PhD *Madrid*

Alexis Delbridge, B BiomedSc(Hons)
Melbourne PhD *Melbourne*

Stephanie Grabow, MSc *Max Planck*
PhD *Melbourne*

Ana Janic, BSc *Belgrade* PhD
Barcelona

Francine Ke, BSc(Hons) *Melbourne*
PhD *Melbourne*

Gemma Kelly, BSc(Hons) *Durham* PhD
Birmingham

Lorraine O'Reilly, BSc *Glasgow* PhD
London

Ann Lin, BSc(Hons) *Melbourne*

Liz Valente, B BiomedSc(Hons) *LaTrobe*

Brandon Aubrey, BA *Pennsylvania* MB
BS *Sydney*, PhD student

Jun Low, B BiomedSc *Melbourne*, PhD
student

Philippe Bouillet, PhD *Louis Pasteur*

Derek Lacey, BSc(Hons) *Monash* PhD
Monash (from 01/14)

Bruno Helbert, MSc *Paris-Sorbonne*

Carley Young, BSc *Melbourne*

Daniel Gray, B BiomedSc(Hons)
Monash PhD *Monash*

Charis Teh, BSc(Hons) *ANU* PhD *ANU*

Reema Jain, MSc *Auckland*, PhD
student

Antonia Policheni, B BiomedSc *Monash*
BSc(Hons) *Melbourne*, PhD student

Marco Herold, Dipl. Biol. *Wuerzburg*
PhD *Wuerzburg*

Lin Tai, BAppSc *Swinburne* MSc
LaTrobe

Margs Cockburn, BSc(Honours)
student (from 07/13)

Leona Rohrbeck, BSc *Maastricht* MSc
Maastricht, PhD student

Robyn Schenk, BSc(Hons) *Canterbury*,
PhD student (from 05/14)

Ruth Kluck, BSc *Qld* PhD *Qld*

Amber Alsop, BSc(Hons) *Sydney* PhD
Cambridge

Khatira Anwari, B BiomedSc *Melbourne*
BSc(Hons) *Melbourne* PhD *Monash*

Rachel Uren, BSc(Hons) *Melbourne*
PhD *Melbourne*

Ray Bartolo, BSc(Hons) *Deakin* PhD
Deakin (to 03/14)

Colin Hockings, BA(Hons) *Cambridge*,
PhD student

Sweta Iyer, BSc *India* MSc *Madurai*
Kamaraj, PhD student

ACRF CHEMICAL BIOLOGY

The ACRF Chemical Biology division investigates key biological processes and pathways critical in disease development to discover potential drug targets important for human disease. Our researchers use chemical, biochemical, structural and biological approaches to establish how dysregulation of critical cell signalling pathways contributes to disease, and use this to guide novel therapeutic development.

Discovering new drugs for inflammatory diseases

Catalyst Therapeutics – a joint venture between the institute and SYN|thesis Med Chem – is funding a program to discover drugs that will treat immune disorders.

The research program aims to develop lead compounds against the protein MLKL in order to treat inflammatory conditions.

MLKL is a key protein in necroptosis, a process that orders the cell to self-destruct while sending signals to the immune system to mount a response to potential invaders. Drugs that target MLKL could help patients who have inflammatory immune disorders including rheumatoid arthritis, inflammatory bowel syndrome, Crohn's disease and psoriasis.

Developing novel cancer drugs

Medicinal chemist Associate Professor Guillaume Lessene is working to identify and develop drug-like molecules targeting cancer cells.

Associate Professor Lessene was jointly awarded the institute's 2013 Burnet Prize, awarded annually to early-career scientists, with Dr Peter Czabotar from the Structural Biology division. Associate Professor Lessene played a key role in developing a tailor-made chemical compound, WEHI-539, which blocks a protein linked to poor responses to treatment in cancer patients. The compound is an important step towards the design of a potential new anti-cancer agent.

Searching for new cancer and infection treatments

Dr Ethan Goddard-Borger joined the institute with a \$150,000 veski fellowship to discover potential medicines for cancers, genetic disorders and fungal infections.

Dr Goddard-Borger is developing new ways to block production of glycosphingolipids. Changes in glycosphingolipid production can contribute to cancer, cryptococcosis (a form of meningitis) and fatal genetic conditions known as lysosomal storage disorders. He is working to discover new agents that block glycosphingolipid function to treat these diseases.

He is also the recipient of a Ramaciotti Establishment grant from the Ramaciotti Foundations, managed by Perpetual.

Health impact

Cancers: blood cancers, breast cancers, myeloproliferative disorders, stomach cancers

Immune disorders: Crohn's disease, inflammatory bowel disease, psoriasis, rheumatic fever and heart disease

Infectious disease: HIV, malaria, toxoplasmosis

Other areas: heart disease and stroke, neurodegenerative disease

Faculty

Division heads

Professor Benjamin Kile

Associate Professor Guillaume Lessene

Lab heads

Dr Chris Burns

Dr Ethan Goddard-Borger

Dr Isabelle Lucet

Professor Keith Watson (Honorary)



PhD student Ms Kate McArthur is working with Associate Professor Guillaume Lessene to study proteins that regulate cell death and inflammation. The research has implications for a range of diseases including cancer, immune disorders and neurodegenerative disease.

Homing in on a new treatment for malaria

Malaria kills more than 700,000 people each year, many of them children under the age of five.

As malaria develops resistance to current antimalarial drugs, the search for new targets that kill all malaria species is becoming critical.

Institute researchers have developed a compound that blocks a key 'gatekeeper' enzyme called Plasmeprin V, which is essential for malaria parasite survival. The compound, WEHI-916, is the first step towards a new class of antimalarial drugs that could cure and prevent infections by all malaria species, including those resistant to existing drugs.

WEHI-916 is the first step towards a new class of antimalarial drugs that could cure and prevent infections by all malaria species, including those resistant to existing drugs.

A team led by Dr Justin Boddey, a parasitologist from the Infection and Immunity division, and Dr Brad Sleebs, a medicinal chemist from the ACRF Chemical Biology division, collaborated to develop WEHI-916.

Dr Sleebs said WEHI-916 blocked Plasmeprin V, an enzyme that institute researchers had previously shown controlled transport of

essential proteins in and out of the malaria parasite.

"Plasmeprin V is an ideal drug target because its inhibition effectively halts the transport of hundreds of malaria proteins that are essential for the parasite's survival," he said.

WEHI-916 could lead to drugs that cure malaria caused by all five species of *Plasmodium* parasite. "Our study has shown that Plasmeprin V is important in the most virulent species that causes malaria and WEHI-916 can kill this parasite," Dr Sleebs said. "It is a starting point for a research program that could lead to a new class of antimalarial drugs."

Collaborating organisations: La Trobe University, National Center for Genetic Engineering and Biotechnology (Thailand) and University of Copenhagen (Denmark).

Funding partners: Australian National Health and Medical Research Council, Australian Research Council, CASS Foundation, Howard Hughes Medical Institute (US), Human Frontier Science Program, Ramaciotti Foundations and Victorian Government.

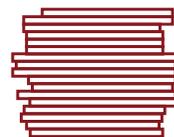
More information: Sleebs BE *et al.* Inhibition of Plasmeprin V activity demonstrates its essential role in protein export, PfEMP1 display and survival of malaria parasites. *PLoS Biology*. 2014 Jul 1;12(7):e1001897.

Watch the video ►



Number of students

6



Number of publications

49

Supporting innovative research

'Apoptosis' is a specialised form of cell death, tightly regulated by a complex web of proteins inside the cell.

Millions of cells undergo apoptosis every minute, ensuring new cells replace old ones to keep tissues healthy. Proper control of apoptosis is critical to human health – too little can lead to a dangerous accumulation of cells, such as in cancer and autoimmune diseases, while excessive apoptosis can cause the unwanted loss of healthy tissues.

The DHB Foundation is enabling some of the institute's most innovative research into cell death; supporting an ambitious early drug discovery project investigating new drugs to prevent apoptosis.

The research program – led by Professor Benjamin Kile, Associate

Professor Guillaume Lessene and Professor David Huang – aims to identify new therapies that prevent the damage caused by stroke, traumatic brain injury, and retinal degeneration.

Associate Professor Lessene said the team would investigate whether blocking apoptosis might be an effective way to intervene in conditions where unwanted cell death contributes to disease.

"Our understanding of apoptosis, and the molecules that regulate it, has grown enormously over the past 20 years," Associate Professor Lessene said. "This project builds on the wealth of cell death expertise that has accumulated at the institute and opens up a world of possibilities regarding the therapeutic manipulation of cell death. It will allow us to definitively establish the potential therapeutic

utility of targeting apoptosis in diseases such as stroke."

Institute director Professor Doug Hilton said it was often philanthropists who were willing to support the riskiest and most ambitious research projects.

"Increasingly the government makes conservative choices when it comes to supporting research," Professor Hilton said. "It is wonderful to have donors who understand the value of blue-sky thinking and adventurous, exploratory research."

The DHB Foundation is managed by Equity Trustees, which manages more than 450 charitable trusts and foundations that will distribute nearly \$100 million to charitable organisations in 2014-15.



Glycans cover the surface of every healthy human cell, cancer cell and bacterium, playing a central role in how cells sense their environment and communicate. Dr Ethan Goddard-Borger is investigating glycans in disease, and developing novel drug-like molecules to interfere with glycans to treat diseases such as malaria, cancer and arthritis.

Major national and international meetings

Professor Benjamin Kile

International Society for Hematology and Stem Cells 42nd Annual Scientific Meeting, *invited speaker*, Vienna, Austria, 08/13

Associate Professor Guillaume Lessene

RACI Biomolecular Conference 2013, *oral presentation*, Blue Mountains, Australia, 07/13

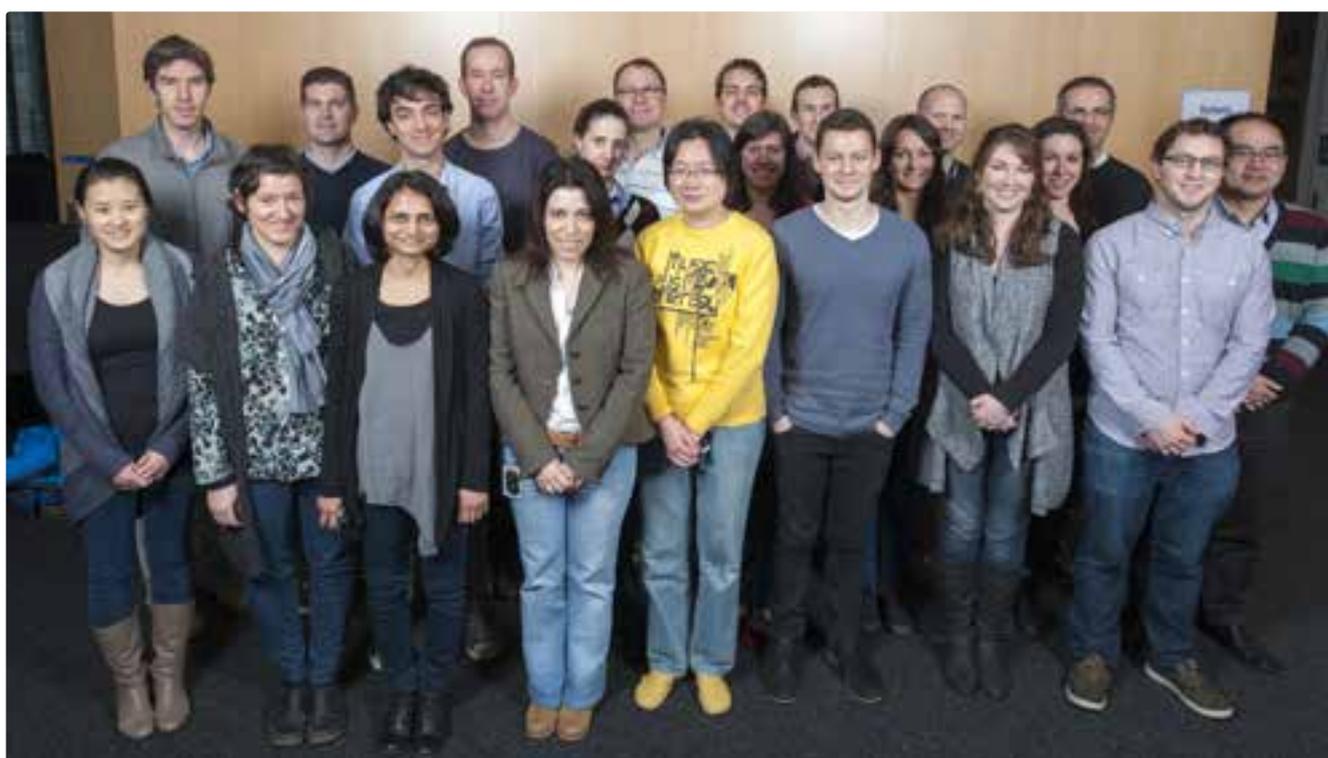
International Chemical Biology Society 2013, *invited speaker*, Kyoto, Japan, 10/13

Keystone Symposia: The Chemistry and Biology of Cell Death, *oral presentation*, Santa Fe, US, 02/14

Dr Brad Sleebis

RACI Biomolecular Conference 2013, *oral presentation*, Blue Mountains, Australia, 07/13

Malaria in Melbourne 2013, *oral presentation*, Melbourne, Australia, 10/13



Staff list

Kylee Aumann, BSc(Hons) *Melbourne*
PhD *Melbourne*, scientific coordinator
Cathy Drinkwater, BSc(Hons) *ANU* PhD
Melbourne, project officer (to 05/14)

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LLB *Monash* PhD *Melbourne*

Catherine Carmichael,
BBIomedSc(Hons) *Melbourne* PhD
Melbourne (to 02/14)

Stephane Chappaz, MSc *Paris* PhD
Basel

Marlyse Debrincat, BSc(Hons)
Melbourne PhD *Melbourne* (to 05/14)
Irina Pleines, Dipl. Biol. *Wuerzburg*
PhD *Wuerzburg* (to 05/14)

Michael White, BBus *Swinburne* BSc
Swinburne BSc(Hons) *Melbourne* PhD
Melbourne

Rachael Lane

Guillaume Lessene, PhD *Bordeaux 1*

Chinh Bui, BSc(Hons) *Griffith* PhD
Melbourne (to 12/13)

Anderly Chueh, BBIomedSc(Hons)
Melbourne PhD *Melbourne* (from
02/14)

Christoph Grohmann, MSc *Muenster*
PhD *Muenster* (from 06/14)

Brad Sleebs, BSc(Hons) *LaTrobe* PhD
LaTrobe

Amelia Vom, PhD *Monash*

Vivien Yin, BSc(Hons) *Tsinghua* PhD
Melbourne (from 09/13 to 11/13)

Yelena Khakham, BSc(Hons) *Monash*
Diane Becart, overseas research
trainee (to 08/13)

Sabrina Bernard, overseas research
trainee (from 03/14)

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student

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LLB *Melbourne*, PhD student

Chris Burns, BSc(Hons) *Melbourne*
PhD *Melbourne*

Danny Ganame, BSc(Hons) *LaTrobe*
PhD *Melbourne* (to 06/14)

Jean-Marc Garnier, PhD *Paris XI*
Tamas Hatfaludi, MSc *Vienna* PhD
Monash (from 07/13)

Georgina Holloway, BAppSc(Hons)
RMIT PhD *Melbourne*

Romina Lessene, BSc(Hons)
Melbourne PhD *Melbourne*

George Nikolakopoulos,
BAppSc(Hons) *QUT* PhD *Monash*

Louisa Phillipson, BSc *Surrey* PhD
Reading

Pat Sharp, BSc(Hons) *ANU* PhD *ANU*

Paul Stuppel, BCh *Oxford* PhD *Oxford*

Wilco Kersten, BSc *Netherlands*

Thao Nguyen, BSc *VUT* (to 02/14)

Dana Stachurska-Buczek, MSc *Poland*

Wendy Gabelle, overseas research
trainee (from 03/14)

Adeline Grandclement, overseas
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Duong Thuy Nhu, BSc *LaTrobe*, PhD
student

Ethan Goddard-Borger, BSc(Hons)
UWA PhD *UWA* (from 07/13)

Valentin Champain, overseas research
trainee (from 03/14)

Alan John, BSc *Melbourne*, visiting
masters student (from 02/14)

Gaetano Speciale, MSc *Milan*, visiting
PhD student (from 06/14)

Isabelle Lucet, PhD *France* (from
02/14)

Onisha Patel, BSc *India* PhD *RMIT*
(from 02/14)

Weiwen Dai, BSc *Shanghai* MS
Shanghai (from 02/14)

MOLECULAR MEDICINE

Researchers in the Molecular Medicine division are investigating how biological systems function and are controlled in normal and disease states. With programs focused on blood cell production and function, epigenetics and cancer, our goal is to pinpoint molecular targets for disease diagnosis and treatment.

Drug discovery partnership

Building on a well-established, long-term collaborative partnership in drug target discovery, CSL and researchers from the Molecular Medicine division extended their collaboration in 2014 to form the WEHI-CSL Bioinformatics Alliance.

Bioinformatics is used to develop analytical tools and methods for the meaningful interpretation of large and complex biological datasets. This wide-ranging collaboration will see the institute's extensive bioinformatics capabilities combine with CSL's translational science expertise to address various biological questions relating to drug target discovery and the development of novel therapeutics for human disease.

Dampening immune attacks

Regulatory T cells (T-regs) are immune cells that dampen the immune response.

T-regs prevent the emergence of autoimmune diseases, in which the body's immune system attacks its own tissues. Dr Yuxia Zhang, Professor Len Harrison and colleagues are studying the 'epigenetic' regulators that control which genes are switched on and off in T-regs'.

In a recent study published in *Blood*, they identified specific regions of the DNA that were 'tagged' with epigenetic marks in T-regs, compared to other types of T cells. The T-regs' 'genetic signatures' provide insights into previously unknown molecular regulators and will help us discover more about these important cells.

Medal rewards blood research

Division head and director Professor Douglas Hilton was awarded the 2013 Ramaciotti Medal for Excellence in Biomedical Research.

Awarded by the Clive and Vera Ramaciotti Foundations, and managed by Perpetual, the Ramaciotti Medal and accompanying \$50,000 grant recognises outstanding contributions to clinical or biomedical research, or the way in which healthcare is delivered.

Professor Hilton is a renowned leader in cell signalling and blood research. Professor Hilton and his research team's achievements include identifying a molecule that controls leukaemia cell development and a new family of proteins (suppressors of cytokine signalling) that regulate blood cell signalling. He is a passionate advocate for translating the benefits of biological discoveries to treatments for patients.

Health impact

Cancers: blood cancers, leukaemia

Immune disorders: allergy, asthma, chronic idiopathic urticaria, multiple sclerosis, rheumatoid arthritis, type 1 diabetes, type 2 diabetes

Other areas: epigenetics, personalised medicine, regenerative medicine

Faculty

Division head

Professor Douglas Hilton

Lab heads

Dr Marnie Blewitt

Dr Ross Dickins

Professor Len Harrison

Dr Shalin Naik

Dr Matthew Ritchie

Dr Samir Taoudi

Reversing cancer in childhood leukaemias

In leukaemia, immature white blood cells replicate abnormally and build up in the bone marrow, interfering with normal blood cell production.

B-cell acute lymphoblastic leukaemia (B-ALL) is the most common cancer affecting children. Institute researchers have shown B-ALL can be successfully 'reversed' by coaxing leukaemia cells back into normal development.

Dr Ross Dickins and Ms Grace Liu found switching off a gene called *Pax5* could cause cancer in a model of B-ALL, while restoring its function could 'cure' the disease.

B-ALL can be successfully 'reversed' by coaxing the cancer cells back into normal development.

When *Pax5* function is compromised, developing B cells can get trapped in an immature state and become cancerous. Restoring *Pax5* function, even in cells that have already become cancerous, removes this 'block', and enables the cells to develop into normal white blood cells.

Dr Dickins said the research shed light on the function of *Pax5*, which was one of about 100 genes known to 'suppress' human tumours. "This work shows how inactivating tumour suppressor gene *Pax5* contributes

to B-ALL development and how leukaemia cells become 'addicted' to low *Pax5* levels to continue proliferating," he said. "Even though B-ALL cells have multiple genetic mutations, simply reactivating *Pax5* causes tumour cells to resume normal development."

Unfortunately, Dr Dickins said it was very difficult to develop drugs that restore the function of genes lost during cancer development. "However by understanding the mechanisms by which *Pax5* loss causes leukaemia, we can begin to look at ways of developing drugs that could have the same effect as restoring *Pax5* function," he said.

Collaborating organisations: Research Institute of Molecular Pathology (Austria), St. Jude Children's Research Hospital (US) and University of Minnesota (US).

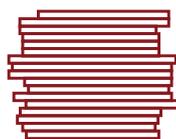
Funding partners: Australian National Health and Medical Research Council, Leukaemia Foundation, Sylvia and Charles Viertel Charitable Foundation, veski and Victorian Government.

More information: Liu GJ *et al.* *Pax5* loss imposes a reversible differentiation block in B-progenitor acute lymphoblastic leukemia. *Genes & Development*. 2014 Jun 15;28(12):1337-50.



Number of students

10



Number of publications

40



PhD student Mr Matt Witkowski is working with Dr Ross Dickins to study the genetic causes of childhood leukaemias. Mr Witkowski is investigating how a gene called *Ikaros* is involved in leukaemia development.

Early career support a vital investment

It is often early investment by a donor that establishes a young researcher's career.

With crucial support from the DHB Foundation, Dr Marnie Blewitt has continued her work on the molecular mechanisms behind epigenetics.

Dr Blewitt said epigenetic modifications controlled which genes were switched on and off in the cell during development.

"'Epi' means 'above and beyond', so 'epigenetics' is beyond what can be explained by genes alone," Dr Blewitt said. "Genes can be thought of as letters on a page from which words can be made. However without punctuation the sentences are open to interpretation. Epigenetic marks

are the punctuation marks that enable interpretation, controlling 'expression' of the genes."

Dr Blewitt was recently able to secure federal government grants, thanks to the impact of her early, donor-funded research.

"It can take more than 10 years for a 'young' researcher to establish their reputation and attract government funding," Dr Blewitt said. "I am very grateful for the support I have received from the DHB Foundation to directly support my laboratory in the critical early stages, allowing us to establish our laboratory and results and making us more competitive for federal funding."

Dr Blewitt said her laboratory was specifically interested in the genes involved in epigenetic control in embryonic and adult stem cells.

"We are looking for the genes that are important in laying down or removing epigenetic marks on the genome, particularly in stem cell development," she said. "Cancers frequently develop stem cell-like properties such as the ability to self-renew and 'immortality'. Understanding the genes that imbue these stem cell properties will help us to discover new targets for therapies that could be pursued to treat cancers as well as in regenerative medicine."



Epigenetic marks are the punctuation marks that enable interpretation of, and control expression of, our genes. Dr Marnie Blewitt is investigating epigenetic control in embryonic and adult stem cells to discover new targets for treating diseases such as cancer, and in regenerative medicine.

Major national and international meetings

Dr Esther Bandala-Sanchez

Merinoff World Congress 2013: HMGB1, *oral presentation*, Manhasset, US, 10/13

Dr Marnie Blewitt

ISEH-Society for Hematology and Stem Cells 42nd Annual Scientific Meeting, *invited speaker*, Vienna, Austria, 08/13

2014 Australian Pain Society 34th Annual Scientific Meeting, *invited speaker*, Hobart, Australia, 04/14

Dr Ross Dickins

ISEH-Society for Hematology and Stem Cells 42nd Annual Scientific Meeting, *oral presentation*, Vienna, Austria, 08/13

Professor Len Harrison

15th International Congress of Immunology, *invited speaker*, Milan, Italy, 08/13

Japanese Study Group of Type 1 Diabetes, *keynote speaker*, Karuizawa, Japan, 10/13

13th Immunology of Diabetes Society Meeting, *keynote speaker*, Lorne, Australia, 12/13

1st Annual Meeting of the Developmental Origins of Health and Disease Society of Australia and New Zealand, *keynote speaker*, Perth, Australia, 04/14

Dr Andrew Keniry

Epigenetics 2013 Australian Epigenetics Alliance, *oral presentation*, Shoal Bay, Australia, 12/13

Ms Grace Liu

New Directions in Leukaemia Research, *oral presentation*, Noosa, Australia, 03/14

Dr Matthew Ritchie

European Bioconductor Developers' Meeting, *invited speaker*, Cambridge, UK, 12/13

Dr Tobias Sargeant

14th International Conference on Systems Biology, *invited speaker*, Copenhagen, Denmark, 08/13

Dr John Wentworth

The Annual Scientific Meeting of the Australian Diabetes Society and the Australian Diabetes Educators Association 2013, *oral presentation*, Sydney, Australia, 08/13

World Diabetes Congress (International Diabetes Federation), *oral presentation*, Melbourne, Australia, 12/13



Staff list

Etty Bonnici, administrative officer
Fiona McGrath, BAppSc(Hons) *RMIT*,
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Doug Hilton, BSc *Monash* BSc(Hons)
Melbourne PhD *Melbourne* FAA

Christine Biben, BSc(Hons) *Paris VI*
PhD *Paris VI*

Jessica Bolden, BBiomedSc
Melbourne BSc(Hons) *Melbourne* PhD
Melbourne (from 04/14)

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Melbourne

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PhD *Melbourne* (from 10/13)

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Kerry Ramsay, BSc(Hons) *Murdoch*

Nick Seidenman, systems developer

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Biol. *LaTrobe* PhD *Cambridge*

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BSc(Hons) *Melbourne* PhD *Melbourne*

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Jamie Gearing, BSc(Hons) *Melbourne*,
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Yuxia Zhang, PhD *IMCAS*

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(to 01/14)

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01/14)

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Adelaide

Cynthia Liu, BSc *Melbourne*

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Andrew Jarratt, BSc(Hons) *York* PhD
Oxford

Casey Ah-Cann, BSc(Hons) *Melbourne*

Caleb Dawson, BSc(Honours) student

Kathryn Potts, BSc *Melbourne*, PhD
student

STRUCTURAL BIOLOGY

The Structural Biology division is interested in discovering new medicines through studies of the three-dimensional structure of large biological molecules that are either targets for drugs or potential therapeutic agents in their own right.

Improving peptide design

Peptides are molecules that can very effectively modulate biological processes. However their clinical application has been limited due to their rapid degradation in bodily fluids.

In collaboration with the Gellman lab in the US we have largely overcome this issue in peptides that are used to activate programmed cell death (apoptosis) machinery in the cell.

Institute researchers have shown how high resolution structural information, obtained at the Australian Synchrotron, could be used to design new and highly stable peptides. The peptides target a wider range of apoptosis proteins and are more effective in activating cell death. These peptides provide an important step toward the development of therapeutically useful molecules with applications in diseases such as cancer where apoptosis is dysregulated.

New targets for immune disease

Institute researchers have generated the first full-length, atomic resolution, three-dimensional structure of a protein involved in necroptosis.

Necroptosis is a recently discovered cell death pathway that, when inappropriately activated, has been linked to the development of autoimmune disease.

The three-dimensional image of the protein MLKL, obtained using the Australian Synchrotron, revealed MLKL is a 'dead enzyme'. This image, coupled with genetic studies, allowed the team to define how MLKL must be 'switched on' before it can activate the necroptosis cell death pathway.

MLKL could be a perfect target for treatments because it is different from almost every other cell-signalling protein, making it easier to develop highly specific drugs and limiting potential side-effects.

Royal Society election

Professor Peter Colman was the only Australian elected a fellow of the Royal Society in 2014, for his contributions to structural biology.

Professor Colman determined the three-dimensional structure of the influenza virus protein neuraminidase in 1983, while at CSIRO. The team discovered an unchanging part of the neuraminidase protein on the surface of all influenza viruses, which led them to discover the anti-influenza drug zanamivir (Relenza) for treating and preventing influenza.

Professor Colman's work at the institute focuses on solving the three-dimensional structures of molecules involved in programmed cell death, which are being pursued for treating diseases including cancers, immune disorders and neurodegenerative diseases.

Health impact

Cancers: bowel cancer, leukaemia, lymphoma, myeloma, myeloproliferative disorders

Immune disorders: type 1 and 2 diabetes

Infectious disease: malaria, schistosomiasis

Other areas: heart disease and stroke, neurodegenerative disease

Faculty

Division head

Professor Peter Colman

Lab heads

Dr Jeff Babon

Professor Tony Burgess

Dr Matthew Call

Dr Melissa Call

Dr Peter Czabotar

Dr Doug Fairlie

Dr Jacqui Gulbis

Associate Professor Mike Lawrence

Dr Colin Ward



Cells are surrounded by membranes that restrict the movement of molecules into or out of the cell. Dr Jacqui Gulbis is studying the structure and function of proteins that transport molecules across cell membranes, which has implications for a range of diseases.

Solving a cryptic problem

Bowel cancer is a leading cause of cancer-related deaths in Australia.

Institute researchers have overturned conventional thinking on bowel mucosa development, suggesting a previously unknown mechanism for how bowel cancer starts.

The researchers implicated crypt-generating stem cells in maintaining and regenerating bowel mucosa, and indicated they may play a role in bowel cancer development.

Dr Chin Wee Tan and Professor Tony Burgess showed for the first time the bowel generates new intestinal crypts by a process called 'budding'.

The findings suggested crypt-generating stem cells are likely to be the initiators of bowel cancer.

Dr Tan said the team used advanced three-dimensional imaging to show new crypts continued to be produced at a low but detectable rate in later life. "Our images clearly showed new crypts start from asymmetrical 'buds' that develop at the bottom of the crypt, not by each crypt splitting down the middle as was previously thought," he said.

The research also uncovered a likely link between crypt 'budding' and bowel cancer. "Our images showed

that – as part of normal intestinal development – only one bud at a time is produced by each regenerating crypt," he said. "In precancerous and cancerous bowel tumours, we see a lot of out-of-control budding, and many buds associated with a single crypt. This suggests the genes that exert control over the budding process may have been 'lost', initiating bowel cancer development."

Professor Burgess said the findings suggested crypt-generating stem cells were likely to be the initiators of bowel cancer, due to a critical change in the APC gene.

"Losing APC, which happens in 85 per cent of bowel cancers, disturbs control of the location and production of bowel stem cells," Professor Burgess said. "This causes 'chaotic' growth of crypt buds, leading directly to precancerous and cancerous growths."

Collaborating organisations: Ludwig Cancer Research (US) and The University of Western Australia.

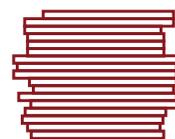
Funding partners: Australian National Health and Medical Research Council and Victorian Government.

More information: Tan CW *et al.* Colon cryptogenesis: asymmetric budding. *PLoS ONE*. 2013 Oct 21;8(10):e78519.



Number of students

13



Number of publications

34

Community support to stop bowel cancer

Living outside Australia's largest cities could mean a higher risk of dying from cancer; with research showing decreases in cancer deaths in metropolitan areas are not translating to the regions.

Recently the Twin Towns Services Community Foundation, which is supported by the Twin Towns Services Club, decided to take action.

Mr Tony Mitchell, speaking on behalf of the Twin Towns Services Community Foundation, said bowel cancer was one of the most commonly diagnosed cancers in Queensland.

"Bowel cancer is the third highest cause of cancer-related death in Queensland men and women," Mr Mitchell said. "The foundation reviewed a number of proposals,

and we were inspired by Professor Tony Burgess' project to identify more effective targeted treatment for bowel cancer."

The foundation has committed to support Professor Burgess' research for the next three years. Professor Burgess said this funding would enable his research team to search for effective drug combinations to target the processes that drive colon cells to become cancerous.

"More than 85 per cent of colon cancers are driven by one specific mutation, and we have already discovered one drug combination which kills cells with this mutation," Professor Burgess said. "We will now be able to compare the efficacy of other drug combinations."

The key to preventing bowel cancer and the spread of bowel cancer to other parts of the body was early detection and treatment, Professor Burgess said.

"In addition to identifying new treatments, this project may also help to develop a realistic chemoprevention strategy for reducing the incidence of colon cancer in our community," he said. "We believe it is feasible to remove precancerous growths before they become cancerous, by identifying a short-term treatment with a combination of drugs which target precancerous colon cells. Support from the Twin Towns community is allowing us to investigate this possibility."



Programmed cell death (apoptosis) is crucial for tissue development, but also plays a role in diseases such as cancer and neurodegenerative diseases. Mr Ahmad Wardak works with Dr Peter Czabotar, using structural biology to visualise cell life and death molecules in atomic detail.

Major national and international meetings

Professor Antony Burgess

Epidermal Growth Factor Receptor - Future Directions Joint International Research Conference of the Israel Institute for Advanced Studies and The Israel Science Foundation, *invited speaker*, Jerusalem, Israel, 11/13

Dr Melissa Call

7th International Leukocyte Signal Transduction Conference, *invited speaker*, Kos, Greece, 09/13

Dr Matthew Call

East Coast Protein Meeting 2013, *keynote speaker*, Coffs Harbour, Australia, 07/13

7th International Leukocyte Signal Transduction Conference, *oral presentation*, Kos, Greece, 09/13

Professor Peter Colman

12th Conference of the Asian Crystallographic Association, *plenary speaker*, Hong Kong, China, 12/13

Dr Peter Czabotar

ComBio 2013, *invited speaker*, Perth, Australia, 10/13

Keystone Symposia: The Chemistry and Biology of Cell Death, *oral presentation*, Santa Fe, US, 02/14

Crystal29, 29th Biennial Meeting of the Society of Crystallographers in Australia and New Zealand, *invited speaker*, Lamington National Park, Australia, 05/14

The 4th Asia Pacific Protein Association Conference, *invited speaker*, Jeju Island, Korean Republic, 05/14

Dr Douglas Fairlie

10th Australian Peptide Conference, *oral presentation*, Penang, Malaysia, 09/13

Cold Spring Harbor Laboratories Cell Death Meeting, *oral presentation*, Cold Spring Harbor, US, 10/13

Dr Jacqui Gulbis

Gordon Conference on Polyamines, *invited speaker*, Waterville Valley, US, 07/13

Associate Professor Michael Lawrence

XII International Symposium on Insulin Receptors and Insulin Action, *invited speaker*, Barcelona, Spain, 11/13



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Yumiko Hirokawa, MVSc *Japan*

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(to 05/14)

Hui Hua Zhang, MB BS *Beijing* PhD
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Ryan Atkins, visiting PhD student

Mark Gregory, MChem *Leeds*, visiting
PhD student (to 12/13)

Shabnam Khatibi, BSc *Sharif*, visiting
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Kelvin Yip, BSc *Hong Kong* M.Phil
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Matt Call, BSc *Trinity* PhD *Harvard*

Melissa Call, BSc *Auckland* MSc
Auckland PhD *Auckland*

Konstantin Knoblich, BSc *Cardiff* MSc
LSHTM PhD *Birmingham*

Mariam Lutfi, BSc *Simon Fraser*
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Raphael Trenker, PhD student (from
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Erinna Lee, BSc *Melbourne* PhD
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Marco Evangelista, BBiotech(Hons)
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Anne Pettikiriarachchi, BSc(Hons)
Monash

Nerida Sleebs, BBiotech&Innov *Box*
Hill BSc(Hons) *LaTrobe* (from 06/14)

Harrod Zhu, BSc(Honours) student
(from 02/14)

Jacqui Gulbis, BSc(Hons) *LaTrobe*
PhD *LaTrobe*

Lukasz Kowalczyk, MSc *Gdansk* PhD
Gdansk (to 12/13)

David Miller, BSc(Hons) *Wellington*
PhD *Bristol*

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Melbourne MSc *Melbourne*

Cindy Luo, BEng *Beijing*

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Michael Lawrence, BSc(Hons) *Cape*
Town PhD *Cape Town*

Colin Ward, BSc(Hons) *UNSW* PhD
UNSW, associate research fellow

Lauren Jenkin, BAppSc(Hons)
Melbourne MBB *LaTrobe*

Mai Margetts, BAppSc *RMIT*

John Menting, BSc(Hons) *Melbourne*
PhD *LaTrobe*

Callum Lawrence, BBiotech(Hons)
Monash, PhD student

BIOINFORMATICS

The Bioinformatics division collaborates with institute and external researchers in designing, conducting and analysing genomic and molecular sequence studies to understand biology and disease. We also conduct research to improve existing methods and develop novel methods for analysing data.

Faster, flexible RNA analysis

RNA sequencing provides a 'snapshot' of what is happening inside a cell at any given moment, providing information on which genes are switched on and how active they are.

Professor Gordon Smyth and colleagues have developed a faster, more robust approach to analysing RNA sequencing data.

Called *Voom*, the new approach greatly widens the range of downstream analysis tools that can be applied to research. It is being used at the institute in a wide range of studies relevant to many different diseases, including breast cancer, lung cancer, leukaemia and malaria.

Finding the key to epilepsy

Epileptic encephalopathies are a range of epileptic syndromes that are associated with cognitive or behavioural problems.

Associate Professor Melanie Bahlo and her team are collaborating with the Melbourne Epilepsy Research Centre to discover genes involved in epilepsy.

Their approach prioritises candidate epileptic encephalopathy genes by looking at genes expressed in the brain and how they interact with other brain-specific genes. This will hasten the discovery of genes whose malfunction causes epilepsy and other brain diseases.

Cancer and medical '-omics'

Associate Professor Papenfuss and his team have developed a new and sensitive method to identify genomic rearrangements in cancer genomes. The Papenfuss lab works closely with cancer researchers in the Peter McCallum Cancer Centre, using bioinformatics to make new insights into cancer.

Professor Terry Speed, Professor Smyth, Associate Professor Bahlo and Associate Professor Papenfuss also won a \$6.1 million grant from the Australian National Health and Medical Research Council to use computational and statistical bioinformatics for medical 'omics'. Medical omics refers to sequencing information from the genome itself, gene products, proteins and metabolic products.

Health impact

Cancers: bowel cancer, breast cancer, leukaemia, lymphoma, lung cancer, myeloma, ovarian cancer, stomach cancer

Immune disorders: coeliac disease, lupus, multiple sclerosis, rheumatoid arthritis, type 1 diabetes

Infectious disease: malaria, scabies, tuberculosis

Other areas: congenital disease, heart disease and stroke, neurodegenerative disease, personalised medicine

Faculty

Division head

Professor Terry Speed

Lab heads

Associate Professor Melanie Bahlo

Associate Professor Tony Papenfuss

Professor Gordon Smyth

Better screening for Down syndrome

More than 1000 pregnant women in Victoria and Tasmania are screened each week for foetal genetic abnormalities such as Down syndrome.

Down syndrome (trisomy 21) is the result of an extra copy of chromosome 21. Prenatal screening can detect the condition, however existing screening methods need to be performed within a narrow gestational window and are somewhat insensitive. This means more mothers than necessary are recommended to have invasive tests that, while giving a definitive diagnosis, carry a risk for both mother and child.

“Ideally, this ‘local’, cheaper version of the Down syndrome screening test will be available to Victorian women next year.”

Ms Dineika Chandrananda and Associate Professor Melanie Bahlo have improved the accuracy and decreased the cost of screening for Down syndrome and other genetic defects.

Ms Chandrananda said the methodology used cell-free DNA fragments from the foetus and mother that are found in the blood of pregnant women. “This DNA can be screened for genetic abnormalities using next-generation sequencing,” she said. “Trisomy 21, for example, is detected by getting more data than expected from chromosome 21. However this sequencing data is riddled with bias or

‘noise’, due to biological or sequencing processes, that hide the signal from the extra copy of chromosome 21.”

The team developed a method that sensitively corrected for biological and statistical bias, to silence the noise. “The new method improves accuracy while also reducing screening costs by decreasing the number of DNA ‘reads’ needed for an accurate result,” Ms Chandrananda said.

Working with the Victorian Clinical Genetics Services (VCGS), Associate Professor Bahlo said they hoped to see the test rolled out soon. “With VCGS, we have trialled the test on 29 donated samples, but we hope to increase this to hundreds or thousands of samples,” she said. “Ideally, this ‘local’, cheaper version of the Down syndrome screening test will be available to Victorian women next year.”

Collaborating organisations: Murdoch Children’s Research Institute, The University of California Berkeley (US), The University of Melbourne and Victorian Clinical Genetics Service.

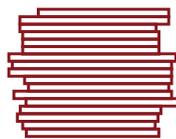
Funding partners: Australian National Health and Medical Research Council, The John and Patricia Farrant Scholarship and Victorian Government.

More information: Chandrananda D *et al.* Investigating and correcting plasma DNA sequencing coverage bias to enhance aneuploidy discovery. *PLoS ONE*. 2014 Jan 29;9(1):e86993.



Number of students

13



Number of publications

48



PhD student Ms Dineika Chandrananda is working with Associate Professor Melanie Bahlo, using statistical methods to improve our ability to detect foetal genetic abnormalities using a simple blood test from the mother.

Sequencing the scabies mite

Scabies is a skin infection caused by the parasitic scabies mite, which burrows into the skin causing an itchy rash.

Scabies infects 300 million people worldwide each year, including in Australia. In Aboriginal and Torres Strait Islander communities in northern Australia, 25 per cent of adults and 50 per cent of children have scabies infections each year.

Associate Professor Tony Papenfuss is using the latest genomic technologies to tackle scabies. “It is appalling that in these communities seven out of 10 children under one year of age contract scabies,” he said.

Scabies infections can lead to severe health problems, including childhood malnutrition and pneumonia.

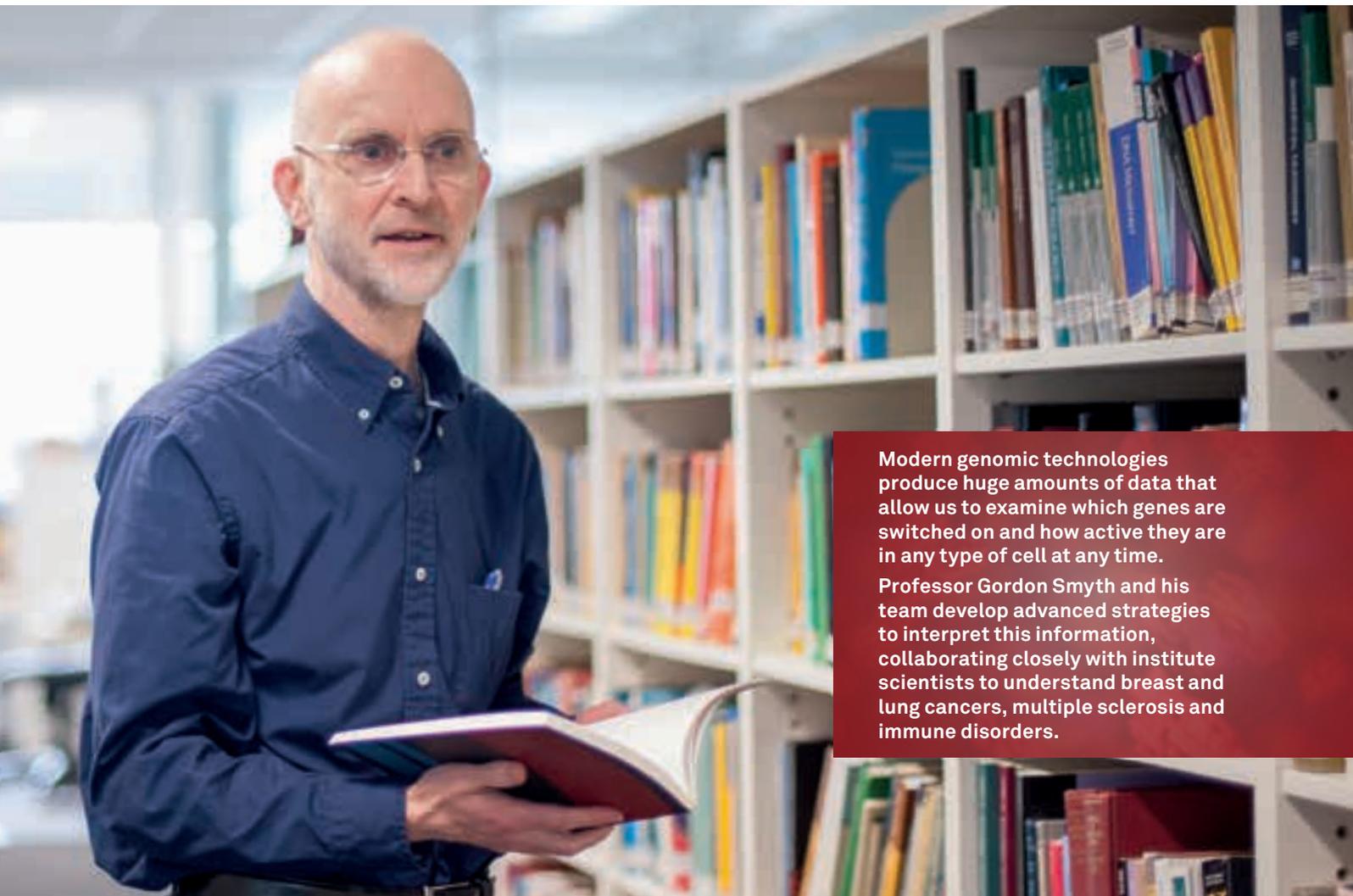
Wounds are commonly infected by Group A streptococcus bacteria, which leads to acute kidney disease, rheumatic fever and rheumatic heart disease. Aboriginal and Torres Strait Islander communities have the highest rates of rheumatic heart disease in the world, with mortality rates 20 times higher than other Australians.

The Lettisi Foundation has pledged three years of support to a project to sequence the scabies mite genome.

Mr David Evans, foundation trustee, said the Lettisi Foundation would contribute to an ambitious multidisciplinary collaboration between the institute, Menzies School of Health Research in Darwin and QIMR Berghofer Medical Research Institute.

“Many diseases have benefited from the genomics revolution taking place in medicine—most notably cancer,” Mr Evans said. “Indigenous Australians should share in the opportunities for state-of-the-art genomics technology to improve health.”

Associate Professor Papenfuss said by 2016 the ‘genome map’ would be ready to share with researchers internationally to accelerate the search for a scabies vaccine. It was a similar genome map of the malaria parasite that led to the development of malaria vaccines now in clinical trials.



Modern genomic technologies produce huge amounts of data that allow us to examine which genes are switched on and how active they are in any type of cell at any time.

Professor Gordon Smyth and his team develop advanced strategies to interpret this information, collaborating closely with institute scientists to understand breast and lung cancers, multiple sclerosis and immune disorders.

Major national and international meetings

Associate Professor Melanie Bahlo

8th International Conference on Genomics & Bio-IT APAC, *invited speaker*, Shenzhen, China, 11/13

6th Barossa Meeting 'Cell Signalling in the Omics Era', *invited speaker*, Barossa Valley, Australia, 11/13

MacTel Annual Scientific Meeting, *invited speaker*, New York, US, 06/14

Professor Gordon Smyth

Winter School of Mathematics, *invited speaker*, Brisbane, Australia, 07/13

Victorian Systems Biology Symposium, *invited speaker*, Melbourne, Australia, 08/13

Australasian Genomics and Technologies Association 2013, *invited speaker*, Surfers Paradise, Australia, 10/13

Bioinformatics Focus on Analytic Methods 2014, *invited speaker*, Melbourne, Australia, 03/14

Dr Saskia Freytag

60. Biometrische Kolloquium of the German Region of the International Biometric Society (IBS-DR), *invited speaker*, Bremen, Germany, 03/14

Mr Rick Tankard

16th International Workshop on Fragile X and Other Early Onset Disorders *oral presentation*, Barossa Valley, Australia, 09/13

Dr Wei Shi

BioC2013 workshop, Seattle, US, 07/13

Professor Terry Speed

29th European Meeting of Statisticians, *lecture*, Budapest, Hungary, 07/13

Joint Statistical Meeting 2013, *invited speaker*, Montréal, Canada, 08/13

The 21st St Vincent and Mater Health Research Symposium, *invited speaker*, Sydney, Australia, 09/13

German Conference on Bioinformatics 2013, *keynote speaker*, Gottingen, Germany, 09/13

International Workshop on Multivariate Analysis and Random Matrices. New Tendencies, *invited speaker*, Guanajuato, Mexico, 09/13

TBC/ISCB-Asia 2013 Meeting, *keynote speaker*, Seoul, Korea, 10/13

BioInfoSummer 2013, *invited speaker*, Adelaide, Australia, 11/13

International Conference on Stochastic Models in Ecology, Evolution and Genetics, *plenary speaker*, Angers, France, 12/13

The Big Data Conference 2014, *invited speaker*, Melbourne, Australia, 04/14

The Abel Symposium 2014, *invited speaker*, Lofoten, Norway, 05/14



Staff list

Terry Speed, BSc(Hons) *Melbourne*
DipEd *Monash* PhD *Monash* HonDSc
UWA FAA FRS

Kathryn Benton, BSc *Colorado* MSc
Tulane (to 08/13)

Zhi-Ping Feng, BSc *Peking* MSc
Tianjin PhD *Tianjin*

Jason Li, PhD *Melbourne* (to 06/14)

Ingrid Lonnstedt, MSc *Uppsala* PhD
Uppsala (to 06/14)

Martin O'Hely, BSc(Hons) *Monash* MA
Minnesota PhD *Minnesota*

Moshe Olshansky, BSc *Israel* PhD
Columbia

Alan Rubin, BSc *Oregon State* PhD
Washington (from 02/14)

Matthew Wakefield, BSc(Hons)
Melbourne PhD *LaTrobe*

Chris Woodruff, BSc(Hons) *UTAS* PhD
UTAS (from 03/14)

Artika Nath, visiting PhD student (from
02/14)

Melanie Bahlo, BSc(Hons) *Monash*
PhD *Monash*

Miriam Fanjul, BSc(Hons) *Manchester*
(from 09/13)

Saskia Freytag, MSc *Georg-August*
PhD *Georg-August* (from 01/14)

Thomas Scerri, BSc *UCL* MSc
Birkbeck DPhil *Oxford*

Natalie Thorne, BSc(Hons) *Melbourne*
PhD *Melbourne*

Peter Diakumis, BSc *Athens*

Vesna Lukic, BEng(Hons) *Melbourne*
BSc *Melbourne* MSc *Melbourne*

Katherine Smith, BSc(Hons)
Melbourne MBIostat *Melbourne*
Natacha Tessier, MBIostat *France*
(from 09/13)

Sophia Cameron-Christie, BSc(Hons),
visiting PhD student (to 08/13)

Dineika Chandrananda, BSc(Hons)
Auckland, PhD student

Lyndal Henden, BSc(Hons) *Massey*,
PhD student

Stuart Lee, BCompSc *Adelaide*,
visiting Masters student (from 06/14)

Karen Oliver, visiting Masters student
Rick Tankard, BSc(Hons) *Melbourne*,
PhD student

Tony Papenfuss, BSc(Hons) *Monash*
PhD *Monash*

Vincent Corbin, BSc *Florida* MSc
Montana PhD *Montana*

Jan Schroeder, MSc *Christian-*
Albrechts PhD *Melbourne*

Leon Di Stefano, BA *Melbourne* MSc
Melbourne (from 01/14)

Jocelyn Penington, BSc(Hons) *Monash*
(from 02/14)

Daniel Cameron, BE(Hons) *Melbourne*,
PhD student

Lachlan McIntosh, visiting Masters
student (from 06/14)

Ehtesham Mofiz, BSc *North South*,
PhD student

Samuel Robinson, BSc(Hons)
Auckland, visiting PhD student

Gerry Tonkin-Hill, BSc *Melbourne*,
visiting Masters student (from 02/14)

Gordon Smyth, BSc(Hons) *UWA* PhD
ANU

Yunshun Chen, BSc(Hons) *Melbourne*
PhD *Melbourne*

Goknur Giner, PhD *Izmir* (from 04/14)

Yang Liao, BCompSc *Tsinghua* MIT
Melbourne

Wei Shi, BECompEng *Harbin* MS
Harbin PhD *Harbin*

Yifang Hu, BESoftEng *Melbourne* BSc
Melbourne, software engineer

Keith Satterley, BSc *Melbourne* DipEd
Melbourne DipCompSci *LaTrobe*,
senior programmer

Joshy George, ME *Bangalore*, visiting
PhD student (to 12/13)

Aaron Lun, BSc(Hons) *Sydney*, PhD
student

Alex Garnham, BSc(Hons) *LaTrobe*,
bioinformatics analyst (from 05/14)

Maria Markovic, BA *RMIT* DipEd
LaTrobe, administrative officer

INFECTION AND IMMUNITY

Malaria, tuberculosis and HIV are three of the major global infectious diseases causing significant death and disease, particularly in resource-poor countries. The Infection and Immunity division aims to understand how infectious agents cause human disease and use this knowledge to develop new treatments.

Developing new antimalarial drugs

The malaria parasite exports hundreds of proteins to the host red blood cell during human infections. These proteins remodel the malaria-infected red blood cell so it can obtain nutrients and build protective systems to evade immune attack.

We identified an enzyme called Plasmepsin V that performs an essential step for export of these proteins to remodel the host red blood cell. In collaboration with the ACRF Chemical Biology division, we discovered and synthesised a drug that inhibits the function of Plasmepsin V, an important step in the development of new antimalarial drugs.

International network to eliminate malaria

The institute joined the Asia Pacific Malaria Elimination Network (APMEN) in 2014, an international collaborative network working towards eliminating malaria in the Asia-Pacific region.

The network is bringing attention and support to the under-appreciated and little-known work of malaria elimination in the Asia-Pacific region, with a particular focus on *Plasmodium vivax*.

The institute's role in the partnership is developing and implementing tools to aid malaria elimination programs throughout the Asia-Pacific region. The institute is already working with APMEN on the evaluation of malaria treatment protocols in the Solomon Islands and Vanuatu to help inform future elimination programs.

Rewarding quest to eradicate malaria

In 2013, division head Professor Alan Cowman received several awards for his quest to eradicate malaria.

Professor Cowman received the 2013 Victoria Prize for Science and Innovation from the Victorian Government and the Mahathir Science Award in Tropical Research by the Mahathir Science Foundation, Malaysia.

Professor Cowman has dedicated his nearly 30-year career to understanding what makes the malaria parasite 'tick' and creating a vaccine that would eradicate this devastating disease. The awards recognise his major contributions to understanding malarial drug resistance, unravelling the mechanism the parasite uses to become resistant to some of the most important antimalarial drugs.

Health impact

Infectious disease: chronic infections, hepatitis B, HIV, malaria, toxoplasmosis, tuberculosis, vaccines

Faculty

Division head

Professor Alan Cowman

Lab heads

Dr Alyssa Barry

Dr Justin Boddey

Dr Diana Hansen

Professor Ivo Mueller

Dr Marc Pellegrini

Professor Louis Schofield

Dr Wai Hong Tham

Dr Chris Tonkin



Malaria is a major burden of disease in the developing world. PhD student Mr Alan Yap is working with Professor Alan Cowman to investigate potential malaria vaccines, to prevent hundreds of thousands of unnecessary deaths from this disease.

Discovery could turn antibiotic into antimalarial

Malaria infects hundreds of millions of people every year, causing more than 700,000 deaths.

The *Plasmodium* malaria parasite has developed resistance to many current antimalarial drugs, with new drugs urgently needed.

Dr Wilson Wong, Dr Jake Baum and colleagues are making progress towards new antimalarial drugs. The team recently revealed how an antibiotic called emetine blocks the proteins required for parasite survival. Although emetine is effective against malaria it cannot be used due to its significant side-effects.

“Knowing exactly how these antibiotics work will enable development of new antimalarial drugs.”

Dr Wong said the study examined the parasite’s protein-making machinery, visualising for the first time the structure of the parasite ribosome. “The ribosome constructs all proteins inside the cell from the DNA ‘blueprint’,” he said. “Emetine kills the parasite by binding to its ribosome, preventing the parasite from building the proteins it needs to produce energy, grow, reproduce and evade the immune system.”

The structure of the *Plasmodium falciparum* parasite ribosome, and how emetine interacts with the ribosome,

was visualised to atomic precision by electron microscopy called ‘Cryo-EM’.

“This powerful technology allows us to visualise the finest details of large protein complexes,” Dr Wong said. “We had access to highly sensitive cameras, which was central to the discovery, through a collaboration with Dr Sjors Scheres at the MRC Laboratory of Molecular Biology.”

The team is working with ACRF Chemical Biology division researchers to develop molecules based on emetine and pactamycin. “Knowing exactly how these antibiotics work will enable development of new antimalarial drugs that replicate the active component of these antibiotics while changing the parts that make it toxic to patients,” Dr Wong said.

Collaborating organisations: Bio21 Institute, Imperial College London (UK) and MRC Laboratory of Molecular Biology (UK).

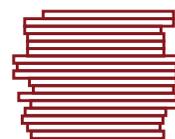
Funding partners: Australian National Health and Medical Research Council, Australian Research Council, Human Frontier Science Program, OzEMalaR and Victorian Government.

More information: Wong W *et al.* Cryo-EM structure of the *Plasmodium falciparum* 80S ribosome bound to the anti-protozoan drug emetine. *ELife*. 2014 Jun 9:e03080.



Number of students

31



Number of publications

57

Eradicating malaria has passionate supporters

The Walter and Eliza Hall Institute has more than 70 researchers who are working to improve treatments, develop vaccines and assist in eradicating malaria.

In 2012, the institute opened a high-containment insectary for researchers to study the very first stages of malaria infection. During early infection, the malaria parasite 'hides' from the host immune system in the liver, silently transforming itself into a form that can infect red blood cells.

Understanding these key stages of the malaria lifecycle could lead to new antimalarial drugs or a much-needed malaria vaccine.

The Rotary Club of Eltham is a great supporter of the institute's malaria research. Last year, the club

raised \$3250 for a new dissecting microscope for the insectary, and pledged to raise a further \$9000 for another essential microscope for the insectary within the next two years.

Former Rotary Club of Eltham President Mr Ken Paynter said the club was proud to support one of Australia's leading medical research institutes.

"The Rotary Club of Eltham is a passionate supporter of the Walter and Eliza Hall Institute's tremendous work to study and eradicate malaria," Mr Paynter said. "It is wonderful to see this great research being done in Melbourne, and we are looking forward to our continued involvement with, and support of, the institute."

In late 2013 the Rotary Club visited the institute for a private tour of the insectary, to see the microscope in action and learn more about the institute's recent research.

Professor Alan Cowman, head of the institute's malaria program, said he was delighted for the ongoing support of the Rotary Club of Eltham.

"The new microscope will be vital in assisting with the division's research into new malaria drugs and vaccines," Professor Cowman said. "It is also inspiring for our researchers to know that the community supports us in our continued vision to improve lives through better antimalarial treatments and vaccines, ultimately working towards malaria eradication."



PhD student Mr Sofonias Tessema (left) and Dr Alyssa Barry (right) are studying naturally-acquired immunity to severe malaria, which develops in people constantly exposed to the parasite. They are looking for molecular targets of immunity, which may lead to a malaria vaccine and new diagnostic tools for monitoring immunity.

Major national and international meetings

Professor Alan Cowman

Center for Emerging and Neglected Diseases, *keynote speaker*, Berkeley, US, 01/14

Lorne Infection and Immunity Conference 2014, *invited speaker*, Lorne, Australia, 02/14

Japanese Society of Parasitology, *plenary speaker*, Osaka, Japan, 03/14

Dr Jake Baum

ComBio 2013, *keynote speaker*, Perth, Australia, 10/13

British Parasitological Society, *invited speaker*, Cambridge, UK, 02/14

Dr Justin Boddey

Molecular Parasitology Meeting, *oral presentation*, Woods Hole, US, 09/13

Dr Alyssa Barry

PNG Medical Symposium, *plenary speaker*, Lae, Papua New Guinea, 09/13

Queensland Tropical Health Alliance and Australasian College of Tropical Medicine Conference, *invited speaker*, Cairns, Australia, 09/13

Keystone Symposium: The Science of Malaria Elimination, *oral presentation*, Merida, Mexico, 02/14

Dr Chris Tonkin

12th International Conference on *Toxoplasma*, *oral presentation*, Oxford, UK, 07/13

Dr Suparat Phuanukoonnon

PNG Medical Symposium, *oral presentation*, Lae, Papua New Guinea, 09/13

Joint International Tropical Medicine Meeting, *invited speaker*, Bangkok, Thailand, 12/13

NDOH/PiH Stakeholders meeting, *plenary speaker*, Port Moresby, Papua New Guinea, 04/14

Dr Celine Barnadas

PNG Medical Symposium, *oral presentation*, Lae, Papua New Guinea, 09/13

Dr Stephan Karl

23rd International Conference on the Scientific and Clinical Application of Magnetic Carriers, *oral presentation*, Perth, Australia, 09/13

Joint International Tropical Medicine Meeting, *invited speaker*, Bangkok, Thailand, 12/13

Workshop on Iron in disease diagnosis and treatment: Instituto de Ciencia de Materials de Madrid, *invited speaker*, Madrid, Spain, 06/14

Professor Ivo Mueller

PNG Medical Symposium, *keynote speaker*, Lae, Papua New Guinea, 09/13

American Society of Tropical Medicine and Hygiene, *invited speaker*, Washington, US, 11/13

Joint International Tropical Medicine Meeting, *plenary speaker*, Bangkok, Thailand, 12/13

Keystone Symposium: The Science of Malaria Elimination, *invited speaker*, Mexico City, Mexico, 02/14

Australian Vaccine and Immunotherapeutics, *invited speaker*, Melbourne, Australia, 05/14

Dr Neta Regev-Rudzki

33rd International Congress of International Society Blood Transfusion, *keynote speaker*, Seoul, South Korea, 06/14

Professor Louis Schofield

3rd Annual Conference of the Queensland Tropical Health Alliance, *plenary speaker*, Cairns, Australia, 09/13

9th Annual Australia-China Symposium, *invited speaker*, Canberra, Australia, 09/13

Queensland-China Workshop on Human Health and Medical Research, *keynote speaker*, Brisbane, Australia, 10/13



Staff list

Joan Curtis, scientific coordinator

Alan Cowman, BSc(Hons) *Griffith* PhD *Melbourne* FAA

Lin Chen, PhD *LaTrobe*

Sara Erickson, BSc *Iowa* MSc *Iowa* PhD *Wisconsin*

Silvia Haase, MSc *Hamburg* PhD *Hamburg*

Julie Healer, BSc(Hons) *Glasgow* M.Phil *London* PhD *Edinburgh*

Tony Hodder, BSc(Hons) *Monash* PhD *Monash*

Neta Regev-Rudzki, MSc *Jerusalem* PhD *Jerusalem*

Xavier Sisquella Duran, BSc *Barcelona* MSc *Barcelona* PhD *Barcelona*

Tony Triglia, BSc(Hons) *Melbourne* MSc *Melbourne*

Jennifer Volz, MSc *Humboldt* PhD *EMBL*

Danny Wilson, BSc(Hons) *NTU* PhD *Melbourne* (to 12/13)

Wilson Wong, BBiomedSc(Hons) *Monash* PhD *Monash*

Melanie Condron, BSc(Hons) *LaTrobe*

Matthew Pimentel, BSc(Hons) *California* (to 05/14)

Yan Hong Tan, BSc(Hons) *Melbourne*

Jennifer Thompson, MSc *Melbourne*

Fiona Angrisano, BBIolSc(Hons) *LaTrobe*, PhD student

Clara Lin, BBIomedSc *Melbourne* BSc(Hons) *Melbourne*, PhD student

Danushka Marapana, BBIomedSc *Melbourne*, PhD student

Maya Olshina, BSc(Hons) *Melbourne*, PhD student

Hayley Stratton, BSc *Melbourne*, BSc(Honours) student (to 01/14)

Pablo Suarez Cortes, visiting PhD student (from 03/14 to 05/14)

Christopher Weir, BBIomedSc MSc *Qld*, PhD student

Alan Yap, BBIomedSc(Hons) *Melbourne*, PhD student

Elizabeth Zuccala, BA *Melbourne* BSc(Hons) *Melbourne*, PhD student

Alyssa Barry, BSc(Hons) *UTAS* PhD *Melbourne*

Alicia Arnott, BBIomedSc(Hons) *Deakin* PhD *Monash*

Abby Harrison, BSc *Massey* MSc *Massey* PhD *Oxford*

Raksmei Keo, BAppSc *RMIT*

Mita Hazairin, visiting BSc(Honours) student (from 07/13 to 05/14)

Sofonias Tessema, MSc *Delhi*, PhD student

Justin Boddey, BBIomedSc(Hons) *Griffith* PhD *Griffith*

Jen Armistead, BSc *George Mason* MPH *Johns Hopkins* MSc *Florida* PhD *Johns Hopkins*

Sash Lopaticki, BSc(Hons) *VUT*

Matthew O'Neill, BSc(Hons) *Melbourne*

Charlie Jennison, BSc *Leeds* MSc

London, PhD student

Pravin Rajasekaran, BSc(Hons) *Melbourne*, PhD student

Annie Yang, BSc(Hons) *Auckland*, PhD student

Diana Hansen, BBIolSc *Buenos Aires* PhD *Uppsala*

Lisa Ioannidis, BSc(Hons) *Melbourne*

Ann Ly, BBIomedSc(Hons) *Melbourne* (from 01/14)

Chris Chiu, BSc(Hons) *Adelaide*, PhD student

Tony Le, BBIomedSc *Melbourne*, BSc(Honours) student (from 02/14)

Victoria Ryg-Cornejo, BSc *Montpellier* BSc(Hons) *Melbourne*, PhD student

Ivo Mueller, MSc *Basel* PhD *Basel*

Celine Barnadas, MSc *Lyon* PhD *Lyon*

Anne Boissiere, MSc *Lille* PhD *Montpellier* (from 07/13 to 02/14)

Sarah Javati, BSc(Hons) *Papua New Guinea* MSc *Basel* (from 10/13 to 11/13)

Stephan Karl, BSc(Hons) *Dresden* PhD *UWA* (from 12/13)

Harin Karunajeewa, MB BS *Melbourne* PhD *UWA* (from 02/14)

Eline Kattenberg, BSc *Leiden* MSc *Leiden* PhD *Amsterdam*

Cristian Koepfli, BSc *Zurich* MSc *Zurich* PhD *Basel*

Anita Lerch, BSc *Basel* MSc *Basel*, visiting PhD student

Connie Li Wai Suen, BSc(Hons) *LaTrobe* PhD *LaTrobe*

Rhea Longley, BBIolSc(Hons) *UTAS* PhD *Oxford* (from 03/14)

Suparat Phuanukoannon, BSc *Thailand* MSc *QUT* PhD *Qld*

Leanne Robinson, BSc(Hons) *Sydney* PhD *Melbourne*

Sarah Boyd, MB BS *Melbourne* (to 02/14) Jessica Brewster, BSc(Hons) *LaTrobe* (from 09/13)

Elisheba Malau, BMedSc *James Cook* BSc(Hons) *Melbourne*

Camila Franca, BBIomedSc *Pernambuco* MSc *Pernambuco*, PhD student

Yi Wan Quah, BSc(Hons) *Putra* MSc *Putra*, PhD student (from 02/14)

Leonie Raijmakers, MSc *Groningen*, visiting PhD student (from 10/13)

Andreea Waltmann, BA *Monash* BSc(Hons) *Monash*, PhD student

Marc Pellegrini, BSc *Melbourne* MB BS *Melbourne* PhD *Melbourne* FRACP

Cody Allison, BAppSc *QUT* BSc(Hons) *Monash* PhD *Monash*

Gregor Ebert, Dipl. Biol. *Munich* PhD *Munich*

James Cooney, BBiotech(Hons) *Flinders*

Samar Ojaimi, MB BS *Monash*, PhD student

Simon Preston, BBIomedSc(Hons) *Monash*, PhD student

Michael Stutz, BSc(Hons) *Murdoch*, PhD student (from 03/14)

Jesse Toe, BSc(Hons) *Melbourne*, PhD student

Louis Schofield, BSc *London* MSc *London* PhD *Qld*

Ariel Achtman, MSc *Freiburg* PhD *London*

Emily Eriksson, MSc *Malmoe* PhD *Melbourne*

Krystal Evans, BMedChem(Hons) *Wollongong* PhD *Melbourne*

Hayley Joseph, BSc(Hons) *James Cook* PhD *James Cook* (from 01/14)

Ramin Mazhari, BSc(Hons) *Justus-Liebig* MSc *Philipps* PhD *Philipps*

Wasan Forsyth, BSc(Hons) *Auckland* (to 03/14)

Thuan Phuong, BSc(Hons) *LaTrobe*

Danika Hill, BBIomedSc(Hons) *Adelaide*, PhD student

Natalia Sampaio, BSc(Hons) *UWA*, PhD student

Stephanie Tan, BBIomedSc(Hons) *Qld*, PhD student

Wai-Hong Tham, BA *California* PhD *Princeton*

Jakub Gruszczyk, MSc *Jagiellonian* PhD *Paris IX* (from 10/13)

Nicholas Lim, BSc(Hons) *Melbourne*

Alex Kennedy, BSc(Hons) *Melbourne*, PhD student

Chris Tonkin, BSc(Hons) *Melbourne* PhD *Melbourne*

Hernan Alonso, BSc(Hons) *Cordoba* PhD *ANU*

Alex Uboldi, BSc(Hons) *Witwatersrand* PhD *Witwatersrand*

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Rebecca Stewart, BSc(Hons) *UWA*, PhD student

Melanie Williams, BBIomedSc *RMIT* BSc(Hons) *Melbourne*, PhD student

IMMUNOLOGY

The Immunology division asks how the many different types of immune response are regulated. Our aim is to improve vaccine performance and treatment of autoimmune and immunodeficient conditions, including type 1 diabetes and coeliac disease.

Improving coeliac disease diagnosis

Dr Jason Tye-Din and colleagues have developed a novel approach to coeliac disease diagnosis based on demonstrating a specific immune response to gluten after brief gluten ingestion.

The simple blood test overcomes the need for prolonged gluten consumption and may avoid intestinal biopsy altogether.

The team also showed that coeliac disease affects at least one in 70 Australians, and that half the population carry the major coeliac susceptibility (HLA) genes. Combining the HLA gene test with traditional antibody testing enhanced diagnostic accuracy by reducing false positive results, enabling many costly and invasive intestinal biopsies to be avoided.

Watch the video ►

Health impact

Cancers: leukaemia, lymphoma, myeloma

Immune disorders: allergy, coeliac disease, lupus, primary immune deficiencies, type 1 diabetes

Infectious disease: influenza, vaccines

Other areas: personalised medicine, transplantation

Improving vaccines and immunity

Memory B cells and plasma cells make antibodies and provide immunity after infection or immunisation.

A research team led by Dr Kim Jacobson and Professor David Tarlinton have been researching epigenetic modifiers in B cells, to understand their role in immunity. Epigenetic modifiers control the switching on and off of genes.

In a recent study the team showed the epigenetic modifier *MOZ* was essential in forming memory B cells and the structures required for their programming and maintenance, enabling them to rapidly respond after infection. Manipulating *MOZ* could help us to control immunity therapeutically, and could be a target for improving vaccine efficacy.

'Parent' cells reset cell division clock

Division researchers overturned a 40-year-old theory on when and how cells divide, showing that 'parent' cells program a cell division time for their offspring that is different from their own.

Professor Phil Hodgkin, Dr John Markham and colleagues showed both phases of the cell cycle contribute to the overall change in division time, rather than one staying fixed in duration as previously thought. They have developed these findings into a new model that helps scientists predict how a population of cells has divided. Their research could impact our understanding of cell replication, such as occurs in the immune cells responding to disease or in cancer cells amassing tumours.

Faculty

Division head

Professor Phil Hodgkin

Lab heads

Dr Bob Anderson (honorary)

Dr Daniel Gray

Associate Professor Andrew Lew

Emeritus Professor Jacques Miller

Dr Shalin Naik

Professor Ken Shortman

Professor David Tarlinton

Dr Jason Tye-Din

'Kill' switch key to immune disorders

Regulatory T cells are critical for dampening the immune response and preventing inappropriate immune attack of the body's own tissues – the underlying cause of autoimmune diseases such as lupus and type 1 diabetes.

