QIMR Berghofer
Medical Research Institute

THE FUTURE OF HEALTH

2017– 2018 ANNUAL REPORT

Acknowledgement of country

QIMR Berghofer acknowledges the Turrbal and Yuggerah People as the traditional owners of the land where its buildings are located. The Institute also acknowledges the important role of Aboriginal and Torres Strait Islander people and their communities where research is conducted.

Communication objectives

The QIMR Berghofer 2017–2018 annual report provides a record of the Institute's performance in the 2017–2018 financial year and audited financial statements. All achievements are documented against the goals and corresponding key performance indicators of the Institute's Strategic Plan (2017–2021).

To provide your feedback or request copies of this annual report, contact the Department of External Relations, QIMR Berghofer, by telephoning +61 7 3362 0222 or by emailing enquiries@qimrberghofer.edu.au.

The report is also available online at www.qimrberghofer.edu.au/about-us/annual-reports.

QIMR Berghofer is committed to providing accessible services to people from culturally and linguistically diverse backgrounds. If you have difficulty understanding the annual report, contact the Department of External Relations, QIMR Berghofer, by telephoning +61 7 3362 0222 to arrange an interpreter to effectively communicate the report to you.

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ISSN 1839-1877 (print)
ISSN 2206-4915 (online)

LETTER OF COMPLIANCE

QIMR Berghofer
Medical Research Institute

28 August 2018

The Honourable Dr Steven Miles MP
Minister for Health and Minister for Ambulance Services
PO Box 48
BRISBANE QLD 4001

Dear Minister

I am pleased to submit for presentation to the Parliament the Annual Report 2017–2018 and financial statements for the Council of the Queensland Institute of Medical Research (trading as QIMR Berghofer Medical Research Institute).

I certify that this Annual Report complies with:

- the prescribed requirements of the *Financial Accountability Act 2009* and the *Financial and Performance Management Standard 2009*, and
- the detailed requirements set out in the *Annual Report requirements for Queensland Government agencies*.

A checklist outlining the annual reporting requirements can be found on the final pages of this Annual Report or accessed at the Institute's website:

www.qimrberghofer.edu.au/annualreport

Yours sincerely

Dr Douglas McTaggart
Chair
QIMR Berghofer Council

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HIGHLIGHTS

Cancer

- Developed an online risk predictor for people aged 40 and over to predict their risk of developing melanoma in the next 3.5 years
- Discovered that 38 per cent of cancer deaths in Australia are potentially preventable, mostly through lifestyle changes
- Co-led the world's largest genetic study of breast cancer, identifying 72 new genetic markers that increase a woman's risk of developing the disease
- Worked with international collaborators on a new treatment that could extend the lives of patients with aggressive breast cancer, and continued work on a genetic test that would ensure the treatment was only given to patients it would benefit
- Published one of the world's first transcriptome-wide association studies to examine cancer risk, discovering at least 12 new genes that increase breast cancer risk
- Found that Queenslanders who regularly take statins to lower their cholesterol have less chance of developing an ulcerated melanoma, which has significantly lower survival rates than regular melanoma
- Discovered a potential new biomarker for testing how advanced prostate cancer is and whether it is responding to treatment
- Found that the cost of diagnosing and treating melanoma in Australia has increased to $201 million per year, and also found that regular sunscreen use by all Australians could drive down melanoma rates by one third by 2031
- Conducted an analysis of the financial burden faced by Queensland cancer patients, finding that breast and prostate cancer patients paid the highest out-of-pocket costs
- Together with collaborators, successfully designed tiny nanorobots, made of DNA and protein, that can be targeted directly at tumours to stop them from growing
- Discovered another way that cancers protect themselves from the immune system, which allows them to grow and spread, paving the way for an antibody to be developed to stop the tumour from spreading.

Infectious diseases

- Designed a safe clinical trial model to test the effectiveness of drugs and vaccines that aim to stop the spread of malaria parasites from humans to mosquitoes
- Discovered that arthritis caused by mosquito-borne viruses is worse in the limbs than the rest of the body because they are generally cooler in temperature
- Calculated the costs of the Asian Tiger Mosquito taking hold in Brisbane and found that quickly and thoroughly eradicating the species would be far more cost effective than allowing it to become established
- Demonstrated that wearing masks is effective in reducing cough aerosols, which have the potential to spread lung infections among people with cystic fibrosis.

Chronic disorders

- Led a major, international study, which identified 136 genetic risk factors that explain why some people suffer from asthma, hay fever and eczema
- Obtained regulatory approval from the US Food and Drug Administration for a cellular immunotherapy treatment for multiple sclerosis, developed and manufactured at the Institute, to enter into clinical trials in the United States
- Discovered why children who were hospitalised with a severe viral respiratory infection as babies are more likely to develop asthma
- Discovered, for the first time, the mechanism that causes severe liver disease in some children with cystic fibrosis, potentially paving the way for a treatment to be developed.

Mental health

- Started imaging the brains of participants in a major, five-year study that is investigating how we can detect Alzheimer's disease before symptoms develop
- Continued to run the Australian arm of the world's largest genetic study of depression, so far collecting more than 15 000 DNA samples from participants and preparing them for genetic testing
- Developed a new prognostic test for developmental outcomes in very premature babies
- Analysed data from 58 cohorts worldwide and identified 251 gene regions that influence the structure of the human cortex, as well as genetic correlations with a range of psychiatric and neurological disorders.

Associate Professors Juliet French and Stacey Edwards work in the laboratory.

VISION AND VALUES

Vision

To be a world-renowned medical research institution that translates discoveries into clinical practice.

Values

In pursuit of its vision, the Institute is committed to:

- Translation—the ability to bring research discoveries from the laboratory bench to the hospital bedside
- Scientific quality—delivering high-quality research aimed at preventing and curing disease throughout Queensland, Australia and the world
- Commercial consequence—connecting with industry to boost health outcomes and economic benefits
- Societal impacts—demonstrating the value in improving health and quality of life by addressing the major health needs of society
- International reputation—attracting researchers, funding and collaborators from around the world to cement international recognition
- Community engagement—working with the community to address health issues affecting their wellbeing through community education and fundraising programs.

MESSAGE FROM OUR PATRON

GOVERNMENT HOUSE
QUEENSLAND

Message from the Governor of Queensland

I am honoured to recognise another exceptional year for the QIMR Berghofer Medical Research Institute. I have been fortunate to enjoy a long association with this highly successful and innovative world leading centre – as a former Chairman of the Council of the Queensland Institute of Medical Research, as Patron of the Institute, as Governor, and of course, as a proud Queenslander.

In 2017-2018 the Institute continued to conduct research that will help to improve the health of people not only in Queensland, but across the country. Researchers once again delivered practical, relevant results with a focus on melanoma and the benefits of regular sunscreen use. A landmark Sunscreen Summit will set new standards in educating Australians and improving public perceptions of how to prevent skin cancer.

QIMR Berghofer also collaborated with Chinese scientists, developing new ways to target tumours and stop them growing. This potentially life-saving work further enhances Queensland's reputation as a leader in medical research and biotechnology, complementing research which will help shape policy, inform our State's decision makers, and provide significant economic value.

It is my pleasure to congratulate everyone involved, including the Council, Director, management, scientists and support staff who have all played their part in impacting so many lives. Thank you also to the State and Federal governments for their continued support, along with the ongoing generosity of the Institute's private benefactors who are helping to write further chapters in the QIMR Berghofer success story.

His Excellency the Honourable Paul de Jersey AC
Governor of Queensland

CHAIR'S REVIEW

It is with great pride that I report on the achievements of QIMR Berghofer Medical Research Institute in 2017–2018.

Since the Institute's establishment 73 years ago, our scientists have continued every year to break new ground in improving the understanding, diagnosis, prevention and treatment of disease. The last year has been no exception.

- Tragically, more than 14 300 Australians are expected to be diagnosed with melanoma this year. Of those, 1905 people are expected to die. That burden is felt most here in Queensland where we hold the unenviable title of having the world's highest melanoma rates. We know that early detection of melanoma not only saves lives – it also saves the community a lot of money in treatment costs. This year, our researchers launched an online test to predict the risk, for people aged 40 and over, of developing a melanoma in the next 3.5 years. The test takes only 90 seconds to complete and is about 70 per cent accurate, which is much higher than similar tests used to predict breast and bowel cancer risk. Since we launched the online melanoma risk predictor in March, at least two members of the community were prompted by their results to get a skin check, only to receive early diagnoses of melanoma. This is yet another example of QIMR Berghofer's research having real consequences for the community. As of 30 June nearly 190 000 people had completed the online test. We hope that in the years ahead many more melanomas will be caught in their earliest stages thanks to this innovative and world-class research.

- Due to the commitment, passion and innovation of successive generations of scientists, QIMR Berghofer has consistently pushed the boundaries of scientific knowledge and led the way in new fields of research. This includes brain imaging technology, which is now a major plank in our mental health research. Our researchers have started imaging the brains of participants in the Prospective Imaging Study of Ageing (PISA). This is a major, five-year study investigating how we can detect Alzheimer's disease before symptoms develop so that treatment can start before the brain tissue is substantially damaged. With our ageing population, this study will be crucial in understanding, diagnosing and treating Alzheimer's disease into the future.

- Nearly 4.5 million Australians live with the burden of hay fever, while 2.5 million suffer from asthma. In 2017–2018, our scientists led a major, international study that identified more than 100 genetic markers that explain why some people suffer from asthma, hay fever and eczema. The study tells us which specific genes, when not working properly, cause allergic conditions. This knowledge will help us understand why allergies develop in the first place and, potentially, gives us new clues on how they could be prevented or treated.

- In our infectious diseases research program, we calculated the costs of the Asian Tiger Mosquito taking hold in Brisbane and found that quickly and thoroughly eradicating the species would be far more cost effective than allowing it to become established. The Asian Tiger Mosquito is the most invasive mosquito in the world and can transmit more than 20 disease-causing viruses. While authorities have so far stopped it from spreading from the Torres Strait to mainland Australia, it can survive in cool climates, meaning it could become established in south-east Queensland if took hold on the mainland. This important economic analysis will help to guide future planning by local and state governments.

Within the field of personalised medicine, our researchers are leading the charge globally in the cutting-edge area of genomics. By discovering what patterns of broken genes cause certain cancers to develop, with time, we will be able to find or develop drugs that repair those broken genes. This will save patients from wasting time on uniform treatments (like chemotherapy) that have terrible side effects and may have little chance of working for them. To this end, our start-up company genomiQa Pty Ltd offers whole genome analysis of cancer data for hospitals, clinicians and companies.

In 2017–2018, we also continued to collaborate with international biopharmaceutical companies to develop new immunotherapies for cancer and other diseases. A cellular immunotherapy treatment for multiple sclerosis – which was developed and manufactured at QIMR Berghofer and has been licensed by US-based biopharmaceutical company Atara Biotherapeutics, Inc. – has been given regulatory approval to enter into clinical trials in the United States. The cellular therapies for these international clinical trials will continue to be manufactured at our cell manufacturing facility, Q-Gen Cell Therapeutics.

Our ultimate goal is always translating our research so it reaches the hospital bedside. We continued that quest with success in the last year, leading 22 clinical trials of new treatments and vaccines. These included seven trials of new candidate drugs or vaccines for malaria using the 'human challenge model' pioneered by Professor James McCarthy. These trials involve infecting healthy volunteers with malaria to speed up the testing and development of new antimalarial drugs. With an estimated 445 000 lives lost to malaria in 2016, this research has global implications.

As Queensland's statutory medical research institute, we take very seriously our responsibility to share our research with the community, including across regional Queensland. This year we again played a big role in World Science Festival Brisbane and its regional program of events in Gladstone, Chinchilla and Toowoomba.

As always, we are grateful to the Queensland Government for their continued support, which allows us to attract crucial research grants. But we also rely heavily on the support of our fundraisers and donors. While it seems unfair to single out any individuals, I would like to acknowledge Dylan and Lawson Reid, who returned to the Institute in late 2017 after a 2.5 year round-the-world motorbike ride to raise money for depression research. Their extraordinary effort was a fitting tribute to their sister Heidi, who lost her life to suicide in 2011. Thanks to Dylan and Lawson, our efforts to develop an imaging-based diagnostic test for depression will continue.

I also take this opportunity to thank the Australian Cancer Research Foundation, which generously awarded QIMR Berghofer a $1.75 million grant in 2017. This vital funding will expand our capacity to develop, trial and produce cancer immunotherapies by establishing the ACRF Centre for Advanced Cellular Immunotherapy.

And of course, I thank our biggest philanthropic donor, Mr Clive Berghofer AM, for his continued support. He, along with all of our extremely generous donors, is helping us to save lives and improve health.

Dr Douglas McTaggart
Chair, QIMR Berghofer Council

DIRECTOR AND CEO'S REVIEW

2017–2018 has been another highly successful year for QIMR Berghofer. We have continued to produce world-leading research with direct and immediate benefits for human health.

Nearly 140 000 Australians are expected to be diagnosed with cancer this year and almost 50 000 people are expected to die from it. We know that, tragically, many of those deaths are preventable. For the first time, our Population Health Department has put a figure on this, determining that 38 per cent of cancer deaths in Australia each year are potentially preventable. This means the deaths of about 16 700 Australians each year potentially could be avoided, mostly through lifestyle changes like quitting smoking and improving diets. We hope that by publicising these sobering statistics, we have encouraged some Queenslanders to make positive changes to their lifestyles. This meticulously conducted research will also help to inform health policy and planning.

Also within our Cancer Research Program, our scientists co-led the world's largest genetic study of breast cancer. The major, international investigation uncovered 72 new genetic variants that increase the risk of the disease. This massive research effort should lead to better breast cancer screening in future, and once again shows that QIMR Berghofer is home to some of the world's leading geneticists.

Those genetics researchers have continued to recruit participants into the Australian arm of the world's largest study of clinical depression. As at 30 June, more than 15 000 Australians have provided DNA samples for the study. Our teams are now hard at work preparing those samples for genetic testing. This work will, in future, help to explain why certain people experience depression, and why some people respond to certain treatments while others do not.

QIMR Berghofer was established in 1945 to research diseases of relevance to northern Australia. Today, our researchers are as committed as ever to researching tropical diseases that occur in Queensland and the mosquitoes that might transmit them. Our scientists have developed a new strain of *Wolbachia*-infected *Aedes aegypti*, the mosquito that is the major source of dengue, chikungunya and Zika virus infection globally. This strain is genetically identical to mosquitoes found in the wild, but is very bad at transmitting viruses, so is safe to release. Limited trials using the *Wolbachia*-infected mosquitoes in North Queensland have shown that we could use the

strain to overwhelm and eliminate local mosquito populations. Given that *Aedes aegypti* is now within 200km of Brisbane, this could be an important tool for eradicating the species, should it become established in the capital in future. You can read about many more of our research outcomes in the Research achievements section of this report.

2017–2018 saw the number of research groups at QIMR Berghofer grow from 58 to 65. This growth has included new laboratories researching the gut and immunity, precision medicine and organoid research. We are tremendously proud that several of our post-doctoral researchers have established their own research laboratories in the last year, including in clinical brain networks, brain modelling and translational human immunology.

One of QIMR Berghofer's greatest strengths is the breadth and depth of expertise among our scientists. These wide-ranging fields of research make the Institute perfect for collaborative research projects that would not be possible without the input and expertise of colleagues. To encourage even more collaboration, we have this year appointed a Coordinator to each of our four research programs (cancer, infectious diseases, chronic disorders and mental health). These highly respected scientists will look for new opportunities for our researchers to work together and to break new scientific ground.

One of the key measures of a medical research institute's success is the number of scientific papers it publishes. In 2017, QIMR Berghofer published more than 864 papers and our research was cited more than 39 000 times worldwide.

Our focus is firmly on translating that knowledge into the clinic. One of the sources of our translational research is Q-Pharm Pty Ltd, an early-phase clinical trials facility located at the Institute. This year, we have undertaken a major refurbishment and expansion of its premises, which has seen Q-Pharm grow from 38 to 62 beds, making it the second largest clinical trial facility in Australia. In its new state-of-the-art premises, Q-Pharm will attract even more global business, boosting Queensland's biopharmaceutical sector and helping to bring new medical treatments to market.

It has been my great pleasure to lead QIMR Berghofer in 2017–2018. It is a Queensland icon that is making an impact on the field of medical research globally. I look forward with great excitement and anticipation to making more life-changing discoveries in the next year.

Professor Frank Gannon
Director and CEO, QIMR Berghofer Medical Research Institute

OVERVIEW

QIMR Berghofer is a translational research institute where research develops from the laboratory bench through to the patient's bedside.

The Institute was established in 1945 as a statutory body under the *Queensland Institute of Medical Research Act 1945*. Originally set up to investigate the tropical diseases of Queensland and northern Australia, it had the very humblest beginnings, starting operations in a disused World War II army hut in Brisbane's Victoria Park. Since then, QIMR Berghofer has established itself as a world leader in scientific research while retaining its proud role as Queensland's own medical research institute.

QIMR Berghofer focuses on the research areas of cancer, infectious diseases, mental health and chronic disorders. It also has a long-established indigenous research program. The Institute's priority is to translate research from the laboratory bench to the hospital bedside and the broader community in order to improve human health. It does that by developing new and better prevention strategies, diagnostic tools and treatments. In conducting its research, the Institute supports different Queensland scientific and medical sectors, and promotes and develops links with industry.

Based next to the Royal Brisbane and Women's Hospital at Herston, QIMR Berghofer is home to approximately 900 scientists, support staff and students. It is also home to an early-phase clinical trial facility and a TGA-approved facility for the manufacture of cellular immunotherapies.

Over its 73-year history, QIMR Berghofer has led global advances in the understanding, prevention, diagnosis and treatment of some of the world's most deadly and debilitating diseases. The Institute is recognised as a world leader in research into the cutting-edge fields of immunotherapy and genomics. It also has an international reputation for its research into skin cancer, malaria and other mosquito-borne diseases.

GOVERNANCE

Basis of authority

The Institute was established as a statutory body under the *Queensland Institute of Medical Research Act 1945*. Controlled entities have been established under the authority of the State Treasurer and Minister for Health and Minister for Ambulance Services in accordance with the *Statutory Bodies Financial Arrangements Act 1982.*

Governing body

The Council of the Queensland Institute of Medical Research

In accordance with Part 2, Section 4A of the *Queensland Institute of Medical Research Act 1945*, QIMR Berghofer is controlled and governed by The Council of the Queensland Institute of Medical Research (The Council). Under the *Statutory Bodies Financial Arrangements Act 1982*, the Council is a statutory body.

Under the *Queensland Institute of Medical Research Act 1945*, the Council's role is to:

- control and manage the Institute
- raise and accept monies for the purposes of the Institute
- invest monies raised or accepted by the Council for the purposes of the Institute
- invest monies derived from any property or other invested monies of the Council for the purposes of the Institute.

The Council met seven times in the 2017–2018 reporting year.

Dr Douglas McTaggart

Council Chair

BEc (Hons) (ANU) MA PhD (Chicago) Hon DUniv (QUT) FAICD SF Fin

Dr Douglas McTaggart was appointed Chair of Council on 27 November 2014. He brings strong leadership to the Council of QIMR Berghofer, having held various senior positions in the public and private sectors as well as on industry bodies and public interest groups.

He is a director of the Suncorp Group and Chairman of the company's audit committee. He is also the Chairman of Spark Infrastructure and Suncentral Maroochydore, as well as being a member of the Australian National University Council. In March 2012 Dr McTaggart was appointed to the Queensland Government's Independent Commission of Audit and as Chairman of the Public Service Commission, a position he retired from in 2015. He was a member of the Prime Minister's Expert Advisory Panel for the White Paper on Reform of the Federation and has held positions on – including chairing – various industry representative bodies. He continues to serve in advisory roles to governments.

Dr McTaggart has broad experience in financial markets and funds management. He was the Chief Executive of QIC Limited for 14 years until his retirement in June 2012. Prior to joining QIC, he was the Under Treasurer and Under Secretary of the Queensland Department of Treasury. He has also had a distinguished academic career as Professor of Economics and Associate Dean at Bond University.

Dr McTaggart also chairs the QIMR Berghofer Investment Committee, the Executive Employment and Remuneration Committee and the Commercialisation Committee and is a member of the Finance and Audit Committee.