Having too few regulatory T cells is linked with the development of autoimmune and inflammatory conditions, while some people with higher than normal numbers of regulatory T cells cannot fight infections properly.

“Without MCL-1 activity, regulatory T cell numbers fall, provoking lethal autoimmune disease.”

Dr Daniel Gray, Ms Antonia Policheni and colleagues from Belgium found regulatory T cells are constantly being produced in the body, with their numbers held steady by programmed cell death.

The decision regulatory T cells make on whether to live or die is controlled by the 'Bcl-2 protein family'. This family includes proteins that can either promote cell survival or trigger cell death.

Dr Gray said the team discovered Bcl-2 family proteins were important determinants of regulatory T cell numbers. “Regulatory T cell death is

highly dependent on the activity of two opposing Bcl-2 family proteins, called Mcl-1 and Bim,” he said.

“Mcl-1 is required for regulatory T cell survival, allowing them to suppress unhealthy immune responses. Without Mcl-1, regulatory T cell numbers fall, provoking lethal autoimmune disease. Conversely, Bim triggers the death of regulatory T cells. If Bim activity is lost, regulatory T cells accumulate in abnormally high numbers.”

Dr Gray said drugs that manipulate regulatory T cell survival could be developed, leading to new ways to suppress autoimmune disease or to enhance beneficial immune responses.

Collaborating organisations: Flanders Institute for Biotechnology (VIB) at University of Leuven (Belgium), Pasteur Institute (France), University of Alabama at Birmingham (US), University of California San Diego (US), University of Cincinnati (US).

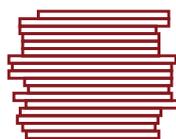
Funding partners: Australian National Health and Medical Research Council, Belgian Government, European Union, VIB (Belgium) and Victorian Government.

More information: Pierson W *et al.* Antiapoptotic Mcl-1 is critical for the survival and niche-filling capacity of Foxp3+ regulatory T cells. *Nature Immunology*. 2013 Sep;14(9):959-65.



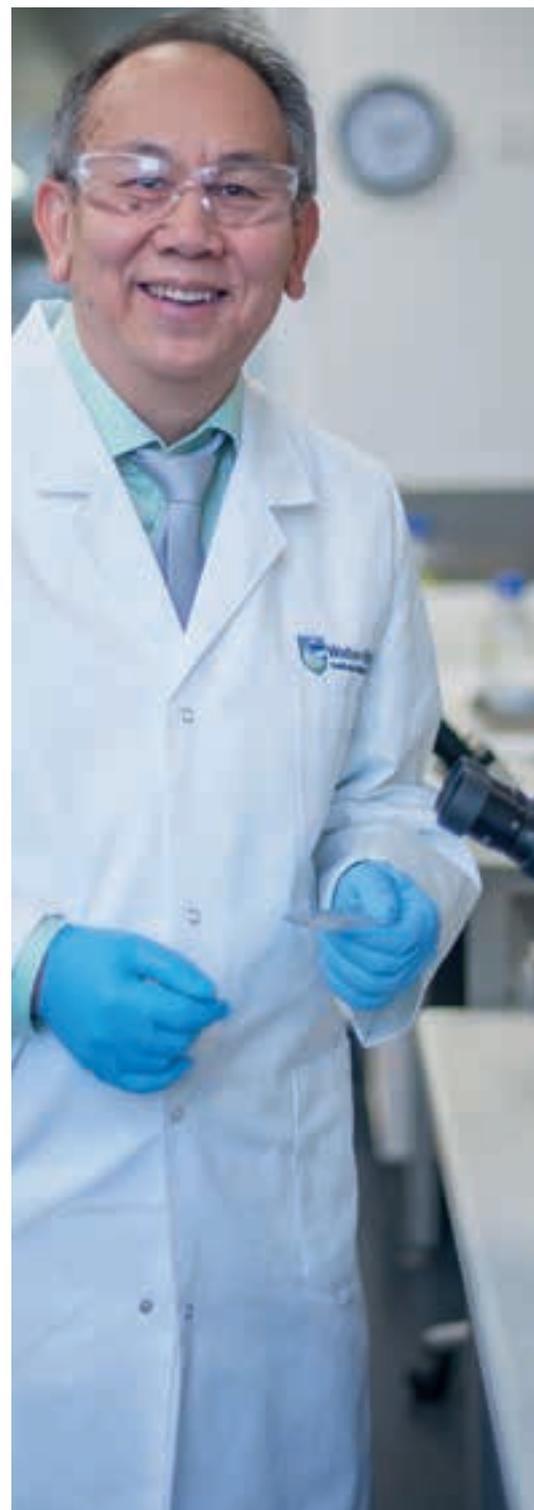
Number of students

8



Number of publications

36



Type 1 diabetes is the most common chronic childhood illness in Australia, and has increased in incidence in the past 30 years.

Associate Professor Andrew Lew is developing new strategies to target local immune responses, with the potential to improve islet transplants as a cure for type 1 diabetes.

Finding new treatments for lupus

Lupus is a disease in which the body's immune system attacks itself.

The autoimmune disease systemic lupus erythematosis (SLE or lupus) can be fatal in its most severe forms, and causes serious damage to tissues including the kidneys, heart, skin, joints, blood vessels and lungs.

Lupus affects more than 17,000 Australians and is more prevalent in women, who represent 90 per cent of people affected.

Professor David Tarlinton was the winner of the 2013 Distinguished Innovator award from the Lupus Research Institute, US, to investigate the causes of lupus and develop new approaches to its treatment.

The award will provide US\$1 million over four years to investigate the immune cells at the root of lupus.

The support will allow Professor Tarlinton to significantly expand his laboratory's investigations into how lupus develops. "Many symptoms of lupus are caused by abnormalities in antibody production," he said. "People with lupus produce 'autoantibodies', which recognise the body's own tissues as foreign and attack them. This causes the inflammation and tissue damage characteristic of lupus."

Professor Tarlinton said his research would focus on the cell signalling pathways that regulate plasma cell survival.

"Our previous studies have shown that the protein Lyn plays an important role in plasma cell survival," he said.

"If Lyn isn't functioning properly, more plasma cells that produce harmful antibodies can live longer than they should, contributing to the development of lupus-like symptoms."

By determining how Lyn is involved in plasma cell survival, Professor Tarlinton aims to develop treatments that inhibit or reverse the build-up of plasma cells, either preventing disease from developing, or diminishing its severity once established.



Plasma cells are critical antibody producers. However when the cells become uncontrolled it can lead to myeloma, a plasma cell cancer. Dr Dimitra Zotos, Miss Dana Piovesan and Dr Michael Low (left to right) work with Professor David Tarlinton to study the pathways that control development and survival of plasma cells, to find new strategies for treating myeloma.

Major national and international meetings

Ms Jamie Brady

Transplant Society of Australia and New Zealand (TSANZ), *oral presentation*, Canberra, Australia, 06/13

Dr Melinda Hardy

Melbourne Health Research Week 2014, *invited speaker*, Melbourne, Australia, 06/14

Dr Susanne Heinzel

43rd Annual Meeting German Society for Immunology, *invited speaker*, Mainz, Germany, 09/13

43rd Australasian Society for Immunology Annual Scientific Meeting, *oral presentation*, Wellington, New Zealand, 12/13



Staff list

Kim McIntosh, BSc(Hons) *Monash*
MEnvSc *Monash*, scientific coordinator

Phil Hodgkin, BSc(Hons) *UWA* PhD
ANU

Vanessa Bryant, BSc *Qld* PhD *Sydney*
GradDipLabourLaw *Melbourne*

David Fulcher, MB BS *Sydney* PhD
Sydney FRCPA (from 02/14 to 02/14)

Susanne Heinzl, BSc(Hons)
Tuebingen PhD *Tuebingen*

Andrey Kan, BSc *Melbourne* PhD
Melbourne

Jae Lee, BSc(Hons) *Otago* PhD *Korea*
(to 08/13)

John Markham, BEng *Swinburne*
BSc(Hons) *Melbourne* PhD *Melbourne*
(from 03/14)

Kim Pham, BSc(Hons) *Melbourne* PhD
Swinburne (from 03/14)

Cameron Wellard, BSc(Hons)
Melbourne PhD *Melbourne* (to 08/13)

Manuela Hancock, BAppSc *RMIT*
Bryan Lye, PhD student (from 05/14)

Julia Marchingo, BBiomedSc(Hons)
Melbourne, PhD student

Simone Oostindie, BSc *Netherlands*,
overseas research trainee (from 11/13
to 06/14)

Charlotte Slade, BSc(Med) *Newcastle*,
PhD student (from 02/14)

Jie Zhou, BBiomedSc *Melbourne*
BBiomedSc(Hons) *Melbourne*, PhD
student

Andrew Lew, BVSc *Melbourne* MVSc
Melbourne PhD *London*

Emma Carrington, BSc(Hons)
Melbourne PhD *Melbourne*

Sophie Ko, MSc *Sungkyunkwan* PhD
Monash (to 12/13)

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Melbourne PhD *Melbourne*

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David Tarlinton, BSc(Hons) *Sydney*
PhD *Stanford*

Simona Infantino, MSc *Switzerland*
PhD *dell'Insubria*

Kim Jacobson, BBiomedSc(Hons) *UTS*
PhD *Sydney*

Ingela Vikstrom, MSc *Ume* PhD *Ume*

Dimitra Zotos, BBiomedSc(Hons)
Deakin PhD *Melbourne*

Catherine Chang, BBiomedSc
Melbourne

Lingli Li, BSc *Hunan* MSc *Hunan* (to
08/13)

Amanda Light, BAppSc *RMIT*

Kristy O'Donnell, BAppSc *RMIT*
BSc(Hons) *Melbourne*

Dana Piovesan (from 07/13)

Ivan Fung, BSc(Hons) *Melbourne*, PhD
student

Michael Low, BMedSci *Melbourne*,
PhD student (from 02/14)

Jason Tye-Din, MB BS *Melbourne*
PhD *Melbourne* FRACP

Melinda Hardy, BSc(Hons) *Qld* PhD
Qld

George Varigos, MB BS *Melbourne*
PhD *Melbourne*

Adam Girardin, BSc *British Columbia*

CELL SIGNALLING AND CELL DEATH

The Cell Signalling and Cell Death division investigates the molecular mechanisms by which cells kill themselves, and the control processes that switch cell death on and off. Many diseases are characterised by too much or too little cell death, and understanding how this process happens will help us develop new treatments for cancers and immune disorders.

Treating stomach and bowel cancers

Bowel and stomach cancers are two of the most common cancers.

When a tumour develops, normal tissues around it can become inflamed, producing signalling molecules (cytokines) that promote the growth and spread of cancer cells.

Associate Professor Matthias Ernst, Dr Tracy Putoczki and colleagues found interleukin-11 (IL-11), a potent cytokine, was an important stimulator of cancer growth and spread of bowel and stomach cancers. Working with scientists at CSL, they showed blocking IL-11 stopped tumour growth and could lead to tumour shrinkage, making IL-11 a promising new target for treating solid cancers.

Overturning a cell death myth

Programmed cell death, or apoptosis, is a natural process used by damaged or diseased cells to destroy themselves without damaging other tissues in the body.

Dr Lisa Lindqvist and colleagues are studying the relationship between cell death and autophagy. Autophagy is when cells eat themselves, a process cells use to recycle their components. It was believed Bcl-2 and similar 'pro-survival' proteins controlled autophagy, as well as apoptosis. However Dr Lindqvist research overturned that theory, showing the 'pro-survival' Bcl-2 family proteins only inhibited autophagy indirectly, by acting on other apoptotic molecules.

This was an important finding, because clinical trials had been planned based on the earlier, flawed model.

New anti-inflammatory drug target

Institute scientists have revealed the three-dimensional structure of a protein essential for triggering a recently discovered cell death mechanism called necroptosis.

They have used genetics to show that the protein MLKL is essential for triggering necroptosis. The structure revealed that although MLKL is a 'dead enzyme', it still needs to be switched on before necroptosis will occur.

The team is now trying to determine the 'on' and 'off' states of MLKL, making possible the development of new drugs that may help treat chronic inflammatory diseases such as inflammatory bowel disease, psoriasis and rheumatoid arthritis.

Health impact

Cancers: bowel cancer, breast cancer, lung cancer, leukaemia, lymphoma, myeloproliferative disorders, stomach cancer

Immune disorders: inflammatory bowel disease, psoriasis, rheumatoid arthritis

Faculty

Division head

Professor David Vaux

Lab heads

Dr Grant Dewson

Associate Professor Paul Ekert

Associate Professor Matthias Ernst

Associate Professor John Silke



Necroptosis is a type of programmed cell death that helps to fight infection. However if unchecked it can provoke inflammatory disease. Dr Joanne Hildebrand is working with Associate Professor John Silke to understand the biological regulation of MLKL, a key protein in necroptosis, and its role in necroptosis.

Finding the cause of inflammatory diseases

Crohn's disease, rheumatoid arthritis and psoriasis all have something in common – they are caused by excessive and uncontrolled inflammation.

Institute researchers have shown a recently discovered type of cell death, termed necroptosis, can exacerbate inflammatory disease. Necroptosis is a form of cell death that alerts the immune system that something has gone wrong. While its normal role is to help fight infection, if unchecked it can provoke chronic inflammatory disease.

“Targeting this pathway could be useful for treating conditions such as psoriasis, rheumatoid arthritis and Crohn's disease.”

Associate Professor John Silke, Dr Motti Gerlic and PhD students Mr James Rickard, Mr Joanne O'Donnell and Mr Joseph Evans discovered RIPK1, a molecule involved in regulating necroptosis, was needed to prevent lethal uncontrolled inflammation.

Associate Professor Silke said RIPK1 was essential in initiating necroptosis, as well as limiting runaway inflammation that can cause severe tissue damage. “Our research highlighted RIPK1 is the gatekeeper that controls whether a cell lives or dies, and the decision it makes on how to die,” he said.

Dr Gerlic said the study provided the first evidence RIPK1 was essential for inhibiting necroptosis. “For the first time, we've shown necroptosis and the molecules involved actually induce inflammatory disease, suggesting that targeting this pathway could be useful for treating conditions such as psoriasis, rheumatoid arthritis and Crohn's disease,” he said.

The research team showed RIPK1 played other important roles, such as keeping blood stem cells alive after bone marrow transplant. This finding is important when considering treatments that target RIPK1, as it could have unwanted side-effects for other cells in the body. The institute is already capitalising on its expertise in necroptotic cell death with a drug discovery program to identify small molecules that could target other molecules in the necroptosis pathway, such as MLKL.

Collaborating organisations: La Trobe University, Monash University and The University of Melbourne.

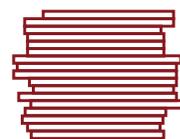
Funding partners: Australian National Health and Medical Research Council, Thomas William Francis & Violet Coles Trust and Victorian Government.

More information: Rickard JA, O'Donnell JA, Evans JM *et al.* RIPK1 regulates RIPK3-MLKL-driven systemic inflammation and emergency hematopoiesis. *Cell*. 2014 May 22;157(5):1175-88.



Number of students

16



Number of publications

54

Is psoriasis a cell death problem?

Psoriasis is a painful and common inflammatory skin condition that causes red scaly patches, itchiness and flaking.

Symptoms can range from mild to severe, sometimes requiring hospitalisation. At present the causes of psoriasis are not fully understood, however psoriasis is not purely a skin disorder and can have a negative impact on many organ systems. Psoriasis has been associated with an increased risk of certain cancers, cardiovascular disease and other immune-mediated disorders such as Crohn's disease and ulcerative colitis.

Researchers in the Cell Signalling and Cell Death division are trying

to better understand how psoriasis develops and search for new treatments, with support from The Thomas William Francis & Violet Coles Trust, managed by Equity Trustees.

Using a new laboratory model, Associate Professor John Silke and colleagues from the institute, in collaboration with Dr George Varigos, head of the Dermatology department at The Royal Melbourne Hospital, are testing the hypothesis that excessive cell death in the skin can cause inflammation and disease.

Psoriasis is generally considered a genetic disease that is triggered or influenced by environmental factors.

Associate Professor Silke said differences in genes involved in the regulation of cell death have been found in large population studies of human patients with psoriasis.

"The next stage of the project will involve further tests using skin biopsy and blood samples from human patients with psoriasis and other dermatological disorders," he said.

"Psoriasis can be very distressing for patients. There is no cure, and it can be difficult to treat due to its chronic, recurrent nature. A new understanding of the disease model will create new opportunities for treatments."



Mitochondria are the 'powerhouse' of the cell. Defective control of mitochondria can lead to many diseases, including cancer, neurodegenerative disease and stroke. Dr Grant Dewson is using innovative approaches to better understand how mitochondria ensure cell survival and growth.

Major national and international meetings

Dr Gabriela Brumatti

10th Cold Spring Harbor Laboratory Meeting on Cell Death, *oral presentation*, Cold Spring Harbor, US, 09/13

15th Lorne Cancer Conference, *oral presentation*, Lorne, Australia, 02/14

Associate Professor Matthias Ernst

Singapore Gastric Cancer Consortium 6th Annual Scientific Meeting, *invited speaker*, Singapore, Singapore, 07/13

2013 Annual Joint Conference of the International Cytokine Society and the International Society for Interferon and Cytokine Research (ICS/ISICR): Cytokines - from Molecular Mechanism to Human Disease, *session chair*, San Francisco, US, 10/13

Midyear Joint Meeting of the International Cytokine Society and International Society for Interferon and Cytokine Research, *invited speaker*, Kiel, Germany, 05/14

Mr Nima Etemadi

9th European Workshop on Cell Death, *oral presentation*, Paphos, Cyprus, 04/14

Dr Najoua Lalaoui

9th European Workshop on Cell Death, *oral presentation*, Paphos, Cyprus, 04/14

Dr Lisa Lindqvist

Ozophagy 2014, *oral presentation*, Parkville, Australia, 02/14

2014 Keystone Symposium on the Chemistry and Biology of Cell Death, *oral presentation*, Santa Fe, US, 02/14

Ms Dimitra Masouras

9th European Workshop on Cell Death, *oral presentation*, Paphos, Cyprus, 04/14

Mr Paul Nguyen

25th Lorne Cancer Conference, *oral presentation*, Lorne, Australia, 02/14

Dr Robert O'Donoghue

The Thoracic Society of Australia & New Zealand (TSANZSRS) Annual Scientific Meeting 2014, *oral presentation*, Adelaide, Australia, 04/14

Airways Inflammation and Remodelling Symposium, *invited speaker*, Melbourne, Australia, 04/15

Associate Professor John Silke

CRC670 Cell Death and Immunity Mini-Symposium, *invited speaker*, Cologne, Germany, 12/13

2014 Keystone Symposium on the Chemistry and Biology of Cell Death, *invited speaker*, Santa Fe, US, 02/14

9th European Workshop on Cell Death, *oral presentation*, Paphos, Cyprus, 04/14

Gordon Research Conference on Cell Death Mechanisms at the interface of Health and Disease, *invited speaker*, West Dover, US, 06/14

Professor David Vaux

25th Lorne Cancer Conference, *invited speaker*, Lorne, Australia, 02/14



Staff list

Michelle Birrell, BBus(Administration)
Monash, administrative officer (from
03/14)

David Vaux, BMedSc *Melbourne* MB
BS *Melbourne* PhD *Melbourne* FAA

Gabriela Brumatti, BSc(Hons) *Sao
Paulo* PhD *Sao Paulo*

Li Dong, MMedSc *Xinjiang* PhD
Shanghai (from 02/14)

Anissa Jabbour, BSc(Hons) *Melbourne*
PhD *Melbourne*

Lisa Lindqvist, BSc(Hons) *McGill* PhD
McGill

Donia Moujalled, BMedSc(Hons)
LaTrobe PhD *LaTrobe* (to 12/13)

James Murphy, BSc(Hons) *Canterbury*
PhD *ANU*

Jarrod Sandow, BBiotech *Adelaide*
BSc(Hons) *Adelaide* PhD *Adelaide*

Diep Chau, BSc *Melbourne*

Carmel Daunt, BSc(Hons) *Melbourne*

Cathrine Hall, BSc *LaTrobe*

Leila Varghese, BSc(Hons) *Melbourne*
PostGradDipArts *Melbourne*

Steph Conos, BA *Melbourne* BSc
Melbourne, PhD student

Paddy Dyer, BSc *Melbourne*,
BSc(Honours) student (from 02/14)

Karla Fischer, PhD student (from
03/14)

Melanie Heinlein, overseas research
trainee (from 10/13 to 02/14)

Dimi Masouras, BSc(Hons) *Melbourne*,
PhD student

Nisha Narayan, BBiomedSc *Melbourne*
BSc(Hons) *Melbourne*, PhD student

Grant Dewson, BSc *Nottingham* PhD
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Robert Ninnis, BBiolSc(Hons) *LaTrobe*
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Iris Tan, BSc(Hons) *Melbourne* PhD
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Jonathan Bernardini, BSc(Honours)
student

Destiny Dalseno, BSc *Melbourne*,
BSc(Honours) student (from 02/14)

Mark Li, BBiomedSc(Hons) *Melbourne*,
PhD student (from 03/14)

Matthias Ernst, BSc(Hons) *Zurich*
PhD *Zurich*

Michael Buchert, PhD *Zurich*

Moritz Eissmann, MSc *Technical* PhD
Frankfurt

Frederic Masson, BSc(Hons) *France*
MSc *France* PhD *Geneva*

Robert O'Donoghue, BCom *UWA*
BSc(Hons) *Murdoch* PhD *UWA*

Toby Phesse, BSc(Hons) *Portsmouth*
PhD *Warwick*

Tom Pierce, BSc(Hons) *Melbourne*
PhD *Melbourne* (to 09/13)

Shoukat Afshar-Sterle, PhD *Adelaide*

Ash Kherlopian, BSc *Monash*
BSc(Hons) *Melbourne* (to 12/13)

Nick Kocovski, BBiomedSc *Melbourne*
BSc(Hons) *Melbourne*

Natasha Silke

Carlos May, BSc(Honours) student
(from 07/13)

Ashleigh Poh, BSc(Hons) *Melbourne*,
PhD student

Madeleine Reilly, BSc(Hons)
Manchester, overseas research trainee
(from 11/13 to 05/14)

Eva Sum, BSc(Hons) *Munich* MSc
Munich, overseas research trainee
(from 11/13 to 02/14)

John Silke, BA(Hons) *Cantab* LLB
London PhD *Zurich*

Joanne Hildebrand, BBiomedSc(Hons)
Melbourne PhD *Melbourne*

Najoua Lalaoui, PhD *France*

Sabrina Muehlen, BSc *Osnabrueck*
MSc *Osnabrueck* PhD *Heidelberg*
(from 07/13 to 06/14)

Ueli Nachbur, PhD *Berne*

Vincent Roh, MSc *Lausanne* PhD
Berne (from 08/13 to 12/13)

Holly Anderton, BA *Canterbury*
BSc(Hons) *Canterbury* (to 06/14)

Aleksandra Bankovacki, BSc(Hons)
LaTrobe

Joseph Evans, BBiomedSc(Hons)
LaTrobe

James Rickard, BSc *LaTrobe* MSc
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Nima Etemadi, BSc *Iran* MSc *LaTrobe*,
PhD student

Chunyan Ma, BSc *Nanjing* MSc
Nanjing, PhD student

Che Stafford, BSc *LaTrobe*, PhD
student

Maria Tanzer, BSc *Innsbruck* MSc
Innsbruck, PhD student

Anne Tripaydonis, BSc(Honours)
student

INFLAMMATION

The Inflammation division seeks to understand the complex series of biological and molecular mechanisms that regulate inflammation. Our aim is to improve the diagnosis, treatment and prevention of human inflammatory diseases such as rheumatoid arthritis, systemic lupus erythematosus, sepsis and rheumatic fever.

Finding the cause of immune disorders

Necroptosis is a type of 'controlled' death that instructs a cell to die while stimulating an inflammatory reaction. However if it persists, it can lead to inflammatory disease.

Dr Motti Gerlic and colleagues showed uncontrolled necroptotic cell death could lead to severe systemic inflammation. They showed the protein RIPK1 was essential in necroptosis and in keeping blood stem cells alive after bone marrow transplantation. This is important when considering treatments that target RIPK1, as it could have detrimental side-effects. The research may help develop better treatments for inflammatory diseases.

Treating inflammatory arthritis

Cartilage destruction is a key feature of many types of arthritis, and contributes to the debilitating symptoms that are hallmarks of arthritis.

Cartilage is made up of chondrocytes, which produce and maintain the cartilage.

Dr Tommy Liu and Professor Ian Wicks showed chondrocytes play an active role in driving inflammation and bone remodelling during inflammatory arthritis. A molecule known as SOCS3 plays a key role in restraining chondrocytes. The team identified key hormone-like signalling molecules produced by chondrocytes in the absence of SOCS3 that exacerbate joint damage, highlighting potential targets for future treatment strategies.

Existing medicines could help treat cancers

Many bowel and stomach cancers are associated with long-term inflammation.

Dr Emma Stuart, Dr Tracy Putoczki, Associate Professor Matthias Ernst and colleagues found medicines called 'JAK inhibitors' reduced the growth of inflammation-associated stomach and bowel cancers.

JAK inhibitors are currently used to treat the cancer-like condition myelofibrosis, and are being investigated in clinical trials for treating leukaemia, lymphoma and rheumatoid arthritis.

The study provides the first evidence supporting their use in treating other cancers.

Health impact

Cancers: bowel cancer, myeloproliferative disorders, stomach cancer

Immune disorders: inflammatory bowel disease, lupus, psoriasis, rheumatic fever and heart disease, rheumatoid arthritis, sepsis

Infectious disease: chronic infections, influenza

Faculty

Division head

Professor Ian Wicks

Lab heads

Dr Seth Masters

Dr Sandra Nicholson

Dr Tracy Putoczki

Dr James Vince

A key fighter against influenza

Influenza is a highly contagious viral disease, with different strains that vary significantly in their ability to cause death and disease (virulence).

Highly virulent and pandemic flu strains have been linked to 'cytokine storms', a flood of inflammatory molecules released by the immune system that can result in increased severity of symptoms, multiple organ failure and death.

Using an experimental mouse model, institute researchers investigated a protein called SOCS4, demonstrating that it acts as a handbrake on the immune response to influenza, preventing the tissue damage associated with severe infection.

Drugs that enhanced or mimicked SOCS4 action could present a way of treating pandemic or aggressive flu strains.

SOCS4 is a key regulator of the immune response. Dr Lukasz Kedzierski, Dr Sandra Nicholson and colleagues found that, without SOCS4, there was an increase in the production of small molecules that promote inflammation in the lungs following influenza infection.

Cytokine storms are believed to be the primary cause of death in young and otherwise healthy people infected with influenza, particularly during pandemic flu infections.

Dr Kedzierski said the normal immune response to influenza was also delayed in experimental models. "Without SOCS4, the immune system did not send the correct signals to mobilise virus-specific immune cells, called killer T cells, to the site of infection," he said. "This prevented the virus from being cleared from the lungs and the infection persists, exacerbating collateral damage."

Dr Nicholson said drugs that enhanced or mimicked SOCS4 action could present a way of treating pandemic or aggressive flu strains and other infections. "Knowing the target and function of SOCS4 may help to develop new, preventive therapies that control inflammation during influenza infection," she said.

Collaborating organisations: The University of Melbourne.

Funding partners: Australian National Health and Medical Research Council, National Institutes of Health (US) and Victorian Government.

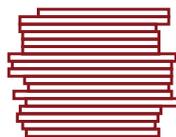
More information: Kedzierski L *et al.* Suppressor of cytokine signaling 4 (SOCS4) protects against severe cytokine storm and enhances viral clearance during influenza infection. *PLoS Pathogens*. 2014 May 8;10(5):e1004134.

Watch the video ►



Number of students

15



Number of publications

39



Acute rheumatic fever is a complication of bacterial infection that can lead to rheumatic heart disease, a potentially fatal illness. Dr Willy-John Martin is leading a project to develop a diagnostic test that identifies acute rheumatic fever, which disproportionately affects Aboriginal Australians and Pacific Islanders.

Long-term support for rheumatoid arthritis research

A partnership extending several decades has transformed our understanding and treatment of rheumatoid arthritis.

In the 1980s, John B Reid AO approached the institute to discuss opportunities for improving the treatment of arthritis. Mr Reid's mother, Lady Gladys Reid, was afflicted with severe arthritis and, at the time, there was very little funding for research into this common disease.

In the mid-1990s, with the support of significant funding from the John T Reid Charitable Trusts, the institute appointed Professor Ian Wicks, an institute-trained researcher and rheumatologist at The Royal Melbourne Hospital, to investigate rheumatoid arthritis.

Understanding why immune cells attack joint tissues and how to 'switch off' the inflammatory response is

now leading to better treatments for rheumatoid arthritis and many related autoimmune conditions. Surprisingly, the blood cell-producing hormones colony stimulating factors (CSFs), first discovered at the institute by Professor Don Metcalf and colleagues, have also been found to play a role in inflammation and rheumatoid arthritis. Therapies that target one of these factors (GM-CSF) to treat rheumatoid arthritis were developed and have progressed to phase 2 clinical trials.

"Discoveries take decades of determination and persistence and it makes a huge difference when you have the committed, long-term support of a donor," Professor Wicks said. "Thanks to the John T Reid Charitable Trusts, we have been able to focus on rheumatoid arthritis in the lab and enhance clinical services for rheumatoid arthritis patients at the

hospital. We have also established an arthritis tissue bank to facilitate translational research.

"The outlook for patients with rheumatoid arthritis is now so much better. With more treatment options, effective disease control and a personalised approach to diagnosis and treatment are realistic goals. In addition, what we learn from studying rheumatoid arthritis is very likely to be relevant to other autoimmune and inflammatory diseases."

Trustee and family member Mrs Belinda Lawson recently visited the institute to hear about the latest developments. "We value long-term partnerships and personal relationships," Mrs Lawson said. "We also like to support institutes and researchers who we have come to know and trust. This is a rewarding and inspiring partnership."



Bowel and stomach cancers are two of the most common cancers worldwide, and – along with pancreatic cancer – have been linked with inflammation. Dr Tracy Putoczki is studying how pro-inflammatory molecules (cytokines) influence the growth and spread of stomach, bowel and pancreatic cancers, and whether blocking these signals could improve cancer treatments.

Major national and international meetings

Mr Akshay D'Cruz

Innate Immunity to Viral Infections, Joint with the Meeting on Pathogenesis of Respiratory viruses, *oral presentation*, Keystone, US, 01/14

Dr Laura Dagley

40th Lorne Conference on Proteomics, *oral presentation*, Lorne, Australia, 02/14

Dr Mordechay Gerlic

Keystone Symposia: The Chemistry and Biology of Cell Death, *oral presentation*, Santa Fe, US, 02/14

7th Congress of the Federation of the Israel Societies for Experimental Biology, *oral presentation*, Eilat, Israel, 02/14

Dr Lukasz Kedzierski

15th International Congress of Immunology, *oral presentation*, Milan, Italy, 08/13

Dr Kate Lawlor

9th European Workshop on Cell Death, *oral presentation*, Paphos, Cyprus, 02/14

Dr Tommy Liu

2013 American College of Rheumatology annual meeting, *oral presentation*, San Diego, US, 10/13

Dr Seth Masters

ComBio 2013, *invited speaker*, Perth, Australia, 09/13

6th Barossa Meeting, *oral presentation*, Adelaide, Australia, 11/13

Asian-Pacific Association for the Study of the Liver, *invited speaker*, Brisbane, Australia, 03/14

Mr Tan Nguyen

43rd Annual Scientific Meeting Australasian Society for Immunology, *oral presentation*, Wellington, New Zealand, 12/13

Dr Sandra Nicholson

6th Barossa Meeting, *oral presentation*, Adelaide, Australia, 11/13

Dr Tracy Putoczki

6th Barossa Meeting, *oral presentation*, Adelaide, Australia, 11/13

Professor Ian Wicks

World Congress of Cardiology, *invited speaker*, Melbourne, Australia, 05/14



Staff list

Emma Stuart, BSc(Hons) *Otago* PhD
Otago, scientific coordinator

Ian Wicks, MB BS *Sydney* PhD
Melbourne FRACP

Jonathan Akikusa, MB BS *Melbourne*
(from 07/13 to 01/14)

Gabby Goldberg, BSc(Hons) *Monash*
PhD *Monash*

Tommy Liu, BSc *Otago* MSc *VUT* PhD
Melbourne

Willy-John Martin, BSc *Waikato* MSc
Waikato PhD *Wellington*

Devi Ngo, BBiomedSc *Deakin*
BSc(Hons) *Monash* PhD *Monash*

Ken Pang, BBiomedSc(Hons)
Melbourne MB BS(Hons) *Melbourne*
PhD *Melbourne* FRACP *Melbourne*

Sandro Prato, BSc(Hons) *Lausanne*
PhD *Melbourne* (to 09/13)

Angus Stock, BSc(Hons) *Melbourne*
PhD *Melbourne* (from 09/13)

Emma Stuart, BSc(Hons) *Otago* PhD
Otago

Jacinta Hansen, BSc(Hons) *Monash*

Jo Keeble, BSc(Hons) *Melbourne* PhD
Melbourne

Jane Murphy, BSc(Hons) *Adelaide*

Ee Shan Pang, BBiomedSc(Hons)
Melbourne

Blake Smith, BBiotech *Newcastle*
BDes(Arch) *Newcastle* BSc(Hons)
Melbourne

Marilou Barrios, MSc *Philippines*, PhD
student (from 06/14)

Simon Chatfield, MB BS *Melbourne*,
Reid Translational Scholar

Andrew Foers, visiting BSc(Honours)
student (from 02/14)

Kathrin Grebe, BSc *Germany*, overseas
research trainee (to 07/13)

Tan Nguyen, BBiomedSc(Hons)
Deakin, PhD student

Shereen Oon, BMedSc *Melbourne* MB
BS *Melbourne*, PhD student

Seth Masters, BSc(Hons) *Melbourne*
PhD *Melbourne*

Richard Ferrero, BAppSc(Hons)
Sydney PhD *Sydney*

Mordechay Gerlic, BBiomedSc *Ben*
Gurion PhD *Ben Gurion*

Man Lyang Kim, BSc *Gyeonsang* MSc
Gyeonsang PhD *Basel* (to 05/14)

Hazel Tye, BBiomedSc(Hons) *Monash*
PhD *Monash* (from 04/14)

Paul Baker, BSc(Hons) *Adelaide*, PhD
student (from 01/14)

Katelyn Chalker, BAppSc *QUT*,
BSc(Honours) student (from 12/13)

Damian D'Silva, BBSc, BSc(Honours)
student (from 12/13)

Jo O'Donnell, BSc(Hons) *Melbourne*

Sandra Nicholson, BSc *Monash* MSc
UNSW PhD *Melbourne*

Laura Dagley, BBiomedSc(Hons)
Melbourne PhD *Melbourne* (from
07/13)

Lukasz Kedzierski, BSc(Hons) *Monash*
PhD *Monash*

Akshay D'Cruz, BBiomedSc(Hons)
Melbourne

Tatiana Kolesnik, BSc(Hons) *Nizhni*
Novgorod MSc *Nizhni Novgorod* PhD
Moscow

Alex Colussa, BMedSci *Deakin*,
BSc(Honours) student (from 10/13)

Tom Hayman, BSc(Honours) student
(from 02/14)

Eddie Linossi, BSc *Melbourne*, PhD
student

Tracy Putoczki, BSc(Hons) *Toronto*
PhD *Canterbury*

Nga Lam, BBiotech(Hons) *Adelaide*
PhD *Adelaide* (from 09/13)

Julia Griesbach, BSc *France* MSc
Georg-August (from 05/14)

Adele Preaudet

Eden Whitlock, BBiotech(Hons)
LaTrobe (from 01/14 to 04/14)

Suad Abdirahman, BSc, BSc(Honours)
student (from 02/14)

Paul Nguyen, BBiomedSc(Hons)
Melbourne, PhD student

James Vince, BSc(Hons) *Melbourne*
PhD *Melbourne*

Nufail Khan, BMedSc(Hons) *LaTrobe*
PhD *LaTrobe* (from 08/13 to 02/14)

Kate Lawlor, BSc(Hons) *Melbourne*
PhD *Melbourne*

Rowena Lewis, BSc(Hons) *Deakin* PhD
Deakin (to 02/14)

Alison Mildenhall, BSc(Hons)
Melbourne

Mary Speir, visiting PhD student

Swarna Vijayaraj, MBIology *Adelaide*,
PhD student (from 02/14)

MOLECULAR IMMUNOLOGY

The Molecular Immunology division aims to understand the immune system and how it functions to protect us from pathogens, such as bacteria and viruses, while at the same time ignoring the harmless or beneficial microbes in our environment. By understanding the normal immune response, we aim to pinpoint the events that go awry in diseases such as lymphoma, autoimmunity or chronic infections.

'Spontaneous' cancers killed daily

Immune cells undergo 'spontaneous' changes on a daily basis that could lead to cancers if not for the diligent surveillance of our immune system.

Dr Axel Kallies, Professor David Tarlinton, Professor Stephen Nutt and colleagues found the immune system was responsible for eliminating potentially cancerous immune B cells in their early stages, before they developed into B-cell lymphomas (also known as non-Hodgkin lymphomas).

The discovery could lead to the development of an early-warning test that identifies patients at high risk of developing B-cell lymphomas, enabling proactive treatment to prevent tumours from growing and progressing to cancer.

New layer to infection battle

Langerhans cells are immune cells that provide the first line of defence against attacks through the skin. Langerhans cells can last a lifetime, and new ones are only produced when the original cells die.

Dr Michäel Chopin, Professor Gabrielle Belz, Professor Stephen Nutt and colleagues have shown that, despite appearing to be identical, the original and new Langerhans cells are genetically different. The finding could have repercussions for developing and refining therapies for skin infections and cancers. It could also explain why some promising new drugs do not work outside the laboratory, and may provide guidance in developing therapeutics.

Promoting vaccine responses

Immunisation induces the activation of B cells into plasma cells, which make antibodies to protect against infection.

Dr Stéphane Chevrier, Associate Professor Lynn Corcoran and colleagues have identified a previously unknown gene that plays an important role in promoting immune responses after immunisation. The research team found the gene *Zbtb20* was a key regulator of B cell development into plasma cells, and was vital for the cells to survive.

The finding has implications for improving vaccines as well as providing potential targets for cancers affecting plasma cells, such as myeloma.

Health impact

Cancers: leukaemia, lymphoma, melanoma, myeloma

Immune disorders: asthma, inflammatory bowel disease, multiple sclerosis

Infectious disease: influenza, listeria, vaccines

Faculty

Division head

Professor Stephen Nutt

Lab heads

Professor Gabrielle Belz

Associate Professor Lynn Corcoran

Dr Axel Kallies

Dr Nicholas Huntington

Dr Li Wu (Honorary)



'Performance-enhancing' boost helps fight infection

Institute researchers have made a discovery that could help in developing new treatments for blood diseases such as leukaemia, and autoimmune diseases in which the body attacks its own tissues, such as diabetes or rheumatoid arthritis. It could also be used to enhance immune response to HIV and other chronic infections.

"This is how the immune system guarantees that the best killer T cells survive, producing an 'army of clones' that maintain their killer function to fight the infection."

Dr Axel Kallies, Mr Kevin Man and colleagues found the immune system is subject to performance enhancement, boosting immune cells to ensure the best team is selected to fight infections.

Immune cells called killer T cells are responsible for killing virus- or bacteria-infected cells, tumour cells and other damaged cells in the body.

Dr Kallies said the team showed a protein called IRF4 helped the body to identify the immune cells most capable of fighting an infection. "We found IRF4 is activated in killer T cell 'clones' that are best equipped to recognise

and fight an infection," Dr Kallies said. "IRF4 stimulates mass production of 'elite' killer T cells, as well as ensuring their survival and enhancing their performance by allowing them to take up large amounts of sugar and other nutrients."

The team showed IRF4 was produced at the highest levels in cells that were best at recognising the foreign invader. "This is how the immune system guarantees that the best killer T cells survive, producing an army of clones that maintain their killer function to fight the infection," he said.

Targeting the IRF4 pathway could help control these immune cells and is already being investigated by pharmaceutical companies. Blocking the IRF4 pathway could diminish immune cell populations when they are out of control, as happens in blood cancers such as leukaemia or in autoimmunity.

Funding partners: Australian National Health and Medical Research Council, Australian Research Council and Victorian Government.

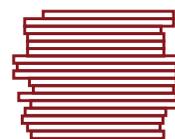
More information: Man K *et al.* The transcription factor IRF4 is essential for TCR affinity-mediated metabolic programming and clonal expansion of T cells. *Nature Immunology*. 2013 Nov; 14(11):1155-65.

Chronic infections, cancers and immune deficiencies can arise from errors in immune cell development and maintenance. Dr Nick Huntington has developed models of the human immune system to improve our understanding of immune cell development and discover and test novel therapies for human disease.



Number of students

4



Number of publications

38

Unravelling T cell development

Highly specialised T cells are essential for our immune system.

There are several types of T cells: effector T cells that fight bacterial and viral infections and cancers, memory T cells that promote long-term immune memory after infection, and regulatory T cells that dampen the immune response to prevent damage caused by aberrant T cells that target the body's own tissues (autoimmunity).

These diverse types of T cells develop by 'differentiation', the process by which cells become more specialised as they divide. 'Master regulator' genes are responsible for switching on or off other important genes in the cell to control T cell differentiation.

With the support of a fellowship from the Sylvia and Charles Viertel

Charitable Foundation, Dr Axel Kallies is studying how master regulator genes control T cell differentiation.

T cells are critical for the immune system but we know little about the molecular program that regulates their differentiation into mature cells with specialised functions. Dr Kallies is developing a model that would explain the genetic determinants of differentiation for each type of T cell.

Dr Kallies said master regulator genes and the pathways they control are potential therapeutic targets in humans. "I am particularly interested in the genes Blimp1 and IRF4, which we are exploring to understand their role in T cell development and function," he said. "This will provide a strong foundation for understanding how to best produce protective T

cell memory, which is the aim of any vaccination strategy that targets T cells. It may also lead to better strategies for the therapeutic treatment of immunodeficiencies, autoimmunity and cancer."

Dr Kallies said the philanthropic support from the Sylvia and Charles Viertel Charitable Foundation was tremendously important for the success of the project. "I'm grateful for the multi-year support provided by the Viertel fellowship, which is helping us to solve these important questions," he said.

The Sylvia and Charles Viertel Charitable Foundation is managed by Equity Trustees together with co-trustees Mr George Curphey OAM, Mr Rex Freudenberg and Justice Debra Mullins.



Dr Gabrielle Belz is studying how the immune system responds to infections including viruses, bacteria and parasites. The research team is investigating how different types of immune cells develop, and what factors influence their maturation, to discover new therapies that boost the immune system and protect against infection.

Major national and international meetings

Professor Gabrielle Belz

Frontiers in Immunology Conference 2013, *keynote speaker*, Tokyo, Japan, 08/13

The British Society for Immunology Annual Congress, *plenary speaker*, Manchester, UK, 12/13

Future of Experimental Medicine Conference: Inflammation in disease and ageing, *keynote speaker*, Sydney, Australia, 03/14

Cold Spring Harbour Laboratories: Gene Expression & Signalling in the Immune System, *invited speaker*, Cold Spring Harbor, US, 04/14

Dr Sebastian Carotta

European Hematology Association (EHA), *invited speaker*, Milano, Italy, 06/14

Associate Professor Lynn Corcoran

43rd Australasian Society of Immunology Annual Scientific Meeting, *panel chair*, Wellington, New Zealand, 12/13

Dr Nick Huntington

Emerging Networks in Cytokine Signalling, *oral presentation*, Vancouver, Canada, 02/14

Dr Axel Kallies

Cold Spring Harbor Laboratories: Harnessing Immunity to Prevent & Treat Disease, *plenary speaker*, Cold Spring Harbor, US, 11/13

Mr Kevin Man

43rd Australasian Society of Immunology Annual Scientific Meeting, *oral presentation*, Wellington, New Zealand, 12/13

Professor Stephen Nutt

2013 Federation of American Society for Experimental Biology Summer Research Conference on Molecular Mechanisms of Immune Cell Development and Function, *plenary speaker*, Colorado, US, 07/13

TuBS Symposium on B cells: Past Present and Future, *plenary speaker*, Turku, Finland, 08/13

Keystone Symposium "Biology of B Cell Responses", *invited speaker*, Colorado, US, 02/14

7th Gene Expression and Signalling in the Immune System, Cold Spring Harbor, *conference convenor*, New York, US, 04/14

American Asthma Foundation Annual Meeting, *invited speaker*, San Francisco, US, 05/14

Dr Milon Pang

New Directions in Leukaemia Research 2014, *oral presentation*, Noosa, Australia, 03/14

Dr Simon Willis

Keystone Symposia: Biology of Cell Responses, *oral presentation*, Denver, US, 02/14



Staff list

Renata Cubas, administrative officer

Stephen Nutt, BSc(Hons) *Sydney* PhD *Vienna*

Rhys Allan, BSc(Hons) *Melbourne* PhD *Melbourne*

Sebastian Carotta, PhD *Vienna* (from 05/14)

Michael Chopin, PhD *Dresden*

Erika Cretney, BSc(Hons) *Melbourne* PhD *Melbourne*

Aleksandar Dakic, BSc(Hons) *Melbourne* PhD *Melbourne*

Sheila Dias Dos Santos, BSc *Lisbon* PhD *Paris VI*

Chin Nien Lee, MSc *Taiwan* PhD *Melbourne* (to 08/13)

Julie Tellier, PhD *France*

Simon Willis, BSc(Hons) *Melbourne* PhD *Melbourne*

Felix Zheng, BSc(Hons) *Melbourne* PhD *Melbourne* (to 12/13)

Angela D'Amico

Nadia Iannarella

Patrick Leung, BBiomedSc *Monash*

Dane Newman, BEng(Hons) *Deakin* PhD *Deakin*

Christina Bruggeman, BSc *Netherlands*, overseas research trainee (from 07/13 to 12/13)

Gabrielle Belz, BVBiol *Qld* BVSc *Qld* PhD *Qld*

Matt Firth, MSc *Guelph* (from 01/14)

Jo Groom, BAppSc *Charles Sturt* BSc(Hons) *Melbourne* PhD *UNSW*

Lisa Mielke, BSc *Melbourne* PhD *Melbourne*

Adele Mount, BSc(Hons) *Melbourne* PhD *Melbourne*

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Janet Yeo, BSc(Hons) *Melbourne*, PhD student

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MSc *Melbourne*, editorial assistant

Lynn Corcoran, BSc(Hons) *Melbourne* PhD *Melbourne*

Dianne Emslie, BSc(Hons) *VUT* PhD *VUT*

Tobias Kratina, BSc(Hons) *Deakin*

Nick Huntington, BSc(Hons) *LaTrobe* PhD *Melbourne*

Milon Pang, BSc *Murdoch* BSc(Hons) *Melbourne* PhD *Melbourne*

Priyanka Sathe, BSc *Sydney* BSc(Hons) *Melbourne* PhD *Melbourne*

Rebecca Delconte, BSc(Hons) *Melbourne*

Axel Kallies, PhD *Free*

Klaas van Gisbergen, PhD *Netherlands*

Ajithkumar Vasanthakumar, BSc

Madurai Kamaraj MSc *Madurai*

Kamaraj PhD *Madurai Kamaraj*

Renee Gloury, BSc(Hons) *Melbourne*

Kevin Man, BSc *Melbourne* LLB

Melbourne, PhD student

Tom Sidwell, BSc(Hons) *Monash*, PhD student

SYSTEMS BIOLOGY AND PERSONALISED MEDICINE

The Systems Biology and Personalised Medicine division uses high-throughput biology to understand global changes in biological systems, and to inform therapeutic decisions. The technologies – including genomics, transcriptomics, proteomics, chemical and genetic screens – are improving our understanding of cancers, immune disorders and infectious diseases.

Funding for drug discovery

The institute is a partner and founder of the Cancer Therapeutics Cooperative Cancer Centre (CRC).

Division laboratory head Associate Professor Ian Street is chief scientific officer at the Cancer Therapeutics CRC. The Cancer Therapeutics CRC received a \$64 million six-year extension to continue drug discovery for cancers. The focus of the is on drug discovery into the major cause of cancer deaths – the spread and growth of secondary cancers in the lung, liver, bone and brain. They will also work with childhood cancer experts to improve development and targeting of new cancer therapies.

Personalised medicine moving forward

The Ian Potter Centre for Genomics and Personalised Medicine was established in 2012 with funding from The Ian Potter Foundation.

The centre is a collaboration between the Walter and Eliza Hall Institute and the Murdoch Children's Research Institute. We have continued to build our capacity this year with the purchase of an automated DNA library preparation system to prepare multiple sequencing samples simultaneously and undertake larger and more complex studies.

The cancer program is continuing its studies into metastatic bowel cancer and acute myeloid leukaemia, while the immune disease program has recruited patients for the acute rheumatic fever project, and a program on childhood food allergies. We have also extended our research to some congenital diseases.

New technologies driving research

Over the past 12 months, the Systems Biology and Personalised Medicine division has doubled in size, to incorporate a number of progressive technologies available to scientists at the institute.

The division now includes the institute's Centre for Dynamic Imaging, Flow Cytometry and High-Throughput Screening laboratories. These state-of-the-art technologies and facilities are driving forward our research programs and enabling scientists to undertake world-class research.

The division has also acquired new state-of-the-art technologies for genome editing and functional genomics that are driving innovative new science programs at the institute.

Health impact

Cancers: bowel cancer, leukaemia, lymphoma, melanoma, stomach cancer

Immune disorders: rheumatoid arthritis, rheumatic fever and heart disease

Infectious disease: malaria, vaccines

Other areas: antivenoms, congenital disease, personalised medicine

Faculty

Division head

Professor Liam O'Connor

Lab heads

Associate Professor Peter Gibbs

Dr Oliver Sieber

Associate Professor Ian Street

Predicting bowel cancer prognosis and response

Bowel cancer is a leading cause of cancer-related deaths worldwide.

Dr Dmitri Mouradov and Dr Oliver Sieber are searching for ways to improve outcomes for people with bowel cancer. The team is looking for biological markers, such as specific genetic changes, with the potential to improve diagnosis and prognosis, and guide clinical treatment decisions.

The team found changes in molecules that control how DNA is packaged within cells may play an important role in bowel cancer development.

Human bowel cancer cell lines are used worldwide to investigate tumour biology, discover new anti-tumour compounds and identify biological markers to predict responses to existing drugs. Using detailed genetic and molecular information on more than 200 bowel tumours from The Cancer Genome Atlas program, the team investigated how commonly used human bowel cancer cell lines, grown in laboratories for as long as 40 years, compared to patients' bowel tumours.

Dr Mouradov said the laboratory-grown cell lines were genetically representative of the cancer cell subtypes commonly found in people with bowel cancer. "We confirmed commonly used cell lines were a good

tool for validating biological markers and testing new drugs," he said. "We now have a comprehensive genomic resource on 70 bowel cancer cell lines, allowing researchers to select the best cell line to answer specific research questions."

As part of the research, the team found changes in molecules that control how DNA is packaged within cells may play an important role in bowel cancer development. "These 'chromatin remodelling' genes extensively change the genome 'packaging', switching sections of DNA on and off," Dr Mouradov said. "This is an important lead for further investigating their role in driving bowel cancer development."

Collaborating organisations: Johns Hopkins University (US), Ludwig Cancer Research (US), QIMR Berghofer Medical Research Institute, University of Oxford (UK), VLSCI Life Sciences Computation and Wellcome Trust Centre for Human Genetics (UK).

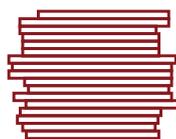
Funding partners: Australian National Health and Medical Research Council, Cancer Australia, Ludwig Cancer Research and Victorian Government.

More information: Mouradov D *et al.* Colorectal cancer cell lines are representative models of the main molecular subtypes of primary cancer. *Cancer Research*. 2014 Jun 15; 74(12):3238-47.



Number of students

6



Number of publications

21



Bowel cancers vary greatly in their genetic makeup and clinical behaviour. Dr Oliver Sieber is studying the genetic changes that contribute to bowel cancer, particularly the aberrant molecules that influence a person's risk of developing bowel cancer and response of their cancer to therapy.

A personal approach to disease

As a medical practitioner with some experience in cancer treatments, Dr George Janko has followed with interest the emerging fields of genomics and personalised medicine.

When he heard Professor Liam O'Connor being interviewed about the promise of personalised medicine and the world-class research being done at the institute, Dr Janko was inspired to contact him.

In 2014, Dr Janko visited The Ian Potter Centre for Genomics and Personalised Medicine, a collaboration between the Walter and Eliza Hall Institute and the Murdoch Children's Research Institute established with \$3 million in funding from The Ian Potter Foundation. Professor O'Connor is the institute's team leader in the centre.

The centre conducts cutting-edge research to drive the use of genomic information to personalise therapy and improve outcomes for patients, and is now a hub for innovative therapeutic research.

The Janko-Inge Foundation has committed to support the centre's cancer program for the next five years. The aim of the cancer program is to investigate individual differences in patients' responses to anti-cancer therapies, and identify inherited and acquired mutations that result in chemotherapy resistance in cancer patients.

"As a doctor, I understand that one of the major sources of inefficiency in our health care system is the one-size-fits-all approach to treatment," Dr Janko said. "Personalised medicine is a very exciting and promising area

of research. It is amazing to think that researchers at the Walter and Eliza Hall Institute can now rapidly sequence an entire human genome in-house."

A more personalised approach to treatment would mean that patients would not need to endure costly, ineffective treatments. For example, 85 per cent of bowel cancer patients do not respond to current treatments and early indicators suggest that patients who do not respond have some genetic similarities. With further research, Professor O'Connor and his team are searching for a genetic profile that will predict those bowel cancer patients likely to be resistant to treatment. A similar study is underway on resistance to childhood leukaemia treatment.

A simple blood test could be used in the future to predict how bowel cancer patients will respond to treatment, based on their cancer DNA.

Dr Jeanne Tie and colleagues are combining innovative research and clinical know-how to develop the test, which will help doctors use 'personalised medicine' to choose the best treatments for their patients.



Major national and international meetings

Dr Jayesh Desai

Royal Australasian College of Surgeons Annual Scientific Congress, *invited speaker*, Singapore, Singapore, 05/14

American Society of Clinical Oncology Annual Scientific Meeting, *invited speaker*, Chicago, US, 06/14

Associate Professor Clara Gaff

Global Alliance for Genomics and Health, *invited speaker*, London, UK, 03/14

Otago Genomics 2014, *invited speaker*, Dunedin, NZ, 04/14

European Society of Human Genetics Conference, *oral presentation*, Milan, Italy, 05/14

Associate Professor Peter Gibbs

Ludwig Cancer Research Annual Scientific Meeting, *invited speaker*, Oxford, UK, 10/13

Asia Pacific Gastrointestinal Cancer Conference, *invited speaker*, Singapore, Singapore, 12/13

Colorectal Cancer Expert Forum, *invited speaker*, Hong Kong, Hong Kong, 03/14

Dr Giuseppe Infusini

19th Proteomics Symposium 2014, *oral presentation*, Lorne, Australia, 02/14

Dr Karl-Johan Leuchowius

Australian High Content Analysis and RNAi meeting, *invited speaker*, Melbourne, Australia, 07/13

Mr Simon Monard

2013 Australasian Flow Cytometry Group Meeting, *invited speaker*, Wellington, New Zealand, 11/13

Dr Kelly Rogers

Advanced Imaging Workshop for Malaria Researchers, UTS, Sydney, *invited speaker*, Sydney, Australia, 08/13

Core Technologies for Life Sciences, Workshop on Research Innovation in Services - Facilitating Research by Improving Technology Resource Management, Institut Pasteur, Paris, *invited speaker*, Paris, France, 02/14

Dr Ben Tran

Official Post American Society of Clinical Oncology Meeting 2013, *invited speaker*, Melbourne, Australia, 08/13

Urological Society Australia New Zealand - Victorian chapter Annual Scientific Meeting, *invited speaker*, Cape Schanck, Australia, 10/13

National Bladder Kidney Cancer Symposium, *invited speaker*, Melbourne, Australia, 02/14

Dr Andrew Webb

19th Proteomics Symposium 2014, *oral presentation*, Lorne, Australia, 02/14



Staff list

Lisa Connolly, BSc(Hons) *Melbourne*, scientific coordinator

Liam O'Connor, BSc(Hons) *UWA* PhD *Melbourne*

Eugene Kapp, BSc(Hons) *Rhodes* MSc *Rhodes*

Stephen Wilcox, BSc(Hons) *Sussex* PhD *LaTrobe*

Sam Wormald, BSc(Hons) *Melbourne* PhD *Melbourne*

Doreen Agyapomaa, BAppSc(Hons) *RMIT* MPH *Monash* (from 07/13)

Liz Milla, BBiolSc *LaTrobe* BSc *Deakin*, computational biologist

Paul van den Bergen, BEng(Hons) *Monash* BSc(Hons) *Monash* PhD *Monash*, systems administrator/scientific programmer (from 02/14)

Denise Heckmann, BSc *Mannheim*, visiting Masters student (from 08/13 to 10/13)

Peter Gibbs, MB BS *Melbourne* MD *Melbourne* FRACP

Jayesh Desai, MB BS *Monash* FRACP
Jeanne Tie, MB ChB *Otago* MD *Melbourne* FRACP

Ben Tran, MB BS *Melbourne* FRACP
Natalie Turner, BAppSc *Sydney* MB BS *Sydney* FRACI, junior clinical research fellow (from 03/14)

Hui-Li Wong, MB BS *Melbourne* FRACI *Melbourne*

Matthew Chapman, BBiolSc(Hons) *LaTrobe*, senior project manager (from 08/13)

Siavash Foroughi, BSc *Melbourne* MSc *Melbourne*, project officer

Kelly Gillespie, BBiolSc *LaTrobe*, clinical data officer

Michael Harold, BAppSc *LaTrobe*, clinical data project manager

Philippa Robertson, clinical program manager

Ashlin Woolley, BHealthSc *Deakin*, clinical data officer

Oliver Sieber, BSc(Hons) *UCL* PhD *UCL*

Bruno Catimel (from 08/13)

Dane Cheasley, PhD *LaTrobe*

Robert Jorissen, BSc(Hons) *Monash* PhD *Melbourne*

Sheng Liu, BSc(Hons) *Melbourne* PhD *Melbourne*

Christopher Love, BSc(Hons) *Bath* MSc *Exeter* PhD *LaTrobe*

Dmitri Mouradov, BSc(Hons) *Qld* PhD *Qld*

Anu Sakthianandeswaren, BSc(Hons) *Melbourne* PhD *Melbourne*

Shan Li, BSc(Hons) *Lu Zhou Medical College*

Michael Christie, MB BS *Qld*, visiting PhD student

Henry Howard, BSc(Honours) student

Kendrick Koo, BMed *Melbourne* BMedSc *Melbourne*, visiting PhD student (from 02/14)

Michelle Palmieri, BSc(Hons) *Melbourne*, PhD student

Marie Parsons, BBiomedSc(Hons) *Newcastle*, visiting PhD student (from 04/14)

Ian Street, BSc(Hons) *Sussex* PhD *British Columbia*

Hendrik Falk, PhD *Berlin*

Karl Leuchowius, MSc *Uppsala* PhD *Uppsala*

Elizabeth Allan, BSc *Otago* PhD *Melbourne*

Melanie De Silva, BSc *Melbourne*

Sukhdeep Spall, BSc *India* MSc *LaTrobe*

Flow Cytometry Laboratory

Simon Monard, BSc(Hons) *UCL* MSc *Kings College*, head of flow cytometry facility

David Baloyan, BSc(Hons) *Javakhishvili Tbilisi State* MSc(Hons) *Javakhishvili Tbilisi State*

Adrian Binek, BSc *Swinburne*

Stacey Jeffrey, BBiomedSc *Swinburne* (from 10/13)

Dora Kaminaris, BSc *Monash*

Melanie Le Page, BSc(Hons) *Monash* (from 11/13)

Michelle McCann, BSc *Monash*

Padmini Nanda, BSc *Bangalore* MSc *Bangalore* (to 12/13)

Chayanica Nasa, BSc *Delhi* MSc *Delhi*

Rumbi Tichawangana, BSc *Deakin*

BSc(Hons) *Melbourne* (to 09/13)

Lankesha Yapa, BSc *Auckland* MSc *Auckland*

Imaging laboratory

Kelly Rogers, BSc(Hons) *Deakin* PhD *Griffith*, head of imaging facility

Mark Scott, BSc(Hons) *Open* BSc(Med) *Curtin* (from 03/14)

Lachlan Whitehead, BA *Melbourne* BSc(Hons) *Melbourne* PhD *Melbourne*

Proteomics laboratory

Giuseppe Infusini, BSc *Naples* PhD *Naples*

Thomas Nebl, PhD *LaTrobe*

Andrew Webb, BSc *Monash* PhD *Melbourne*

Sangeetha Ramdave, BEng *Melbourne* MS *Melbourne*, PhD student (from 02/14)

Screening laboratory

Kate Jarman, BSc(Hons) *Adelaide* PhD *Adelaide*

Kym Lowes, BSc(Hons) *UWA* PhD *UWA*

Rebecca Moss, BAppSc(Hons) *RMIT*

Patrizia Novello, BBiolSc(Hons) *LaTrobe*

Soo San Wan, BAgSc(Hons) *LaTrobe* MAgSc *LaTrobe* (to 04/14)

Hong Yang, PhD *Norman Bethune* (to 06/14)

Henry Beetham, BBiomedSc(Hons) *Otago*, visiting PhD student (from 09/13 to 03/14)

DEVELOPMENT AND CANCER

Researchers from the Development and Cancer division investigate mechanisms regulating cell growth in normal development and cancer. The molecular mechanisms underlying the rapid, but regulated, growth of cells during embryonic development are frequently deregulated in cancer.

Gene defects in development and disease

Using zebrafish, Associate Professor Joan Heath, Dr Sebastian Markmiller and colleagues demonstrated a protein called Rnpc3 was critical for the growth of many organs during development.

Rnpc3 is a component of the minor-class splicing machinery, which is required to remove a small fraction of DNA (called introns) from newly synthesised mRNA (the blueprint for proteins). The team showed that impaired minor-class splicing has widespread effects during development, disabling networks of genes required for normal cell behaviour. The study sheds light on the cause of a severe human developmental disorder known as Taybi-Linder syndrome or MOPD1 (microcephalic osteodysplastic primordial dwarfism 1).

Investigating eye disease

Division researcher Dr Leigh Coultas has established a collaboration with Associate Professor Andrew Symons at The Royal Melbourne Hospital to investigate retinopathy and retinal vascular disease.

Retinopathy and retinal vascular disease can cause blindness associated with changes to the light-sensitive retinal cell layer on the back of the eye. Retinopathy is a common complication of diabetes and macular degeneration.

Dr Coultas and Associate Professor Symons will investigate novel targets that could aid in treating or preventing these conditions, in a collaboration that bridges the gap between basic research discoveries and clinical application.

Award-winning PhD students

Division PhD students Ms Hannah Vanyai and Ms Farrah El-Saafin each won prizes for their oral presentations at major national conferences.

Ms Vanyai won the David Walsh Prize at the ComBio 2013 conference for her presentation on unraveling the complex genetic interactions that, when defective, can lead to cleft palate, a common developmental abnormality in newborns.

Ms El-Saafin won the Promega Student Award at the Lorne Genome Conference 2014 for her presentation on the molecular mechanisms underlying cell death in the embryonic brain.

Health impact

Cancers: bowel cancer, lung cancer, leukaemia, lymphoma, stomach cancer

Other areas: congenital diseases, epigenetics, regenerative medicine, vascular diseases

Faculty

Division head

Associate Professor Anne Voss

Lab heads

Dr Leigh Coultas

Associate Professor Joan Heath

Associate Professor Tim Thomas



Stem cells have the potential to treat disease and to be used in regenerative medicine, due to their capacity to self renew while retaining the ability to become multiple different cell types. Associate Professor Tim Thomas is studying the genes required to maintain the key stem cell-like properties and 'epigenetic' changes that drive developmental diseases.

Unlocking the secrets of (cell) life and death

Blood vessels carry the oxygen and nutrients our tissues require to grow and survive.

Blood vessel development is critical for the growth of complex organisms, such as a baby growing in the womb. In adults the process is generally switched off, however it can reactivate and cause disease, such as cancers switching on blood vessel development to feed tumours.

“We showed BIM was the essential ‘death instructor’ for blood vessel cells.”

Dr Leigh Coultas is studying normal blood vessel development and how it is controlled in the body, in the hope that it could lead to ways of preventing or treating diseases such as cancer.

“As part of normal embryonic development, some of the cells that develop are no longer needed, such as the cells between our fingers and toes,” Dr Coultas said. “These cells are removed by a process called programmed cell death, which tells the cell to die quietly without causing inflammation and collateral damage.”

Recently Dr Coultas and his team showed a protein called BIM was essential for regulating the life and death of cells that make up blood vessels. “There are a number of proteins that can instruct cells to die, and different proteins are used by different tissues as the main signal to die,” Dr Coultas said. “We showed BIM was the essential ‘death instructor’ for blood vessel cells.”

The team is now looking to develop ways of controlling the life and death of blood vessel cells. “We hope this will lead to new treatments for diseases caused or exacerbated by abnormal blood vessel growth,” Dr Coultas said.

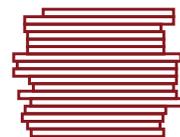
Funding partners: Australian National Health and Medical Research Council, Australian Research Council and Victorian Government.

More information: Koenig MN *et al.* Pro-apoptotic BIM is an essential initiator of physiological endothelial cell death independent of regulation by FOXO3. *Cell Death & Differentiation*. 2014 Jun 27.



Number of students

6



Number of publications

14

International support for bowel cancer research

Bowel cancer is one of the most commonly diagnosed cancers in Australia, and the second leading cause of cancer-related deaths worldwide.

The international not-for-profit Ludwig Cancer Research provides funding to five research teams at the Walter and Eliza Hall Institute. The teams are studying bowel cancer biology, development, diagnostics and treatments, and are led by Professor Tony Burgess, Associate Professor Matthias Ernst, Associate Professor Peter Gibbs, Associate Professor Joan Heath and Dr Oliver Sieber.

Ludwig Cancer Research is an international community of distinguished scientists dedicated to preventing and controlling cancer. US businessman Daniel K. Ludwig began to support cancer research with the establishment of the Ludwig

Institute for Cancer Research in 1971. Today Ludwig Cancer Research encompasses the Ludwig Institute and six Ludwig Centers at US institutions, all pursuing breakthroughs to alter the course of cancer.

Associate Professor Joan Heath from the institute's Development and Cancer division is identifying novel genes required for intestinal development that may be involved in cancer, particularly bowel cancer. She said the research team used zebrafish to discover genes that were indispensable for the growth of rapidly proliferating tissues during development.

"Our research is driven by the recognition that many of the dynamic processes occurring during development, such as rapid cell growth and division, are also highly active or dysregulated in cancer," she

said. "Typically the genes controlling these processes are inactive during adulthood but can be hijacked by cancer cells later in life."

Having discovered several genes in zebrafish that are crucial for intestinal development, the team is now examining the genes' ability to contribute to cancer development, using molecular tools to disrupt their activity in models of bowel, lung, liver and stomach cancer. "We are focused on these four cancers because, collectively, they cause nearly half of all cancer deaths globally, and new therapies are urgently needed," Associate Professor Heath said. "We are particularly excited by one gene that appears to be required for the development of several cancers and we are currently testing whether it could be a worthwhile target for novel anti-cancer therapies."



PhD student Ms Helen McRae (right) is working with Associate Professor Anne Voss (left) to understand the molecular function of a protein, which is mutated in a human intellectual disability syndrome and associated with leukaemia.

Major national and international meetings

Dr Leigh Coultas

2013 Joint meeting of the Australian Vascular Biology Society and the Australian and New Zealand Microcirculation Society, *oral presentation*, Barossa Valley, Australia, 09/13

Second meeting of the Australian Network of Cardiac and Vascular Developmental Biologists, *oral presentation*, Gold Coast, Australia, 10/13

Dr Karen Doggett

6th Annual Melbourne Cell and Developmental Biology Meeting, *oral presentation*, Melbourne, Australia, 10/13

Associate Professor Joan Heath

Zebrafish Disease Models 6, *oral presentation*, Murcia, Spain, 07/13

15th Annual Australia and New Zealand Zebrafish Conference, *session chair*, Sydney, Australia, 02/14

11th International Conference on Zebrafish Development and Genetics, *session chair*, Madison, US, 06/14

Zebrafish Disease Models 7, *session chair*, Madison, US, 06/14

Associate Professor Anne Voss

Lorne Genome Conference, *co-convenor*, Lorne, Australia, 02/14

The Hunter Meetings, *invited speaker*, Hunter Valley, Australia, 03/14



Staff list

Tim Thomas, BSc(Hons) *Melbourne*
PhD *Melbourne*

Anne Voss, BVSc *Hannover* PD
Goettingen PhD *Hannover*

Qingyan Cui, PhD *Shanghai* (from
03/14 to 05/14)

Andrew Kueh, BSc(Hons) *Melbourne*
MB BS *Melbourne* PhD *Melbourne*

Bilal Sheikh, BBiomedSc(Hons)
Melbourne PhD *Melbourne* (to 06/14)

Rose Cobb, BBiolSc(Hons) *LaTrobe*

Natalie Downer, BSc(Hons) *Melbourne*

Farrah El-Saafin, BMedSc *LaTrobe*
BSc(Hons) *Melbourne*, PhD student

Helen McRae, BSc(Hons) *Melbourne*,
PhD student (from 03/14)

Hannah Vanyai, BA *Melbourne*
BSc(Hons) *Melbourne*, PhD student

Leigh Coultas, BSc(Hons) *Adelaide*
PhD *Melbourne*

Monica Koenig, BBiomedSc(Hons)
Monash (to 01/14)

Evelyn Trounson, BSc(Hons) *VUT*

Zoe Grant, BBiomedSc *Melbourne*,
BSc(Honours) student (from 02/14)

Emma Watson, BSc *Melbourne*, PhD
student

Lysandra Richards

Joan Heath, BA(Hons) *Cambridge MA*
Cambridge PhD *Cambridge*

Karen Doggett, BSc(Hons) *Surrey*
DPhil *Oxford*

Cristina Keightley, BSc(Hons) *Monash*
PhD *Monash*

Viola Lobert, BSc(Hons) *Monash* PhD
Oslo (from 01/14)

Johanna Simkin, BSc(Hons) *Melbourne*
PhD *Melbourne*

Ben Williams, BSc(Hons) *UNSW* PhD
Melbourne

Tyson Blanch

Janine Coates, BSc(Hons) *Melbourne*

Tanya de Jong-Curtain, BA *Monash*
BSc(Hons) *Monash* PhD *Melbourne*

Dora McPhee, BFA *VCA* BSc(Hons)
Monash GradDipFA *VCA*

Esther Kim, BBiomedSc *Melbourne*,
BSc(Honours) student (from 12/13)

Prime Minister's Prize for Science

Statistician Professor Terry Speed was the winner of the 2013 Prime Minister's Prize for Science for his influential work using mathematics and statistics to help biologists understand human health and disease.

The Prime Minister's Prize for Science is Australia's highest award for excellence in science research. The award recognises the significant importance of bioinformatics in modern biomedical science.

Over the course of his 44-year career, Professor Speed has developed mathematical and statistical tools that enable biologists to make sense of the vast amounts of information generated by rapidly advancing (next-generation) genetic technologies.

Bioinformatics has made it possible to look at hundreds of genes in a DNA sequence at once

to understand the genetic changes involved in complicated diseases such as cancers, and is integral to the genomics revolution that is driving the sequencing of whole genomes in record times. Professor Speed has developed tools to identify genes that are responsible for different traits, diseases or cancers by sifting through these enormous volumes of data.

"Science is a collaborative effort and I would like to thank the many students, postdocs and colleagues who have supported me throughout my career."

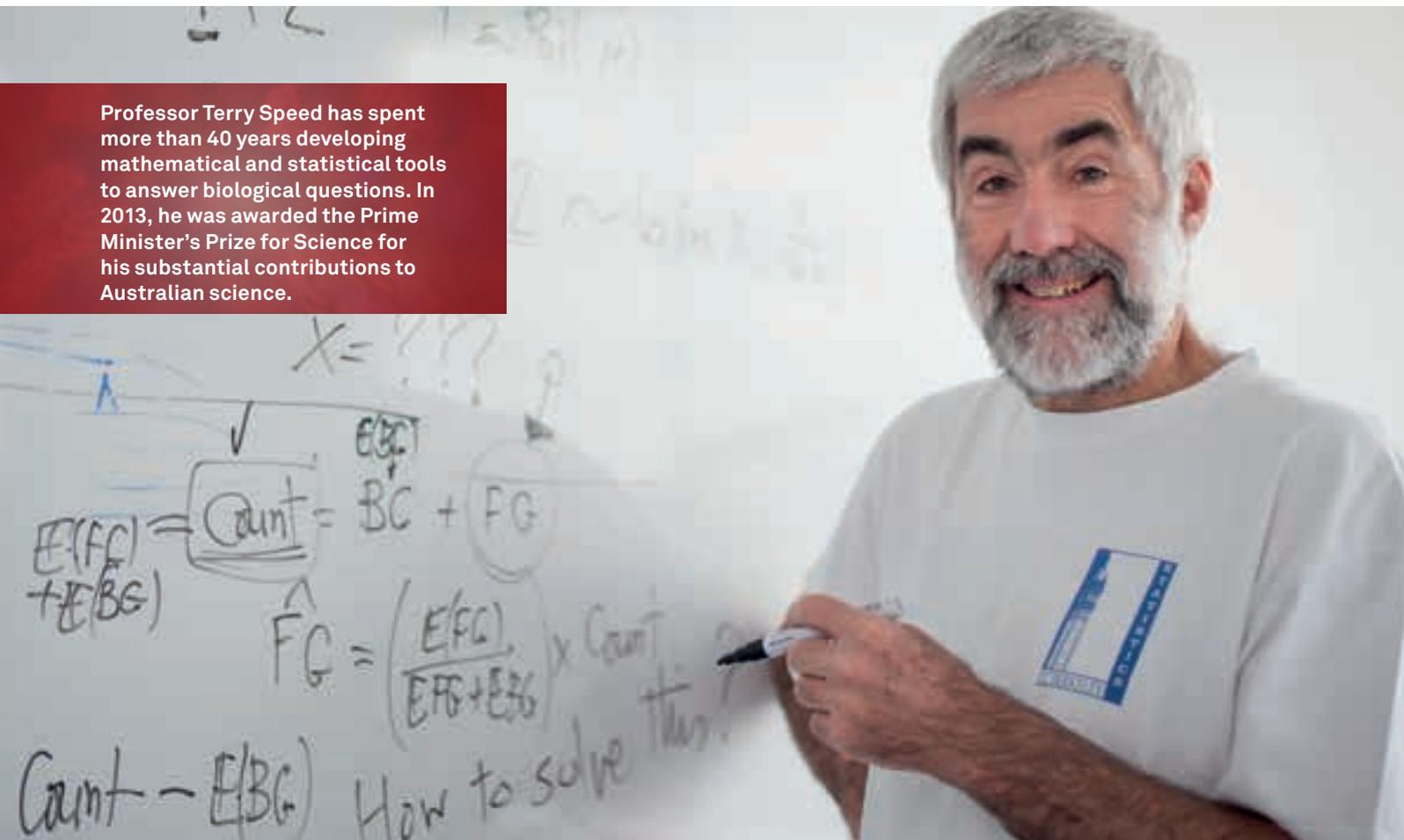
In addition to developing tools to help biologists analyse and explain their results, Professor Speed is working with biologists to determine

the genetic traits that make normal and cancerous cells different; developing tools to help determine if thyroid growths are benign or cancerous; and determining the risk children in malaria-endemic countries have of developing clinical malaria, which helps to inform prevention and treatment strategies.

Professor Speed said it was a great honour to receive the Prime Minister's Prize for Science. "Australia is full of many amazing and talented researchers, so it is humbling to be recognised in this way," he said.

"Science is a collaborative effort and I would like to thank the many students, postdocs and colleagues who have supported me throughout my career. In addition, I would like to thank my wife, Sally, whose love and support over the past 50 years has enabled me to pursue my research with passion."

Professor Terry Speed has spent more than 40 years developing mathematical and statistical tools to answer biological questions. In 2013, he was awarded the Prime Minister's Prize for Science for his substantial contributions to Australian science.



PUBLICATIONS

BIO	Bioinformatics
CBD	ACRF Chemical Biology division
CHD	Cancer and Haematology division
CSCD	Cell Signalling and Cell Death division
DCD	Development and Cancer division
IMM	Immunology division
INF	Infection and Immunity division
INFL	Inflammation division
MGC	Molecular Genetics of Cancer division
MIMM	Molecular Immunology division
MMD	Molecular Medicine division
SBD	Structural Biology division
SBPM	Systems Biology and Personalised Medicine division
SCC	ACRF Stem Cells and Cancer division

Number of publications

Primary: 296

Reviews: 80

Book chapters: 5

Total: 381

Primary

1. Abraham G, Tye-Din J, Bhalala O, Kowalczyk A, Zobel J, Inouye M. Accurate and robust genomic prediction of celiac disease using statistical learning. *PLoS Genetics*. 2014 10(2):e1004137. **IMM**
2. Abubaker K, Luwor RB, Zhu H, McNally O, Quinn MA, Burns CJ, Thompson EW, Findlay JK, Ahmed N. Inhibition of the JAK2/STAT3 pathway in ovarian cancer results in the loss of cancer stem cell-like characteristics and a reduced tumor burden. *BMC Cancer*. 2014 14:317. **CBD**
3. Afshar-Sterle S, Zotos D, Bernard NJ, Scherger AK, Rodling L, Alsop AE, Walker J, Masson F, Belz GT, Corcoran LM, O'Reilly LA, Strasser A, Smyth MJ, Johnstone R, Tarlinton DM, Nutt SL, Kallies A. Fas ligand-mediated immune surveillance by T cells is essential for the control of spontaneous B cell lymphomas. *Nature Medicine*. 2014 20(3):283-290. **MGC MIMM IMM**
4. Aguilar R, Magallon-Tejada A, Achtman AH, Moraleta C, Joice R, Cistero P, Suen C, Nhabomba A, Macete E, Mueller I, Marti M, Alonso PL, Menendez C, Schofield L, Mayor A. Molecular evidence for the localization of *Plasmodium falciparum* immature gametocytes in bone marrow. *Blood*. 2014 123(7):959-966. **INF**
5. Ali MI, Rauf MK, Badshah A, Kumar I, Forsyth CM, Junk PC, Kedzierski L, Andrews PC. Anti-leishmanial activity of heteroleptic organometallic Sb(V) compounds. *Dalton Transactions*. 2013 42(48):16733-16741. **INFL**
6. Allam R, Lawlor KE, Yu EC, Mildenhall AL, Moujalled DM, Lewis RS, Ke F, Mason KD, White MJ, Stacey KJ, Strasser A, O'Reilly LA, Alexander W, Kile BT, Vaux DL, Vince JE. Mitochondrial apoptosis is dispensable for NLRP3 inflammasome activation but non-apoptotic caspase-8 is required for inflammasome priming. *EMBO Reports*. 2014 Jul 2. (epub ahead of print) **INFL MGC CBD CHD CSCD**
7. Anderson RP, Henry MJ, Taylor R, Duncan EL, Danoy P, Costa MJ, Addison K, Tye-Din JA, Kotowicz MA, Knight RE, Pollock W, Nicholson GC, Toh BH, Brown MA, Pasco JA. A novel serogenetic approach determines the community prevalence of celiac disease and informs improved diagnostic pathways. *BMC Medicine*. 2013 11:188. **IMM**
8. Andrew EV, Pell C, Angwin A, Auwun A, Daniels J, Mueller I, Phuanukoonnon S, Pool R. Factors affecting attendance at and timing of formal antenatal care: results from a qualitative study in Madang, Papua New Guinea. *PLoS One*. 2014 9(5):e93025. **INF**
9. Andrews PC, Blair VL, Ferrero RL, Junk PC, Kedzierski L, Peiris RM. Bismuth(III) beta-thioxoketonates as antibiotics against *Helicobacter pylori* and as anti-leishmanial agents. *Dalton Transactions*. 2014 43(3):1279-1291. **INFL**
10. Andrews PC, Junk PC, Kedzierski L, Peiris RM. Anti-Leishmanial activity of novel homo- and heteroleptic bismuth(III) thiocarboxylates. *Australian Journal of Chemistry*. 2013 66(10):1297-1305. **INFL**
11. Arnott A, Mueller I, Ramsland PA, Siba PM, Reeder JC, Barry AE. Global population structure of the genes encoding the malaria vaccine candidate, *Plasmodium vivax* Apical Membrane Antigen 1 (PvAMA1). *PLoS Neglected Tropical Diseases*. 2013 7(10):e2506. **INF**
12. Arnott A, Wapling J, Mueller I, Ramsland PA, Siba PM, Reeder JC, Barry AE. Distinct patterns of diversity, population structure and evolution in the AMA1 genes of sympatric *Plasmodium falciparum* and *Plasmodium vivax* populations of Papua New Guinea from an area of similarly high transmission. *Malaria Journal*. 2014 13(1):233. **INF**
13. Atkinson SC, Dogovski C, Downton MT, Czabotar PE, Dobson RCJ, Gerrard JA, Wagner J, Perugini MA. Structural, kinetic and computational investigation of *Vitis vinifera* DHDPS reveals new insight into the mechanism of lysine-mediated allosteric inhibition. *Plant Molecular Biology*. 2013 81(4-5):431-446. **SBD**

14. Balasubramanian SA, Kumar KK, Baird PN. The role of proteases and inflammatory molecules in triggering neovascular age-related macular degeneration: basic science to clinical relevance. *Translational Research*. 2014 Apr 15. (epub ahead of print) **SBD**
15. Baldwin G, Lio D, Ferrand A, Catimel B, Shehan B, Norton R, Cheng H. Activation of Src family tyrosine kinases by ferric ions. *Biochimica et Biophysica Acta-Proteins and Proteomics*. 2014 1844(3):487-496. **SBD**
16. Ballouz S, Liu J, Oti M, Gaeta B, Fatkin D, Bahlo M, Wouters M. Candidate disease gene prediction using Gentrepid: application to a genome-wide association study on coronary artery disease. *Molecular Genetics & Genomic Medicine*. 2014 2(1):44-57. **BIO**
17. Bancroft EK, Page EC, Castro E, Lilja H, Vickers A, Sjoberg D, Assel M, Foster CS, Mitchell G, Drew K, Maehle L, Axcrona K, Evans DG, Bulman B, Eccles D, McBride D, van Asperen C, Vasen H, Kiemeny LA, Ringelberg J, Cybulski C, Wokolorczyk D, Selkirk C, Hulick PJ, Bojesen A, Skytte AB, Lam J, Taylor L, Oldenburg R, Cremers R, Verhaegh G, van Zelst-Stams WA, Oosterwijk JC, Blanco I, Salinas M, Cook J, Rosario DJ, Buys S, Conner T, Ausems MG, Ong KR, Hoffman J, Domchek S, Powers J, Teixeira MR, Maia S, Foulkes WD, Taherian N, Ruijs M, den Eenden AT, Izatt L, Davidson R, Adank MA, Walker L, Schmutzler R, Tucker K, Kirk J, Hodgson S, Harris M, Douglas F, Lindeman GJ, Zgajnar J, Tischkowitz M, Clowes VE, Susman R, Ramon YCT, Patcher N, Gadea N, Spigelman A, van Os T, Liljegen A, Side L, Brewer C, Brady AF, Donaldson A, Stefansdottir V, Friedman E, Chen-Shtoyerman R, Amor DJ, Copakova L, Barwell J, Giri VN, Murthy V, Nicolai N, Teo SH, Greenhalgh L, Strom S, Henderson A, McGrath J, Gallagher D, Aaronson N, Ardern-Jones A, Bangma C, Dearnaley D, Costello P, Eyfjord J, Rothwell J, Falconer A, Gronberg H, Hamdy FC, Johannsson O, Khoo V, Kote-Jarai Z, Lubinski J, Axcrona U, Melia J, McKinley J, Mitra AV, Moynihan C, Rennert G, Suri M, Wilson P, Killick E, The IC, Moss S, Eeles RA. Targeted prostate cancer screening in BRCA1 and BRCA2 mutation carriers: results from the initial screening round of the IMPACT study. *European Urology*. 2014 Jan 15. **SCC**
18. Bandopadhyay P, Jabbour AM, Riffkin C, Salmanidis M, Gordon L, Popovski D, Rigby L, Ashley DM, Watkins DN, Thomas DM, Algar E, Ekert PG. The oncogenic properties of EWS/WT1 of desmoplastic small round cell tumors are unmasked by loss of p53 in murine embryonic fibroblasts. *BMC Cancer*. 2013 13:585. **CSCD CHD**
19. Becker J, Czamara D, Scerri TS, Ramus F, Csepe V, Talcott JB, Stein J, Morris A, Ludwig KU, Hoffmann P, Honbolygo F, Toth D, Fauchereau F, Bogliotti C, Iannuzzi S, Chaix Y, Valdois S, Billard C, George F, Soares-Boucaud I, Gerard CL, van der Mark S, Schulz E, Vaessen A, Maurer U, Lohvansuu K, Lyytinen H, Zucchelli M, Brandeis D, Blomert L, Leppanen PH, Bruder J, Monaco AP, Muller-Myhsok B, Kere J, Landerl K, Nothen MM, Schulte-Korne G, Paracchini S, Peyrard-Janvid M, Schumacher J. Genetic analysis of dyslexia candidate genes in the European cross-linguistic NeuroDys cohort. *European Journal of Human Genetics*. 2014 22(5):675-680. **BIO**
20. Berry R, Headey SJ, Call MJ, McCluskey J, Tregaskes CA, Kaufman J, Koh R, Scanlon MJ, Call ME, Rossjohn J. Structure of the chicken CD3epsilon/delta/gamma heterodimer and its assembly with the alpha beta T cell receptor. *Journal of Biological Chemistry*. 2014 289(12):8240-8251. **SBD**
21. Berry R, Ng N, Saunders PM, Vivian JP, Lin J, Deuss FA, Corbett AJ, Forbes CA, Widjaja JM, Sullivan LC, McAlister AD, Perugini MA, Call MJ, Scalzo AA, Degli-Esposti MA, Coudert JD, Beddoe T, Brooks AG, Rossjohn J. Targeting of a natural killer cell receptor family by a viral immunoevasin. *Nature Immunology*. 2013 14(7):699-705. **INF**
22. Bert SA, Robinson MD, Strbenac D, Statham AL, Song JZ, Hulf T, Sutherland RL, Coolen MW, Stirzaker C, Clark SJ. Regional activation of the cancer genome by long-range epigenetic remodeling. *Cancer Cell*. 2013 23(1):9-22. **BIO**
23. Bordbar B, Tuikue Ndam N, Renard E, Jafari-Guemouri S, Tavul L, Jennison C, Gnidehou S, Tahar R, Gamboa D, Bendezu J, Menard D, Barry AE, Deloron P, Sabbagh A. Genetic diversity of VAR2CSA ID1-DBL2Xb in worldwide *Plasmodium falciparum* populations: impact on vaccine design for placental malaria. *Infection Genetics and Evolution*. 2014 25:81-92. **INF**
24. Bosco JJ, Suan D, Varikatt W, Lin MW. Extra-pancreatic manifestations of IgG4-related systemic disease: a single-centre experience of treatment with combined immunosuppression. *Internal Medicine Journal*. 2013 43(4):417-423. **MMD**
25. Brady RM, Vom A, Roy MJ, Toovey N, Smith BJ, Moss RM, Hatzis E, Huang DCS, Parisot JP, Yang H, Street IP, Colman PM, Czabotar PE, Baell JB, Lessene G. De-Novo designed library of benzoylureas as inhibitors of BCL-X-L: synthesis, structural and biochemical characterization. *Journal of Medicinal Chemistry*. 2014 57(4):1323-1343. **SBD CBD SBPM CHD**
26. Brady RM, Zhang MM, Gable R, Norton RS, Baell JB. De novo design and synthesis of a mu-conotoxin KIIIA peptidomimetic. *Bioorganic & Medicinal Chemistry Letters*. 2013 23(17):4892-4895. **SBD**
27. Brierley GV, Fung KYC, Purins L, Priebe IK, Tabor B, Lockett T, Nice E, Gibbs P, Tie J, McMurrick P, Moore J, Ruzskiewicz AR, Burgess A, Cosgrove L. Circulating levels of the Wnt antagonist Dkk-3 as a diagnostic marker for colorectal cancer. *Journal of Molecular Biomarkers and Diagnostics*. 2013 S8:0008. **SBD**
28. Brierley GV, Priebe IK, Purins L, Fung KYC, Tabor B, Lockett T, Nice E, Gibbs P, Tie J, McMurrick P, Moore J, Ruzskiewicz A, Burgess A, Cosgrove LJ. Serum concentrations of brain-derived neurotrophic factor (BDNF) are decreased in colorectal cancer patients. *Cancer Biomarkers*. 2013 13(2):67-73. **SBD SBPM**
29. Brumatti G, Salmanidis M, Kok CH, Bilardi RA, Sandow JJ, Silke N, Mason K, Visser J, Jabbour AM, Glaser SP, Okamoto T, Bouillet P, D'Andrea RJ, Ekert PG. HoxA9 regulated Bcl-2 expression mediates survival of myeloid progenitors and the severity of HoxA9-dependent leukemia. *Oncotarget*. 2013 4(11):1933-1947. **CSCD CHD MGC**

30. Bryant PA, Smyth GK, Gooding T, Oshlack A, Harrington Z, Currie B, Carapetis JR, Robins-Browne R, Curtis N. Susceptibility to acute rheumatic fever based on differential expression of genes involved in cytotoxicity, chemotaxis, and apoptosis. *Infection and Immunity*. 2014 82(2):753-761. **BIO**
31. Burberry A, Zeng MY, Ding L, Wicks I, Inohara N, Morrison SJ, Nunez G. Infection mobilizes hematopoietic stem cells through cooperative NOD-like receptor and toll-like receptor signaling. *Cell Host & Microbe*. 2014 15(6):79-91. **INFL**
32. Burgess AW, Henis YI, Hynes NE, Jovin T, Levitzki A, Pinkas-Kramarski R, Yarden Y. EGF receptor family: twisting targets for improved cancer therapies. *Growth Factors*. 2014 32(2):74-81. **SBD**
33. Campbell S, Thibault J, Mehta N, Colman PM, Barry M, Kvensakul M. Structural insight into BH3-domain binding of vaccinia virus anti-apoptotic F1L. *Journal of Virology*. 2014 86:67-8677. **SBD**
34. Carow B, Reuschl AK, Gavier-Widen D, Jenkins BJ, Ernst M, Yoshimura A, Chambers BJ, Rottenberg ME. Critical and independent role for SOCS3 in either myeloid or T cells in resistance to *Mycobacterium tuberculosis*. *PLoS Pathogens*. 2013 9(7):e1003442. **CSCD**
35. Carpinelli MR, Manning MG, Kile BT, Burt RA. Two ENU-induced alleles of *Atp2b2* cause deafness in mice. *PLoS One*. 2013 8(6):e67479. **CBD**
36. Carpinelli MR, Voss AK, Manning MG, Perera AA, Cooray AA, Kile BT, Burt RA. A new mouse model of Canavan leukodystrophy displays hearing impairment due to central nervous system dysmyelination. *Disease Models & Mechanisms*. 2014 7(6):649-657. **CBD DCD**
37. Chakravorty R, Rawlinson D, Zhang A, Markham J, Dowling MR, Wellard C, Zhou JHS, Hodgkin PD. Labour-efficient in vitro lymphocyte population tracking and fate prediction using automation and manual review. *PLoS One*. 2014 9(1):e83251. **IMM**
38. Chalkley RJ, Bandeira N, Chambers MC, Clauser KR, Cottrell JS, Deutsch EW, Kapp EA, Lam HHN, McDonald WH, Neubert TA, Sun RX. Proteome Informatics Research Group (IPRG)_2012: a study on detecting modified peptides in a complex mixture. *Molecular & Cellular Proteomics*. 2014 13(1):360-371. **SBPM**
39. Chandrananda D, Thorne NP, Ganesamoorthy D, Bruno DL, Benjamini Y, Speed TP, Slater HR, Bahlo M. Investigating and correcting plasma DNA sequencing coverage bias to enhance aneuploidy discovery. *PLoS One*. 2014 9(1):e86993. **BIO**
40. Chee J, Ko HJ, Skowera A, Jhala G, Catterall T, Graham KL, Sutherland RM, Thomas HE, Lew AM, Peakman M, Kay TWH, Krishnamurthy B. Effector-memory T cells develop in islets and report islet pathology in type 1 diabetes. *Journal of Immunology*. 2014 192(2):572-580. **IMM**
41. Chen C, Liu Y, Rappaport AR, Kitzing T, Schultz N, Zhao Z, Shroff AS, Dickins RA, Vakoc CR, Bradner JE, Stock W, LeBeau MM, Shannon KM, Kogan S, Zuber J, Lowe SW. MLL3 is a haploinsufficient 7q tumor suppressor in acute myeloid leukemia. *Cancer Cell*. 2014 25(5):652-665. **MMD**
42. Cheung LC, Strickland DH, Howlett M, Ford J, Charles AK, Lyons KM, Brigstock DR, Goldschmeding R, Cole CH, Alexander WS, Kees UR. Connective tissue growth factor is expressed in bone marrow stromal cells and promotes IL-7-dependent B lymphopoiesis. *Haematologica*. 2014 99(7):1149-1156. **CHD**
43. Chevrier S, Emslie D, Shi W, Kratina T, Wellard C, Karnowski A, Eriqi E, Smyth GK, Chowdhury K, Tarlinton D, Corcoran LM. The BTB-ZF transcription factor *Zbtb20* is driven by *Irf4* to promote plasma cell differentiation and longevity. *Journal of Experimental Medicine*. 2014 211(5):827-840. **MIMM BIO IMM**
44. Chevrier S, Kratina T, Emslie D, Karnowski A, Corcoran LM. Germinal center-independent, IgM-mediated autoimmunity in *sanroque* mice lacking *Obf1*. *Immunology and Cell Biology*. 2014 92(1):12-19. **MIMM**
45. Chiu CY, Healer J, Thompson JK, Chen L, Kaul A, Savergave L, Raghuvanshi A, Li Wai Suen CS, Siba PM, Schofield L, Mueller I, Cowman AF, Hansen DS. Association of antibodies to *Plasmodium falciparum* reticulocyte binding protein homolog 5 with protection from clinical malaria. *Frontiers in Microbiology*. 2014 5:314. **INF**
46. Choi J. Guide: a desktop application for analysing gene expression data. *BMC Genomics*. 2013 14:688. **MMD**
47. Chopin M, Seillet C, Chevrier S, Wu L, Wang HS, Morse HC, Belz GT, Nutt SL. Langerhans cells are generated by two distinct PU.1-dependent transcriptional networks. *Journal of Experimental Medicine*. 2013 210(13):2967-2980. **MIMM**
48. Christensen LL, Holm A, Rantala J, Kallioniemi O, Rasmussen MH, Ostenfeld MS, Dagnaes-Hansen F, Oster B, Schepeler T, Tobiasen H, Thorsen K, Sieber OM, Gibbs P, Lamy P, Hansen TF, Jakobsen A, Riising EM, Helin K, Lubinski J, Hagemann-Madsen R, Laurberg S, Orntoft TF, Andersen CL. Functional screening identifies miRNAs influencing apoptosis and proliferation in colorectal cancer. *PLoS One*. 2014 9(6):e96767. **SBPM**
49. Christensen LL, Tobiasen H, Holm A, Schepeler T, Ostenfeld MS, Thorsen K, Rasmussen MH, Birkenkamp-Demtroeder K, Sieber OM, Gibbs P, Lubinski J, Lamy P, group Cs, Laurberg S, Oster B, Hansen KQ, Hagemann-Madsen R, Byskov K, Orntoft TF, Andersen CL. MiRNA-362-3p induces cell cycle arrest through targeting of E2F1, USF2 and PTPN1 and is associated with recurrence of colorectal cancer. *International Journal of Cancer*. 2013 133(1):67-78. **SBPM**
50. Ciprotti M, Chong G, Gan HK, Chan A, Murone C, MacGregor D, Lee FT, Johns TG, Heath JK, Ernst M, Burgess AW, Scott AM. Quantitative intratumoural microdistribution and kinetics of (131)I-huA33 antibody in patients with colorectal carcinoma. *EJNMMI Research*. 2014 4:22. **CSCD DCD SBD**
51. Cobbold SA, Vaughan AM, Lewis IA, Painter HJ, Camargo N, Perlman DH, Fishbaugher M, Healer J, Cowman AF, Kappe SHI, Llinas M. Kinetic flux profiling elucidates two independent acetyl-CoA biosynthetic pathways in *Plasmodium falciparum*. *Journal of Biological Chemistry*. 2013 288(51):36338-36350. **INF**

52. Condon SM, Mitsuuchi Y, Deng Y, Laporte MG, Rippin SR, Haimowitz T, Alexander MD, Kumar PT, Hendi MS, Lee YH, Benetatos CA, Yu G, Kapoor GS, Neiman E, Seipel ME, Burns JM, Graham MA, McKinlay MA, Li X, Wang J, Shi Y, Feltham R, Bettjeman B, Cumming MH, Vince JE, Khan N, Silke J, Day CL, Chunduru SK. Birinapant, a smac-mimetic with improved tolerability for the treatment of solid tumors and hematological malignancies. *Journal of Medicinal Chemistry*. 2014 57(9):3666-3677. **CSCD INFL**
53. Cook W, Moujalled D, Ralph T, Lock P, Young S, Murphy J, Vaux D. RIPK1- and RIPK3-induced cell death mode is determined by target availability. *Cell Death and Differentiation*. 2014 Jun 6. (epub ahead of print) **CSCD INFL CHD**
54. Corcoran L, Emslie D, Kratina T, Shi W, Hirsch S, Taubenheim N, Chevrier S. Oct2 and Obf1 as facilitators of B:T Cell collaboration during a humoral immune response. *Frontiers in Immunology*. 2014 5:108. **MIMM BIO**
55. Cross G, Coles K, Nikpour M, Moore O, Denholm J, McBryde E, Eisen D, Warigi B, CARTER R, Pandey S, Harino P, Siba P, Coulter C, Mueller I, Phuanukoannon S, Pellegrini M. TB incidence and characteristics in the remote gulf province of Papua New Guinea: a prospective study. *BMC Infectious Diseases*. 2014 14:93. **INF**
56. D'Cruz AA, Kershaw NJ, Chiang JJ, Wang MK, Nicola NA, Babon JJ, Gack MU, Nicholson SE. Crystal structure of the TRIM25 B30.2 (PRYSPRY) domain: a key component of antiviral signalling. *Biochemical Journal*. 2013 456:231-240. **CHD SBD INFL**
57. Dagley LF, White CA, Liao Y, Shi W, Smyth GK, Orian JM, Emili A, Purcell AW. Quantitative proteomic profiling reveals novel region-specific markers in the adult mouse brain. *Proteomics*. 2014 14(2-3):241-261. **INFL BIO**
58. Dahan-Pasternak N, Nasereddin A, Kolevzon N, Pe'er M, Wong W, Shinder V, Turnbull L, Whitchurch CB, Elbaum M, Gilberger TW, Yavin E, Baum J, Dzikowski R. PfSec13 is an unusual chromatin-associated nucleoporin of *Plasmodium falciparum* that is essential for parasite proliferation in human erythrocytes. *Journal of Cell Science*. 2013 126(14):3055-3069. **INF**
59. Dai Z, Sheridan JM, Gearing LJ, Moore DL, Su S, Dickins RA, Blewitt ME, Ritchie ME. shRNA-seq data analysis with edgeR [v1; ref status: indexed, <http://f1000r.es/38s>]. *F1000Research*. 2014 3(95)**MMD SCC**
60. Daxinger L, Harten SK, Oey H, Epp T, Isbel L, Huang E, Whitelaw N, Apedaile A, Sorolla A, Yong J, Bharti V, Sutton J, Ashe A, Pang ZY, Wallace N, Gerhardt DJ, Blewitt ME, Jeddelloh JA, Whitelaw E. An ENU mutagenesis screen identifies novel and known genes involved in epigenetic processes in the mouse. *Genome Biology*. 2013 14(9):R96. **MMD**
61. Day F, Muranyi A, Singh S, Shanmugam K, Williams D, Byrne D, Pham K, Palmieri M, Tie J, Grogan T, Gibbs P, Sieber O, Waring P, Desai J. A mutant BRAF V600E-specific immunohistochemical assay: correlation with molecular mutation status and clinical outcome in colorectal cancer. *Targeted Oncology*. 2014 May 27. (epub ahead of print) **SBPM**
62. Deakin JE, Cooper DW, Sinclair JJ, Herbert CA, Renfree MB, Wakefield M. Towards an understanding of the genetic basis behind 1080 (sodium fluoroacetate) tolerance and an investigation of the candidate gene ACO2. *Australian Journal of Zoology*. 2013 61(1):69-77. **BIO**
63. Delbridge AR, Grabow S, Bouillet P, Adams JM, Strasser A. Functional antagonism between pro-apoptotic BIM and anti-apoptotic BCL-XL in MYC-induced lymphomagenesis. *Oncogene*. 2014 May 26. (epub ahead of print) **MGC**
64. Dewhurst SM, McGranahan N, Burrell RA, Rowan AJ, Gronroos E, Endesfelder D, Joshi T, Mouradov D, Gibbs P, Ward RL, Hawkins NJ, Szallasi Z, Sieber OM, Swanton C. Tolerance of whole-genome doubling propagates chromosomal instability and accelerates cancer genome evolution. *Cancer Discovery*. 2014 4(2):175-185. **SBPM**
65. Diesch J, Sanij E, Gilan O, Love C, Tran H, Fleming NI, Ellul J, Amalia M, Haviv I, Pearson RB, Tulchinsky E, Mariadason JM, Sieber OM, Hannan RD, Dhillon AS. Widespread FRA1-dependent control of mesenchymal transdifferentiation programs in colorectal cancer cells. *PLoS One*. 2014 9(3):e88950. **SBPM**
66. Ding YT, Wilkinson A, Idris A, Fancke B, O'Keefe M, Khalil D, Ju XS, Lahoud MH, Caminschi I, Shortman K, Rodwell R, Vuckovic S, Radford KJ. FLT3-ligand treatment of humanized mice results in the generation of large numbers of CD141(+) and CD1c(+) dendritic cells in vivo. *Journal of Immunology*. 2014 192(4):1982-1989. **IMM**
67. Domingo E, Church DN, Sieber O, Ramamoorthy R, Yanagisawa Y, Johnstone E, Davidson B, Kerr DJ, Tomlinson IPM, Midgley R. Evaluation of PIK3CA mutation as a predictor of benefit from nonsteroidal anti-inflammatory drug therapy in colorectal cancer. *Journal of Clinical Oncology*. 2013 31(34):4297-4305. **SBPM**
68. Domingo E, Ramamoorthy R, Oukrif D, Rosmarin D, Presz M, Wang HT, Pulker H, Lockstone H, Hveem T, Cranston T, Danielsen H, Novelli M, Davidson B, Xu ZZ, Molloy P, Johnstone E, Holmes C, Midgley R, Kerr D, Sieber O, Tomlinson I. Use of multivariate analysis to suggest a new molecular classification of colorectal cancer. *Journal of Pathology*. 2013 229(3):441-448. **SBPM**
69. Dowling MR, Kan A, Heinzl S, Zhou JH, Marchingo JM, Wellard CJ, Markham JF, Hodgkin PD. Stretched cell cycle model for proliferating lymphocytes. *Proceedings of the National Academy of Sciences of the United States of America*. 2014 111(17):6377-6382. **IMM**
70. Dworkin S, Simkin J, Darido C, Partridge DD, Georgy SR, Caddy J, Wilanowski T, Lieschke GJ, Doggett K, Heath JK, Jane SM. Rainyhead-like 3 regulation of endothelin-1 in the pharyngeal endoderm is critical for growth and development of the craniofacial skeleton. *Mechanisms of Development*. 2014 Jun 7. (epub ahead of print) **DCD**
71. Elliott KL, Catimel B, Church NL, Coates JL, Burgess AW, Layton MJ, Faux MC. Immunopurification of adenomatous polyposis coli (APC) proteins. *BMC Research Notes*. 2013 6:429. **SBD**

72. Elsum IA, Yates LL, Pearson HB, Phesse TJ, Long F, O'Donoghue R, Ernst M, Cullinane C, Humbert PO. Scribble heterozygosity predisposes to lung cancer and cooperates with KRas hyperactivation to accelerate lung cancer progression in vivo. *Oncogene*. 2013 Nov 25. (epub ahead of print) **CSCD**
73. Eltahla AA, Lackovic K, Marquis C, Eden JS, White PA. A fluorescence-based high-throughput screen to identify small compound inhibitors of the genotype 3a hepatitis C virus RNA Polymerase. *Journal of Biomolecular Screening*. 2013 18(9):1027-1034. **CBD**
74. Etemadi N, Webb A, Bankovacki A, Silke J, Nachbur U. Progranulin does not inhibit TNF and lymphotoxin-alpha signalling through TNF receptor 1. *Immunology and Cell Biology*. 2013 91(10):661-664. **CSCD SBPM**
75. Ferreira T, Wilson SR, Choi YG, Risso D, Dudoit S, Speed TP, Ngai J. Silencing of odorant receptor genes by G protein beta gamma signaling ensures the expression of one odorant receptor per olfactory sensory neuron. *Neuron*. 2014 81(4):847-859. **BIO**
76. Figgett WA, Fairfax K, Vincent FB, Le Page MA, Katik I, Deliyanti D, Quah PS, Verma P, Grumont R, Gerondakis S, Hertzog P, O'Reilly LA, Strasser A, Mackay F. The TACI receptor regulates T-cell-independent marginal zone B cell responses through innate activation-induced cell death. *Immunity*. 2013 39(3):573-583. **MGC**
77. Fourlanos S, Elkassaby S, Varney M, Colman P, Harrison L. Higher body mass index in adults at diagnosis of the slowly progressive form of type 1 diabetes mellitus is associated with lower risk HLA genes. *Diabetes Research and Clinical Practice*. 2014 104(3):e69-71. **MMD**
78. Frederico B, Chao B, May J, Belz G, Stevenson P. A murid gamma-herpesviruses exploits normal splenic immune communication routes for systemic spread. *Cell Host & Microbe*. 2014 15(4):457-470. **MIMM**
79. Fu Y, Mukhamedova N, Ip S, D'Souza W, Henley KJ, DiTommaso T, Kesani R, Ditiatkovski M, Jones L, Lane RM, Jennings G, Smyth IM, Kile BT, Sviridov D. ABCA12 regulates ABCA1-dependent cholesterol efflux from macrophages and the development of atherosclerosis. *Cell Metabolism*. 2013 18(2):225-238. **CHD CBD**
80. Fung K, Priebe I, Purins L, Tabor B, Brierley G, Lockett T, Nice E, Gibbs P, Tie J, McMurrick P, Moore J, Ruszkiewicz A, Burgess A, Cosgrove L. Performance of serum lipocalin 2 as a diagnostic marker for colorectal cancer. *Cancer Biomarkers*. 2013 13(2):75-79. **SBD SBPM**
81. Gandolfo LC, Bahlo M, Speed TP. Dating rare mutations from small samples with dense marker data. *Genetics*. 2014 May 30. (epub ahead of print) **BIO**
82. Gerlic M, Croker BA, Cengia LH, Moayeri M, Kile BT, Masters SL. NLRP1a expression in Srebp-1a-deficient mice. *Cell Metabolism*. 2014 19(3):345-346. **INFL CBD CHD**
83. Gianatti EJ, Dupuis P, Hoermann R, Strauss BJ, Wentworth JM, Zajac JD, Grossmann M. Effect of testosterone treatment on glucose metabolism in men with type 2 diabetes: a randomized controlled trial. *Diabetes Care*. 2014 37(8):2098-2107. **MMD**
84. Godde NJ, Sheridan JM, Smith LK, Pearson HB, Britt KL, Galea RC, Yates LL, Visvader JE, Humbert PO. Scribble modulates the MAPK/Fra1 pathway to disrupt luminal and ductal integrity and suppress tumour formation in the mammary gland. *PLoS Genetics*. 2014 10(5):e1004323. **SCC**
85. Good-Jacobson KL, Chen Y, Voss AK, Smyth GK, Thomas T, Tarlinton D. Regulation of germinal center responses and B-cell memory by the chromatin modifier MOZ. *Proceedings of the National Academy of Sciences of the United States of America*. 2014 111(26):9585-9590. **IMM BIO DCD**
86. Goodman C, Mollard V, Louie T, Holloway G, Watson K, McFadden G. Apicoplast acetyl Co-A carboxylase of the human malaria parasite is not targeted by cyclohexanedione herbicides. *International Journal for Parasitology*. 2014 44(5):285-289. **CBD**
87. Grevén DE, Cohen ES, Gerlag DM, Campbell J, Woods J, Davis N, van Nieuwenhuijze A, Lewis A, Heasmen S, McCourt M, Corkill D, Dodd A, Elvin J, Statache G, Wicks IP, Anderson IK, Nash A, Sleeman MA, Tak PP. Preclinical characterisation of the GM-CSF receptor as a therapeutic target in rheumatoid arthritis. *Annals of the Rheumatic Diseases*. 2014 Jun 16. (epub ahead of print) **INFL**
88. Halliday JS, Harrison GL, Brown A, Hunter JG, Bendall R, Penny D, Toatu T, Abdad MY, Klenerman P, Barnes E, Dalton HR. Hepatitis E virus infection, Papua New Guinea, Fiji, and Kiribati, 2003-2005. *Emerging Infectious Diseases*. 2014 20(6):1057-1058. **INF**
89. Hansen DS, Ryg-Cornejo V, Ioannidis LJ, Chiu CY, Ly A, Nie CQ, Scalzo AA, Schofield L. The contribution of natural killer complex loci to the development of experimental cerebral malaria. *PLoS One*. 2014 9(4):e93268. **INF**
90. Hanssen E, Dekiwadia C, Riglar DT, Rug M, Lemgruber L, Cowman AF, Cyrklaff M, Kudryashev M, Frischknecht F, Baum J, Ralph SA. Electron tomography of *Plasmodium falciparum* merozoites reveals core cellular events that underpin erythrocyte invasion. *Cellular Microbiology*. 2013 15(9):1457-1472. **INF**
91. Hare LM, Phesse TJ, Waring PM, Montgomery KG, Kinross KM, Mills K, Roh V, Heath JK, Ramsay RG, Ernst M, Phillips WA. Physiological expression of the PI3K-activating mutation Pik3ca(H1047R) combines with Apc loss to promote development of invasive intestinal adenocarcinomas in mice. *Biochemical Journal*. 2014 458(2):251-258. **CSCD DCD**
92. Harrison GLA, Pryor J, Malani J, Supuri M, Masta A, Teriboriki B, Toatu T, Penny D, Allain JP, Barnes E, Pybus OG, Klenerman P. Infection frequency of hepatitis C virus and IL28B haplotypes in Papua New Guinea, Fiji, and Kiribati. *PLoS One*. 2013 8(8):e66749. **INF**

93. Harten SK, Bruxner TJ, Bharti V, Blewitt M, Nguyen TM, Whitelaw E, Epp T. The first mouse mutants of D14Abb1e (Fam208a) show that it is critical for early development. *Mammalian Genome*. 2014 25(7-8):293-303. **MMD**
94. Hawkins B, Lindqvist L, Nhu D, Sharp P, Segal D, Powell A, Campbell M, Ryan E, Chambers J, White J, Rizzacasa M, Lessene G, Huang D, Burns C. Simplified silvestrol analogues with potent cytotoxic activity. *ChemMedChem*. 2014 9(7):1556-1566. **CSCD CHD CBD**
95. Hawkins ED, Turner ML, Wellard CJ, Zhou JHS, Dowling MR, Hodgkin PD. Quantal and graded stimulation of B lymphocytes as alternative strategies for regulating adaptive immune responses. *Nature Communications*. 2013 4:2406. **IMM**
96. Hawthorne WJ, Salvaris EJ, Phillips P, Hawkes J, Liuwantara D, Burns H, Barlow H, Stewart AB, Peirce SB, Hu M, Lew AM, Robson SC, Nottle MB, D'Apice AJ, O'Connell PJ, Cowan PJ. Control of IBMIR in neonatal porcine islet xenotransplantation in baboons. *American Journal of Transplantation* 2014 14(6):1300-1309. **IMM**
97. He J, Tsai L, Leong Y, Hu X, Ma C, Chevalier N, Sun X, Vandenberg K, Rockman S, Ding Y, Zhu L, Wei W, Wang C, Karnowski A, Belz G, Ghali J, Cook M, Riminton D, Veillette A, Schwartzberg P, Mackay F, Brink R, Tangye S, Vinuesa C, Mackay C, Li Z, Yu D. Circulating precursor CCR7(lo)PD-1(hi) CXCR5(+) CD4(+) T cells indicate Tfh cell activity and promote antibody responses upon antigen reexposure. *Immunity*. 2013 39(4):770-781. **MIMM**
98. Healer J, Thompson JK, Riglar DT, Wilson DW, Chiu YHC, Miura K, Chen L, Hodder AN, Long CA, Hansen DS, Baum J, Cowman AF. Vaccination with conserved regions of erythrocyte-binding antigens induces neutralizing antibodies against multiple strains of *Plasmodium falciparum*. *PLoS One*. 2013 8(9):e72504. **INF**
99. Heinemann C, Heink S, Petermann F, Vasanthakumar A, Rothhammer V, Doorduyn E, Mitsdoerffer M, Sie C, Prazeres da Costa O, Buch T, Hemmer B, Oukka M, Kallies A, Korn T. IL-27 and IL-12 oppose pro-inflammatory IL-23 in CD4+ T cells by inducing Blimp1. *Nature Communications*. 2014 5:3770. **MIMM**
100. Henry KM, Pase L, Ramos-Lopez CF, Lieschke GJ, Renshaw SA, Reyes-Aldasoro CC. PhagoSight: An open-source MATLAB (R) package for the analysis of fluorescent neutrophil and macrophage migration in a zebrafish model. *PLoS One*. 2013 8(8):e72636. **CHD**
101. Hercus TR, Barry EF, Dottore M, McClure BJ, Webb AI, Lopez AF, Young IG, Murphy JM. High yield production of a soluble human interleukin-3 variant from *E. coli* with wild-type bioactivity and improved radiolabeling properties. *PLoS One*. 2013 8(8):e74376. **SBD CHD SBPM**
102. Herold MJ, Rohrbeck L, Lang MJ, Grumont R, Gerondakis S, Tai L, Bouillet P, Kaufmann T, Strasser A. Foxo-mediated Bim transcription is dispensable for the apoptosis of hematopoietic cells that is mediated by this BH3-only protein. *EMBO Reports*. 2013 14(11):992-998. **MGC**
103. Hetzel MW, Choudhury AA, Pulford J, Ura Y, Whittaker M, Siba PM, Mueller I. Progress in mosquito net coverage in Papua New Guinea. *Malaria Journal*. 2014 13(1):242. **INF**
104. Hill DL, Eriksson EM, Suen C, Chiu CY, Ryg-Cornejo V, Robinson LJ, Siba PM, Mueller I, Hansen DS, Schofield L. Oponising antibodies to *P. falciparum* merozoites associated with immunity to clinical malaria. *PLoS One*. 2013 8(9):e74627. **INF**
105. Hirokawa Y, Yip KH, Tan CW, Burgess AW. Colonic myofibroblast cell line stimulates colonoid formation. *American Journal of Physiology Gastrointestinal and Liver Physiology*. 2014 306(7):G547-556. **SBD**
106. Holik AZ, Krzystyniak J, Young M, Richardson K, Jarde T, Chambon P, Shorning BY, Clarke AR. Brg1 is required for stem cell maintenance in the murine intestinal epithelium in a tissue-specific manner. *Stem Cells*. 2013 31(11):2457-2466. **SCC**
107. Howson LJ, Morris KM, Kobayashi T, Tovar C, Kreiss A, Papenfuss AT, Corcoran L, Belov K, Woods GM. Identification of dendritic cells, B cell and T cell subsets in Tasmanian devil lymphoid tissue; evidence for poor immune cell infiltration into devil facial tumors. *Anatomical Record*. 2014 297(5):925-938. **BIO MIMM**
108. Hoy A, Lundie R, Ivens A, Quintana J, Nausch N, Forster T, Jones F, Kabatereine N, Dunne D, Mutapi F, Macdonald A, Buck A. Parasite-derived microRNAs in host serum as novel biomarkers of helminth infection. *PLoS Neglected Tropical Diseases*. 2014 8(2):e2701. **INF**
109. Humphries J, Penno M, Weiland F, Klingler-Hoffmann M, Zuber A, Boussioutas A, Ernst M, Hoffmann P. Identification and validation of novel candidate protein biomarkers for the detection of human gastric cancer. *Biochimica et Biophysica Acta-Proteins and Proteomics*. 2014 1844(5):1051-1058. **CSCD**
110. Irtegun S, Wood R, Lackovic K, Schweiggert J, Ramdzan YM, Huang DC, Mulhern TD, Hatters DM. A biosensor of Src family kinase conformation by exposable tetracysteine useful for cell-based screening. *ACS Chemical Biology*. 2014 9(7):1426-1431. **CHD**
111. Jiao Z, Bedoui S, Brady J, Walter A, Chopin M, Carrington E, Sutherland R, Nutt S, Zhang Y, Ko H, Wu L, Lew A, Zhan Y. The closely related CD103+ dendritic cells (DCs) and lymphoid-resident CD8+ DCs differ in their inflammatory functions. *PLoS One*. 2014 9(3):e91126. **IMM MIMM**
112. Johanson TM, Lew AM, Chong MMW. MicroRNA-independent roles of the RNase III enzymes Drosha and Dicer. *Open Biology*. 2013 3(10):130144. **IMM**
113. Josefsson E, Burnett D, Lebois M, Debrincat M, White M, Henley K, Lane R, Moujalled D, Preston S, O'Reilly L, Pellegrini M, Metcalf D, Strasser A, Kile B. Platelet production proceeds independently of the intrinsic and extrinsic apoptosis pathways. *Nature Communications*. 2014 5:3455. **MGC CSCD CHD CBD INF**
114. Kallies A. T cell immunosurveillance controls B lymphoma development. *Oncoimmunology*. 2014 3:e28697. **MIMM**

115. Kaiser FJ, Ansari M, Braunholz D, Concepcion Gil-Rodriguez M, Decroos C, Wilde JJ, Fincher CT, Kaur M, Bando M, Amor DJ, Atwal PS, Bahlo M, Bowman CM, Bradley JJ, Brunner HG, Clark D, Del Campo M, Di Donato N, Diakumis P, Dubbs H, Dymont DA, Eckhold J, Ernst S, Ferreira JC, Francey LJ, Gehlken U, Guillen-Navarro E, Gyftodimou Y, Hall BD, Hennekam R, Hudgins L, Hullings M, Hunter JM, Yntema H, Innes AM, Kline AD, Krumina Z, Lee H, Leppig K, Lynch SA, Mallozzi MB, Mannini L, McKee S, Mehta SG, Micule I, Care4Rare Canada C, Mohammed S, Moran E, Mortier GR, Moser JA, Noon SE, Nozaki N, Nunes L, Pappas JG, Penney LS, Perez-Aytes A, Petersen MB, Puisac B, Revencu N, Roeder E, Saitta S, Scheuerle AE, Schindeler KL, Siu VM, Stark Z, Strom SP, Thiese H, Vater I, Willems P, Williamson K, Wilson LC, University of Washington Center for Mendelian G, Hakonarson H, Quintero-Rivera F, Wierzbza J, Musio A, Gillessen-Kaesbach G, Ramos FJ, Jackson LG, Shirahige K, Pie J, Christianson DW, Krantz ID, Fitzpatrick DR, Deardorff MA. Loss-of-function HDAC8 mutations cause a phenotypic spectrum of Cornelia de Lange syndrome-like features, ocular hypertelorism, large fontanelle and X-linked inheritance. *Human Molecular Genetics*. 2014 23(11):2888-2900. **BIO**
116. Kan A, Tan YH, Angrisano F, Hanssen E, Rogers KL, Whitehead L, Mollard VP, Cozijnsen A, Delves MJ, Crawford S, Sinden RE, McFadden GI, Leckie C, Bailey J, Baum J. Quantitative analysis of *Plasmodium ookinete* motion in three dimensions suggests a critical role for cell shape in the biomechanics of malaria parasite gliding motility. *Cellular Microbiology*. 2014 16(5):734-750. **INF SBPM**
117. Kanodia S, Kumar G, Rizzi L, Pedretti A, Hodder AN, Romeo S, Malhotra P. Synthetic peptides derived from the C-terminal 6kDa region of *Plasmodium falciparum* SERA5 inhibit the enzyme activity and malaria parasite development. *Biochimica et Biophysica Acta*. 2014 1840(9):2765-2775. **INF**
118. Kats LM, Fernandez KM, Glenister FK, Herrmann S, Buckingham DW, Siddiqui G, Sharma L, Bamert R, Lucet I, Guillotte M, Mercereau-Puijalon O, Cooke BM. An exported kinase (FIKK4.2) that mediates virulence-associated changes in *Plasmodium falciparum*-infected red blood cells. *International Journal for Parasitology*. 2014 44(5):319-328. **CBD**
119. Kedzierski L, Linossi EM, Kolesnik TB, Day EB, Bird NL, Kile BT, Belz GT, Metcalf D, Nicola NA, Kedzierska K, Nicholson SE. Suppressor of cytokine signaling 4 (SOCS4) protects against severe cytokine storm and enhances viral clearance during influenza infection. *PLoS Pathogens*. 2014 10(5):e1004134. **INFL CHD CBD MIMM**
120. Keightley MC, Crowhurst MO, Layton JE, Beilharz T, Markmiller S, Varma S, Hogan BM, de Jong-Curtain TA, Heath JK, Lieschke GJ. In vivo mutation of pre-mRNA processing factor 8 (Prpf8) affects transcript splicing, cell survival and myeloid differentiation. *FEBS Letters*. 2013 587(14):2150-2157. **CBD DCD**
121. Kelly GL, Grabow S, Glaser SP, Fitzsimmons L, Aubrey BJ, Okamoto T, Valente LJ, Robati M, Tai L, Fairlie WD, Lee EF, Lindstrom MS, Wiman KG, Huang DCS, Bouillet P, Rowe M, Rickinson AB, Herold MJ, Strasser A. Targeting of MCL-1 kills MYC-driven mouse and human lymphomas even when they bear mutations in p53. *Genes & Development*. 2014 28(1):58-70. **MGC CHD CBD SBD**
122. Kennedy C, Najdovska M, Tye H, McLeod L, Yu L, Jarnicki A, Bhathal P, Putoczki T, Ernst M, Jenkins B. Differential role of MyD88 and Mal/Tirap in TLR2-mediated gastric tumorigenesis. *Oncogene*. 2014 33(19):2540-2546. **CSCD INFL**
123. Kershaw NJ, Laktyushin A, Nicola NA, Babon JJ. Reconstruction of an active SOCS3-based E3 ubiquitin ligase complex in vitro: identification of the active components and JAK2 and gp130 as substrates. *Growth Factors*. 2014 32(1):1-10. **CHD SBD**
124. Khaw SL, Merino D, Anderson MA, Glaser SP, Bouillet P, Roberts AW, Huang DCS. Both leukaemic and normal peripheral B lymphoid cells are highly sensitive to the selective pharmacological inhibition of pro-survival Bcl-2 with ABT-199. *Leukemia*. 2014 28(6):1207-1215. **CHD MGC CBD**
125. Killick E, Morgan R, Launchbury F, Bancroft E, Page E, Castro E, Kote-Jarai Z, Aprikian A, Blanco I, Clowes V, Domchek S, Douglas F, Eccles D, Evans DG, Harris M, Kirk J, Lam J, Lindeman G, Mitchell G, Pachter N, Selkirk C, Tucker K, Zgajnar J, Eeles R, Pandha H. Role of Engrailed-2 (EN2) as a prostate cancer detection biomarker in genetically high risk men. *Scientific Reports*. 2013 3:2059. **SCC**
126. Kim SY, Jacob L, Speed TP. Combining calls from multiple somatic mutation-callers. *BMC Bioinformatics*. 2014 15(1):154. **BIO**
127. Klein KM, Bromhead CJ, Smith KR, O'Callaghan CJ, Corcoran SJ, Heron SE, Iona X, Hodgson BL, McMahon JM, Lawrence KM, Scheffer IE, Dibbens LM, Bahlo M, Berkovic SF. Autosomal dominant vasovagal syncope clinical features and linkage to chromosome 15q26. *Neurology*. 2013 80(16):1485-1493. **BIO**
128. Knowler KC, Chand AL, Eriksson N, Takagi K, Miki Y, Sasano H, Visvader JE, Lindeman GJ, Funder JW, Fuller PJ, Simpson ER, Tilley WD, Leedman PJ, Graham J, Muscat GE, Clarke CL, Clyne CD. Distinct nuclear receptor expression in stroma adjacent to breast tumors. *Breast Cancer Research and Treatment*. 2013 142(1):211-223. **SCC**
129. Ko H, Brady J, Ryg-Cornejo V, Hansen D, Vremec D, Shortman K, Zhan Y, Lew A. GM-CSF-responsive monocyte-derived dendritic cells are pivotal in Th17 pathogenesis. *Journal of Immunology* 2014 192(5):2202-2209. **INF IMM**
130. Ko HJ, Chee J, Sutherland RM, Thomas HE, Zhan Y, Krishnamurthy B, Kay TW, Lew AM. Functional cytotoxic T lymphocytes against IGRP predict diabetes in the non-obese diabetic mouse. *Immunology and Cell Biology*. 2014 Apr 29. (epub ahead of print) **IMM**
131. Koehler MF, Bergeron P, Choo EF, Lau K, Ndubaku C, Dudley D, Gibbons P, Sleebs BE, Rye CS, Nikolakopoulos G, Bui C, Kulasegaram S, Kersten WJ, Smith BJ, Czabotar PE, Colman PM, Huang DC, Baell JB, Watson KG, Hasvold L, Tao ZF, Wang L, Souers AJ, Elmore SW, Flygare JA, Fairbrother WJ, Lessene G. Structure-guided resccaffolding of selective antagonists of BCL-XL. *ACS Medicinal Chemistry Letters*. 2014 5(6):662-667. **CBD SBD CHD**

132. Koenig MN, Naik E, Rohrbeck L, Herold MJ, Trounson E, Bouillet P, Thomas T, Voss AK, Strasser A, Coultas L. Pro-apoptotic BIM is an essential initiator of physiological endothelial cell death independent of regulation by FOXO3. *Cell Death and Differentiation*. 2014 Jun 27. (epub ahead of print) **MGC MMD DCD**
133. Koepfli C, Colborn KL, Kiniboro B, Lin E, Speed TP, Siba PM, Felger I, Mueller I. A high force of *Plasmodium vivax* blood-stage infection drives the rapid acquisition of immunity in Papua New Guinean children. *PLoS Neglected Tropical Diseases*. 2013 7(9):e2403. **BIO INF**
134. Kozer N, Barua D, Henderson C, Nice EC, Burgess AW, Hlavacek WS, Clayton AH. Recruitment of the adaptor protein Grb2 to EGFR tetramers. *Biochemistry*. 2014 53(16):2594-2604. **SBD**
135. Krishnan T, Winship A, Sonderegger S, Menkhorst E, Horne AW, Brown J, Zhang JG, Nicola NA, Tong S, Dimitriadis E. The role of leukemia inhibitory factor in tubal ectopic pregnancy. *Placenta*. 2013 34(11):1014-1019. **CHD**
136. Kuang ZH, Zhang MM, Gupta K, Gajewiak J, Gulyas J, Balaram P, Rivier JE, Olivera BM, Yoshikami D, Bulaj G, Norton RS. Mammalian neuronal sodium channel blocker mu-Conotoxin BullIB has a structured N-terminus that influences potency. *ACS Chemical Biology*. 2013 8(6):1344-1351. **SBD**
137. Kueh HY, Champhekar A, Nutt SL, Elowitz MB, Rothenberg EV. Positive feedback between PU.1 and the cell cycle controls myeloid differentiation. *Science*. 2013 341(6146):670-673. **MIMM**
138. Labi V, Woess C, Tuzlak S, Erlacher M, Bouillet P, Strasser A, Tzankov A, Villunger A. Deregulated cell death and lymphocyte homeostasis cause premature lethality in mice lacking the BH3-only proteins Bim and Bmf. *Blood*. 2014 123(17):2652-2662. **MGC**
139. Laman M, Moore BR, Benjamin J, Padapu N, Tarongka N, Siba P, Betuela I, Mueller I, Robinson LJ, Davis TME. Comparison of an assumed versus measured leucocyte count in parasite density calculations in Papua New Guinean children with uncomplicated malaria. *Malaria Journal*. 2014 13:145. **INF**
140. Lau LS, Fernandez-Ruiz D, Mollard V, Sturm A, Neller MA, Cozijnsen A, Gregory JL, Davey GM, Jones CM, Lin YH, Haque A, Engwerda CR, Nie CQ, Hansen DS, Murphy KM, Papenfuss AT, Miles JJ, Burrows SR, de Koning-Ward T, McFadden GI, Carbone FR, Crabb BS, Heath WR. CD8+ T cells from a novel T cell receptor transgenic mouse induce liver-stage immunity that can be boosted by blood-stage infection in rodent malaria. *PLoS Pathogens*. 2014 10(5):e1004135. **INF BIO**
141. Law CW, Chen Y, Shi W, Smyth GK. Voom: precision weights unlock linear model analysis tools for RNA-seq read counts. *Genome Biology*. 2014 15(2):R29. **BIO**
142. Lee SCW, Phipson B, Hyland CD, Leong HS, Allan RS, Lun A, Hilton DJ, Nutt SL, Blewitt ME, Smyth GK, Alexander WS, Majewski IJ. Polycomb repressive complex 2 (PRC2) suppresses E mu-myc lymphoma. *Blood*. 2013 122(15):2654-2663. **CHD MMD BIO MIMM**
143. Li J, Doyle MA, Saeed I, Wong SQ, Mar V, Goode DL, Caramia F, Doig K, Ryland GL, Thompson ER, Hunter SM, Halgamuge SK, Ellul J, Dobrovic A, Campbell IG, Papenfuss AT, McArthur GA, Tothill RW. Bioinformatics pipelines for targeted resequencing and whole-exome sequencing of human and mouse genomes: a virtual appliance approach for instant deployment. *PLoS One*. 2014 9(4):e95217. **BIO**
144. Li R, Doherty J, Antonipillai J, Chen S, Devlin M, Visser K, Baell J, Street I, Anderson RL, Bernard O. LIM kinase inhibition reduces breast cancer growth and invasiveness but systemic inhibition does not reduce metastasis in mice. *Clinical & Experimental Metastasis*. 2013 30(4):483-495. **SBPM**
145. Li S, Lefranc MP, Miles JJ, Alamyar E, Giudicelli V, Duroux P, Freeman JD, Corbin VDA, Scheerlinck JP, Frohman MA, Cameron PU, Plebanski M, Loveland B, Burrows SR, Papenfuss AT, Gowans EJ. IMGT/HighV QUEST paradigm for T cell receptor IMGT clonotype diversity and next generation repertoire immunoprofiling. *Nature Communications*. 2013 4:2333. **BIO**
146. Liao Y, Smyth GK, Shi W. featureCounts: an efficient general purpose program for assigning sequence reads to genomic features. *Bioinformatics* 2014 30(7):923-930. **BIO**
147. Liddel SA, Dziegielewska KM, Ek CJ, Habgood MD, Bauer H, Bauer HC, Lindsay H, Wakefield MJ, Strazielle N, Kratzer I, Mollgard K, Ghersi-Egea JF, Saunders NR. Mechanisms that determine the internal environment of the developing brain: a transcriptomic, functional and ultrastructural approach. *PLoS One*. 2013 8(7):e65629. **BIO**
148. Liew SH, Vaithyanathan K, Cook M, Bouillet P, Scott CL, Kerr JB, Strasser A, Findlay JK, Hutt KJ. Loss of the proapoptotic BH3-only protein BCL-2 modifying factor prolongs the fertile life span in female mice. *Biology of Reproduction*. 2014 90(4):77. **MGC SCC**
149. Lim EJ, El Khobar K, Chin R, Earnest-Silveira L, Angus PW, Bock CT, Nachbur U, Silke J, Torresi J. Hepatitis C-induced hepatocyte cell death and protection by inhibition of apoptosis. *Journal of General Virology*. 2014 Jun 27. (epub ahead of print) **CSCD**
150. Lim SC, Smith KR, Stroud DA, Compton AG, Tucker EJ, Dasvarma A, Gandolfo LC, Marum JE, McKenzie M, Peters HL, Mowat D, Procopis PG, Wilcken B, Christodoulou J, Brown GK, Ryan MT, Bahlo M, Thorburn DR. A founder mutation in PET100 causes isolated complex IV deficiency in Lebanese individuals with Leigh Syndrome. *American Journal of Human Genetics*. 2014 94(2):209-222. **BIO**
151. Lindqvist LM, Heinlein M, Huang DC, Vaux DL. Prosurvival Bcl-2 family members affect autophagy only indirectly, by inhibiting Bax and Bak. *Proceedings of the National Academy of Sciences of the United States of America*. 2014 111(23):8512-8517. **CSCD CHD**

152. Linossi EM, Chandrashekar IR, Kolesnik TB, Murphy JM, Webb AI, Willson TA, Kedzierski L, Bullock AN, Babon JJ, Norton RS, Nicola NA, Nicholson SE. Suppressor of cytokine signaling (SOCS) 5 utilises distinct domains for regulation of JAK1 and interaction with the adaptor protein Shc-1. *PLoS One*. 2013 8(8):e70536. **CHD INFL SBD SBPM MMD**
153. Liu GJ, Cimmino L, Jude JG, Hu Y, Witkowski MT, McKenzie MD, Kartal-Kaess M, Best SA, Tuohey L, Liao Y, Shi W, Mullighan CG, Farrar MA, Nutt SL, Smyth GK, Zuber J, Dickins RA. Pax5 loss imposes a reversible differentiation block in B-progenitor acute lymphoblastic leukemia. *Genes & Development*. 2014 28(12):1337-1350. **MMD MIMM BIO**
154. Liu R, Dai Z, Yeager M, Irizarry R, Ritchie M. KRLMM: an adaptive genotype calling method for common and low frequency variants. *BMC Bioinformatics*. 2014 15(1):158. **MMD**
155. Liu X, Croker BA, Campbell IK, Gauci SJ, Alexander WS, Tonkin BA, Walsh NC, Linossi EM, Nicholson SE, Lawlor KE, Wicks IP. Suppressor of cytokine signaling-3 regulates gp130 cytokine-induced signaling to limit chondrocyte responses during inflammatory arthritis. *Arthritis & Rheumatology*. 2014 May 16. (epub ahead of print) **CHD INFL**
156. Liu Z, Hoffmeister K, Hu Z, Mager D, Ait-Oudhia S, Debrincat M, Pleines I, Josefsson E, Kile B, Italiano J, Ramsey H, Grozovsky R, Veng-Pedersen P, Chavda C, Sola-Visner M. Expansion of the neonatal platelet mass is achieved via an extension of platelet lifespan. *Blood*. 2014 123(22):3381-3389. **CHD CBD**
157. Ludlow LE, Hasang W, Umbers AJ, Forbes EK, Ome M, Unger HW, Mueller I, Siba PM, Jaworowski A, Rogerson SJ. Peripheral blood mononuclear cells derived from grand multigravidae display a distinct cytokine profile in response to *P. falciparum* infected erythrocytes. *PLoS One*. 2014 9(1):e86160. **INF**
158. Lun AT, Smyth GK. De novo detection of differentially bound regions for ChIP-seq data using peaks and windows: controlling error rates correctly. *Nucleic Acids Research*. 2014 42(11):e95. **BIO**
159. Ma S, Hockings C, Anwari K, Kratina T, Fennell S, Lazarou M, Ryan MT, Kluck RM, Dewson G. Assembly of the bak apoptotic pore a critical role for the Bak protein alpha 6 helix in the multimerization of homodimers during apoptosis. *Journal of Biological Chemistry*. 2013 288(36):26027-26038. **MGC CSCD**
160. Maas C, Tromp JM, van Laar J, Thijssen R, Elias JA, Malara A, Krippner-Heidenreich A, Silke J, van Oers MHJ, Eldering E. CLL cells are resistant to smac mimetics because of an inability to form a ripoptosome complex. *Cell Death & Disease*. 2013 4:e782. **CSCD**
161. MacRae JI, Lopaticki S, Maier AG, Rupasinghe T, Nahid A, Cowman AF, McConville MJ. *Plasmodium falciparum* is dependent on de novo myo-inositol biosynthesis for assembly of GPI glycolipids and infectivity. *Molecular Microbiology*. 2014 91(4):762-776. **INF**
162. MacRae T, Sargeant T, Lemieux S, Hebert J, Deneault E, Sauvageau G. RNA-seq reveals spliceosome and proteasome genes as most consistent transcripts in human cancer cells. *PLoS One*. 2013 8(9):e72884. **MMD**
163. Majewski IJ, Mittempergher L, Davidson NM, Bosma A, Willems SM, Horlings HM, de Rink I, Greger L, Hooijer GKJ, Peters D, Nederlof PM, Hoffland I, de Jong J, Wesseling J, Kluijn RJC, Brugman W, Kerkhoven R, Nieboer F, Roepman P, Broeks A, Muley TR, Jassem J, Niklinski J, van Zandwijk N, Brazma A, Oshlack A, van den Heuvel M, Bernards R. Identification of recurrent FGFR3 fusion genes in lung cancer through kinome-centred RNA sequencing. *Journal of Pathology*. 2013 230(3):270-276. **CHD**
164. Man K, Miasari M, Shi W, Xin A, Henstridge DC, Preston S, Pellegrini M, Belz GT, Smyth GK, Febbraio MA, Nutt SL, Kallies A. The transcription factor IRF4 is essential for TCR affinity-mediated metabolic programming and clonal expansion of T cells. *Nature Immunology*. 2013 14(11):1155-1165. **INF MIMM BIO**
165. Markmiller S, Cloonan N, Lardelli RM, Doggett K, Keightley MC, Boglev Y, Trotter AJ, Ng AY, Wilkins SJ, Verkade H, Ober EA, Field HA, Grimmond SM, Lieschke GJ, Stainier DYS, Heath JK. Minor class splicing shapes the zebrafish transcriptome during development. *Proceedings of the National Academy of Sciences of the United States of America*. 2014 111(8):3062-3067. **DCD**
166. Masson F, Ghisi M, Groom JR, Kallies A, Seillet C, Johnstone RW, Nutt SL, Belz GT. Id2 represses E2A-mediated activation of IL-10 expression in T cells. *Blood*. 2014 123(22):3420-3428. **MIMM**
167. Matthews K, Kalan M, Chisholm SA, Sturm A, Goodman CD, Dixon MWA, Sanders PR, Nebel T, Fraser F, Haase S, McFadden GI, Gilson PR, Crabb BS, de Koning-Ward TF. The *Plasmodium* translocon of exported proteins (PTEX) component thioredoxin-2 is important for maintaining normal blood-stage growth. *Molecular Microbiology*. 2013 89(6):1167-1186. **INF**
168. McColl B, Kao BR, Lourthai P, Chan K, Wardan H, Roosjen M, Delagneau O, Gearing LJ, Blewitt ME, Svasti S, Fucharoen S, Vadolas J. An *in vivo* model for analysis of developmental erythropoiesis and globin gene regulation. *FASEB Journal*. 2014 28(5):2306-2317. **MMD**
169. McCormack MP, Shields BJ, Jackson JT, Nasa C, Shi W, Slater NJ, Tremblay CS, Rabbitts TH, Curtis DJ. Requirement for Lyl1 in a model of Lmo2-driven early T-cell precursor ALL. *Blood*. 2013 122(12):2093-2103. **CHD BIO**
170. McQualter JL, McCarty RC, Van der Velden J, O'Donoghue RJJ, Asselin-Labat ML, Bozinovski S, Bertonecello I. TGF-beta signaling in stromal cells acts upstream of FGF-10 to regulate epithelial stem cell growth in the adult lung. *Stem Cell Research*. 2013 11(3):1222-1233. **CSCD SCC**
171. Meniel V, Song F, Phesse T, Young M, Poetz O, Parry L, Jenkins JR, Williams GT, Dunwoodie SL, Watson A, Clarke AR. Cited1 deficiency suppresses intestinal tumorigenesis. *PLoS Genetics*. 2013 9(8):e1003638. **CSCD**