Mr Christopher Coyne

Deputy Chair

Mr Christopher Coyne is a solicitor of the Supreme Court of Queensland and an accredited specialist in the field of commercial litigation, specialising in insurance law, health law, corporate governance and risk management. Following his admission as a solicitor in 1979, he practised law in Brisbane and was a partner in the national law firm Clayton Utz from 1984 until 2004.

Mr Coyne now practises on his own account. He is the Vice President of the Council of the Queensland Law Society. He is also a Director of the Incorporated Council of Law Reporting for the State of Queensland, a past President of the Medico-Legal Society of Queensland and the Australian Insurance Law Association and a former legal member of the Australian Health Ethics Committee.

Mr Coyne is a member of the QIMR Berghofer Executive Employment and Remuneration Committee and a Director of the board of Q-Pharm Pty Ltd (a wholly owned subsidiary of QIMR Berghofer).

Emeritus Professor John de Jersey

AM BSc (Hons 1) PhD

Emeritus Professor John de Jersey enjoyed a long career in academia at The University of Queensland until his retirement in 2007. Prior to 1971, he obtained his PhD from the university and undertook research and teaching at the University of Sydney and the Pennsylvania State University. As well as maintaining an active research program funded largely by the Australian Research Council and the NHMRC, Emeritus Professor de Jersey served as head of UQ's Department of Biochemistry, head of the School of Molecular and Microbial Sciences and Deputy Dean of the Faculty of Biological and Chemical Sciences. In addition, he served for several years as a member of the UQ Senate, elected by the academic board.

He was actively involved in the Australian Society for Biochemistry and Molecular Biology for many years and served as its President between 2001 and 2002. He was also the Secretary-General of the Federation of Asian and Oceanian Societies of Biochemistry and Molecular Biology from 2006 until 2011.

Emeritus Professor de Jersey has undertaken various research projects in protein chemistry and enzymology and is currently part of a team seeking to develop biotechnological uses for components of Australian snake venoms.

Emeritus Professor de Jersey is a member of the QIMR Berghofer Appointments and Promotions Committee.

Mr Ian Fraser

BComm FCA FAICD

Mr Ian Fraser is a chartered accountant practising as a non-executive company director. He has more than 45 years' experience as a business and accounting professional, including 10 years as a director of listed and unlisted public companies and 27 years as a partner with KPMG. He retired as an audit and corporate advisory partner in 2004.

Mr Fraser is Chair of the QIMR Berghofer Finance and Audit Committee and a member of the QIMR Berghofer Investment Committee.

Associate Professor Paula Marlton

MB BS (Hons I) FRACP FRCPA

Associate Professor Paula Marlton is the head of Leukaemia and Lymphoma at the Princess Alexandra Hospital, where she is also the Deputy Director of Haematology. Her previous appointments include three years at the MD Anderson Cancer Centre in Houston and a recent placement at Memorial Sloan Kettering Cancer Centre in New York. Associate Professor Marlton has extensive experience in clinical research, including as a principal investigator for national and international clinical trials and as a supervisor of translational research integrated with trials. She was the founding Chair of the Australasian Leukaemia and Lymphoma Group (ALLG) Laboratory Science Committee. She also served on the ALLG Executive for six years, and established and directed the ALLG Tissue Bank for 15 years.

Associate Professor Marlton was Medical Advisor and board member of the Leukaemia Foundation Queensland for 13 years. She is a member of various government and specialist medical college advisory committees and several disease and drug advisory boards. She also holds a wide range of clinical and academic service roles.

Associate Professor Marlton has served as a member of the QIMR Berghofer Council since 2006 and is a member of the Appointments and Promotions Committee.

Professor Alan Pettigrew

BSc (Hons) PhD FAICD

Professor Alan Pettigrew has held senior academic and executive appointments at the Universities of Sydney, Queensland and New South Wales. He was the Vice-Chancellor and CEO of the University of New England from 2006 to 2009. From 2001 to 2005 Professor Pettigrew was the inaugural CEO of the National Health and Medical Research Council (NHMRC) of Australia.

Professor Pettigrew has served on many Australian Government and other committees, including an Advisory Committee for the Australian Law Reform Commission (2003–2004) and the Board of the Australian Universities Quality Agency (AUQA) Ltd (2006–2010).

Professor Pettigrew served on the Cooperative Research Centres Committee for five years until 2015. He has previously been a member of the Australian Capital Territory selection panel for the General Sir John Monash Foundation and an Adjunct Professor at the Australian National University. He was also an adviser to the Chief Scientist of Australia between 2010 and 2014 and has actively contributed to national policy discussions on research and higher education. Professor Pettigrew was Chair of the Board of the Western Australian Data Linkage Infrastructure Project from 2014 until its completion in 2017.

Professor Pettigrew has served as a consultant on international higher education and research training projects supported by the World Bank, the OECD and the Swedish International Development Agency. He has served as a consultant to the NHMRC, the Australian Research Council and 11 Australian universities, advising them on leadership, management and research strategy. Professor Pettigrew participates in and leads various research leadership training programs offered by the L.H. Martin Institute at the University of Melbourne in national and international settings.

Professor Pettigrew is currently a Professorial Fellow of the L.H. Martin Institute and is Chair of the Board of the Illawarra Health and Medical Research Institute. In January 2017, he was appointed as the Transition Manager in the Faculty of Medicine and Health at the University of Sydney. In December 2017, he was appointed as Acting Executive Dean of the Faculty until June 2018.

Professor Pettigrew is Chair of the QIMR Berghofer Appointments and Promotions Committee and a member of the Executive Employment and Remuneration Committee.

Professor John Shine AC

AC BSc (Hons 1) PhD DSc (Honoris Causa) PresAA

Professor John Shine was the Executive Director of the Garvan Institute of Medical Research from 1990 until the end of 2011. He is a Professor of Medicine and Professor of Molecular Biology at the University of NSW and is the current Chairman of CSL Limited. He is a past Chairman of the National Health and Medical Research Council and a past president of the Australian Genome Research Facility. In 2018, Professor Shine was elected President of the Australian Academy of Science. Until 2011, he was a member of the Prime Minister's Science, Engineering and Innovation Council. Until mid-2016, he was President of the Museum of Applied Arts and Science (Powerhouse Museum and Sydney Observatory).

Professor Shine obtained his PhD from the Australian National University in 1975. From 1975 to 1978, at the University of California, San Francisco, he was instrumental in developing many of the techniques of genetic engineering. He was a central figure in the cloning of the insulin and growth hormone genes and was the first person to clone a human gene. He also determined the first sequence responsible for replication of a cancer-causing virus.

In early 1984, Professor Shine was appointed Director of Research of a newly formed biotech company, California Biotechnology Inc. He was appointed President of the company in 1986 and guided it from a staff of some 15 scientists in 1984 to more than 200 in 1987.

In 2010, Professor Shine was awarded the Prime Minister's Prize for Science, the nation's highest scientific award. He was made a Companion (AC) in the General Division of the Order of Australia in the Queen's Birthday Honours List 2017 for eminent service to medical research.

Professor Shine is a member of the QIMR Berghofer Appointments and Promotions Committee and the Commercialisation Committee.

Mr Michael Sargent

Mr Michael Sargent has been a Brisbane-based financial operative with more than 45 years' experience working with some of the world's leading financial groups. During this time, his experience covered activities in stockbroking, merchant banking, financial planning and money market operations.

Mr Sargent was a Fellow of the Certified Practicing Accountants (FCPA) and a Fellow of the Securities Institute of Australia (FSIA), now known as Finsia. He served as the Queensland President and Australian Vice-President of the Institute. Mr Sargent is an active supporter of the community. He was a charter member of the Rotary Club of Brisbane Mid-City, has twice served as the club's President and has also been a Rotary District Treasurer. He is also a past President of the Royal Automobile Club of Queensland and a former Chairman of RACQ Insurance Ltd and its subsidiary companies.

Mr Sargent is a member of the QIMR Berghofer Finance and Audit Committee, the Investment Committee and the Commercialisation Committee, as well as being a Director of the Institute's subsidiary company genomiQa Pty Ltd.

Dr Jeannette Young

PSM MBBS MBA DUniv(Griffith) DUniv(QUT) FRACMA FFPH FCHSM (Hon)

Dr Jeanette Young has been the Chief Health Officer of Queensland since 2005 and since August 2015 she has also held the role of Deputy Director-General Prevention Division. Her role includes, among other things, responsibility for health disaster planning and response; aero-medical retrieval services; environmental health responses; managing communicable disease planning and outbreaks; licensing of private hospitals and schools of anatomy; organ and tissue donation; blood, poisons and medicines; cancer screening; preventive health programs and initiatives; and medical workforce planning and

leadership. Every two years, Dr Young produces a report, *The Health of Queenslanders*, to report on the health status and burden of disease of the Queensland population.

Previously she worked in a range of positions in hospitals in Queensland and Sydney. She has specialist qualifications as a Fellow of the Royal Australasian College of Medical Administrators and as a Fellow by Distinction of the Faculty of Public Health of the Royal College of Physicians of the United Kingdom. She is an Adjunct Professor at Griffith University, QUT and The University of Queensland.

Dr Young is a member of numerous state and national committees and boards, including the NHMRC, the Australian Health Protection Principal Committee, the Domestic and Family Violence Death Review and Advisory Board, the Jurisdictional Blood Committee, the Organ and Tissue Jurisdictional Advisory Committee, the National Screening Committee and the Queensland Clinical Senate.

Dr Young is a member of the QIMR Berghofer Commercialisation Committee.

Council membership

The Council consists of at least seven, but not more than 11, members appointed by the Governor-in-Council. Under the *Queensland Institute of Medical Research Act 1945*, the Minister is to recommend people for appointment as members of the Council. The Minister may have regard to a person's skills, experience and expertise in any of the following areas:

- corporate governance
- public or academic administration
- health or clinical research
- health ethics
- financial management
- fundraising
- any other area the Minister considers to be relevant to the functions of the Council.

Council membership, terms of appointment and meetings attended for the 2017–2018 reporting year were as follows:

POSITION	COUNCIL MEMBERS	TERM	MEETINGS ATTENDED
Chair	Dr Douglas McTaggart	27/11/14–26/11/18	5 of 7
Deputy Chair	Mr Christopher Coyne	27/11/14–26/11/17	6 of 7
Members	Emeritus Professor John de Jersey AM	27/11/14–26/11/18	5 of 7
	Mr Ian Fraser	8/10/15–26/11/17	6 of 7
	Associate Professor Paula Marlton	27/11/14–26/11/18	4 of 7
	Professor Alan Pettigrew	27/11/14–26/11/18	6 of 7
	Mr Michael Sargent	27/11/14–26/11/18	7 of 7
	Emeritus Professor John Shine AC	27/11/14–26/11/18	4 of 7
	Dr Jeannette Young	27/11/14–26/11/17	4 of 7
Secretary	Ms Donna Hancock	N/A	7 of 7

Council committees

Finance and Audit Committee

The role of the Finance and Audit Committee is to provide independent assurance and assistance to the Council on:

- risk, control and compliance frameworks
- QIMR Berghofer's external accountability responsibilities as prescribed in the relevant legislation
- the appointment of the internal audit function and communications with internal and external auditors.

The Committee meets quarterly to review business and financial risk, financial operating performance and audit performance. The committee reviews all issues and recommendations arising from internal audit and the Queensland Audit Office, along with agreed management actions implemented to address any issues found.

The Finance and Audit Committee has due regard to Queensland Treasury's Audit Committee Guidelines. Its membership was comprised of:

- Mr Ian Fraser (Chair)
- Dr Douglas McTaggart
- Mr Michael Sargent
- Mr Mitchell Petrie (external member)

Appointments and Promotion Committee

The Appointments and Promotions Committee assists Council with the maintenance of academic standards at QIMR Berghofer. This involves reviewing proposals for the appointment and promotion of Faculty. The committee's membership was comprised of:

- Professor Alan Pettigrew (Chair)
- Emeritus Professor John de Jersey
- Associate Professor Paula Marlton
- Professor John Shine
- Dr Joanne Aitken, Head of Research and Director of Cancer Registries, Cancer Council Queensland
- Professor Susan Charman, Centre for Drug Candidate Optimisation, Monash Institute of Pharmaceutical Sciences
- Professor Alan Cowman, Walter and Eliza Hall Institute of Medical Research
- Professor Andrew Grulich, The Kirby Institute
- Professor Michelle Haber, Children's Cancer Institute
- Professor Glenda Halliday, Neuroscience Research Australia

Investment Committee

The Investment Committee is responsible for overseeing the investment of Council funds. Its membership was comprised of:

- Dr Douglas McTaggart (Chair)
- Mr Ian Fraser
- Mr Michael Sargent
- Mr John Allpass (external member)

Executive Employment and Remuneration Committee

The Executive Employment and Remuneration Committee is responsible for reviewing the terms and conditions relating to the appointment and remuneration of senior management. Its membership was comprised of:

- Dr Douglas McTaggart (Chair)
- Mr Christopher Coyne
- Professor Alan Pettigrew

Commercialisation Committee

The Commercialisation Committee advises Council and management on innovation and potential commercialisation opportunities. Its membership was comprised of:

- Dr Douglas McTaggart (Chair)
- Mr Michael Sargent
- Professor John Shine
- Dr Jeannette Young

Human Research Ethics Committee

The Human Research Ethics Committee, on behalf of Council, ensures the maintenance of ethical standards in human research and compliance with regulatory guidelines. The committee is comprised of 14 members.

Animal Ethics Committee

The Animal Ethics Committee, on behalf of Council, ensures the maintenance of ethical standards in animal research and compliance with regulatory guidelines in the use of animals in medical research. The committee is comprised of 10 members.

ORGANISATION

Institute leadership

Director and CEO, Professor Frank Gannon

Professor Frank Gannon is the seventh Director and CEO of QIMR Berghofer. He was appointed to the role in January 2011. Prior to that, he was the Director-General at Science Foundation Ireland (SFI) from 2007.

From 1994 until 2007, Professor Gannon was the Executive Director of the European Molecular Biology Organization (EMBO) and a Senior Scientist at the European Molecular Biology Laboratory (EMBL) based in Germany. Between 1981 and 1994, he was the Director of the National Diagnostic Centre and an Associate Professor in the Department of Microbiology at University College Galway, Ireland.

Professor Gannon obtained a Bachelor of Science from the National University of Ireland, Galway in 1970, followed by a PhD from the University of Leicester, England in 1973. He was a post-doctoral fellow at the University of Madison Wisconsin in the United States from 1973 until 1975, before becoming Chargé de Recherche in INSERM at the University of Strasbourg, France from 1975 until 1981.

His major research interest is the regulation of gene expression by the oestrogen receptor, which plays a major role in breast and endometrial cancer. These studies have provided leads to novel treatments or therapeutic approaches to these and other cancers.

Professor Gannon has authored more than 200 research articles published in international journals. In addition, between 2000 and 2008, he contributed to a monthly editorial in EMBO Reports, of which he was the founding senior editor.

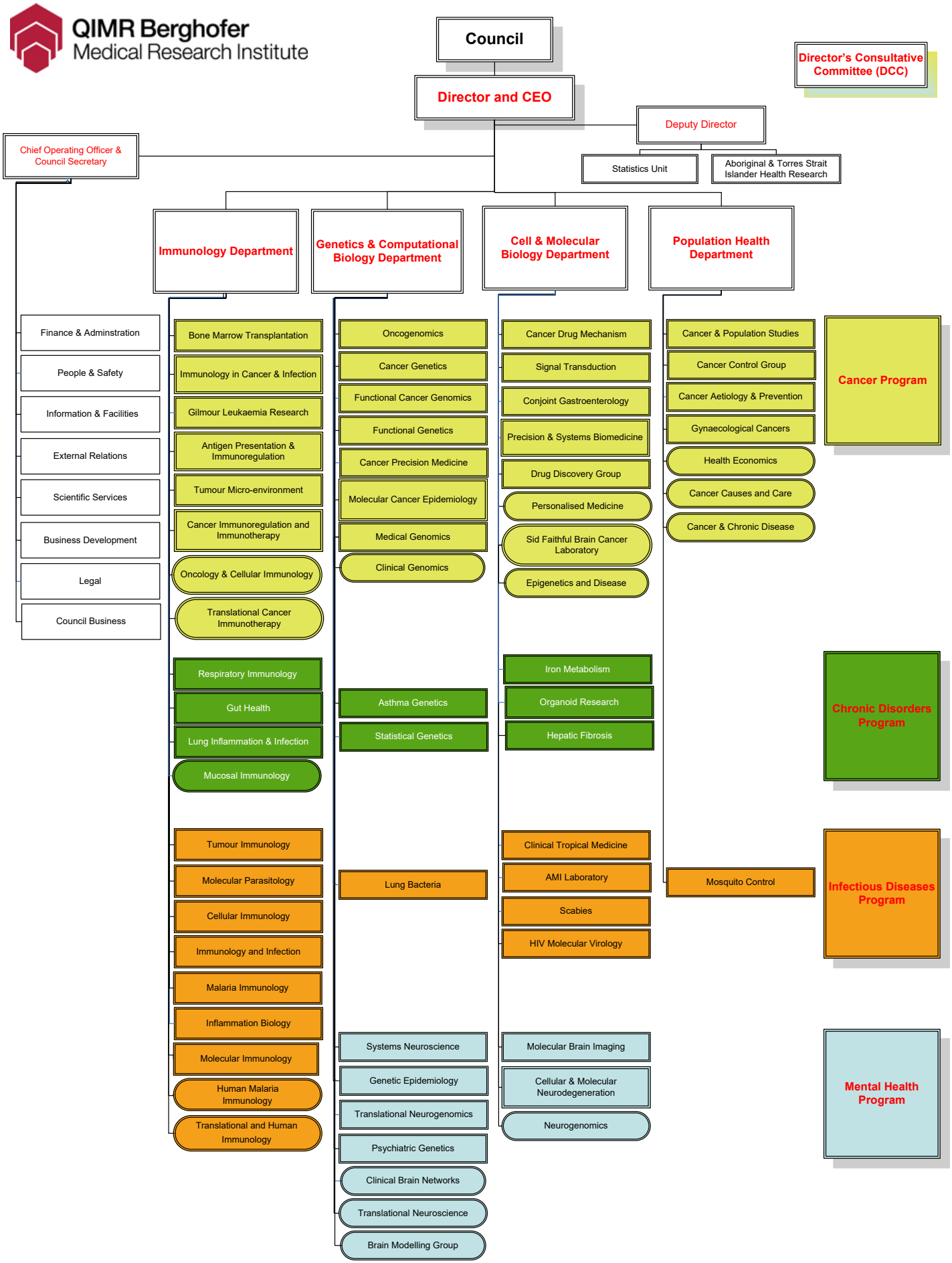
Professor Gannon has seven patent applications, four of which are active at present, and he was the founder of both Bimini Ltd (1990) and Elara Pharmaceuticals (2006). He was a member of the interim Board of Science Foundation Ireland from 2002 until 2004 and was elected as a Member of EMBO in 1989, Academia Europea in 2004, the Royal Irish Academy in 2007, the Mexican Academy of Medicine in 2008 and The European Academy of Cancer Sciences in 2009. In 2012, Professor Gannon was appointed as a Queensland Academy of Arts and Sciences Fellow. He serves on the Council of the Australian Academy of Health and Medical Sciences. He has been awarded honorary doctorates by the University of Jozsef Attila, Szeged (Hungary), The University of Queensland (Australia) and Queens University Belfast (Northern Ireland).

Professor Gannon has served on a range of high-level scientific advisory boards at institutes throughout the world. He was the co-founder of the European Life Sciences Forum (ELSF) and the Initiative for Science Europe (ISE), which played significant roles in the establishment of the European Research Council (ERC). He was the Vice President of the European Heads of Research Council and, prior to his move to Brisbane, he was an advisor to the European Union Commissioner for Research and Innovation. Currently, he is a board member of the Australian Association of Medical Research Institutes and a member of the Advance Queensland Expert Panel.

Organisational structure

QIMR Berghofer has a matrix structure where each research group falls into one of four research programs and one of four departments. The division of departments is based on scientific approaches, while the division of programs is based on types of diseases.