172. Metcalf D, Glaser SP, Xu Z, Di Rago L, Mifsud S. Reversible growth factor dependency and autonomy during murine myelomonocytic leukemia induced by oncogenes. *Proceedings of the National Academy of Sciences of the United States of America*. 2013 110(42):17029-17034. **CHD CBD**
173. Mielke LA, Groom JR, Rankin LC, Seillet C, Masson F, Putoczki T, Belz GT. TCF-1 controls ILC2 and NKp46(+)ROR gamma t(+) innate lymphocyte differentiation and protection in intestinal inflammation. *Journal of Immunology*. 2013 191(8):4383-4391. **MIMM INFL**
174. Mikolajczak SA, Lakshmanan V, Fishbaugher M, Camargo N, Harupa A, Kaushansky A, Douglass AN, Baldwin M, Healer J, O'Neill M, Phuong T, Cowman A, Kappe SH. A next generation genetically attenuated *Plasmodium falciparum* parasite created by triple gene deletion. *Molecular Therapy*. 2014 May 14. (epub ahead of print) **INF**
175. Mok YT, Schwierzeck V, Thomas DC, Vigorito E, Rayner TF, Jarvis LB, Prosser HM, Bradley A, Withers DR, Martensson IL, Corcoran LM, Blenkiron C, Miska EA, Lyons PA, Smith KGC. MiR-210 is induced by Oct-2, regulates B cells, and inhibits autoantibody production. *Journal of Immunology*. 2013 191(6):3037-3048. **MIMM**
176. Moore BR, Salman S, Benjamin J, Page-Sharp M, Robinson LJ, Waita E, Batty KT, Siba P, Mueller I, Davis TME, Betuela I. Pharmacokinetic properties of single-dose primaquine in Papua New Guinean children: feasibility of abbreviated high-dose regimens for radical cure of vivax malaria. *Antimicrobial Agents and Chemotherapy*. 2014 58(1):432-439. **INF**
177. Moujalled D, Cook W, Murphy J, Vaux D. Necroptosis induced by RIPK3 requires MLKL but not Drp1. *Cell Death & Disease*. 2014 5:e1086. **CSCD CHD**
178. Mould AW, Pang ZY, Pakusch M, Tonks ID, Stark M, Carrie D, Mukhopadhyay P, Seidel A, Ellis JJ, Deakin J, Wakefield MJ, Krause L, Blewitt ME, Kay GF. Smchd1 regulates a subset of autosomal genes subject to monoallelic expression in addition to being critical for X inactivation. *Epigenetics & Chromatin*. 2013 6:19. **BIO MMD**
179. Mouradov D, Domingo E, Gibbs P, Jorissen RN, Li S, Soo PY, Lipton L, Desai J, Danielsen HE, Oukrif D, Novelli M, Yau C, Holmes CC, Jones IT, McLaughlin S, Molloy P, Hawkins NJ, Ward R, Midgely R, Kerr D, Tomlinson IPM, Sieber OM. Survival in stage II/III colorectal cancer is independently predicted by chromosomal and microsatellite instability, but not by specific driver mutations. *American Journal of Gastroenterology*. 2013 108(11):1785-1793. **SBPM**
180. Mouradov D, Sloggett C, Jorissen RN, Love CG, Li S, Burgess AW, Arango D, Strausberg RL, Buchanan D, Wormald S, O'Connor L, Wilding JL, Bicknell D, Tomlinson IP, Bodmer WF, Mariadason JM, Sieber OM. Colorectal cancer cell lines are representative models of the main molecular subtypes of primary cancer. *Cancer Research*. 2014 74(12):3238-3247. **SBPM SBD**
181. Mugenyi CK, Elliott SR, McCallum FJ, Anders RF, Marsh K, Beeson JG. Antibodies to polymorphic invasion-inhibitory and non-inhibitory epitopes of *Plasmodium falciparum* apical membrane antigen 1 in human malaria. *PLoS One*. 2013 8(7):e68304. **INF**
182. Muniz JRC, Guo KD, Kershaw NJ, Ayinampudi V, von Delft F, Babon JJ, Bullock AN. Molecular architecture of the ankyrin SOCS box family of Cul5-dependent E3 ubiquitin ligases. *Journal of Molecular Biology*. 2013 425(17):3166-3177. **SBD CHD**
183. Murphy J, Lucet I, Hildebrand J, Tanzer M, Young S, Sharma P, Lessene G, Alexander W, Babon J, Silke J, Czabotar P. Insights into the evolution of divergent nucleotide-binding mechanisms among pseudokinases revealed by crystal structures of human and mouse MLKL. *Biochemical Journal*. 2014 457(3):369-377. **CSCD CHD SBD CBD**
184. Murphy JM, Czabotar PE, Hildebrand JM, Lucet IS, Zhang JG, Alvarez-Diaz S, Lewis R, Lalaoui N, Metcalf D, Webb AI, Young SN, Varghese LN, Tannahill GM, Hatchell EC, Majewski JJ, Okamoto T, Dobson RC, Hilton DJ, Babon JJ, Nicola NA, Strasser A, Silke J, Alexander WS. The pseudokinase MLKL mediates necroptosis via a molecular switch mechanism. *Immunity*. 2013 39(3):443-453. **CSCD MGC CHD MMD SBD SBPM CBD**
185. Murphy JM, Zhang Q, Young SN, Reese ML, Bailey FP, Evers PA, Ungureanu D, Hammaren H, Silvennoinen O, Varghese LN, Chen K, Tripathydonis A, Jura N, Fukuda K, Qin J, Nimchuk Z, Mudgett MB, Elowe S, Gee CL, Liu L, Daly RJ, Manning G, Babon JJ, Lucet IS. A robust methodology to subclassify pseudokinases based on their nucleotide-binding properties. *Biochemical Journal*. 2014 457(2):323-334. **CSCD CHD**
186. Myers M, Morgan H, Leiw SH, Zerafa N, Gamage TU, Sarraj M, Cook M, Kapic I, Sutherland A, Scott CL, Strasser A, Findlay JK, Kerr JB, Hutt KJ. PUMA regulates germ cell loss and primordial follicle endowment in mice. *Reproduction*. 2014 148(2):211-219. **SCC MGC**
187. Nagareddy PR, Kraakman M, Masters SL, Stirzaker RA, Gorman DJ, Grant RW, Dragoljevic D, Hong ES, Abdel-Latif A, Smyth SS, Choi SH, Korner J, Bornfeldt KE, Fisher EA, Dixit VD, Tall AR, Goldberg IJ, Murphy AJ. Adipose tissue macrophages promote myelopoiesis and monocytosis in obesity. *Cell Metabolism*. 2014 19(5):821-835. **INFL**
188. Naik SH, Perie L, Swart E, Gerlach C, van Rooij N, de Boer RJ, Schumacher TN. Diverse and heritable lineage imprinting of early haematopoietic progenitors. *Nature*. 2013 496(7444):229-232. **MMD IMM**
189. Nakatani Y, Kleffmann T, Linke K, Condon SM, Hinds MG, Day CL. Regulation of ubiquitin transfer by XIAP, a dimeric RING E3 ligase. *Biochemical Journal*. 2013 450(3):629-638. **SBD**
190. Newbold A, Matthews GM, Bots M, Cluse LA, Clarke CJP, Banks KM, Cullinane C, Bolden JE, Christiansen AJ, Dickins RA, Miccolo C, Chiocca S, Kral AM, Ozerova ND, Miller TA, Methot JL, Richon VM, Secrist JP, Minucci S, Johnstone RW. Molecular and biologic analysis of histone deacetylase inhibitors with diverse specificities. *Molecular Cancer Therapeutics*. 2013 12(12):2709-2721. **MMD**

191. Newton K, Hildebrand JM, Shen ZR, Rodriguez D, Alvarez-Diaz S, Petersen S, Shah S, Dugger DL, Huang CZ, Auwerx J, Vandenabeele P, Green DR, Ashkenazi A, Dixit VM, Kaiser WJ, Strasser A, Degterev A, Silke J. Is SIRT2 required for necroptosis? *Nature*. 2014 506(7489):E4-E6. **MGC CSCD**
192. Ng AP, Kauppi M, Metcalf D, Hyland CD, Josefsson EC, Lebois M, Zhang JG, Baldwin TM, Di Rago L, Hilton DJ, Alexander WS. Mpl expression on megakaryocytes and platelets is dispensable for thrombopoiesis but essential to prevent myeloproliferation. *Proceedings of the National Academy of Sciences of the United States of America*. 2014 111(16):5884-5889. **CHD MMD**
193. Ogier JM, Carpinelli MR, Arhatari BD, Symons RC, Kile BT, Burt RA. CHD7 deficiency in “Looper”, a new mouse model of CHARGE Syndrome, results in ossicle malformation, otosclerosis and hearing impairment. *PLoS One*. 2014 9(5):e97559. **CBD**
194. Okada N, Lin CP, Ribeiro MC, Biton A, Lai G, He X, Bu P, Vogel H, Jablons DM, Keller AC, Wilkinson JE, He B, Speed TP, He L. A positive feedback between p53 and miR-34 miRNAs mediates tumor suppression. *Genes & Development*. 2014 28(5):438-450. **BIO**
195. Okamoto T, Coultas L, Metcalf D, van Delft MF, Glaser SP, Takiguchi M, Strasser A, Bouillet P, Adams JM, Huang DCS. Enhanced stability of Mcl1, a prosurvival Bcl2 relative, blunts stress-induced apoptosis, causes male sterility, and promotes tumorigenesis. *Proceedings of the National Academy of Sciences of the United States of America*. 2014 111(1):261-266. **CHD MGC CBD DCD**
196. Okamoto T, Segal D, Zobel K, Fedorova A, Yang H, Fairbrother WJ, Huang DCS, Smith BJ, Deshayes K, Czabotar PE. Further insights into the effects of pre-organizing the BimBH3 helix. *ACS Chemical Biology*. 2014 9(3):838-839. **CHD CBD**
197. Olive V, Sabio E, Bennett MJ, De Jong CS, Biton A, McGann JC, Greaney SK, Sodir NM, Zhou AY, Balakrishnan A, Foth M, Luftig MA, Goga A, Speed TP, Xuan ZY, Evan GI, Wan Y, Minella AC, He L. A component of the mir-17-92 polycistronic oncomir promotes oncogene-dependent apoptosis. *Elife*. 2013 2:e00822. **BIO**
198. Olson MR, Seah SG, Edenborough K, Doherty PC, Lew AM, Turner SJ. CD154 CD4 T-cell dependence for effective memory influenza virus-specific CD8 T-cell responses. *Immunology and Cell Biology*. 2014 Apr 29. (epub ahead of print) **IMM**
199. Ontiveros N, Tye-Din JA, Hardy MY, Anderson RP. *Ex-vivo* whole blood secretion of interferon (IFN)-gamma and IFN-gamma-inducible protein-10 measured by enzyme-linked immunosorbent assay are as sensitive as IFN-gamma enzyme-linked immunospot for the detection of gluten-reactive T cells in human leucocyte antigen (HLA)-DQ2.5(+)-associated coeliac disease. *Clinical and Experimental Immunology*. 2014 175(2):305-315. **IMM**
200. Oon S, Roberts C, Gorelik A, Wicks I, Brand C. Primary angiitis of the central nervous system: experience of a Victorian tertiary-referral hospital. *Internal Medicine Journal*. 2013 43(6):685-692. **INFL**
201. Orban A, Butykai A, Molnar A, Prohle Z, Fulop G, Zelles T, Forsyth W, Hill D, Muller I, Schofield L, Rebelo M, Hanscheid T, Karl S, Kezsmarki I. Evaluation of a novel magneto-optical method for the detection of malaria parasites. *PLoS One*. 2014 9(5):e96981. **INF**
202. Park HJ, Guariento M, Maciejewski M, Hauhart R, Tham WH, Cowman AF, Schmidt CQ, Mertens HDT, Liszewski MK, Hourcade DE, Barlow PN, Atkinson JP. Using mutagenesis and structural biology to map the binding site for the *Plasmodium falciparum* merozoite protein PfRh4 on the human immune adherence receptor. *Journal of Biological Chemistry*. 2014 289(1):450-463. **INF**
203. Park HY, Light A, Lahoud MH, Caminschi I, Tarlinton DM, Shortman K. Evolution of B cell responses to Clec9A-targeted antigen. *Journal of Immunology*. 2013 191(10):4919-4925. **IMM**
204. Pattabiraman DR, McGirr C, Shakhbazov K, Barbier V, Krishnan K, Mukhopadhyay P, Hawthorne P, Trezise A, Ding J, Grimmond SM, Papanthanasou P, Alexander WS, Perkins AC, Levesque JP, Winkler IG, Gonda TJ. Interaction of c-Myb with p300 is required for the induction of acute myeloid leukemia (AML) by human AML oncogenes. *Blood*. 2014 123(17):2682-2690. **CHD**
205. Pearson JS, Giogha C, Ong SY, Kennedy CL, Kelly M, Robinson KS, Lung TWF, Mansell A, Riedmaier P, Oates CVL, Zaid A, Muhlen S, Crepin VF, Marches O, Ang CS, Williamson NA, O'Reilly LA, Bankovacki A, Nachbur U, Infusini G, Webb AI, Silke J, Strasser A, Frankel G, Hartland EL. A type III effector antagonizes death receptor signalling during bacterial gut infection. *Nature*. 2013 501(7466):247-251. **CSCD MGC SBPM**
206. Penno MAS, Couper JJ, Craig ME, Colman PG, Rawlinson WD, Cotterill AM, Jones TW, Harrison LC, Endia Study G. Environmental determinants of islet autoimmunity (ENDIA): a pregnancy to early life cohort study in children at-risk of type 1 diabetes. *BMC Pediatrics*. 2013 13:124. **MMD**
207. Perie L, Hodgkin PD, Naik SH, Schumacher TN, de Boer RJ, Duffy KR. Determining lineage pathways from cellular barcoding experiments. *Cell Reports*. 2014 6(4):617-624. **IMM**
208. Pheesse TJ, Myant KB, Cole AM, Ridgway RA, Pearson H, Muncan V, van den Brink GR, Vousden KH, Sears R, Vassilev LT, Clarke AR, Sansom OJ. Endogenous c-Myc is essential for p53-induced apoptosis in response to DNA damage in vivo. *Cell Death and Differentiation*. 2014 21(6):956-966. **CSCD**
209. Pierson W, Cauwe B, Policheni A, Schlenner SM, Berges J, Tian L, Schoenefeldt S, Herold M, Hildeman D, Strasser A, Bouillet P, Matthys P, Freitas AF, Dooley J, Gray DHD. Antiapoptotic Mcl-1- is critical for the survival and niche-filling capacity of Foxp3(+) T regulatory cells. *Nature Immunology*. 2013 14(9):959-965. **MGC IMM**
210. Prato S, Zhan YF, Mintern JD, Villadangos JA. Rapid deletion and inactivation of CTLs upon recognition of a number of target cells over a critical threshold. *Journal of Immunology*. 2013 191(7):3534-3544. **INFL**

211. Puccini J, Shalini S, Voss AK, Gatei M, Wilson CH, Hiwase DK, Lavin MF, Dorstyn L, Kumar S. Loss of caspase-2 augments lymphomagenesis and enhances genomic instability in Atm-deficient mice. *Proceedings of the National Academy of Sciences of the United States of America*. 2013 110(49):19920-19925. **DCD**
212. Pulford J, Kurumop SF, Ura Y, Siba PM, Mueller I, Hetzel MW. Malaria case management in Papua New Guinea following the introduction of a revised treatment protocol. *Malaria Journal*. 2013 12:433. **INF**
213. Rahimi A, Lee YY, Abdella H, Doerflinger M, Gangoda L, Srivastava R, Xiao K, Ekert PG, Puthalakath H. Role of p53 in cAMP/PKA pathway mediated apoptosis. *Apoptosis*. 2013 18(12):1492-1499. **CSCD**
214. Raynor J, Sholl A, Plas DR, Bouillet P, Chougnet CA, Hildeman DA. IL-15 fosters age-driven regulatory T cell accrual in the face of declining IL-2 levels. *Frontiers in Immunology*. 2013 4:161. **MGC**
215. Rickard J, O'Donnell J, Evans J, Lalaoui N, Poh A, Rogers T, Vince J, Lawlor K, Ninnis R, Anderton H, Hall C, Spall S, Phesse T, Abud H, Cengia L, Corbin J, Mifsud S, Di Rago L, Metcalft D, Ernst M, Dewson G, Roberts A, Alexander W, Murphy J, Ekert P, Masters S, Vaux D, Croker B, Gerlic M, Silke J. RIPK1 regulates RIPK3-MLKL driven systemic inflammation and emergency hematopoiesis. *Cell*. 2014 157(5):1175-1188. **CSCD CHD INFL**
216. Rios AC, Fu NY, Lindeman GJ, Visvader JE. *In situ* identification of bipotent stem cells in the mammary gland. *Nature*. 2014 506(7488):322-327. **SCC**
217. Robinson SD, Safavi-Hemami H, McIntosh LD, Purcell AW, Norton RS, Papenfuss AT. Diversity of Conotoxin gene superfamilies in the venomous snail, *Conus victoriae*. *PLoS One*. 2014 9(2):e87648. **BIO**
218. Roosjen M, McColl B, Kao B, Gearing LJ, Blewitt ME, Vadolas J. Transcriptional regulators Myb and BCL11A interplay with DNA methyltransferase 1 in developmental silencing of embryonic and fetal beta-like globin genes. *FASEB Journal* 2014 28(4):1610-1620. **MMD**
219. Ross DM, O'Hely M, Bartley PA, Dang P, Score J, Goynes JM, Sobrinho-Simoes M, Cross NCP, Melo JV, Speed TP, Hughes TP, Morley AA. Distribution of genomic breakpoints in chronic myeloid leukemia: analysis of 308 patients. *Leukemia*. 2013 27(10):2105-2107. **BIO**
220. Sadras T, Perugini M, Kok CH, Iarossi DG, Heatley SL, Brumatti G, Samuel MS, To LB, Lewis ID, Lopez AF, Ekert PG, Ramshaw HS, D'Andrea RJ. Interleukin-3-mediated regulation of beta-catenin in myeloid transformation and acute myeloid leukemia. *Journal of Leukocyte Biology*. 2014 96(1):83-91. **CSCD**
221. Sagulenko V, Thygesen SJ, Sester DP, Idris A, Cridland JA, Vajjhala PR, Roberts TL, Schroder K, Vince JE, Hill JM, Silke J, Stacey KJ. AIM2 and NLRP3 inflammasomes activate both apoptotic and pyroptotic death pathways via ASC. *Cell Death and Differentiation*. 2013 20(9):1149-1160. **CSCD INFL**
222. Sandow JJ, Dorstyn L, O'Reilly LA, Tailler M, Kumar S, Strasser A, Ekert PG. ER stress does not cause upregulation and activation of caspase-2 to initiate apoptosis. *Cell Death and Differentiation*. 2014 21(3):475-480. **CSCD MGC**
223. Saunders NR, Noor NM, Dziegielewska KM, Wheaton BJ, Liddelov SA, Steer DL, Ek CJ, Habgood MD, Wakefield MJ, Lindsay H, Truettner J, Miller RD, Smith AI, Dietrich WD. Age-dependent transcriptome and proteome following transection of neonatal spinal cord of *Monodelphis domestica* (South American Grey Short-Tailed Opossum). *PLoS One*. 2014 9(6):e99080. **BIO**
224. Schroder J, Hsu A, Boyle SE, Macintyre G, Cmero M, Tothill RW, Johnstone RW, Shackleton M, Papenfuss AT. Socrates: identification of genomic rearrangements in tumour genomes by re-aligning soft clipped reads. *Bioinformatics*. 2014 Jan 22. (epub ahead of print) **BIO**
225. Schulze M, Anders AK, Sethi DK, Call MJ. Disruption of hydrogen bonds between Major Histocompatibility Complex class II and the peptide N-terminus is not sufficient to form a human leukocyte antigen-DM receptive state of major Histocompatibility Complex class II. *PLoS One*. 2013 8(7):e69228. **SBD**
226. Schwickert TA, Tagoh H, Gultekin S, Dakic A, Axelsson E, Minnich M, Ebert A, Werner B, Roth M, Cimmino L, Dickins RA, Zuber J, Jaritz M, Busslinger M. Stage-specific control of early B cell development by the transcription factor Ikaros. *Nature Immunology*. 2014 15(3):283-293. **MMD MIMM**
227. Seillet C, Huntington ND, Gangatirkar P, Axelsson E, Minnich M, Brady HJM, Busslinger M, Smyth MJ, Belz GT, Carotta S. Differential requirement for Nfil3 during NK cell development. *Journal of Immunology*. 2014 192(6):2667-2676. **MIMM**
228. Sengupta N, Yau C, Sakthianandeswaren A, Mouradov D, Gibbs P, Suraweera N, Cazier JB, Polanco-Echeverry G, Ghosh A, Thaha M, Ahmed S, Feakins R, Propper D, Dorudi S, Sieber O, Silver A, Lai C. Analysis of colorectal cancers in British Bangladeshi identifies early onset, frequent mucinous histotype and a high prevalence of RBFOX1 deletion. *Molecular Cancer*. 2013 12:1. **SBPM**
229. Senn N, Rarau P, Salib M, Manong D, Siba P, Rogerson S, Mueller I, Genton B. Use of antibiotics within the IMCI guidelines in outpatient settings in Papua New Guinean Children: an observational and effectiveness study. *PLoS One*. 2014 9(3):e90990. **INF**
230. Shahrabi-Farahani S, Wang L, Zwaans BM, Santana JM, Shimizu A, Takashima S, Kreuter M, Coultas L, D'Amore PA, Arbeit JM, Aklsen LA, Bielenberg DR. Neuropilin 1 expression correlates with differentiation status of epidermal cells and cutaneous squamous cell carcinomas. *Laboratory Investigation*. 2014 94(7):752-765. **DCD**
231. Sheikh BN, Downer NL, Kueh AJ, Thomas T, Voss AK. Excessive versus physiologically relevant levels of retinoic acid in embryonic stem cell differentiation. *Stem Cells*. 2014 32(6):1451-1458. **DCD**

232. Shortt J, Hsu AK, Martin BP, Doggett K, Matthews GM, Doyle MA, Ellul J, Jockel TE, Andrews DM, Hogg SJ, Reitsma A, Faulkner D, Bergsagel PL, Chesi M, Heath JK, Denny WA, Thompson PE, Neeson PJ, Ritchie DS, McArthur GA, Johnstone RW. The drug vehicle and solvent N-methylpyrrolidone is an immunomodulator and antimyeloma compound. *Cell Reports*. 2014 7(4):1009-1019. **CBD DCD**
233. Sim X, Jensen RA, Ikram MK, Cotch MF, Li XH, MacGregor S, Xie J, Smith AV, Boerwinkle E, Mitchell P, Klein R, Klein BEK, Glazer NL, Lumley T, McKnight B, Psaty BM, de Jong P, Hofman A, Rivadeneira F, Uitterlinden AG, van Duijn CM, Aspelund T, Eiriksdottir G, Harris TB, Jonasson F, Launer LJ, Attia J, Baird PN, Harrap S, Holliday EG, Inouye M, Rochtchina E, Scott RJ, Viswanathan A, Li G, Smith NL, Wiggins KL, Kuo JZ, Taylor KD, Hewitt AW, Martin NG, Montgomery GW, Sun C, Young TL, Mackey DA, van Zuydam NR, Doney ASF, Palmer CNA, Morris AD, Rotter JI, Tai ES, Gudnason V, Vingerling JR, Siscovick DS, Wang JJ, Wong TY, Wellcome Trust Case Control C, Global BC. Genetic loci for retinal arteriolar microcirculation. *PLoS One*. 2013 8(6):e65804. **INF**
234. Simpson NH, Addis L, Brandler WM, Slonims V, Clark A, Watson J, Scerri TS, Hennessy ER, Bolton PF, Conti-Ramsden G, Fairfax BP, Knight JC, Stein J, Talcott JB, O'Hare A, Baird G, Paracchini S, Fisher SE, Newbury DF, SLIConsortium. Increased prevalence of sex chromosome aneuploidies in specific language impairment and dyslexia. *Developmental Medicine and Child Neurology*. 2014 56(4):346-353. **BIO**
235. Sizemore GM, Sizemore ST, Pal B, Booth CN, Seachrist DD, Abdul-Karim FW, Kume T, Keri RA. FOXC1 is enriched in the mammary luminal progenitor population, but is not necessary for mouse mammary ductal morphogenesis. *Biology of Reproduction*. 2013 89(1):10. **SCC**
236. Slade C, Bosco J, Unglik G, Bleasel K, Nagel M, Winship I. Deficiency in complement factor B. *New England Journal of Medicine*. 2013 369(17):1667-1669. **MMD**
237. Sleebbs BE, Lopaticki S, Marapana DS, O'Neill MT, Rajasekaran P, Gazdik M, Gunther S, Whitehead LW, Lowes KN, Barford L, Hviid L, Shaw PJ, Hodder AN, Smith BJ, Cowman AF, Boddey JA. Inhibition of Plasmeprin V activity demonstrates its essential role in protein export, PfEMP1 display, and survival of malaria parasites. *PLoS Biology*. 2014 12(7):e1001897. **CBD INF**
238. Sloane MA, Wong JW, Perera D, Nunez AC, Pimanda JE, Hawkins NJ, Sieber OM, Bourke MJ, Hesson LB, Ward RL. Epigenetic inactivation of the candidate tumor suppressor USP44 is a frequent and early event in colorectal neoplasia. *Epigenetics*. 2014 9(8):1092-1100. **SBPM**
239. Smith ML, Baggerly KA, Bengtsson H, Ritchie ME, Hansen KD. illuminaio: An open source IDAT parsing tool for Illumina microarrays. *F1000Research*. 2013 2:264. **MMD**
240. Sosenko JM, Skyler JS, Beam CA, Krischer JP, Greenbaum CJ, Mahon J, Rafkin LE, Matheson D, Herold KC, Palmer JP, Type 1 Diabetes T, Diabetes Prevention Trial-Type 1 Study G. Acceleration of the loss of the first-phase insulin response during the progression to type 1 diabetes in diabetes prevention trial-type 1 participants. *Diabetes*. 2013 62(12):4179-4183. **MMD**
241. Sosenko JM, Skyler JS, Palmer JP, Krischer JP, Yu LP, Mahon J, Beam CA, Boulware DC, Rafkin L, Schatz D, Eisenbarth G, Type 1 Diabetes TrialNet G, Diabet Prevention Trial-Type S. The prediction of type 1 diabetes by multiple autoantibody levels and their incorporation into an autoantibody risk score in relatives of type 1 diabetic patients. *Diabetes Care*. 2013 36(9):2615-2620. **MMD**
242. Spender LC, Carter MJ, O'Brien DI, Clark LJ, Yu J, Michalak EM, Hoppo L, Cragg MS, Inman GJ. Transforming growth factor-beta directly induces p53-up-regulated modulator of apoptosis (PUMA) during the rapid induction of apoptosis in Myc-driven B-cell lymphomas. *Journal of Biological Chemistry*. 2013 288(7):5198-5209. **SCC**
243. Spring M, Murphy J, Nielse R, Dowler M, Bennett JW, Zarling S, Williams J, de la Vega P, Ware L, Komisar J, Polhemus M, Richie TL, Epstein J, Tamminga C, Chuang I, Richie N, O'Neil M, Heppner DG, Healer J, O'Neill M, Smithers H, Finney OC, Mikolajczak SA, Wang RB, Cowman A, Ockenhouse C, Krzych U, Kappe SHI. First-in-human evaluation of genetically attenuated *Plasmodium falciparum* sporozoites administered by bite of Anopheles mosquitoes to adult volunteers. *Vaccine*. 2013 31(43):4975-4983. **INF**
244. Srikhanta YN, Hocking DM, Praszker J, Wakefield MJ, Robins-Browne RM, Yang J, Tauschek M. RegR virulence regulon of rabbit-specific enteropathogenic escherichia coli strain E22. *Infection and Immunity*. 2013 81(4):1078-1089. **BIO**
245. Stanicic DI, Cutts J, Eriksson E, Fowkes FJ, Rosanas-Urgell A, Siba P, Laman M, Davis TM, Manning L, Mueller I, Schofield L. gammadelta T cells and CD14+ monocytes are predominant cellular sources of cytokines and chemokines associated with severe malaria. *Journal of Infectious Diseases*. 2014 210(2):295-305. **INF**
246. Stanicic DI, Javati S, Kiniboro B, Lin E, Jiang JL, Singh B, Meyer EVS, Siba P, Koepfli C, Felger I, Galinski MR, Mueller I. Naturally acquired immune responses to *P. vivax* merozoite surface protein 3 alpha and merozoite surface protein 9 are associated with reduced risk of *P. vivax* malaria in young Papua New Guinean children. *PLoS Neglected Tropical Diseases*. 2013 7(11):e2498. **INF**
247. Stevenson WS, Morel-Kopp MC, Chen Q, Liang HP, Bromhead CJ, Wright S, Turakulov R, Ng AP, Roberts AW, Bahlo M, Ward CM. GFI1B mutation causes a bleeding disorder with abnormal platelet function. *Journal of Thrombosis and Haemostasis*. 2013 11(11):2039-2047. **CHD BIO**
248. Stock AT, Smith JM, Carbone FR. Type I IFN suppresses Cxcr2 driven neutrophil recruitment into the sensory ganglia during viral infection. *Journal of Experimental Medicine*. 2014 211(5):751-759. **INFL**

249. Stuart E, Buchert M, Putoczki T, Thiem S, Farid R, Elzer J, Huszar D, Waring PM, Pheesse TJ, Ernst M. Therapeutic inhibition of Jak activity inhibits progression of gastrointestinal tumors in mice. *Molecular Cancer Therapeutics*. 2014 13(2):468-474. **INFL CSCD**
250. Susnik N, Sorensen-Zender I, Rong S, von Vietinghoff S, Lu X, Rubera I, Tauc M, Falk C, Alexander W, Melk A, Haller H, Schmitt R. Ablation of proximal tubular suppressor of cytokine signaling 3 enhances tubular cell cycling and modifies macrophage phenotype during acute kidney injury. *Kidney International*. 2014 85(6):1357-1368. **CHD**
251. Tan CW, Gardiner BS, Hirokawa Y, Smith DW, Burgess AW. Analysis of Wnt signaling beta-catenin spatial dynamics in HEK293T cells. *BMC Systems Biology*. 2014 8(1):44. **SBD**
252. Tan CW, Hirokawa Y, Gardiner BS, Smith DW, Burgess AW. Colon cryptogenesis: asymmetric budding. *PLoS One*. 2013 8(10) e78519. **SBD**
253. Tao D, King JG, Tweedell RE, Jost PJ, Boddey JA, Dinglasan RR. The acute transcriptomic and proteomic response of HC-04 hepatoma cells to hepatocyte growth factor and its implications for *Plasmodium falciparum* sporozoite invasion. *Molecular & Cellular Proteomics*. 2014 13(5):1153-1164. **INF**
254. Tarlac V, Kelly L, Nag N, Allen-Graham J, Anderson RP, Storey E. HLA-DR3-DQ2 mice do not develop ataxia in the presence of high titre anti-gliadin antibodies. *Cerebellum*. 2013 12(3):370-376. **IMM**
255. Tauro BJ, Mathias RA, Greening DW, Gopal SK, Ji H, Kapp EA, Coleman BM, Hill AF, Kusebauch U, Hallows JL, Shteynberg D, Moritz RL, Zhu HJ, Simpson RJ. Oncogenic H-Ras reprograms Madin-Darby canine kidney (MDCK) cell-derived exosomal proteins following epithelial-mesenchymal transition. *Molecular & Cellular Proteomics*. 2013 12(8):2148-2159. **SBPM**
256. Teo A, Hasang W, Randall LM, Feng G, Bell L, Unger H, Langer C, Beeson JG, Siba PM, Mueller I, Molyneux ME, Brown GV, Rogerson SJ. Decreasing malaria prevalence and its potential consequences for immunity in pregnant women. *Journal of Infectious Diseases*. 2014 May 5. (epub ahead of print) **INF**
257. Teo ZL, Provenzano E, Dite GS, Park DJ, Apicella C, Sawyer SD, James PA, Mitchell G, Trainer AH, Lindeman GJ, Shackleton K, Cicciarelli L, Buys SS, Andrulis IL, Mulligan AM, Glendon G, John EM, Terry MB, Daly M, Odefrey FA, Nguyen-Dumont T, Giles GG, Dowty JG, Winship I, Goldgar DE, Hopper JL, Southey MC, kConFab. Tumour morphology predicts PALB2 germline mutation status. *British Journal of Cancer*. 2013 109(1):154-163. **SCC**
258. Teo ZL, Sawyer SD, James PA, Mitchell G, Trainer AH, Lindeman GJ, Shackleton K, Cicciarelli L, Southey MC. The incidence of PALB2 c.3113G>A in women with a strong family history of breast and ovarian cancer attending familial cancer centres in Australia. *Familial Cancer*. 2013 12(4):587-595. **SCC**
259. Tomita H, Ziegler ME, Kim HB, Evans SJ, Choudary PV, Li JZ, Meng F, Dai M, Myers RM, Neal CR, Speed TP, Barchas JD, Schatzberg AF, Watson SJ, Akil H, Jones EG, Bunney WE, Vawter MP. G protein-linked signaling pathways in bipolar and major depressive disorders. *Frontiers in Genetics*. 2013 4:297. **BIO**
260. Topp M, Hartley L, Cook M, Heong V, Boehm E, McShane L, Pyman J, McNally O, Ananda S, Harrell M, Etemadmoghadam D, Galletta L, Alsop K, Mitchell G, Fox S, Kerr J, Hutt K, Kaufmann S, Australian Ovarian Cancer S, Swisher E, Bowtell D, Wakefield M, Scott C. Molecular correlates of platinum response in human high-grade serous ovarian cancer patient-derived xenografts. *Molecular Oncology*. 2014 8(3):656-668. **SCC BIO**
261. Ung N, Putoczki TL, Stylli SS, Ng I, Mariadason JM, Chan TA, Zhu HJ, Luwor RB. Anti-EGFR therapeutic efficacy correlates directly with inhibition of STAT3 activity. *Cancer Biology & Therapy*. 2014 15(5):623-632. **INFL**
262. Uwamahoro N, Verma-Gaur J, Shen HH, Qu Y, Lewis R, Lu J, Bambery K, Masters SL, Vince JE, Naderer T, Traven A. The pathogen *Candida albicans* hijacks pyroptosis for escape from macrophages. *MBio*. 2014 5(2):e00003-00014. **INFL**
263. Vaillant F, Merino D, Lee L, Breslin K, Pal B, Ritchie ME, Smyth GK, Christie M, Phillipson LJ, Burns CJ, Mann GB, Visvader JE, Lindeman GJ. Targeting BCL-2 with the BH3 mimetic ABT-199 in estrogen receptor-positive breast cancer. *Cancer Cell*. 2013 24(1):120-129. **SCC MMD BIO SBPM CBD**
264. van der Wath RC, Gardiner BS, Burgess AW, Smith DW. Cell organisation in the colonic crypt: a theoretical comparison of the pedigree and niche concepts. *PLoS One*. 2013 8(9):e73204. **SBD**
265. van Nieuwenhuijze AE, Coghill E, Gray D, Prato S, Metcalf D, Alexander WS, Wicks IP. Transgenic expression of GM-CSF in T cells causes disseminated histiocytosis. *American Journal of Pathology*. 2014 184(1):184-199. **CHD INFL MGC IMM**
266. Vandenberg C, Josefsson E, Campbell K, James C, Lawlor K, Kile B, Cory S. Loss of Bak enhances lymphocytosis but does not ameliorate thrombocytopaenia in BCL-2 transgenic mice. *Cell Death and Differentiation*. 2014 21(5):676-684. **MGC CHD INFL CBD**
267. Varghese LN, Ungureanu D, Liao NP, Young SN, Laktyushin A, Hammaren H, Lucet IS, Nicola NA, Silvennoinen O, Babon JJ, Murphy JM. Mechanistic insights into activation and SOCS3-mediated inhibition of myeloproliferative neoplasm-associated JAK2 mutants from biochemical and structural analyses. *Biochemical Journal*. 2014 458(2):395-405. **CHD SBD CBD**
268. Varghese LN, Zhang JG, Young SN, Willson TA, Alexander WS, Nicola NA, Babon JJ, Murphy JM. Functional characterization of c-Mpl ectodomain mutations that underlie congenital amegakaryocytic thrombocytopenia. *Growth Factors*. 2014 32(1):18-26. **CHD MMD SBD**
269. Vasanthakumar A, Kattusamy K, Prasad R. Regulation of daunorubicin biosynthesis in *Streptomyces peucetius* - feed forward and feedback transcriptional control. *Journal of Basic Microbiology*. 2013 53(8):636-644. **MIMM**

270. Waibel M, Solomon VS, Knight DA, Ralli RA, Kim SK, Banks KM, Vidacs E, Virely C, Sia KCS, Bracken LS, Collins-Underwood R, Drenberg C, Ramsey LB, Meyer SC, Takiguchi M, Dickins RA, Levine R, Ghysdael J, Dawson MA, Lock RB, Mullighan CG, Johnstone RW. Combined targeting of JAK2 and Bcl-2/Bcl-xL to cure mutant JAK2-driven malignancies and overcome acquired resistance to JAK2 inhibitors. *Cell Reports*. 2013 5(4):1047-1059. **MMD**
271. Wali JA, Masters SL, Thomas HE. Linking metabolic abnormalities to apoptotic pathways in Beta cells in type 2 diabetes. *Cells*. 2013 2(2):266-283. **INFL**
272. Wali JA, Rondas D, McKenzie MD, Zhao Y, Elkerbout L, Fynch S, Gurzov EN, Akira S, Mathieu C, Kay TW, Overbergh L, Strasser A, Thomas HE. The proapoptotic BH3-only proteins Bim and Puma are downstream of endoplasmic reticulum and mitochondrial oxidative stress in pancreatic islets in response to glucotoxicity. *Cell Death & Disease*. 2014 5:e1124. **MGC MMD**
273. Wampfler R, Mwingira F, Javati S, Robinson L, Betuela I, Siba P, Beck HP, Mueller I, Felger I. Strategies for detection of *Plasmodium species* gametocytes. *PLoS One*. 2013 8(9):e76316. **INF**
274. Wampfler R, Timinao L, Beck HP, Soulama I, Tiono AB, Siba P, Mueller I, Felger I. Novel genotyping tools for investigating transmission dynamics of *Plasmodium falciparum*. *Journal of Infectious Diseases*. 2014 Apr 25. (epub ahead of print) **INF**
275. Wang J, Carvajal-Carmona LG, Chu JH, Zauber AG, Kubo M, Matsuda K, Dunlop M, Houlston RS, Sieber O, Lipton L, Gibbs P, Martin NG, Montgomery GW, Young J, Baird PN, Ratain MJ, Nakamura Y, Weiss ST, Tomlinson I, Bertagnoli MM, Collaborators APCT. Germline variants and advanced colorectal adenomas: adenoma prevention with celecoxib trial genome-wide association study. *Clinical Cancer Research*. 2013 19(23):6430-6437. **SBPM**
276. Webster KE, Kim HO, Kyriassoudis K, Corpuz TM, Pinget GV, Uldrich AP, Brink R, Belz GT, Cho JH, Godfrey DI, Sprent J. IL-17-producing NKT cells depend exclusively on IL-7 for homeostasis and survival. *Mucosal Immunology*. 2014 Jan 22. (epub ahead of print) **MIMM**
277. Wensveen FM, Geest CR, Libregts S, Derks IAM, Ekert PG, Labi V, Villunger A, Nolte MA, Eldering E. BH3-only protein Noxa contributes to apoptotic control of stress-erythropoiesis. *Apoptosis*. 2013 18(11):1306-1318. **CSCD**
278. Wentworth JM, Hensman T, Playfair J, Laurie C, Ritchie ME, Brown WA, Skinner S, Shaw JE, O'Brien PE. Laparoscopic adjustable gastric banding and progression from impaired fasting glucose to diabetes. *Diabetologia*. 2014 57(3):463-468. **MMD**
279. Wentworth JM, Playfair J, Laurie C, Ritchie ME, Brown WA, Burton P, Shaw JE, O'Brien PE. Multidisciplinary diabetes care with and without bariatric surgery in overweight people: a randomised controlled trial. *Lancet Diabetes & Endocrinology*. 2014 2(7):545-552. **MMD**
280. Willis SN, Good-Jacobson KL, Curtis J, Light A, Tellier J, Shi W, Smyth GK, Tarlinton DM, Belz GT, Corcoran LM, Kallies A, Nutt SL. Transcription factor IRF4 regulates germinal center cell formation through a B cell-intrinsic mechanism. *Journal of Immunology*. 2014 192(7):3200-3206. **MIMM IMM BIO INF**
281. Wilson DW, Langer C, Goodman CD, McFadden GI, Beeson JG. Defining the timing of action of antimalarial drugs against *Plasmodium falciparum*. *Antimicrobial Agents and Chemotherapy*. 2013 57(3):1455-1467. **INF**
282. Wilson GR, Sunley J, Smith KR, Pope K, Bromhead CJ, Fitzpatrick E, Di Rocco M, van Steensel M, Coman DJ, Leventer RJ, Delatycki MB, Amor DJ, Bahlo M, Lockhart PJ. Mutations in SH3PXD2B cause Borrone dermato-cardio-skeletal syndrome. *European Journal of Human Genetics*. 2014 22(6):741-747. **BIO**
283. Wirawan A, Harris RS, Liu Y, Schmidt B, Schroder J. HECTOR: a parallel multistage homopolymer spectrum based error corrector for 454 sequencing data. *BMC Bioinformatics*. 2014 15:131. **BIO**
284. Wong W, Bai XC, Brown A, Fernandez IS, Hanssen E, Condrón M, Tan YH, Baum J, Scheres SH. Cryo-EM structure of the *Plasmodium falciparum* 80S ribosome bound to the anti-protozoan drug emetine. *eLife*. 2014:e03080. **INF**
285. Wong W, Webb AI, Olshina MA, Infusini G, Tan YH, Hanssen E, Catimel B, Suarez C, Condrón M, Angrisano F, Nebl T, Kovar DR, Baum J. A mechanism for actin filament severing by malaria parasite actin depolymerizing factor 1 via a low affinity binding interface. *Journal of Biological Chemistry*. 2014 289(7):4043-4054. **INF SBPM**
286. Wong WW, Vince JE, Lalaoui N, Lawlor KE, Chau D, Bankovacki A, Anderton H, Metcalf D, O'Reilly L, Jost PJ, Murphy JM, Alexander WS, Strasser A, Vaux DL, Silke J. cIAPs and XIAP regulate myelopoiesis through cytokine production in an RIPK1- and RIPK3-dependent manner. *Blood*. 2014 123(16):2562-2572. **MGC CSCD CHD INFL**
287. Wormald S, Milla L, O'Connor L. Association of candidate single nucleotide polymorphisms with somatic mutation of the epidermal growth factor receptor pathway. *BMC Medical Genomics*. 2013 6:43. **SBPM**
288. Xu Y, Fairfax K, Light A, Huntington ND, Tarlinton DM. CD19 differentially regulates BCR signalling through the recruitment of PI3K. *Autoimmunity*. 2014 Jun 23. (epub ahead of print) **MIMM MMD IMM**
289. Xu Y, Lindemann P, Vega-Ramos J, Zhang JG, Villadangos JA. Developmental regulation of synthesis and dimerization of the amyloidogenic protease inhibitor cystatin C in the hematopoietic system. *Journal of Biological Chemistry*. 2014 289(14):9730-9740. **CHD IMM**
290. Yabal M, Mueller N, Adler H, Knies N, Thomas C, Damgaard R, Kanegane H, Ringelhan M, Kaufmann T, Heikenwaelder M, Peschel C, Strasser A, Gross O, Ruland J, Gyrd-Hansen M, Jost P. XIAP restricts TNF- and RIP3-dependent cell death and inflammasome activation. *Cell Reports*. 2014 7(6):1796-1808. **MGC**
291. Yao SG, Westphal D, Babon JJ, Thompson GV, Robin AY, Adams JM, Colman PM, Czabotar PE. NMR studies of interactions between Bax and BH3 domain-containing peptides in the absence and presence of CHAPS. *Archives of Biochemistry and Biophysics*. 2014 545:33-43. **CHD MGC SBD**

292. Yap A, Azevedo M, Gilson P, Weiss G, O'Neill M, Wilson D, Crabb B, Cowman A. Conditional expression of apical membrane antigen 1 in *Plasmodium falciparum* shows it is required for erythrocyte invasion by merozoites. *Cellular Microbiology*. 2014 16(5):642-656. **INF**
293. Zamurs L, Pouliot N, Kusuma N, Nice EC, Burgess AW. Chain-specific antibodies for laminin-511. *Growth Factors*. 2013 31(6):209-219. **SBD**
294. Zapparoli GV, Jorissen RN, Hewitt CA, McBean M, Westerman DA, Dobrovic A. Quantitative threefold allele-specific PCR (QuanTAS-PCR) for highly sensitive JAK2 V617F mutant allele detection. *BMC Cancer*. 2013 13:206. **SBPM**
295. Zhang Y, Kinkel S, Maksimovic J, Bandala-Sanchez E, Tanzer MC, Naselli G, Zhang JG, Zhan Y, Lew AM, Silke J, Oshlack A, Blewitt ME, Harrison LC. The polycomb repressive complex 2 governs life and death of peripheral T cells. *Blood*. 2014 124(5):737-749. **MMD CHD CSCD IMM**
296. Zhang Y, Maksimovic J, Naselli G, Qian JY, Chopin M, Blewitt ME, Oshlack A, Harrison LC. Genome-wide DNA methylation analysis identifies hypomethylated genes regulated by FOXP3 in human regulatory T cells. *Blood*. 2013 122(16):2823-2836. **MMD MIMM**

Reviews and book chapters

297. Babon J, Varghese L, Nicola N. Inhibition of IL-6 family cytokines by SOCS3. *Seminars in Immunology*. 2014 26(1):13-19. **CHD SBD**
298. Bae S, Desai J. Personalized management: inoperable gastrointestinal stromal tumors. *Clinical Gastroenterology and Hepatology*. 2014 12(1):130-134. **SBPM**
299. Banerjee A, Vasanthakumar A, Grigoriadis G. Modulating T regulatory cells in cancer: how close are we? *Immunology and Cell Biology*. 2013 91(5):340-349. **MIMM**
300. Bauer DC, Gaff C, Dinger ME, Caramins M, Buske FA, Fenech M, Hansen D, Cobiac L. Genomics and personalised whole-of-life healthcare. *Trends in Molecular Medicine*. 2014 May 4. (epub ahead of print) **SBPM**
301. Belz GT. Phagocytes, granulocytes, & myelopoiesis miR-142 keeps CD4(+) DCs in balance. *Blood*. 2013 121(6):871-872. **MIMM**
302. Blewitt M, Whitelaw E. The use of mouse models to study epigenetics. *Cold Spring Harbor Perspectives in Biology*. 2013 5(11):a017939. **MMD**
303. Boddey JA, Cowman AF. *Plasmodium* nesting: remaking the erythrocyte from the inside out. *Annual Review of Microbiology*. 2013 67:243-269. **INF**
304. Brumatti G, Ekert PG. Seeking a MCL-1 inhibitor. *Cell Death and Differentiation*. 2013 20(11):1440-1441. **CSCD**
305. Burns CJ, Segal D, Wilks AF. The Use of JAK-specific inhibitors as chemical biology tools. *Methods in Molecular Biology*. 2013 967:99-113. **CBD**
306. Caminschi I, Lew AM. Vaccines. *Current Opinion in Immunology*. 2013 25(3):356-358. **IMM**
307. Chen Y, Lun ATL, Smyth GK. Differential expression analysis of complex RNA-seq experiments using edgeR. In: Datta S, Nettleton DS. eds. *Statistical analysis of next generation sequencing data*. Springer; 2014. (in press) **BIO**
308. Chevrier S, Corcoran LM. BTB-ZF transcription factors, a growing family of regulators of early and late B-cell development. *Immunology and Cell Biology*. 2014 92(6):481-488. **MIMM**
309. Chopin M, Nutt S. Establishing and maintaining the Langerhans cell network. *Seminars in Cell and Developmental Biology*. 2014 Feb 7. (epub ahead of print) **MIMM**
310. Cory S. Australian academy is fair to women. *Nature*. 2013 497(7450):439. **MGC**
311. Croker B, O'Donnell J, Gerlic M. Pyroptotic death storms and cytopenia. *Current Opinion in Immunology*. 2014 26:128-137. **INFL**
312. Czabotar PE, Lessene G, Strasser A, Adams JM. Control of apoptosis by the BCL-2 protein family: implications for physiology and therapy. *Nature Reviews Molecular Cell Biology*. 2014 15(1):49-63. **SBD CBD MGC**
313. De Livera AM, Olshansky M, Speed TP. Statistical analysis of metabolomics data. In: Roessner U, Dias DA. eds. *Metabolomics Tools for Natural Product Discovery: Methods and Protocols*. Totowa, New York: Humana Press; 2013. 291-307. **BIO**
314. Dragavon J, Rekiki A, Theodorou I, Samson C, Blazquez S, Rogers KL, Tournebize R, Shorte S. In vitro and in vivo demonstrations of Fluorescence by Unbound Excitation from Luminescence (FUEL). In: Badr CE. ed. *Bioluminescent Imaging: Methods and Protocols*. Totowa: Humana Press Inc; 2014. 259-270. **SBPM**
315. Ernst M, Putoczki TL. Targeting IL-11 signaling in colon cancer. *Oncotarget*. 2013 4(11):1860-1861. **CSCD INFL**
316. Ernst M, Thiem S, Nguyen P, Eissmann M, Putoczki T. Epithelial gp130/Stat3 functions: an intestinal signaling node in health and disease. *Seminars in Immunology*. 2014 26(1):29-37. **CSCD**
317. Etemadi N, Silke J, Nachbur U. Response to the letter to the editor. *Immunology and Cell biology*. 2014 92(4):301-302. **CSCD**
318. Eyers PA, Murphy JM. Dawn of the dead: protein pseudokinases signal new adventures in cell biology. *Biochemical Society Transactions*. 2013 41:969-974. **SBD CHD**
319. Fu N, Lindeman G, Visvader J. The mammary stem cell hierarchy. *Current Topics in Developmental Biology*. 2014 107:133-160. **SCC**

320. Fung KYC, Nice E, Priebe I, Belobrajdic D, Phatak A, Purins L, Tabor B, Pompeia C, Lockett T, Adams TE, Burgess A, Cosgrove L. Colorectal cancer biomarkers: to be or not to be? cautionary tales from a road well travelled. *World Journal of Gastroenterology*. 2014 20(4):888-898. **SBD**
321. Garnier JM, Sharp PP, Burns CJ. BET bromodomain inhibitors: a patent review. *Expert Opinion on Therapeutic Patents*. 2014 24(2):185-199. **CBD**
322. Grant EJ, Chen L, Quinones-Parra S, Pang K, Kedzierska K, Chen WS. T-cell immunity to influenza A viruses. *Critical Reviews in Immunology*. 2014 34(1):15-39. **INFL**
323. Gray D. The thymic medulla: who needs it? *Immunology and Cell Biology*. 2013 91(9):541-542. **MGC IMM**
324. Gray DH, Liston A. Uhrf1 to Treg cells: reinforcing the mucosal peacekeepers. *Nature Immunology*. 2014 15(6):533-534. **MGC IMM**
325. Haneklaus M, Gerlic M, O'Neill LAJ, Masters SL. miR-223: infection, inflammation and cancer. *Journal of Internal Medicine*. 2013 274(3):215-226. **INFL**
326. Harrison LC, Wentworth JM, Zhang Y, Bandala-Sanchez E, Bohmer RM, Neale AM, Stone NL, Naselli G, Bosco JJ, Auyeung P, Rashidi M, Augstein P, Morahan G. Antigen-based vaccination and prevention of type 1 diabetes. *Current Diabetes Reports*. 2013 13(5):616-623. **MMD**
327. Herold MJ, Strasser A. It's not over until the FAT lady sings. *EMBO Journal*. 2014 33(3):173-175. **MGC**
328. Hildebrand JM, Sun L, Silke J. An appointment with death, : 2013 Cold Spring Harbor Asia meeting 'mechanisms and functions of non-apoptotic cell death'. *Cell Death and Differentiation*. 2013 20(11):1593-1594. **CSCD**
329. Huntington ND. NK cell recognition of unconventional ligands. *Immunology and Cell Biology*. 2014 92(3):208-209. **MIMM**
330. Huntington ND. The unconventional expression of IL-15 and its role in NK cell homeostasis. *Immunology and Cell Biology*. 2014 92(3):210-213. **MIMM**
331. Ioannidis L, Nie C, Hansen D. The role of chemokines in severe malaria: more than meets the eye. *Parasitology*. 2014 141(5):602-613. **INF**
332. Johanson TM, Skinner JP, Kumar A, Zhan Y, Lew AM, Chong MM. The role of microRNAs in lymphopoiesis. *International Journal of Hematology*. 2014 Jun 15. (epub ahead of print) **IMM**
333. Kallies A, Vasanthakumar A. Transcription factor Bach2 balances tolerance and immunity. *Immunology and Cell Biology*. 2013 91(8):491-492. **MIMM**
334. Kan A, Hodgkin PD. Mechanisms of cell division as regulators of acute immune response. *Systems and Synthetic Biology*. 2014 Apr. (epub ahead of print) **IMM**
335. Kershaw NJ, Murphy JM, Lucet IS, Nicola NA, Babon JJ. Regulation of Janus kinases by SOCS proteins. *Biochemical Society Transactions*. 2013 41:1042-1047. **SBD CHD CBD**
336. Khan N, Lawlor K, Murphy J, Vince J. More to life than death: molecular determinants of necroptotic and non-necroptotic RIP3 kinase signaling. *Current Opinion in Immunology*. 2014 26:76-89. **CSCD CHD INFL**
337. Kile BT. The role of apoptosis in megakaryocytes and platelets. *British Journal of Haematology*. 2014 165(2):217-226. **CBD**
338. Kumar KK, Burgess AW, Gulbis JM. Structure and function of LGR5: an enigmatic G-protein coupled receptor marking stem cells. *Protein Science*. 2014 23(5):551-565. **SBD**
339. Lackovic K, Lessene G, Falk H, Leuchowius KJ, Baell J, Street I. A perspective on 10-years HTS experience at the Walter and Eliza Hall Institute of Medical Research - eighteen million assays and counting. *Combinatorial Chemistry & High Throughput Screening*. 2014 17(3):241-252. **SBPM CBD**
340. Lawlor K, Vince J. Ambiguities in NLRP3 inflammasome regulation: is there a role for mitochondria? *Biochimica et Biophysica Acta*. 2014 1840(4):1433-1440. **INFL**
341. Lindqvist LM, Vaux DL. BCL2 and related prosurvival proteins require BAK1 and BAX to affect autophagy. *Autophagy*. 2014 10(8):1474-1475. **CSCD**
342. Liston A, Gray DHD. Homeostatic control of regulatory T cell diversity. *Nature Reviews Immunology*. 2014 14(3):154-165. **MGC IMM**
343. Lucet IS, Babon JJ, Murphy JM. Techniques to examine nucleotide binding by pseudokinases. *Biochemical Society Transactions*. 2013 41:975-980. **SBD CHD CBD**
344. Metcalf D. The colony-stimulating factors and cancer. *Cancer Immunology Research*. 2013 1(6):351-356. **CHD**
345. Murphy J, Goldberg GL. Flow cytometric analysis of STAT phosphorylation. *Methods in Molecular Biology*. 2013 967:161-165. **INFL**
346. Murphy JM, Silke J. Ars Moriendi; the art of dying well - new insights into the molecular pathways of necroptotic cell death. *EMBO Reports*. 2014 15(2):155-164. **CSCD CHD**
347. Ng W, Pebay A, Drummond K, Burgess A, Kaye AH, Morokoff A. Complexities of lysophospholipid signalling in glioblastoma. *Journal of Clinical Neuroscience*. 2014 21(6):893-898. **SBD**
348. O'Connell PJ, Cowan PJ, Hawthorne WJ, Yi SN, Lew AM. Transplantation of xenogeneic islets: are we there yet? *Current Diabetes Reports*. 2013 13(5):687-694. **IMM**
349. Ottina E, Pellegrini M, Villunger A. Guarding effector T-cell survival: all for one, Mcl-1 for all? *Cell Death and Differentiation*. 2013 20(8):969-971. **INF**
350. Palmieri M, Desai J, Sieber O. What is the future potential of the PI3K pathway in colorectal cancer treatment? *Colorectal Cancer*. 2014 3(2):113-116. **SBPM**

351. Pang SH, Carotta S, Nutt SL. Transcriptional control of pre-B cell development and leukemia prevention. *Current Topics in Microbiology and Immunology*. 2014 May 16. (epub ahead of print) **MIMM**
352. Pellegrini M, Walker BD. Host pathogen interactions at the coalface of immunity. *Current Opinion in Immunology*. 2013 25(4):425-427. **INF**
353. Pera MF. Stress management: a new path to pluripotency. *Cell Stem Cell*. 2014 14(3):273-274. **MMD**
354. Pheesse TJ, Sansom OJ. Responding to R-Spondin: Slit2 potentiates intestinal regeneration. *Cell Stem Cell*. 2013 13(5):512-514. **CSCD**
355. Phillips KA, Lindeman GJ. Breast cancer prevention for BRCA1 and BRCA2 mutation carriers: is there a role for tamoxifen? *Future Oncology*. 2014 10(4):499-502. **SCC**
356. Pilat S, Carotta S, Klump H. Development of hematopoietic stem and progenitor cells from mouse embryonic stem cells, in vitro, supported by ectopic human HOXB4 expression. *Methods in Molecular Biology*. 2013 1029:129-147. **MIMM CHD**
357. Radford K, Shortman K, O'Keefe M. Dendritic cells in autoimmune diseases. In: Mackay IR, Rose NR. eds. *The Autoimmune diseases*. 5th edition. Amsterdam: Elsevier; 2014. 175-186. **IMM**
358. Riglar DT, Baum J. Static and dynamic imaging of erythrocyte invasion and early intra-erythrocytic development in *Plasmodium falciparum*. *Methods in Molecular Biology*. 2013 923:269-280. **INF**
359. Roy MJ, Vom A, Czabotar PE, Lessene G. Cell death and the mitochondria: therapeutic targeting of the BCL-2 family-driven pathway. *British Journal of Pharmacology*. 2014 171(8):1973-1987. **CBD SBD**
360. Scott CL, Becker MA, Haluska P, Samimi G. Patient-derived xenograft models to improve targeted therapy in epithelial ovarian cancer treatment. *Frontiers in Oncology*. 2013 3:295. **SCC**
361. Seillet C, Belz GT. Terminal differentiation of dendritic cells. *Advances in Immunology*. 2013 120:185-210. **MIMM**
362. Seillet C, Belz GT, Mielke LA. Complexity of cytokine network regulation of innate lymphoid cells in protective immunity. *Cytokine*. 2014 Jun 24. (epub ahead of print) **MIMM**
363. Sheikh BN. Crafting the brain - role of histone acetyltransferases in neural development and disease. *Cell and Tissue Research*. 2014 356(3):553-573. **DCD**
364. Sheridan J, Blackburn C. Generation of tissue organoids by compaction reaggregation. *Methods in Molecular Biology*. 2014 1092:143-151. **SCC**
365. Shortman K, Sathe P, Vremec D, Naik S, O'Keefe M. Plasmacytoid dendritic cell development. *Advances in Immunology*. 2013 120:105-126. **IMM MMD**
366. Silke J, Hartland EL. Masters, marionettes and modulators: intersection of pathogen virulence factors and mammalian death receptor signaling. *Current Opinion in Immunology*. 2013 25(4):436-440. **CSCD**
367. Speir M, Vince JE, Naderer T. Programmed cell death in Legionella infection. *Future Microbiology*. 2014 9(1):107-118. **INFL**
368. Tarlinton D, Good-Jacobson K. Diversity among memory B cells: origin, consequences, and utility. *Science*. 2013 341(6151):1205-1211. **IMM**
369. Tarlinton DM. Immunology: to affinity and beyond. *Nature*. 2014 509(7502):573-574. **IMM**
370. Teh BW, Harrison SJ, Pellegrini M, Thursky KA, Worth LJ, Slavin MA. Changing treatment paradigms for patients with plasma cell myeloma: impact upon immune determinants of infection. *Blood Reviews*. 2014 28(2):75-86. **INF**
371. Tellier J, Nutt SL. The unique features of follicular T cell subsets. *Cellular and Molecular Life Sciences*. 2013 70(24):4771-4784. **MIMM**
372. Tie J, Gibbs P. Co-funded expanded access programmes for new oncology drugs: creating a two-tier system for Australian cancer patients? Reply. *Internal Medicine Journal*. 2013 43(7):844-845. **SBPM**
373. Toe J, Pellegrini M, Mak T. Promoting immunity during chronic infection-the therapeutic potential of common gamma-chain cytokines. *Molecular Immunology*. 2013 55(1-2):38-47. **INF**
374. van Nieuwenhuijze A, Koenders M, Roeleveld D, Sleeman MA, van den Berg W, Wicks IP. GM-CSF as a therapeutic target in inflammatory diseases. *Molecular Immunology*. 2013 56(4):675-682. **INFL**
375. Vaux DL. Know when your numbers are significant. *Forestry Chronicle*. 2013 89(1):7-8. **CSCD**
376. Vaux DL. Another twist in the on and off affair between cell suicide and inflammation. *Cell Death and Differentiation*. 2013 20(8):974-975. **CSCD**
377. Visvader JE, Stingl J. Mammary stem cells and the differentiation hierarchy: current status and perspectives. *Genes & Development*. 2014 28(11):1143-1158. **SCC**
378. Wang WY, Fan Y, Speed TP. DNA variant calling in targeted sequencing data. In: Do KA, Qin ZS, Vannucci M. eds. *Advances in Statistical Bioinformatics: Models and Integrative Inference for High-Throughput Data*. Cambridge: Cambridge Univ Press; 2013. 54-76. **BIO**
379. Ward CW, Menting JG, Lawrence MC. The insulin receptor changes conformation in unforeseen ways on ligand binding: sharpening the picture of insulin receptor activation. *Bioessays*. 2013 35(11):945-954. **SBD**
380. Westphal D, Kluck RM, Dewson G. Building blocks of the apoptotic pore: how Bax and Bak are activated and oligomerize during apoptosis. *Cell Death and Differentiation*. 2014 21(2):196-205. **MGC CSCD**
381. Westwell-Roper C, Dunne A, Kim ML, Verchere CB, Masters SL. Activating the NLRP3 inflammasome using the amyloidogenic peptide IAPP. *Methods in Molecular Biology*. 2013 1040:9-18. **INFL**



TRANSLATION

TRANSLATION

A major goal of the institute is to harness and translate basic research discoveries into the clinic, delivering real patient benefits.

The institute's Clinical Translation Centre provides strong links between clinicians, research and hospital partners, and supports highly skilled clinician-scientists who are helping to translate fundamental discoveries into treatments that will improve patient outcomes.

The Business Development Office initiates start-up ventures, partnerships and collaborative projects with the public and private sectors to help achieve translation of discoveries to the clinic.

15 clinically active
researchers

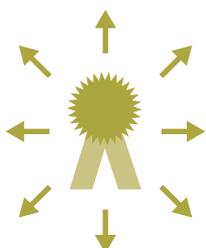
22 medically qualified
PhD students



9 Victorian
partners
in clinical translation and trials

MORE THAN
100 national and international
clinical trials based on discoveries
made at the institute

 **16**
patents
granted in 2013-14

 **17** patent
families are
licensed
for research
or development

 **36**
interns
completed Molecules2Medicine
program across 15 organisations

CANCER

One in two Australians will be diagnosed with a cancer by the age of 85. The institute has clinical and translational research programs focused on blood, breast, bowel, lung, ovarian and stomach cancers.

Trial results bring high hopes for advanced leukaemia

Chronic lymphocytic leukaemia (CLL) is the most common leukaemia in adults, affecting one in 161 Australians by age 85.

A first-in-human clinical trial has shown impressive results for treating particularly serious forms of this leukaemia. The anti-cancer agent ABT-199 was used to treat people with advanced leukaemia for whom no conventional treatment options were available.

The treatment achieved outstanding results in a phase one trial including 78 patients with advanced CLL – clearing the cancer in 23 per cent of patients and achieving partial clearance in a further 54 per cent. The first clinical trial with this drug is still running at The Royal Melbourne Hospital (RMH) and Peter MacCallum Cancer Centre.

ABT-199 is based on a landmark discovery made in the late 1980s by Walter and Eliza Hall Institute scientists that a protein called Bcl-2 promoted cancer cell survival. ABT-199/GDC-0199 has been co-developed for clinical use by biotech companies AbbVie and Genentech, a member of the Roche group, and was discovered as part of a joint research collaboration that involved Walter and Eliza Hall Institute scientists. The institute has been closely involved in the preclinical testing and research that led to ABT-199 being used in clinical trials.

Professor Andrew Roberts, a cancer researcher at the institute and haematologist at RMH, is leading the Melbourne arm of the international trial.

Professor Roberts said although CLL cells were slow to proliferate, they accumulated inexorably in the body and, in some patients, resulted in large tumours that could not be adequately combated with standard treatments.

“High levels of Bcl-2 protect the leukaemia cells from dying when using standard treatments,” Professor Roberts said. “ABT-199 selectively targets the interaction responsible for keeping the leukaemia cells alive and, in many cases, we’ve seen the cancerous cells simply melt away.”

“Eighty-four per cent of patients experienced remission after treatment with ABT-199, despite their disease having failed an average of four prior treatment regimens,” he said. “The patients on the trial were typically incurable, with an average life expectancy of up to 18 months. To see complete cancer clearance in nearly one-quarter of these patients, after taking this non-chemotherapy treatment on its own, is incredibly encouraging.”

Professor Roberts said it was an important trial and drug for Australia. “We are very happy that our involvement in the discovery has meant that Melbourne patients are some of the first people in the world to benefit from the treatment,” he said. “Trials are going on around the world now to establish just how important this new drug may be for patients with CLL.”

Studies have suggested the Bcl-2 ‘survival instinct’ may play a role in other cancers, and preclinical testing has suggested drugs that target Bcl-2 could be used to treat other blood cancers, or used in combination with existing treatments to improve treatments for breast, lung and prostate cancers.

The project is an important example of how three Melbourne organisations can collaborate as members of the Victorian Comprehensive Cancer Centre to drive the next generation of improvements in the prevention, detection and treatment of cancer.



Cancer researcher and haematologist Professor Andrew Roberts has been named the inaugural Metcalf Chair of Leukaemia Research, a joint appointment between The University of Melbourne, the Walter and Eliza Hall Institute and The Royal Melbourne Hospital.

Through his new position Professor Roberts will champion fundamental and translational leukaemia research in Melbourne and lead a team across all three institutions, improving diagnosis and treatment of leukaemia and other blood cancers.

Discovering new cancer drugs

The Cancer Therapeutics Cooperative Research Centre (CRC) received a \$64 million six-year extension in 2014 to continue drug discovery for cancers.

The focus of the program is on drug discovery into the major cause of cancer deaths – the process of metastasis where tumours spread and grow as secondary cancers in other organs such as lung, liver, bone and brain. The Cancer Therapeutics CRC team will also work with Australia's experts in childhood cancer to improve the development and targeting of new therapies for children with cancer.

Four exciting cancer therapeutic projects from the Walter and Eliza Hall Institute are being progressed within the Cancer Therapeutics CRC. Inhibitors of the epigenetic regulator Moz are being developed, in a project

championed by Dr Tim Thomas at the institute, which is likely to be relevant for acute myeloid leukaemia, lymphomas and potentially breast and ovarian cancers. Professor Tony Burgess and Associate Professor Guillaume Lessene are involved in projects looking for inhibitors of a molecule called RET kinase, which it is hoped will demonstrate utility in lung and other cancer types; and an anti-mitotic (inhibitor of cell division) agent with broad relevance to multiple cancer types.

Associate Professor Ian Street, in collaboration with Professor Stephen Jane and Professor David Curtis at Monash University, is participating in a project to develop inhibitors of the epigenetic regulator, PRMT5, which will be used to treat leukemia and other cancers. PRMT5 inhibitors

also have potential for treating non-cancerous blood disorders such as β -thalassemia and sickle cell disease.

All projects involve medicinal chemistry to optimise lead molecules, in conjunction with thorough biological investigation of drug activity. The anti-mitotic project is the most advanced, and lead molecules have demonstrated utility in bowel, brain, non-small cell lung cancer and breast cancer. The compounds are also showing early promise for cancers that do not respond to the widely used chemotherapy agent paclitaxel. In addition, this compound is being investigated as an antibody–drug conjugate, which could allow the compound to be specifically targeted to cancerous cells. PRMT5 inhibitors are currently being evaluated in preclinical models of leukemia.



Professor Geoff Lindeman (left) and Professor Jane Visvader lead the institute's breast cancer laboratory. Their team is developing novel diagnostics and therapeutics for breast cancer, with a strong translational focus to fast-track research discoveries to the clinic.

Improving cancer research with better models

The key to translating basic cancer discoveries to the clinic is predicting how 'real' human cancers respond, and become resistant, to new and existing treatments.

Institute scientists are developing realistic laboratory models of human cancers using donated tumour samples from patients. Called patient-derived xenografts (PDX), the models provide an unparalleled and relevant tool for understanding human cancers.

The models are created using human tumour samples donated by patients, and are possible thanks to collaborations between the institute and its partners, including The Royal Melbourne Hospital, Royal Women's Hospital and Royal Children's Hospital, and through initiatives such as the Victorian Cancer Biobank, Kathleen Cuninghame Foundation Consortium for Research into Familial Breast Cancer (kConFab) and Australian Ovarian Cancer Study.

With PDX models, researchers can study the response of the tumour to multiple treatments and trial new anti-cancer drugs to see if they will be effective in human cancers.

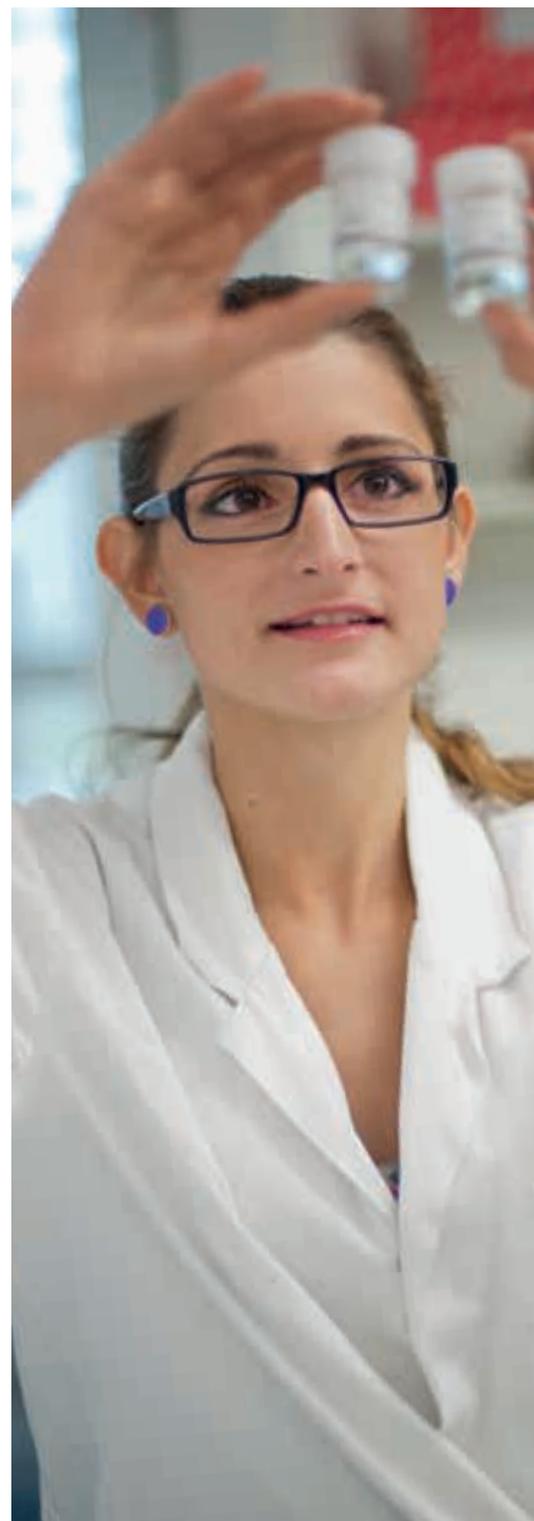
The models exhibit similar treatment responses to what is seen in patients, including development of chemotherapy resistance. With PDX models, researchers can study the response of the tumour to multiple treatments and trial new anti-cancer drugs to see if they will be effective in human cancers. They can also act as a reference tumour to compare the cancer's 'evolution' after treatment.

Six laboratories from the institute have dedicated programs to create PDX models of breast, ovarian, lung and colon cancers, as well as blood cancers including myeloma and acute lymphoblastic leukaemia. Several of these programs are supported with additional funding from the Cancer Therapeutics CRC.

The breast, ovarian and lung cancer programs have led the way in PDX development at the institute.

The breast and ovarian cancer laboratories have significant interest in familial cancers caused by mutations in the BRCA1/2 genes. The breast cancer laboratory, led by Professor Jane Visvader and Professor Geoff Lindeman, has developed more than 40 models that recapitulate all the breast cancer subtypes – oestrogen-positive cancers, HER2 (human epidermal growth factor receptor 2)-positive cancers and aggressive triple negative cancers, which are common in familial cancers. The models are being used in projects to test the response of breast stem cells to chemotherapy, and to identify 'biomarkers' that would help to screen for breast cancer.

The institute's ovarian cancer laboratory, led by Associate Professor Clare Scott, has created a suite of PDX models that represent the diversity of high-grade serous ovarian cancers, the most aggressive type of ovarian cancer. These models are being used to test their response to Parp inhibitors, a new medication being trialled for treating ovarian and breast cancers. Associate Professor Scott is also investigating cancer-causing genes that drive resistance to cancer therapies and the pattern in which they occur.



PhD student Ms Monique Topp has contributed to the development of a suite of laboratory models of aggressive ovarian cancers. The models are key to predicting treatment response and resistance in real patient ovarian tumours.

International partnership to target Achilles' heel of many cancers

The Walter and Eliza Hall Institute and European pharmaceutical company Servier have established a collaborative partnership to facilitate the development of new agents that could be effective in treating several types of cancer, particularly blood cancers.

A research team at the Walter and Eliza Hall Institute, led by Associate Professor Guillaume Lessene, will test in preclinical models how cancer cells respond to treatment with the Mcl-1-inhibitory BH3-mimetics discovered by a Servier-Vernalis collaboration.

The results will indicate whether this new class of compounds could be useful in the future for treating people with cancer, and which types of cancer the compounds would be most effective against.

Mcl-1 is a promising therapeutic target for many types of cancer, said Associate Professor Lessene. "There is a considerable body of experimental evidence pinpointing Mcl-1 as the Achilles' heel for many cancers, particularly blood cancers," he said.

Mcl-1 is part of a closely-related group of proteins known as the 'Bcl-2 family', which also includes Bcl-2 and Bcl-xL, which are important in extending the lifespan of certain types of cancer cells.

"Institute researchers made the initial discovery more than 20 years ago that Bcl-2 played a role in cancer by extending the lifespan of cancer cells," Associate Professor Lessene said. "We have been at the forefront of research revealing how the Bcl-2 family promotes cancer development

and treatment resistance and have provided considerable experience in evaluating and developing potential anti-cancer agents, including BH3-mimetics."

Dr Jean-Pierre Abastado, head of the Oncology Pole, and Dr Olivier Geneste, director of Apoptosis Programs at Servier, said the partnership would generate critical data and ideas helping the development of Servier's anti Mcl-1 drug candidates and facilitate bringing a highly innovative treatment to cancer patients.



Medicinal chemist Associate Professor Guillaume Lessene is leading an institute team that will test in preclinical models how cancer cells respond to treatment with the Mcl-1-inhibitory BH3-mimetics discovered by a Servier-Vernalis collaboration.

IMMUNE DISORDERS

Immune disorders, or chronic inflammatory diseases, are caused by an inappropriate immune response that attacks the body's own tissues. The institute has clinical and translational research programs focused on immune disorders including coeliac disease, rheumatoid arthritis, rheumatic fever and type 1 and 2 diabetes.

On the brink of new treatments for rheumatoid arthritis

Rheumatoid arthritis is an immune disorder that can cause chronic joint inflammation, joint destruction and disability. Unlike osteoarthritis, which is more common in older people, rheumatoid arthritis typically begins in younger adults, between 20 and 40 years old.

An investigational drug called mavrilimumab, which has shown positive results in clinical trials for treating rheumatoid arthritis, can trace its origins back to discoveries made by researchers at the Walter and Eliza Hall Institute. The drug has met its safety and efficacy endpoints in phase 2 clinical trials, supporting further development.

The drug dampens specific inflammatory molecules known to exacerbate rheumatoid arthritis. This drug targets the receptor for granulocyte-macrophage colony stimulating factor (GM-CSF). GM-CSF and its receptor were first discovered at the Walter and Eliza Hall Institute by Professor Don Metcalf, Professor Nick Nicola and colleagues in the 1970s.

Clinician-scientist Professor Ian Wicks, from the Walter and Eliza Hall Institute and The Royal Melbourne Hospital, has made important contributions to the development of mavrilimumab for the treatment of rheumatoid arthritis.

"As a result of the early work of Professors Metcalf and Nicola the institute held the patent for the GM-CSF receptor," Professor Wicks said. "We collaborated with biotechnology companies AMRAD (now CSL) and Cambridge Antibody Technology (now MedImmune,

a wholly owned subsidiary of AstraZeneca) to develop the first fully human anti-GM-CSF receptor antibody. This was the start of the work that led to the clinical trials that are now showing such promise." MedImmune, which has a licence agreement with CSL, is leading the clinical studies.

More than a third of people with rheumatoid arthritis do not respond adequately to existing treatments that target other molecules in the inflammatory response, which is why new approaches are needed.

Professor Wicks said that mavrilimumab looked particularly exciting as a treatment for rheumatoid arthritis due to its rapid action.

"People are experiencing significant relief of symptoms and, importantly, reduced pain within 2-3 weeks, rather than on average 6 weeks [with existing drugs]," he said. "Most people associate arthritis with getting old, however rheumatoid arthritis is a very different condition. It affects young people with families to raise, jobs to go to and it makes life very difficult, so the availability of a treatment that helps you get back to your life is very important for these people."

"This is a very Australian story," Professor Wicks said. "The drug is a classic example of a clinical development that was possible due to basic discoveries and research at the Walter and Eliza Hall Institute. It is also testament to long-term philanthropic support from the John T Reid Charitable Trusts that has enabled my laboratory to conduct this research."



Rheumatoid arthritis causes chronic joint inflammation and affects up to 140,000 Australians. Professor Ian Wicks has a long-term commitment to treating and researching rheumatoid arthritis, making fundamental biological discoveries that have helped drive new clinical treatments.

Closing the gap in acute rheumatic fever

Acute rheumatic fever is a complication of bacterial infection with group A streptococcus.

Aboriginal Australians and Pacific Islanders have some of the world's highest rates of acute rheumatic fever and related rheumatic heart disease. Rheumatic heart disease is a chronic, sometimes fatal, illness caused by recurrent episodes of acute rheumatic fever in early life, which damages heart valves. Approximately 45 per cent of Aboriginal people who require heart valve surgery in Australia are less than 25 years old.

Researchers from the Walter and Eliza Hall Institute, Menzies School of Health Research in Darwin and Telethon Kids Institute in Perth are collaborating on a project to decrease the burden caused by rheumatic fever and heart disease in Australian Aboriginal and Pacific Islander communities.

Dr Willy-John Martin, who is leading the project together with Professor Ian Wicks, said rheumatic fever should be an Australian health and medical research priority.

“We believe cutting-edge strategies should be applied to identifying and preventing acute rheumatic fever, and ensuing rheumatic heart disease, in Aboriginal and Pacific Islander communities.”

“Despite decades of research, there is still no diagnostic test, no vaccine, and limited therapeutic options for acute rheumatic fever and its cardiac complications,” Dr Martin said. “We believe cutting-edge strategies should be applied to identifying and

preventing acute rheumatic fever, and ensuing rheumatic heart disease, in Aboriginal and Pacific Islander communities.”

Dr Martin said the initial project would focus on developing a diagnostic test to identify people with acute rheumatic fever following streptococcal infection.

“We are using the latest technologies to identify biomarkers and design an assay to measure the immune response to acute rheumatic fever,” Dr Martin said. “The development of a diagnostic test for acute rheumatic fever is urgently needed to help reduce the heavy burden of rheumatic heart disease in Aboriginal Australians, in the Pacific Islands, and throughout the developing world.”

Dr Martin said the research team had begun an extensive study of blood samples from participants in the Northern Territory.

New diagnostic approaches in development for coeliac disease

Coeliac disease is an autoimmune disorder in which the body inappropriately reacts to gluten in the diet.

The disease can cause severe digestive symptoms such as nausea, vomiting and diarrhoea and is associated with malnutrition, osteoporosis, autoimmune diseases and cancer.

Institute researcher and gastroenterologist at The Royal Melbourne Hospital Dr Jason Tye-Din and colleagues have made significant progress in developing a novel diagnostic test for coeliac disease. This test may one day enable coeliac disease to be diagnosed without the need for prolonged gluten exposure or invasive small bowel biopsy.

The immune diagnostic test builds on fundamental research discoveries made at the institute on how the immune system of people with coeliac disease reacts to dietary gluten. The test works by detecting a very specific T cell response to gluten

in the bloodstream, which is highly predictive of coeliac disease.

“This test may one day enable coeliac disease to be diagnosed without the need for prolonged gluten exposure or invasive small bowel biopsy.”

Dr Tye-Din and Dr Bob Anderson from biotechnology company ImmusanT Inc. in Boston, US, led a study of the immune test in 48 participants. The test was able to detect a gluten-specific T cell response in the majority of people with coeliac disease and, importantly, was negative in all participants who did not have coeliac disease. Larger studies are now planned to verify the tests' role as a new diagnostic approach for coeliac disease.

In a separate study working with Barwon Health, Deakin University,

Healthscope Pathology and The University of Queensland Diamantina Institute, the team also found that coeliac disease is more common in Australia than previously recognised. This population-based study revealed one in 70 Australians have coeliac disease, although 80 per cent remain undiagnosed. Surprisingly, more than half of the population carried the major HLA risk genes for developing coeliac disease.

Dr Tye-Din said combining the HLA gene test with traditional screening antibody tests may improve the accuracy of testing for coeliac disease in some situations, allowing many unnecessary, costly and invasive small bowel biopsies to be avoided. “In this study the inclusion of a simple genetic test helped identify a substantial number of people whose antibody tests were falsely positive and who did not actually require a bowel biopsy to test for the possibility of coeliac disease,” he said.

Testing new molecules for chronic inflammatory diseases

Chronic inflammatory diseases are painful and debilitating conditions.

Existing treatments can have serious side-effects and do not work in all cases, therefore new drugs and approaches are needed to help patients.

A recently discovered cell death pathway called necroptosis has been linked to chronic inflammatory diseases. Necroptosis is a vital process in which cells undergo programmed death while warning the immune system that something has gone wrong. However when necroptosis is inappropriately activated, it can promote inflammation and the development of inflammatory disease.

Dr James Murphy, Associate Professor John Silke and institute colleagues provided the first genetic proof that a protein named MLKL was required for necroptosis; as well as the first full length, atomic resolution, three-dimensional structure of the protein.

Their work showed MLKL is a 'dead enzyme', which needs to be switched on before it can kill the cell. As MLKL directly kills cells, and is unlikely to have other roles, it could be a good target for developing drugs that specifically block necroptosis without affecting other cellular processes, limiting the potential for unwanted side-effects.

Catalyst Therapeutics, a joint venture between the Walter and Eliza Hall Institute and SYN|thesis Med Chem, has invested in a drug discovery project to identify small molecules that inhibit MLKL. The project has already identified a number of lead molecules, and we are working with medicinal chemists, led by Associate Professor Guillaume Lessene, to develop potential compounds for further testing.

MLKL-inhibitors have the potential to help people who are affected by chronic inflammatory diseases such as psoriasis, Crohn's disease, inflammatory bowel disease and rheumatoid arthritis.



Chronic idiopathic urticaria (CIU) is a disease that causes recurrent itchy hives, with no apparent trigger. Clinician and PhD student Dr Priscilla Auyeung is studying how immune cells that release inflammatory histamines become activated in CIU, to improve how the disease is diagnosed and treated.

INFECTIOUS DISEASES

Infectious diseases continue to be a significant burden of disease globally, causing many millions of deaths. The institute has clinical and translational research focused on global health problems such as malaria, hepatitis B, HIV and tuberculosis.

Investigating new agents in hepatitis B infection

Hepatitis B is a chronic infectious disease that affects about two billion people worldwide.

Hepatitis B can often establish a lifelong infection that puts people infected with the virus at a substantially increased risk of liver damage, including cirrhosis and liver cancer.

The Walter and Eliza Hall Institute has entered into a research collaboration with TetraLogic Pharmaceuticals Corporation to examine TetraLogic's SMAC-mimetic agent birinapant for treating viral infections.

Birinapant is an agent that targets proteins involved in the apoptosis programmed cell death pathway. It has shown promise in clinical trials for treating cancers including blood cancers and solid tumours.

Dr Marc Pellegrini is leading the project at the Walter and Eliza Hall Institute. He said the research collaboration would investigate whether birinapant could also be effective in treating viral infections such as hepatitis B.

“If successful, the use of birinapant to treat hepatitis B would represent a completely novel approach to treating viral infections.”

“Preclinical studies performed at the institute have indicated that SMAC-mimetics can decrease the viral burden in models of human hepatitis B virus,” Dr Pellegrini said. “Birinapant appears to induce apoptosis of virally

infected liver cells while sparing the non-infected cells. If successful, the use of birinapant to treat hepatitis B would represent a completely novel approach to treating viral infections.”

Dr Pellegrini said birinapant was expected to enter a clinical trial in October 2014 in hepatitis B virus-infected people, to be conducted at multiple sites including Melbourne, with other centres in Adelaide, Perth, Auckland and Christchurch.

Mr Kevin Buchi, chief executive officer of TetraLogic, said the company was excited about the collaboration. “We look forward to further progress in the research program with the Walter and Eliza Hall Institute, building on pioneering basic research to attack infectious disease with a completely novel therapeutic approach.”



Hepatitis B is a chronic disease that establishes a lifelong infection, and has no cure. Clinician-scientist Dr Marc Pellegrini is working with TetraLogic Pharmaceuticals Corporation to investigate whether an anti-cancer drug could also be effective in treating viral infections such as hepatitis B. The agent is expected to enter a clinical trial in October 2014 in hepatitis B virus-infected people.

Australian-made malaria vaccine to enter human trials

Despite the urgent need for a malaria vaccine, no effective vaccine currently exists.

It is estimated that half the world's population is at risk of contracting malaria, which kills more than 700,000 people a year, mostly children under five and pregnant women.

Australian researchers have developed the first malaria vaccine that can be tailored to combat the many variants of malaria that exist around the world. The new vaccine uses a genetically attenuated parasite (GAP) to protect people who are at risk from malaria infection.

“The GAP vaccine has the ability to be modified to suit the variability that occurs in malaria between regions and over time.”

The vaccine was developed by a team of researchers led by Professor Louis Schofield, Dr Krystal Evans and Professor Alan Cowman from the Infection and Immunity division, and Professor James McCarthy from the QIMR Berghofer Medical Research Institute.

The vaccine targets the blood stage of malaria infection, which is responsible for classic malaria symptoms such as headache, fever, shivering and joint pain.

Dr Evans said the GAP vaccine was based on many years of research at the Walter and Eliza Hall Institute, identifying critical molecules in the malaria parasite that were recognised by the immune system.

“The funding will allow us to firstly manufacture the vaccine in sufficient quantities, and to high enough standards, for human trials,” Dr Evans said.

“We will then test how effective the vaccine is in inducing a protective immune response against malaria. If these trials are successful, the next stage will be to develop the vaccine further, by adding additional features to prevent malaria transmission, such as modifying it to match regional and species variants of the malaria parasite.”

The manufacture and trial of the GAP vaccine is being supported by an Australian National Health and Medical Research Council (NHMRC) Development Grant. The institute also received funding from the Australian Government for this project, enabling regulatory and manufacturing advice for human trials of the vaccine, which are scheduled to begin in 2015.

Professor Schofield said the GAP vaccine represented an important new approach to combating malaria. “There is a clear need for a vaccine against malaria,” he said. “In many parts of the world, the malaria parasite has developed resistance to antimalarial medications and an effective vaccine could offer people in malaria-endemic regions long-lasting protection against this devastating disease. The GAP vaccine has the ability to be modified to suit the variability that occurs in malaria between regions and over time.”



Dr Diana Hansen is studying plasma samples from a malaria-endemic region of Papua New Guinea to identify potential targets of naturally-acquired immunity to malaria. Her research has revealed that antibody responses to the parasitic protein *Plasmodium falciparum* Reticulocyte Binding Protein Homologue 5 (PfRh5) are associated with protection from high parasite numbers in the blood and clinical malaria.

PARTNERSHIPS

The institute is involved in a number of national and international partnerships to drive research and translation forward and deliver health benefits to the community.

Consumers advocating for medical research

Consumer involvement benefits medical research, enabling researchers to draw inspiration from people's personal and professional experiences with disease to inspire medical research design, and improving communication of results to the community.

Recognising this, the institute has laid the foundations for an institute consumer advisory panel. Dr Judith Slocombe, chief executive officer of the Alannah and Madeline Foundation, has been appointed the inaugural chair of the panel. Dr Slocombe will work closely with clinician-scientist

Associate Professor Clare Scott who has championed establishment of the consumer advisory panel.

A consumer may have been affected by a disease themselves or cared for a family member with the disease. Consumers can highlight important research issues not fully considered by researchers and educate researchers about their disease from a community point of view.

In the coming decades, much of the institute's research (particularly genetic and genomic research) will have a significant impact on the community and input from educated

consumers is necessary to guide its implementation. Some funding bodies also request consumer input into grant applications. A consumer research buddy system has been implemented to encourage discussions between researchers and consumers, which the researchers will draw inspiration from during grant and project development. To date 25 buddy pairs have been established, with positive feedback already being received. Such involvement will ensure that the institute's research is relevant for, and accessible to, the community.



Dr Judith Slocombe (left) has been appointed the inaugural chair of the institute's consumer advisory panel, working closely with head of clinical translation Professor Andrew Roberts (right).

Driving cancer discoveries to treatment

The \$1 billion Victorian Comprehensive Cancer Centre (VCCC) has begun to take shape in the Parkville biomedical hub.

The VCCC aims to improve cancer research, treatment and care. The strength of the VCCC is the collaboration between its eight members – Peter MacCallum Cancer Centre, Melbourne Health, The University of Melbourne, Walter and Eliza Hall Institute of Medical Research, Royal Women’s Hospital, Royal Children’s Hospital, Western Health and St Vincent’s Hospital Melbourne.

The Walter and Eliza Hall Institute is the research powerhouse of the VCCC. Our contribution is demonstrated

through the impact of our research publications and the advances our discoveries have brought to cancer treatment, including colony stimulating factors and new therapies targeting the cell survival machinery to kill cancer cells. The VCCC will assist members to accelerate the discovery of new cancer treatments, attract the nation’s leading cancer researchers and provide a centre of excellence for people affected by cancer.

The institute has delivered benefits to millions of cancer patients and we are excited by the prospect of the patient benefits we hope will flow from the collaborative opportunities presented by the VCCC.

Alliance making personalised medicine a reality

The institute is a proud partner in a new Victorian alliance to unlock the genetic secrets behind disease.

The Melbourne Genomics Health Alliance, launched in February 2014, is integrating genomic information into everyday healthcare, bringing truly personalised medicine one step closer to reality for Australians.

The alliance brings together some of the very best health, research and education organisations in Victoria – Melbourne Health, Royal Children’s Hospital, The University of Melbourne, Walter and Eliza Hall Institute, Murdoch Children’s Research Institute, CSIRO and Australian Genome Research Facility.

The alliance is enabling patients with genetic conditions access to genome sequencing from accredited laboratories within the member organisations; researchers to analyse

genomic information and conduct further research into genetic diseases and treatments; and research findings to inform improvements to patient care. Although genomic sequencing requires innovative science and cutting-edge technology, the alliance prides itself on being clinically led, ensuring ‘the patient’ always comes first, and providing the information that clinicians need to improve diagnosis and treatment approaches.

Five pilot projects are underway as part of the alliance, and have begun recruiting patients. Clinician-scientist Professor Andrew Roberts is leading a pilot project on acute myeloid leukaemia, and Associate Professor Melanie Bahlo and Dr Ian Majewski are involved in developing the bioinformatics analysis pipeline used for analysis of all the diseases.

Donating blood to research

The Volunteer Blood Donor Registry (VBDR), established in March 2012 by the Walter and Eliza Hall Institute and Melbourne Health, collects volunteer donor blood samples for ethically approved research on the Parkville campus.

The VBDR has more than 400 donors contributing to 17 research projects, including two external to the

institute. More than 280 VBDR blood donors have allowed us to supply more than 450 samples to aid institute research into malaria, rheumatoid arthritis, rheumatic fever and heart disease, lupus, blood disorders, coeliac disease, diabetes and HIV.



The Volunteer Blood Donor Registry collects donor blood samples for ethically approved research on the Parkville campus. Donors have supplied more than 450 samples to aid institute research into malaria, rheumatoid arthritis, rheumatic fever and heart disease, lupus, blood disorders, coeliac disease, diabetes and HIV.

PATENTS GRANTED IN 2013-14

Compounds and methods of use (1)

Inventors: J Baell, P Colman, C Bui, P Czabotar, G Lessene, B Sleebs, D Dudley, S Elmore, W Fairbrother, J Flygare, C Ndubaku, G Nikolakopoulos, A Petros, C Rye, B Smith, A Souers, K Watson

Singapore, Philippines, China, France, Spain, Italy, UK, New Zealand, Germany

Compounds and methods of use (2)

Inventors: J Baell, P Colman, C Bui, P Czabotar, G Lessene, B Sleebs, D Dudley, S Elmore, W Fairbrother, J Flygare, C Ndubaku, G Nikolakopoulos, A Petros, C Rye, B Smith, A Souers, K Watson

China, Russia, Ukraine, New Zealand

Apoptosis-inducing agents for the treatment of cancer and immune and autoimmune diseases

Inventors: P Colman, P Czabotar, G Lessene, M Bruncko, Y Dai, H Ding, G Doherty, L Hasvold, A Kunzer, R Mantei, W McClellan, S Moore, C Park, A Petros, X Song, A Souers, G Sullivan, Z Tao, X Wang, G Wang, M Wendt

New Zealand, Russia, South Africa

Immunogenic compositions and uses thereof

Inventors: L Schofield
US

Clinical Translation Centre

Andrew Roberts, MB BS *Qld* PhD
Melbourne FRACP FRCPA

David Segal, BSc(Hons) *UWA* PhD
ANU

Cathy Quilici

Katya Gray, consumer advisory panel coordinator

Jenni Harris, BSc(Nursing)
Ballarat GradDipCC(ICU) *Monash*
GradDipSc(Nursing) *VUT*, clinical project officer

Kimvan Le, administrative officer to Metcalf Chair (from 11/13)

Lina Laskos, BSc(Hons) *Monash* PhD
Monash, clinical translation ethics and compliance manager

Alpha-helical mimetics

Inventors: G Lessene, J Baell
Canada

Structure of the C-terminal region of the insulin receptor alpha chain and the insulin-like growth factor receptor alpha chain

Inventors: M Lawrence, J Menting, C Ward, B Smith
US

Barley with low levels of hordeins

Inventors: G Tanner, C Howitt
China, US, Australia

Structure of the insulin receptor ectodomain

Inventors: M Lawrence, T Adams, T Garrett, M Lou, G Lovrecz, L Sparrow, V Streltsov, C Ward
Australia

Arylsulfonamide compounds

Inventors: G Lessene, B Sleebs, J Baell, W Fairbrother, J Flygare, M Koehler
Switzerland, Italy, Germany, France, Spain, Turkey, UK

A method of cell isolation

Inventors: G Lindeman, J Visvader, F Vaillant, M Shackleton
Canada, US

Business Development Office

Julian Clark, BSc(Hons) *Flinders* PhD
Glasgow, head of Business Development

Tim Bakker, BEComp *Melbourne* BSc
Melbourne, project manager - information management and ICT (from 10/13)

Michele Cook, administrative officer
Patricia Diggie, BSc(Hons) *Monash* PhD
Bristol, IP and contracts associate
Clara Gaff, BSc(Hons) *Melbourne* PhD
Melbourne, program leader (from 10/13)

Rhiannon Jones, BSc(Hons) *Adelaide* PhD
Adelaide, project manager

Therapeutic and diagnostic agents

Inventors: L Harrison, S Mannering, A Purcell, N Williamson
Canada, India

Therapeutic molecules and methods for generating and/or selecting same

Inventors: D Fairlie, P Colman, D Huang, E Lee
US

Methods and compositions for treating malaria

Inventors: A Cowman, S Lopaticki, J Beeson, A Maier, K Persson, J Richards
US, Australia

A method of treatment and prophylaxis

Inventors: I Wicks, D Metcalf, A Roberts, K Lawlor, I Campbell
Canada

Methods and compositions for treating and preventing malaria using an invasion ligand directed to a protease-resistant receptor

Inventors: L Chen, A Cowman, J Baum
Australia

Novel anti-cancer agents

Inventors: G Lessene, T Burgess, F Walker, K Watson, H Witchard
US



EDUCATION

EDUCATION

The Walter and Eliza Hall Institute engages in education to inspire young researchers and to foster the development of the next generation of Australian scientists. Pursuing postgraduate studies at the institute provides the candidates with a stimulating and challenging research experience at the forefront of science.

136
PhD students

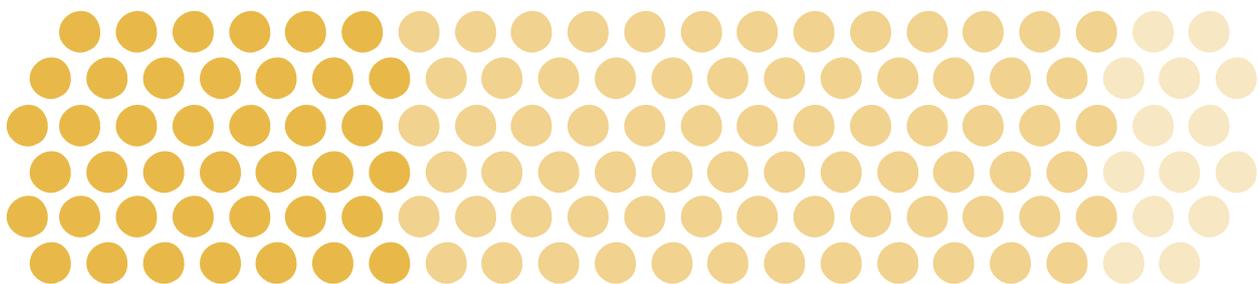
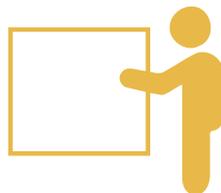
19
Honours students

20
UROF students



12
publications by
student authors with
an impact factor >10

74
publications
with student
authors



41
institute seminars

75
visiting seminars

14
postgraduate seminars

PhD student wins top NHMRC scholarship

Dr Michael Low was awarded the 2014 Gustav Nossal Scholarship from the National Health and Medical Research Council (NHMRC) to undertake PhD studies at the Walter and Eliza Hall Institute.

The Gustav Nossal Scholarship is awarded to the highest-ranked clinical postgraduate applicant in medical and dental science.

“The institute offers a great educational program and many open meetings that allow close collaboration between laboratories, facilitating cooperation between scientists with different specialties.”

Dr Low completed a Bachelor of Medicine, Bachelor of Surgery and Bachelor of Medical Science at The University of Melbourne and is also completing specialty training as a clinical and laboratory haematologist. Dr Low said he was convinced to

study at the institute after meeting his supervisors.

“During my medical training I became aware of the institute and its reputation for leading the world in new biological discoveries,” he said. “There are many inspiring laboratory heads at the institute, and I was convinced to study here after meeting my supervisors, Professor David Tarlinton and Professor Stephen Nutt. They combine amazing scientific knowledge and experience with humble and approachable personalities.”

Dr Low’s project is looking into the pathways that control differentiation and survival in antibody-producing plasma cells, and how these pathways are involved in cancers of plasma cells (multiple myeloma).

Dr Low said he looked forward to combining his clinical experience with the scientific knowledge gained at the institute. “The institute offers a great educational program and many open meetings that allow close collaboration between laboratories, facilitating cooperation between scientists with different specialties,” he said.

Award-winning PhD student

Dr David Riglar, who completed his PhD at the institute in 2013, has won a number of awards for his PhD studies into malaria biology.

Dr Riglar was one of three commendees in the 2014 Victorian Premier’s Award for Health and Medical Research. He was commended for his PhD research and achievements, which included capturing malaria parasites ‘red handed’ invading red blood cells using super-resolution microscopy. He was first author on the subsequent paper, published in the journal *Cell Host & Microbe*.

In addition to the Premier’s award, Dr Riglar also received a Dean’s Award for Excellence in a PhD Thesis and was one of six awardees for the 2014 Chancellor’s Prize for Excellence in a PhD Thesis, both from The University of Melbourne.

David is currently undertaking postdoctoral training at Harvard Medical School, US, with funding from an NHMRC/R.G. Menzies Fellowship. The NHMRC/R.G. Menzies Fellowship is awarded in partnership with the NHMRC to the highest ranked candidate in the Overseas Early Career Fellowships category.



Dr Michael Low is a clinician and PhD student researching immunology and multiple myeloma. He won the 2014 Gustav Nossal Fellowship from the NHMRC as the highest-ranked clinical postgraduate applicant in medical and dental science.

PhD students publish in top journal

Three PhD students were joint first authors on a paper published in the journal *Cell* in May 2014.

The students Mr James Rickard, Ms Joanne O'Donnell and Mr Joseph Evans worked with supervisors and joint final authors Associate Professor John Silke, Dr Motti Gerlic and Dr Ben Croker. *Cell* is a highly competitive journal, with an impact factor of 33.

The *Cell* paper was one of 12 publications with an impact factor of 10 or greater on which institute students were authors. Students were named on a further 62 publications in 2013-14.

The *Cell* paper demonstrated that a recently discovered type

of cell death called necroptosis could be the underlying cause of inflammatory disease.

The Cell paper was one of 12 publications with an impact factor of 10 or greater on which institute students were authors.

The research team demonstrated that a previously identified molecule involved in necroptosis, called RIPK1, prevented uncontrolled inflammation and was therefore essential for survival. This finding

could lead to future treatments for inflammatory diseases including Crohn's disease, rheumatoid arthritis and psoriasis.

The researchers also showed that the 'survival' molecule RIPK1 acted as a 'gatekeeper' between cell life and death, and was essential for the cell's decision to live or die, and their choice of how to die.

Mr Rickard and Ms O'Donnell are enrolled as PhD students through The University of Melbourne, and Mr Evans is enrolled through La Trobe University.



PhD students Mr James Rickard, Mr Joseph Evans and Ms Joanne O'Donnell (left to right) were joint first authors on a *Cell* paper published in May 2014. The paper demonstrated a protein called RIPK1 was essential for survival by preventing uncontrolled inflammation.

Supporting medical professionals during their PhD studies

Clinician-scientists engage professionally in research, but also see patients, usually in a clinical specialty connected to their research.

The clinician-scientist career is challenging, rewarding, and offers opportunities to better understand diseases and improve outcomes for patients. It also improves future career opportunities for medical professionals, and enables the translation of research discoveries to health outcomes.

The institute has 22 medical professionals and medical students who are undertaking research PhD studies.

In response to specific requirements of medical professionals commencing their PhD studies, the Education Committee and Clinical Translation Centre devised support meetings held three times a year. Commencing PhD students can meet second and third year medical graduate PhD students, and established clinician-scientists, to discuss challenges associated with moving from a position of competence and authority in the clinics into the first year of PhD studies in a basic research laboratory.

The Clinical Translation Centre is organising the meetings and has extended the support to include a practical lab skills program for new medical graduate PhD students.

Harold Mitchell Travel scholarships

The Harold Mitchell Foundation gives the institute \$10,000 each year to award one postdoctoral scientist and one PhD student with \$5000 to travel to overseas conferences and develop connections with potential collaborators.

In 2013 the Harold Mitchell Travel scholarships were awarded to PhD student Ms Darcy Butts from the Molecular Medicine division, and postdoctoral fellow Dr Cyril Seillet from the Molecular Immunology division.

Ms Butts said the fellowship funded her to participate in the Keystone Stem Cells and Reprogramming symposium in the US in April 2014.

“This opportunity substantially influenced my career development by providing an outstanding environment to present my PhD work and the opportunity to directly connect with trailblazers in the field of stem cell biology,” she said.

PhD completion seminars program

As part of their PhD, students at the Walter and Eliza Hall Institute are required to provide a research presentation prior to final completion of their degree.

Over the past few years student numbers have doubled, making it no longer possible to accommodate all PhD completion seminars in the existing Wednesday Seminar Series.

In response, the institute began a new series of seminars in 2014 called the PhD Completion Seminar Series, which covers a range of topics being undertaken by PhD students at the institute. The seminars are open to the general public and are an integral part of PhD candidature.



Medical oncologist Dr Valerie Heong is undertaking a PhD with ovarian cancer clinician-scientist Associate Professor Clare Scott. Dr Heong is working to develop novel treatment strategies for a subclass of ovarian cancer, using tumour samples derived from patients to test new drugs.

Pieces of the cell death puzzle

Programmed cell death is a pathway involved in many diseases, including cancers, immune disorders and viral infections.

Honours student Mr Damian D'Silva is working jointly with institute researchers Dr Seth Masters and Dr Silvia Alvarez-Diaz on finding novel proteins involved in programmed cell death.

Necroptosis and pyroptosis are two recently discovered forms of programmed cell death that have been implicated in disease development. Necroptosis happens when the cell has been damaged or infected and dies in a regulated manner, while signalling to the immune system that something has gone wrong. Pyroptosis occurs when immune cells swell and die in response to infection.

Mr D'Silva said his honours project provided the opportunity to work with state-of-the-art technologies being developed for the first time in Australia by institute researchers.

"As part of my project I am applying CRISPR technology for identifying novel proteins and controllers of necroptosis and pyroptosis," Mr D'Silva said. "CRISPR has just arrived in Australia and it is a great opportunity to use this emerging technology to study a pathway that we still have so much to learn about."

Mr D'Silva said he chose to do his honours year at the institute because of its history and expertise in researching programmed cell death. "During my undergraduate degree, I became fascinated with cell death and wanted to do my honours in that field," he said. "The Walter and

Eliza Hall Institute has a big program investigating cell death and some of the top cell death researchers, such as David Vaux and Andreas Strasser. It was a great opportunity to study a largely unknown form of programmed cell death, with lots of room to discover new things."

Mr D'Silva said honours was a chance to try out a research career. "Honours has been a really good experience so far," he said. "The atmosphere at the institute is friendly and open and, no matter who they are, people are always happy to talk to you and provide advice on your work. The resources and facilities are also great, allowing you to focus on your project and get the best out of your work."

Following his honours year, Damian plans to do a PhD to continue his investigations into cell death.



Programmed cell death has been implicated in the development of many diseases, including cancers and immune disorders. Mr Damian D'Silva is completing his honours year at the institute, identifying novel proteins that control cell death.

Reversing leukaemia

Acute lymphoblastic leukaemia is the most common cancer affecting children.

In leukaemia, immature white blood cells replicate abnormally and build up in the bone marrow, interfering with production of normal blood cells.

PhD student Ms Grace Liu was the first author on a *Genes & Development* paper showing B-cell acute lymphoblastic leukaemia (B-ALL) could be successfully 'reversed' by coaxing cancer cells back into normal development.

The research showed switching off a gene called Pax5 could cause cancer in a model of B-ALL, while restoring its function could 'cure' the disease. Ms Liu and supervisor Dr Ross Dickins led the research, in collaboration with institute colleagues and collaborators in Vienna and the US.

“The Walter and Eliza Hall Institute really is a world-class institution that facilitates this level of research.”

Ms Liu said the team used a newly developed 'genetic switch' technology to inhibit then reactivate *Pax5* in the leukaemia model. "Along with other genetic changes, deactivating Pax5 drives normal blood cells to turn into leukaemia cells, which has been shown before," Ms Liu said.

"We showed for the first time that reactivating Pax5 enabled the cells to resume their normal development and lose their cancer-like qualities, effectively curing the leukaemia. What was intriguing for us was that simply restoring Pax5 was enough to normalise these cancer cells, despite the other genetic changes."

Ms Liu said *Pax5* was a gene frequently 'lost' in childhood B-ALL. "Pax5 is essential for normal development of a type of white blood

cell called B cells," she said. "When Pax5 function is compromised, developing B cells can get trapped in an immature state and become cancerous. Restoring Pax5 function, even in cells that have already become cancerous, removes this 'block', and enables the cells to develop into normal white blood cells."

Ms Liu has completed her PhD and, with support from the institute's Edith Moffatt Travel Scholarship, attended an international conference and visited laboratories in Europe to present her results. She said that her PhD studies have been highly challenging, but also stimulating and ultimately rewarding.

"Undertaking a PhD not only encourages you to ask complex and relevant questions, but also helps us to develop the skills and confidence to address them using a variety of intellectual and technical skills," Ms Liu said.

"The Walter and Eliza Hall Institute really is a world-class institution that facilitates this level of research, both with the expertise available but also in helping us to reach out across Melbourne, Australia and the world for collaborations."

Collaborating organisations: Research Institute of Molecular Pathology (Austria), St. Jude Children's Research Hospital (US) and University of Minnesota (US).

Funding partners: Australian National Health and Medical Research Council, Leukaemia Foundation, Sylvia and Charles Viertel Charitable Foundation, veski and Victorian Government.

More information: Liu GJ *et al.* Pax5 loss imposes a reversible differentiation block in B-progenitor acute lymphoblastic leukemia. *Genes & Development*. 2014 Jun 15;28(12):1337-50



PhD student Ms Grace Liu was first author on a paper that used a newly developed 'genetic switch' technology to show that switching on a gene called *Pax5* could reverse cancer in a model of childhood leukaemia. The paper was published in the journal *Genes & Development*.

2013-14 GRADUATES

Congratulations to the following students who successfully completed their studies this year.

Doctor of Philosophy, The University of Melbourne

Dr Yunshun (Andy) Chen

Differential expression analysis of complex RNA-Seq experiments.

Professor Gordon Smyth, Professor Terry Speed

Dr Silvia Corona

Targeted therapeutics in colon cancer.

Professor Antony Burgess, Dr Francesca Walker

Dr Alexis Delbridge

Exploration of DNA damage-induced apoptosis and its relevance for tumour suppression.

Professor Andreas Strasser, Dr Philippe Bouillet

Dr Jamie Gearing

Screening for epigenetic modifiers of X-chromosome inactivation.

Dr Marnie Blewitt, Professor Doug Hilton

Dr Eugene Kapp

Improved bioinformatics tools for the analysis of mass spectrometry based on Peptidomics data.

Professor Terry Speed, Dr Thomas Nebl, Associate Professor Tony Papenfuss

Dr Francine Ke

The role of BOK in apoptosis and development.

Professor Andreas Strasser, Professor Jerry Adams

Dr Xiao (Tommy) Liu

The role of suppressor of cytokine signalling-3 (SOCS-3) in chondrocytes during development and in inflammatory arthritis.

Professor Ian Wicks, Dr Kate Lawlor, Dr Ben Croker

Dr Swee Heng Pang

Critical roles for the transcription factor PU.1 in early lymphopoiesis in adult mice.

Dr Li Wu, Professor Stephen Nutt, Dr Sebastian Carotta

Dr Elizabeth Valente

Tumour suppression by p53 and therapeutic targeting of the p53-MDM2 interaction.

Professor Andreas Strasser, Dr Philippe Bouillet

Dr Michael White

Functional characterisation of caspase-9 in haematopoiesis.

Professor Ben Kile, Professor David Huang

Bachelor of Science (Honours), The University of Melbourne

Ms Katrina Black

Physiological regulators of ion channels.

Dr Jacqui Gulbis, Associate Professor Mike Lawrence, Dr David Miller

Mr Michael Coffey

Regulation of host cell invasion in *Toxoplasma* parasites.

Dr Chris Tonkin, Dr Alessandro Uboldi

Mr Michael Erlichster

Tumour suppressive mechanisms of myeloid transcription factors.

Dr Ross Dickins, Dr Mark McKenzie

Ms Laura Galvis

Epigenetic regulators of embryonic lung progenitor cells.

Dr Marie-Liesse Asselin-Labat, Dr Marnie Blewitt

Mr Tran (Andrew) Giang

Understanding the regulation of immune cell fates.

Professor Phil Hodgkin, Dr Susanne Heinzel

Ms Natasha Jansz

Identifying interactions between Smchd1 and other epigenetic modifiers.

Dr Marnie Blewitt, Dr James Murphy

Mr Nikolce Kocovski

Understanding the regulation of immune cell fates.

Professor Phil Hodgkin, Dr Shalin Naik

Mr Mark Xiang Li

Post-translational modifications affecting B cell behaviour.

Professor David Tarlinton, Dr Simona Infantino

Ms Ann Ly

Understanding the development of antibody responses to malaria.

Dr Diana Hansen, Dr Lisa Ioannidis

Ms Helen McRae

Understanding the regulation of brain and endocrine development through central control of chromatin.

Associate Professor Anne Voss, Associate Professor Tim Thomas

Ms Alison Mildenhall

Virus miRNAs that target the host innate immune response and inflammation.

Dr Seth Masters, Dr James Vince

Mr Joseph O'Niell

Determining the function of a malaria parasite adhesion.

Dr Wai-Hong Tham, Professor Alan Cowman

Ms Starling Sim

Platelet function in cancer progression.

Dr Emma Josefsson, Professor Warren Alexander

Mr Blake Smith

Delivery of RNAi therapeutics by the mammalian SID-1 orthologs.

Dr Ken Pang, Professor Ian Wicks

Mr Che Stafford

Development of new inhibitors of RIPK2 kinase.

Associate Professor Guillaume Lessene, Dr Ueli Nachbur, Associate Professor John Silke

Ms Hayley Stratton

Molecular and structural analysis of malaria invasion.

Dr Tony Hodder, Professor Alan Cowman

Mr Kelvin Yaprianto

A novel model of gastric adenocarcinoma and assessment of new therapies.

Dr Lorraine O'Reilly, Professor Andreas Strasser

Bachelor of Science (Honours), visiting students

Mr Jeffrey Kam

Prolactin receptor signalling and breast cancer.

Professor Geoff Lindeman, Professor Bruce Mann, Dr Jane Fox

Ms Mita Hapsari Hazairin

The molecular epidemiology of *Plasmodium falciparum*.

Dr Alyssa Barry, Dr Freya Fowkes

2013-14 PHD IN PROGRESS

Scholarships to support training

APA	Australian Postgraduate Award
ARH	Australian Rotary Health
CCV	Cancer Council of Victoria
Dora Lush	NHMRC Dora Lush
FRS	Faculty Research Scholarship
IPRS	International Postgraduate Research Scholarship
KHA	Kidney Health Australia Scholarship
LFA	Leukaemia Foundation Australia Scholarship
MDS	NHMRC Medical/Dental Postgraduate Scholarship
MIFRS	Melbourne International Fee Remission Scholarship
MIRS	Melbourne International Research Scholarship
MPS	NHMRC Medical Postgraduate Scholarship
NBCF	National Breast Cancer Foundation Scholarship
OCA	Ovarian Cancer Australia Scholarship
Pearl Pearl Scholarship	
Pratt Pratt Foundation	
SACM	Saudi Arabian Cultural Mission Scholarship
WEHI	Walter and Eliza Hall Institute Scholarship
WEHI BGS	Walter and Eliza Hall Institute Bev Gray Scholarship

Student	Project title	Supervisors	Funding
Hesham Abdulla	Modelling the multi-step pathogenesis of T-cell acute lymphoblastic leukaemia.	Dr Matthew McCormack, Professor Warren Alexander, Dr Ben Shields	APA
Raed Alserihi	Targeting self-renewal mechanism in T-cell acute lymphoblastic leukaemia (T-ALL).	Professor Warren Alexander, Professor David Huang, Dr Matthew McCormack	SACM
Chow Hiang (Alexander) Ang	Role of nucleophosmin (NPM1) in normal and leukemic cells.	Dr Stefan Glaser, Associate Professor Paul Ekert, Professor Warren Alexander	MIRS/MIFRS
Fiona Angrisano	Molecular mechanisms underlying ookinete traversal of the mosquito midgut.	Dr Jacob Baum, Professor Alan Cowman, Professor Geoffrey McFadden	Dora Lush
Natasha Anstee	Studies of the role of Mcl-1 in haematopoiesis and leukaemia.	Professor Suzanne Cory, Dr Cassandra Vandenberg	LFA
Brandon Aubrey	Investigating the role of mutant p53 in lymphoma growth and development.	Dr Gemma Kelly, Professor Andreas Strasser	LFA
Priscilla Auyeung	Autoreactive T cells in chronic idiopathic urticaria.	Professor Len Harrison, Professor Phil Hodgkin, Dr Diana Mittag	MPS
Paul Baker	Investigating the role of caspase-4 and caspase-5 in human myeloid cell pyroptosis.	Dr Seth Masters, Dr Marco Herold, Dr Sammy Bedoui	APA
Marilou Barrios	RNA exchanges as a novel means of intracellular communication.	Dr Ken Pang, Dr Seth Masters	MIRS/MIFRS
Sarah Best	Investigation into the role of transcription factors Snai and Id4 in mammary gland development.	Professor Geoff Lindeman, Professor Jane Visvader	Dora Lush
Katrina Black	Physiological regulators of potassium channels.	Dr Jacqui Gulbis, Dr David Miller	APA

Student	Project title	Supervisors	Funding
Julian Bosco	Role of CD52 in T-cell immune regulation.	Professor Len Harrison, Professor Fernando Sanchez, Dr Jian-Guo Zhang	Dora Lush
Jason Brouwer	Structural and biochemical analysis of the pro-apoptotic protein Bak.	Professor Peter Colman, Dr Peter Czabotar	APA
Darcy Butts	An shRNA screen for novel epigenetic regulators of neural stem cell proliferation, differentiation and survival.	Professor Douglas Hilton, Dr Marnie Blewitt, Dr Clare Parish	MIRS/MIFRS
Daniel Cameron	Understanding the evolution of genomic instability using high-throughput sequencing data.	Professor Terry Speed, Associate Professor Tony Papenfuss	APA
Bianca Capaldo	Defining regulators of the luminal lineage using breast cancer cells and iPS cell lines derived from human mammary epithelial cells.	Professor Geoff Lindeman, Professor Jane Visvader	APA
Dineika Chandrananda	Detection of foetal chromosomal abnormalities such as trisomies by massively parallel sequencing of cell-free foetal DNA in maternal plasma.	Professor Terry Speed, Associate Professor Melanie Bahlo, Dr Natalie Thorne	APA
Simon Chatfield	Human neutrophil activation in inflammatory arthritis.	Professor Ian Wicks, Dr Mark McKenzie	FRS The May Stewart Bursary
Kelan Chen	Structural and functional characterisation of a novel epigenetic regulator SmcHD1.	Dr Marnie Blewitt, Dr James Murphy	MIFRS/MIRS
Edward Chen Hsung Chew	Identification and characterisation of genetic factors that contribute to and predict relapses in acute myeloid leukaemia.	Professor Andrew Roberts, Dr Ian Majewski, Professor Warren Alexander	LFA
Hui San Chin	Identifying and targeting novel cancer cell susceptibilities.	Dr Mark Van Delft, Dr Seong Lin Khaw, Professor David Huang	MIRS/MIFRS
Chris Chiu	Antigenic and functional targets of the naturally acquired immunity to blood stage malaria.	Professor Alan Cowman, Dr Diana Hansen, Professor Ivo Mueller	WEHI
Kevin Chow	The regulation of monocyte derived cells during allograft rejection.	Associate Professor Andrew Lew, Dr Yifan Zhan	KHA/NHMRC
Michael Coffey	Host cell effectors in <i>Toxoplasma</i> .	Dr Chris Tonkin, Dr Justin Boddey, Professor Alan Cowman	WEHI
Stephanie Conos	Regulation of caspase-1 dependent cell death and inflammation.	Associate Professor John Silke, Dr James Vince, Dr Lisa Lindqvist	APA
Angus Cowan	Structural investigations into the control of Bax.	Professor Peter Colman, Dr Peter Czabotar	APA
Akshay D'Cruz	Structural and biochemical characterisation of the SPRY protein interaction domain involved in innate immunity.	Dr Sandra Nicholson, Dr Jeff Babon, Professor Nick Nicola	APA
Farrah El-Saafin	Investigating the molecular and cellular role of TBN.	Dr Anne Voss, Dr Tim Thomas	APA
Nima Etemadi	New insight into TNFR1 signalling.	Associate Professor John Silke, Professor David Vaux, Dr Ueli Nachbur	MIRS/MIFRS
Karla Fischer	Cytokine signalling in myeloid leukaemia.	Dr Anissa Jabbour, Professor Andreas Strasser, Professor David Vaux	MIRS/MIFRS

Student	Project title	Supervisors	Funding
Camilla Franca	Discovery and evaluation of novel antigens as serological markers for recent malaria exposure.	Professor Ivo Mueller, Dr Diana Hansen, Professor Louis Schofield	MIFRS/MIRS
Ivan Fung	Regulation of early B Cell differentiation in response to antigen.	Professor David Tarlinton, Professor Phil Hodgkin	APA
Michelle Gazdik	The design of small molecule inhibitors of Plasmeprin V for intervention against malaria.	Dr Brad Sleebs, Dr Justin Boddey, Professor David Huang, Professor Alan Cowman	APA
Clea Grace	Identifying and validating novel targets for cancer therapy.	Professor David Huang, Professor Andreas Strasser, Professor Liam O'Connor	APA
Alison Hadley	Mechanisms of resistance to novel therapies in DNA repair defective high-grade serous ovarian cancer.	Associate Professor Clare Scott, Professor Geoff Lindeman	NHMRC Clinical Postgraduate Research Scholarship
Lyndal Henden	Analysis of structural variation in sequencing data in pedigrees.	Associate Professor Melanie Bahlo, Professor Terry Speed	APA
Valerie Heong	Improving targeted therapy in oncogene-expressing high-grade serous ovarian cancer using novel xenografts.	Associate Professor Clare Scott, Professor Geoff Lindeman	OCA/WEHI BGS
Danika Hill	Functional correlates of acquired immunity to malaria.	Professor Louis Schofield, Professor Alan Cowman	APA
Colin Hockings	The Bak:Mcl-1 complex – a mechanism of resistance to apoptosis.	Dr Ruth Kluck, Professor Jerry Adams	APA
Sweta Iyer	Role for Bak and Bax C-terminus in apoptotic pore formation.	Dr Ruth Kluck, Professor Peter Colman, Dr Brian Smith	WEHI/MIFRS
Reema Jain	Thymic epithelial cell differentiation and apoptosis.	Dr Daniel Gray, Professor Andreas Strasser	MIFRS/MIRS
Natasha Jansz	Characterising novel epigenetic modifiers of X chromosome inactivation.	Dr Marnie Blewitt, Dr James Murphy	APA
Charlie Jennison	Population structure of the human malaria parasite <i>Plasmodium vivax</i> in the Asia-Pacific region.	Dr Justin Boddey, Professor Alan Cowman	MIRS/MIFRS
Timothy Johanson	The role of microRNA's in the differentiation and function of dendritic cells.	Associate Professor Andrew Lew, Dr Mark Chong, Dr Yifan Zhan	APA
Alexander Kennedy	Complement evasion mechanisms of the important human pathogen <i>Plasmodium falciparum</i> .	Dr Wai-Hong Tham, Professor Alan Cowman	APA
Logesvaran Krshnan	Investigating transmembrane organisation in the T-cell receptor complex and its relationship to receptor function.	Dr Matthew Call, Dr Melissa Call	MIFRS/MIRS
Callum Lawrence	Structurally guided small molecule targeting of the insulin and type 1 insulin-like growth factor receptors.	Dr Jacqui Gulbis, Professor Mike Lawrence	APA
Lily Lee	Cell types in normal breast and human breast cancers: when do they express the oestrogen receptor?	Professor Geoff Lindeman, Professor Jane Visvader	NBCF
Sophie (Hye Suk) Lee	The role of Klf1 in haematopoiesis, malignancy and angiogenesis.	Professor Andrew Roberts, Dr Ashley Ng	LFA

Student	Project title	Supervisors	Funding
Mark Li	Characterising the Bak apoptotic pore by mass spectrometry.	Dr Grant Dewson, Dr Andrew Webb, Professor David Vaux	MIRS/MIFRS
Nicholas Liau	Inhibiting inflammatory cytokine signalling in myeloproliferative disease.	Dr Jeff Babon, Professor Nick Nicola	APA
Clara Lin	Dissection of merozoite surface complexes of <i>Plasmodium falciparum</i> involved in invasion.	Professor Alan Cowman, Dr Tony Hodder	APA
Edmond Linossi	Dissecting the role of the suppressor of cytokine signalling (SOCS)-5.	Dr Sandra Nicholson, Professor Nick Nicola, Dr Andrew Webb	APA
Grace Liu	Tumour suppressor mechanisms of B cell transcription factor Pax5 in mice.	Dr Ross Dickins, Dr Lorraine Robb	LFA
Jun Ting Low	A novel model of gastric adenocarcinoma and assessment of new therapies.	Dr Lorraine O'Reilly, Professor Andreas Strasser	APA
Michael Low	Regulation of Mcl-1 transcription and protein stability in myeloma and lymphoma cells.	Professor David Tarlinton, Professor Stephen Nutt	RACP NHMRC CRB Blackburn Scholarship
Aaron Lun	Systems biology for chromatin interaction using ChIA-PET and Hi-C.	Professor Stephen Nutt, Professor Gordon Smyth	APA
Bryan Lye	Characterising the immune cell responses to IMiDs.	Professor Phil Hodgkin, Dr Suzanne Heinzel	MIRS/MIFRS
Chunyan Ma	Differential sensitivity of leukaemia cells to anti-cancer drugs.	Associate Professor John Silke, Dr Gabriel Brumatti, Professor Paul Ekert	MIFRS/MIRS
Kevin Man	The transcription factor IRF4 is essential for TCR affinity-mediated metabolic reprogramming and clonal expansion of T cells.	Professor Stephen Nutt, Dr Axel Kallies	APA
Danushka Marapana	Export of virulence proteins to the surface of the malaria-infected red blood cell of humans.	Professor Alan Cowman, Dr Justin Boddey	APA
Julia Marchingo	Quantifying the contribution of T cell stimuli to T cell fate.	Professor Phil Hodgkin, Dr Susanne Heinzel	APA
Dimitra Masouras	The role of IKK in the regulation of the BH3-only protein Bim.	Dr Anissa Jabbour, Associate Professor Paul Ekert	APA
Kate McArthur	Investigating the apoptotic triggers Bax and Bak.	Associate Professor Guillaume Lessene, Dr Mark Van Delft, Professor Benjamin Kile	APA
James McCoy	The role of calcium-dependent kinases in the lytic cycle of <i>Toxoplasma gondii</i> .	Dr Chris Tonkin, Professor Alan Cowman	APA
Helen McRae	The role of PHF6 <i>in vivo</i> .	Dr Anne Voss, Dr Tim Thomas	APA
Ehtesham Mofiz	Assembly and comparative analysis of the scabies mite genome.	Associate Professor Tony Papenfuss, Professor Terry Speed, Dr Torsten Seeman	APA
Nisha Narayan	The role of microRNAs in myeloid differentiation and leukaemogenesis.	Associate Professor Paul Ekert, Dr Anissa Jabbour	APA
Tan Nguyen	The role of the mammalian SID-1 orthologues in innate immunity.	Dr Ken Pang, Dr Seth Masters	APA

Student	Project title	Supervisors	Funding
Paul Minh Cong Nguyen	Characterisation of the source and function of interleukin-11 and interleukin-22 during gastrointestinal tumourigenesis.	Dr Tracey Putockzki, Associate Professor Matthias Ernst	APA
Duong Nhu	Rocaglamide congeners as novel anti-cancer agents.	Dr Chris Burns, Associate Professor Guillaume Lessene	APA
Emma Nolan	Identification and application of mouse models for the prevention and treatment of breast cancer.	Professor Geoff Lindeman, Professor Jane Visvader	CCV
Joanne O'Donnell	Molecular regulation of inflammatory cell death.	Professor Andrew Roberts, Dr Ben Croker, Dr Mordechay Gerlic	Dora Lush
Samar Ojaimi	Pro-apoptotic therapies for the treatment of <i>Mycobacterium tuberculosis</i> disease and latent infection.	Dr Marc Pellegrini, Dr Gabrielle Belz	MDS
Maya Olshina	<i>In vivo</i> and <i>in vitro</i> investigation of actin regulation in the malaria parasite.	Dr Jacob Baum, Dr Jacqui Gulbis, Dr Wilson Wong	Dora Lush
Shereen Oon	A novel approach to cytokine blockade in systemic lupus erythematosus (SLE).	Professor Ian Wicks, Dr Nicholas Wilson	MPS
Michelle Palmieri	Understanding oncogenic PI3K signalling in colorectal cancer – from function to therapy.	Dr Oliver Sieber, Associate Professor Joan Heath, Dr Catimel	Australian Rotary Health
Agalya Periasamy	Import of polytopic proteins of the mitochondrial inner membrane: Study of structure and function.	Dr Jacqui Gulbis, Dr David Miller	APA
Ashleigh Poh	Investigation of the role of haematopoietic cell kinase in the growth and progression of gastrointestinal cancer.	Dr Robert O'Donoghue, Associate Professor Matthias Ernst	APA
Antonia Policheni	Identifying driver mutations in p53-deficient lymphomas.	Dr Daniel Gray, Professor Andreas Strasser	CCV
Kathryn Potts	Investigating early haematopoietic lineage specification and development in the mouse embryo.	Professor Douglas Hilton, Dr Samir Taoudi	APA
Simon Preston	The role of cell death and its mediators during chronic active infections.	Dr Marc Pellegrini, Dr Gabrielle Belz	MPS
Yi Wan Quah	Molecular epidemiology of <i>Plasmodium vivax</i> relapses.	Professor Ivo Mueller, Dr Alyssa Barry, Dr Celine Barnadas	MIRS/MIFRS
Pravin Rajasekaran	The role of plasmepsin V in blood and liver stage infection of malaria.	Professor Alan Cowman, Dr Justin Boddey	APA
Sangeetha Ramdave	Developing mass spectrometry tools for identifying novel cancer targets.	Dr Andrew Webb, Dr Mark Van Delft, Professor David Huang	APA
Lucille Rankin	The molecular mechanisms underlying the development and differentiation of innate lymphoid cells (ILCs).	Dr Gabrielle Belz, Dr Stephen Nutt	Dora Lush
Maryam Rashidi	CD52: a negative regulator in the innate-immune system.	Professor Len Harrison, Dr John Wentworth	MIRS/MIFRS
Leona Rohrbeck	Regulation of the pro-apoptotic BH3-ONLY protein Bim.	Professor Andreas Strasser, Dr Marco Herold	MIFRS/MIRS
Michael Roy	Structural and chemical studies targeting pro-survival Bcl-2 family proteins.	Professor Peter Colman, Associate Professor Guillaume Lessene, Dr Peter Czabotar	APA

Student	Project title	Supervisors	Funding
Victoria Ryg-Cornejo	Understanding generation of high affinity antibody responses to malaria.	Dr Diana Hansen, Dr Axel Kallies	APA
Natalia Sampaio	Suppression of malaria by the malaria parasite antigen <i>Plasmodium falciparum</i> erythrocyte membrane protein 1 (PfEMP-1).	Professor Louis Schofield, Dr Krystal Evans	NHMRC Biomedical Postgrad Scholarship
Robyn Schenk	Determining the role of the pro-survival Bcl-2 family member A1 in lymphoma and leukaemia.	Dr Marco Herold, Professor Andreas Strasser	LFA
Eric Si	Understanding the mechanisms of high-grade transformation in B-cell lymphoproliferative disease.	Professor Andrew Roberts, Dr Ian Majewski	MIRS/MIFRS
Tom Sidwell	The transcription factor Bach2 in the activation and differentiation of CD4 T cells.	Dr Gabrielle Belz, Dr Axel Kallies	APA
Charlotte Slade	Lymphocyte differentiation and genetics of primary immunodeficiency.	Dr Vanessa Bryant, Professor Phil Hodgkin	NHMRC
Katherine Smith	Identifying inherited disease-causing mutations using massively parallel sequencing.	Associate Professor Melanie Bahlo, Professor Samuel Berkovic	Pratt Foundation Scholarship
Che Stafford	Targeting innate immune responses using small molecules.	Dr Ueli Nachbur, Professor John Silke	APA
Rebecca Stewart	Characterisation of intracellular signalling cascades required for invasion and egress in <i>Apicomplexan</i> parasites.	Dr Chris Tonkin, Dr Jacob Baum, Professor Alan Cowman	APA
Michael Stutz	Identifying host cell signalling and cell death pathways that can be therapeutically targeted to promote clearance of chronic active infections.	Dr Marc Pellegrini, Professor Gabrielle Belz, Dr James Vince	APA
Stephanie Tan	Glycosylphosphatidylinositol as a multi-stage, pan-species surface antigen in malaria.	Professor Louis Schofield, Dr Krystal Evans	MIFRS/MIRS
Cyrus Tan	Intra-membrane substrate recognition by membrane-associated E3 ligases.	Dr Matthew Call, Dr Melissa Call	APA
Rick Tankard	Identifying disease-causing short tandem repeats in massively parallel sequencing data, with a focus on ataxias.	Associate Professor Melanie Bahlo, Professor Terry Speed, Associate Professor Paul Lockard	APA
Maria Tanzer	Investigation of cross talk in signalling pathways.	Associate Professor John Silke, Professor David Vaux, Dr Jarrod Sandow	VIRS Victoria International Research Scholarship
Sofonias Tessema	Patterns of antibody acquisition to the major surface antigen of <i>Plasmodium falciparum</i> .	Dr Alyssa Barry, Professor Ivo Mueller, Dr Diana Hansen	MIRS/MIFRS
Jesse Toe	Apoptotic regulation of CD8+ T cells during chronic viral infection.	Dr Marc Pellegrini, Dr Gabrielle Belz	Dora Lush
Raphael Trenker	Regulation of cell-surface protein levels in immune cells by membrane-embedded E3 ubiquitin ligases.	Dr Matthew Call, Dr Melissa Call	IPRS
Hannah Vanyai	The role of monocytic leukaemia zinc finger protein in embryonic development.	Dr Anne Voss, Dr Tim Thomas	APA
Leila Varghese	Janus kinase activity and regulation in haematopoiesis and disease.	Dr James Murphy, Dr Jeff Babon, Professor Douglas Hilton	LFA

Student	Project title	Supervisors	Funding
Swarna Vijayaraj	Identifying new mechanisms of regulation of inflammasomes.	Dr James Vince, Dr Kate Lawlor, Professor John Silke	MIRS/MIFRS
Andreea Waltmann	The molecular epidemiology of <i>Plasmodium falciparum</i> and <i>Plasmodium vivax</i> malaria in Solomon Islands.	Dr Alyssa Barry, Professor Ivo Mueller	Public Health NHMRC
Emma Watson	The role of Bcl-2 family genes in apoptosis regulation during angiogenesis.	Dr Leigh Coultas, Dr Grant Dewson, Professor David Vaux	APA
Clare Weeden	Cells of origin in lung cancer and preclinical validation of new combination therapies in xenograft mouse models of lung cancer.	Professor Geoff Lindeman, Dr Marie-Liesse Asselin-Labat	APA
Christopher Weir	Dissection of the Interaction of key malaria parasite proteins and their erythrocyte receptors.	Professor Alan Cowman, Dr Anthony Hodder, Professor Paul Barlow, Dr Lin Chen	APA
Melanie Williams	Structural and functional analysis of host cell invasion motor in toxoplasma parasites.	Professor Alan Cowman, Dr Chris Tonkin	APA
Matthew Witkowski	The role of transcription factor Ikaros in acute lymphoblastic leukaemia pathogenesis and therapy-resistance.	Dr Ross Dickins, Dr Mark McKenzie	APA
Annie Yang	Molecular mechanisms of cell traversal by <i>Plasmodium falciparum</i> .	Dr Justin Boddey, Professor Alan Cowman	APA
Alan Yap	Role of PfRips and its homologue in the invasion of red blood cells by Plasmodium merozoites.	Professor Alan Cowman, Dr Paul Gilson, Dr Diana Hansen	Pearl Scholarship
Janet Yeo	Characterisation of a putative novel RNAsell enzyme Mrp144.	Dr Gabrielle Belz, Dr Mark Chong	MIFRS/MIRS
Kelvin Hon Yan Yip	Responses of normal and cancerous intestinal stem cells to regulatory signals.	Dr Tony Burgess, Dr Jonathan McQualter	MIRS
Jie Zhou	Exploring cellular calculation with the B-lymphocyte model.	Professor Phil Hodgkin, Professor David Tarlinton	APA
Elizabeth Zuccala	Cell-cell interactions during malaria parasite invasion of erythrocytes.	Dr Jacob Baum, Professor Alan Cowman	APA

Visiting PhD in progress: 2013-14

Student	Project title	Supervisors
Mary Ann Anderson	Anti-lymphoma therapy.	Professor David Huang, Professor Andrew Roberts
Michael Christie	The WNT signalling pathway in colorectal cancer.	Dr Oliver Sieber, Professor Tony Burgess, Dr Lara Lipton
Greg Corboy	The clinical utility of next-generation genetic sequencing in the management of haematological malignancies.	Professor Paul Waring, Dr Graham Taylor, Professor Andrew Roberts, Dr Annabel Tuckfield
Betty Kao	Epigenetic therapy for beta-thalassemia.	Dr Jim Vadolas, Dr Marnie Blewitt, Dr Bradley McColl
Shabnam Khatibi	Quantitative analysis and mathematical modelling of the effects of cytokine signalling on epithelial cells.	Professor Jonathan Manton, Professor Tony Burgess, Dr John Wagner
Kendrick Koo	Molecular oncogenesis of oral cavity and oropharyngeal squamous cell carcinoma.	Professor Tony Burgess, Dr Oliver Sieber
Anita Lerch	Bioinformatic analyses of <i>Plasmodium vivax</i> stage-specific transcriptome data and of genome data from multi-clonal infections.	Professor Ivo Mueller
Artika Nath		Dr Mike Inouye, Associate Professor Stephen Turner, Professor Frank Carbone, Professor Terry Speed
Marie Parsons	Clinical and functional characterisation of novel cancer gene candidates for colorectal cancer.	Dr Hong-Jian Zhu, Dr Oliver Sieber, Dr Anu Sakthianandeswaren
Samuel Robinson	Venoms to drugs: a case study with <i>Conus victoriae</i> .	Associate Professor Tony Papenfuss
Simon Sadedin	Identifications of de novo variants from family-based next generation sequencing data	Dr Alicia Oshlack, Professor Andrew Sinclair, Professor Terry Speed
Gaetano Speciale	Investigating the mechanism of glycoside hydrolases: synthesis of substrates and inhibitors for mechanistic studies.	Associate Professor Spencer Williams, Dr Ethan Goddard-Borger
Mary Speir	Manipulation of host cell death processes by the opportunistic human pathogen <i>Legionella pneumophila</i> .	Dr Thomas Naderer, Professor Trevor Lithgow, Dr James Vince
Monique Topp	Novel xenograft mouse model of human high-grade serous epithelial ovarian cancer for preclinical analysis.	Associate Professor Clare Scott, Dr Karla Hutt
Sook Pheng Wong	Notch signalling in colorectal cancer.	Professor Tony Burgess, Dr Nadia Kershaw

2013-14 BACHELOR OF SCIENCE (HONOURS) STUDENTS IN PROGRESS

Student	Project title	Supervisors
Suad Abdirahman	Defining the function of the interleukin-11 signalling complex.	Dr Oliver Sieber, Dr Tracy Putoczki, Dr Michael Griffin
Jonathan Bernardini	Investigating the Bcl-2 family of apoptosis regulators in cells using novel imaging approaches.	Dr Grant Dewson, Dr Danny Hatters
Katelyn Chalker	Investigating the role of NLRP1 in asthma.	Dr Robert O'Donoghue, Dr Seth Masters
Margaret Cockburn	Molecular regulation of apoptosis.	Dr Marco Herold, Professor Andreas Strasser
Alexander Colussa	The role of SPSB1 in regulating the innate immune response.	Dr Sandra Nicholson, Dr Lukasz Kedzierski, Professor Gabrielle Belz
Damian D'Silva	Regulation of pyroptosis and necroptosis.	Dr Seth Masters, Dr Silvia Alvarez-Diaz
Destiny Dalseno	Characterising the Bak apoptotic pore by mass spectrometry.	Dr Grant Dewson, Dr Andrew Webb, Dr Robert Ninnis
Caleb Dawson	Investigating the formation and function of foetal platelets.	Dr Samir Taoudi, Dr Emma Josefsson, Professor Warren Alexander
Patrick Dyer	Somatic genetics in haploid murine cells.	Professor David Vaux, Dr Lisa Lindqvist, Professor Liam O'Connor
Zoe Grant	Investigating the role of the histone acetyltransferase HBO1 in blood vascular development.	Dr Leigh Coultas, Dr Anne Voss
Thomas Hayman	Regulating antiviral immunity.	Dr Sandra Nicholson, Dr Seth Masters
Sean Hewetson	Characterising antibodies targeting the pro-apoptotic protein Bax.	Dr Mark van Delft, Dr Peter Czabotar, Dr David Segal
Henry Howard	Characterisation of the role of a novel WNT/beta-catenin pathway regulator in colorectal cancer.	Dr Oliver Sieber, Dr Anuratha Sakthianandeswaren
Jeong Yoon Kim (Ester)	Investigating the influence of cell death signalling pathways on cellular reprogramming.	Associate Professor Joan Heath, Dr Minni Anko, Dr Mark van Delft
Tony Le	Development of B cell memory and antibody responses to malaria.	Dr Diana Hansen, Dr Lisa Ioannidis, Dr Tony Hodder
Elizabeth Lieschke	Using mouse models of high-grade serous ovarian cancer to understand the role of MYCN.	Associate Professor Clare Scott, Dr Matthew Wakefield
Shuiping Lin (Dawn)	Understanding haematopoiesis at the single cell level.	Dr Shalin Naik, Dr Samir Taoudi
Anne Tripaydonis	Understanding how a dead enzyme MLKL mediates cell death.	Dr Michael Buchert, Associate Professor John Silke, Dr James Murphy
Hoaran Zhu	Selective targeting of Bcl-2 proteins in cancer.	Dr Doug Fairlie, Dr Erinna Lee, Dr Marco Herold

2013-14 VACATION SCHOLARS

UROP students, overseas research trainees and vacation scholars.

Twenty students came to the institute as part of the Undergraduate Research Opportunities Program (UROP), which is administered through the Bio21 Cluster and gives university students an opportunity to participate in research.

The institute hosted 14 university undergraduates as vacation scholars mainly between November 2013 and March 2014, for periods from two weeks up to four months. It also hosted eight visiting Masters students and 12 overseas undergraduates to undertake short-term research training placements from Finland, France, Germany, United Kingdom and The Netherlands.