QIMR Berghofer's organisational structure as at 30 June 2018 is overleaf.


QIMR Berghofer
Medical Research Institute
Council
Director's Consultative Committee (DCC)
Director and CEO
Deputy Director
Chief Operating Officer & Council Secretary
Statistics Unit
Aboriginal & Torres Strait Islander Health Research
Immunology Department
Genetics & Computational Biology Department
Cell & Molecular Biology Department
Population Health Department
Finance & Adminstration
People & Safety
Information & Facilities
External Relations
Scientific Services
Business Development
Legal
Council Business
Bone Marrow Transplantation
Immunology in Cancer & Infection
Gilmour Leukaemia Research
Antigen Presentation & Immunoregulation
Tumour Micro-environment
Cancer Immunoregulation and Immunotherapy
Oncology & Cellular Immunology
Translational Cancer Immunotherapy
Oncogenomics
Cancer Genetics
Functional Cancer Genomics
Functional Genetics
Cancer Precision Medicine
Molecular Cancer Epidemiology
Medical Genomics
Clinical Genomics
Cancer Drug Mechanism
Signal Transduction
Conjoint Gastroenterology
Precision & Systems Biomedicine
Drug Discovery Group
Personalised Medicine
Sid Faithful Brain Cancer Laboratory
Epigenetics and Disease
Cancer & Population Studies
Cancer Control Group
Cancer Aetiology & Prevention
Gynaecological Cancers
Health Economics
Cancer Causes and Care
Cancer & Chronic Disease
Cancer Program
Respiratory Immunology
Gut Health
Lung Inflammation & Infection
Mucosal Immunology
Asthma Genetics
Statistical Genetics
Iron Metabolism
Organoid Research
Hepatic Fibrosis
Chronic Disorders Program
Tumour Immunology
Molecular Parasitology
Cellular Immunology
Immunology and Infection
Malaria Immunology
Inflammation Biology
Molecular Immunology
Human Malaria Immunology
Translational and Human Immunology
Lung Bacteria
Clinical Tropical Medicine
AMI Laboratory
Scabies
HIV Molecular Virology
Mosquito Control
Infectious Diseases Program
Systems Neuroscience
Genetic Epidemiology
Translational Neurogenomics
Psychiatric Genetics
Clinical Brain Networks
Translational Neuroscience
Brain Modelling Group
Molecular Brain Imaging
Cellular & Molecular Neurodegeneration
Neurogenomics
Mental Health Program

Operating environment

QIMR Berghofer aims to improve health by developing prevention strategies, new diagnostics and better health treatments. Its strategic objectives for 2017–2021 are to:

- foster scientific excellence
- build scientific, institutional and international connectivity
- undertake research with economic, clinical and community consequence
- strengthen enabling mechanisms.

The realisation of QIMR Berghofer's strategic objectives depends on the Institute's success in securing funding from government and non-government sources. In 2017–18, QIMR Berghofer received $18.9 million from the Queensland Government, representing approximately 17 per cent of total revenue. This, together with competitive peer-reviewed medical research grants, is QIMR Berghofer's most significant source of funding.

QIMR Berghofer leverages the Queensland Government grant, and the support operations it finances, to secure competitive, peer-reviewed medical research grants. However, competition for research grants is increasing and success rates have continued to fall in recent years, meaning that QIMR Berghofer is now funding a greater proportion of its research. For that reason, a high priority for the Institute is securing new and ongoing sources of income, particularly from research commercialisation and philanthropic sources.

Government objectives for the community

Keeping Queenslanders healthy

QIMR Berghofer is highly attuned to the health needs of Queenslanders and directly contributes to the Government's objective of keeping Queenslanders healthy. The Institute does this by researching and creating new and improved prevention strategies, diagnostics and treatments for various diseases and disorders. Each of QIMR Berghofer's four research programs – Cancer, Infectious Diseases, Mental Health and Chronic Disorders – has been selected to align with the needs of Queensland. Research into cancer is particularly important given Queensland's ageing population. Work on infectious diseases, especially tropical diseases, is vital given the increasing numbers of people living in the tropics and the pole-ward migration of species due to climate change bringing tropical diseases closer to major population centres. Research into mental health and neurodegeneration – such as depression, dementia and Alzheimer's disease – addresses rises in the incidence of these diseases due to demographic and social changes. Work in the Chronic Disorders program addresses many of the health impacts associated with changes in our demographics and lifestyles.

QIMR Berghofer's research also directly contributes to the Government's specific objective of increasing the number of Queenslanders with a healthy bodyweight. The Institute regularly publishes peer-reviewed research that is contributing to the scientific evidence that supports maintaining a healthy bodyweight. This includes research into the impact of obesity on cancer incidence and mortality, as well investigating socio-demographic factors associated with childhood obesity. QIMR Berghofer promotes these research findings via the media in an effort to encourage Queenslanders to make healthy lifestyle changes. Researchers in the Institute's Population Health Department are also assessing the effects of a healthy diet on cancer incidence and survival. This research is helping to build an evidence base that will support initiatives to promote healthy diets.

The Institute's research also directly contributes to the Government's specific objective of reducing suicides. QIMR Berghofer has 10 research groups in its Mental Health Program and depression, bipolar disorder and schizophrenia are major focuses of their research. There is currently no quantitative diagnostic test for depression that uses imaging or laboratory tests. Clinical diagnosis rests entirely upon the opinion of individual doctors and is therefore prone to their subjective biases. QIMR Berghofer is working to develop an imaging-based diagnostic test for different subtypes of depression, which

would allow doctors to diagnose patients accurately so they can receive the most suitable treatment and interventions at the earliest possible opportunity. In 2017, QIMR Berghofer launched the Australian arm of the world's largest genetic study of depression. This major, international effort will help to detect the genetic factors that contribute to clinical depression in order to develop better treatments.

Giving all our children a great start

QIMR Berghofer's research is helping to ensure all children receive the best start in life, with a number of key researchers focusing heavily on infant health. The Institute has recently recruited a research group whose work focuses on nutrition and allergies, specifically on the interplay between the gut, the immune system and disease. Another research group is investigating the link between nutrition, gut bacteria, the immune system and the onset of allergies in small children, while a third group is focused on the genetic origins of allergies, including asthma, eczema and food allergies. That group's studies have examined whether environmental factors (including BMI and birth weight) influence the risk of allergies. QIMR Berghofer also has a research group that is heavily focused on iron intake in early postnatal life, which has significant implications for infant nutrition and complementary feeding. The Institute's Population Health department has also published a number of nutritional studies involving children.

Creating jobs in a strong economy

QIMR Berghofer contributes to the Queensland Government's objective of creating jobs in a strong economy. During 2017–2018, the Institute expanded to 65 research groups and more than 900 scientists, support staff and students. It is actively recruiting researchers in areas of high importance to Queensland, including tropical diseases, vaccine development, cancer and genetics. QIMR Berghofer is also expanding and promoting its scientific services to clients globally, including the cell therapy manufacturing facility Q-Gen Cell Therapeutics. The Institute's early-phase clinical trials company Q-Pharm Pty Ltd also works with clients worldwide. This work is creating jobs in the high-value bio-medical sector and is generating investment into Queensland. Finally, QIMR Berghofer is engaging young Queenslanders in education by hosting approximately 180 post-graduate students and running a comprehensive high school education program.

Strategic framework

The Institute's strategic plan sets the priorities for its operational activities over the next five years. The strategic plan is available online at www.qimrberghofer.edu.au/about-us/strategic-plan and is updated on 1 July each year in accordance with Queensland Government requirements. Approved by The Council of the Queensland Institute of Medical Research, the revised Strategic Plan (2017–2021) was implemented from 1 July 2017.

Annual review of operations

Each year, QIMR Berghofer reviews its operations and measures its success against the objectives and performance indicators set out in the Strategic Plan (2017–2021) and against the service areas and service standards set out in the Service Delivery Statement (2017–2018) in the State Budget documentation. A review of QIMR Berghofer's achievements in 2017–2018 follows.

REVIEW OF PERFORMANCE

Review: Foster scientific excellence

Two of the best indicators of scientific excellence are the number of papers an institute publishes and the number of times those papers are cited by other researchers worldwide. In 2017, QIMR Berghofer published 864 scientific papers, which have already been cited more than 2200 times. All QIMR Berghofer papers ever published were cited 39 203 times in 2017.

In 2017–2018, 11 researchers joined the '1000 club', meaning a total of 40 QIMR Berghofer scientists have now authored at least one paper that has been cited more than 1000 times. Twelve researchers who were already on the list increased the number of papers that have now been cited more than 1000 times.

Another two researchers joined the '500 club', bringing to 22 the number of QIMR Berghofer scientists who have now authored at least one paper that has been cited more than 500 times. Three researchers who were already on the list increased the number of papers that have now been cited more than 500 times.

Membership of QIMR Berghofer's '1000 club' and '500 club' is detailed in the table below.

1000 CLUB		500 CLUB	
Author	Number of publications cited more than 1000 times	Author	Number of publications with 500 to 999 citations in first or last author position
Nick Martin	8	Mark Smyth	12
Mark Smyth	7	Nick Martin	6
Nick Hayward	5	Adele Green	3
Georgia Chenevix-Trench	4	Barbara Leggett	3
John Pearson	4	Kum Kum Khanna	2
Lisa Simms	4	Don McManus	2
Manuel Ferreira	4	Frank Gannon	2
Graham Radford-Smith	3	Geoff Hill	2
Michelle Lupton	3	Rajiv Khanna	2
Nic Waddell	3	David Duffy	1
Sarah Medland	3	David Frazer	1
Scott Gordon	3	David Whiteman	1
Ann-Marie Patch	2	Deepak Mittal	1
Bill Dougall	2	Grant Ramm	1
Frank Gannon	2	John Whitfield	1
Greg Anderson	2	Kelli MacDonald	1
Harsha Gowda	2	Lisa Simms	1
Michael Breakspear	2	Nic Waddell	1

1000 CLUB		500 CLUB	
Author	Number of publications cited more than 1000 times	Author	Number of publications with 500 to 999 citations in first or last author position
Stuart MacGregor	1	Penny Webb	1
Adele Green	1	Siok-Keen Tey	1
Amanda Spurdle	1	Stacey Edwards	1
Anthony White	1	Stuart MacGregor	1
Ashraful Haque	1		
Barbara Leggett	1		
Christine Xu	1		
Conrad Leonard	1		
David Whiteman	1		
Felicity Newell	1		
Jason Madore	1		
John Whitfield	1		
Jonathan Beesley	1		
Juliet French	1		
Katia Nones	1		
Kum Kum Khanna	1		
Nigel Waterhouse	1		
Oliver Holmes	1		
Penny Webb	1		
Scott Bell	1		
Scott Wood	1		
Xiao Qing Chen	1		

The h-Index is an integrated measure of the quality and quantity of a scientist's output. The average h-Index of our Faculty (the scientists who have their own research groups) is 46, which is considered to be outstanding.

As well as success in publications and citations, QIMR Berghofer researchers were recognised with a number of prestigious accolades in 2017–2018. For example:

- Professor Frank Gannon was awarded the Queensland Life Sciences Industry Excellence Award for his significant contribution to the life sciences in Queensland.
- Professor James McCarthy was awarded the Sornchai Looareesuwan Medal for his distinguished and outstanding achievements in malaria research.
- Professor McCarthy was also named an Honourary International Fellow by The American Society of Tropical Medicine and Hygiene, making him one of only five people worldwide to be recognised by the Society in 2017 for their outstanding contributions to the field of tropical medicine.
- Dr Ken Dutton-Regester received a Young Tall Poppy Science Award, which recognises early-career researchers who have achieved significant scientific milestones and demonstrated a willingness to engage the Queensland community in science.

- Grace Chojnowski received a Career Recognition Award from the Australasian Cytometry Society.
- Dr Lucia Colodro Conde received the Fuller and Scott Early Career Award for outstanding scientific accomplishments and service to the field.
- Professor Adele Green AC was appointed to lead the Australian Brain Cancer Mission Strategic Advisory Group, a new national advisory body established to improve quality of life for patients with brain cancer.
- Dr Bryan Day was awarded an inaugural Infrastructure Grant from the Cure Brain Cancer Foundation (CBCF), which forms part of the CBCF's commitment to the Federal-Government-backed Australian Brain Cancer Mission.

Minister for Innovation, Science and the Digital Economy Leeanne Enoch presents Dr Ken Dutton-Regester with a Young Tall Poppy Science Award.

QIMR Berghofer holds its annual Council Awards ceremony in December. The recipients of its research awards were:

- Bancroft Medal – Dr Glen Boyle
- Ralph Doherty QIMR Berghofer Prize for Outstanding Achievement and Leadership in Medical Research – Professor James McCarthy
- Post-doctoral Prize – Dr Ann-Marie Patch
- Long Service Awards – Professor Greg Anderson, Karen Anderson, Jacqueline Burrows, Mary Duke and Lucy Winkler
- Australian Cancer Research Foundation Prize for Cancer Research Excellence – Dr Nic Waddell
- Researcher Recognition Awards – Christina Bernardes, Katia Nones and Tracy O'Mara.

Review: Build scientific, institutional and international connectivity

In 2017–2018, QIMR Berghofer:

- Signed a Memorandum of Understanding with the Dubai Health Authority to collaborate on cancer research and translation using precision medicine techniques developed by QIMR Berghofer. This partnership will speed up the development of the Institute's precision medicine technologies and will see them fully integrated into the Dubai health system
- The Institute's precision analytics start-up genomiQa entered into a Memorandum of Understanding with analytics and software engineering agency Max Kelsen to collaborate on developing predictive analysis tools to improve patient care
- Convened and hosted a national Sunscreen Summit to develop new strategies for educating the public on the role of sunscreen in sun protection, and to find new ways of improving public understanding of how to prevent skin cancer
- Collaborated with external researchers on 89 per cent of the Institute's publications. Sixty-four per cent of QIMR Berghofer publications involved international collaborators, which is the highest proportion to date
- Hosted 126 visiting scientists, affiliates and honourary/emeritus appointees, and 180 higher degree students who are placed at the Institute by collaborating universities
- Continued to contribute to planning for the redevelopment of the Herston health precinct as members of the Herston Precinct Integration Committee
- Contributed expertise and analysis to 14 state and federal government consultation processes, including the Department of Foreign Affairs and Trade's Regional Health Security Initiative and the review of the National Gene Technology Scheme.

Professor Frank Gannon, Queensland Deputy Premier Jackie Trad and Dubai Health Authority Director-General His Excellency, Humaid Al Qatami at the signing of the Memorandum of Understanding.

Engaged in long-term collaboration

QIMR Berghofer has a long track record of successful and enduring research collaborations. Together with UQ, QIMR Berghofer co-founded and co-manages the Australian Skin and Skin Cancer Research Centre, the Australian Infectious Disease Research Centre, the Queensland Mental Health Alliance and the Queensland Emory Development Alliance. Together with the Princess Alexandra Hospital and the Translational Research Institute, QIMR Berghofer established the Queensland Head and Neck Cancer Centre of Excellence. The Institute is a partner in the Queensland Tropical Health Alliance and the Herston Imaging Research Facility. QIMR Berghofer is a key member of the Queensland Genomics Health Alliance (QGHA) and has representatives on the QGHA community advisory group. The Institute is also an active member and founder of the Brisbane Diamantina Health Partners, the recently certified Advanced Health Research and Translation Centre.

QIMR Berghofer also has members on the Advance Queensland Expert Panel, the Advancing Health 2026 Oversight Committee, the Board of the Association of Australian Medical Research Institutes and the Council of the Australia Academy of Health and Medical Sciences.

Review: Undertake research with economic, clinical and community consequences

In 2017–2018 QIMR Berghofer undertook the following research with economic consequences:

- Conducted 21 clinical trials for clients at the Institute's early-phase clinical trials company Q-Pharm Pty Ltd
- Continued to provide specialised support to two projects in the Institute's SEEDBox laboratory to move the discoveries towards commercialisation
- Entered into an exclusive worldwide licensing agreement with Icelandic biotechnology company Kvikna Medical for an algorithm developed by QIMR Berghofer to be incorporated into technology to help guide the treatment of premature babies
- Calculated that the economic cost of melanoma to Australia's healthcare system increased to approximately $201 million in 2017
- Analysed out-of-pocket costs for cancer patients, finding that breast and prostate cancer patients had the highest average out-of-pocket costs at $4192 and $3175 respectively
- Calculated the costs of the Asian Tiger Mosquito taking hold in Brisbane and found that quickly and thoroughly eradicating the mosquito would be far more cost effective than allowing it to become established.

In 2017–2018 QIMR Berghofer undertook the following research with clinical and community consequences:

- Developed an online test for people aged 40 and over to predict their risk of developing a melanoma over the next 3.5 years

- Discovered that 38 per cent of cancer deaths in Australia each year are potentially preventable, mostly through lifestyle changes
- Received regulatory approval from the United States Food and Drug Administration for a cellular immunotherapy treatment for multiple sclerosis, developed and manufactured at QIMR Berghofer, to enter into clinical trials in the US
- With collaborators, conducted the world's largest genetic study of breast cancer, discovering 72 new genetic variants that put women at higher risk of the disease
- Pinpointed 136 genetic markers that explain why some people suffer from asthma, hay fever and eczema
- Found that regularly taking cholesterol-lowering drugs reduces the chances of developing an ulcerated melanoma, which has significantly lower survival rates than regular melanoma
- With collaborators, successfully designed tiny nanorobots made of DNA and protein that can be targeted directly at tumours to stop them from growing
- Discovered why children who were hospitalised with severe viral respiratory infections as babies are more likely to develop asthma
- Discovered a potential new way of testing how advanced a patient's prostate cancer is and whether it is responding to treatment
- Found that regular sunscreen use by all Australians could lower melanoma rates by up to one third by 2031
- Found that the molecule IL-18 is critical in the progression of the untreatable blood cancer multiple myeloma, which mostly affects older Australians
- Discovered why arthritis caused by mosquito-borne viruses is worse in the limbs than the rest of the body
- Discovered for the first time the mechanism that causes severe liver disease in some children with cystic fibrosis.

Clinical trials

In 2017–2018 there were 22 clinical trials as a result of research undertaken at QIMR Berghofer. During the year, QIMR Berghofer scientists were involved in more than 60 further trials that were led by other researchers or clinicians.

Review: Strengthen enabling mechanisms

In 2017–2018, QIMR Berghofer:

- Relocated the Institute's wholly owned early-phase clinical trial company, Q-Pharm Pty Ltd, to new and expanded premises within QIMR Berghofer, increasing its capacity from 38 to 62 beds
- Finalised planning for the expansion of TGA-certified cell therapy manufacturing facility, Q-Gen Cell Therapeutics
- Appointed Coordinators to each of the four research departments to help foster even more collaborations within the Institute
- Provided financial support for 18 women scientists as part of the Institute's policy to help more women researchers to move into leadership roles.

COMMUNITY ENGAGEMENT

As Queensland's statutory medical research institute, QIMR Berghofer takes a very active role in engaging the Queensland community in science. In 2017–2018 the Institute's researchers spent a combined total of more than 600 hours on community engagement and school education activities.

Sharing our research

In 2017–2018, QIMR Berghofer:

- Participated in the third World Science Festival Brisbane, hosting practical sessions in the laboratory as part of the apprentice programs and offering a range of activities at the Street Science! Precinct. The Institute also travelled to Gladstone, Chinchilla and Toowoomba for the regional program events, hosting medical illustration workshops and a range of other activities.
- Hosted two free seminars and laboratory tours for members of the public interested in the Institute's melanoma research
- Hosted or attended more than 54 public tours or public speaking engagements involving more than 1800 members of the public
- Shared its research with the community via the media. The Institute published 47 media releases and media coverage of the Institute reached an estimated audience of more than 75 million people.

Children look down the microscopes at QIMR Berghofer's stand at World Science Festival Brisbane.