Student	Project title	Supervisors
Liselle Atkin	UROP student	Dr Ethan Goddard-Borger
Margaret Cockburn	UROP student	Dr Marco Herold
Adrian Di Rago	UROP student	Associate Professor Guillaume Lessene
Karl Dudfield	UROP student	Professor Phil Hodgkin
Laura Fielden	UROP student	Professor David Tarlinton
Kaneeka Gajendra	UROP student	Associate Professor Matthias Ernst
Hersha Kadko	UROP student	Dr Chris Burns
Keilly Kuykhoven	UROP student	Associate Professor Matthias Ernst
Carlos May	UROP student	Associate Professor Matthias Ernst
Simone Park	UROP student	Dr Leigh Coultas
Damian Pavlyshyn	UROP student	Professor Phil Hodgkin
Weiyi Pei	UROP student	Dr Kate Sutherland
Dana Piovesan	UROP student	Professor David Tarlinton
Catherine Pitt	UROP student	Dr Anne Voss, Dr Tim Thomas
Rupoj Sarbaswa	UROP student	Professor David Vaux
Lucy Taylor	UROP student	Professor Warren Alexander
Jessica Tran	UROP student	Professor Phil Hodgkin
Tuyet Tran	UROP student	Associate Professor John Silke
Lynn Wang	UROP student	Professor Gordon Smyth
Andrea Zhu	UROP student	Professor Tony Burgess
Sabrina Bernard	Overseas research trainee (France)	Associate Professor Guillaume Lessene
Christina Bruggeman	Overseas research trainee (The Netherlands)	Professor Stephen Nutt
Valentin Champain	Overseas research trainee (France)	Dr Ethan Goddard-Borger
Dylan Cherrier	Overseas research trainee (France)	Professor Gabrielle Belz
Wendy Gabelle	Overseas research trainee (France)	Dr Chris Burns
Julius Graesel	Overseas research trainee (Germany)	Professor Jane Visvader
Melanie Heinlein	Overseas research trainee (Germany)	Professor David Vaux
Simone Oostindie	Overseas research trainee (The Netherlands)	Professor Phil Hodgkin
Madeleine Reilly	Overseas research trainee (United Kingdom)	Associate Professor Matthias Ernst

Student	Project title	Supervisors
Eva Sum	Overseas research trainee (Germany)	Associate Professor Matthias Ernst
Jaana Tuominen	Overseas research trainee (Finland)	Associate Professor Joan Heath
Sebastian Zijl	Overseas research trainee (The Netherlands)	Dr Marie-Liesse Asselin-Labat
Shun Ch'ng	Vacation scholarship student	Dr Marnie Blewitt
Katelyn Chalker	Vacation student	Dr Seth Masters
Alexander Colussa	Vacation student	Dr Sandra Nicholson
Damian D'Silva	Vacation student	Dr Seth Masters
Brigitte Duckworth	Vacation student	Professor Gabrielle Belz
Carlos Gantner	Vacation scholarship student	Professor Douglas Hilton
Peter Gearing	Vacation student	Professor Douglas Hilton
Jeong Kim	Vacation student	Associate Professor Joan Heath
Youlin Koh	Vacation scholarship student	Professor David Huang
Elizabeth Lieschke	Vacation student	Associate Professor Clare Scott
Shuiping Lin	Vacation student	Dr Shalin Naik
Shian Su	Vacation student	Dr Matt Ritchie
Leonie Tang	Vacation student	Dr Anne Voss/Dr Tim Thomas
Farzana Zaman	Vacation scholarship student	Professor Warren Alexander
Ms Wendy Allan	Visiting Masters student	Dr Marnie Blewitt
Dr Simon He	Visiting Masters student	Professor Andrew Roberts
Ms Denise Heckmann	Visiting Masters student	Professor Liam O'Connor
Mr Alan John	Visiting Masters student	Dr Ethan Goddard-Borger
Mr Lachlan McIntosh	Visiting Masters student	Associate Professor Tony Papenfuss
Ms Karen Oliver	Visiting Masters student	Associate Professor Melanie Bahlo
Mr Gerry Tonkin-Hill	Visiting Masters student	Associate Professor Tony Papenfuss
Dr Louie Ye	Visiting Masters student	Associate Professor Clare Scott

2013-14 INSTITUTE SPEAKERS

DATE	TOPIC	SPEAKER
1 July 2013	shRNA technology	Dr Ross Dickins, Molecular Medicine division
3 July 2013	Screening for epigenetic regulators of X-chromosome inactivation	Mr Jamie Gearing (PhD student), Molecular Medicine division
10 July 2013	Timing is everything: a new RIPK2 inhibitor reveals exquisite temporal regulation of anti-bacterial NOD signaling	Dr Ueli Nachbur, Cell Signalling and Cell Death division
31 July 2013	Epigenetic pathways and autoimmune disease susceptibility	Dr Yuxia Zhang, Molecular Medicine division
5 August 2013	Epigenetic modifications and the immune system	Dr Rhys Allan, Molecular Immunology division
21 August 2013	Targeting cytokines in inflammatory diseases: focus on interleukin-11	Dr Tracy Putoczki, Cell Signalling and Cell Death division
28 August 2013	Identification of key mechanisms governing natural killer cell homeostasis in mice and men	Dr Nick Huntington, Molecular Immunology division
11 September 2013	G-CSF and neutrophils – pathogenic mediators in autoimmune uveitis	Dr Gabrielle Goldberg, Inflammation division
18 September 2013	Sharing is caring: borrowing information between genes improves gene expression analysis	Ms Belinda Phipson (PhD student), Bioinformatics division
25 September 2013	Regulation of platelet production and function in health and disease	Dr Emma Josefsson, Cancer and Haematology division
2 October 2013	Apoptosis and immunological tolerance	Dr Daniel Gray, Molecular Genetics of Cancer division
9 October 2013	The emergence of a 'dead' enzyme MLKL as a mediator of cell death by programmed necrosis	Dr James Murphy, Structural Biology division
16 October 2013	Does Plasmeprin V make the 'cut' as an antimalarial drug target?	Dr Brad Sleebs, ACRF Chemical Biology division
30 October 2013	Plasmacytoid dendritic cells and lymph-resident conventional dendritic cells employ different survival strategy	Dr Yifan Zhan, Immunology division
13 November 2013	The role of SOCS3 in chondrocytes during skeletal development and in inflammatory arthritis	Mr Tommy Liu (PhD student), Inflammation division
20 November 2013	How does p53 protect us from cancer?	Ms Elizabeth Valente (PhD student), Molecular Genetics of Cancer division
27 November 2013	Targeting Bcl-2 in the treatment of leukaemia and lymphoma	Dr Mary Ann Anderson (PhD student), ACRF Chemical Biology division
4 December 2013	Cell death as a driver of inflammatory disease	Mr James Rickard (PhD student), Cell Signalling and Cell Death division
11 December 2013	Do multipotent mammary stem cells exist? Insights from 3D imaging	Dr Anne Rios, ACRF Stem Cells and Cancer division
18 December 2013	A two-site interaction underpins TRIM25 activation of the RIG-I anti-viral response	Mr Akshay D'Cruz (PhD student), Inflammation division
5 March 2014	Investigating the role of <i>Pax5</i> hypomorphism in B-progenitor acute lymphoblastic leukaemia	Ms Grace Liu (PhD student), Molecular Medicine division

DATE	TOPIC	SPEAKER
12 March 2014	Patient derived xenografts: precision medicine for ovarian cancer	Ms Monique Topp (PhD student), ACRF Stem Cells and Cancer division
19 March 2014	Translating research into new medicines	Dr Ian Street, Systems Biology and Personalised Medicine division
2 April 2014	Antigen-presenting cells: of life, death and transplantation	Associate Professor Andrew Lew, Immunology division
28 April 2014	Necroptotic death of RIPK1-deficient HSC compromises haematopoiesis	Ms Joanne O'Donnell (PhD student), Inflammation division
5 May 2014	Regulation of JAK/STAT signalling (SOCS mechanisms of action)	Dr Jeff Babon, Cancer and Haematology division
12 May 2014	Immune regulation by CD52 in the mouse	Dr Julian Bosco (PhD student), Molecular Medicine division
14 May 2014	Myb, Moz and memory: genetic networks regulating long-lived immunity	Dr Kim Jacobson, Immunology division
21 May 2014	Drug discovery for cancer and inflammatory diseases	Dr Chris Burns, ACRF Chemical Biology division
26 May 2014	Inflammation-associated cancers (gp130 signalling)	Dr Tracy Putoczki, Inflammation division
28 May 2014	Making sense of tumour genome sequence data	Associate Professor Tony Papenfuss, Bioinformatics division
4 June 2014	The role of calcium-dependent kinases in the lytic lifecycle of <i>Toxoplasma gondii</i>	Mr James McCoy (PhD student), Infection and Immunity division
11 June 2014	IRF4 in T cells: from clonal selection and Burnet to sugar and fat	Dr Axel Kallies, Molecular Immunology division
16 June 2014	NF-κB and cancer	Dr Lorraine O'Reilly, Molecular Genetics of Cancer division
16 June 2014	JAK on, JAK off: the activation and inhibition of JAK2 in proliferative blood disorders	Ms Leila Varghese (PhD student), Cancer and Haematology division
18 June 2014	Identifying and exploiting 'molecular matches' to design treatments for women with high-grade serous ovarian cancer	Associate Professor Clare Scott, ACRF Stem Cells and Cancer division
23 June 2014	TNF signalling	Associate Professor John Silke, Cell Signalling and Cell Death division
23 June 2014	TNF receptor 1 signalling: activators, inhibitors and regulators	Mr Nima Etemadi (PhD student), Cell Signalling and Cell Death division
25 June 2014	Mechanisms that activate and drive <i>Toxoplasma</i> host cell egress and invasion	Dr Chris Tonkin, Infection and Immunity division
30 June 2014	Type 1 diabetes	Associate Professor Andrew Lew, Immunology division
30 June 2014	Autoimmune responses in chronic idiopathic urticaria	Dr Priscilla Auyeung (PhD student), Molecular Medicine division

2013-14 VISITING SPEAKERS

DATE	TOPIC	SPEAKER
8 July 2013	MicroRNAs and other small regulatory RNAs	Dr Mark Chong, St Vincent's Institute of Medical Research, Australia
15 July 2013	Human genetics of mitochondrial DNA and nuclear causes of mitochondrial disease	Professor David Thorburn, Murdoch Children's Research Institute, Australia
15 July 2013	Poised with purpose: understanding cell plasticity in cancer	Dr Christine Chaffer, Whitehead Institute of Biomedical Research, US
17 July 2013	The signalling networks regulating cell morphology	Dr Chris Bakal, The Institute of Cancer Research, UK
26 July 2013	The BCL-2 family and mitochondrial shape regulate ER stress	Dr Konstantinos Floros, Icahn School of Medicine at Mount Sinai, US
29 July 2013	Epigenetics	Professor Emma Whitelaw, La Trobe Institute of Molecular Sciences, Australia
29 July 2013	Single-molecule studies of DNA replication: from <i>in vitro</i> to <i>in vivo</i>	Antoine M van Oijen, Groningen University, Netherlands
12 August 2013	Bioinformatic analysis of the epigenome	Dr Alicia Oshlack, Murdoch Children's Research Institute, Australia
14 August 2013	Junking gene expression in granulocytes	John E J Rasko AO, Royal Prince Alfred Hospital, Australia
20 August 2013	How SBML and other tools are transforming computer models of life	Michael Hucka PhD, California Institute of Technology, US
20 August 2013	Regulation of cytokine signaling: Revisiting the pseudokinase domain of JAK2	Professor Olli Silvennoinen, University Tampere, Finland
12 September 2013	Studying cellular morpho-dynamics via BiImage informatics	Dr Alexandre Dufour, Institut Pasteur, France
17 September 2013	The APAF-1 binding protein FAM96A is involved in tumorigenicity of gastrointestinal stromal tumours	Dr Bettina Schwamb, Georg-Speyer-Haus Institute for Biomedical Research, Germany
26 September 2013	Interleukin-7: an elixir for mouse lymphocytes	Professor Rhodri Ceredig, INSERM, France
7 October 2013	Epigenetic regulation in mouse development	Professor Francis Stewart, Technische Universitaet Dresden, Germany
7 October 2013	Mice with humanised livers: a vehicle for exploring liver centric infection	Professor Norman Kneteman, University of Alberta, Canada
10 October 2013	The epigenetic cause of Facioscapulohumeral Dystrophy	Silvère van der Maarel, Leiden University Medical Center, Netherlands
17 October 2013	Aboriginal and Torres Strait Islander health, research ethics and policy changes	Ms Mary Guthrie, The Lowitja Institute, Australia
23 October 2013	Control of organ size by the Hippo pathway	Assistant Professor Kieran Harvey, Peter MacCallum Cancer Centre, Australia

DATE	TOPIC	SPEAKER
23 October 2013	Regenerating the aged thymus - can Foxn1 do it all?	Professor Clare Blackburn, University of Edinburgh, UK
24 October 2013	Latest advancements and techniques in Bioenergetics Research using the <i>Seahorse XFe Analysers</i>	Laura Storjohann PhD and Ajit Divakaruni PhD, Seahorse Bioscience, Australia
29 October 2013	Transcription elongation and plasma cell gene expression	Christine Milcarek PhD, University of Pittsburgh, US
6 November 2013	Red cell mutants identified by chemical mutagenesis	Associate Professor David Curtis, Monash University, Australia
11 November 2013	Genetics of immune mediated diseases	Professor Matthew Brown, University of Queensland, Australia
14 November 2013	Kinase drug discovery: opportunities and challenges	Dr Isabelle Lucet, Monash University, Australia
14 November 2013	Gender issues and STEM (Science, Technology, Engineering and Mathematics)	Professor Helen Forgasz, Monash University, Australia
15 November 2013	Project grandiose: gaining insights into the molecular mechanisms driving reprogramming toward pluripotency	Professor Andras Nagy, Mount Sinai Hospital, Canada
18 November 2013	Building a research program in Aboriginal health: lessons from the edge	Professor Alex Brown, South Australian Health and Medical Research Institute, Australia
21 November 2013	Strong-self/weak-self: How T lineage cells interpret antigen affinity and avoid autoimmunity (it's a bit of a dog's breakfast)	Professor Ed Palmer, University Hospital, Switzerland
26 November 2013	PacBio single molecule sequencing: applications and bioinformatics tools	Dr Siddarth Singh, Pacific Biosciences, Singapore
2 December 2013	Gene-environment interactions in the pathogenesis of diabetes and metabolic syndrome – role of the gut microbiome	C Ronald Kahn, Joslin Diabetes Center, US
10 December 2013	Using microscopy to investigate cell fate decisions <i>in vitro</i> and <i>in vivo</i> : insights into novel therapies for leukemia and autoimmunity	Dr Edwin Hawkins, Imperial College London, UK
10 December 2013	c-FLIP and IkappaBNS in immune regulation	Professor Dr Ingo Schmitz, Helmholtz Centre for Infection Research, Germany
10 December 2013	A structural and biophysical comparison of the mammalian peptide transporters PepT1 and PepT2	Mr John Beale, University of Oxford, UK
11 December 2013	A pinch of salt: the effect of NaCl on macrophage activation and function	Dr Katrina Binger, Max-Delbruck Center for Molecular Medicine, Germany
12 December 2013	The public health impact and cost-effectiveness of malaria vaccine RTS,S: use of clinical trial results and simulations from the OpenMalaria large-scale individual-based modelling study	Melissa Penny, Swiss Tropical and Public Health Institute, Switzerland
12 December 2013	Towards a functional understanding of autoimmunity-associated gene variants	Stephen Kissler PhD, Joslin Diabetes Center, US
12 December 2013	The origin and relevance of epigenetic variation in mammals	Dr Michelle Holland, Queen Mary University of London, UK

DATE	TOPIC	SPEAKER
16 December 2013	Nuclear export of mRNA in humans is selective, with pathways favouring gene regulation and repair	Dr Vihandha Wickramasinghe, University of Cambridge, UK
16 December 2013	High-density lipoprotein mediates anti-inflammatory reprogramming of macrophages via the transcriptional regulator ATF3	Dr Dominic De Nardo, University Hospitals, Germany
6 February 2014	Understanding immune regulation during parasitic diseases	Dr Christian Engwerda, Queensland Institute of Medical Research, Australia
10 February 2014	My journey with high-throughput screening	Dr Reena Halai, University of Queensland, Australia
12 February 2014	How to screen ion channel targets	Dr H�el�ene Sabroux Jousset, Geneva Biotech Centre, Switzerland
12 February 2014	The many faces of hematopoietic stem cells	Associate Professor Emmanuelle Passegu�e, University of California, San Francisco, US
12 February 2014	Unexpected implication of PML nuclear bodies in APL cure	Professor Hugues de Th�e, University Paris Diderot, France
17 February 2014	Dissecting the molecular pathway of programmed necrosis	Xiaodong Wang PhD, China Member of the National Academy of Sciences, US
20 February 2014	'Non-genetics' and mammalian phenotypes	Dr Vardhman Rakyan, Blizard Institute, UK
25 February 2014	Stem cell origin of cancer	Dr Stewart Sell, Wadsworth Center, US
17 March 2014	Toll-like receptors	Dr Ashley Mansell, Prince Henry's Institute-Monash Institute of Medical Research, Australia
24 March 2014	PRRs-C-type lectins	Dr Irene Caminschi, Burnet Institute, Australia
26 March 2014	Novel pathways regulating peripheral B cell survival and maturation	Dr Anselm Enders, Australian National University, Australia
27 March 2014	Evolution and ecology of drug resistance in tuberculosis	Dr Sonia Borrell, Swiss Tropical and Public Health Institute, Switzerland
31 March 2014	Inflammasomes and viral sensors	Dr Kate Schroder, University of Queensland, Australia
4 April 2014	Molecular mechanism of apoptotic cell disassembly	Dr Ivan Poon, La Trobe University, Australia
7 April 2014	Inflammation and obesity	Professor Mark Febbraio, Baker IDI Heart and Diabetes Institute, Australia
8 April 2014	Thymic selection of MHC-restricted versus MHC-independent T cells	Fran�ois Van Laethem, National Cancer Institute, US
9 April 2014	Latent herpes simplex virus: on a tight leash but still barking	Associate Professor David Tscharke, Australian National University, Australia

DATE	TOPIC	SPEAKER
11 April 2014	Generating intra-thymic self-antigen diversity for tolerance induction	Professor Bruno Kyewski, German Cancer Research Center, Germany
11 April 2014	Regulation of T lymphocyte functions by Crk adaptor proteins	Professor Noah Isakov, Ben Gurion University of the Negev, Israel
14 April 2014	Interferon signalling	Professor Paul Hertzog, Monash Institute of Medical Research, Australia
16 April 2014	Clostridial gut infections: from toxins and spores to mother's milk	Associate Professor Dena Lyras, Monash University, Australia
24 April 2014	Can optical high speed imaging be an alternative to patch-clamp?	Dr Lars Kaestner, Saarland University, Germany
28 April 2014	Mast cells: delinquents or 'D'-lightful?	Associate Professor Michele Grimbaldston, Centre for Cancer Biology, Australia
28 April 2014	Antibody-drug conjugates for the treatment of cancer	John Flygare, Genentech Inc, US
30 April 2014	Focusing on new applications of ddPCR	Dr Eli Mrkusich, Bio-Rad Laboratories, Australia
30 April 2014	Personalised medicine – the triumphs and the challenges	Professor Paul Waring, University of Melbourne, Australia
6 May 2014	Dendritic cell and macrophage ontogeny	Dr Florent Ginhoux, Agency for Science, Technology and Research (A*STAR), Singapore
7 May 2014	Death receptors and bacterial diarrhoea	Professor Elizabeth Hartland, University of Melbourne, Australia
12 May 2014	Cancer microenvironment and immunity: lessons for immunotherapy	Dr Nicole Haynes, Peter MacCallum Cancer Centre, Australia
15 May 2014	From IgG fusion proteins to engineered specific human T-regs: a life of tolerance	Professor David W Scott, Uniformed Services School of Health Sciences, US
19 May 2014	The macrophage/pathogen dynamic (subversion of the host response)	Associate Professor Matt Sweet, University of Queensland, Australia
26 May 2014	Dengue virus transmission in the <i>Aedes aegypti</i> mosquito with and without <i>Wolbachia</i> infection	Associate Professor Elizabeth McGraw, Monash University, Australia
27 May 2014	Visualising the Machinery of Life	David S Goodsell, The Scripps Research Institute, US
2 June 2014	Visualisation of inflammatory immune responses	Professor Wolfgang Weninger, Centenary Institute, Australia
3 June 2014	Dissecting mechanisms of immune responses with combined peptide-MHC tetramer analysis and mass cytometry (CyTOF)	Dr Helen McGuire, Stanford University, US

2014 POSTGRADUATE LECTURE SERIES: CELL SIGNALLING AND INFLAMMATION

The institute's postgraduate lecture series provides students, postdoctoral fellows and staff with the opportunity to learn from experts from many institutions across the nation. Following the lecture, the students have the opportunity to pursue further discussions over lunch with the speaker.

DATE	TOPIC	SPEAKER
17 March 2014	Toll-like receptors	Dr Ashley Mansell, PHI-MIMR Institute of Medical Research
24 March 2014	PRRs-C-type lectins	Dr Irene Caminschi, Burnet Institute
31 March 2014	Inflammasomes and viral sensors	Dr Kate Schroder, University of Queensland
7 April 2014	Inflammation and obesity	Professor Mark Febbraio, Baker IDI Heart and Diabetes Institute
14 April 2014	Interferon signalling	Professor Paul Hertzog, Monash Institute of Medical Research
28 April 2014	Mast cells: delinquents or 'D'-lightful?	Associate Professor Michele Grimbaldeston, Centre for Cancer Biology
5 May 2014	Regulation of JAK/STAT signalling (SOCS mechanisms of action)	Dr Jeff Babon, Walter and Eliza Hall Institute
12 May 2014	Cancer microenvironment and immunity: lessons for immunotherapy	Dr Nicole Haynes, Peter MacCallum Cancer Centre
19 May 2014	The macrophage/pathogen dynamic (subversion of the host response)	Associate Professor Matthew Sweet, University of Queensland
26 May 2014	Inflammation-associated cancers (gp130 signalling)	Dr Tracy Putoczki, Walter and Eliza Hall Institute
2 June 2014	Visualisation of inflammatory immune responses	Professor Wolfgang Weninger, Centenary Institute
16 June 2014	NF- κ B and cancer	Dr Lorraine O'Reilly, Walter and Eliza Hall Institute
23 June 2014	TNF signalling	Associate Professor John Silke, Walter and Eliza Hall Institute
30 June 2014	Type 1 diabetes	Associate Professor Andrew Lew, Walter and Eliza Hall Institute



ENGAGEMENT

ENGAGEMENT

The Walter and Eliza Hall Institute is committed to creating community conversations about medical research, engaging with the community, school students, colleagues and scientific audiences.

2624

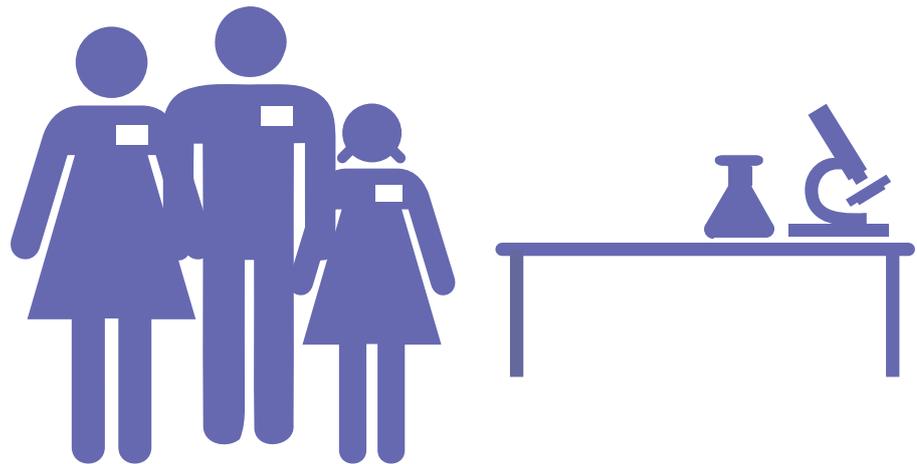
people came to a scientific event at the institute

2892

members of the public toured or visited the institute

785

school students toured the institute



YouTube channel video views

379,169 | 1,801,750

institute website page views

4972

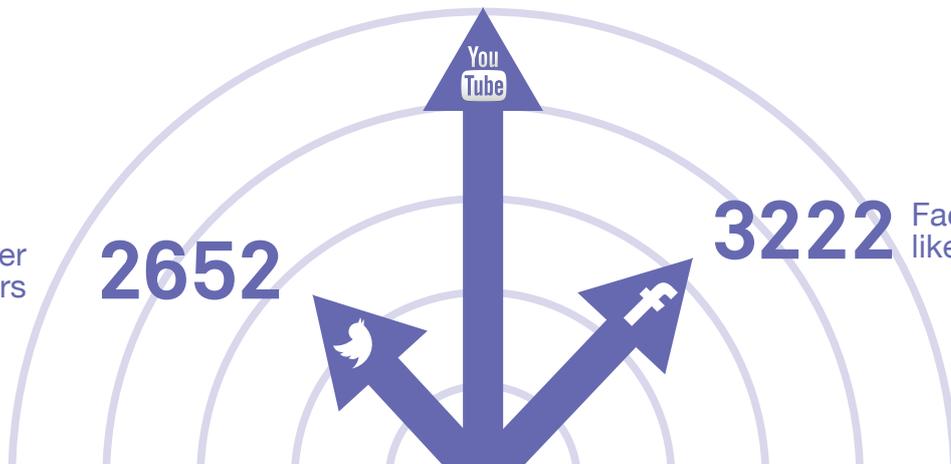
YouTube subscribers

Twitter followers

2652

3222

Facebook likes



ENGAGING WITH THE COMMUNITY

The artistic side of science

Researchers can capture some amazing images while exploring the inner workings of the body.

Art of Science is an institute competition that reveals the beauty behind medical research. Each year, our scientists submit images captured as part of their research to the institute's Art of Science competition. These visually stunning images of real-world research are a great way to engage the public with a different aspect of science.

In October 2013, we invited the public to the institute for an exhibition of the Art of Science finalists and the Art of Science Awards. More than 150 guests attended the event, which saw the institute transformed for the night

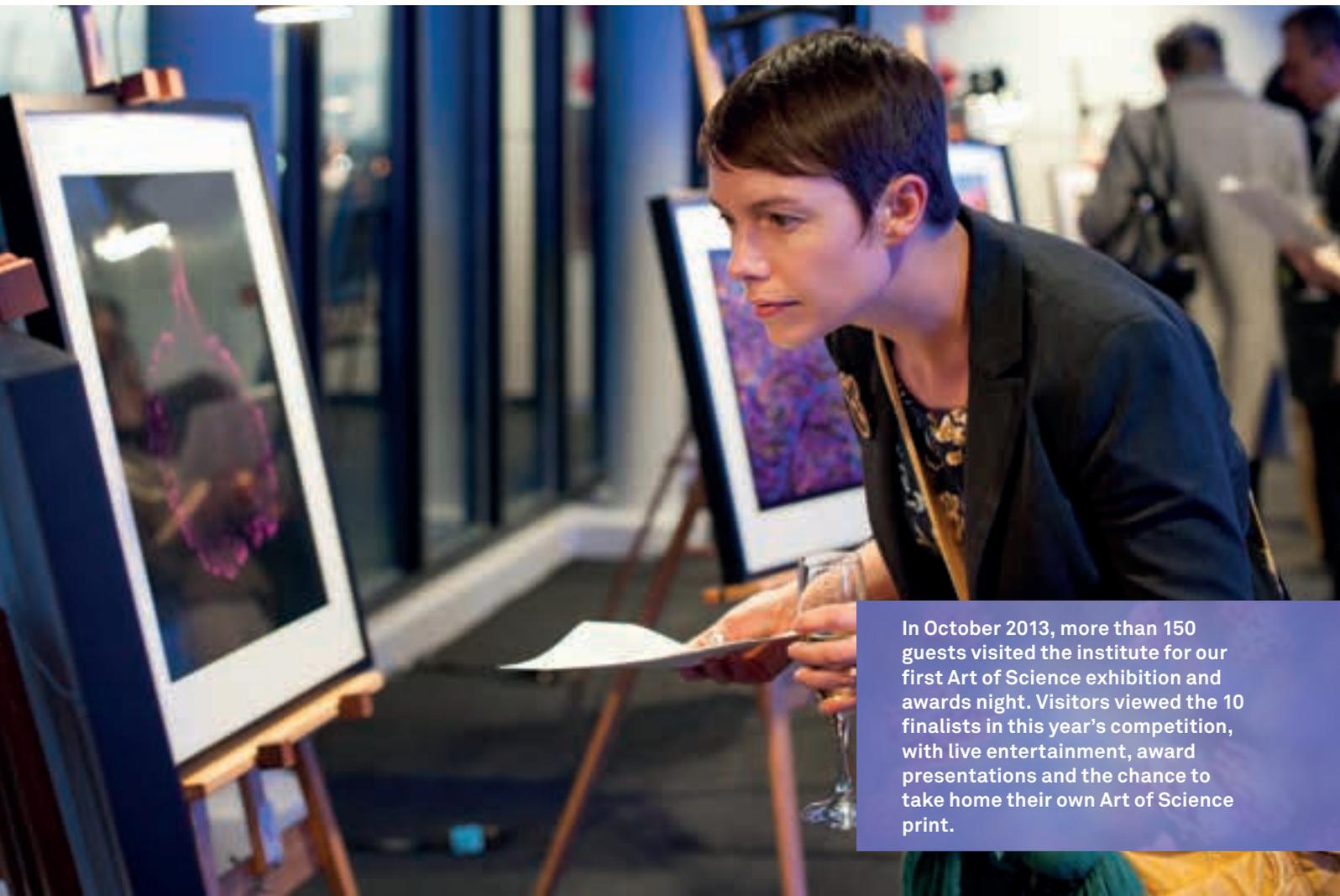
with a gallery-style exhibition and live jazz band. Ten finalists were exhibited from more than 35 entries submitted.

Winning both the Art of Science Award and the Director's Choice Award was *Heart of Science* from Dr Christine Biben and Dr Anne Rios. The fairy-like image captured blood vessels forming as the heart develops. Understanding how these vessels form and renew will aid in developing therapies to repair heart tissue.

In the lead up to the awards night, the public were invited to choose their favourite image as part of the newly-established People's Choice Award, hosted through the institute's Facebook page. Ms Laura Galvis took out the People's Choice Award with

her image, *Lungberry*, which shows the early stages of lung development, in which the budding lung branches out to create sufficient surface area for breathing.

The awards were presented by institute director Professor Doug Hilton and special guest judge Ms Kelly Gellatly, director of the Ian Potter Museum of Art at The University of Melbourne. Attendees had the opportunity to purchase the prints on the night, as well as enter a draw to win a limited edition print of an artwork by WEHI.TV biomedical animator Mr Drew Berry.



In October 2013, more than 150 guests visited the institute for our first Art of Science exhibition and awards night. Visitors viewed the 10 finalists in this year's competition, with live entertainment, award presentations and the chance to take home their own Art of Science print.

Opening our doors to Melbourne

In July 2013, the Walter and Eliza Hall Institute participated in Open House Melbourne for the first time.

Open House Melbourne is a free annual event that encourages people to explore the amazing buildings that make our city. In 2013, the institute was one of 111 buildings open to the public. Staff and scientists led visitors on 50 half-hour tours through the institute's new and redeveloped

Parkville facilities as part of the two-day event, welcoming more than 600 visitors across the weekend.

Visitors explored some of the unique architectural features that define the Parkville building, such as the open lift atrium at the centre of the building, while learning about the medical research happening within the laboratories.

One of the highlights of the day for visitors was seeing the institute's new

and improved laboratories and visiting the institute's tearoom on the top floor, which enjoys panoramic views to the north over Parkville. The tearoom reflects the collaborative culture that exists within the institute, encouraging staff to come together and share their experiences and discoveries in an informal environment.

Viruses light White Night

White Night Melbourne is an all-night artistic festival that lights Melbourne's CBD and adjoining areas from dusk until dawn.

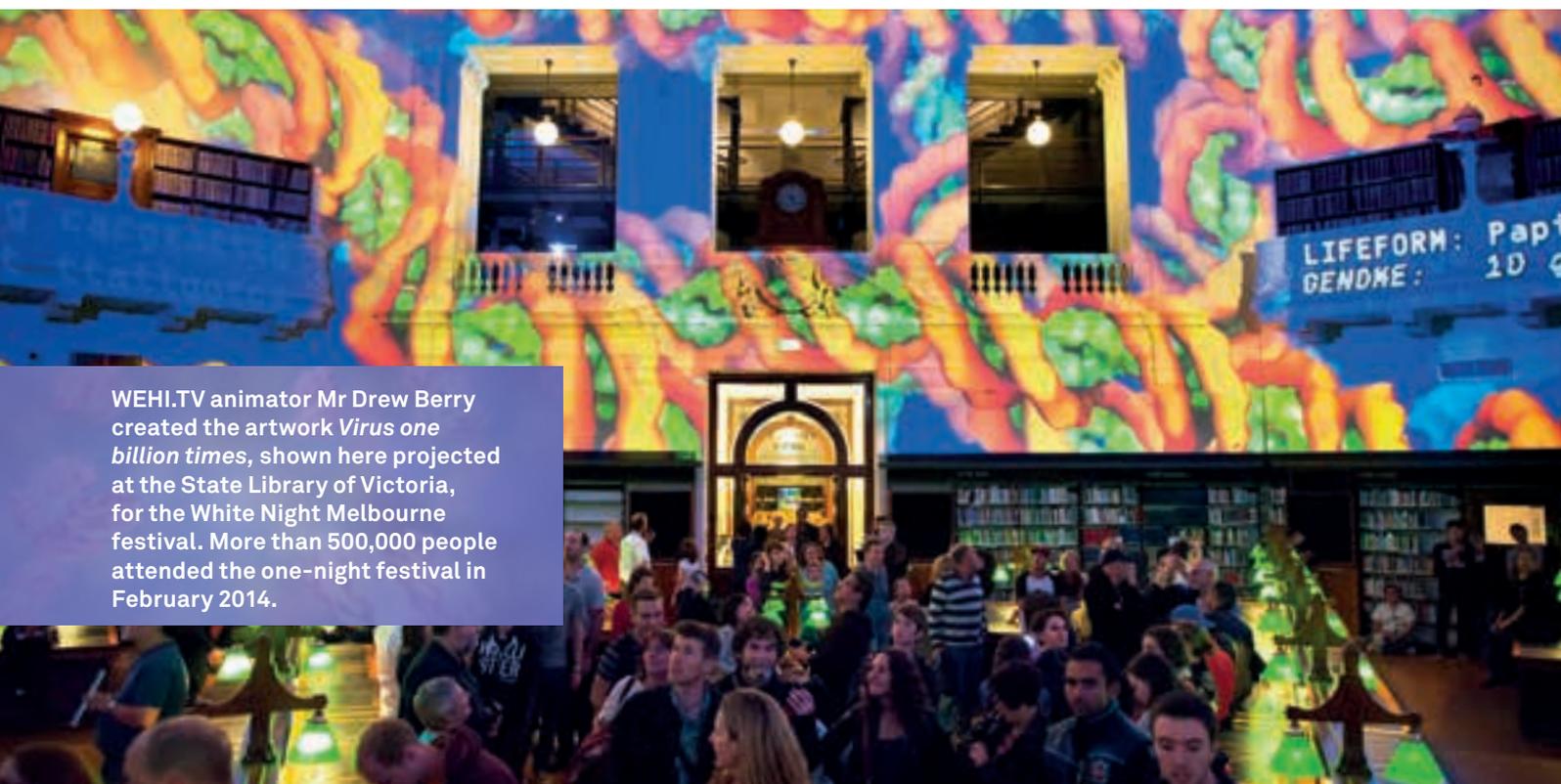
In 2014, more than 500,000 people attended the one-night festival in Melbourne CBD and adjacent areas.

The dome of the State Library of Victoria's La Trobe Reading Room hosted a multitude of viruses as part of White Night Melbourne in February 2014. The artwork *Virus one billion times* was the vision of WEHI.TV animator Mr Drew Berry,

who transformed the dome into a vast microscope with a magnifying power of one billion times. At this magnification an infectious virus, usually an unimaginably small 30-nanometres across, was enlarged by the dome 'lens' into a giant 30-metre geometric molecular ball hovering overhead. Every two minutes the room switched to a different type of virus, including herpes, influenza, HIV, polio and smallpox.

Mr Berry said the complexity of medical research meant it was often difficult for the public to feel connected with scientific discovery. "By watching biological processes in action through animations, people can intuitively grasp what even the most complex biology is about," he said. "In the long run, this can only help the community to comprehend and appreciate the value of medical research."

[Watch the video ►](#)



WEHI.TV animator Mr Drew Berry created the artwork *Virus one billion times*, shown here projected at the State Library of Victoria, for the White Night Melbourne festival. More than 500,000 people attended the one-night festival in February 2014.

Illuminating disease

Each year, the institute holds a series of public forums, sharing with the public the progress of institute research programs into understanding and treating disease.

This year, the institute held two public lectures for the general community. In November, our lecture attracted more than 300 people who came to hear about the latest research and outcomes for people with breast cancer. Institute clinician-scientist Professor Geoff Lindeman spoke about our breast cancer laboratory's research, in addition to presentations from the National Breast Cancer Foundation and Breast Cancer Network Australia. Attendees also heard from breast cancer specialist and surgeon Professor Laura Esserman from the University of California San Francisco Carol Franc Buck Breast Care Center, US.

In March 2014, the institute launched the first of its new series of public

forums. Called the *Illumination* series, the new format encourages community conversations about science, and enables the audience to ask more questions about research and engage with the presenters and extended panel of experts.

More than 250 people attended the *Illuminating...* personalised medicine public forum in March 2014. Researcher Professor Liam O'Connor and clinician-scientist Dr Jayesh Desai spoke about the institute's new program in personalised medicine, which involves targeting treatment to an individual rather than a 'one-size-fits-all' approach to treatment. This was followed by an extended Q&A session, in which the audience could delve in-depth into the issue.

All the institute's public forums and lectures are available on our YouTube channel: *WEHImovies*.

[Watch the video ►](#)

Visualising the future of biomedicine

VizbiPlus: Visualising the Future of Biomedicine is a collaborative project to improve how life science is communicated to the public, by creating visually beautiful and scientifically accurate biomedical animations.

The animations are designed to inspire and engage the public with cutting-edge Australian biomedical research. The project is a collaboration between the Walter and Eliza Hall Institute, the Garvan Institute of Medical Research and CSIRO, supported by a grant from *Inspiring Australia*.

WEHI.TV animator Mr Drew Berry and his colleague Ms Etsuko Uno mentored and trained the three new biomedical animators, who debuted and exhibited their work at events in Melbourne and Sydney in mid-2014.

Dr Maja Divjak from the Walter and Eliza Hall Institute created the animation *Inflammation and type 2 diabetes*, which highlights how diseases associated with inflammation, such as type 2 diabetes, are 'lifestyle' diseases that represent one of the biggest health risks in our society.

"My animation looks at the role of the newly-discovered protein called the inflammasome in type 2 diabetes, which is being studied by researchers here at the Walter and Eliza Hall Institute," Dr Divjak said. "The inflammasome is a really amazing structure employed by the immune system to protect the body from infection. However, it also plays a key role in the development and progression of chronic immune diseases such as type 2 diabetes."

[Watch the video ►](#)



The institute launched a new series of public forums, the *Illumination* series, in 2014. The forums include an extended Q&A session for audience members, to ask their questions of institute scientists.

Professor Liam O'Connor presented at the first public forum, *Illuminating...* personalised medicine.



The veski inspiring students (and teachers) program was held at the Walter and Eliza Hall Institute in May 2014. More than 200 secondary students from four regional schools attended the day, which included speed-meeting scientists, laboratory tours and behind-the-scenes presentation from WEHI.TV animator Drew Berry on his latest animations (pictured).

ENGAGING WITH SCHOOLS

Supporting science talent

Encouraging primary and secondary school students to develop their passion for science is a core part of the institute's community engagement program.

The Walter and Eliza Hall Institute has proudly supported the Science Teachers' Association of Victoria's (STAV) Science Talent Search program since 2001. The STAV Science Talent Search sees primary and secondary students from across Victoria conduct experiments, take photographs, make videos, design posters and write essays for consideration by a panel of judges.

In 2013 the institute supported 34 bursaries awarded to students across a range of ages and categories. Among the winners of the institute's

bursaries in 2013 was Isabel Chu from Presbyterian Ladies' College with her project 'inhibitory effects of citrus extract on bacteria'.

Adelaide Wood from Methodist Ladies' College devised an experiment to improve dental hygiene with her project 'erosive effects of different beverages on teeth', while Ben Toohey from St Kevin's College probed the properties of water with his project 'the effect of temperature and salinity on surface tension'.

Institute director Professor Doug Hilton presented at the Science Talent Search awards ceremony in November 2013, announcing the awards for experimental research and computer programs.

Inspiring regional science students

More than 200 secondary school students from four regional towns visited the institute in May 2014 for a veski inspiring students (and teachers) program.

veski is a Victorian Government seed funded initiative to foster an innovation economy and identify leading researchers and bring them to Victoria for the benefit of the Australian economy.

The veski inspiring students (and teachers) program is designed to lift participation rates and interest in science among regional Victorian students. Secondary students from Neerim District, Mooroopna, Kyneton and Keysborough secondary colleges, representing Gippsland, Hume and Loddon Mallee, attended the symposium, held at the Walter and Eliza Hall Institute.

Students from Years 7 to 10 got an insight into real-world science at the institute, through dynamic presentations, speed-meetings, and behind-the-scene laboratory tours

led by veski innovation fellows, veski family members, colleagues and their research teams. Five of the 20 veski innovation fellows announced in the past 10 years are Walter and Eliza Hall Institute scientists, who were all part of the event.

The half-day event provided students with an opportunity to participate in speed-meeting opportunities with 15 veski innovation fellows; three-minute presentations focused on a range of areas from cancer and inflammatory diseases to dengue and malaria. Students also had the opportunity to share their own stories about becoming a scientist via a uniquely modern take on the traditional 'soap box'.

veski chief executive officer Ms Julia Page said the students gave overwhelmingly positive feedback. "The students were clearly inspired by the symposium which only reinforces the need to hold more events like this one and far more often," Ms Page said.

Giving students an insight into medical research

In June 2014, researchers from the Walter and Eliza Hall Institute volunteered their time to show the next generation what it is like to be a medical researcher for a day.

The 'Insights into Medical Research' day is a collaborative venture between the Gene Technology Access Centre (GTAC) and the institute for year 9 students, providing the opportunity for 90 students from schools across Victoria to participate in this free event, with a focus on research into malaria.

The day began with an opening address by malaria and toxoplasmosis researcher Dr Chris Tonkin. Students then had the opportunity for a 'speed dating' session with 15 medical researchers from the Walter and Eliza Hall Institute, before a hands-on laboratory experiment to simulate

what is involved in developing a malaria vaccine.

We became a scientist for a day and learnt heaps in the process.

Kalli, a year 9 student from Alphington Grammar School, said the students had a fantastic day. "We were enlightened by the idea of eradicating malaria – the third largest killer in the world and furthermore got the opportunity to attempt a very complicated yet compelling prac," she said. "With the help and guidance of our mentor scientist, we were able to extract the DNA and proteins from human and malaria cells. We became a scientist for a day and learnt heaps in the process."

Silver medal for Science Olympian

The Australian Science Olympiad Competition is a national extension program for top performing secondary science students.

The program, coordinated by Australian Science Innovations, culminates each year in the International Science Olympiads – the Olympic Games for science students. The institute has supported the International Biology Olympiad (IBO) for several years, providing funding and mentoring for the Science Olympians who represent Australia in the competition.

"The IBO has ignited a love of research, especially into biology, and I am also very interested in promoting science to the world."

Four Australian Year 12 students represented Australia at IBO 2013 in Bern, Switzerland, in July 2013. Mr Andrew Coote, a Year 12 student at Melbourne Grammar School, won a silver medal for Australia at IBO in 2013.

Andrew said the experience was truly life changing.

"There were around 240 students from 60 countries, and it was an incredible experience being surrounded by people with an immense love of biology, and an insatiable curiosity about the world," he said. "In the future I would like to be a doctor, however the IBO has ignited a love of research, especially into biology, and I am also very interested in promoting science to the world! There is a lot of study involved, but the end result is very rewarding."

Institute bioinformatician and former maths Olympian Dr Martin O'Hely spoke to biology students at the Australian Science Olympiad Summer School at Monash University in January 2014.

"The Olympiads give these talented young people the chance to experience post-secondary science learning as well as providing an element of challenge which they'd rarely get in their school classrooms," Dr O'Hely said.



More than 90 Year 9 students from schools across Victoria participated in the 'Insights into Medical Research' day, a collaborative program between the Gene Technology Access Centre (GTAC) and the Walter and Eliza Hall Institute.



Dr Lisa Mielke was a prize winner at the Victorian Infection and Immunity Network Young Investigator Symposium in September 2013.

Dr Mielke also participated in the veski students (and teachers) program, giving students from regional Victorian schools the change to see real-world science at the institute.

ENGAGING WITH SCIENTISTS

It's a hit: celebrating a decade of drug discovery

In November 2013 the institute celebrated a decade of translating research into potential drugs and treatments for patient benefits.

The Walter and Eliza Hall Institute's drug discovery program has a focus on strong multidisciplinary teams, and requires a highly collaborative approach to delivering drug-like small molecules and tackling difficult targets. More than 180 people attended the 10-year celebration from the research, commercialisation and pharmaceutical sectors, with some media and general public also joining the event.

The event, supported by the Victorian Government Department of State Development, Business and Innovation (DSDBI), also looked at future programs and challenges in drug discovery in Melbourne. Professor Manfred Auer, Professor of Translational Biology from the University of Edinburgh, delivered the

plenary lecture, and special guest Dr Amanda Caples from DSDBI spoke about government investment in biotechnology and drug development. The event also included presentations from medicinal chemists, researchers, biologists and clinician-scientists across the day.

Feedback from attendees was overwhelmingly positive, with participants commenting there were a number of interesting issues and challenges highlighted, and much food for thought for how they approached drug discovery and commercialisation. Overwhelming feedback from attendees supported running the event every two to three years.

Professor Auer said pharmaceutical companies needed early drug development, which provided opportunities for academic researchers to develop drug candidates.

VIIN Young Investigator Symposium

The Victorian Infection and Immunity Network (VIIN) brings together researchers from diverse disciplines across Victoria who have an interest in infection and immunity.

In September 2013, the institute hosted and provided in-kind support for the VIIN Young Investigator Symposium, which attracted more than 200 established researchers, early-career researchers and students from around Victoria.

The Young Investigator Symposium has been held at the Walter and Eliza Hall Institute in 2009, 2010, 2012 and 2013. The symposium connects established and emerging infection and immunity researchers with the goal of seeding new collaborations

and strengthening research performance and capabilities.

As part of the one-day event, 30 speakers from across 10 Victorian universities and research organisations gave presentations, including a keynote address by Dr Linfa Wang from the CSIRO Australian Animal Health Laboratory. Institute researchers Ms Victoria Ryg-Cornejo and Dr Lisa Mielke were two of the eight prize winners for poster and oral presentations on the day. Dr Lisa Ioannidis from the institute's Infection and Immunity division was the Walter and Eliza Hall Institute representative on the symposium organising committee.

SERVICE TO THE SCIENTIFIC COMMUNITY

Service to biotechnology boards, committees and consultancies

Jerry Adams, Leukemia & Lymphoma Society Specialized Center of Research, director

Warren Alexander, MuriGen Therapeutics Scientific Advisory Board, chair

Marie-Liesse Asselin-Labat, Victorian Comprehensive Cancer Centre Lung Research Collaborative Working Group, member

Christopher Burns, Catalyst Therapeutics Scientific Advisory Board, member

Christopher Burns, Gilead Sciences, scientific advisor

Peter Colman, Burnet Institute Board, member

Jayesh Desai, Bionomics Scientific Advisory Board, member

Jayesh Desai, Circadian/Vegenics Scientific Advisory Board, member

Ross Dickins, Victorian Centre for Functional Genomics Scientific Advisory Committee, member

Paul Ekert, Ian Potter Centre Scientific and Management Committee, member

Paul Ekert, Melbourne Genomics Health Alliance Clinical Interpretation and Reporting Advisory Group, member

Paul Ekert, Victorian Clinician Researcher Network - Advisory Group Meeting, member

Matthias Ernst, Victorian Prostate Cancer Research Council, board member

Len Harrison, Ascend Biopharmaceuticals, consultant

Len Harrison, CSL, consultant

Joan Heath, CellBank Australia Scientific Advisory Committee, chair

Eugene Kapp, The Association of Biomolecular Resource Facility/ Proteome Informatics Research Group, chair

Benjamin Kile, MuriGen Therapeutics Pty Ltd, chief operating officer and chief scientific officer

Guillaume Lessene, Bionomics Ltd, consultant

Andrew Lew, Cellestis Ltd (now Qiagen), consultant

Andrew Lew, CSL Ltd, consultant

Andrew Lew, Fonterra, consultant

Andrew Lew, Genetic Technologies, consultant

Andrew Lew, ImmusanT, consultant

Andrew Lew, Prosetta Antiviral Inc, consultant

Andrew Lew, Starfish Ventures Pty Ltd, consultant

Andrew Lew, Tecniplast, Australia, consultant

Geoffrey Lindeman, Australian Cancer Research Foundation Medical Research Advisory Committee, member

Nick Nicola, Insitute for Molecular Biosciences-Advisory Board, member

Nick Nicola, Insitute for Molecular Biosciences-Scientific Advisory Board, chair

Nick Nicola, KConFab Management Committee, member

Nick Nicola, Therapeutic Innovation Australia – National Research Infrastructure for Australia Expert advisory Committee, member

Nick Nicola, Victorian Comprehensive Cancer Centre Research Advisory committee, member

Nick Nicola, Virtual Pharma (part of Therapeutic Innovation Australia Program of DISR), member

Lorraine O'Reilly, UROP (University Research Opportunity Program), interview panel member

Tony Papenfuss, Peter MacCallum Cancer Centre Clinical Genomics Initiative Steering Committee, member

Marc Pellegrini, TetraLogic Pharmaceuticals (USA), honorary consultant

Andrew Roberts, AbbVie, adviser re ABT-263 and ABT-199 (pro-bono), member

Andrew Roberts, CSL Behring, advisory committees for CSL-360 and CSL-362 (pro-bono), member

Louis Schofield, Australian Institute of Tropical Health and Medicine, director

Louis Schofield, Queensland Tropical Health Alliance, director

Clare Scott, BioGrid Australia, head rare tumour stream

Clare Scott, BioGrid Australia, head breast cancer stream

Clare Scott, BioGrid Australia, Management Committee, WEHI representative

Clare Scott, Cure Cancer Australia Foundation (CCAF) Board, member

Clare Scott, Cure Cancer Australia Foundation (CCAF) Research Committee, chair

Clare Scott, Mayo Clinic Ovarian SPORE External Advisory Board, member

Clare Scott, Melbourne Health Expert Scientific Review Panel, member

Clare Scott, Melbourne Health Research Week Committee, WEHI representative

Clare Scott, Royal Women's Hospital, Women's Cancer Foundation Scientific Advisory Committee, member

Clare Scott, The University of Melbourne PhD Student Advisory Committees, chair

Clare Scott, Victorian Comprehensive Cancer Centre Seminar Series Committee, WEHI representative

Clare Scott, Walter and Eliza Hall Institute – Victorian Comprehensive Cancer Centre Gynaecologic Oncology Research Collaborative, consultant

John Silke, Bio21 Scientific Advisory Council, member

John Silke, BioMedVic Scientific Advisory Council, WEHI representative

John Silke, CRC for Biomarker Translation, consultant

John Silke, Scientific Advisory Board, Tetralogic Inc, Pennsylvania, board member

John Silke, VCCC Education & Training Committee, member

Andreas Strasser, Genentech, Inc., consultant

Andreas Strasser, Servier, research contract

Ian Street, Cancer Therapeutics CRC Portfolio Management Committee, chair

Ian Street, Children's Cancer Institute Drug Discovery Advisory Committee, member

David Tarlinton, CSL Ltd, consultant

Jason Tye-Din, ImmusanT Inc., consultant

David Vaux, Scientific Advisory Board, TetraLogic Inc, Pennsylvania, board member

Jane Visvader, International Society for Stem Cell Research Translational Science Advisory Committee, member

Jane Visvader, Medical and Scientific Committee of The Cancer Council Victoria, member

Jane Visvader, National Breast Cancer Foundation Research Advisory Committee, member

Jane Visvader, Stem Cells Australia, honorary member

Ian Wicks, CSL, consultant

Service on clinical advisory and working groups

Melanie Bahlo, NHMRC Workshop – Translation of omics-based discoveries into clinical research and practice, panel member

Melanie Bahlo, Peter MacCallum Cancer Centre Clinical Genomics Initiative Steering Committee, bioinformatics lead

Melanie Bahlo, Theme Group – Royal Melbourne Hospital research review 2014 ‘Precision Medicine’, panel member

Antony Burgess, BioGrid Australia Management Committee, chair

Jayesh Desai, Australasian Sarcoma Study Group/Cancer Council Australia National Sarcoma Guidelines, co-chair

Paul Ekert, Melbourne Genomics Health Alliance, principal investigator

Paul Ekert, Victorian Comprehensive Cancer Centre Molecular Tumour Board, member

Phil Hodgkin, Bio21 Cluster Scientific Advisory Council, WEHI representative

Phil Hodgkin, RMIT Biomedical Science Program Advisory Committee, member

David Huang, Bio21 Cluster Scientific Advisory Council, member

David Huang, University of Melbourne Faculty of Medicine, Dentistry and Health Sciences China Strategy group, member

Geoffrey Lindeman, AMGEN – Global Scientific Breast Cancer Advisory Board Member, member

Geoffrey Lindeman, Australian Academy of Health and Medical Science -- Member of the Development Committee and nominated Foundation Member, member

Geoffrey Lindeman, Australian Cancer Research Foundation Centre for Therapeutic Target Discovery, clinical director

Geoffrey Lindeman, Australian New Zealand Breast Cancer Trials Group Board, member

Geoffrey Lindeman, Australian New Zealand Breast Cancer Trials Group Scientific Advisory Committee, member

Geoffrey Lindeman, Department of Health Implementation Committee for the Victorian Family Cancer Genetics Service, member

Geoffrey Lindeman, Implementation Committee for The Royal Melbourne Hospital Familial Cancer Centre, chair

Geoffrey Lindeman, Kathleen Cuningham Foundation Consortium for Research into Familial Breast Cancer (kConFab) Executive, member

Geoffrey Lindeman, Mater Research Scientific Advisory Committee, member

Geoffrey Lindeman, Melbourne Health Tissue Bank Implementation Committee, chair

Geoffrey Lindeman, NSW Breast Cancer Tissue Bank Scientific Advisory Panel, member

Geoffrey Lindeman, Sanofi-Aventis International Steering Committee for Sanofi-Aventis PARP inhibitor (BSI-201) Study TCD11418, member

Geoffrey Lindeman, Streamlined Research Governance and Ethics Steering Committee Member, WEHI representative

Geoffrey Lindeman, The Royal Melbourne Hospital Familial Cancer Centre, director

Geoffrey Lindeman, Victorian Cancer Biobank Consortium Committee, member

Geoffrey Lindeman, Victorian Comprehensive Cancer Centre Melbourne Health Clinical Advisory Group, member

Geoffrey Lindeman, Victorian Comprehensive Cancer Centre Melbourne Health Research Advisory Group, member

Geoffrey Lindeman, Victorian Comprehensive Cancer Centre Research Advisory Group - Tissue Bank Subcommittee, chair

Geoffrey Lindeman, Victorian Comprehensive Cancer Centre Working Party - Research, member

Geoffrey Lindeman, Victorian Cooperative Oncology Group, Genetics Advisory Committee (The Cancer Council Victoria), member

Ashley Ng, Victorian Comprehensive Cancer Centre Patient Information Services Steering Committee, scientific representative

Marc Pellegrini, National Centre in HIV Epidemiology and Clinical Research,

Andrew Roberts, Victorian Comprehensive Cancer Centre Cancer Research Advisory Committee, member

Louis Schofield, Malaria Research Eradication, member

Clare Scott, Clinical Trials Australia (CTA) Breast Stream, consultant

Clare Scott, Clinical Trials Australia (CTA) Gynaecologic Tumour Stream, consultant

Clare Scott, Clinical Trials Australia (CTA) Phase I Trials Group, consultant

Clare Scott, Cure Cancer Australia Foundation (CCAF) Board, member

Clare Scott, Cure Cancer Australia Foundation (CCAF) Research Committee, chair

Clare Scott, Royal Women’s Hospital, Women’s Cancer Foundation Scientific Advisory Committee, member

Clare Scott, Royal Women’s Hospital, Women’s Cancer Foundation Scientific Advisory Committee, member

David Tarlinton, Bio21 Cluster Scientific Advisory Council, WEHI representative

Jason Tye-Din, Medical Advisory Committee of Coeliac Australia, chair

Jane Visvader, Cancer Council Victoria Committee, member

Jane Visvader, Kathleen Cuningham Foundation Consortium for Research into Familial Breast Cancer (kConFab) Review Committee, member

Jane Visvader, National Breast Cancer Foundation Research Advisory Committee, member

Ian Wicks, Back Pain Steering Committee, member

Ian Wicks, Medical Advisory Committee, Melbourne Health, member

Ian Wicks, Melbourne Health, Scientific Review Panel, member

Ian Wicks, Neurosciences Division Management Group, member

Ian Wicks, Rheumatology Unit Management Group, chair

Service to editorial boards

Jerry Adams, *Genes & Development*, member

Jerry Adams, *Oncogene*, member

Jerry Adams, *Proceedings of the National Academy of Sciences of the United States of America*, review editor

Warren Alexander, *Growth Factors*, editorial board member

Warren Alexander, *Stem Cell Investigation*, editorial board member

Melanie Bahlo, *Faculty of 1000*, faculty member - genetics

Alyssa Barry, *The Open Parasitology Journal*, member

Jake Baum, *Malaria Journal*, editorial board member

Philippe Bouillet, *Apoptosis*, associate editor

Philippe Bouillet, *Cell Death & Differentiation*, associate editor

Antony Burgess, *Encyclopedia of Hormones*, associate editor

Antony Burgess, *Growth Factors*, editor-in-chief

Antony Burgess, *Journal of Experimental Therapeutics and Oncology*, editorial board member

Christopher Burns, *MedChemComm* (Royal Society of Chemistry), editorial board member

Matthew Call, *Journal of Visualized Experiments*, member

Peter Colman, *Current Opinions in Structural Biology*, member

Peter Colman, *IUCrJ*, member

Peter Colman, *Structure*, member

Suzanne Cory, *Cancer Research*, editorial board

Suzanne Cory, *Proceedings of the National Academy of Sciences of the United States of America*, review editor

Alan Cowman, *Science*, board of review

Jayesh Desai, *Journal of Clinical Oncology*, editorial board member

Jayesh Desai, *Journal of Oncopathology*, associate editor

Jayesh Desai, *Targeted Oncology*, editorial board member

Grant Dewson, *Open Cell Signalling Journal*, editorial board

Paul Ekert, *BMC Cancer*, associate editor

Paul Ekert, *Cell Death and Disease*, editorial board member

Matthias Ernst, *Cytokine*, associate editor

Matthias Ernst, *PLoS Genetics*, guest editor

Matthias Ernst, *World Journal of Gastroenterology*, editorial board

Daniel Gray, *Frontiers in Immunology*, editorial board

Diana Hansen, *Immunity and Diseases*, member

Diana Hansen, *International Journal for Parasitology*, guest editor

Diana Hansen, *ISRN Parasitology*, member

Diana Hansen, *Parasitology*, guest editor

Len Harrison, *Current Diabetes Reports*, member

Len Harrison, *Diabetes Nutrition and Metabolism*, associate editor

Len Harrison, *Diabetes Prevention and Therapy*, associate editor

Len Harrison, *Diabetes Research and Clinical Practice*, member

Len Harrison, *Human Vaccines and Immunotherapeutics*, associate editor

Len Harrison, *Molecular Medicine*, contributing editor

Len Harrison, *Pediatric Diabetes*, member

Phil Hodgkin, *Frontiers in B Cell Biology*, editorial board member

Phil Hodgkin, *Immunology and Cell Biology*, editorial board member

David Huang, *Frontiers in Cell Death*, editorial board

Eugene Kapp, *Molecular and Cellular Proteomics*, editorial board member

Eugene Kapp, *Translational Proteomics*, editorial board member

Lukasz Kedzierski, *Advances in Bioscience and Biotechnology*, editorial board

Lukasz Kedzierski, *Journal of Tropical Medicine*, editorial board

Ruth Kluck, *Cell Death & Disease*, member

Michael Lawrence, *Frontiers in Molecular and Structural Endocrinology*, associate editor

Andrew Lew, *Clinical & Translational Immunology*, member

Andrew Lew, *Current Opinions Immunology*, section editor

Andrew Lew, *Frontiers Immunology*, member

Andrew Lew, *Immunology & Cell Biology*, member

Geoffrey Lindeman, *Growth Factors*, member

Geoffrey Lindeman, *Journal of Mammary Gland Biology and Neoplasia*, member

Geoffrey Lindeman, *Stem Cell Research*, member

Seth Masters, *Dataset Papers in Cell Biology*, editorial board

Seth Masters, *Frontiers in Inflammation*, editorial review board

Seth Masters, *The Open Inflammation Journal*, editorial board

Ivo Mueller, *PLoS Medicine*, academic editor

Ivo Mueller, *PLoS One*, editor

James Murphy, *Biochemical Journal*, editorial advisory panel

James Murphy, *International Journal of Interferon, Cytokine and Mediator Research*, editorial board

Shalin Naik, *Cellular Immunology*, editor

Nick Nicola, *Growth Factors*, editorial board

Nick Nicola, *Open Biotechnology*, editorial board

Nick Nicola, *Stem Cells*, editorial board

Nick Nicola, *Technology Transfer Tactics*, editorial board

Ken Pang, *American Journal of Clinical and Experimental Immunology*, editorial board

Tony Papenfuss, *Biology Direct*, editorial board member

Marc Pellegrini, *Clinical Translational Immunology*, associate editor

Marc Pellegrini, *Current Opinions in Immunology*, section editor

Andrew Roberts, *Leukemia*, guest section editor

Louis Schofield, *Cellular Microbiology*, editor

Clare Scott, *Board of BBA - Reviews on Cancer*, member

Ken Shortman, *Frontiers in Molecular Antigen Presentation*, review editor

Ken Shortman, *International Immunology*, executive editor

John Silke, *Cell Death & Differentiation*, editorial board

John Silke, *Open Cell Signalling Journal*, editorial board

John Silke, *Science Signalling*, editorial board

Gordon Smyth, BMC Bioinformatics, editorial advisory board member

Andreas Strasser, *Cell Death & Differentiation*, associate editor

Andreas Strasser, *Current Opinion in Immunology*, associate editor

Andreas Strasser, *Genes to Cells*, associate editor

Andreas Strasser, *International Journal of Molecular Medicine*, associate editor

Andreas Strasser, *Journal of Cell Biology*, associate editor

Andreas Strasser, *Journal of Experimental Medicine*, associate editor

David Tarlinton, *Frontiers in Immunology*, associate editor

David Tarlinton, *Immunology and Cell Biology*, editorial board member

David Tarlinton, *Immunology Letters*, editorial board member

David Tarlinton, *International Immunology*, transmitting editor

David Tarlinton, *Journal of Immunology*, associate editor

Tim Thomas, *PLoS ONE*, editorial board

David Vaux, *Apoptosis*, editorial board

David Vaux, *Cancer Medicine*, editorial board

David Vaux, *Cell Death & Differentiation*, editorial board

David Vaux, *Disease Models and Mechanisms*, editorial board

David Vaux, *EMBO Reports*, editorial board

James Vince, *Inflammation and Cell Signaling*, associate editor

Jane Visvader, *Breast Cancer Research*, editorial board member

Jane Visvader, *Cancer Cell*, editorial board member

Jane Visvader, *Cancer Research*, senior editor

Jane Visvader, *Cell Stem Cell*, editorial board member

Jane Visvader, *Molecular Oncology*, editorial board member

Service to learned scientific societies

Jerry Adams, American Association for Cancer Research Academy, Fellow

Jerry Adams, Australian Academy of Science, Fellow

Jerry Adams, European Molecular Biology Organisation, associate member

Jerry Adams, The Royal Society of Victoria, member

Jerry Adams, The Royal Society, London, Fellow

Jerry Adams, US National Academy of Sciences, Member

Antony Burgess, Australian Academy of Science, member

Suzanne Cory, American Academy of Arts & Sciences, foreign honorary member

Suzanne Cory, Australian Academy of Science, president

Suzanne Cory, European Molecular Biology Organisation, associate member

Suzanne Cory, French Academy of Sciences, associate foreign member

Suzanne Cory, Pontifical Academy of Sciences, academician

Suzanne Cory, The Japan Academy, member

Suzanne Cory, The Royal Institution of Australia, Bragg member

Suzanne Cory, The Royal Society of Victoria, member

Suzanne Cory, The Royal Society, London, member

Suzanne Cory, US National Academy of Sciences, foreign member

Alan Cowman, Australian Academy of Science, sectional committee member

Grant Dewson, Faculty of 1000, fellow

Paul Ekert, American Society of Hematology, member

Ivo Mueller, American Society of Tropical Medicine and Hygiene, member

Clare Scott, American Association for Cancer Research, member

John Silke, Faculty of 1000, associate member

Andreas Strasser, Australian Academy of Science, member

Andreas Strasser, European Molecular Biology Organisation, associate member

David Vaux, Australian Academy of Science, Fellow

David Vaux, Faculty of 1000, section head

Service on international committees, councils, boards and foundations

Warren Alexander, American Society of Hematology Scientific Committee on Hematopoiesis, member

Marie-Liesse Asselin-Labat, European Association for Cancer Research, member

Marie-Liesse Asselin-Labat, International Association for the Study of Lung Cancer, member

Marie-Liesse Asselin-Labat, Thoracic Society of Australia and New Zealand, member

Alyssa Barry, Asia-Pacific Malaria Elimination Network, member

Suzanne Cory, Cold Spring Harbor Conferences Asia Scientific Advisory Board, member

Suzanne Cory, Gairdner Foundation Medical Advisory Board, member

Suzanne Cory, Institute of Medical Biology (A*STAR BMRC) Scientific Advisory Board, member

Suzanne Cory, KwaZulu-Natal Research Institute for Tuberculosis & HIV Scientific Advisory Board, member

Suzanne Cory, Pasteur Institute Scientific Advisory Board, member

Suzanne Cory, University of Auckland Maurice Wilkins Centre for Molecular Biodiscovery Scientific Advisory Board, member

Suzanne Cory, Vallee Visiting Professor Selection Committee, member

Alan Cowman, Howard Hughes Medical Institute Early-Career Scientist Selection Committee, member

Alan Cowman, World Federation of Parasitologist, president

Jayesh Desai, American Society of Clinical Oncology (ASCO) Education Committee, chair

Jayesh Desai, World Sarcoma Network Board, member

Grant Dewson, American Society for Biochemistry and Molecular Biology, WEHI representative

Paul Ekert, Society for Pediatric Research, member

Matthias Ernst, Swiss Australian Academic Network, president

Daniel Gray, Faculty of 1000, contributing member

Len Harrison, Diabetes Vaccine Development Centre Scientific Advisory Committee, member

Joan Heath, Zebrafish Disease Models Society Board, member

Susanne Heinzl, International Union of Immunological Societies, member of the General Assembly

Ruth Kluck, Faculty of 1000, contributing member

Nick Nicola, A-IMBN Research Advisory Committee, member

Andrew Roberts, American Society of Hematology International Members Committee, chair

Andrew Roberts, American Society of Hematology Program Committee, member

Andrew Roberts, American Society of Hematology Executive Committee, member

Louis Schofield, The Malaria Eradication Research Agenda, member

Anuratha Sakthianandeswaren, European Association for Cancer Research, ambassador

Clare Scott, American Society of Clinical Oncology, member

Clare Scott, Australian and New Zealand Breast Cancer Trials Group, member

Clare Scott, Australian and New Zealand Gynaecology Oncology Group, member

Clare Scott, European Network for Translational Research in Ovarian Cancer, member

Clare Scott, Gynaecologic Cancer Inter-Group, Translational Committee, co-chair

Clare Scott, International Breast Cancer Study Group, member

Ken Shortman, International Society for DC and Vaccine Science Scientific Advisory Committee, member

Ken Shortman, International Union of Immunological Societies Nomenclature Committee on Dendritic Cells And Monocytes Committee, member

Andreas Strasser, Dr Josef Steiner Cancer Research Foundation Prize Committee, adviser

Andreas Strasser, Faculty of 1000 Biology Advisory Board, member

Andreas Strasser, Faculty of 1000 Medical Research Advisory Board, member

Andreas Strasser, Marcel Benoist Prize Committee, adviser

Andreas Strasser, The European Research Institute for Integrated Cellular Pathology International Advisory, member

Jason Tye-Din, Scientific Advisory Board, ImmusanT Inc., scientific adviser

David Vaux, Committee on Freedom and Responsibility in the Conduct of Science (CFRS) of the International Council for Science (ICSU), member

Jane Visvader, HUGO (Human Genome Organisation) Awards Selection Committee, member

Jane Visvader, Stinehart-Reed Awards Selection Committee, Stanford University, member

Service to international grant review panels

Marie-Liesse Asselin-Labat, Medical Research Council UK

Melanie Bahlo, Marsden Fund New Zealand

Melanie Bahlo, UK Muscular Dystrophy Campaign

Marnie Blewitt, Financial Mechanism Office Belgium

Antony Burgess, Dowd Foundation Research Fellowship for Neuroscience

Antony Burgess, Health Research Council of New Zealand

Antony Burgess, Israel Science Foundation

Antony Burgess, Netherlands Organisation for Scientific Research

Antony Burgess, Swiss National Science Foundation

Antony Burgess, Vanderbilt University Specialized Programs of Research Excellence in GI Cancer

Christopher Burns, Health Research Council New Zealand

Matthias Ernst, Swiss National Science Foundation

Joan Heath, Dutch Cancer Society

Joan Heath, King's Health Partners R&D Challenge Fund (UK)

Phil Hodgkin, German-Israeli Foundation for Scientific Research

David Huang, Dutch Cancer Society

David Huang, Health Research Council, New Zealand

Emma Josefsson, The Netherlands Organization for Scientific Research Project Grants

Lukasz Kedzierski, National Science Center, Poland

Lukasz Kedzierski, Portuguese Foundation for Science and Technology

Lukasz Kedzierski, Research Council of Norway

Andrew Lew, Arthritis Research Campaign, UK

Andrew Lew, Health Research Council, New Zealand

Andrew Lew, Wellcome Trust

Seth Masters, Hong Kong Research Grant

Seth Masters, Israel Science Foundation

Seth Masters, Telethon Italy

Shalin Naik, French National Research Agency

Shalin Naik, Research Foundation Flanders

Nick Nicola, Leukaemia & Lymphoma Research (UK)

Nick Nicola, Medical Research Council (UK)

Marc Pellegrini, Health Research Council, New Zealand

Matthew Ritchie, Fondation pour la Recherche Médicale (FRM).

Clare Scott, Health Research Council, New Zealand

Oliver Sieber, Cancer Research UK

Oliver Sieber, Israel Science Foundation

Oliver Sieber, Italian Association for Cancer Research (AIRC)

John Silke, Ecole Polytechnique Federale de Lausanne (EPFL)

Terry Speed, National Institutes of Health

Andreas Strasser, European Union Large-Scale Program

Andreas Strasser, Japanese Society for Promotion of Science

Ian Street, Wellcome Trust

Robyn Sutherland, Diabetes UK

Samir Taoudi, French National Research Agency

Ian Wicks, Health Research Board, Ireland

Ian Wicks, Arthritis & Rheumatism Research Council (UK)

Ian Wicks, Medical Research Council, UK

Ian Wicks, Wellcome Trust, UK

Service on international conference organising committees

Warren Alexander, International Society for Stem Cell Research 12th Annual Meeting, abstract reviewer

Alyssa Barry, Molecular Approaches to Malaria 2016, co-chair

Michael Buchert, Wnt Signalling International Meeting, organising committee member

Antony Burgess, IIAS Conference: Epidermal Growth Factor Receptor - Future Directions, Organising Committee, chair

Christopher Burns, Pacificchem 2015, symposium organiser

Suzanne Cory, Cold Spring Harbor Conferences Asia Scientific Advisory Board, member

Jayesh Desai, Asia-Pacific Musculoskeletal Tumour Society Annual Scientific Meeting, co-convenor

Matthias Ernst, Wnt Signalling International Meeting, organising committee member

Diana Hansen, Molecular Approaches to Malaria 2016, chair

Len Harrison, 13th International Immunology of Diabetes Society, organising committee member

Joan Heath, 16th International Zebrafish Development and Genetics Conference, organising committee member

Joan Heath, Strategic Conference of Zebrafish Investigators, organising committee member

Joan Heath, Zebrafish Disease Models 8, organising committee member

Phil Hodgkin, 16th International Congress of Immunology 2016, Scientific Program Committee member

David Huang, Lorne Cancer Conference, co-convenor

David Huang, New Directions in Leukemia Research, executive committee member

Emma Josefsson, 55th American Society of Hematology Annual Meeting, abstract reviewer and session moderator

Emma Josefsson, XXIV Congress of the International Society on Thrombosis and Haemostasis, session moderator

Benjamin Kile, American Society of Hematology Annual Meeting, Scientific Committee on Platelets member

Andrew Lew, 13th Annual Scientific Meeting of the Immunology of Diabetes Society, member

Andrew Lew, 16th International Congress of Immunology 2016, Scientific Program Committee vice-president and chair

Sandra Nicholson, International Cytokine and Interferon Society, scientific organising committee

Toby Pheese, EMBO Workshop on Wnt signalling in development and disease, organising committee

Toby Pheese, Wnt Signalling International Meeting, organising committee

Andrew Roberts, American Society of Hematology, program committee chair

Clare Scott, International Gynecologic Cancer Society (IGCS) 2014, organising committee member

Ken Shortman, 13th International Symposium on Dendritic Cells, Paris, France, International Advisory Committee member

John Silke, 15th TNF Meeting, advisory committee

Gordon Smyth, Bioinformatics / BIOSTEC 2014, program committee member

Gordon Smyth, Bioinformatics / BIOSTEC 2015, program committee member

Andreas Strasser, 15th International Congress of Immunology (Roma 2013), organising committee

Andreas Strasser, 2015 TNF Conference, Ghent, Belgium, scientific committee member

Andreas Strasser, AACR 105th Annual Meeting, Scientific Program Committee member

Andreas Strasser, International Congress of Cell Biology (ICCB), Prague, Czech Republic, international advisory board

David Tarlinton, 16th International Congress of Immunology 2016, Scientific Program Committee member

Wai-Hong Tham, Molecular Approaches to Malaria 2016, co-chair

Jane Visvader, American Association for Cancer Research Breast Cancer Meeting 2013, co-chair

Jane Visvader, Breast Cancer Nobel Symposium, member

Service to national committees, councils, boards and foundations

Marie-Liesse Asselin-Labat, Australasian Society for Stem Cell Research, Member

Jerry Adams, Australian Cancer Research Foundation Medical Research Advisory Committee, member

Jerry Adams, Australian Society of Biochemistry and Molecular Biology National Advisory Council and Award Committee, member

Jerry Adams, National Health and Medical Research Council Academy, member

Warren Alexander, Children's Cancer Institute Australia Scientific Advisory Board, member

Warren Alexander, National Health and Medical Research Council Research Committee, member

Warren Alexander, National Health and Medical Research Council Research Fellowship Interview Panel, chair

Warren Alexander, National Health and Medical Research Council Research Translation Faculty Cancer Control Steering Group, member

Philippe Bouillet, Research Translation Faculty, member

Antony Burgess, The University of Melbourne Cancer Program Advisory Committee, member

Antony Burgess, Victorian Comprehensive Cancer Centre Board, alternate member

Antony Burgess, Victorian Comprehensive Cancer Centre Cancer Research Advisory Committee, member

Chris Burns, Monash University Bachelor of Pharmaceutical Sciences Action Group, member

Melissa Call, Immunology Group of Victoria Committee, member

Suzanne Cory, Australian Synchrotron National Science Colloquium Committee, member

Suzanne Cory, Gene Technology Access Centre Board of Management, chair

Suzanne Cory, L'Oréal Australia For Women in Science Fellowships Selection Committee, member

Suzanne Cory, Rotary Aboriginal and Torres Strait Islander Tertiary Scholarship Selection Committee, member

Suzanne Cory, Royal College of Pathologists of Australasia Faculty of Science Foundation Committee, member

Suzanne Cory, The Global Foundation Advisory Council, member

Alan Cowman, Griffith University Advisory Board, member

Alan Cowman, National Health and Medical Research Council Academy and assigner, assigner

Alan Cowman, QIMR Berghofer Medical Research Institute Appointment and Promotions Committee, member

Peter Czabotar, Australian Synchrotron Macromolecular Beamline Program Advisory Committee, member

Peter Czabotar, Australian Synchrotron User Advisory Committee, chair

Peter Czabotar, Society of Crystallographers in Australia and New Zealand, newsletter editor

Jayesh Desai, Australasian Sarcoma Study Group (ASSG), chair

Jayesh Desai, Cancer Australia Genomic Cancer Clinical Trials Initiative Steering Committee, member

Ross Dickins, Australian Phenomics Group Management Group, member

Paul Ekert, Leukaemia Foundation Australia Medical and Scientific Advisory Committee, member

Matthias Ernst, Victorian Prostate Cancer Research Council Scientific Advisory Committee, member

Nima Etemadi, Australian & New Zealand Association for the Advancement of Science Victorian Committee, member

Clara Gaff, Human Genetics Society of Australasia, Ethics and Social Issues Committee, member

Clara Gaff, National Health and Medical Research Council Human Genetics Advisory Committee, member

Gabrielle Goldberg, National Health and Medical Research Council Research Translation Faculty, member

Daniel Gray, Australian Society of Immunology, Victorian and Tasmanian state councillor

Daniel Gray, Immunology Group of Victoria, councillor

Diana Hansen, Victorian Infection and Immunity Network Executive, member

Len Harrison, National Health and Medical Research Council Academy, member

Joan Heath, CellBank Australia, Scientific Advisory Committee, chair

Susanne Heinzl, Australasian Society for Immunology, meeting coordinator

Phil Hodgkin, National Health and Medical Research Council Assigners Academy, assigner

Seong Lin Khaw, Royal Children's Hospital Children's Cancer Centre Tissue Bank Committee, member

Benjamin Kile, Australian Academy of Science National Committee on Cellular and Developmental Biology, member

Benjamin Kile, Board of the Australian Genome Research Facility, member

Benjamin Kile, Management Executive of the Australian Phenomics Network, chair

Ruth Kluck, Gene Technology Access Centre Board of Management, member

Geoffrey Lindeman, Australian Cancer Research Foundation Medical Research Advisory Committee, member

Geoffrey Lindeman, Australian Cancer Research Foundation Medical Research Advisory Committee, member

Geoffrey Lindeman, Australian New Zealand Breast Cancer Trials Group Board, member

Geoffrey Lindeman, Australian New Zealand Breast Cancer Trials Group Scientific Advisory Committee, member

Geoffrey Lindeman, National Health and Medical Research Council Research Translation Faculty, member

George Nikolakopoulos, Victorian Branch of The Royal Australian Chemical Institute Committee, member

Liam O'Connor, Melbourne University Centre for Neural Engineering Scientific Board, member

Liam O'Connor, Victorian Life Sciences Computation Initiative (VLSI) Steering Committee, member

Liam O'Connor, VSLCI Life Sciences Computation Centre (LSCC) Executive And Advisory Committees, member

Ken Pang, National Health and Medical Research Council Research Translation Faculty, member

Ken Pang, Australian Academy of Science Theo Murphy High Flyers Think Tank, member

Tracy Putoczki, National Health and Medical Research Council Translational Medicine Forum, member

Matthew Ritchie, Australian Mathematical Sciences Institute Research & Higher Education Committee, member

Andrew Roberts, Australasian Leukaemia and Lymphoma Group Board, member

Andrew Roberts, Cancer Council Victoria Executive Committee, member

Andrew Roberts, Cancer Council Victoria Executive Committee, deputy chair

Andrew Roberts, Cancer Council Victoria Executive Committee, chair

Andrew Roberts, Cancer Council Victoria Medical and Scientific Committee, chair

Andrew Roberts, National Health and Medical Research Council Academy, member

Kelly Rogers, Fluorescence Imaging Group, member

Kelly Rogers, Victorian Comprehensive Cancer Centre – Microscopy and Histology Subcommittee, member

Louis Schofield, Australian Institute of Tropical Health and Medicine Board, director

Louis Schofield, National Health and Medical Research Council Research Translation Faculty, member

Louis Schofield, Queensland Tropical Health Alliance Board, director

Clare Scott, Australian Society of Medical Research, member

Clare Scott, Clinical Oncology Society of Australia, member

Clare Scott, Cure Cancer Australia Foundation (CCAF) Board, member

Clare Scott, Cure Cancer Australia Foundation (CCAF) Research Committee, chair

Clare Scott, Gynecologic Cancer Inter Group, member

Clare Scott, Medical Oncology Group of Australia, member

Clare Scott, National Breast Cancer Foundation Research Advisory Committee, member

Clare Scott, Royal Australasian College of Physicians, member

John Silke, National Health and Medical Research Council Assigners Academy, member

Gordon Smyth, Australasian Genomic Technologies Association Executive Committee, member

Gordon Smyth, National Health and Medical Research Council Assigners Academy, lead assigner

Terry Speed, Australian Mathematical Science Institute Scientific Advisory Board, member

Kate Sutherland, Lung Foundation Australia, member

Kate Sutherland, The Australian Society for Medical Research, member

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David Tarlinton, Australian Research Council, Ozreader

Chris Tonkin, Victorian Infection and Immunity Network Executive, member

David Vaux, Australian & New Zealand Association for the Advancement of Science Federal Council and Victorian Committee, member

David Vaux, Australian Academy of Science National Committee for Science (ICSU), member

David Vaux, Victorian Premier's Medical Research Award Selection Panel, member

Jane Visvader, National Breast Cancer Foundation National Collaborative Breast Cancer Research Program Selection Committee, member

Jane Visvader, National Breast Cancer Foundation Research Advisory Committee, member

Jane Visvader, National Health and Medical Research Council Assigner's Academy, assigner

Jane Visvader, The Cancer Council Victoria Medical and Scientific Committee, member

Ian Wicks, External Scientific Review Board, Diamantina Institute, member

Ian Wicks, Medicine, Dentistry and Health Sciences Research Performance Review, member

Ian Wicks, National Health and Medical Research Council Academy, member

Ian Wicks, National Health and Medical Research Council Research Translation Faculty, member

Ian Wicks, Scientific Assessment Panel, Rebecca Cooper Foundation, member

Ian Wicks, University of Melbourne, Department of Medicine, Executive, member

Jie Zhou, Immunology Group of Victoria Committee, student representative

Service to national grant review panels

Warren Alexander, Cancer Council Victoria Venture Grants Committee

Warren Alexander, National Health and Medical Research Council

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Marie-Liesse Asselin-Labat, Cancer Australia

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Gabriela Brumatti, National Health and Medical Research Council

Michael Buchert, National Health and Medical Research Council

Antony Burgess, Australian Academy of Science France-Australia Science Innovation Collaboration

Antony Burgess, Australian Academy of Science Japan Bilateral Exchange Program

Antony Burgess, Melbourne Health Research

Antony Burgess, National Health and Medical Research Council

Christopher Burns, National Health and Medical Research Council

Melissa Call, Australian Research Council

Matthew Call, Australian Research Council

Melissa Call, National Health and Medical Research Council

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Anderly Chueh, National Health and Medical Research Council

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Joan Heath, National Health and Medical Research Council

Phil Hodgkin, Australian Research Council

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Geoffrey Lindeman, NSW Cancer Institute

Ian Majewski, National Health and Medical Research Council

Ian Majewski, Wellbeing of Women Research Grants

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Onisha Patel, National Health and Medical Research Council

Marc Pellegrini, Australian Research Council

Marc Pellegrini, National Health and Medical Research Council

Toby Phesse, National Health and Medical Research Council

Tracy Putoczki, National Health and Medical Research Council

Tracy Putoczki, National Health and Medical Research Council

Matthew Ritchie, National Health and Medical Research Council

Louis Schofield, National Health and Medical Research Council

Clare Scott, Cancer Australia

Clare Scott, Cancer Australia

Clare Scott, Cure Cancer Australia Foundation

Oliver Sieber, National Health and Medical Research Council

Oliver Sieber, South Australian Health and Medical Research Institute

John Silke, National Health and Medical Research Council

Gordon Smyth, National Health and Medical Research Council

Terry Speed, Australian Research Council

Terry Speed, National Health and Medical Research Council

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Ian Street, National Health and Medical Research Council

Samir Taoudi, Australian Research Council

Samir Taoudi, National Health and Medical Research Council

Tim Thomas, National Health and Medical Research Council

Chris Tonkin, Australian Research Council

Chris Tonkin, National Health and Medical Research Council

Jason Tye-Din, National Health and Medical Research Council

David Vaux, ANZ Trustees Medical Research Grants

Anne Voss, National Health and Medical Research Council

Ian Wicks, National Health and Medical Research Council

Service to national conference organising committees

Melanie Bahlo, 10th Genemappers' Meeting, committee member

Melanie Bahlo, ASC/IMS International Conference, session organiser

Melanie Bahlo, Lorne Genome Conference, organising committee member

Alyssa Barry, Malaria in Melbourne, co-chair

Marnie Blewitt, ComBio 2013, session chair

Chris Burns, Royal Australian Chemical Institute Biomolecular Division Conference, committee member

Peter Czabotar, Lorne Conference on Protein Structure and Function, trade liaison

Jayesh Desai, Australian Sarcoma Group Annual Scientific Meeting, co-chair

Jayesh Desai, Lorne Cancer Conference, organising committee member

Ross Dickins, New Directions in Leukaemia Research (NDLR) 2014, scientific committee member

Ross Dickins, New Directions in Leukaemia Research (NDLR) 2016, co-convenor

Matthias Ernst, Lorne Cancer Conference, organising committee member

David Huang, Lorne Cancer Conference, co-convenor

David Huang, Lorne Cancer Conference organizing committee, member

David Huang, New Directions in Leukemia Research Scientific Advisory Committee, Member

Geoff Lindeman, Australian Breast Cancer Conference 2013, organising committee chair

Toby Phesse, EMBO Workshop on Wnt Signalling, organising committee member

Louis Schofield, Queensland Tropical Health Alliance Conference, convenor

Clare Scott, Australia New Zealand Gynaecological Oncology Group (ANZGOG) Annual Scientific Meeting 2013, organising committee member

Clare Scott, Biennial International Gynaecologic Cancer Society (IGCS) 2014, organising committee member

Clare Scott, Victorian Comprehensive Cancer Centre Ovarian Cancer Symposium, organising committee member

Gordon Smyth, AMATA 2014, organising committee member

Ian Street, Lowy Cancer Symposium, organising committee member

Jane Visvader, 29th International Association for Breast Cancer Research Conference (2014), organising committee member

Jane Visvader, Australian Breast Cancer Conference 2013, organising committee member

Anne Voss, Hunter Cell Biology Meeting, organising committee member

Anne Voss, Lorne Genome Conference, organising committee member

Anne Voss, Lorne Genome Conference 2014, co-convenor

Anne Voss, Lorne Genome Conference 2015, convenor and organising committee chair

Ian Wicks, Australasian Autoimmunity Workshop 2014, organising committee member

Ian Wicks, Medical Research Week, The Royal Melbourne Hospital, abstract assessor



SUSTAINABILITY

WALTER AND ELIZA HALL INSTITUTE BOARD

The directors of the Walter and Eliza Hall Institute of Medical Research board



Mr Christopher W Thomas BCom (Hons) MBA *Melb* FAICD
President

Appointed: February 2001

Mr Thomas joined executive search firm Egon Zehnder International in 1979 and retired in 2014. He was managing partner of the Melbourne office from 1986 to 2003, leader of the firm's global Board Consulting Practice Group from 1998 to 2006 and chaired the firm's twice-yearly international partners' meetings from 1997 to 2007.

Mr Thomas is a fellow of the Australian Institute of Company

Directors. He has served on the board of the Corps of Commissionaires (Victoria) and the council of the Australian Film, Television and Radio School. He was a board member of the Heide Museum of Modern Art for nine years (and its chairman for three years), chairman of the Victorian Community Foundation and president of the Melbourne Business School Alumni.



Mr Steven M Skala AO BA LLB (Hons) *Qld* BCL *Oxon*
Vice-President

Appointed: June 1999

Mr Skala is vice chairman, Australia and New Zealand, of Deutsche Bank and a former senior partner of Arnold Bloch Leibler. He is a director of the Australian Broadcasting Corporation, Hexima Limited and Wilson HTM Investment Group Ltd.

Beyond law and commerce, Mr Skala is a director of the Centre for Independent Studies and The General Sir John Monash Foundation and is a member of the international council of

New York's Museum of Modern Art. He is a trustee of the Sir Zelman Cowen Foundation for Medical Research and Public Health, and a member of the advisory council of the Australian Innovation Research Centre, the Global Foundation and the grievance tribunal of Cricket Australia. Mr Skala is the immediate past chairman of Film Australia Limited and the Australian Centre for Contemporary Art.



Mr Robert Wylie FCA FAICD
Honorary Treasurer

Appointed: April 2014

Mr Wylie is a fellow of the Australian Institute of Company Directors, a fellow and past president of the Institute of Chartered Accountants in Australia and a member of the Institute of Chartered Accountants in Scotland. He is a non-executive director of Maxitrans Industries Limited.

Mr Wylie joined Deloitte in 1973 in the UK, transferring to Australia in 1976. He was national chairman of

Deloitte Australia from 1993 to 2001. He was deputy managing partner Asia Pacific from 2001 before joining Deloitte & Touche USA as a senior executive partner from 2002 to 2006. He was also a member of the Deloitte Global Board and Global Governance Committee as well as the Deloitte Consulting Global Board.



Associate Professor Rufus Black BA LLB (Hons) *Melb*, MPhil DPhil *Oxon*

Appointed: August 2013

Associate Professor Black is the Master of Ormond College at The University of Melbourne. A strategic advisor, ethicist and theologian, he works on public policy, ethical and education issues. Associate Professor Black is a principal fellow in the Department of Philosophy at The University of Melbourne, and teaches for the Centre for Ethical Leadership. He is also a director of the law firm Corrs Chambers Westgarth.

Before becoming Master of Ormond, Associate Professor Black worked at McKinsey & Company for nine years where he was a partner. He holds degrees in law and politics from The University of Melbourne and graduate degrees in moral theology from the University of Oxford, where he studied as a Rhodes Scholar.



Mr Malcolm Broomhead BE (Civil) MBA *UQ* FIE FAusIMM FAIM MICE FAICD

Appointed: July 2014

Mr Broomhead is a professional non-executive director. His directorships include BHP Billiton Limited and Plc and Asciano Limited (where he is also chairman).

Mr Broomhead was formerly managing director and chief executive officer (CEO) of Orica Limited from 2001 until September 2005. Prior to Orica, he was managing director

and CEO of the global diversified resources company North Limited. He has had extensive experience in the resources industry, as well as in finance, investment and construction activities. He has worked in management positions with Halcrow (UK), MIM Holdings, Peko Wallsend and Industrial Equity.



Mr Mike C Fitzpatrick BA (Hons) *Oxon* BEng (Hons) *UWA*

Appointed: February 2001

Mr Fitzpatrick is chairman of the Australian Football League, Treasury Group Limited, Infrastructure Capital Group, and a non-executive director of Rio Tinto plc.

He is the founder and former managing director of Hastings Funds Management Limited. In that role, Mr Fitzpatrick was a director of a number of Hastings-managed investments including Pacific Hydro Limited, Global Renewables Limited, Utilities of Australia, Australian Infrastructure

Fund and Airstrialia Development Group Pty Ltd (Perth Airport).

Mr Fitzpatrick was a premiership captain (1981, 1982) with the Carlton Football Club in the Australian Football League and a first-grade cricketer. He was formerly a member of the Melbourne Park Tennis Centre Trust, a director of the Carlton Football Club, chairman of the Australian Sports Commission and, in the early 1980s, vice-president of the AFL Players' Association.



Dr Gareth Goodier MB ChB MHA DHSc FRACMA FAFPHM

Appointed: August 2012

Dr Goodier commenced in the role as chief executive for Melbourne Health in June 2012. He qualified as a medical practitioner in 1974, and has practiced as a clinician in the UK, Australia and Saudi Arabia before moving into management.

Over the past 23 years, Dr Goodier has worked as the chief executive for a number of academic teaching hospitals and health authorities. In addition, he has worked as a

management consultant for the World Bank and Arthur Andersen.

Dr Goodier returned to the UK as the chief executive officer (CEO) of the Royal Brompton and Harefield NHS Trust in 2003 and was later appointed as the CEO of North West London Strategic Health Authority. In September 2006, he was appointed as the CEO of Cambridge University Hospitals NHS Foundation Trust.



Mrs Jane Hemstrich FICAEW FICAA FAICD BSc (Hons) UoL

Appointed: October 2013

Mrs Hemstrich was managing director Asia Pacific for Accenture Limited from 2004 until her retirement in February 2007. In this role, Mrs Hemstrich was a member of Accenture's global executive leadership team and oversaw the management of Accenture's business portfolio in Asia Pacific. She holds a Bachelor of Science with honours in biochemistry and physiology and has professional expertise in technology, communications, change management and accounting.

Mrs Hemstrich is a member of the Council of The National Library of Australia, the Council of Governing Members of The Smith Family and Chief Executive Women. She is an independent non-executive director of The Commonwealth Bank of Australia, Lend Lease Corporation Limited, Santos Ltd, Tabcorp Holdings Ltd, and Victorian Opera Company Ltd (chairman from February 2013).



Professor Jim McCluskey BMedSc MB BS MD UWA FRACP FRCPA FAA

Appointed: April 2011

Professor Jim McCluskey became the deputy vice-chancellor (research) at The University of Melbourne in March 2011. Prior to this he was the pro vice-chancellor (research partnerships), chair of Microbiology and Immunology and deputy head of that department.

Professor McCluskey has an international reputation for his research in basic and clinical

immunology. He has consulted for the Australian Red Cross for more than 20 years and is editor-in-chief of the international immunogenetics journal *Tissue Antigens*. He is a member of the board of directors of the Florey Neurosciences Institute, Bionics Institute and a member of the Nossal Institute for Global Health.



Dr Graham F Mitchell AO RDA BVSc Syd FACVSc PhD Melb FTSE FAA

Appointed: July 2007

Dr Mitchell has detailed knowledge of the academia-industry interface and completed his PhD at the Walter and Eliza Hall Institute in the late 1960s. In 1973, after postdoctoral experience in the US, UK and Switzerland, Dr Mitchell returned to the institute and established a program on the immunology of parasitism.

Dr Mitchell is an adviser on innovation to the Victorian Government and jointly acts as chief scientist for the Victorian departments of Primary Industries and Sustainability and Environment. He is a non-executive director of Antisense Therapeutics Limited and Avipep Pty Ltd.



Mr Terry Moran AC AO BA (Hons) La Trobe

Appointed: November 2013

Mr Terry Moran AC is the former secretary of the Department of Prime Minister and Cabinet and former secretary of the Victorian Department of Premier and Cabinet.

Mr Moran's involvement in the public service has resulted in the establishment of institutions that have made important contributions to Australia's cultural and educational landscape, such as the Wheeler

Centre, the Grattan Institute, Opera Victoria, the Melbourne Recital Centre, the Australian and New Zealand School of Government and the National Institute of Public Policy. He is the board chair for both the Barangaroo Delivery Authority and Melbourne Theatre Company, and holds the position of senior adviser at the Boston Consulting Group and Maddocks Lawyers.



Mrs Linda B Nicholls AO BA(Econ) Cornell MBA Harvard Hon AIBA

Appointed: February 2001

Mrs Nicholls is a corporate adviser and a director of a number of leading Australian companies and organisations. She is chairman of Japara Healthcare, chairman of KDR (Yarra Trams) and a director of Sigma Pharmaceutical Group, Fairfax Media, Pacific Brands and Medibank Private. Previously she was chairman of Australia Post, chairman of Healthscope, a director of St George Bank and president of the Australian

Institute of Company Directors (Victorian Division).

Mrs Nicholls is also a member of the Harvard Business School Alumni Board. She runs her own corporate advisory practice specialising in business strategy in financial services and health care. Mrs Nicholls has more than 30 years experience as a senior executive and company director in Australia, New Zealand and the United States.



Ms Catherine M Walter AM LLB (Hons) LLM MBA *Melb* FAICD

Appointed: February 2001

Ms Walter is a non-executive director of Australian Foundation Investment Company, the Reserve Bank's Payment Systems Board, Victorian Funds Management, Victorian Opera and Melbourne Business School; and chairman of the Australian Synchrotron.

She practised law for 20 years as a commercial lawyer, which included a term as managing partner of Clayton

Utz in Melbourne. Ms Walter is a former commissioner of the City of Melbourne.

In 2003, Ms Walter was appointed a Member of the Order of Australia for her service to business, particularly as a director of a number of public companies, to the arts, to the law, and to the community through the City of Melbourne. She was awarded a Centenary Medal in the same year.



Professor Stephen K Smith DSc FRCOG FMedSci

Appointed: October 2013

Professor Smith is the Dean, Faculty of Medicine, Dentistry and Health Sciences at The University of Melbourne.

A gynaecologist by training, he has published more than 230 papers on reproductive medicine and cancer. He was awarded his Doctor of Science in 2001 for his work in Cambridge on the complex gene pathways that regulate the growth of blood vessels in reproductive tissue.

Professor Smith led the formation of the UK's first Academic Health Science Centre and its integration with Imperial College London (ICL). He was principal of the Faculty of Medicine at ICL and had been chief executive of Imperial College Healthcare National Health Service Trust since its inception, the largest such trust in the United Kingdom.



Professor Ingrid Winship MB ChB MD *Cape Town* FRACP

Appointed: June 2007

Professor Winship is the inaugural chair of adult clinical genetics at the University of Melbourne and executive director of research for Melbourne Health.

A medical graduate of the University of Cape Town, she completed postgraduate training in genetics and dermatology before combining an academic position at the university with a clinical position.

In 1994, Professor Winship took up an academic position at the University of Auckland where she later became Professor of Clinical Genetics, clinical

director of the Northern Regional Genetic Service and associate dean for research in the Faculty of Medicine and Health Sciences (2000-2004).

She is currently chair of the Victorian Cooperative Oncology Group and a member of the Victorian Cancer Action Plan Implementation Committee. Professor Winship is also a member of the NHMRC Human Genetic Advisory Committee. She is on the steering committee for the VLSCI and the clinical advisory panel for the Australian Synchrotron.

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The advances in medical science at the Walter and Eliza Hall Institute are made possible by our generous supporters. We are proud to acknowledge these gifts, grants and bequests received in 2013-14. Gifts of \$1000 or more are acknowledged, unless otherwise requested by our donors.

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Grants of more than \$500,000

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PATH Malaria Vaccine Initiative, US
The Leukemia & Lymphoma Society, US

Grants up to \$500,000

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Juvenile Diabetes Research Foundation, US
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Dr George Morstyn and Mrs Rosa Morstyn
Mr Michael G Peterson

Gifts up to \$50,000

Anonymous (2)
Bell Charitable Fund
Brian M Davis Charitable Foundation
Drakensberg Trust
The Isabel & John Gilbertson Charitable Trust
Mrs Renate Harding

Mr Michael Harris and Ms Kelli Garrison
Janko-Inge Foundation

Ms Pauline Speedy
Mrs Jean Williamson

Gifts up to \$10,000

Anonymous (3)
The Joan Elaine Barry Memorial Fund
Mr Joe Bendror
Ms Sue Clifton
Mr Ronald F Diamond and Mrs Helen M Diamond
Evelyn Ann Drury Trust
The HMA Foundation
The Barbara Luree Parker Foundation Ltd
Nossal Family Trust
RobMeree Foundation
Mrs Margaret Ross ^{AM}
Ms Jenny Tatchell
Mr John Warburton

Gifts up to \$5000

Anonymous (6)
Mrs Barbara Anderson
The Pierce Armstrong Trust
Mr Andrew Cuthbertson
Mr John Edward Davies
Goldman Sachs Australia Foundation
Mrs Andrea Gowers and Mr Geoff Gowers
Mrs Jane Hemstritch
Mrs Caroline Johnston
H & K Johnston Family Foundation
Ms Helen Kennan
Mrs Christine McConnell and Mr Denis McConnell
Mr James McIntyre
Mr John McRae
Mrs Marion Page
Craig Perkins Cancer Research Foundation
Mr Peter Ruse and Mrs Barbara Ruse
Nell & Hermon Slade Trust
S.T.A.F - Rupert Ethel & Ronald Fraser & Ruby Thomas
Mr Chris Thomas and Mrs Cheryl Thomas

Gifts up to \$2000

Anonymous (8)
Ms Katherine I Behrend
The M I Bird Family Trust
Dr Margaret Brumby ^{AM} and Mr Ian Brumby
Mrs Anita Burch, Mr Mark Renison and Mrs Jenny Simmons
Mr Gordon Darling ^{AC CMG}
Mr Patrick Devlin and Mrs Mayda Devlin
Dr Janice Dudley
Mr Cyril Evans and Mrs Pauline Evans
The Goldschlager Family Charitable Foundation
Mr Graham Jackson and Mrs Barbara Jackson
Mr George James
Mrs Margaret Johnson
Mr Philip Leung
Mr Brian Little
Dr Darren Lockie
Mr Brendan Madigan
Ms Joan Matison
Dr Neville McCarthy ^{AO} and Mrs Margaret McCarthy
Mrs Anne Naylor
Professor David Penington ^{AC}
Mr Rory Pincott
Mr John B Reid ^{AO}
Ms Caroline Richardson
Mr Dieter Rinke and Mrs Maxine Rinke
Mr Michael Robinson ^{AO} and Mrs Judith Robinson
Mr Keith Satterley
Mr Richard Taylor and Mrs Josephine Taylor
Mrs Jean Thomas and Mr Ralph Thomas
Mrs Olive Thurlby
Ms Marjorie Wilks

Gifts from communities and companies

Gifts up to \$500,000

Susan Alberti Medical Research Foundation
Coeliac Australia

Gifts up to \$50,000

Donald Cant Watts Corke

Gifts up to \$10,000

Coolah Lady Golfers
Latrobe Golf Club
Royal College of Pathologists of Australia
Yarra Yarra Golf Club

Gifts up to \$5000

Cardinia Beaconhills Golf Links
Rotary Club of Eltham
Rotary Club of Point Gellibrand Williamstown
Tour de Cure

Gifts up to \$2000

Berwick Opportunity Shop
Commercial Club Albury Lady Golfers
Freefall United Skydiving Club
National Cancer Research Foundation
Pambula-Merimbula Golf Club
JJ Richards & Sons

Grants from trusts and foundations

Grants of more than \$500,000

Australian Cancer Research Foundation
Cancer Council Victoria
Leukaemia Foundation of Australia
The Ian Potter Foundation
Sylvia and Charles Viertel Charitable Foundation

Grants up to \$500,000

Cancer Council NSW
L.E.W. Carty Charitable Fund
Cure Cancer Australia
DHB Foundation
The Dyson Bequest
The Walter and Eliza Hall Trust
National Breast Cancer Foundation
National Heart Foundation of Australia
The Harry Secomb Foundation

Grants up to \$100,000

The Thomas William Francis & Violet Coles Trust
Phyllis Connor Memorial Trust
Erica Foundation Pty Ltd
The Scobie and Claire Mackinnon Trust
The Royal Australian College of Physicians
The Royal Melbourne Hospital Home Lottery Grant

Grants up to \$50,000

Athol Joseph Anderson Charitable Trust
Arthritis Foundation of Australia
Australian Kidney Foundation
Australian Rotary Health
Harold and Cora Brennen Benevolent Trust
Diabetes Australia Research Trust
Diabetes Vaccine Development Centre
Juvenile Diabetes Research Foundation
Sir Edward Dunlop Medical Research Foundation
Lions Sponsored Cancer Research Fund
The Lowy Medical Research Foundation
Irene & Ronald MacDonald Foundation
Multiple Sclerosis Research Australia
Ovarian Cancer Australia
Lynne Quayle Charitable Trust Fund
Smile Foundation Ltd
Twin Towns Services Community Foundation Ltd
Joe White Bequest

Grants up to \$10,000

Lettsier Foundation as Trustee for Evans Family Foundation
William Angliiss (Vic) Charitable Fund

Grants up to \$5000

The Eirene Lucas Foundation

Grants up to \$2000

The Ray & Joyce Uebergang Foundation

Gifts in wills (listed by gift amount)

Estate of Anthony (Toni) William Redstone OAM
Estate of Diane Adrienne Lemaire
Estate of Yvonne Agnes Aitken Morgan
Estate Theodor James Strehlow
Estate of Sheila Mary Helpman
Estate of Maxwell Gardiner Helpman
Estate of Frederick William Jarrett
Hazel & Pip Appel Fund
George Collie Trust
Estate of Keith Goldsbury
Estate of Dorothy Guinevere Foster
Frederick and Winifred Grassick Memorial Fund
Estate of Eleanor Margrethe Albiston (The Stang Bequest)
Estate of Mrs R.A. Scott
Estate of Jakob Frenkiel
Estate of Ethel Mary Drummond
Estate of Dorothy Helen Croft
Estate of the Late Patricia McArthur
The Baldy Trust Fund
Estate of Florence Mary Young
Estate of Toni Gertrude Cunningham
Estate of Emily Vera Winder
The C.H. Boden Memorial Trust
Agnes Maude Reilly Charitable Trust
GT & L Potter Charitable Trust
John Frederick Bransden Charitable Trust
Margaret Lewis Reilly Charitable Trust
Estate of the late Doreen Merle Taylor
Estate of Irene Alice Lenton
The Frank Broadhurst Memorial Charitable Fund
Thomas, Annie and Doris Burgess Charity Trust

Trustee companies managing bequests and grants to the Walter and Eliza Hall Institute

ANZ Trustees
Australian Executor Trustees
Equity Trustees Ltd
National Australia Trustees Limited
Perpetual Trustees
Public Trustees
State Trustees Limited
The Trust Company Ltd

OPERATIONAL OVERVIEW

Our centenary in 2015 marks a significant milestone for the institute, which will be the first medical research institute in Australia to reach 100 years of discoveries.

Our Professional Services and scientific staff and students have been working together to recognise this auspicious occasion. The centenary organising committee has established an exciting program of events and the institute's staff and students are looking forward to sharing in these events with our supporters, alumni and colleagues.

I joined the institute in November 2013 as chief operating officer. I am excited about providing strategic leadership and implementing best practice and continuous improvement. My experience is in business planning and development, process system development and finance and leading teams in government, health, justice and business innovation both in Australia and internationally.

Adding value to the institute

Everyone at the institute makes a valuable contribution to the research discoveries and achievements.

Our Professional Services staff complement the institute's scientific divisions, supporting our scientists to achieve good research outcomes. The team includes Business Development, Communications and Marketing, Facilities Management, Finance, Grants, Information Technology Services, Laboratory Operations, and People and Culture.

To support our scientists, the professional services are undergoing a period of modernisation and renewal. The improvement projects

are varied and wide-ranging. Travel management, electronic management of our mice and e-Procurement systems are now being developed and delivered. We are fostering a sense of team culture to meet the needs of our organisation and ensure Professional Services teams deliver best practice and support our science.

Welcoming new leadership

In the past year, I am delighted to have welcomed new leadership in a number of senior Professional Services roles.

Mr Ian Coulson came on board in April 2014 as chief financial officer. Mr Coulson has extensive experience in leading teams across the finance function, together with skills in general management, change initiatives, planning, financial reporting and business case management. Mr Coulson has previously worked for Save the Children Australia, National Australia Bank and the Grattan Institute.

Head of People and Culture Ms Liz Slavin joined the institute in July 2014, and brings a wealth of experience spanning industries such as finance, retail and transport. In these industries, she has worked in senior leadership positions, most recently as Head of People and Culture (Asia) at National Australia Bank.

Long-standing staff members, including librarian Ms Josephine Marshall and head of Human Resources Mr Paul Fraser, left the institute in the past year, along with chief financial officer Ms Kim Tsai. I would like to thank them for their years of service to the institute and wish them well in their future endeavours.

A new five-year road map

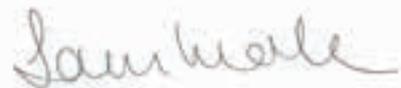
Since the release of the institute's current strategic plan in 2010, the organisation has doubled in size – both in space and personnel.

Significant global economic austerity measures have driven a shift in the biotechnology and medical research industries, which has affected the institute's potential revenues.

A new strategic plan is vital for us to continue to support our scientists through best business practices, setting our scientific direction and maintaining our global reputation.

The institute has undertaken a comprehensive planning process, engaging a broad section of stakeholders to develop our future plan.

The 2015-2020 strategic plan will provide opportunities for future research, in addition to creating a sound scientific foundation.



Ms Samantha Ludolf
Chief Operating Officer
Walter and Eliza Hall Institute



“A new strategic plan is vital for us to continue to support our scientists through best business practices, setting our scientific direction and maintaining our global reputation”.

PROFESSIONAL SERVICES STAFF LIST

Director's office

Doug Hilton, BSc *Monash* BSc(Hons) *Melbourne* PhD *Melbourne* FAA, director

Keely Bumsted O'Brien, BSc *Simmons College* PhD *Washington*, scientific education officer

Nicole Den Elzen, BSc(Hons) *Qld* PhD *Cambridge*, AAMRI executive officer

Pamela Dewhurst, personal secretary to Professor Nossal (to 01/14)

Sue Hardy, student administrator
Lisa Kuspira, AAMRI communications manager (to 06/14)

Kelly Rodger, executive assistant (administrative)

Rebecca Thorpe, BA *RMIT*, AAMRI communications officer (from 06/14)

Fenny Wiradjaja, BSc *Monash* PhD *Monash*, executive assistant (scientific)

Chief Operating Office

Sam Ludolf, BA(Hons) *Lincoln* MEnterp *Melbourne*, chief operating officer (from 11/13)

Emma Booth, BA(Hons) *Humberside*, project coordinator (from 12/13)

Sue Cameron-Codognotto, Administrative Officer

Bioservices

Bioservices - Bundoora

Elaine Major, head of Bioservices Bundoora

Kathy Barber

Denise Barker

Sheree Brown

Tara Carle

Bryce Coghlan

Cassandra D'Alessandro

Mark Do

Christopher Evans

Katie Franks

Theresa Gibbs

Stephanie Green

Aida Herrera

Jose Jimenez

Tracey Kemp

Lyn Lowe

Vicki Marshall, BSc *LaTrobe*

Teisha Mason

Shauna Ross

Melanie Salzone

Christina Tsatsoulis

Jayne Vella

Fiona Waters, BSc *LaTrobe*, central microinjection co-ordinator

Magda Wilk

Bioservices - Kew

Gillian Carter, head of Bioservices Kew (to 06/14)

Andrea Baldwin

Fiona Berryman

Peter Coffman

Liana Enright (from 08/13)

Carmen Epifanio

Colette Giaouque, BSc *LaTrobe* (from 02/14)

Kerry Harrison

Sharen Hennessy

Melinda Iliopoulos

Wendy Intrepido

Jess Janssen

Leanne Johnson (from 07/13)

Melissa Keeble

Tom Kitson

Con Koureskas

Kelly Lane, BSc *Melbourne*

Cameron McKenzie

Lyciah Mounsey (to 08/13)

Danni Norman (from 03/14)

Sohrab Partow

Liz Reddie

Nikki Richardson

Erica Smakman, BBiolSc *LaTrobe*

Bianca Smaranda

Jackie Standfield

Cheryl Thorp, administrative assistant

Collette Turfrey

Sarah Vivian

Melinda Watts

Kelly Wilson (to 02/14)

Bioservices - Parkville

Angela Milligan, head of Bioservices Parkville

Cathy O'Brien, BVSc *Melbourne*, veterinarian

Sophie Allan

Carolina Alvarado Ochoa, BVSc MAppSc *Sydney*

Fiona Bell, BA *Melbourne* BSc(Hons) *Melbourne*, animal ethics committee and regulatory compliance officer

Theo Bertenis (from 02/14)

Kim Birchall

Andrea Briffa

Tania Camilleri

Rebecca Cole

Dannielle Cooper

Rhiannan Crawley

Faye Dabrowski

Merle Dayton

Heather Donatucci

Carmen Gatt

Jaclyn Gilbert

Rachel Hancock

Catherine Hay

Melissa Hobbs, BSc *Monash* (to 04/14)

Krystal Hughes

Louise Inglis

Hannah Johnson (from 04/14)

Elizabeth Kyran

Kelly Landells

Jamie Leahy

Eren Loza

Nicole Lynch

Liana Mackiewicz

Jessica Mansheim

Kate McKenzie

Julie Merryfull

Glen Monagle

Gary Morgan

Danny Noriel

Stephanie O'Connor

Shannon Oliver

Bec Poppleton (to 02/14)

Melissa Pritchard

Lisa Reid

Leanne Scott

Giovanni Siciliano

Emilia Simankowicz

Catherine Smith

Julie Stanley, cryogenics coordinator

Crystal Stivala (from 05/14)

Keti Stoev

Silvia Stoev

Paul Trajcevski

Kelly Trueman

Jenny Vasiliadis

Kristy Vella

Lauren Wilkins

Jian Xiao

Communications and Marketing

Penny Fannin, BSc(Hons) *Melbourne* GradDipJourn *Murdoch*, head of Communications and Marketing
Drew Berry, BSc(Hons) *Melbourne* MSc *Melbourne*, biomedical animations manager
Rachel Bucknall, BVC (Hons) *Monash*, graphics officer
Lee Byrne, BA *South Australia* MA *Deakin* GradDipJourn *USQ*, web communications manager
Maja Divjak, BAppSc(Hons) *Sydney* PhD *Monash*, biomedical animator
Alan Gill, BSc *UWA*, science communications officer (from 07/13)
Maureen Grant, BA *UTS* CEM, conference and events manager
Rebekah Kober, BA *Macquarie*, centenary events manager
Peter Maltezos, graphics officer
Czesia Markiewicz, photographer
Lucy McPhee, BA(Hons) *Melbourne*, communications officer (from 01/14)
Brigitte Mesiti, graphics officer
Sarah Pye, BComn(Hons) *Monash*, communications officer (from 08/13 to 11/13)
Charles Reilly, BBiomedSc *Wellington* BSc(Hons) *Melbourne* GCCRS *Melbourne* PhD *Melbourne*, biomedical animator (to 03/14)
Vanessa Solomon, BSc(Hons) *UTAS* PhD *Melbourne*, communications advisor
Simon Taplin, production manager
Lisa Trinh, BA *Monash* BSc *Monash* DipLang *Monash*, events officer
Etsuko Uno, BSc(Hons) *UWA* MA *Rockefeller*, biomedical animator
Cameron Wells, graphics officer
Elizabeth Williams, BSc(Hons) *UWA* GradDipSciComm *UWA*, media and publications manager

Catering

Elizabeth Bravo, catering supervisor
Madhu Dass, catering assistant

Reception

Rosie Falcone, reception coordinator
Renee Jowett, receptionist

Engineering Services

Engineering Services - Parkville
Steve Droste, BEng *Melbourne*, facilities manager
Nick Basalaj, essential safety measures technician (to 12/13)
Mahbub Bhuiyan, MPICT *Macquarie*, security and compliance manager
Peter Brown, maintenance technician
Geoff Cravino, engineering supervisor
Marek Grostal, BEng(Technology) *Warsaw*, electronics engineer
Mike Ledingham, BA *UTAS* BArch *UTAS*, Engineer (to 05/14)
Cipriano Maligsay, BEng *Manila*, electrical/mechanical technician
Alf Mele, trades assistant
Indy Palihakkara, BSc *Sir John Kotelawala* MBA *Monash*, maintenance manager
Onker Singh, maintenance technician
Derek Wates, refrigeration technician
Jenna Kelley, administrative assistant
Engineering Services - Bundoora
Darren Goodwin, workshop technician
Patrick Makiatea, trades assistant
Robert Mitrevski, workshop technician
Engineering Services - Kew
Graham Thornbury, maintenance technician
Tony Trajcewski, trades assistant

ES Cell Laboratory

Jacob Sarkis, BSc *RMIT*
Elizabeth Viney, BAppSc *RMIT*

Finance

Ian Coulson, BEc *Monash*, chief financial officer (from 04/14)
Kim Tsai, BCom *Melbourne* DipEd *Melbourne*, chief financial officer (to 02/14)
Mark Adler, BA *Monash*, project accountant/business analyst (from 07/13 to 03/14)
Yesar Al-Hashimi, BBus(Administration) *Yarmouk*, accounts officer (to 12/13)
Gordana Barkovic, accounts officer
Martin Budiman, BBus(Accounting) *Monash*, assistant accountant (from 04/14)
Peter Chen, BCom *Deakin*, accounts payable officer (to 06/14)
Barbara Groves, accounts officer (to 07/13)
Gabrielle Hirsch, BSc(Hons) *Monash* LLB *Monash* LLM *Melbourne*, general counsel (legal)
Jacinta Kost, accounts payable supervisor (from 01/14)
Sofia Lancuba, accounts payable officer (from 01/14)
Carol Noonan, management accountant (from 09/13)
Liz Shaw, BBus(Accounting) *RMIT*, financial and systems manager (from 09/13 to 04/14)
Marie Sheppard, BBus(Accounting) *Cork*, financial accountant (from 02/14 to 03/14)
Kate Tayler, BCom *Deakin*, assistant management accountant (from 11/13)
Adrian Turvey, assistant accountant (to 09/13)
Malcolm Williamson, BBus(Accounting) *Swinburne* FCPA, financial operations manager (to 12/13)

Fundraising

Susanne Williamson, Head of Fundraising (from 07/13)
Bay Ang, BA(Hons) *Monash*, Database Officer
Sally Cane, BSc *Deakin*, Supporter Relations Manager
Alice Robinson, BA *Flinders* LLB *Flinders*, Corporate Relationships Manager
Jane Turner, BA *LaTrobe*, Philanthropic Grants Manager

Information Technology Services

John Wastell, BSc(Hons) *Melbourne*
PhD *Melbourne*, head of Information
Technology Services

Adrian Colomitchi, BSc *Bacharest*,
senior software engineer

Janice Coventry, BSc *Melbourne*
DipEd *Melbourne*, software specialist

Jason Cutler, BInfTech *Monash*,
helpdesk engineer

Miffy Edwards, BA *Monash*, DBA/
software engineer

Chris Fitzgerald, helpdesk engineer

Colin Griffiths, BAppSc *Swinburne*,
helpdesk engineer (from 09/13)

Chris Ham, BCom *Monash*, Apple
systems engineer

David Hardy, BA(Hons) *De Montfort*,
Apple systems manager

Edy Huynh, Apple systems technician

Norm King, computer technician (to
09/13)

Khoi Le, senior software engineer

Tri Le, BSc(Hons) *Monash*, Microsoft
systems manager

John McFarlane, GradDipAppInfSys
RMIT, manager service delivery and
deputy head

Richard McGrath, BCompSc
Melbourne, senior software engineer

Andrew McInnery, helpdesk team
leader

Austin McLaughlin, BSc(Hons)
LaTrobe, application services manager

John Nguyen, BECompEng
Melbourne, Microsoft support
engineer

Jakub Szarlat, BESoftEng(Hons)
Melbourne, Unix/Linux systems
manager

Phi Tang, BComp(Hons) *Adelaide*,
software engineer

Tran Tran, BEComp *Monash*, networks
manager

Qui Tran, BAppSc *Chisholm*, Microsoft
systems engineer

Rodney Van Cooten, BSc(Hons)
Melbourne, CTx systems engineer

Internal audit

Stanley Balbata, CPA, internal auditor

Laboratory Operations

Helene Martin, BSc(Hons) *Melbourne*
MBB *RMIT* PhD *Melbourne*,
Laboratory Operations manager

Michael Rubira, BAppSc *RMIT*,
laboratory operations manager (to
08/13)

Wendy Carter, ARMIT *RMIT*, biological
safety officer

Histology

Ellen Tsui, head of Histology

Vera Babo

Salam Hasanein (to 11/13)

Yuyin Hoang

Cary Tsui, BAppSc *RMIT*, histologist

Kevin Weston

Media

Wendy Dietrich, BAppSc *Monash*
BAppSc(Hons) *RMIT*, head of central
services

Kelly Arnott

Goran Arsovski

Dora Vasiliadis, media supervisor

Monoclonal Antibody Laboratory

Kaye Wycherley, head of antibody
facility

Ridouan Bouhbouh

Stephanie Fennell, BBiolSc(Hons)
LaTrobe (from 05/14)

Myha Huynh

Karen Mackwell, BAppSc *RMIT*

Paul Masendycz, BAppSc *RMIT*,
deputy head of antibody facility

Preparation Services

Leny Juatan

Balwinder Kaur, BA *Bunjab*

Christine Nwe, BSc *Rangoon* (from
06/14)

Heather Orange

Josephine Pink

Wendy Ross

Anna Rymer

Denise Stephen

Radiation and Instrument Services

Denis Quilici, ARMIT *RMIT*, radiation
safety

Thomas Nikolaou

Library and Information Management

Josephine Marshall, head of Library
and Information Management (to
03/14)

Richard Burt, BA *LaTrobe* MIMS
Swinburne GradDipEd *Monash*,
records officer

Wendy Hertan, BA *VUT* GradDipLib
Melbourne, librarian

People and Culture

Paul Fraser, BSc(Hons) *Melbourne*
DipEd *Melbourne* MEdAdmin *New*
England, head of Human Resources
(to 2/14)

Catherine Axiaq, BBus *Swinburne*,
human resources officer

Louise Johansson, BAppSc
Melbourne, project officer - equity and
diversity (from 05/14)

Mabel Kiang, BBus *Swinburne*, human
resources officer

Hoay Lee, BSc *Melbourne*, payroll
officer/human resources administrator
(from 10/13)

Vanessa Linde, BHealthSc *Deakin*,
human resources officer (to 09/13)

Yvonne Sirinotis, BBus *LaTrobe*,
human resources officer

Rita Tiziani, senior human resources
officer

Tawanda Whata, BSc(Hons) *Midlands*
State, HR/immigration administrator
(from 04/14)

Procurement and Logistics

Todd Jasper OAM, Procurement and
Logistics manager

Luke Baltrunas, storeperson

Oscar Canedo, storeperson

Kevin Dobson, storeperson

Mario Florides, stores and inventory
clerk

Brigitte Jordanidis, receptionist/
administration assistant

Claudia Kerstovitch, purchasing officer

Stella Kyvetos, shipping officer

Jim McDonagh, shipping officer

Greg Menzies, purchasing officer

Dorothy Pilarinos, purchasing officer

Richard Reeve, stores supervisor

John Sapazovski, storeperson

Boris Trajceviski, purchasing officer

Research grants

Julie Mercer, BSc *Melbourne* DipEd
Monash PhD *Monash*, grants manager

Lynne Hartley, BSc(Hons) *Melbourne*
GradDipAcc *Monash*, grants officer

Annette Wilson, BA(Hons) *Monash* MA
Monash GradDipSocSci *Swinburne*,
grants administrative assistant

Safety

Tony Hendy, BAgSc(Hons) *Melbourne*
GCertIndHygSc *Deakin*, safety
systems manager

Grant Thomas, BAppSc *RMIT*,
chemical safety officer

COMMITTEES

Board committees

Appointment and promotion review committee

Professor Jim McCluskey, chair (The University of Melbourne)
Professor Jerry Adams
Professor Warren Alexander
Professor Peter Colman
Professor Alan Cowman
Professor Len Harrison
Professor Doug Hilton
Professor Phil Hodgkin
Professor David Huang
Professor Geoff Lindeman
Professor Nick Nicola AO
Professor Stephen Nutt
Professor Liam O'Connor
Professor Terry Speed
Professor Andreas Strasser
Professor David Vaux
Professor Jane Visvader
Professor Ian Wicks

Audit and risk committee

Ms Linda B Nicholls AO, chair
Mr Peter Caldwell (Deloitte)
Mr Ian Coulson
Professor Doug Hilton
Ms Samantha Ludolf
Mr Roger Male
Mr Steven Skala AO
Mr Stan Balbata (minutes)

Commercialisation advisory committee

Dr Graham Mitchell, chair
Dr Julian Clark
Professor Peter Colman
Professor Doug Hilton
Dr Kurt Lackovic
Dr George Morstyn
Professor Nick Nicola AO
Dr John Raff
Ms Carmela Monger (minutes)

Financial sustainability committee

Mr Christopher Thomas, chair
Mrs Sally Bruce
Dr Julian Clark
Mr Ian Coulson
Mr Michael Daddo
Mr John Dyson
Ms Penny Fannin
Ms Jane Hemstritch
Professor Doug Hilton
Ms Caroline Johnston
Ms Samantha Ludolf
Mr Steven Skala AO
Ms Susanne Williamson
Mr Robert Wylie
Ms Sue Cameron (minutes)

Human Research Ethics committee

Professor Rufus Black, chair
Reverend Father Michael Elligate, deputy chair
Mrs Netta McArthur
Dr John Bonacci
Dr Vanessa Bryant
Mr David Freeman
Professor Geoff Lindeman
Dr Rachel Nowak
Dr Ken Pang (from 03/14)
Ms Moira Rayner
Professor Louis Schofield
Professor Ingrid Winship
Ms Sue Cameron (minutes)
Dr Lina Laskos (observer)

Investment committee

Mr Robert Wylie, chair
Mr Ian Coulson
Mr Steven Daley
Professor Doug Hilton
Ms Samantha Ludolf
Mr Stephen Merlicek
Mr Stephen Milburn-Pyle
Mr John Stratton
Ms Fiona Trafford-Walker
Ms Catherine Walter AM
Mr Peter Worcester
Mr Andrew Scott (minutes)

Remuneration committee

Mr Christopher Thomas, chair
Mr Roger Male
Mr Steven Skala AO
Mr Rob Wylie
Ms Ian Coulson (minutes)

Advisory committees

International scientific advisory council

Dr David Baltimore, California Institute of Technology

Professor Christophe Benoist, Joslin Diabetes Center

Professor Anton Berns, Netherlands Cancer Institute

Dr Alan Bernstein, Global HIV Vaccine Enterprise

Professor Elizabeth Blackburn, University of California, San Francisco

Professor Dr Meinrad Busslinger, Research Institute of Molecular Pathology

Professor Peter Doherty, The University of Melbourne

Professor Richard Flavell, Yale University

Professor Christopher Goodnow, John Curtin School of Medical Research, Australian National University

Dr Diane Mathis, Joslin Diabetes Center

Professor Philippe Sansonetti, Institut Pasteur

Professor Tom Steitz, HHMI, Yale University

Professor Bruce Stillman, Cold Spring Harbor Laboratory

Professor James Wells, Small Molecule Discovery Center, University of California, San Francisco

Director's office, Walter and Eliza Hall Institute (minutes)

Senior scientific advisory committee

Professor Doug Hilton, chair

Professor Jerry Adams

Professor Warren Alexander

Dr Chris Burns

Professor Peter Colman

Professor Alan Cowman

Professor Len Harrison

Professor Phil Hodgkin

Professor David Huang

Professor Geoff Lindeman

Professor Nick Nicola AO

Professor Stephen Nutt

Professor Liam O'Connor

Professor Andrew Roberts

Professor Ken Shortman

Professor Gordon Smyth

Professor Terry Speed

Professor Andreas Strasser

Professor David Vaux

Professor Jane Visvader

Associate Professor Anne Voss

Professor Ian Wicks

Ms Kelly Rodger (minutes)

Standing committees and subcommittees

Animal Ethics committee

Professor Colin Chapman, chair
Dr Alan Bolton (The Lost Dogs Home)
Mr Terence Flanagan (representing the public interest)
Dr Daniel Gray (scientist)
Dr Carlotta Kellaway (representing the public interest)
Dr Sarah Kinkel (scientist)
Associate Professor Andrew Lew (veterinarian/scientist)
Ms Julie Merryfull (senior animal technician)
Dr Matthew McCormack (scientist)
Ms Angela Milligan (senior animal technician)
Dr Catheryn O'Brien (veterinarian)
Mr Tony Pyman (representing the public interest)
Ms Fiona Bell (minutes)

Biosafety committee

Dr Ross Dickens, chair
Dr Marc Pellegrini, deputy chair
Ms Wendy Carter
Associate Professor Andrew Lew
Ms Samantha Ludolf
Dr Helene Martin
Dr Catheryn O'Brien
Professor Stephen Nutt
Professor Jane Visvader
Ms Marian Cravino (minutes)
Ms Jane Howard (The University of Melbourne)
Con Sonza (The University of Melbourne)

Clinical translation standing committee

Professor Andrew Roberts, chair
Dr Brandon Aubrey (from March 2014)
Dr Priscilla Auyeung
Dr Chris Burns (from March 2014)
Dr Julian Clark
Dr Jayesh Desai
Dr Ross Dickins (from March 2014)
Associate Professor Paul Ekert
Associate Professor Peter Gibbs
Professor Len Harrison
Dr Lina Laskos
Professor Geoffrey Lindeman
Dr Ian Majewski
Dr Marc Pellegrini
Mrs Cathy Quilici
Associate Professor Clare Scott
Dr Oliver Sieber (from March 2014)
Dr Jason Tye-Din
Professor Paul Waring, Department of Pathology, University of Melbourne
Dr John Wentworth
Professor Ian Wicks
Ms Jenni Harris (minutes)

Education committee

Dr Anne Voss, chair
Dr Sandra Nicholson, deputy chair
Dr Marnie Blewitt
Dr Keely Bumsted-O'Brien
Dr Vanessa Bryant
Dr Matthew Call
Dr Melissa Call
Dr Grant Dewson
Associate Professor Paul Ekert
Ms Penny Fannin
Associate Professor Joan Heath
Dr Ruth Kluck
Mr Logesvaran Krshnan
Dr Seth Masters
Dr James Murphy
Dr Ashley Ng
Associate Professor John Silke
Dr Brad Sleebs
Ms Jenni Harris (minutes)

Engagement committee

Ms Penny Fannin, co-chair
Professor David Vaux, co-chair
Dr Kylee Aumann
Dr Keely Bumsted-O'Brien
Ms Lee Byrne
Ms Gillian Carter
Mr Jason Corbin
Dr Leigh Coultas
Mr Ian Coulson
Professor Alan Cowman
Dr Marlyse Debrincat
Ms Angela Georgiou
Mrs Maureen Grant
Dr Kurt Lackovic
Dr Ewa Michalak
Dr Ashley Ng
Ms Mikara Robati
Ms Emma Watson
Dr Christine White
Ms Susanne Williamson
Ms Kaye Wycherley
Ms Lucy McPhee, committee secretary

Gender equity committee

Associate Professor Lynn Corcoran, co-chair
Professor Terry Speed, co-chair
Dr Marie-Liesse Asselin-Labat
Associate Professor Melanie Bahlo
Dr Alyssa Barry
Professor Sharon Bell
Dr Marnie Blewitt
Dr Justin Boddey
Dr Keely Bumsted-O'Brien
Dr Chris Burns
Dr Kim Jacobson
Dr Ben Kile
Ms Carmela Monger
Associate Professor Clare Scott
Ms Rita Tiziani
Ms Hannah Vanyai
Ms Liz Zuccala
Ms Kelly Rodger (minutes)

Health, safety and environment committee

Ms Tracey Baldwin
Mr Mahbub Bhuiyan
Ms Andrea Briffa
Ms Wendy Carter
Mr Steve Droste
Ms Jessica Janssen
Associate Professor Guillaume Lessene
Dr Kym Lowes/Tracey Kemp
Mr Denis Quilici
Mrs Helene Martin
Mr Keith Satterly
Ms Ellen Tsui/Kevin Weston
Mr Charlie Jennison (student representative)
Mr Tony Hendy (minutes)

IT standing committee

Professor Peter Colman, co-chair
Dr John Wastell, co-chair
Ms Lee Byrne
Dr Hendrik Falk (postdoctoral representative)
Mr Tom Sidwell (student representative)
Professor Phil Hodgkin
Professor Liam O'Connor
Associate Professor Tony Papenfuss
Dr Kelly Rogers
Mr Grant Thomas
Mr Zeus Villanueva (VCCC rep)
Ms Amanda Voudouris (minutes)

Reconciliation committee

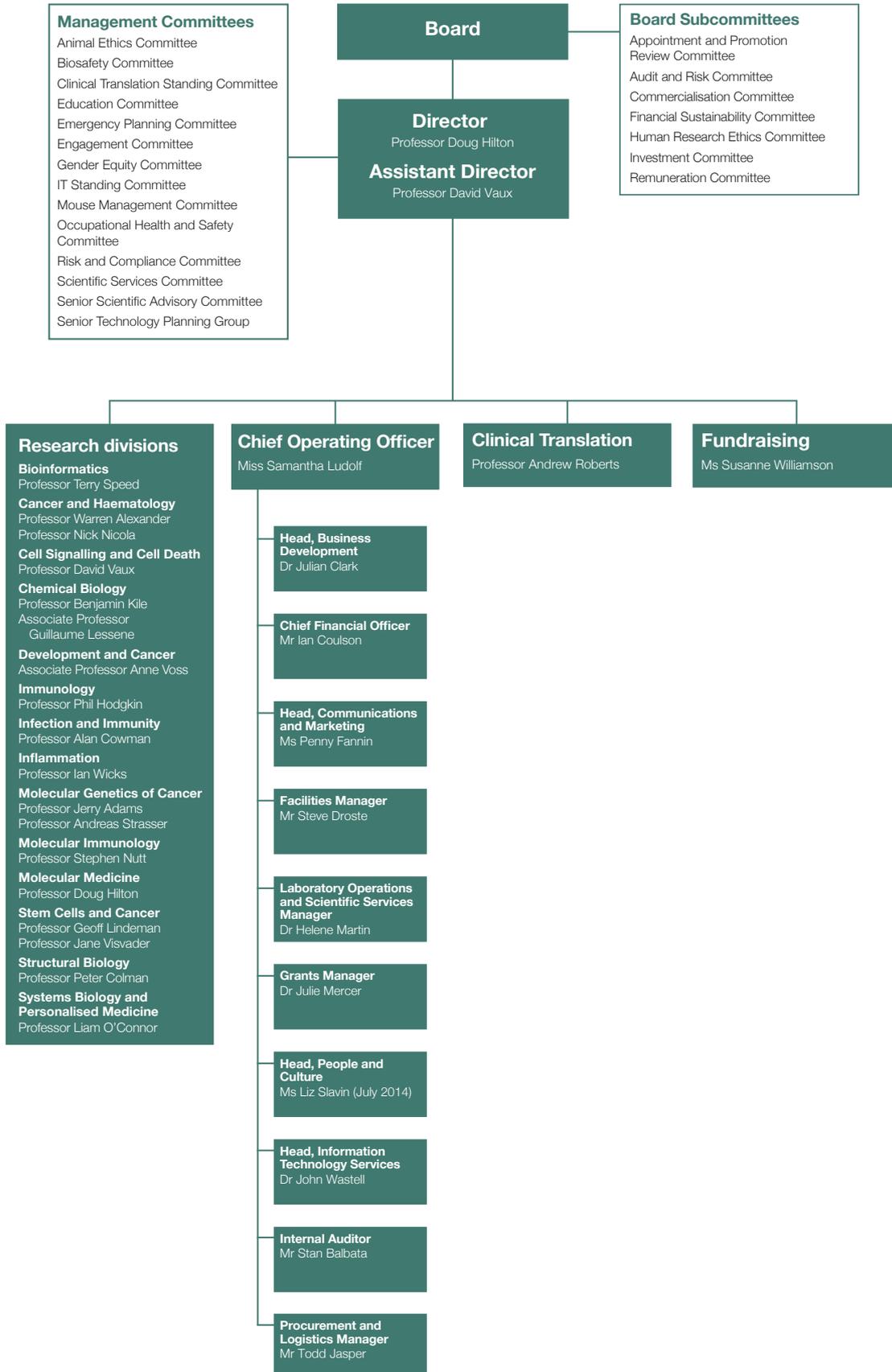
Ms Louise Johansson, chair
Dr Alyssa Barry
Ms Ngaree Blow
Ms Sharon Bonython-Ericson
Mr Jason Brouwer
Ms Lee Byrne
Dr Julian Clark
Professor Len Harrison
Dr Cristian Koepfli
Dr Willy-John Martin
Dr Julie Mercer
Dr Pat Sharp
Ms Susanne Williamson
Dr Emma Stuart (secretary)

Scientific services committee

Professor Warren Alexander, chair
Professor Gabrielle Belz
Professor David Huang
Associate Professor Guillaume Lessene
Ms Samantha Ludolf
Dr Helene Martin
Dr Kelly Rogers
Dr Chris Tonkin
Dr Sabine Kelly (minutes)

INSTITUTE ORGANISATION

30 June 2014



The Walter and Eliza Hall Institute acknowledges the support of these organisations

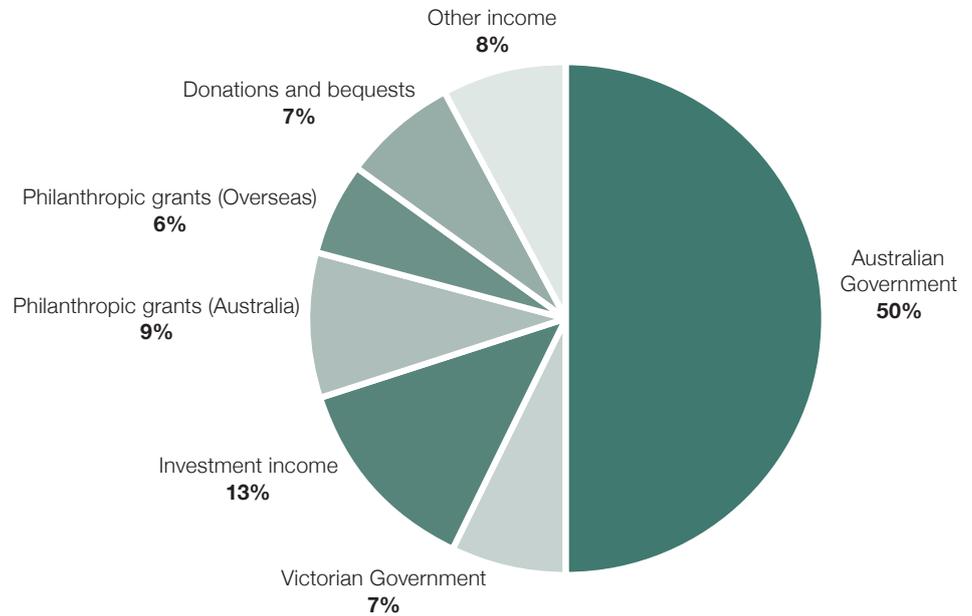


The Walter and Eliza Hall Institute is associated with the following organisations

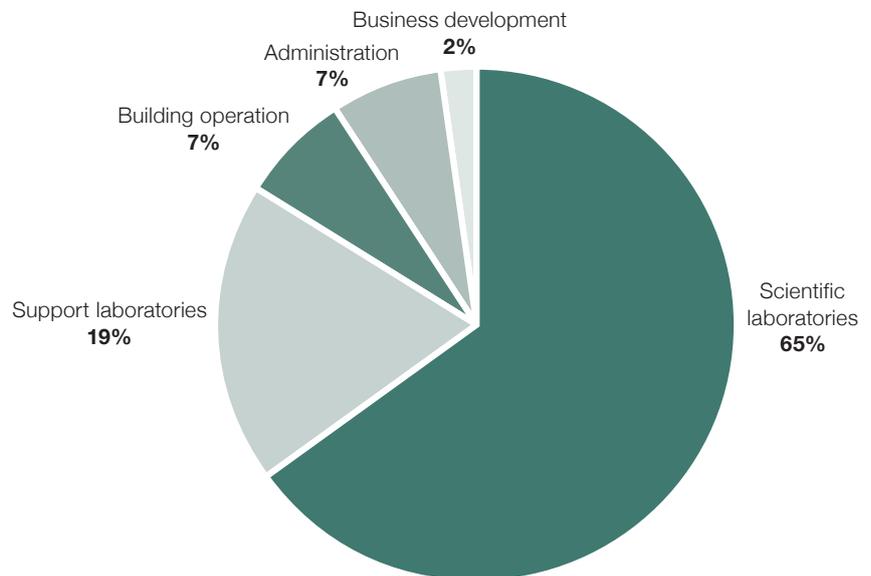


THE YEAR AT A GLANCE

Income



Expenditure



The year in brief

	2014	2013
Income for research (\$000)	102,120	95,262
Expenditure on research (\$000)	103,411	97,760
Net surplus (deficit) from research (\$000)	(1,291)	(2,498)
Number of staff and visiting scientists	689	674
Number of postgraduate students	175	151
Total staff and students (EFTs)	864	825

Statement of profit or loss and other comprehensive income for the year ended 30 June 2014

		2014	2013
Revenue for research activities	Note	\$'000	\$'000
Government revenue			
National Health and Medical Research Council		44,497	45,801
Cooperative Research Centres		2,025	2,064
Other Australian Government grants		1,632	1,755
Other Australian Government fellowships		3,358	3,375
Victorian Government grants		6,936	6,771
Foreign Government grants and fellowships		506	472
		58,954	60,238
Other grant revenue			
Industrial grants and contracts		1,696	1,482
Philanthropic grants and fellowships – Australia		9,024	6,971
Philanthropic grants and fellowships – International		6,355	5,376
		17,075	13,829
Other revenue			
Investment income	2	12,925	13,146
Royalty income		3,119	828
General income		3,369	2,819
Donations and bequests		6,678	4,402
		26,091	21,195
Total revenues for research activities		102,120	95,262

The financial statements are to be read in conjunction with the notes to, and forming part of the financial statements.

		2014	2013
Expenditure on research activities	Note	\$'000	\$'000
Scientific laboratories			
Staff costs		52,344	48,185
Apparatus and equipment		1,559	1,882
Consumable supplies		11,444	10,325
Other expenses		2,097	2,156
		67,444	62,548
Support laboratories			
Staff costs		14,899	13,943
Apparatus and equipment		979	1,605
Consumable supplies		1,959	2,753
Other expenses		2,341	2,416
		20,178	20,717
Building operation			
Staff costs		1,678	1,699
Operating costs and repairs		5,171	5,307
		6,849	7,006
Administration			
Staff costs		5,139	4,628
Equipment		57	46
Fundraising and marketing expenditure		58	81
Other expenses		1,870	1,035
		7,124	5,790
Business development			
Staff costs		967	884
Patents		535	500
Other expenses		314	315
		1,816	1,699
Total expenditure on research activities		103,411	97,760
Deficit from research activities		(1,291)	(2,498)
Other income	3	5,324	21,598
Impairment write-down of available-for-sale financial assets	15(h)	-	(263)
Depreciation and amortisation	10	(8,671)	(8,396)
Gain/ (Loss) on sale of non financial assets		-	2
Net (defecit)/surplus before bequests and grants for capital works		(4,638)	10,443
Bequests and grants for capital works	4	4,785	2,324
Net surplus for the year	15(a)	147	12,767
Other comprehensive income			
Items that may be reclassified subsequently to profit or loss			
Gain/(loss) on available-for-sale financial assets taken to equity	15(h)	20,813	27,934
Cumulative (gain)/loss reclassified to profit or loss on sale of available for sale financial assets	15(h)	(5,215)	(26,118)
Transfer impairment write-down of available-for-sale financial assets	15(h)	-	263
Total comprehensive income for the year		15,745	14,846

The financial statements are to be read in conjunction with the notes to, and forming part of the financial statements.

Statement of financial position as at 30 June 2014

		2014	2013
	Note	\$'000	\$'000
Assets			
Current assets			
Cash and bank balances	16(a)	4,582	8,343
Current tax assets	7(a)	2,710	2,967
Trade and other receivables	7(b)	15,575	13,737
Other financial assets	7(c)	18,310	15,000
Prepaid operating lease	8	32	32
Total current assets		41,209	40,079
Non-current assets			
Other financial assets	9	217,365	189,831
Property, plant and equipment	10	185,893	190,639
Prepaid operating lease	8	2,687	2,720
Total non-current assets		405,945	383,190
Total assets		447,154	423,269
Liabilities			
Current liabilities			
Trade and other payables	11	8,380	6,149
Employee benefits	12	16,613	15,179
Unearned grants and fellowships	13	24,905	20,664
Other liabilities	14	290	261
Total current liabilities		50,188	42,253
Non-current liabilities			
Employee benefits	12	1,946	1,741
Total non-current liabilities		1,946	1,741
Total liabilities		52,134	43,994
Net assets		395,020	379,275
Funds			
Permanent invested funds	15(b)	157,026	152,428
General funds	15(c)	150,132	160,291
Royalty fund	15(d)	19,994	17,551
Leadership fund	15(e)	18,975	17,840
Discovery fund	15(f)	2,030	-
Centenary fund	15(g)	100	-
Investment revaluation reserve	15(h)	46,763	31,165
Total funds		395,020	379,275

The financial statements are to be read in conjunction with the notes to, and forming part of the financial statements.