Education program

In 2017–2018, QIMR Berghofer:

- Gave approximately 3500 Queensland students and more than 170 teachers from more than 65 high schools the opportunity to participate in the Institute's education program
- Hosted 1170 students from 36 schools for the Day in the Life of a Scientist Program, involving hands-on experiments in the Institute's purpose-built education laboratory
- Addressed approximately 1600 students from 13 schools in Cairns, the Torres Strait, Townsville and Rockhampton as part of the Regional Roadshow
- Hosted 634 students from 15 schools for the Institute's High School Lecture series, where students come to the Institute to be inspired by world-leading scientists
- Hosted 40 students from 14 schools as part of the Institute's high school work experience program
- Delivered professional development training to six teachers in laboratory techniques and conducting practical experiments in the classroom.

Community feedback

In 2017–2018, QIMR Berghofer:

- Hosted two community reference groups, giving 25 community representatives the opportunity to provide input into the Institute's research priorities.

Support from the community

QIMR Berghofer relies on philanthropic support from individual and corporate donors and third-party fundraisers. The Institute thanks its key supporters for 2017–2018:

- Bartent Pty Ltd
- Estate of Lyell Desmond Bartlett
- Mr Kevin and Mrs Dallas Bedford
- Mr Clive Berghofer AM
- Biniris Pty Ltd
- The Osmar Julius Blau & Beatrice Earle Blau Memorial Trust
- In Loving Memory of Kenneth George Blackburne
- Estate of Marion Dorothy Briggs
- Estate of Deidre Alison Brown OAM
- BT Managed Accounts
- Centenary Foundation - The Nancy May Mckenzie Bequest
- Mr Damian Clothier QC
- The Rebecca L Cooper Medical Research Foundation
- Estate of William Raymond Cronk
- Estate of Beatrice Mildred Crombie
- Estate of Patricia Doris Darley
- Estate of John George Davis
- Dentons Australia Pty Ltd
- Mrs Lorraine Duckwitz
- Dr Roberta Edmeades
- The English Family Foundation
- Faithfull Investment Group Trust
- Mr John Farrell
- Estate of Kenneth T Farrow
- Dr John and Mrs Paulette Goodell
- Estate of Mr Charles H Green
- Estate of Neville David Hare
- Estate of Jillaine M Johnstone

- Estate of Mr Leonard Jordan
- Ms Natasha Knight
- Ms Kwee-Fong Lai
- Dr Kwok Ching Lee
- Mr Keith Maher
- Mr Bob W Marshall
- McLeod Country Golf Club
- Mr Ivan and Mrs Sandra Mitchell
- Brian Needham on behalf of Carmel Kneen
- Selwyn Thomas Fassifern Ozanne & Doreen Elaine Ozanne Trust
- Nelumbo Trust Fund
- Mrs Jacqueline Pascual
- Mrs Rae L Peacock
- Perpetual Foundation - The John Thomas Wilson Endowment
- Perpetual Foundation - E M Squires Charitable Endowment
- Perpetual Foundation – Ira Peace and Ashley Keidge Trust
- Queensland Community Foundation
- Estate of Rosemary Maclean Rae
- Ms Jean Redman
- Robert George Relf Trust Fund
- J J Richards & Sons Pty Ltd
- Henry Cyril & Stella May Robjohns Memorial Trust
- Supporters of 65 Roses Inc
- Rotary Club of Townsville Central
- Rotary Club of Brisbane Mid-City Inc
- Mrs Elisabeth and Mr David Stanton
- Mrs Maureen Stevenson
- Adjunct Professor John Story AO and Mrs Georgina Story
- The GPT Group
- Tour de Cure Ltd
- Estate of Richard Malcolm Warner
- Donald and Joan Wilson Foundation
- Estate of Mrs Glenys Wildman
- Mrs Ailsa Zinns

At the annual Council Awards ceremony, QIMR Berghofer awarded Clive Berghofer Humanitarian Awards to supporters Maureen Stevenson and the Reid family in recognition of their unwavering and invaluable support of the Institute.

Professors Michael Breakspear and Frank Gannon welcome Lawson and Dylan Reid after their 2.5-year round-the-world motorbike journey.

STATUTORY OBLIGATIONS AND COMPLIANCE

Risk management

The review and management of risk at QIMR Berghofer is undertaken by the QIMR Berghofer Council through the Finance and Audit Committee. The Institute's management maintains a register of potential risks applicable to functions of the Institute.

Ethics, code of conduct and public service values

Based on the principles set out in the *Public Sector Ethics Act 1994*, QIMR Berghofer has a Code of Conduct for expected workplace conduct, relationships and behaviour of staff, in order to foster a safe and productive work environment for all employees. The Code of Conduct was last reviewed by Council in October 2016.

The ethics principles enshrined in the Code of Conduct are:

1. Integrity and impartiality
2. Promoting the public good
3. Commitment to the system of government
4. Accountability and transparency

Ethical procedures and practices are embedded into QIMR Berghofer's finance, procurement and human resources operations. As part of the staff induction program, employees complete mandatory education and training in public sector ethics and the code of conduct, including their rights and obligations in relation to contraventions. This education and training must be undertaken at regular intervals throughout a staff member's employment. In addition to making available online training modules, the Institute's Human Resources department also schedules workshops and team training sessions on request.

In addition to the Code of Conduct, the Institute also operates in consideration of the Queensland Public Service Values: customers first; ideas into action; unleash potential; be courageous; and empower people.

Audit

Internal audit is a fundamental part of QIMR Berghofer's corporate governance, ensuring the Institute operates effectively, efficiently and economically. The role of internal audit is to provide independent, objective assurance and advice and to bring a systematic, disciplined approach to evaluating and improving the appropriateness and effectiveness of risk management and internal control.

The Finance and Audit Committee oversees the planning, performance and reporting of the internal auditor under the guidance of an annual internal audit plan. The internal audit contractor (KPMG) met with the Finance and Audit Committee at each quarterly committee meeting. The internal audit function has observed the terms of its charter and has due regard to Queensland Treasury's Audit Committee Guidelines.

Identifying areas of significant risk combines a focus on both cyclical reviews of core business processes as well as reviews of key risk areas. KPMG's integrated governance, risk and controls framework builds on a traditional internal audit model to take a holistic view of QIMR Berghofer's key objectives, risks, controls and supporting structure across the organisation.

The internal audit plan is presented to the Finance and Audit Committee for approval prior to the commencement of the financial year, with consideration given to past internal audit findings, recent and forthcoming changes in systems and processes, key business risks and the period since the last internal audit of each core business process.

Workplace health and safety

QIMR Berghofer operates in compliance with Queensland's *Work Health and Safety Act 2011*. The Institute has a Safety Committee and a Safety Team.

Staffing

At 30 June 2018, QIMR Berghofer had:

- 569 full-time equivalent staff (including fixed-term, permanent, part-time and casual staff, but not including visiting scientists/affiliates, students or external collaborators on site)
- 65 members of Faculty, 11 Senior Scientists, 39 Group Leaders and 15 Team Heads
- 180 students
- 96 casual staff

Workforce planning and performance

The majority of QIMR Berghofer staff are employed under the QIMR Berghofer Medical Research Institute Enterprise Agreement. Seventy-three per cent of the Institute's employees are employed on fixed-term contracts, as research funding relies on short-term grants. Historically, QIMR Berghofer has maintained a low rate of voluntary staff turnover; in 2017–2018 from a FTE staff of 569 the voluntary separation rate was 15.51 per cent.

QIMR Berghofer's workforce planning and performance is supported by a range of policies, procedures and initiatives designed to foster a high-performance culture. This includes a set induction program for new staff, annual online refresher training, annual performance reviews, an extensive annual program of scientific seminars for staff (including dedicated seminar series for PhD students, early-career researchers and support staff), conference attendance/participation, and opportunities for staff development and career progression.

Equal opportunities

Women are strongly represented at QIMR Berghofer, accounting for 58 per cent of the total workforce, 62 per cent of research staff and 59 per cent of students. Women hold senior management roles at the Institute, including as Coordinators of two of the four research Departments, as Deputy Coordinators of three of the four research Departments, and as the Institute's Chief Operating Officer and General Counsel.

QIMR Berghofer operates in consideration of the guidelines endorsed by the Council of the Australian Academy of Science to ensure both women and men have equal opportunities to pursue a successful career in science. The Institute has a Gender Equity Committee, flexible work hours, and job-share and part-time employment options to help staff balance their personal and professional lives. Women account for the majority of staff with part-time and job-share arrangements.

Supporting women at QIMR Berghofer

Despite the well-known challenges for women working in science, QIMR Berghofer has a strong representation of women researchers in senior positions. Thirty-eight per cent of lead research positions (Faculty) are held by women and 42 per cent of new faculty appointments in the last five years have been women. While these figures are positive, QIMR Berghofer wants to get even more women into scientific leadership roles.

However, one of the biggest challenges for women scientists is taking time out of the workforce, in a fast-moving and competitive industry, to have children. That's why QIMR Berghofer has a policy in place to help more women scientists move into, and stay in, scientific leadership roles. Women scientists employed at the level of senior research officer and higher, who have at least one child below high-school age, can apply for up to $10 000 in financial assistance in addition to their salaries. These funds can be used at the scientist's discretion. Under the policy, women scientists employed at the slightly lower level of research officer, who have at least one child below high-school age, can apply for financial assistance for particular expenses. This could include covering the cost of childcare while the scientist attends a conference, for example.

This forward-thinking policy is a first in the Australian research sector and is making it easier for women with young children to keep publishing research and advance their careers. The Institute also has several other measures in place to make it easier for mothers to return to work, including securing places for children under two at a local childcare centre, and having a designated room for nursing mothers. QIMR Berghofer also offers parking on premises for all pregnant women in their final month before taking maternity leave.

Information systems and recordkeeping

QIMR Berghofer's recordkeeping complies with the *Public Records Act 2002*, Information Standard 40 and Information Standard 31. The Institute keeps physical and electronic documents as full and accurate records of its activities, and uses the Total Records and Information Management (TRIM) document management system. This single, standardised system promotes file and information sharing across the organisation, secures access to the Institute's records, improves accessibility and reduces duplication.

Records are not disposed of, or archived, unless duly authorised under the *Public Records Act 2002* or by reference to the Retention and Disposal Schedule (RDS) approved by Queensland State Archives (QSA). All QIMR Berghofer records are registered into TRIM before being transferred to the off-site storage provider or QSA. All QIMR Berghofer hardcopy records stored off-site are managed under legislatively appropriate risk management standards and guidelines. Work continues on ensuring that all record types are identified, and are managed under the retention and disposal schedule, and that all other legislative and other requirements for records management are satisfied.

Records management is undertaken by trained staff and all new Institute employees receive a training session in records management as part of their formal induction process.

Open data

For information on consultancies and overseas travel for QIMR Berghofer, visit the Queensland Government Open Data website: https://data.qld.gov.au.

RESEARCH ACHIEVEMENTS

CANCER PROGRAM

HEAD: ASSOCIATE PROFESSOR STEVEN LANE

Cancer is a disease caused by abnormal cell growth, which eventually spreads to other parts of the body. Some cancers are common within a family and are clearly inherited, while others are caused by factors in the environment interacting with genetic susceptibilities. Many forms of cancer can be treated successfully if detected early; however, cancer is still one of the major causes of illness and death in Australia and the developed world.

Cancer is the largest research program at QIMR Berghofer, accounting for approximately half the Institute's research. Research in the cancer program includes:

- identification of the genetic, epigenetic and environmental factors affecting an individual's risk of cancer
- study of the molecular changes that are precursors to cancer or that occur during tumour formation and metastasis
- development and testing of novel therapies in the laboratory and in clinical trials.

The program has a strong focus on skin cancers, including melanoma; hormone-related cancers such as breast, ovarian, endometrial and prostate cancer; leukaemia and lymphoma; brain cancer; and tumours of the gastrointestinal tract.

The Institute is a world leader in immunotherapy, which is emerging as the fourth pillar of cancer treatment, alongside surgery, chemotherapy and radiotherapy.

Bone Marrow Transplantation

Senior Scientist: Geoff Hill

The laboratory seeks to understand the pathophysiology of graft-versus-host disease (GVHD) and graft-versus-leukaemia (GVL) in pre-clinical and clinical bone marrow transplantation (BMT). Its work focuses on cellular and cytokine biology in transplantation. The group is increasingly translating findings into patients at the RBWH bone marrow transplant laboratory and enrolled approximately 100 patients into clinical trials across four centres in Australia.

Highlights:

- Discovered that myeloma escape after stem cell transplantation is a consequence of T cell exhaustion and is prevented by blockading the receptor TIGIT.
- Demonstrated that recipient mucosal-associated invariant T cells control GVHD within the colon.
- Identified that Flt-3L expansion of recipient CD8a+ dendritic cells deletes alloreactive donor T cells and represents an alternative to post-transplant cyclophosphamide for preventing GVHD.
- Found that conventional dendritic cells are required for the cross-presentation of leukemia-specific antigen in a model of acute myeloid leukaemia relapse post-bone marrow transplant.
- Discovered that early blood stream infections after bone marrow transplantation are associated with cytokine dysregulation and poor overall survival.
- Identified a critical role for donor-derived IL-22 in cutaneous chronic GVHD.

Cancer Aetiology and Prevention

Group Leader: Rachel Neale

Deputy Coordinator, Population Health Department

Vitamin D and pancreatic cancer are this group's main areas of research, including continuing the D-Health trial and the patterns of care in pancreatic cancer study, along with research into the genetic risk factors for pancreatic cancer.

Highlights:

- Showed that the variability in the care of patients with pancreatic cancer extends beyond surgery to chemotherapy and supportive interventions such as relief of jaundice.
- Demonstrated that treatment for pancreatic cancer is suboptimal for many patients and is related to sociodemographic characteristics, including whether patients live in rural areas.
- Continued to make exceptional progress in conducting the D-Health trial into the health benefits of vitamin D supplementation in the general population.

Cancer and Chronic Disease

Team Head: Patricia Valery

This group focuses on three main, broad research areas:

- management of chronic liver disease and liver cancer
- patterns of care of Aboriginal and Torres Strait Islander people with cancer, including diagnosis, use of health services, supportive care needs, cancer treatment and survival
- descriptive epidemiology of cancer and chronic liver disease (such as incidence, trends and geographic distribution of disease).

A particular focus is the optimal management of cirrhosis in Australia, including benchmarking quality of care indicators to identify algorithms that may be associated with poorer patient outcomes. This will help highlight deficiencies in treatment and suggest mechanisms for improvement.

The group is also collaborating with other Australian researchers on non-alcoholic fatty liver disease (NAFLD), childhood cancers, cervical, bone and lung cancers, chronic respiratory disease and multiple sclerosis.

Highlights:

- Together with international collaborators, predicted the burden of primary liver cancer (PLC) in 30 countries by 2030, providing a baseline against which to assess the effects of future hepatitis B and C controls on decreasing PLC, albeit with the prospect that rising obesity and metabolic complications may potentially offset gains.
- Evaluated general practitioners' approach to the diagnosis, management and referral of NAFLD, which is a common cause of incidental liver test abnormalities. Found a lack of recognition of the clinical spectrum and assessment of NAFLD.
- Demonstrated that type two diabetics with NAFLD have higher burden of multi-morbidity and poly-pharmacy and identified the most common co-existent conditions within this patient group. These findings highlight the importance of multidisciplinary management to address patients' complex health care needs.
- Described the high prevalence of psychosocial distress and physical functioning among cancer survivors in a cross-sectional study in the Riverina region of NSW, and found that health professionals should consider accessibility of support services when devising care plans.
- Performed a qualitative study that found resilience and communication were factors that assisted some indigenous Australians to have positive cancer experiences, despite potential barriers to care services.

Cancer and Population Studies

Senior Scientist: Adele Green

This group is carrying out several studies that focus on the prevention, causes and management of melanoma and other skin cancers, along with the quality of life of patients.

Highlights:

- Showed the prognostic importance of numbers of mitosis in early primary melanoma nodular subtype, which has been discounted in the new melanoma classification schedule.
- Identified associations between statins and diabetes and the diagnosis of ulcerated cutaneous melanoma.
- Evaluated Queensland's first Transplant Skin Clinic for its high treatment throughput and ability to stimulate patients' prevention activities.
- Showed for the first time the clustering of prevention behaviours in patients with high-risk primary melanoma.

Cancer Causes and Care

Team Head: Susan Jordan

The group is focusing on four main research projects into thyroid and renal cancers, cancer and mortality rates after hysterectomies, and the screening of severely mentally ill people for certain cancers.

Highlights:

- Showed that older people, those who live in rural areas, and those treated in low-volume hospitals are more likely to develop new-onset chronic kidney disease after receiving surgery for kidney cancer.
- Found that people with severe mental illness are significantly less likely to be screened for cervical and prostate cancer, potentially explaining the disparity in cancer mortality seen in people with severe mental illness.
- Discovered that the majority of people diagnosed with thyroid cancer in Queensland between 2013 and 2016 did not present with symptoms, supporting the possibility that many of these cancers are over-diagnosed.
- Found that hysterectomy is not associated with the risk of the most common type of ovarian cancer, but among women with a surgically confirmed diagnosis of endometriosis, hysterectomy is associated with a very strongly reduced risk of ovarian cancer.

Cancer Control Group

Senior Scientist: David Whiteman

QIMR Berghofer Deputy Director

The Cancer Control Group is conducting research into a range of cancers, with a particular focus on skin cancer and melanoma. This research is contributing extensively to skin cancer control policies. A major focus during 2017–2018 was the QSKIN Study – a prospective cohort of more than 43 000 Queenslanders being followed for skin cancer and melanoma. The group has now finished genotyping the DNA samples and has started to statistically analyse the genetic data to identify the genetic changes associated with cancers of the skin.

The group also conducts research into preventable, fatal cancers.

Highlights:

- Developed and launched an online test for people aged 40 and over to predict their risk of developing melanoma over the next 3.5 years: http://qimrberghofer.edu.au/melanomariskpredictor
- Calculated the number and proportion of fatal cancers in Australia that are caused by modifiable factors and are therefore potentially preventable.
- Quantified the incidence and costs of keratinocyte cancers in Australia.

- Identified smoking as a risk factor for squamous cell carcinomas of the skin, but not basal cell carcinomas or melanomas.
- Estimated the number of melanomas that might be prevented if more Australians used sunscreen in line with recommendations.

Cancer Drug Mechanism

Group Leader: Glen Boyle

The Cancer Drug Mechanisms Group combines cell biology with studies understanding drug resistance of cancers. The group's cell and molecular biology work focuses on understanding the molecular mechanisms involved in the progression and metastasis of cancers of the skin (melanoma and cutaneous squamous cell carcinoma) and the oral cavity (head and neck cancer). These mechanisms also impact on the resistance of these cancers to treatment. Identifying and understanding aberrantly regulated pathways in these cancers is crucial before identifying suitable therapeutic agents to treat these diseases and having an impact on patient outcomes.

The group has identified that different sub-populations of melanoma cells within the same tumour are important in the processes of growing and spreading. The team believes that these different cell types cooperate and communicate with each other to enable this to happen. This finding opens the opportunity to study the way the tumour cells communicate and cooperate with each other, to then find a treatment to stop the melanoma cells growing and spreading. This may lead to better treatments to prevent melanoma from developing and spreading around the body, and may result in better outcomes for patients with the disease.

Highlights:

- Found that different sub-populations of melanoma cells within the same tumour are crucial for tumour growth after metastasis.
- Identified that targets of a key factor involved in melanoma invasion also impact on sensitivity to chemotherapy treatment.
- Refined a model leading to identification of key molecules involved in peri-neural invasion of squamous cell carcinoma.
- Characterised the molecular effects of a novel agent for treatment of chronic wounds.

Cancer Genetics

Senior Scientist: Georgia Chenevix-Trench

Coordinator, Genetics and Computational Biology Department

This group's main purpose is to work within international consortia to find inherited genetic variants that influence the risk of, or outcomes from, breast and ovarian cancer. The group has now found almost 200 such loci and the challenge is to discover how they act. So far it appears that most of the relevant genetic variants influence the expression of a gene in the vicinity, but not always the gene closest to the variant.

The group has developed a pipeline to predict the target genes that are breast cancer risk loci, which can be used to plan the necessary experiments to validate them. This pipeline shows that many of the genes predicted as targets of these risk loci are also somatically mutated as tumours develop. The lab has also looked at somatic events that occur in breast tumours that arise as a consequence of inherited mutations in the ATM gene, and has found that, surprisingly, they do not have the hallmarks of a tumour caused by aberrant DNA repair.