Statement of cash flows for the year ended 30 June 2014

	Note	2014	2013
		\$'000	\$'000
Cash flows from operating activities			
Donations and bequests		3,480	4,379
General income		3,416	3,101
Receipts from granting bodies		83,805	84,154
GST paid to ATO		(3,217)	(3,819)
Payments to suppliers and employees		(103,644)	(99,417)
Royalty receipts		3,119	828
Dividends received		11,996	8,377
Interest and bill discounts received		2,719	4,126
Net cash generated by operating activities	16(b)	1,674	1,729
Cash flows from investing activities			
Payment for other financial assets		(31,389)	(116,807)
Proceeds on sale of other financial assets		28,385	109,925
Purchase of bills of exchange		(3,310)	2,000
Grants and donations for property, plant and equipment		3,204	2,105
Payment for property, plant and equipment		(3,937)	(5,861)
Net cash used in investing activities		(7,047)	(8,638)
Cash flows from financing activities			
Donations and bequests to permanent invested funds		1,581	219
Net cash used in financing activities		1,581	219
Net decrease in cash and held		(3,792)	(6,690)
Cash and cash equivalents at the beginning of the financial year		8,082	14,772
Cash and cash equivalents at the end of the financial year	16(a)	4,290	8,082

The financial statements are to be read in conjunction with the notes, to and forming part of the financial statements.

Statement of changes in equity

	Permanent funds	General funds	Royalty funds	Leadership funds	Discovery funds	Centenary funds	Investment revaluation reserve	Total
Balance at 1 July 2012	139,073	162,909	17,079	16,282	-	-	29,086	364,429
Surplus for the year	13,355	(2,618)	472	1,558			-	12,767
Other comprehensive income for the year								
Gain / (loss) on available-for-sale investments	-	-	-	-	-	-	27,934	27,934
Cumulative (gain) / loss reclassified to profit or loss on sale of available for sale financial assets	-	-	-	-	-	-	(26,118)	(26,118)
Transfer impairment write down of available-for-sale financial assets	-	-	-	-	-	-	263	263
Total comprehensive income for the year	13,355	(2,618)	472	1,558			2,079	14,846
Balance at 30 June 2013	152,428	160,291	17,551	17,840	-	-	31,165	379,275
Surplus for the year	4,598	(10,159)	2,443	1,135	2,030	100	-	147
Other comprehensive income for the year								
Gain / (loss) on available-for-sale investments	-	-	-	-	-	-	20,813	20,813
Cumulative (gain) / loss reclassified to profit or loss on sale of available for sale financial assets	-	-	-	-	-	-	(5,215)	(5,215)
Total comprehensive income for the year	4,598	(10,159)	2,443	1,135	2,030	100	15,598	15,745
Balance at 30 June 2014	157,026	150,132	19,994	18,975	2,030	100	46,763	395,020

The financial statements are to be read in conjunction with the notes, to and forming part of the financial statements.

Notes to the annual accounts 2013-2014

1. Statement of significant accounting policies

The Walter and Eliza Hall Institute of Medical Research ('the Institute') is incorporated in Victoria as a company limited by guarantee. The Institute has 185 members and the guarantee is limited to two dollars per member.

The financial report is a general purpose financial report in accordance with the Corporations Act 2001, Australian Accounting Standards (AASs) and complies with other requirements of the law. Accounting Standards include Australian equivalents to International Financial Reporting Standards (A-IFRS). The Institute is exempt from taxation. The Institute is a not-for-profit entity.

The financial statements were authorised for issue by the directors on 18 September 2014.

The financial report has been prepared on the basis of historical cost except for the revaluation of certain non-current assets and financial instruments. Cost is based on the fair values of consideration given in exchange for assets.

The Institute is a company of the kind referred to in ASIC Class Order 98/0100, dated 10 July 1998, and in accordance with that Class Order amounts in the financial report are rounded to the nearest thousand dollars, unless otherwise indicated.

Accounting policies are selected and applied in a manner which ensures that the resulting financial information satisfies the concepts of relevance and reliability, thereby ensuring that the substance of the underlying transactions or other events is reported.

The following significant accounting policies have been adopted in the preparation and presentation of the financial report:

(a) Reporting Entity

The financial statements include all the activities of The Walter and Eliza Hall Institute of Medical Research.

Principal address of the Institute is:

1G Royal Parade
Parkville, Victoria, 3052

(i) Jointly controlled assets or operations

Interests in jointly controlled assets or operations are not consolidated by the Institute, but are accounted for in accordance with the policy outlined in Note 1(f) (v).

(b) Property, plant and equipment

Property, plant and equipment held for use in research, or for administrative purposes, are stated in the statement of financial position at cost, less any subsequent accumulated depreciation.

Depreciation is provided on property, plant and equipment. Depreciation is calculated on a straight-line basis so as to write off the net cost of each asset over its expected useful life.

A regular review of useful lives, depreciation rates and residual values is conducted at each year end, with the effect of any changes in estimate accounted for on a prospective basis.

The following table indicates the expected useful lives of non current assets on which the depreciation charges are based.

	2014	2013
Buildings	20 - 40 years	20 - 40 years
Plant and equipment	5 - 20 years	5 - 20 years
Furniture and fittings	5 to 15 years	5 to 15 years

Land leased at Parkville is recognised as part of property, plant and equipment at fair value. Subsequent measurement will be under the cost method, whereby the assets will not be revalued.

(c) Acquisition of assets

Assets acquired are recorded at the cost of acquisition, being the purchase consideration determined as at the date of acquisition plus costs incidental to the acquisition. Items of property, plant and equipment are recorded at cost less accumulated depreciation.

(d) Source of capital funds

The Institute is a company limited by guarantee and as such has no issued capital.

(i) General Funds consist of the net accumulation of surpluses and deficits of prior years.

(ii) Permanent Invested Funds originate from gifts and bequests, the income from which is applied as stipulated by the donor, or to general research where there is no specific stipulation. These gifts and bequests are appropriated to Capital Funds.

(iii) The Royalty Fund consists of the balance of royalties received in respect of patented inventions and not expended.

(iv) The Leadership Fund consists of donations and income earned thereon. The Leadership Fund was established in honour of Professors Gustav Nossal, Donald Metcalf, Jacques Miller and Suzanne Cory to provide named fellowships to nurture the development of outstanding young scientists with the potential to be future leaders of biomedical research.

(v) The Discovery Fund consists of donations and income earned thereon, less funds spent on research to date. The Fund was established by the Institute to support specialist research and will be applied based on the merits of submissions to the Institute Director. There are three areas of focus; early drug discovery, blue sky basic biological research and technical innovation.

(vi) The Centenary Fund consists of donations and income earned thereon. The Fund was established to celebrate the centenary of the Institute and provides fellowships funding for early cancer research (post-doctoral fellows with up to ten years experience and new lab heads appointed between 2015-2020). The five year fellowships are awarded at the discretion of the Institute Director.

(vii) The Investment Revaluation Reserve consists of gains and losses recognised through movement in the fair value of investments and other financial assets.

(e) Revenue recognition

Grants

Government and other funding received or receivable on the condition that the specified activities are undertaken are considered reciprocal. Such grants are recognised as deferred income and revenue is recognised as services are performed or conditions fulfilled, being the expenditure incurred relating to the specified grant.

Sale of goods and disposal of assets

Revenue from the sale of goods and disposal of assets is recognised when goods are delivered and legal title has passed.

Rendering of services

Revenue from a contract to provide services is recognised by reference to the stage of completion of the contract.

Royalties

Royalty income is recognised when received.

Contributions of assets

Revenue arising from the contribution of assets is recognised when the Institute gains control of the contribution.

Donations and bequests

Donation and bequest income is recognised on receipt of the donation or bequest. They are disclosed as part of revenue for research activities, except for, where stipulated by the donor or bequestor, certain amounts are treated as donations and bequests for capital works and are appropriated to Permanent Funds.

(f) Investments and other financial assets

All investments are initially measured at fair value plus transaction costs. After initial recognition, investments are measured at fair value. Gains or losses on investments held are recognised in the Investment Revaluation Reserve. For assets that are actively traded in organised financial markets, fair value is determined by reference to the Stock Exchange quoted market bid prices at the close of business on balance date.

(i) Available-for-sale financial assets

Shares and other investments held by the Institute are classified as being available-for-sale and are stated at fair value. Fair value is determined in the manner described in note 9. Gains and losses arising from changes in fair value are recognised directly in the investment revaluation reserve with the exception of impairment losses which are recognised in profit or loss. Where the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously accumulated in the investments revaluation reserve is reclassified to profit or loss.

(ii) Impairment of financial assets

Financial assets, other than those at fair value through profit or loss, are assessed for indicators of impairment at each balance sheet date. Financial assets are impaired where there is objective evidence that as a result of one or more events that occurred after initial recognition of the financial asset the estimated future cash flows of the investment have been impacted. Financial assets held below cost, by 20% or more, or for greater than 12 months are considered impaired and adjusted through profit and loss. Such impairment loss will not be reversed in subsequent periods.

(iii) Bills of exchange are recorded at amortised cost, with revenue recognised on an accruals basis.

(iv) Dividend revenue is recognised when the dividend is received. Interest revenue is recognised and accrued on a time proportionate basis that takes into account the effective yield on the financial asset.

(v) Interests in jointly controlled assets or operations

In respect of any interest in jointly controlled assets, the Institute recognises in the financial statements:

- its share of jointly controlled assets;
- any liabilities that it had incurred;
- its share of liabilities incurred jointly by the joint venture;
- any income earned from the selling or using of its share of the output from the joint venture; and
- any expenses incurred in relation to being an investor in the joint venture.

For jointly controlled operations, the Institute recognises: the assets that it controls and the liabilities that it incurs; expenses that it incurs; and its share of income that it earns from selling outputs of the joint venture.

(g) Cash and cash equivalents

Cash comprises cash on hand and demand deposits. Cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash, which are subject to an insignificant risk of changes in value and have a maturity of six months or less at the date of acquisition.

(h) Trade and Other Receivables

Trade and other receivables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest rate method less any accumulated impairment.

(i) Trade and Other Payables

Trade payables and other accounts payables are initially measured at fair value and then subsequently carried at amortised cost. They are recognised when the Institute becomes obliged to make future payments resulting from the purchase of goods and services.

(j) Research costs

Research costs are recognised as an expense when incurred and reported in the financial year in which they relate.

(k) Goods and Services Tax (GST)

Revenues, expenses and assets are recognised net of the amount of GST except:

- (i) where the amount of GST incurred is not recoverable from the taxation authority, it is recognised as part of the cost of acquisition of an asset or as part of an item of expense; or
- (ii) for receivables and payables which are recognised inclusive of GST.

The net amount of GST recoverable from, or payable to, the taxation authority is included as part of receivables or payables. Cash flows are included in the statement of cash flows on a gross basis. The GST component of cash flows arising from investing and financing activities which is recoverable from, or payable to, the taxation authority is classified within operating cash flows.

(l) Employee benefits

Provision is made for benefits accruing to employees in respect of annual leave and long service leave, when it is probable that settlement will be required and they are capable of being measured reliably.

Provisions made in respect to annual leave and long service leave expected to be settled within 12 months, are measured at their nominal values, using the remuneration rate expected to apply at the time of settlement.

Provisions made in respect to long service leave which are not expected to be settled within 12 months are measured as the present value of the estimated future cash outflows to be made by the Institute in respect of services provided by employees up to the reporting date.

(m) Foreign currency

All foreign currency transactions during the financial year are brought to account using the exchange rate in effect at the date of the transaction. Foreign currency monetary items at reporting date are translated at the exchange rate existing at that date and exchange differences are recognised in the net surplus or deficit in the period in which they arise.

(n) Leased assets

Operating lease payments are recognised as an expense on a straight-line basis which reflects the pattern in which economic benefits from the leased asset are consumed.

(o) Impairment of non-financial assets

All assets are assessed annually for indications of impairment. If there is an indication of impairment, the assets concerned are tested as to whether their carrying value exceeds their possible recoverable amount. Where an asset's carrying value exceeds its recoverable amount, the difference is written-off as an expense. The recoverable amount for most assets is measured at the higher of value in use and fair value less costs to sell. Depreciated replacement cost is used to determine value in use. Depreciated replacement cost is the current replacement cost of an item of plant and equipment less, where applicable, accumulated depreciation to date, calculated on the basis of such cost.

(p) Critical accounting judgements and key sources of estimation uncertainty

In the application of the Institute's accounting policies, which are described above, management may from time to time make judgements, estimates and assumptions about the carrying values of assets and liabilities that may not be readily apparent from other sources. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances, the result of which form the basis of making the judgement.

(q) Impact of new and revised Accounting Standards

In the current year, the Institute has adopted all of the new and revised standards and interpretations issued by the Australian Accounting Standards Board (the AASB) that are relevant to its operations and effective for the current annual reporting period. There has been no financial impact in the current year.

Standards and interpretations issued not yet effective

At the date of authorisation of the financial report, the standards and interpretations that are relevant to the Institute, listed below, were on issue but not yet effective.

Initial application of the following standard will not affect any of the amounts recognised in the financial report, but will change the disclosures presently made in relation to the Institute's financial report:

Standard	Effective for annual reporting periods beginning on or after	Expected to be initially applied in the financial year ending
AASB 9 'Financial Instruments', and the relevant amending standards	1 January 2017	30 June 2018
AASB 1031 'Materiality' (2013)	1 January 2014	30 June 2015
AASB 2012-3 'Amendments to Australia Accounting Standards - Offsetting Financial Assets and Financial Liabilities'	1 January 2014	30 June 2015
AASB 2013-3 'Amendments to AASB 136-Recoverable Amount Disclosures for Non Financial Assets'	1 January 2014	30 June 2015
"AASB 2014-1 'Amendments to Australian Accounting Standards' - Part A: 'Annual Improvements 2010-2012 and 2011-2013 Cycles' - Part B: 'Defined Benefit Plans: Employee Contributions (Amendments to AASB 119)' - Part C: 'Materiality' "	1 July 2014	30 June 2015
AASB 2014-1 'Amendments to Australian Accounting Standards' - Part E: 'Financial Instruments'	1 January 2015	30 June 2016

(r) Comparative amounts

Certain comparatives have been reclassified where appropriate.

	2014 \$'000	2013 \$'000
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2. Income

The following has been prepared in support of the items of income shown in the income statement.

Investment income from investments received during the year, prior to adjustments for amounts carried forward:

Recognised in surplus or deficit		
Dividends and distributions income on available-for-sale financial assets	12,417	11,303
Interest income on available-for-sale financial assets	2,719	3,587
Amortisation of investment premiums	-	(98)
	<hr/> 15,136	<hr/> 14,792
Less transfer to grants and fellowships	(2,211)	(1,646)
Total as per statement of profit or loss and other comprehensive income	<hr/> 12,925	<hr/> 13,146

The Institute has updated its disclosure in the current year financial statements in relation to Grant and Donation details. This updated disclosure brings the Institute in line with other similar entities.

Specific details on Grant and Donations are included within the Institute Annual Report.

3. Other income

Gain on sale of available-for-sale investments	5,324	21,598
Total other income	<hr/> 5,324	<hr/> 21,598

4. Bequests and grants for capital works

Total bequests and grants for capital works	4,785	2,324
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5. Operating expenses

The following items of expense are included in the net surplus.

Remuneration of auditors		
Auditing the financial report: \$60,410 (2013: \$57,230)	60	57
Other regulatory audit services: Nil (2013: \$9,440)	-	9
Non audit services \$24,000 (2013: \$24,000)	24	24

Employee benefits

Employee benefits expense	75,027	69,339
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Depreciation of non-current property, plant and equipment

Buildings	4,901	4,888
Plant and equipment	3,678	3,288
Furniture and fittings	92	220
Total depreciation	<hr/> 8,671	<hr/> 8,396

Operating lease

Operating lease expense	32	32
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6. Directors' remuneration

The directors of the Walter and Eliza Hall Institute of Medical Research during the year were:

CW Thomas	RER Black	J McCluskey	SK Smith
SM Skala	MC Fitzpatrick	GF Mitchell	CM Walter
RE Male	JS Hemstritch	TF Moran	IM Winship
JA Angus	GJ Goodier	LB Nicholls	RH Wylie

The aggregate income paid or payable, or otherwise made available, in respect of the financial year, to all directors of the Institute, directly or indirectly, by the company or by any related party was nil (2013: nil).

Aggregate retirement benefits paid to all directors of the Institute, by the Institute or by any related party was nil (2013: nil).

	2014 \$'000	2013 \$'000
7. Current assets		
(a) Current tax assets		
Franking credits receivable	2,710	2,967
	2,710	2,967
(b) Trade and other receivables		
Sundry debtors* and prepayments	4,754	3,643
Grants receivable	2,974	9,724
Accrued income	7,847	370
	15,575	13,737
(c) Other financial assets		
Bills of exchange	18,310	15,000

8. Operating leases

Operating leases relate to research facilities with lease terms of between 5 to 99 years, with an option to extend. All operating lease contracts contain market review clauses in the event that the Institute exercises its option to renew. The Institute does not have an option to purchase the leased asset at the expiry of the lease period. The operating leases are prepaid.

Non-cancellable operating leases		
Not longer than 1 year	32	32
Longer than 1 year and not longer than 5 years	128	128
Longer than 5 years	2,559	2,592
	2,719	2,752

	2014 \$'000	2013 \$'000
9. Other financial assets		
Non-quoted available-for-sale Investments at fair value		
Fixed interest securities	20,666	16,053
Shares	394	268
Quoted available-for-sale investments at fair value		
Shares	174,163	145,882
Unit trusts	1,086	974
Perpetual floating rate securities	21,056	26,654
	217,365	189,831

(a) Fair value measurements recognised in the statement of financial position

The following table provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, grouped into levels 1 to 3 based on

- Level 1 fair value measurements are those derived from quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2 fair value measurements are those derived from inputs other than those quoted prices included within level 1 that are observable for the asset, either directly (i.e. as prices) or indirectly (i.e. derived from prices)
- Level 3 fair value measurements are those derived from valuation techniques that include inputs for the asset that are not based on observable market data

	Level 1	Level 2	Level 3	30 June 2014
Total	\$'000	\$'000	\$'000	Total \$'000
Available for sale financial assets				
Quoted shares	174,163	-	-	174,163
Fixed interest securities	-	20,666	-	20,666
Perpetual floating rate securities	-	21,056	-	21,056
Unit trusts	-	1,086	-	1,086
Unquoted shares	-	-	394	394
Total	174,163	42,808	394	217,365

(b) Reconciliation of level 3 fair value measurements of financial assets

	Available-for-sale unquoted equities	
	2014 \$'000	2013 \$'000
Opening balance	268	213
Purchases	145	-
Revaluation	(19)	55
Closing balance	394	268

10. Property, plant and equipment

	Buildings	Work in progress	Plant and equipment	Furniture and fittings	Land Lease	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Gross carrying amount						
Balance at 30 June 2012	176,696	2,713	35,668	1,634	16,200	232,911
Additions at cost	1,174	393	4,248	36	-	5,851
Transfers	74	(2,489)	2,415	-	-	-
Disposals	-	(224)	(1,645)	(231)	-	(2,100)
Balance at 30 June 2013	177,944	393	40,686	1,439	16,200	236,662
Additions at cost	382		3,551	4		3,937
Transfers		(393)	393			-
Disposals			(14)			(14)
Balance at 30 June 2014	178,326	-	44,616	1,443	16,200	240,585
Accumulated depreciation						
Balance at 30 June 2012	(14,861)	-	(23,462)	(1,190)	-	(39,513)
Disposals	-		1,655	231	-	1,886
Depreciation expense	(4,888)	-	(3,288)	(220)	-	(8,396)
Balance at 30 June 2013	(19,749)	-	(25,095)	(1,179)	-	(46,023)
Disposals			2			2
Depreciation expense	(4,901)		(3,678)	(92)		(8,671)
Balance at 30 June 2014	(24,650)	-	(28,771)	(1,271)	-	(54,692)
Carrying amounts						
As at 30 June 2013	158,195	393	15,591	260	16,200	190,639
As at 30 June 2014	153,676	-	15,845	172	16,200	185,893

Aggregate depreciation allocated, whether recognised as an expense or capitalised as part of the carrying amount of other assets during the year:

	2014	2013
	\$'000	\$'000
Buildings	4,901	4,888
Plant and equipment	3,678	3,288
Furniture and fittings	92	220
Total depreciation	8,671	8,396

	2014 \$'000	2013 \$'000
11. Trade and Other Payables		
Trade Creditors	3,060	4,343
Accrued Expenses	4,245	1,685
Current Tax Liability	1,075	121
	8,380	6,149
12. Employee benefits		
The aggregate employee benefit liability recognised and included in the financial statements is as follows:		
Current Provisions*	16,613	15,179
Non Current Provisions	1,946	1,741
	18,559	16,920
* Included in current provisions are \$7.82m (2013 :\$8.11m) of long service leave for which current entitlement exists.		
Number of employees at end of financial year (full time equivalents)		
Staff	675	659
Visiting scientists	14	15
	689	674
13. Unearned grants and fellowships		
Grants and fellowships already committed and applicable to future periods:		
Grants	23,582	19,435
Fellowships	1,323	1,229
	24,905	20,664
14. Other Liabilities		
Monies Held in Trust:		
- Staff Salary Packaging deposits	290	261
	290	261

		2014	2013
		\$'000	\$'000
15. Capital movements			
(a) The net surplus for the financial year is \$146,805 (2013 - \$12,767,026)			
This has been appropriated as follows:	Note		
Transfer to Permanent Invested Funds	15(b)	4,598	13,355
Transfer to (from) General Funds	15(c)	(10,159)	(2,618)
Transfer to Royalty Fund	15(d)	2,443	472
Transfer to Leadership Fund	15(e)	1,135	1,558
Transfer to Discovery Fund	15(f)	2,030	-
Transfer to Centenary Fund	15(g)	100	-
Total appropriations to funds		147	12,767
(b) Permanent Invested Funds			
Balance at beginning of year		152,428	139,073
Surplus for year transferred from income statement		4,598	13,355
Total Permanent Invested Funds		157,026	152,428
(c) General Funds			
Balance at beginning of year		160,291	162,909
Deficit for year transferred from income statement		(10,159)	(2,618)
Total General Funds		150,132	160,291
(d) Royalty Fund			
Balance at beginning of year		17,551	17,079
Surplus for year transferred from income statement		2,443	472
Total Royalty Fund		19,994	17,551
(e) Leadership Fund			
Balance at beginning of year		17,840	16,282
Surplus for year transferred from income statement		1,135	1,558
Total Leadership Fund		18,975	17,840
(f) Discovery Fund			
Balance at beginning of year		-	-
Surplus for year transferred from income statement		2,030	-
Total Discovery Fund		2,030	-
(g) Centenary Fund			
Balance at beginning of year		-	-
Surplus for year transferred from income statement		100	-
Total Centenary Fund		100	-
(h) Investment revaluation reserve			
Balance at beginning of year		31,165	29,086
Valuation gain/(loss) recognised for the year		20,813	27,934
Transfers to gain or loss on sale of investment		(5,215)	(26,118)
Transfers due to loss on impairment		-	263
Total investment revaluation reserve		46,763	31,165
Total funds		395,020	379,275

	2014	2013
	\$'000	\$'000
16. Notes to statement of cash flows		
(a) Reconciliation of cash		
For the purposes of the statement of cash flows, cash includes cash on hand, cash at bank, monies held at trust (salary packaging bank account for staff) and investments in money market instruments, net of outstanding bank overdrafts.		
Cash at the end of the financial year as shown in the statement of cash flows is reconciled to the related items in the statement of financial position as follows:		
Cash	2,561	802
Deposits at call	2,021	7,541
	4,582	8,343
Represented by:		
Cash for Institute operations (as per Cash Flow Statement)	4,290	8,082
Cash balances not available for use		
- Monies Held in Trust - Staff Salary Packaging Deposits	292	261
	4,582	8,343
(b) Reconciliation of net surplus to net cash flows from operating activities		
Net surplus	147	12,767
Depreciation	8,671	8,396
Gain on Disposal of Property Plant and Equipment	(8)	-
Donations and bequests moved to permanent fund	(1,581)	(219)
Gain on sale of available-for-sale financial assets	(5,324)	(21,598)
Write down of available-for-sale investments	-	263
Increase in Investments – dividend reinvestment plans	(678)	(1,895)
Grants and donations for capital works	(3,204)	(2,105)
Amortisation of investment premiums	-	98
Donated Financial Assets	(2,910)	(23)
Transfer of Capital Work in Progress	-	225
Prepaid Operating Lease	32	32
	(4,855)	(4,059)
Changes in net assets and liabilities:		
(Increase)/decrease in assets:		
Tax assets	257	(849)
Sundry debtors and prepayments	(1,111)	186
Income receivable	(727)	(2,119)
Net Movement in Monies Held in Trust	(2)	(3)
Increase/(decrease) in liabilities:		
Trade payables	(1,283)	(237)
Accrued Expenses	2,560	167
Tax Liabilities	954	121
Current provisions	1,435	900
Other current liabilities(Grants)	4,241	7,500
Non-current provisions	205	122
Net cash from operating activities	1,674	1,729
(c) Non-cash financing and investing activities		
During the financial year:		
Dividends of \$678,499 (2013- \$1,894,841) were reinvested as part of dividend and distribution reinvestment plans.		

17. Economic dependency

The Institute is reliant upon grants from the Australian Government National Health and Medical Research Council for 46.8% of operating expenditure (2013 - 46.8%) and the Victorian Department of State Development, Business and Innovation for 5.9% of operating expenditure (2013 - 5.7%) for support of its basic research activities.

18. Segment information

The Institute operates predominantly in medical research in Australia.

	2014 \$'000	2013 \$'000
19. Capital expenditure commitments		
Not longer than 1 year	-	2,355
After 1 year but not more than 5 years	-	-
Total commitments	-	2,355

20. Key management personnel compensation

The aggregate compensation of the key management personnel of the institute is set out below:

Short-term employee benefits	1,028,672	1,057,455
Post-employment benefits	163,054	176,511
	1,191,726	1,233,966

21. Superannuation commitments

a) Institute employees are members of a range of superannuation funds, which are divided into the following categories:

Those operative and open to membership by new employees:

UniSuper – Accumulation Super (1)

Other superannuation funds chosen by employees.

Those closed to future membership by institute employees:

Unisuper – Defined Benefit Division

Unisuper – Accumulation Super (2)

b) UniSuper plans

UniSuper is a multi employer superannuation fund operated by UniSuper Limited as the corporate trustee and administrated by UniSuper Management Pty Ltd, a wholly owned subsidiary of UniSuper Limited. The operations of UniSuper are regulated by the *Superannuation Industry (Supervision) Act 1993*.

(i) The UniSuper schemes known as the Defined Benefit Division or Accumulation Super (2) were only available to contributing members of the Walter and Eliza Hall Institute of Medical Research Superannuation Fund (1979) which closed in 2003.

(ii) The maximum contribution rate to the schemes is 21% of member's salary of which the member contributes 7% after tax and the institute 14%.

(iii) UniSuper has advised that the Accumulation Super (2) and Defined Benefit Division plans are defined as multi-employer defined contribution schemes in accordance with AASB 119 Employee Benefits. AASB 119 Employee Benefits states that this is appropriate for a defined benefit plan where the employer does not have access to the information required and there is no reliable basis for allocating the benefits, liabilities, assets and costs between employers.

(iv) The number of members of the Walter and Eliza Hall Institute of Medical Research Superannuation Fund (1979) who became members of the UniSuper – Defined Benefit Division when the fund closed in 2003 was 204. The number of institute employees who are members of the Defined Benefit Division as at 30 June 2014 was 97 (2013 – 101).

(v) New employees who commenced after 1 July 2003 have a minimum contribution 9% of their annual salary contributed by the institute to Accumulation Super (1) or to a fund of their choice prescribed under the *Superannuation Guarantee Charge Act (1992)*.

(c) The total superannuation contributions by the institute during the year in respect to the above plans were:

UniSuper – Defined Benefit Division	1,843	1,882
UniSuper – Accumulation Super (2)	395	405
UniSuper – Accumulation Super (1)	5,351	4,764
Other superannuation funds	206	180
Total	7,795	7,231

22. Financial instruments

(a) Significant accounting policies

Details of the significant accounting policies and methods adopted, including the criteria for recognition, the basis of measurement and the basis on which revenues and expenses are recognised, in respect of each class of financial asset and financial liability are disclosed in note 1 to the financial statements.

(b) Significant terms, conditions and objectives of derivative financial instruments

The Institute does not enter into or trade derivative financial instruments.

(c) Capital risk management

The Institute manages its capital to ensure it will be able to continue as a going concern whilst maximising its return on investment within the risk profile maintained by the Institute. The capital structure consists of permanent funds, retained earnings and reserves.

(d) Financial risk management

The Institute minimises financial risk through the charter given to the investment sub-committee. In line with this charter, the Institute invests short term funds in a appropriate combination of fixed and floating instruments.

(e) Interest rate risk management

The Institute is exposed to interest rate risk as it invests funds at both fixed and floating interest rates. The majority of financial assets in this class are bank accounts, bank bills and fixed interest securities with varying interest rates.

(f) Interest rate sensitivity analysis

The sensitivity analysis below has been determined based on the exposure to interest rates at the reporting date and the stipulated change taking place at the beginning of the financial year and held constant throughout the reporting period. A 25 basis point decrease was used as the minimum point and 100 basis point decrease as the maximum point. This is consistent with the management's view of interest rate sensitivity. A net decrease in interest rates translates into a fall in net surplus as investment income is reduced. The investment revaluation reserve would increase mainly as a result of the changes in the fair value of available-for-sale fixed rate instruments.

Interest rate risk	Minimum 25bp		Maximum 100bp	
	2014 \$000's	2013 \$000's	2014 \$000's	2013 \$000's
Effect on surplus	(110)	(126)	(439)	(500)
Effect on reserve	49	38	199	155

(g) Equity price sensitivity analysis

The sensitivity analysis below has been determined based on the exposure to equity price risks at the reporting date.

At reporting date, if the equity prices had been 5% higher / lower:

- net surplus for the year ended 30 June 2014 would have been unaffected as the equity investments are classified as available-for-sale; and
- investment revaluation reserve would decrease/increase by \$8.8 million (2013: \$7.3 million) mainly as a result of the changes in fair value of available-for-sale shares.

The Institute's sensitivity to equity prices has not changed significantly from the prior year.

(h) Credit risk management

Credit risk refers to the risk that a counterparty will default on its contractual obligations resulting in a financial loss to the Institute. The Institute has adopted a policy of only dealing with creditworthy counter parties as a means of mitigating the risk of financial loss from defaults. The Institute's exposure is continuously monitored and reviewed. Trade receivables consist of a large number of customers including granting bodies. The Institute does not have a significant credit exposure to any single party or any group of counter parties having similar characteristics. The carrying amount of financial assets recorded in the financial statements represents the Institute's maximum exposure to credit risk.

(i) Liquidity risk management

Ultimate responsibility for liquidity risk management rests with the board of directors, who have built an appropriate risk management framework for the management of the Institute's short, medium and long-term funding and liquidity management. The Institute manages the liquidity risk by maintaining adequate cash reserves, and by continuously monitoring forecast and actual cash flows while matching the maturity profiles of financial assets. Given the current surplus cash assets, liquidity risk is minimal. The Institute does not have any interest bearing liabilities. The remaining contractual maturity for its non-interest-bearing financial liabilities is \$8.380 million payable within 3 months of 30 June 2014 (2013: \$6.149 million).

(j) Fair value

The carrying amount of the Institute's financial assets and financial liabilities recorded in the financial statements approximates their fair values. The fair value of financial assets with standard terms and conditions and traded on active liquid markets are determined with reference to quoted market prices.

(k) Interest rate risk

The following table details the Institute's exposure to interest rate risk as at 30 June 2014 and 30 June 2013.

	Average interest rate	Variable interest rate	Less than 1 year	1 to 5 years	More than 5 years	Non-Interest Bearing	TOTAL
30 June 2014		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Financial assets							
Cash	2.09%	4,582	-	-	-	-	4,582
Tax assets		-	-	-	-	2,710	2,710
Sundry debtors and prepayments		-	-	-	-	4,754	4,754
Accrued income		-	-	-	-	7,847	7,847
Grants Receivable		-	-	-	-	2,974	2,974
Bills of exchange	3.47%	-	18,310	-	-	-	18,310
Fixed interest securities	4.19%	-	-	17,030	3,637	-	20,667
Shares		-	-	-	-	174,163	174,163
Unit trusts		-	-	-	-	1,086	1,086
Perpetual floating rate securities	4.46%	-	-	9,490	11,566	-	21,056
Non listed shares		-	-	-	-	394	394
		4,582	18,310	26,520	15,203	193,928	258,543
Financial liabilities							
Trade payables		-	-	-	-	8,380	8,380
Other liabilities		-	-	-	-	290	290
Grants carried forward		-	-	-	-	24,905	24,905
		-	-	-	-	33,575	33,575
30 June 2013							
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Financial assets							
Cash	1.96%	8,343	-	-	-	-	8,343
Tax assets		-	-	-	-	2,967	2,967
Sundry debtors and prepayments		-	-	-	-	3,643	3,643
Accrued income		-	-	-	-	370	370
Grants Receivable		-	-	-	-	9,724	9,724
Bills of exchange	4.06%	-	15,000	-	-	-	15,000
Fixed interest securities	4.70%	-	-	9,200	6,853	-	16,053
Shares		-	-	-	-	145,882	145,882
Unit trusts		-	-	-	-	974	974
Perpetual floating rate securities	5.28%	-	-	16,504	10,150	-	26,654
Non listed shares		-	-	-	-	268	268
		8,343	15,000	25,704	17,003	163,828	229,878
Financial liabilities							
Trade payables		-	-	-	-	6,149	6,149
Other liabilities		-	-	-	-	261	261
Grants carried forward		-	-	-	-	20,664	20,664
		-	-	-	-	27,074	27,074

23. Jointly controlled operations and assets

	2014	2013
Victorian Comprehensive Cancer Centre Limited	12.5%	12.5%

The member entities have committed to the establishment of a world leading comprehensive cancer centre in Parkville, Victoria, through the joint venture, with a view to saving lives through the integration of cancer research, education and training, and patient care. The Institute's interest in the above jointly controlled operations is detailed below.

The amounts are included in the financial statements under their respective categories:

Assets

Current Assets

Cash and cash equivalents	223	169
Trade and other receivables	8	30
Total current assets	231	199

Non-current Assets

Property, plant and equipment	5	5
Total non-current assets	5	5
Share of total assets	236	204

Liabilities

Current liabilities

Trade and other payables	47	31
Employee benefits	38	37
Total current liabilities	85	68

Non-current liabilities

Employee benefits	6	5
Total non-current liabilities	6	5
Share of total liabilities	91	73

Net Assets

Share of VCCC's net assets	145	131
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Revenue for research activities

Co-operative Research Centres	183	182
Other Australian Government Grants	189	226
Investment Income - Interest	6	8
Total revenues for research activities	378	416

Expenditure on research activities

Support laboratories

Staff costs	114	117
Other expenses	131	168
Total	245	285

Administration

Staff costs	40	45
Other expenses	45	65
Total	85	110

Business development

Staff costs	15	4
Other expenses	18	5
Total	33	9

Total expenditure on research activities	363	404
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Surplus from research activities	15	12
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24. Contingent liability

As part of the daily management of the Institute's investment portfolio, transactions are undertaken based on advice of external advisers and authorised personnel. During FY2013, certain authorised transactions were undertaken as part of managing the investment portfolio, resulting in income of \$0.658m recognised and received during FY2013.

During the current financial year, these transactions became subject to review by the Australian Taxation Office, the outcome of which may result in a potential repayment of the amount. The matter is in the early stages of review and based on current advice, the Institute may request a Private Binding Ruling to assist in resolving the matter.

Governance statement:

The Walter and Eliza Hall Institute of Medical Research is a public company limited by guarantee. Ultimate responsibility for the governance of the Institute rests with the board of directors. This governance statement outlines how the board meets that responsibility.

Achieving the mission:

The board's primary role is to ensure that the Institute's activities are directed towards achieving its mission of 'Mastery of Disease through Discovery'. The board must ensure that this mission is achieved in the most efficient and effective way.

Specific responsibilities of the board:

The board fulfils its primary role by:

- selecting, appointing, guiding and monitoring the performance of the chief executive;
- formulating the Institute's strategic plan in conjunction with the chief executive and senior management;
- approving operating and capital budgets formulated by the chief executive and management;
- monitoring management's progress in achieving the strategic plan;
- monitoring management's adherence to operating and capital budgets;
- ensuring the integrity of internal control, risk management and management information systems;
- ensuring stakeholders receive regular reports, including financial reports;
- ensuring the company complies with relevant legislation and regulations; and
- acting as an advocate for the Institute whenever and wherever possible.

Management's responsibility:

The Board has formally delegated responsibility for the Institute's day-to-day operations and administration to the chief executive and executive management.

Board oversight:

The board oversees and monitors management's performance by:

- meeting at least four times during the year;
- receiving detailed financial and other reports from management at these meetings;
- receiving additional information and input from management when necessary; and
- assigning to the Audit and Risk, Commercialisation and Investment committees of the board responsibility to oversee particular aspects of the Institute's operations and administration.

Each board committee operates under a charter approved by the board. These charters are reviewed annually and updated as necessary.

Board members:

All board members are non-executive directors and receive no remuneration for their services. The company's constitution specifies:

- there must be no less than 12 and no more than 18 directors;
- directors (except those appointed by The University of Melbourne) are appointed for a maximum of four terms of three years each, after which directors may be reappointed annually with the unanimous agreement of all other board members; and
- the president or vice president may hold office for an additional period or periods not exceeding six years.

Appointments to the board are made to ensure the board has the right mix of skills, experience and expertise. Board members are appointed by the company's founding members, The University of Melbourne and The Royal Melbourne Hospital (Melbourne Health) – two each and up to a further 14 by the board.

Board and committee members receive written advice of the terms and conditions of their appointment. Board and committee members' knowledge of the business is maintained by visits to the Institute's operations and management presentations.

The performance of individual board and committee members and the board and board committees is assessed annually.

Risk management:

The board oversees the Institute's risk management system, which is designed to protect the organisation's reputation and manage those risks that might preclude it from achieving its goals.

Management is responsible for establishing and implementing the risk management system, which assesses, monitors and manages operational, financial reporting and compliance risks. The Audit and Risk Committee is responsible for monitoring the effectiveness of the risk management system between annual reviews.

Ethical standards and code of conduct:

Board members, senior executives and staff are expected to comply with relevant laws and the codes of conduct of relevant professional bodies, and to act with integrity, compassion, fairness and honesty at all times when dealing with colleagues, and others who are stakeholders in our mission.

Involving stakeholders:

The Institute has many stakeholders, including our donors and benefactors, our staff, and students, the broader community, the government agencies who provide us funds and regulate our operations, and our suppliers.

We adopt a consultative approach in dealing with our stakeholders. We get involved in industry forums to ensure governments at all levels are aware of our concerns and our achievements and to remain abreast of industry developments.

Indemnification and insurance:

The Institute insures directors (and the company secretary and executives) against liabilities for costs and expenses incurred by them in defending any legal proceedings arising out of their conduct while acting in the capacity of director (or company secretary or executive) of the company, other than conduct involving a wilful breach of duty in relation to the company.

Directors' report

The directors of the Walter and Eliza Hall Institute of Medical Research submit herewith the annual financial report of the company for the year ended 30 June 2014. In order to comply with the provisions of the Corporations Act 2001, the directors report as follows:

Directors and board meetings

The names and particulars of the directors of the company during or since the end of the financial year and attendance at board meetings in the year to 30 June 2014 are:

		Joined Board	Meetings held while a Director	Meetings Attended
Christopher W Thomas <i>Chairman and President of the Institute</i>	BCom(Hons) MBA <i>Melb</i> FAICD	2001	5	5
Steven M Skala AO <i>Vice President of the Institute</i>	BA LLB(Hons) <i>Qld</i> BCL <i>Oxon</i>	1999	5	3
Roger E Male ¹ <i>Honorary Treasurer (until April 2014)</i>	LLB Adelaide DipAcctg <i>Swinburne</i>	1998	5	4
Robert H Wylie ² <i>Honorary Treasurer (from April 2014)</i>	FCA FAICD	2014	1	1
James A Angus AO ³	BSc PhD <i>Syd</i> FAA	2003	1	0
Rufus ER Black ⁴	BA LLB(Hons) <i>Melb</i> DipTheol MPhil DPhil <i>Oxon</i>	2013	4	2
Malcolm W Broomhead ⁵	MBA BE(Civil) <i>Qld</i> FIE(Aus) FAusIMM FAIM MICE(UK) FAICD	2014	0	0
Michael C Fitzpatrick	BA(Hons) <i>Oxon</i> BEng(Hons) <i>UWA</i>	2001	5	5
Gareth J Goodier	MB ChB MHA DHSc FRACMA FAFPHM	2012	5	4
Jane S Hemstritch ⁶	BSc(Hons) FCA FAICD	2013	3	2
James McCluskey	BMedSci MBBS MD <i>UWA</i> FRACP FRCPA	2011	5	3
Graham F Mitchell AO	RDA BVSc <i>Syd</i> FACVSc PhD <i>Melb</i> FTSE FAA	2007	5	3
Terence F Moran AC ⁶	BA(Hons) <i>Latrobe</i>	2013	2	2
Linda B Nicholls AO	BA(Econ) <i>Cornell</i> MBA <i>Harvard</i> FAICD	2001	5	2
Stephen K Smith ⁷	DSc FRCOG RMedSci	2013	4	2
Catherine M Walter AM	LLB(Hons) LLM MBA <i>Melb</i> FAICD	2001	5	4
Ingrid M Winship	MB ChB MD <i>Cape Town</i> FRACP	2007	5	4

¹ Retired 24 April 2014 ² Commenced 24 April 2014 ³ Retired 19 July 2013 ⁴ Commenced 27 August 2013 ⁵ Commenced 24 July 2014

⁶ Commenced 21 November 2013 ⁷ Commenced 30 October 2013

The Audit and Risk Committee

The role of the Audit and Risk Committee is to assist the board in fulfilling its statutory and fiduciary responsibilities with regard to accounting and financial reporting practices and internal control systems of the company. The committee met four times during the year.

Principal activities

The company's principal activity in the course of the financial year was medical research and there has been no significant change in that activity during the financial year.

Financial results

The financial result from research activities was a net deficit of \$1,291,356 (2013 deficit of \$2,498,035). After allowing for the surplus arising from gains from the sale of investments and other grants, donations and bequests, depreciation and amortisation the overall result for the year was a surplus of \$146,805 (2013 – \$12,767,026). Tax is not applicable. The company is limited by guarantee, has no share capital and declares no dividends.

Operations

A review of operations of the company is included in the detailed scientific reports.

Environmental regulations

The Institute aims to achieve a high standard in environmental matters. The Institute complies with the Environmental Protection Act in respect of its operations. Discharges to air and water are below specified levels of contaminants and solid waste is disposed of in an appropriate manner. Biomedical waste and sharps are disposed of through appropriately licensed contractors. The directors have not received notification nor are they aware of any breaches of environmental laws by the Institute.

Appreciation

The board wishes to extend its appreciation to the members of the various committees (Appointments and Promotions Committee, Human Research Ethics Committee, Investment Committee, Commercialisation Advisory Committee and the Financial Sustainability Committee) as well as the many other people including the director, staff, students, overseas visitors and honorary workers, who work so tirelessly to advance the company's world-wide reputation for excellence in medical research. A table of attendance at the various committees is listed below.

Committee attendance	Meetings Held	Meetings attended
Audit and Risk Committee		
Ms Linda Nicholls (Chair)	4	4
Mr Roger Male	4	4
Mr Steven Skala	4	1
Commercialisation Advisory Committee		
Professor Graham Mitchell (Chair)	3	3
Professor George Morstyn	3	1
Mr John Raff	3	2
Professor Doug Hilton	3	0
Professor Peter Colman	3	2
Professor Nic Nicola	3	2
Dr Julian Clark	3	3
Dr Kurt Lackovic	3	3
Ms Carmela Monger	3	3
Financial Sustainability Committee		
Mr Christopher Thomas (Chair)	5	5
Ms Sally Bruce	5	4
Mr Greg Camm	5	1
Dr Julian Clark	5	2
Mr Ian Coulson (from May 2014)	1	1
Mr Michael Daddo	5	2
Mr John Dyson	5	3
Ms Penny Fannin	5	5
Ms Jane Hemstrich	5	0
Professor Doug Hilton	5	3
Ms Caroline Johnston	5	5
Mr Rowan Kennedy (until March 2014)	4	1
Ms Samantha Ludolf (from November 2013)	3	1
Mr Steven Skala	5	3
Ms Kim Tsai (until January 2014)	3	2
Ms Susanne Williamson	5	4
Mr Rob Wylie	5	4

Committee attendance	Meetings Held	Meetings attended
Human Research Ethics Committee		
Associate Professor Rufus Black (Chair)	7	5
Dr John Bonacci	7	7
Dr Vanessa Bryant (on maternity leave)	3	3
Rev Father Michael Elligate (Deputy Chair)	7	6
Associate Professor Paul Ekert (until March 2014)	5	3
Mr David Freeman	7	7
Professor Geoff Lindeman	7	7
Mrs Netta McArthur	7	5
Dr Rachel Nowak	7	6
Dr Ken Pang (from April 2014)	1	1
Ms Moira Rayner	7	2
Associate Professor Louis Schofield	7	3
Professor Ingrid Winship	7	3
Investment Committee		
Mr Roger Male (Chair)	6	6
Mr Ian Coulson (from June 2014)	1	1
Mr Stephen Daley	6	2
Professor Doug Hilton	6	2
Ms Samatha Ludolf (from November 2013)	3	2
Mr Stephen Merlicek	6	4
Mr Stephen Milburn-Pile	6	4
Mr Andrew Scott	6	6
Ms Fiona Trafford-Walker	6	3
Ms Kim Tsai (until January 2014)	3	3
Ms Catherine Walter	6	3
Mr Peter Worcester	6	2
Mr Robert Wylie (from June 2014)	1	1

Auditors' independence declaration

The Auditors' independence declaration is included on page 25 of the financial report.

Other Matters

(a) During the financial year there was no significant change in the company's state of affairs other than that referred to in the accounts or the notes thereto.

(b) There has not been any other matter or circumstance that has arisen since the end of the financial year, that has significantly affected, or may significantly affect the operations of the company, the results of those operations, or the state of affairs of the company in future financial years.

(c) The company is in the process of expansion and redevelopment of the Parkville premises which will significantly increase its capacity and operations in the coming years. Disclosure of information regarding likely developments in the operations of the company in future years and the expected results of those operations is likely to result in unreasonable prejudice to the company. Accordingly, this information has not been disclosed in this report.

(d) During the financial year the company paid a premium in respect of a contract insuring the directors and officers of the company against liability incurred as such a director or officer to the extent permitted by the Corporations Act 2001. The contract of insurance prohibits disclosure of the nature of the liability and the amount of the premium. The company has not otherwise, during or since the financial year, indemnified or agreed to indemnify an officer or auditor of the company or any related body corporate against a liability incurred as such an officer or auditor.

(e) The company is a company of the kind referred to in ASIC Class Order 98/100, dated 10 July 1998, and in accordance with that Class Order amounts in the directors' report and the financial report are rounded off to the nearest thousand dollars.

Signed in accordance with a resolution of the directors made pursuant to s.298(2) of the Corporations Act 2001.

On behalf of the directors



Christopher Thomas

President

Melbourne, 18 September 2014



Robert Wylie

Treasurer

Directors' declaration

The directors declare that:

(a) The attached financial statements and notes thereto comply with accounting standards;

(b) The attached financial statements and notes thereto give a true and fair view of the financial position and performance of the company;

(c) In the directors' opinion, the attached financial statements and notes thereto are in accordance with the Corporations Act 2001; and

(d) In the directors' opinion, there are reasonable grounds to believe that the company will be able to pay its debts as and when they become due and payable.

Signed in accordance with a resolution of the directors made pursuant to s.295(5) of the Corporations Act 2001.

On behalf of the directors



Christopher Thomas

President

Melbourne, 18 September 2014



Robert Wylie

Treasurer

The Board of Directors
The Walter and Eliza Hall Institute of Medical Research
1G Royal Parade
Parkville VIC 3052

18 September 2014

Dear Board Members

The Walter and Eliza Hall Institute of Medical Research

In accordance with section 307C of the Corporations Act 2001, I am pleased to provide the following declaration of independence to the directors of The Walter and Eliza Hall Institute of Medical Research.

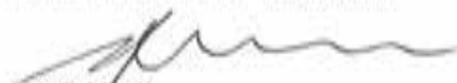
As lead audit partner for the audit of the financial statements of The Walter and Eliza Hall Institute of Medical Research for the financial year ended 30 June 2014, I declare that to the best of my knowledge and belief, there have been no contraventions of:

- (i) the auditor independence requirements of the Corporations Act 2001 in relation to the audit; and
- (ii) any applicable code of professional conduct in relation to the audit.

Yours sincerely



DELOITTE TOUCHE TOHMATSU



P A Caldwell
Partner
Chartered Accountants

Independent Auditor's Report to the Members of The Walter and Eliza Hall Institute of Medical Research

We have audited the accompanying financial report of The Walter and Eliza Hall Institute of Medical Research, which comprises the statement of financial position as at 30 June 2014, the statement of profit or loss and other comprehensive income, the statement of cash flows and the statement of changes in equity for the year then ended, notes comprising a summary of significant accounting policies and other explanatory information, and the directors' declaration as set out on pages 1 to 20 and 24.

Directors' Responsibility for the Financial Report

The directors of the company are responsible for the preparation of the financial report that gives a true and fair view in accordance with Australian Accounting Standards and the *Corporations Act 2001* and for such internal control as the directors determine is necessary to enable the preparation of the financial report that gives a true and fair view and is free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. Those standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control, relevant to the entity's preparation and fair presentation of the financial report, in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial report.

Deloitte

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Auditor's Independence Declaration

In conducting our audit, we have complied with the independence requirements of the *Corporations Act 2001*. We confirm that the independence declaration required by the *Corporations Act 2001*, which has been given to the directors of the Walter and Eliza Hall Institute of Medical Research, would be in the same terms if given to the directors as at the time of this auditor's report.

Opinion

In our opinion:

- (a) the financial report of The Walter and Eliza Hall Institute of Medical Research is in accordance with the *Corporations Act 2001*, including:
 - (i) giving a true and fair view of the company's financial position as at 30 June 2014 and of its performance for the year ended on that date; and
 - (ii) complying with Australian Accounting Standards and the *Corporations Regulations 2001*; and
- (b) the financial statements also comply with International Financial Reporting Standards as disclosed in Note 1.



DELOITTE TOUCHE TOHMATSU



P A Caldwell
Partner
Chartered Accountants
Melbourne, 18 September 2014

Statistical summary for the year ended 30 June

	2014 \$,000s	2013 \$,000s	2012 \$,000s	2011 \$,000s	2010 \$,000s
Research revenue					
Australian Government	51,512	52,995	49,962	45,973	39,291
Victorian Government	6,936	6,771	7,074	6,842	7,638
Foreign governments	506	472	359	557	953
Government revenue	58,954	60,238	57,395	53,372	47,882
Industrial grants and contracts	1,696	1,482	1,114	1,846	3,518
Philanthropic grants and fellowships – Australia	9,024	6,971	5,285	3,830	3,644
Philanthropic grants and fellowships – international	6,355	5,376	2,180	3,235	4,399
Investment income	12,925	13,146	11,280	11,486	9,278
Royalty income	3,119	828	810	2,513	1,071
General revenue	3,369	2,819	3,054	2,647	2,761
Donations and bequests	6,678	4,402	3,043	3,305	958
Non-government revenue	43,166	35,024	26,766	28,862	25,629
Total revenue for research	102,120	95,262	84,161	82,234	73,511
Research expenditure and financial results					
Staff costs	75,027	69,339	61,559	54,799	48,938
Laboratory operating costs	17,841	17,650	16,452	15,424	16,310
Laboratory equipment	2,538	3,487	4,119	2,862	2,474
Building operations	5,171	5,307	4,746	4,353	4,356
Administration	1,985	1,162	1,203	1,002	1,225
Business development	849	815	899	684	879
Total research expenditure	103,411	97,760	88,978	79,124	74,182
Results from research activities	(1,291)	(2,498)	(4,817)	3,110	(671)
Other income					
Profit and loss on sale of long-term assets	5,324	21,600	746	7,712	1,151
Contribution income for recognition of land lease	-	-	12,782	-	-
Donations and bequests	1,581	219	3,461	1,566	2,120
Grants and donations for capital works	3,204	2,105	906	117	428
Total other income	10,109	23,924	17,895	9,395	3,699
Other expenses					
Loss on impairment write down of long-term investments	-	(263)	(2,333)	(2,945)	(203)
Depreciation and amortisation	(8,671)	(8,396)	(5,681)	(6,375)	(3,877)
Total other expenses	(8,671)	(8,659)	(8,014)	(9,320)	(4,080)
Net operating surplus	147	12,767	5,064	3,185	(1,052)
Capital funds					
Permanent invested capital funds	157,026	152,428	139,073	134,457	129,802
General funds	150,132	160,291	162,909	138,752	90,534
Royalty fund	19,994	17,551	17,079	16,788	14,823
Leadership fund	18,975	17,840	16,282	16,182	15,873
Discovery Fund	2,030	-	-	-	-
Centenary Fund	100	-	-	-	-
Asset revaluation reserve	46,763	31,165	29,086	38,812	37,961
Total funds	395,020	379,275	364,429	344,991	288,993
Capital expenditure					
Property, plant and equipment	3,937	5,852	43,348	53,579	64,516
Staff numbers: (equivalent full-time) at 30 June	2014	2013	2012	2011	2010
Scientific research staff:					
– Senior faculty	78	76	64	64	52
– Postdoctoral scientists	197	186	160	147	143
– Visiting scientists	14	15	10	16	14
– Other laboratory research staff	265	268	252	246	245
Supporting staff:					
– Other support services	135	129	122	112	104
Total staff and visiting scientists	689	674	608	585	558
Students	175	151	137	135	103
Papers published	381	298	284	250	249

Capital Funds

Permanent Named Capital Funds

The following is a complete listing of all permanent funds held and invested by the institute at 30 June, 2014.

*New donations of capital received in current financial year.

	2014 \$		
Adair John Bequest (ex DW)	349,815	Buckland William Foundation Fund	205,349
Adair John Bequest (ex MF)	66,417	Buckman Olive Estate	24,327
Alexander R Estate	139,484	Bult C G Estate	443,546
Allison-Levick J & H	78,292	Brumloop LAA Estate	76,402
Amey AM Estate	33,682	Burley Stanley Estate	62,222
Anderson KA Estate	250,370	Burnet Sir Macfarlane Estate	104,703
Anderson NM Estate	15,172	Burns JC Estate	164,170
Angus Dorothy Irene Estate	246,383	Cahill JL Estate	22,732
Anonymous – Tasmania	53,871	Callaway LJ Estate	43,529
Anonymous – Victoria	174,600	Cambridge Beresford Estate	180,303
Anonymous – Victoria	6,487	Carlin Freda Evelyn Estate	89,187
Arnel Florence Janet Maude Estate	50,953	Carling DM Estate	159,336
Arter Myra G Estate	78,337	Carlson Catherine Estate	79,998
Ashford Ivy A Estate	31,010	Carlson Elizabeth F Estate	90,415
Attwell Samuel E Estate	60,672	Carty LEW Charitable Fund	38,453
Atyeo George & Isobel Fund	44,570	Cato EA Estate	788,910
Baker Alice Lillian Estate	73,854	Cato MC Estate	641,226
Ballantyne JW Estate	706,257	Chapman Debbie Memorial Fund	10,313
Barfield WG Estate	47,942	Chatfield SL Estate	108,231
*Barry Joan Elaine Memorial Fund	10,000	Claridge John PG Estate	32,260
Bartlett Mary V Estate	33,973	Clark Lindesay Fund	875,402
*Bates Tim Memorial Diabetes Research Fund	139,565	Cockburn Clarice BP Estate	24,258
Charles L Bartholomew Estate	140,971	Cole DE Estate	695,429
Bauer Dr Franz Estate	58,025	Coles GO Estate	33,824
Bell Valerie Amy	82,195	Collie Barbara Estate	134,677
Benjamin EG Estate	54,376	Collie Betty Rae	188,844
Bennett LM Estate	34,391	Collie George Estate	2,113,223
Berry Ruby C Estate	145,100	Colliver Len Estate	49,778
Biderman Cyla Estate	69,255	Connolly Grace C Estate	114,625
Blain BE Estate	110,895	Cormack Margaret Mary	85,513
Bland RT Estate	333,496	Cory Joy & Desmond Cancer Research Fund	115,805
Bock Lindsay William Estate	29,358	Coultass Hylida M Estate	114,905
Boothman Alva Estate	681,603	Courtney Gwendoline Vera Estate	245,957
Borrett M A Estate	529,760	Coutts Dr ELA Estate	115,365
Bran EG Estate	192,824	Coutts IBM Estate	24,463
Brennan EM Estate	60,191	*Craven DA Memorial Fund	1,016,786
The Ruby Bryan Memorial Fund	657,622	JE Craven & MA Shearer Estates	43,621,292
Brittain W & VI Mem Fund	70,931	Crawford Duncan Estate	15,045
Brockhoff Nyon Trust	222,752	Criswick R M Estate	458,817
Brough AV Estate	76,627	Critchlow Ronald P Estate	268,476
Brown Isabelle A Estate	79,811	Crowley MM Estate	187,604
Bruce RH Estate	35,004	Cubbins SG Estate	79,873
		Cummings ED Estate	142,209
		Cutter BE Estate	14,780
		Darbyshire EJ (Ted) Estate	309,317
		Davey Dorothy Estate	273,685
		Davidson BI Estate	23,225
		Davidson EE Estate	26,360
		Davis FLG Estate	52,702
		Dawson Anne Marie Estate	7,046
		Del Cott RAM Estate	232,327
		Deryk SD Estate	62,836
		*Sir Harold Dew and Family Estate	749,074
		Dick MRK (Ray) Estate	194,963
		Dickie Phoebe Estate	39,952
		Dimsey WE Estate	201,072
		Dobbie Myrtle M Estate	36,697
		Dodgshun GM Estate	145,859
		Dossetor Catherine L Estate	31,732
		Dowie S Estate	20,601
		Drakensberg Trust	2,214,814
		*Drury Evelyn Ann Fund	10,000
		Duncan PH Estate	87,059
		East James Douglas Estate	165,704
		Edwards Allen Richard Estate	174,277
		Edwards HHW Estate	222,059
		Eisner KR	85,752
		Ellis GM Estate	3,366,858
		Emery Harriet Anne Estate	19,115
		Eva Michael Ross Estate	4,008,314
		Facey Mary Bethune Estate	14,645
		Fagg Maude V Estate	91,112
		Farrant Patricia & John Scholarship Fund	175,789
		Fields Ernest Estate	256,140
		Findlay Winifred Gertrude Estate	127,948
		Fitzgerald Sheila Mary Estate	39,179
		Ford Ada Joyce Estate	17,956
		Fraser K Estate	1,855,813
		Galbraith DA & DV Estate	101,183
		Gerdts Sheila Lesley G Estate	60,756
		Gibb Geo & Bennett Wm A	375,359
		Gilbert Augusta Estate	339,182
		Gilder CH Estate	14,958
		Gillon AM Estate	2,829,065
		Girdwood J Estate	222,941
		Goldman Sachs JB Were Foundation	688,098
		Gordon H & T Estate	99,879
		Graves GC Estate	24,746
		Gray Bessie Mavis Fund	23,506
		Gray Clara Estate	67,515
		Greig Harry Douglas Estate	471,642
		Grubb Walter Joseph Estate	34,900

Guest Doris Rose Estate	14,679	Lyell Alexia Bequest	404,205	Must Mary Kathleen Bequest	972,537
Hackett Dorothy Estate	6,043	MacAskill WG & I	24,889	Myer Dame Merlyn Estate	13,405
Hadfield RCS Estate	106,473	Mace Nina May Estate	269,131	Myer Pam Sallmann Foundation	27,139
Hadley AN Estate	1,062,262	MacDonald Elsie May Estate	167,918	Nevill Melanie Joy	74,808
Hamilton M Estate	42,505	Macindoe Jock & Diana Fund	37,333	Newton Evelyn	17,389
Harrap FM Estate	125,797	MacIntosh Elizabeth H Estate	22,421	Newton EM Estate	16,903
Harrap LM Estate	27,126	Mackie-Smith CM Estate	341,043	Nicholas Harold George Estate	296,763
*Harris Alan Scholarship Fund	84,345	Macleay The Lillian & Kenneth Bequest	390,829	Norins Leslie Fund	253,485
Harris John D & Lyla Foundation	798,035	Mahoney Florence Cancer Fund	157,277	Norton M Estate	787,280
Hartlett K Estate	917,080	Malcolm Phyllis Elizabeth Estate	252,031	*Nossal Sir Gustav Fund	291,848
Haydon Michael JM Memorial Fund	56,111	Maloney Kathleen Margaret Estate	20,744	Nottingham SG Estate	32,185
Hearse JD	1,115,861	Mann David Memorial Research Fund	43,107	Palmer DE Estate	24,290
Hemphill Olive May Estate	61,795	Mansfield Trevor Geoffrey Estate	9,265	Palmer Ethel Fund	292,490
Henderson AN Estate	23,563	Marguccio R Estate	12,444	Parker Barbara Memorial Fund	66,669
Henderson Joan Estate	120,432	Mariner Barry Leonard Estate	57,501	Parker Mabel V Estate	75,105
Henry MA Estate	592,180	McArthur Nellie M Estate	98,987	Parsons Kathleen FB Estate	38,024
Heron Thelma Hope Estate	87,899	McCooke Miss MH Estate	312,622	Patten Ralph & ETTY Bequest	282,893
Highton GAN Estate	505,186	McDonald Charles Thomas	16,966	Patterson Gerard A Estate	17,779
Hill Ramon Bruce Estate	142,244	McDougall Phyllis Mable Estate	117,630	Paulin Leukaemia Fund	205,150
Hind Ruby F Estate	30,686	McGhee ME Estate	67,761	Paulin SC Estate	25,765
Hocking Helen Estate	335,758	McGregor Amy VK Estate	114,588	Payne Henry and Charlotte Fund	886,671
Holmes EM Estate	75,085	McGregor Elvira Ruth Estate	21,115	Peterson Vera Estate	531,472
Hope Irene Estate	395,192	McGregor KB Estate	165,670	Petley Francis Estate	141,182
Hooper Nancy Hilda	104,353	McKinnon Sheila May Estate	41,777	Pierce John Lindsay Estate	1,133,842
Hosier MM Estate	140,867	McLean Ada Myee Dutton Estate	492,789	Pietsch Dr CH Fund	189,193
Hurry M Estate	28,504	McLennan B Estate	88,996	Porter Florence JA Estate	121,573
Inglis Dulcie M Estate	105,477	McNab M Estate	22,482	Prater Mabel Edward	12,904
Ironside WH Estate	62,222	McNeill Sir James Fund	19,356	Pritchard DG Estate	31,941
Jackson Catherine M Estate	179,683	McRorie Ruby A Estate	72,778	Pyke MA Estate	14,933
Johnson Daphne Adele Estate	7,326	Menagh Thelma Marie Estate	16,934	Qualtrough Research Fund	2,317,071
Johnson Ethel Grace Estate	42,610	Miller Lorna May Estate	812,174	Rae Olive Estate	1,039,184
Johnson Sydney Robert Estate	48,613	Miller MA Estate	58,246	Reeves Jessie Estate	58,352
Johnstone Reginald Ben Estate	12,975	Miller Violet Isabella Estate	67,782	Reid John T Charitable Trusts	6,406,717
Judd Anita Estate	56,081	Minney DW & NR Fund	12,444	Reiser Erwin Estate	24,889
Kayler-Thomson Marion Estate	48,561	Mitchell, Bettye Victoria Fund	4,083,913	Richardson DLK Estate	79,581
Keating L Estate	1,265,057	Mitchell Doris Georgina Mildred	62,222	Ricker EM Fund	71,604
Keats LCA Estate	1,196,224	Mitchell G Fund	48,231	Roberts JI Charitable Fund	7,591
Kellock TH Estate	1,685,815	Moden FHW Estate	119,944	Robertson AT Estate	12,444
Kendall Nanyce Douglas	43,986	Moody E Vaughan Estate	1,188,860	Rose Norma J Estate	12,580
Kerr HM Estate	101,247	Moon Ida Alice Estate	46,989	Ruppel FE Estate	144,255
King DM Estate	38,604	Mooney Carmel Mary, Estate of	156,398	Salemann CW Estate	12,444
Knight FF Estate	28,185	Moore Phyllis Estate	12,444	Sallmann L & E Memorial Fund	24,290
Lang John Murray Estate	692,897	Morgan DM Estate	366,979	Santos TS Estate	805,927
Lanteri Gwen Estate	1,453,567	Morris Foundation of Medical Research	157,293	Schack Elsie Edith Estate	117,764
Larard DV Estate	11,982	Moss EE Estate	240,066	Scott Annie May Estate	153,493
Leckie Winifred Estate	201,116	Muller FG Estate	17,768	Sharp II Estate	19,563
Lilford VM Estate	443,520	Murray Alan Ambrose Estate	31,990	Shaw Eileen Coryn Estate	21,791
Lins RD Estate	24,889	Murray Gwendoline Mary Fund	1,109,696	Shelton Edgar Estate	763,837
Little Mabel B Estate	60,714			Sidwell OB Estate	1,795,128
Lyddon Pauline M Estate	1,116,300			Skinner Phyllis Maye Estate	78,888

Smith Elsie Violet Estate	15,898
Smorgon Robert & Jack Family Foundation	350,310
Snow Freda Estate	56,596
Spence Frank Meldrum	32,260
Spencer Stanley L Estate	17,206
Stanbrough AE Estate	99,203
Stephens L Estate	103,223
Stevens SA Estate	117,585
Stevenson Dame Hilda Estate	84,207
Stewardson Family Trust	84,769
Stewart Jean Elma	79,287
Swingler Maxwell & Mary Bequests	2,381,597
Sydserrf Charles SB Estate	15,655
Syme David Farnell Estate	909,447
Talbot P Estate	388,522
Taws M Estate	124,444
Taws GE Arthritis Fund	23,506
Taylor Sarah McQuillan Estate	57,923
Thomas JC Estate	286,478
Thompson O Estate	27,564
Thorpe Doris EB	84,981
Tink RM Estate	288,932
Tinkler VF Estate	55,797
Tomasetti John T Estate	395,469
Thompson LW Estate	2,057,785
Tressider Edith Kathleen Estate	510,496
Trezise KW Estate	17,934
Tropical Diseases Fund	87,356
Turnbull JG Estate	73,145
Van Leeuwen GH Estate	442,122
Vincent-Smith IG Fund	178,443
Vogel Herta & FB Estate	12,580
Walker CM Estate	205,046
Walker Dorothy Hope Estate	2,191,456
Wallace Nancy Jeanie Estate	194,266
Walsh Dr William Butler Memorial Fund	801,817
Walter Ailsa Amy Mary Estate	151,761
Warnock EMC nee Riddle Estate	1,589,240
Watson MR Estate	14,241
Waxman Elizabeth H Estate	68,584
Wedge Erica Estate	314,571
Webb NJ Estate	252,606
Weeks Thelma Estate	12,904
Wekwerth Hilda Frances Estate	30,846
West John James Estate	95,419
Westcott Ita E Estate	20,033
White Morris G Estate	40,009
Wicks LR Estate	12,444

Williams AM Estate	82,422
Williams Irene E Estate	299,290
Wilson DE Estate	77,871
Wilson MML Estate	87,629
Wilson NF Estate	12,444
Wilson V M (Sunny) Estate	128,355
Wolstonecroft WW Estate	35,535
Wright Lynette Oreti Estate	180,276
Zillman Dudley V Estate	50,019

Fellowship and Scholarship Funds

Carty EM	322,574
Mackay Dr Ian Fellowship Fund	258,536
Mathison G C Research Scholarship	161,070
Moffatt Edith Scholarship Fund	1,902,361
JHA Munro Foundation	738,731
*Paddy Pearl Fund	1,182,810
Skea Lyndal and Jean Leukaemia Fund	891,837
Syme Colin Fellowship Fund	1,797,009
Wilson Ed Memorial Fellowship	1,548,150

Other Funds

*Anonymous Seminar Award	16,587
Balderstone Award	32,729
Gideon Goldstein Fund	1,106,755
*Bev Gray Scholarship Fund	13,373
Mckay C N Fund	245,351

The following Estates in which the institute had an interest, were managed during the year by Trustees. (Income received by the institute in the financial year is treated similarly to donations and bequests):

The Baldy Trust Fund	
CH Boden Memorial Trust	
John Frederick Bransden Memorial Fund	
Frank Broadhurst Estate	
Thomas, Annie & Doris Burgess Charity Trust	
George Collie Estate	
Miss EM Drummond Estate	
Frederick and Winifred Grassick Memorial Fund	
The Helpman Family Foundation	
The Mackie Bequest	
Irene and Ronald MacDonald Foundation	
Albert H Maggs Charitable Trust	
Mrs AM Reilly	
Miss ML Reilly	
The Stang Bequest	
Emily Vera Winder Estate	
Florence Mary Young Charitable Trust	

Leadership Fund

The Leadership Fund was established in honour of Professors Gustav Nossal, Donald Metcalf, Jacques Miller and Suzanne Cory to provide named Fellowships to nurture the development of outstanding young scientists with the potential to be future leaders of biomedical research.

The Leadership Fund at 30 June 2014 included the following permanent funds (\$10,000 and over):

Sir Harold Dew and Family Estate	4,493,039
Chugai Pharmaceutical Co Ltd	935,212
The Ian Potter Foundation	935,212
L M Archibald Estate	623,475
Albert H Maggs Charitable Trust	609,856
Helen Macpherson Smith Trust	374,085
Anonymous	311,737
Anonymous	311,737
E Vaughan Moody Estate	311,737
The Broken Hill Proprietary Company Limited	311,737
J B Were & Son Charitable Fund	311,737
Eunice L Lambert Estate	306,660
Betty Eunice Stephens Estate	209,954
National Australia Bank	187,043
Victor Smorgon Charitable Fund	137,165
The Sidney Myer Fund	112,226
Leslie D W Stewart Estate	91,753
Joe White Bequest	84,793
Krongold Foundation Pty Limited	62,348
Professor Sir Gustav Nossal	62,348
The Scobie and Claire MacKinnon Trust	62,348
The R & J Law-Smith Gift	37,408
National Mutual Holdings Limited	37,408
Pacific Dunlop Ltd	37,408
Sheila R White Estate	36,885
Coles Myer Ltd	31,173
James Kirby Foundation	31,173
Arthur Andersen & Co Foundation	24,938
Arthur Robinson & Hedderwicks	24,938
H B Kay Estate	12,470
Stephelle Pty Ltd	12,470
C M Walter	12,470

100 years of discoveries for humanity

In 2015 Australia's oldest medical research institute, the Walter and Eliza Hall Institute, celebrates 100 years of discoveries for humanity.

Over the past 100 years, more than 20 million people around the world have benefited from our discoveries. These discoveries included improved cancer treatments, protecting people against influenza and reducing death from snakebite.

Today more than 100 clinical trials are underway based on institute discoveries, including anti-cancer drugs to treat leukaemia and vaccines for coeliac disease, type 1 diabetes and malaria.

A shared success story

For 100 years our success has been a shared journey supported by thousands of donors, many of whom have made gifts to the institute in their will. It is these gifts that have funded innovative blue-sky research, the challenging initial phase of drug discovery and the early work of our most promising young scientists.

Together we can ensure future generations of Australians continue to benefit from world-class medical research and treatments.



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CANCER

IMMUNE DISORDERS

INFECTIOUS DISEASE