Highlights:

- Identified 65 variants associated with risk of breast cancer and predicted the target genes.
- Identified 10 variants associated with risk of estrogen receptor negative breast cancer.

- Predicted breast and prostate cancer risk in male BRCA1 and BRCA2 mutation carriers using the polygenic risk score.
- Conducted a large transcriptome-wide association study in 119 000 cases and 101 000 controls of European descent. This study identified new breast cancer genes and demonstrated that most mediate breast cancer risk.

Cancer Immunoregulation and Immunotherapy

Group Leader: Michele Teng

Cancer immunotherapy – which harnesses and enhances tumour-specific T cell responses – has become the fourth pillar of cancer treatment (along with surgery, radiotherapy and chemotherapy). Although cancer immunotherapies have demonstrated clinical efficacy in many advanced cancers, a significant proportion of patients do not respond. Furthermore, the dosing and scheduling for immunotherapies in combination or with other cancer treatment remains to be optimised. Using different mouse tumour models to mimic human cancers that are responsive or non-responsive to current cancer immunotherapies, the group is evaluating the best combination of treatments that is most likely to be effective for different cancer types.

Highlights:

- Validated pre-clinical findings that in the context of surgery, neo-adjuvant was superior over adjuvant immunotherapy in treating non-small-cell lung cancer and melanoma.
- Demonstrated that blocking IL23R was more effective at suppressing metastases than was neutralising IL23.
- Demonstrated that Bat3+ DCs and type I IFN are critical for the efficacy of neo-adjuvant cancer immunotherapy.
- Defined the parameters for optimal neo-adjuvant immunotherapy and primary tumour surgery.

Cancer Precision Medicine Group

Group Leader: Harsha Gowda

This research group is working on delineating mechanisms of acquired resistance to kinase inhibitors and devising novel strategies to combat therapeutic resistance. Currently, the group is focusing on melanoma, breast and lung cancers. They are deriving resistant clones for kinase inhibitors that are used to treat these cancers by subjecting corresponding cell lines to selection pressure in vitro. These resistant clones will be charaterised by employing genomic and proteomic approaches to determine underlying mechanisms that confer resistance. The group will then evaluate therapeutic intervention strategies to overcome drug resistance. They will also evaluate treatment strategies that might delay or prevent the onset of acquired resistance.

Highlights:

- Identified spleen tyrosine kinase as a potential therapeutic target in oesophageal squamous cell carcinoma.
- Characterised miRNA alterations associated with chronic exposure to cigarette smoke in lung, oral and oesophageal cancers.
- Characterised protein expression and signaling alterations associated with chronic exposure to cigarette smoke and chewing tobacco in oral keratinocytes.
- Characterised curcumin mediated signaling pathways in head and neck squamous cell carcinoma.

Clinical genomics

Team Head: Ann-Marie Patch

This recently established group has been focusing on research into ovarian, breast and colorectal cancers and mesothelioma. Dr Patch was part of the team that published the first cancer whole-genome sequencing data generated on a new sequencing platform available from the Beijing Genomics Institute (BGI) based in China. This work is important because it demonstrates the utility of this alternative platform in a market with little choice and makes available the data for the wider research community to evaluate. Dr Patch's research – spanning colorectal, brain and endometrial cancer – has focused on identifying genomic heterogeneity in cancer samples. This is crucial to understand as it can directly affect a patient's response to treatment. With collaborators from Western Australia, the group has analysed the genomes of more than 60 malignant pleural mesothelioma cancers.

Highlights:

Identified treatment-affecting genomic differences between patient-matched bowel cancer and liver metastasis samples.

- Identified genomic differences between primary colorectal cancer and liver metastasis samples that could affect response to therapy.
- Carried out the world's first cancer genome sequencing analysis using data generated on the BGI platform.
- Became a co-investigator on the workforce capability-building program for the Queensland Genomic Health Alliance.
- Trained the next generation of bio-informaticians and informatics trainers as part of the Bioplatforms Australia training team.

Conjoint Gastroenterology

Group Leader: Barbara Leggett

This group's focus is the molecular and clinical aspects of colorectal polyp and cancer development, with the aims of reducing cancer incidence and improving patient outcomes. The group is particularly interested in a subtype of colorectal polyps called sessile serrated adenomas. In the last year, the group has studied molecular changes in a large collection of these polyps and discovered that polyps in young patients are at lower risk of progressing to cancer than these polyps in older patients. This association with age is a new finding that will impact surveillance guidelines for patients with these polyps and will help us to better understand progression to malignancy in general. This finding is consistent with observations in our mouse model of serrated neoplasia. We are now further using our model to test the efficacy of aspirin and curcumin as chemopreventive agents for serrated polyps. This year we have also progressed our work on molecular subtypes of colorectal cancers and how key molecular events may differ between primary and metastatic cancers. This work is important for designing biomarker testing strategies and for informing therapeutic regimens.

Highlights:

- Using DNA methylation changes as a surrogate for risk, demonstrated a dramatically increased risk of malignant progression of BRAF mutant bowel polyps only after age 50 years, regardless of polyp size. This finding will contribute to the personalisation of bowel cancer surveillance recommendations to increase appropriate screening of high-risk patients while reducing procedures and costs for low-risk patients.
- Identified clinical and molecular features of colorectal cancers based on genome-wide DNA methylation, expression and mutation profiles.
- Using genome-wide copy number and mutational profiles, identified substantial molecular differences between primary and metastatic colorectal cancers that will impact biomarker screening strategies used for determining therapeutic regimens.
- With collaborators, genetically edited colonic organoids to develop an orthotopic murine model of serrated carcinogenesis.

Drug Discovery Group

Group Leader: Peter Parsons

The Drug Discovery Group identified factors released from direct killing of tumor cells in culture by the anti-cancer drug EBC-46 as proimmunogenic. This means the rapid necrosis that occurs when a tumour is injected in vivo may not only explain totally or in part local cure, but also raises the possibility of abscopal efficacy, ie. causing remote or metastatic tumours to regress as well. Some evidence has been obtained for this in combination with checkpoint blockade and an abscopal response was observed in a Phase I human trial of intratumoral injection of EBC-46 in at least one patient who had received no other treatment. Further studies have revealed the detailed mechanism for direct killing of tumor cells by this drug.

This group has also been studying the healing and antibacterial action of another compound in blood in cells cultured from skin. Early application in a pilot study of a diabetic animal indicated improved healing in the face of natural formation of bacterial biofilm. The group has established collaborations with several wound healing groups at Cardiff University. A suitable gel formulation was developed and support provided for the manufacture of this compound and EBC-46 on commercial scale.

The group continued to discover innate genetic pathways that confer resistance to skin cancer.

Highlights:

- Elucidated the abscopal action of EBC-46.
- Found that direct necrosis of tumor cells observed in culture by EBC-46 results from a complex process including apoptotic features and endoplasmic reticulum stress.
- Used a new animal model to demonstrate improved wound healing by a drug.
- Extended details of the discovery of a gene involved in congenital naevi formation, and of UV activation of hair follicle melanocytes.

Epigenetics and Disease

Team Head: Jason Lee

Epigenetic modifications change the pattern of expression of genes. In some cases, this can give rise to cancers. The Epigenetics and Disease Group is using small molecule inhibitors to reverse some of these changes and block tumour progression. Having successfully identified combinations of epigenetic modifying enzyme inhibitors that stop the growth of tumour cell lines – making them more sensitive to clinical treatments or reversing the resistance of some cancers to some therapies – the group is now testing these combinations in animal models. The epigenetic studies target breast, ovarian, head and neck, and lung cancers, as well as melanoma.

The group is seeking to define the molecular mechanisms involved and this has led to a focus on autophagy as being important in some of the model systems.

Highlights:

- Filed a patent application in relation to hypoxia-dependent gene repression as a predictor of relapse-free survival in breast cancer.
- Convened and chaired the Australian Epigenetics Alliance, Epigenetics 2017 conference.
- Invited to present at the Royal Australian College of Surgeons Queensland Annual State Meeting 2017 and the Asia-Korea Conference 2017.

Functional Cancer Genomics

Group Leader: Stacey Edwards

Genome-wide association studies (GWAS) have identified hundreds of genetic variants associated with an increased risk of breast cancer. Whole genome sequencing of human breast tumours has also revealed numerous mutations that could be involved in breast tumour development. The vast majority of these variants and mutations fall in noncoding regions of the genome, and therefore the target genes are not known. Over the past year, this group has focused on identifying the target genes (including protein-coding genes and non-coding RNAs) and underlying molecular mechanisms driving breast cancer risk and progression. Identifying the key target genes and pathways will increase our understanding of the biology underpinning breast cancer and provide key targets suitable for future drug repositioning or development.

Highlights:

- Using Capture HiC technology, identified the candidate target genes at 147 independent breast cancer risk signals.
- Breast cancer risk is strongly associated with an intergenic region on 11q13. The group has previously shown that the strongest risk variants fall within a distal enhancer that regulates CCND1. The group led studies that found that, in addition to CCND1, this enhancer regulates two long noncoding RNAs, CUPID1 and CUPID2.
- Also provided evidence that the risk SNPs result in reduced chromatin looping between the enhancer and the CUPID1/2 bidirectional promoter.
- Further showed that CUPID1 and CUPID2 are expressed in hormone receptor positive breast tumours and play a role in modulating double strand break (DSB) repair pathway choice.
- Contributed to the largest GWAS for breast cancer, and identified 65 novel loci associated with overall breast cancer. The results provide further insight into breast carcinogenesis and will improve the utility of genetic risk scores for individualised screening and prevention.
- Contributed to a transcriptome-wide association study, which evaluated associations of genetically predicted gene expression with breast cancer risk in 122 977 cases and 105 974 controls of European ancestry.
- Developed several new high-throughput technologies that will help identify all target genes from cancer risk regions.

Functional Genetics

Group Leader: Juliet French

Deputy Coordinator, Genetics and Computational Biology Department

The Functional Genetics Laboratory investigates how genetic variants in noncoding regions of the genome contribute to cancer risk and progression. Until recently, the genetic basis of cancer had only been examined in coding regions, which account for less than two per cent of the human genome. However, it is now apparent that noncoding regions are littered with functional elements such as transcriptional enhancers and long non-coding RNAs. This laboratory focuses on how inherited variants identified through genome-wide association studies and cancer-specific mutations identified through whole gene sequencing can alter these non-coding elements to promote the development of cancer. The ultimate aim is to use genetics to pinpoint the key genes and pathways implicated in the development of cancer to identify new therapeutic opportunities.

Highlights:

- Identified two novel lncRNAs that modify risk of breast cancer by modulating how DNA double strand breaks are repaired.
- Showed that modulation of lncRNAs by risk-associated variants is a predominant mechanism underlying breast cancer development.

- Used a high-throughput method to identify the target genes of enhancers that contain breast cancer risk SNPs.
- Identified more than 600 candidate breast cancer risk genes.

Gynaecological Cancers Group

Group Leader: Penny Webb

Coordinator, Population Health Department

The Gynaecological Cancers Group investigates all aspects of ovarian and endometrial cancer from aetiology to diagnosis, patterns of care, quality of life and survival. The group also contributes to similar studies of other cancer types. A particular focus is on the role of environmental (non-genetic) factors in not only the causation of cancer, but also the development of sequelae, quality of life and survival after a diagnosis of cancer. Much of this work is conducted within two national population-based studies – the Australian Ovarian Cancer Study and the Australian National Endometrial Cancer Study – and three international consortia – the Ovarian Cancer Association Consortium, Multidisciplinary Ovarian Cancer Outcomes Group and Epidemiology of Endometrial Cancer Consortium. The group has recently completed the 36-month follow-up for the Ovarian Cancer Prognosis and Lifestyle Study which is investigating whether modifiable aspects of lifestyle are associated with patient-reported outcomes and progression-free and cancer-specific survival following a diagnosis of ovarian cancer. The team is also using a national linked dataset to assess the relation between use of common diabetes and cholesterol medications and cancer risk and outcomes.

Highlights:

- Found components of a healthy diet pre-diagnosis were associated with improved survival, raising the possibility that dietary choices after diagnosis may improve survival.
- Validated the results of previous observational studies suggesting that taller women are at greater risk of ovarian cancer.
- Contributed to analyses from an international consortium showing that a history of endometriosis, asthma, depression, osteoporosis and autoimmune, gallbladder, kidney, liver, or neurologic diseases is not associated with survival after a diagnosis of ovarian cancer, but that survival may be worse for women with thyroid disease.
- Contributed to analyses estimating the number of new cancers and cancer deaths in Australia that were attributable to potentially modifiable factors such as tobacco smoking, obesity and diet.

Health Economics

Team Head: Louisa Gordon

The Health Economics Group has been working on economic evaluation projects across various areas, including clinical genomic applications in melanoma, lung cancer and infectious diseases; new diagnostics in prostate cancer (Gallium-labelled PSMA PET/MRI); cost impacts of a dedicated skin clinic for organ transplant patients; and, cost-effectiveness analyses of skin cancer prevention priorities and exercise intervention for breast cancer survivors.

Highlights:

- Commenced work to establish the economic evidence and value of clinical demonstration projects involving next generation sequencing in clinical practice in Queensland.
- Presented a plenary talk at the fourth International Conference for UV and Skin Cancer Prevention.
- Invited by the World Health Organisation to undertake a project on economic impacts of sunbed regulation.
- A member of the team won the ‘best abstract in conference prize’ at the Health Services Research of Australia and New Zealand Association Conference.

Gordon and Jessie Gilmour Leukaemia Research Laboratory

Group Leader: Steven Lane

Head, Cancer Program

The Gordon and Jessie Gilmour Leukaemia Research Laboratory has examined the role of a new type of anti-cancer drug in leukaemia. The group has been able to use preclinical human samples to show that this drug is highly effective in acute myeloid leukaemia. Additionally, the group has shown the importance of genetic factors in determining patients' response to chemotherapy, and the progression of early-stage blood cancers to more aggressive blood cancers.

Highlights:

- Identified the interaction between genetic factors and clinical factors in predicting outcomes in acute myeloid leukaemia.
- In pre-clinical studies, validated imetelstat in human acute myeloid leukaemia.

Immunology in Cancer and Infection

Senior Scientist: Mark Smyth

Coordinator, Immunology Department

The Immunology in Cancer and Infection Group studies the efficiency and mechanism of new cancer immunotherapies. The group has achieved four major goals. Firstly, it has shown that the inflammatory cytokine IL-18 is critical in the development of the bone marrow disease, multiple myeloma. Bone marrow IL-18 levels are prognostic of patient outcome. Secondly the group has continued to develop lead antibodies against the immune checkpoint molecule, CD96, expressed on immune T cells and natural killer cells. The group has discovered their mechanism of action and shown that there is a rationale to take these lead new therapeutics into the clinic. Thirdly, they have partnered with a small pharmaceutical company to develop new antibodies against the extracellular ATPase enzyme, CD39. This is a new target in cancer immunotherapy. The group is now studying the mechanism of anti-tumour immunity. Finally, they have shown that the tumour myeloid cell expression of CD155 reduces the tumour growth and spread and anti-tumour immune response respectively. The group has shown the importance of this molecule in mouse and human cancers and proposes new, complementary strategies designed around this target for cancer treatment.

Highlights:

- Demonstrated the prognostic value of IL-18 levels in the bone marrow in human multiple myeloma patients and the role of IL-18 in disease development.
- Developed lead anti-human CD96 therapeutics for clinical evaluation and developed a new method for detecting CD96 in human cancers.
- Pre-clinically tested CD39 as a new cancer immunotherapy target.
- Demonstrated that both tumour and host expression of CD155 regulate cancer growth and spread.

Medical Genomics

Group Leader: Nic Waddell

Coordinator, Cancer Program

Genomics allows researchers to study a person's entire genome. The Medical Genomics Group uses computational techniques to analyse large amounts of genomic data to learn about disease and find better ways to treat or diagnose patients. This group is collaborating on a variety of projects to provide computational analysis. These studies include the International Cancer Genome Consortia melanoma project, a national whole genome mesothelioma project, and a familial breast cancer project.

The group has also been working in the Australian Genomics ICCon Partnership research project, which is performing whole genome sequencing of patients from families with cancer to find the underlying germline variant. Members of the Medical Genomics team are also working with the Queensland Genomics Health Alliance on research into the ethical, legal and social implications of genomic testing.

Highlights:

- Established genomiQa, which is the first Australian company to specialise in the analysis of whole cancer genome data.
- Identifed germline variants and somatic inactivation of MUTYH in five per cent of cases of pancreatic neuroendocrine cancer.
- Described the mutation landscape of melanoma and pancreatic neuroendocrine cancers.
- Continued to be active members of the Austalian Genomics Health Alliance and the Queensland Genomics Health Alliance.

Molecular Cancer Epidemiology

Group Leader: Amanda Spurdle

The Molecular Cancer Epidemiology Group develops and applies statistical and laboratory methods to determine which variants in cancer syndrome genes cause disease. The group shares this information with clinicians so they can use it for the most appropriate clinical management of their patients. The group has conducted several studies to confirm the clinical importance of specific variants in cancer genes causing hereditary breast and ovarian cancer and Lynch Syndome (which causes colorectal and endometrial cancer). The team has also developed methods to assess the clinical importance of variation in the TP53 gene, which causes the multi-cancer Li-Fraumeni Syndrome. The researchers have been actively developing the BRCA Exchange website, aimed at providing information to clinicians and patients about specific variants identified during clinical genetic testing.

Another important component of this group's research is discovering how genetic factors influence the development of endometrial and other cancers, and using new knowledge about cancer biology to experimentally test specific drugs as potential therapies for cancer. The group has completed a large international study, which has identified nine new modest-risk genetic factors for endometrial cancer. In parallel we have also found that more genetic factors (high-risk and modest-risk) remain to be identified, by comparing genetic information to reported family history of cancer for patients.

Highlights:

- Conducted the first study to systematically assess endometrial cancer risk associated with report of cancer in first-degree and second-degree relatives and showed that it is important to collect information on endometrial cancer and age at diagnosis in both first-degree and second-degree relatives when assessing the family cancer history for genetic counselling and risk prediction.
- Discovered that known high-risk cancer genes account only in part for strong family history of endometrial cancer.
- Established that low ER and PR tumour expression is associated with poor survival after endometrial cancer diagnosis, but is not as predictive at the individual level.
- Optimised bioinformatic tools for predicting the clinical importance of TP53 gene variants.
- Provided evidence for a link between endometrial cancer and endometriosis from cross-disease genetic studies.

Oncogenomics

Senior Scientist: Nick Hayward

The Oncogenomics Laboratory has a strong focus on melanoma, while also conducting some research into lung cancer. Principally, the group researches the different histological subtypes of melanoma (i.e. cutaneous, uveal, acral and mucosal) to identify unique cancer gene dependencies and novel therapeutic drug targets. The research also aims to understand transcriptional cell states and their role in drug resistance. The group also has a strong interest in characterising the underlying genetics of melanoma predisposition.

Highlights:

- Contributed to the finding that a common intronic variant of PARP1 confers melanoma risk and mediates melanocyte growth via regulation of MITF.
- Showed that DOT1L plays a protective role in UV-induced melanomagenesis.
- Found that RGS7 is recurrently mutated in melanoma and promotes migration and invasion of human cancer cells.
- Demonstrated that intergenic disease-associated regions are abundant in novel transcripts.
- Showed that telomere sequence content can be used to determine ALT activity in tumours.

Oncology and Cellular Immunology

Team Head: Tobias Bald

The Oncology and Cellular Immunology Laboratory focuses on the role of the innate and adaptive immune system during tumour progression and resistance to cancer immunotherapies. In particular, this group studies the impact of neutrophils – the most abundant type of immune cell in humans – and natural killer cells on metastasis and therapy resistance. For this work, the group is using state-of-the-art genetically engineered mouse models and a variety of preclinical cancer models (mainly melanoma). While the team is trying to understand immune cell populations that negatively affect therapeutic outcomes, they are also working on how to boost anti-tumoural killer T cells to finally develop novel therapies and/or improve existing therapies for the benefit of cancer patients.

Highlights:

- Showed that cancer immunotherapies cause the recruitment of immune suppressive neutrophils, which limit the efficacy of anti-tumoural T cells. Using a small molecule inhibitor against c-Met inhibited this neutrophil response and ultimately improved the efficacy of different immunotherapies.
- Received a NHMRC New Investigator Project grant to further investigate the role of immune suppressive neutrophils in cancer immunotherapy.
- Showed that innate Lymphoid Cells type 1 (ILC1s) can arise from Natural Killer (NK) cells dependent on TGF-beta signalling in the tumour microenvironment. This is very important as the group has also shown that these ILC1s have less anti-tumoural properties, compared to NK cells, thus leading to enhanced tumour growth and metastasis.

Personalised Medicine

Team Head: Fares Al-Ejeh

The Personalised Medicine Team is conducting inter-disciplinary, translational research in cancer, particularly breast cancer. This group's research spans cancer biomarker identification and validation using samples from patients, pre-clinical research to understand the cancer biology and identifying therapeutic opportunities towards clinical translation.

Highlights:

- Signed a Memorandum of Understand with the Dubai Health Authority to implement precision medicine technologies from the Personalised Medicine Team and other research groups at QIMR Berghofer.

- Identified novel mechanisms for the contribution of a kinase, ERK5, to the progression of cancers, particularly breast cancer. This new understanding also enables new and tailored therapies.
- Validated the integrated Cancer Recurrence Score as a test for prognosis in breast cancer and a predictive test for benefit from chemotherapy.
- Identified and validated several new targets in breast cancer with great therapeutic potentials.

Precision and Systems Biomedicine

Group Leader: Michelle Hill

The Precision and Systems Biomedicine Laboratory aims to improve health outcomes by developing better diagnostic tests for early detection of cancer, and by harnessing the power of 'omics' technologies and computational systems biology methods to model molecular networks altered in disease and to predict therapeutic response.

Highlights:

- Performed the first large-scale validation study to demonstrate the ability of a panel of biomarkers to detect early-stage oesophageal cancer through a blood test.
- Completed an independent validation study of oesophageal adenocarcinoma serum biomarkers in Australian and US groups.
- Established new collaborations for developing oesophageal adenocarcinoma biomarkers and for evaluating complementary pathway activity in cancer.

Sid Faithfull Brain Cancer Laboratory

Team Head: Bryan Day

The Sid Faithfull Brain Cancer Laboratory studies the most common and aggressive form of adult brain cancer, glioblastoma (GBM), the most common brain cancer in children, medulloblastoma, and the rare and incurable paediatric brain stem cancer, diffuse intrinsic pontine glioma.

The focus of this group's research is understanding the molecular mechanisms that are responsible for the initiation and recurrence of brain cancers and developing and testing new and effective therapies to treat these highly aggressive diseases.

Highlights:

- Commenced clinical testing of EphA3 targeting strategies in recurrent glioblastoma in Australia.
- Continued to successfully develop a high-grade brain cancer bank at QIMR Berghofer.
- Initiated development of Q-Cell, a brain cancer cell line resource that aims to provide a source of high-quality, well-characterised brain cancer cell lines for academic use. These resources are valuable to researchers seeking readily-usable, well-characterised, clinically-relevant, gold-standard models of GBM.

Signal Transduction

Group Leader: Kum Kum Khanna

Deputy Coordinator, Cell and Molecular Biology Department

The Signal Transduction Laboratory researches the DNA damage response (DDR) pathway that is essential for survival of all organisms. Defects in DDR are the cause of many diseases, including cancer. This group's work is to understand how its dysregulation leads to development and progression of cancer and to provide the basis for translation to the clinic. An example of the relevance of this work is the description of intrinsic differences in DDR

between Cancer Stem Cell (CSC) and other cells. This points to an explanation of the reason for the survival of CSCs after therapies, and hence, their role in promoting metastases. The group is addressing this gap through the discovery of critical mediator of CSC's radio resistance.

The laboratory also focuses on triple-negative breast cancer (TNBC), which relapses frequently and is resistant to treatments. More than 90 per cent of TNBCs carry mutations in tumor suppressor p53. The group has identified novel compounds to target p53-mut cancers, which are currently being tested in preclinical models.

In addition to cancer, DDR is also of great relevance to other diseases. The Signal Transduction Laboratory is applying its expertise to understanding the role of DDR in maintenance of normal tissue homeostasis.

Highlights:

- Identified new strategies for targeting triple-negative breast cancer, which the group hopes to test soon in a clinical trial.
- Discovered that overexpression of Cep55 results in progressive germ cell loss in mice and causes a phenotype similar to that seen in many azoospermic men.
- Found that 5T4 oncofetal glycoprotein marks differentiated breast cancer cells and regulates endocytic regulators.
- Discovered that inhibiting LSD1, a histone demethylase, serves as a promising adjuvant therapy to subvert breast cancer progression and treatment resistance.

Statistics Unit

Group Leader: Gunter Hartel

The Statistics Unit provides statistical advice, consultation and training to researchers and clinicians from QIMR Berghofer, Metro North Hospital and Health Service (MNHHS) and Mater Research (MR). The unit assists with developing research proposals, funding applications and analysis plans, and statistical analyses. The team also assists researchers with writing reports, co-authoring publications and collaborating on research grants. The Statistics Unit also collaborates with IT to provide statistical analysis software to QIMR Berghofer staff.

Highlights:

- Continued collaborating with the Human Malaria Modeling Unit, resulting in multiple high-profile publications and invitations to present at international conferences.
- Received authorship on 36 peer-reviewed publications.
- Provided statistical advice on more than 20 grant applications.
- Secured a consulting agreement with new partner, Mater Research.

Translational Cancer Immunotherapy

Team Head: Siok Tey

This group's focus is translating basic immunology research into clinical application in the field of cancer immunotherapy and bone marrow transplantation. The Translational Cancer Immunotherapy Laboratory is particularly interested in developing and testing new cell therapy technologies. In the past 12 months, the group has developed a method to isolate, purify and expand a type of immune cell known as a regulatory T cell (Treg), which is a promising therapy for a debilitating complication of bone marrow transplantation, known as graft-versus-host disease. This group's ongoing work will scale up this technology for future phase I clinical trials.

The Translational Cancer Immunotherapy Laboratory has also started working on Chimeric Antigen Receptor (CAR) T cells. CAR T cell technology represents a major breakthrough in cancer therapy, with remarkable responses seen in patients with otherwise-resistant leukaemia. The group is currently working on this technology to make it more effective and hopes that its 'home-grown' platform will make this life-saving technology more accessible and affordable to Australian patients.

The group is also actively working on basic science research to drive future translational work. This includes studies on the how virus infection can strengthen immunity against leukaemia and the changes in gene expression during immune cell maturation.

Highlights:

- Developed a clinically applicable method to isolate regulatory T cells (Tregs) at high purity.
- Developed a method to genetically modify Tregs, which enables them to be tracked in future phase I clinical trials.
- Completed single cell RNA sequencing of natural killer (NK) cells following bone marrow transplantation to understand the changes in gene expression during maturation.
- Established a mouse model to study the impact of cytomegalovirus infection on leukaemia relapse following bone marrow transplantation.

Tumour Microenvironment

Group Leader: Andreas Moller

The Tumour Microenvironment Laboratory focuses on how specific processes between cancer cells and surrounding non-tumour stromal cells influence carcinogenesis and its metastasis to distant organs. The group aims to understand how low oxygen (hypoxic) environments and other stress conditions change the intercellular communication within the tumour microenvironment. In particular, the group works to understand how cancer-derived small vesicles, named exosomes, participate in different steps of metastatic spread from a primary tumour, ranging from reprogramming of malignant and tumour-associated stromal cells to formation of pre-metastatic niches.

Highlights:

- Developed a blood-based biomarker for use in cancer patients to determine their potential response to therapies.

INFECTIOUS DISEASES PROGRAM

HEAD: PROFESSOR JAMES McCARTHY

Infectious diseases claim millions of lives each year across the globe. They are caused by pathogenic organisms, including viruses, bacteria and parasites. The research groups in QIMR Berghofer's Infectious Diseases Program are studying how these organisms cause illness, searching for better ways to diagnose and treat the diseases they cause, and developing vaccines and education strategies to prevent infections. These research groups have a strong focus on diseases that disproportionately affect developing countries and tropical regions.

QIMR Berghofer's Infectious Diseases Program includes research into viruses (including human immunodeficiency virus (HIV), cytomegalovirus, Epstein-Barr virus and mosquito-borne viruses), bacteria (including streptococci) and parasites (including malaria, intestinal protozoa and scabies). The program has a strong focus on collaborations with clinicians and pharmaceutical companies.

QIMR Berghofer is a founding member of the Queensland Tropical Health Alliance (QTHA), which is designed to enhance collaborations and networking in the field of tropical health. The Institute is also a founding member of the Australian Infectious Diseases Research Centre (AID), which supports research into diseases such as malaria, dengue fever and schistosomiasis.

AMI Laboratory

Senior Scientist: Qin Cheng

The Army Malaria Institute (AMI) Laboratory, established to consolidate close research collaborations between QIMR Berghofer and the Australian Defence Force, focuses on malaria research and investigates biological and molecular changes that make parasites difficult to detect and more resistant to antimalarial drugs. These include investigations into factors impacting on the accuracy of malaria rapid diagnostic tests, studies of drug resistance mechanisms and surveillance of drug resistant parasites and molecular epidemiology of malaria in the Pacific region. The laboratory's research informs malaria control and elimination policy and strategies.

Highlights:

- Assisted WHO-FIND to evaluate and quality-assure malaria rapid diagnostic tests for global malaria control programs.
- Discovered the artemisinin-induced dormancy phenomenon in *Plasmodium falciparum* in vitro and in humans, and its impact on treatment outcomes.
- Discovered the emergence of *P. falciparum* parasites lacking HRP2 (diagnostic-resistant malaria parasites) in South America and Africa, causing a high rate of false negative malaria rapid diagnostic tests results, thereby delaying life-saving treatment and presenting a major threat to malaria case management and control.
- Demonstrated malaria prevalence and epidemiology in the Solomon Islands and Vanuatu.
- Established a novel method to enable separation of male and female gametocytes, allowing assessment of transmission-blocking effects.

Cellular Immunology

Group Leader: Scott Burrows

The Cellular Immunology Group is investigating the role of Epstein-Barr virus (EBV) in cancer. EBV is associated with 200 000 cancer cases annually. These malignancies include nasopharyngeal carcinoma, Hodgkin's lymphoma and post-transplant lymphoproliferative disease. EBV infection also predisposes to the autoimmune disease, multiple sclerosis (MS). At present no commercial vaccines or antiviral drugs for EBV are available. T lymphocytes play a pivotal role in the immune control of EBV, recognising virus-infected cells through the use of T cell receptors (TCR). Our work this year has been aimed toward the development and preclinical testing of novel approaches for treating EBV-associated malignancies, including using high-affinity, EBV-specific TCRs,

either with TCR gene transfer or soluble high-affinity TCR therapy. The ultimate aim is to translate this technology into a clinical setting as an extension to the immunotherapy clinical trials for virus-associated malignancies already underway at QIMR Berghofer. The group has also investigated molecules from animal venoms for their capacity to augment the human immune response.

Highlights:

- Discovered a method to stabilise peptide vaccine candidates while maintaining their capacity to stimulate the immune system.
- Developed novel therapeutic agents based on high-affinity T cell receptors that can kill malignancies associated with EBV.
- Identified molecules from animal venoms that can augment human immune function.
- Identified T cell receptors that can be used clinically to treat malignancies associated with EBV.

Clinical Tropical Medicine

Senior Scientist: James McCarthy

Head, Infectious Diseases Program

The focus of the Clinical Tropical Medicine Laboratory is on the development and application of clinical trial systems entailing experimental human malaria infection. These trials are being used to improve understanding of the biology of malaria in humans, the immune response to malaria, as well as to develop new anti-malarial drugs and diagnostics. The group is studying the transmission of malaria from these experimentally infected human hosts to mosquito vectors. Other work is underway to investigate the effect of interventions to control intestinal parasite infections using a sensitive biomedical technique known as PCR to measure the burden of parasite infection.

Highlights:

- Conducted a clinical trial of a new anti-malarial drug.
- Tested a genetically attenuated malaria parasite in humans.
- Developed a new bank of artemisinin-resistant malaria parasite for testing how well antimalarial drugs work against drug-resistant malaria.
- Published an important paper showing that it is possible to study the transmission of malaria parasites from experimentally infected subjects to *Anopheles* mosquitos.
- Undertook a trial to test whether the drug tafenoquine would be useful to protect people against malaria. This trial facilitated the approval of this drug by the US Food and Drug Administration.
- Completed a study that showed that feeding the anti-parasitic drug ivermectin to pigs led to the death of any malaria mosquitoes that fed on them.

HIV Molecular Virology

Group Leader: David Harrich

The HIV Molecular Virology Laboratory is focused on identifying critical interactions between viral and cellular proteins that are essential for virus replication. The group identified the first human cellular protein called eEF1A that is essential for infection and acts by directly binding to the viral enzyme reverse transcriptase. Preliminary experiments indicate this protein interaction is a potential drug target. The group has reported the discovery of powerful inhibition of HIV-1 replication in human T cells by Nullbasic, an antiviral protein. The group's studies showed that Nullbasic strongly suppresses HIV-1 in productively infected human T cells by blocking HIV-1 transcription. How Nullbasic affects this change of the HIV-1 promoter is unknown and is a second major area of investigation by the group. A small pre-clinical trial to test Nullbasic as a gene therapy agent is ongoing.

Highlights:

- Demonstrated that the antiviral protein Nullbasic enforces complete shutdown of HIV-1 in human T cells.
- Showed that the interaction between HIV-1 reverse transcriptase and the cellular protein eEF1A can be targeted by small compounds that strongly inhibit a critical viral process called reverse transcription.

Immunology and Infection

Group Leader: Christian Engwerda

The Immunology and Infection Laboratory continues to identify immune molecules that can be targeted to improve anti-parasitic vaccine efficacy and drug treatment. This has been achieved by studying immune regulatory mechanisms activated during malaria and visceral leishmaniasis (VL), two of the most important human parasitic diseases. The group has used established pre-clinical models of disease, as well as clinical samples from human volunteers deliberately infected with *P. falciparum*, and from malaria and VL patients. The group's research remains focused on immunoregulatory mechanisms mediated by CD4+ T cells, as these cells play important roles during infection, cancer and autoimmunity. By using previously generated datasets that identify genes differentially expressed by human and animal CD4+ T cells during different parasitic disease conditions, the group has discovered novel immunomodulatory molecules that play key roles in inflammation.

Highlights:

- Discovered a novel inflammatory molecule, NKG7, which promotes inflammation.
- Identified CD4+ T cell CXCL8 gene (encoding IL-8) transcription as an early biomarker of sub-microscopic *P. falciparum* infection, with predictive power for parasite growth.
- Discovered the early development of an immunoregulatory CD4+ T cell phenotype in blood-stage *P. falciparum* infection and showed selective immune check point blockade may be used to modulate early developing anti-parasitic immunoregulatory pathways as part of malaria vaccine and/or drug treatment protocols.
- Discovered a new transcription factor, PBX1, that plays an important role in the generation of inflammation during infection.
- Discovered that NKG7 is a novel mediator of inflammation during parasitic infection. This molecule is expressed by NK, CD8+ and CD4+ T cells during infection. In mice lacking NKG7 expression, inflammation was inhibited and associated with reduced control of parasite growth. The group has submitted a provisional patent on the use of this molecule as a clinical target.

Inflammation Biology

Group Leader: Andreas Suhrbier

Enhancing international and regional health security has become an important objective for national governments as the transnational social and economic costs of infectious disease outbreaks are fully realised. The Inflammation Biology group has focused on chikungunya virus (CHIKV) and Zika virus (ZIKV), two emerging mosquito-transmitted viruses of international concern.

In collaboration with the Australian Infectious Diseases Research Centre, the group established ZIKV foetal infection and testes damage mouse models, which are being used to investigate host/virus interactions and test new anti-ZIKV interventions with commercial and academic collaborators. The group has expanded its use of RNA sequencing to unravel a number of issues, including mosquito viromes, the role of diet on viral arthritides and systems vaccinology of new vaccine vectors.

Highlights:

- Identified Granzyme A as a major player in arthritic inflammation.
- Found that the slightly lower temperatures in the body's extremities is important for driving alphaviral arthritides.

- Discovered that a Sementis Copenhagen Vector multi-disease vaccine protects mice against both Zika and chikungunya virus.
- Found that the virome of *Aedes aegypti* mosquitoes comprises up to 27 viruses, 23 of which are currently uncharacterised.
- Completed preclinical testing of a poxvirus-based multi-disease SCV-ZIKA/CHIK vaccine, illustrating that a single vaccination was able to prevent chikungunya arthritis, Zika virus infection of foetal brains and Zika virus mediated testes damage in mice.

Lung Bacteria

Group Leader: Scott Bell

The Lung Bacteria Group studies pathways for acquiring and transmitting respiratory infection between people with lung diseases. This group also studies ways to reduce the risk of infection being acquired and transferred between people.

Highlights:

- Demonstrated the effectiveness of masks in reducing cough aerosols in people with cystic fibrosis (CF).
- Showed that wearing masks is effective in the clinic when they are worn for extended periods.
- Highlighted the importance of geographical location as a risk factor for acquiring non-tuberculous mycobacterial infection in CF (an emerging infection).
- Demonstrated that anomalies in T cell function are associated with individuals at risk of *Mycobacterium abscessus* complex infection.

Malaria Immunology

Group Leader: Ashraful Haque

Coordinator, Infectious Diseases Program

The Malaria Immunology Group employs state-of-the-art, single-cell genomics technologies in a variety of systems – including experimental animal models and human clinical samples – to help understand the biology of malaria, and the adverse effects of bone marrow transplantation and cancer. In addition, the group has focused on the disease malaria, by examining how anti-malarial drugs and our immune systems can best control parasite numbers.

Highlights:

- Published one of the first studies to examine T cell differentiation using single cell genomics and machine learning approaches.
- Published a review that allows other researcher to design and conduct their own single-cell studies.
- Discovered a new way in which the host inflammatory response to infection can control malaria parasites.
- Discovered a gene that participates in the innate immune response to infection (IRF3) that plays a pivotal role in controlling immunity to malaria.

Molecular Immunology

Group Leader: Michelle Wykes

The Molecular Immunology Laboratory is focused on investigating the role of immune checkpoint inhibitors, especially the PD-1 pathway, in the immune system's protecting against malaria and cancer. The group is working on three main projects with the aim of developing novel immunotherapies and experiments. The group is also investigating the pathogenesis of malaria and is working to develop new treatments for this disease, which will be relevant to other diseases.

Highlights:

- Discovered the importance of PD-L2 in human and mouse melanoma.
- Found that PD-L2 affects important immune cells known as CD8+ T cells, which are crucial in protecting against cancer.
- Developed human antibodies for immunotherapy.
- Completed a study on Crohn's disease.

Molecular Parasitology

Senior Scientist: Don McManus

The Molecular Parasitology Group researches parasitic worm diseases, notably schistosomiasis, echinococcosis and soil-transmitted helminthiases caused by the nematodes *Ascaris* (roundworm), *Trichuris* (whipworm) and *Ancylostoma* (hookworm). The group aims to translate laboratory findings into the development of effective public health interventions for these infections, leading to their elimination. The group is internationally recognised for its pioneering work in developing and testing transmission-blocking vaccines for schistosomiasis in Asia (especially China and the Philippines), in diagnostics and in global tropical health. The group continues to contribute papers in many areas of parasitology and population health, many of which have been transformational, shaping policy and practice and leading to improved treatment and control of worm infections with wide-scale application for informing government agencies globally on intervention options in other parasite-endemic communities, including in Africa.

Highlights:

- Formed part of an international consortium that published the sequence and analysis of the whole genome of a schistosomiasis-transmitting freshwater snail, *Biomphalaria*.
- Used dynamic transcriptomes to identify biogenic amines and to show that reproduction in schistosomes is mediated by insect-like hormonal regulation.
- Developed a new test, the novel Droplet Digital PCR assay, to detect parasite-cell-free DNA for the diagnosis of human schistosomiasis and confirmed its utility using diverse clinical samples.
- Undertook a parallel comparison of antigen candidates for developing an optimised serological diagnosis of human schistosomiasis.

Mosquito Control

Group Leader: Greg Devine

The Mosquito Control Group continues to explore the new insecticidal vector control paradigms of 'auto-dissemination' and 'spatial repellents' in Europe, the Americas and Asia. The group created a new strain of *Wolbachia*-infected *Aedes aegypt*i and made significant inroads into the exploitation of mosquito genomics for identifying vector control targets and population dynamics. The group continued to work with USAID and UK MRC to define the utility of near infra-red spectroscopy to characterise key entomological traits such as age and infection. The Mosquito Control Group continues to chair and host the Mosquito and Arbovirus Research

Committee, which advises Queensland Health and local governments on matters of vector surveillance and control, and works with the State and Federal Governments on the costs and public health risks of exotic mosquito invasions and on the ecology and epidemiology of Ross River virus.

Highlights:

- Created and characterised a *Wolbachia* strain subsequently released in North Queensland.
- Identified *Aedes koreicus* invasion and chikungunya virus transmission as a new public health threat
- Initiated urban trials on new 'spatial repellent' insecticides in Mexico.
- Quantified the economic and public health costs of *Aedes albopictus* invasions in Australia.
- Established the group as the 'go to' laboratory for state and federal government work on the biosecurity implications of insecticide-resistant *Aedes aegypti* invasions.

Scabies

Group Leader: Katja Fischer

Scabies is an infectious disease caused by parasitic mites. It affects millions of people worldwide and, importantly, a high percentage of Aboriginal and Torres Strait Islander people in remote northern Australia. Scabies is listed by the World Health Organization as a neglected tropical disease (NTD) and is inextricably linked to extremely high rates of pyoderma, chronic rheumatic heart and kidney diseases, invasive streptococcal and staphylococcal sepsis and, thus, represents a huge, persistent public health burden.

The Scabies Group uses cutting-edge molecular and bioinformatic methods to generate crucial high-quality, integrated molecular databases to identify new drug and diagnostic targets and translate these into clinical trials and practice. The group analyses the diversity and dynamics of the microbiota associated with scabies and the molecular mechanisms that underpin the synergy between mite and bacteria against host defence to provide the basis for improved treatment and management strategies.

Highlights:

- Generated the scabies mite genome, proteome and transcriptome databases.
- Analysed the scabies mite associated microbiota.
- Undertook in vitro and in vivo testing of a new drug candidate in collaboration with a commercial partner.
- Identified three new scabicide candidates that will kill all parasitic stages.

Translational and Human Immunology

Team Head: Corey Smith

The Translational and Human Immunology group is delineating the mechanisms that regulate human immune responses in health and disease. Knowledge gained from these studies forms the basis for developing novel immune interventional and diagnostic strategies, which can be implemented in clinical settings. The group is also interested in understanding the transcriptional and epigenetic regulation of human immune responses during persistent viral infections and human cancers, and in developing strategies to manipulate this regulation to improve outcomes following immune intervention.

Highlights:

- Demonstrated transcriptional and epigenetic changes in virus specific T cells associated with poor viral control in transplant patients.

- Completed a first-in-human study using immunotherapy to treat cytomegalovirus (CMV)-associated complications in solid organ transplant patients.
- Commenced a new research program on immunotherapy for common mutations in oncogenes.

Tumour Immunology

Senior Scientist: Rajiv Khanna

Deputy Coordinator, Immunology Department

The Tumour Immunology Laboratory is gaining a deeper understanding of the mechanisms by which an immune response to tumours may be generated, augmented and applied to inhibit tumour growth. The group's aim is that its research will be applicable to the treatment or prevention of cancer.

Highlights:

- Successfully completed a clinical trial of immunotherapy for cytomegalovirus infection in transplant patients.
- Completed recruitment of patients to test a T cell therapy as an adjuvant therapy for brain cancer.
- Successfully completed a clinical trial of immunotherapy for multiple sclerosis patients.
- Received world-first approval from the US Food and Drug Administration for the trial of an 'off-the-shelf' T cell immunotherapy for multiple sclerosis (in collaboration with US-based biotech company, Atara Biotherapeutics).
- Successfully developed immune-based T cell therapy for multiple viral infections in transplant patients.
- Developed a novel immunotherapy platform for human-papilloma-virus-associated cancers.

CHRONIC DISORDERS PROGRAM

HEAD: PROFESSOR GREG ANDERSON

QIMR Berghofer is conducting research into a range of chronic disorders that affect people's quality of life and health prospects. These include asthma, eye disease, haemochromatosis, hepatic fibrosis, cystic fibrosis liver disease and inflammatory bowel disease. The incidence of some of these conditions is rising due to demographic and lifestyle changes and QIMR Berghofer is conducting research in this field in response to the community's changing needs.

The Institute's chronic disorders research groups are conducting wide-ranging investigations, including identifying the genetic variation associated with the risk of some of these disorders, as well as understanding the natural history of iron-related disorders.

Asthma Genetics

Group Leader: Manuel Ferreira

Coordinator, Chronic Disorders Program

The Asthma Genetics Group has identified hundreds of genetic risk factors for allergic diseases, including asthma, hay fever and eczema. These risk factors point to potential new drug targets for allergic disease.

The group completed a phase II trial of an anti-IL-6R drug (tocilizumab) in participants with mild allergic asthma. This drug was not effective in preventing exacerbations. The results raise the possibility that only a small sub-group of asthmatics might benefit from drugs that block IL-6R.

Based on data from the Pharmaceutical Benefits Scheme, the group found that individuals taking regular tocilizumab treatment who also suffered from asthma did not change the frequency of drug prescriptions for asthma after the onset of tocilizumab treatment. These results are in line with findings from the clinical trial, which suggest that tocilizumab is not effective in reducing asthma symptoms for most asthmatics.

Highlights:

- Identified 136 new genetic risk factors for allergic disease and showed that most of these are shared between asthma, hay fever and eczema.
- Showed that a drug that blocks IL-6 signaling does not prevent asthma exacerbation in humans.

Hepatic Fibrosis

Group Leader: Grant Ramm

Coordinator, Cell and Molecular Biology Department

The Hepatic Fibrosis Group has for the past year undertaken an extensive research program focused on:

- investigating the mechanisms associated with liver cell differentiation in response to genetic and acquired liver insults that drive scarring of the liver (fibrosis)
- examining how different liver cell populations interact and communicate via soluble mediators to undertake wound healing (liver regeneration)
- translating this basic research into clinical application for detecting and monitoring fibrosis progression, and predicting clinical outcomes in chronic liver diseases, including hereditary haemochromatosis, paediatric cystic fibrosis liver disease, liver cancer and fatty liver disease associated with diabetes and obesity.

Highlights:

- Identified the mechanism of bile acid-induced liver stem cell differentiation that drives hepatic fibrosis in children with cystic fibrosis.
- Demonstrated that serum ferritin is an independent predictor of hepatic fibrosis stage in haemochromatosis, providing clinical evidence for a role for ferritin in mediating chronic liver disease progression.
- Demonstrated the use of self-assembling asymmetric peptide-based dendrimer micelles for in vitro delivery of nucleic acids into liver cells.
- Following a clinical trial involving short-term, rapid iron removal via erythrocytapheresis, demonstrated improved cognition and decreased markers of oxidative stress and hepatic fibrosis in individuals with hereditary haemochromatosis who have moderate hepatic iron stores.

Inflammatory Bowel Disease

Group Leader: Graham Radford-Smith

The Gut Health Group's major research focus is the link between objective and quantitative clinical data and molecular data in subjects with gut disorders, including inflammatory bowel disease (Crohn's disease and ulcerative colitis) and colorectal cancer. The group focuses on understanding the underlying biology of gut health disorders and developing objective diagnostic support systems to aid in the timely diagnosis of disease. The group has developed novel systems to extract and analyse longitudinal laboratory data on the group's research subjects and seeks to determine the relationships between specific subgroups within these datasets and both host genome and transcriptome. To this end, the group has generated extensive genotype data on both its Crohn's disease and ulcerative colitis populations, together with a detailed transcriptomic profile of both the small and large bowel. This will improve the group's understanding of intestinal biology in the healthy and inflamed gut, and support the development of novel therapeutic approaches and diagnostic tools.

Highlights:

- As part of a collaboration, drove the development and rollout of a novel software program called Crohn's Colitis Care for managing inflammatory bowel disease. This will provide clinicians and scientists with the opportunity to assemble large phenotype and 'omics' datasets across the ANZ IBD Consortium.
- Published on the development of a risk assessment algorithm for colorectal cancer and its precursors. This work was recognised at the Metro North Hospital and Health Service Research Excellence Awards. Queensland Health has also supported a validation of this tool in the coming year.

Iron Metabolism

Group Leader: Greg Anderson

Head, Chronic Disorders Program

The Iron Metabolism Laboratory focuses on understanding the homeostasis of the essential trace element iron (and related metals), the natural history of iron-related disorders and potential therapies for treating them, and mechanisms of liver disease. Current research activities include:

- elucidating the basic mechanisms of intestinal iron absorption and its regulation. Increased absorption characterises most iron loading disorders, such as haemochromatosis and thalassaemia. Emphasis is being placed on the ferroportin/hephaestin iron transport complex and its modulation by the iron regulatory peptide, hepcidin
- exploring novel mechanisms of regulating iron intake in pregnancy and early postnatal life. These are times of high iron demand and this work has significant implications for maternal health, as well as infant nutrition and complementary feeding

- using novel nanoparticle technology to develop better iron supplements and methods for delivering iron-removing agents. Target tissues for iron removal include the liver, brain and heart
- studying the natural history of the iron loading disorder hereditary haemochromatosis and exploring markers for monitoring the effectiveness of treatment
- examining the mechanisms underlying hepatic encephalopathy, the neuropsychiatric syndrome that often accompanies severe liver disease. The group's work takes a broad approach from basic molecular mechanisms to clinical applications.

Highlights:

- Demonstrated that the essential iron regulatory hormone, hepcidin, can be modulated by metabolic changes associated with fasting and a low carbohydrate diet.
- Showed that even a moderately elevated iron load has adverse clinical implications in haemochromatosis.
- Developed a DNA nanorobot for the targeted delivery of a blood vessel occluding agent to tumours.
- Demonstrated that nanoparticle-mediated iron chelator delivery can deplete brain iron in a Parkinson's disease model.

Lung Inflammation and Infection

Group Leader: David Reid

The Lung Inflammation and Infection Group is focused on lung diseases that are characterised by bacterial infections. The group is studying immune responses to bacteria and viruses in smoking-related chronic obstructive pulmonary disease (COPD) and the genetic disorder, cystic fibrosis (CF). Immune defences in the lung rely on a robust, innate and adaptive immune system. The group has found abnormalities in lung iron homeostasis in CF and COPD, which are important as bacteria require iron for replication and their enzyme systems. As part of this research, the group is targeting bacterial iron acquisition systems therapeutically. The group has also found that key innate T lymphocytes may not function normally in CF and COPD and is investigating this further, as innate T cells are needed for healthy defences against bacteria and viruses. A key component of the group's work is the identification of biomarkers in blood that may be used to guide antibiotic therapy in COPD and CF.

Highlights:

- Discovered blood biomarkers that differentiate between bacteria and viruses in the lung.
- Confirmed, using mouse models and human airway epithelial cells, that lung iron homeostasis is abnormal in cystic fibrosis.

Organoid Research

Group Leader: James Hudson

The recently established Organoid Research Laboratory is focused on developing state-of-the art bioengineering approaches for human 3D organoids. The group ultimately aims to use these organoids for discovery of new therapeutics for human disease.

The group's current programs include understanding the mechanisms of cardiac maturation, interactions between different cell populations in the heart or outside of the heart and the role of metabolism in cardiac biology and function. The group's goal is the culture of advanced adult-like muscle in a dish as a model for human cardiac biology, while learning about many unknown factors governing heart health.

The group is also extending its technology to other organoid systems to facilitate similar human 3D tissue models in collaboration with researchers focused on different tissues and diseases.

Highlights:

- Showed that functional human heart tissue can be created from human pluripotent stem cells.
- Developed an injury model and demonstrated that immature human heart tissue has a regenerative capacity.
- Designed, fabricated and validated a 96-well plate screening device for culture of miniature human heart tissues.
- Profiled the epigenetic and transcriptional changes that occur during cardiac maturation and found that the changes are predominately characterised by a loss of cell cycle and a gain of metabolic transcriptional networks.
- Found that a switch from glycolysis to fatty acid oxidation drives cardiac maturation and cell cycle arrest in human heart tissues.

Respiratory Immunology

Group Leader: Simon Phipps

The Respiratory Immunology Group seeks to understand the causal association between respiratory virus infections in early life and the later development of asthma. This year the group published three major articles, each elucidating a central cellular and/or molecular process that links the two diseases. With this greater understanding of disease pathogenesis, the group has identified a number of novel targets and shown that when these are neutralised (with an antibody) or antagonised (with a small molecule), disease inception or progression can be ameliorated.

Highlights:

- Published papers in the journal, *Science Translational Medicine*, including one that demonstrated that DP2 antagonists may prove useful for the treatment of severe viral bronchiolitis in infancy and prevent the onset of asthma.
- Published papers in other prestigious peer-reviewed journals such as the *Journal of Experimental Medicine* and the *Journal of Allergy and Clinical Immunology.*

Statistical Genetics

Group Leader: Stuart MacGregor

Research in the Statistical Genetics Laboratory focuses on applying a range of statistical genetic methods to complex disease. As well as identifying new inherited variants contributing to disease risk, the group has used genetic data to identify overlaps between various diseases and traits. In the specific case of a disease and a modifiable risk factor, the group has used genetic data in causal inference (work aiming to determine if a risk factor really causes that disease).

The group's work has continued to have two major disease foci: cancer (melanoma, ovarian cancer and esophageal cancer) and eye disease (glaucoma, myopia and macular degeneration). Specifically, the group has mapped a large number of genes influencing the risk of eye disease. This work is now being extended to allow gene-based risk predictions for glaucoma.

Highlights:

- Mapped dozens of genes for glaucoma and a range of eye diseases. It is anticipated that in the near future these will be useful for improved screening for eye diseases.
- Mapped more than 150 genes for myopia and used these genetic data to show that response to light is a key pathway in myopia development.

- Doubled the number of genes known to influence thickness of the cornea in the eye and showed the relevance of these genes in the eye disease, keratoconus.
- Produced a series of papers that identified many new genes which influence glaucoma risk.
- Showed that coffee consumption plays no role in a woman's risk of developing ovarian cancer.
- Showed that being taller is causally related to increased cancer risk.
- Showed that increasing one's fatty acid consumption has no effect on melanoma risk.

MENTAL HEALTH PROGRAM

HEAD: PROFESSOR MICHAEL BREAKSPEAR

QIMR Berghofer's Mental Health Program focuses on a range of conditions that arise from an interaction of genetic and complex environmental influences, such as Alzheimer's disease, dementia, depression, anxiety, bipolar disorder, schizophrenia, epilepsy and anorexia nervosa.

The Mental Health Program combines our existing expertise in genetics and population health with new techniques in neurosciences. Our teams have strengths in the clinical aspects of mood disorders, which are complemented by their ability to use genetic, imaging and computational approaches to understand these debilitating disorders. This approach promises earlier and more accurate diagnosis of mental disorders and personalised therapies based on improved knowledge of pathophysiology and empirically validated clinical and/or biological phenotypes.

Our mental health researchers have comprehensively mapped the connections in the healthy elderly brain, laying the groundwork for new research into Alzheimer's disease and dementia, and are using cutting-edge imaging and information technology to develop a diagnostic test for major depressive disorders.

Brain Modelling Group

Team Head: James Roberts

The Brain Modelling Group models and analyses brain structure and dynamics in health and disease. This work currently follows two major themes: developing new diagnostic methods for neonatal brain health and modelling large-scale brain activity across the lifespan. In neonates, the group uses techniques from physics and machine learning to extract more information than ever before from intensive care monitoring of babies born prematurely. The goal is to enable early detection of injuries and early prognosis of developmental outcomes, so that clinicians can optimise care with personalised markers of brain health, potentially opening the window for new treatments. On the modelling side, the group is harnessing the rapid developments in neuroimaging technology and connectomics to develop new mathematical models of brain activity, in particular at the spatial scales most relevant to human health. The goal is to fill in some of the large gaps in our knowledge of how neuroimaging brain signals emerge from brain structure, on how this relationship varies as we grow and age, and how things can go wrong leading to neurological and psychiatric disorders.

Highlights:

- Licensed novel markers of brain health to a medical software company for integration into clinical EEG systems.
- Worked on constructing a large database of pre-term brain activity and clinical data for validation and further development of diagnostic methods.
- Developed new brain network analysis methods and applied these to reveal organising principles of the human connectome, with application to schizophrenia.
- Identified a new class of brain dynamics – metastable waves – that explains several experimentally observed features of neuroimaging data.

Cellular and Molecular Neurodegeneration

Group Leader: Anthony White

The Cellular and Molecular Neurodegeneration Group's research has centred on building new human brain cell models to improve understanding and treatment of neurodegenerative diseases, such as dementia, Parkinson's disease and motor neuron disease. This has involved establishing a new model of human brain immune cells (microglia), which the group is using to understand the differences between the inflammatory response in the brains of dementia patients and people with motor neuron disease. The cells are also being used to develop a screening platform for specific patient-targeted drugs. The group is also developing a 3D Alzheimer's 'brain on a chip', establishing a new model of the blood-brain barrier, and developing a new olfactory stem cell

model to study dementia. These models are being developed to provide greater clinical translation of potential neuroprotective drugs.

Highlights:

- Developed a patient-specific assay to screen drugs for treatment of neuroinflammation in dementia.
- Identified novel differences between dementia patient microglia using a new assay platform.
- Developed a patient-specific assay to screen drugs for treatment of neuroinflammation in dementia.
- Elucidated a therapeutic pathway for a prototype neuroprotective copper drug, involving activation of the protein, Nrf2.
- Established conditions to grow microglia in 3D cultures, which has not yet been described.

Clinical Brain Networks

Team Head: Luca Cocchi

With the goal of progressing knowledge on brain disorders and evidence-based psychiatric therapies, the Clinical Brain Networks Group focuses on understanding how the structural and functional wiring of the brain underpin health and pathology. The group uses a variety of neuroimaging, brain stimulation and computational techniques to map brain networks and understand the neural principles underpinning their function. The group's current research includes:

- understanding the neural principles supporting the function of whole-brain neural networks
- assessing the local and remote effects of invasive and non-invasive brain stimulation on neural dynamics
- developing new personalised interventions to restore altered brain dynamics in brain disorders, including obsessive-compulsive disorder (OCD) and schizophrenia
- connectomics
- cognitive neuroscience
- biological psychiatry.

Highlights:

- Validated new personalised brain stimulation interventions for psychiatric symptoms, including OCD.
- Provided new insights on the neural principles supporting brain activity and behaviour, in health and disease.
- Explored the multi-dimensional associations between brain, body and behaviour underpinning health and pathology.

Genetic Epidemiology

Senior Scientist: Nick Martin

The Genetic Epidemiology Group seeks to identify the particular genes involved in causing complex diseases. The group performs longitudinal studies with twins on a wide range of complex traits of medical and behavioural interest. Particular research over recent years has moved to genome-wide association studies (GWAS) to locate genes influencing complex traits, including anxiety, alcoholism and dizygotic (non-identical) twinning. Most recently, the laboratory initiated projects to recruit large patient samples for GWAS of anorexia and depression and also conducted research into the genetics of melanoma.

Highlights:

- Found that the risk of major depression was influenced significantly by the interaction between polygenic risk score for depression and environmental stress.

- Recruited more than 15 000 people who have suffered from depression and obtained saliva samples from them for DNA extraction and GWAS.
- Participated in research that identified the first 44 gene loci for depression.
- Found the first eight gene loci for anorexia.
- Found five new gene loci for melanoma.

Molecular Brain Imaging

Group Leader: Paul Cumming

During 2017–2018, the Molecular Brain Imaging Laboratory focused on obtaining ethics and governance approval for a funded study of neuroinflammation in amateur boxers. The group also undertook a preclinical pilot study of microglial activation in brains of rats fed on a sucrose diet. Analysis showed a proliferation of microglia extending throughout the neocortex. This evidence for neuroinflammation induced by diet has broad implications for the pathophysiology of eating disorders and conditions such as diabetes and obesity.

Highlights:

- Contributed to a comprehensive review of the quantitation of microglial markers by PET.
- Formed part of an international collaboration studying the mechanisms underlying reduced antipsychotic medication efficacy.
- Continued a long-standing collaboration on brain dopamine with psychiatrists the University of Aachen and initiated a collaboration with psychiatrists in Korea, leading to several publications.

Neurogenomics

Team Head: Guy Barry

The Neurogenomics Laboratory investigates and validates genome-wide transcriptomic data to provide insight into how the human brain functions. For this, it employs cutting-edge technologies such as:

- induced pluripotent stem cells (iPSCs)
- next generation sequencing (NGS)
- advanced bioinformatic analyses.

Understanding how the human brain works has historically been restricted due to the lack of a suitable human model and the ability to interrogate the entire transcribed human genome. Recent innovations in iPSC technology have permitted an unprecedented view into the biology of human cellular function, as many cell types – including brain cells – can be derived from these ‘stem’ cells.

The emergence of powerful bioinformatic capabilities has advanced the field of genomics and transcriptomics over the last decade. Using a combination of iPSC and NGS technologies, the group is exploring how mRNAs, long non-coding RNAs and small RNAs combine to underpin human cognitive advancement and psychiatric disease.

Highlights:

- Published seven papers during 2017–18, including a key paper relating to the understanding of how cannabis use may trigger schizophrenia and the neural pathways involved in this process
- Found new genomic targets for the brain cancer, glioblastoma
- Produced preliminary data for a mechanism of adaptive evolution.

Psychiatric Genetics

Group Leader: Sarah Medland

Coordinator, Mental Health Program

The Psychiatric Genetics Group uses statistical genetics and genetic epidemiological techniques to investigate the causes of mental health conditions and traits that impact on mental health. The group's current projects focus on examining the genetic architecture of the human brain structure, ADHD (attention deficit hyperactivity disorder), bipolar disorder, depression, schizophrenia, anorexia, borderline personality disorder and pregnancy-related conditions that impact on mental health. The group also works on developing models and strategies to translate genetic findings in the mental health domain, as translation within this field is expected to be different to other fields of medicine.

Highlights:

- Used genome-wide association meta-analysis of data from 60 cohorts from around the world to study the genetic architecture of the structure of the human cortex, resulting in the identification of 271 loci and genetic correlations with a range of psychiatric and neurological disorders.
- Developed a model for understanding the processes involved in translating genetic findings in mental health.
- Demonstrated that genetic influences contribute to the relationship between schizophrenia and urbanicity (the degree to which the person lives in an urban area).
- Provided an empirical proof of the diathesis-stress model of depression.
- Identified 271 genetic loci influencing brain structure.

Systems Neuroscience

Senior Scientist: Michael Breakspear

Head, Mental Health Program

The Systems Neuroscience Group uses brain imaging and computer modelling to understand a range of important diseases of the human brain. In the last year, the group has focused on the early brain changes that precede dementia and brain changes in healthy young Australians at future risk of bipolar disorder and depression.

In the field of dementia, the group has focused on identifying healthy Australians aged between 45 and 75 and studying the genetic, behavioural and brain imaging 'fingerprints' that predict risk of later dementia. This involves these participants volunteering for a series of cognitive tests and undertaking molecular and structural brain imaging scans.

More broadly, the group also looks at the influence of exercise and a healthy lifestyle on physical and emotional wellbeing, and the fundamental brain processes underlying complex decision-making tasks.

The Systems Neuroscience Group also studies schizophrenia, Parkinson's disease, epilepsy, attention deficit disorder and autism.

Highlights:

- Discovered brain network changes sensitive to genetic risk of bipolar disorder.
- Developed a novel prognostic test for developmental outcomes in very pre-term neonates.
- Established a new clinical trial using brain stimulation therapy for obsessive compulsive disorder.
- Discovered fundamental principles of neurodevelopmental disturbances in schizophrenia.
- Commenced clinical trials using exercise to promote wellbeing in people with mental illness.

Translational Neurogenomics

Group Leader: Eske Derks

The Translational Neurogenomics Laboratory investigates the role of genetic factors in a range of mental health disorders, including schizophrenia, substance use disorders, anxiety disorders and compulsive disorders. Mental health disorders are the leading cause of global disease burden in the young adult population. Current pharmacological interventions have limited efficacy and severe side effects. By researching a wide variety of symptoms that are typical of patients with a particular psychiatric condition, the group uses newly developed statistical methods to discover associations between mental health conditions and genetic variants. The group aims to improve patient outcomes by identifying more effective drugs based on bioinformatic analysis of genetic data collected in patients with a psychiatric disorder.

Highlights:

- Discovered 32 genes that increase the risk of cannabis use.
- Identified eight genetic regions associated with the risk of cannabis use.
- Identified a genetic variant that predicts the age at onset of cannabis use.
- Discovered ethnic differences in mental and physical health.
- Co-led research by the International Cannabis Consortium published in highly influential journals.

Translational Neuroscience

Team Head: Christine Guo

The Translational Neuroscience Group aims to develop sensitive and quantitative approaches to inform diagnosis and to guide treatment in neuropsychiatric disorders. The group's work combines advanced neuroimaging tools with sensitive molecular biology techniques to examine neurobiological changes underlying cognitive and behavioural changes in diseases, and to understand fundamental questions about the human brain. Recent research includes:

- imaging and biological markers in dementia
- imaging markers in refractory epilepsy
- cognitive and socio-emotional changes in dementia
- neural basis of emotion.

Highlights:

- Developed a novel and improved protocol to isolate and culture olfactory stem cells using simple nasal brushing. This protocol holds great potential for future clinical study of neuropsychiatric disorders.

FINANCIAL REVIEW

Total comprehensive income in 2017–18 was a deficit of $2.9 million, which includes depreciation and amortisation of $11.7 million. Competitive grant funding has reduced, while commercial activities have increased slightly to bring in alternative funds. Investment returns for the year have also been favourable compared to 2016–17 and the budget.

The Council's financial structure is mainly based on the management of operating, commercial and grant funds. Funding from competitive grants and commercial contracts spent on research in the 2017–18 financial year was $41.6 million (2016–17: $42.7 million), representing 39% (2016–17: 40%) of total income from continuing operations. A portion of the Council's operating funding is provided by a grant from Queensland Health of $18.9 million (2016–17: $18.9 million).

The Council's total funding resources, including amounts under management at 30 June 2018, totalled $156.8 million (2016–17: $152.7 million). The increase in funds held during the year was mainly due to reinvestment of returns on the funds invested.

The Council of the Queensland Institute of Medical Research Financial Statements 2017–2018

Contents

Statement of comprehensive income
For the year ended 30 June 2018

	Notes	2018 $'000	2017 $'000
Income from continuing operations			
Grants and other contributions	3	64,942	66,749
User charges and fees	4	26,467	25,709
Other revenue	5	10,308	7,272
Interest		588	861
Total Revenue		102,305	100,591
Gains on sale/revaluation of assets	6	5,486	6,909
Total income from continuing operations		**107,791**	**107,500**
Expenses from continuing operations			
Employee expenses	7	61,432	57,325
Supplies and services	8	25,744	26,868
Depreciation and amortisation	14,15	11,735	12,257
Other expenses	9	11,119	12,627
Finance costs		697	633
Total expenses from continuing operations		**110,727**	**109,710**
Operating result from continuing operations		**(2,936)**	**(2,210)**
Other comprehensive income			
Items that will not be reclassified subsequently to operating result			
Increase in asset revaluation surplus	19	-	359
Total other comprehensive income		**-**	**359**
Total comprehensive loss		**(2,936)**	**(1,851)**

The accompanying notes form part of these financial statements.

Statement of financial position
As at 30 June 2018

	Notes	2018 $'000	2017 $'000
Current assets			
Cash and cash equivalents	10	17,629	21,394
Receivables	11	10,174	7,412
Other financial assets	13	19,675	25,000
Inventories	12	256	253
Other		645	482
Total current assets		**48,379**	**54,541**
Non-current assets			
Other financial assets	13	119,524	106,340
Property, plant and equipment	15	283,695	288,453
Intangible assets	14	396	511
Controlled and jointly controlled entities	30	23	23
Total non-current assets		**403,638**	**395,327**
Total assets		**452,017**	**449,868**
Current liabilities			
Payables	16	10,162	10,254
Accrued employee benefits	17	5,459	5,005
Unearned revenue	18	28,975	24,252
Total current liabilities		**44,596**	**39,511**
Total liabilities		**44,596**	**39,511**
Net assets		**407,421**	**410,357**
Equity			
Accumulated surplus		334,922	337,858
Asset revaluation surplus	19	72,499	72,499
Total equity		**407,421**	**410,357**

The accompanying notes form part of these financial statements.

The Council of The Queensland Institute of Medical Research

Statement of changes in equity
For the year ended 30 June 2018

	Accumulated surplus	Asset revaluation surplus (note 19)	Total
	$'000	**$'000**	**$'000**
Balance as at 1 July 2017	337,858	72,499	410,357
Operating result from continuing operations	(2,936)	-	(2,936)
Balance as at 30 June 2018	**334,922**	**72,499**	**407,421**
Balance as at 1 July 2016	340,068	72,140	412,208
Operating result from continuing operations	(2,210)	-	(2,210)
Other comprehensive income			
Increase in asset revaluation surplus	-	359	359
Balance as at 30 June 2017	**337,858**	**72,499**	**410,357**

The accompanying notes form part of these financial statements.

Statement of cash flows
For the year ended 30 June 2018

	Notes	2018 $'000	2017 $'000
Cash flows from operating activities			
Inflows:			
Grants and other contributions		68,262	65,940
User charges and fees		24,365	24,895
Other income		2,311	2,662
Interest income		559	910
GST input tax credits from ATO		3,397	2,858
GST collected from customers		1,590	1,751
Outflows:			
Employee expenses		(60,215)	(57,368)
Supplies and services		(29,512)	(22,901)
Finance costs		(697)	(633)
GST paid to suppliers		(3,403)	(2,798)
GST remitted to ATO		(1,600)	(1,838)
Other		(5,537)	(13,807)
Net cash used in operating activities	CF1	**(480)**	**(329)**
Cash flows from investing activities			
Inflows:			
Redemptions of other financial assets		10,500	-
Sale of property, plant and equipment		119	7
Outflows:			
Investments in other financial assets		(6,127)	(4,011)
Acquisition of property, plant and equipment		(7,777)	(3,293)
Net cash used in investing activities		**(3,285)**	**(7,297)**
Net decrease in cash and cash equivalents		(3,765)	(7,626)
Cash and cash equivalents at beginning of financial year		21,394	29,020
Cash and cash equivalents at end of financial year	10	**17,629**	**21,394**

The accompanying notes form part of these financial statements.

Notes to the statement of cash flows
For the year ended 30 June 2018

	2018 $'000	2017 $'000
CF1 Reconciliation of operating result to net cash from operating activities		
Operating deficit	(2,936)	(2,210)
Depreciation and amortisation expense	11,735	12,257
Investment distributions in other financial assets	(7,008)	(5,453)
Loss on sale of property, plant and equipment	2	189
Net gain on market value of other financial assets	(5,488)	(7,098)
Change in assets and liabilities:		
(Increase)/decrease in operating receivables	(2,464)	(2,738)
(Increase)/decrease in inventories	(3)	19
(Increase)/decrease in prepayments	(163)	79
Increase/(decrease) in operating payables	668	3,569
Increase/(decrease) in accrued employee benefits	454	310
Increase/(decrease) in unearned revenue	4,723	747
Net cash used in operating activities	**(480)**	**(329)**

The accompanying notes form part of these financial statements.

Notes to the financial statements
For the year ended 30 June 2018

Notes to the financial statements
For the year ended 30 June 2018

ABOUT COUNCIL AND THIS FINANCIAL REPORT

1. Basis of financial statement preparation

General information

The Council of the Queensland Institute of Medical Research is a Queensland statutory body established under the *Queensland Institute of Medical Research Act 1945* and is controlled by the State of Queensland which is the ultimate parent. The Council trades as QIMR Berghofer Medical Research Institute.

The head office and principal place of business of the statutory body is:
300 Herston Road
Herston QLD 4006

For information in relation to the Council's financial statements please call +61 7 3362 0222, email enquiries@qimrberghofer.edu.au or visit the internet site www.qimrberghofer.edu.au.

Compliance with prescribed requirements

The Council has prepared this financial report in compliance with the requirements of the *Financial and Performance Management Standard 2009*, *Financial Accountability Act 2009*, and the *Australian Charities and Not-for-profits Commission Act 2012*.

These financial statements are general purpose financial statements, and have been prepared on an accrual basis in accordance with Australian Accounting Standards and Interpretations. In addition, the financial statements comply with Queensland Treasury Minimum Reporting Requirements, and other authoritative pronouncements including the Australian Charities and Not-for-profits Commission (ACNC).

With respect to compliance with Australian Accounting Standards and Interpretations, the Council has applied those requirements applicable to not-for-profit entities, as the Council is a not-for-profit statutory body.

The reporting entity

The financial statements include the value of all revenues, expenses, assets, liabilities and equity of the Council and the entities it controls where these entities are material. No controlled entities are included as they are not considered material by Council (refer note 30).

Presentation details

Currency and rounding

Amounts included in the financial statements are in Australian dollars and have been rounded to the nearest $1,000 or, where that amount is $500 or less, to zero, unless disclosure of the full amount is specifically required.

Comparatives

Comparative information reflects the audited 2016-17 financial statements and has been restated where necessary to be consistent with disclosures in the current reporting period.

Current/non-current classification

Assets and liabilities are classified as either 'current' or 'non-current' in the Statement of Financial Position and associated notes.

Assets are classified as 'current' where their carrying amount is expected to be realised within 12 months after the reporting date. Liabilities are classified as 'current' when they are due to be settled within 12 months after the reporting date, or the Council does not have an unconditional right to defer settlement to beyond 12 months after the reporting date.

All other assets and liabilities are classified as non-current.

Basis of measurement

Historical cost is used as the measurement basis in this financial report except for the following:

- Buildings and heritage and cultural assets which are measured at fair value; and
- Inventories which are measured at the lower of cost and net realisable value.

Historical cost

Under historical cost, assets are recorded at the amount of cash or cash equivalents paid or the fair value of the consideration given to acquire assets at the time of their acquisition. Liabilities are recorded at the amount of proceeds received in exchange for the obligation or at the amounts of cash or cash equivalents expected to be paid to satisfy the liability in the normal course of business.

Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date under current market conditions (i.e. an exit price) regardless of whether that price is directly derived from observable inputs or estimated using another valuation technique. Fair value is determined using the following approaches.

- The market approach uses prices and other relevant information generated by market transactions involving identical or comparable (i.e. similar) assets, liabilities or a group of assets and liabilities, such as a business.
- The cost approach reflects the amount that would be required currently to replace the service capacity of an asset. This method includes the current replacement cost methodology.

Where fair value is used, the fair value approach is disclosed.

Net realisable value

Net realisable value represents the amount of cash or cash equivalents that could currently be obtained by selling an asset in an orderly disposal.

Accounting estimates and judgements

The preparation of financial statements necessarily requires the determination and use of certain critical accounting estimates, assumptions, and management judgements that have the potential to cause a material adjustment to the carrying amounts of assets and liabilities within the next financial year. Such estimates, judgements and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised and in future periods as relevant.

Estimates and assumptions that have a potential significant effect are outlined in the following financial statement notes:

- Useful lives of property, plant and equipment – note 15
- Valuation of property, plant and equipment – note 15

Authorisation of financial statements for issue

The financial statements are authorised for issue by the Chair of Council, Director & Chief Executive Officer and Secretary at the date of signing the Management Certificate.

2. Objective and principal activities of the Council

The objective of the Council is to control and manage the operations of the Queensland Institute of Medical Research in accordance with the *Queensland Institute of Medical Research Act 1945*. The Council has been established to conduct research into all branches of medical science. It operates predominantly in one geographical area, being Queensland, Australia, although it has research collaborations across Australia and overseas.

The majority of the Council's funding is generated from competitive, peer reviewed research grants, commercial and other earned revenue. The Council also receives an annual operational grant from the Department of Health, Queensland (Queensland Health). Further funding is generated from donations, fundraising and investment activities performed under the guidance of the Council. Refer note 25.

Notes to the financial statements
For the year ended 30 June 2018

NOTES ABOUT OUR FINANCIAL PERFORMANCE

	2018 $'000	2017 $'000
3. Grants and other contributions		
Grants - National Health & Medical Research Council (NHMRCC)	24,502	26,834
Grants - Queensland Health	18,864	18,864
Grants - NHMRC overheads support funding (IRIISS)	4,251	4,438
Grants - US Department of Defence	989	373
Grants - Cancer Council Queensland	791	1,033
Grants - Australian Research Council	608	929
Grants - Perpetual Trustees Australia Limited	491	480
Grants - Dept. of Science, Information Technology & Innovation	399	272
Grants - Other	6,888	7,449
Donations and bequests	7,159	6,077
Total	**64,942**	**66,749**

Accounting policy - Grants and other contributions
Grants, contributions, donations, bequests, gifts and fundraising that are non-reciprocal in nature are recognised as revenue in the year in which the Council obtains control over them (control is generally obtained at time of receipt). Where grants are received that are reciprocal in nature, revenue is progressively recognised as it is earned according to the terms of the funding agreements. Contributed assets are recognised at their fair value.

Accounting policy - Services received free of charge or for nominal value
Contributions of services are recognised only if the services would have been purchased if they had not been donated and their fair value can be measured reliably. Where this is the case, an equal amount is recognised as revenue and an expense.

4. User charges and fees		
Commercial and contract research	23,720	23,158
Rent	2,222	2,112
Sundry tenants recoveries	525	439
Total	**26,467**	**25,709**

Accounting policy - User charges and fees
User charges and fees from commercial services, rent (licence fees) and recoveries of expenditure incurred by associated bodies which use the Council's laboratory consumables and services are recognised as revenue when it has been earned and can be measured reliably with a sufficient degree of certainty. This involves either invoicing for related goods/services and/or the recognition of accrued revenue. User charges and fees are controlled by the Council where they can be deployed for the achievement of Council objectives.

Notes to the financial statements
For the year ended 30 June 2018

	2018 $'000	2017 $'000
5. Other revenue		
Investment distributions	8,490	5,453
Reimbursements	921	1,139
Other	897	680
Total	**10,308**	**7,272**

Accounting policy - Reimbursements

Reimbursement from third parties for commercial and/or collaboration arrangements are recognised as revenue when the revenue has been earned and can be measured reliably with a sufficient degree of certainty. This involves either invoicing for related goods/services and/or the recognition of accrued revenue.

Accounting policy - Interest, dividends and distributions

Revenue for interest on cash and cash equivalents is recognised on an accrual basis. Revenue for dividends and distributions from managed funds classified as financial instruments held at fair value through profit or loss are recognised when the Council's right to receive payment is established.

Accounting policy - Imputation credits

As an endorsed income tax exempt charity, imputation credits attached to franked dividends received by the Council are refundable and may be claimed retrospectively after the end of the financial year. Imputation credits are brought to account when the right to receive the credits is established.

6. Gains/(losses) on sale/revaluation of assets		
Net gain on market value of other financial assets	5,488	7,098
Net loss on disposal of property, plant and equipment	(2)	(189)
Total	**5,486**	**6,909**

The Council holds financial assets in managed funds. Refer notes 13 and 21.

Accounting Policy – Gains/(losses) on revaluation of other financial assets

Gains/(losses) arising from changes in the fair value of managed funds are included in the operating result for the period in which they arise.

7. Employee expenses		
Employee benefits		
Wages and salaries	48,098	44,387
Employer superannuation contributions	7,156	6,767
Annual leave expense	4,529	4,367
Long service leave levy	1,122	1,024
Other employee benefits	244	371
	61,149	56,916
Employee related expenses		
Workers' compensation premium	102	96
Other employee related expenses	101	171

Notes to the financial statements
For the year ended 30 June 2018

7. Employee expenses (cont'd)	2018 $'000	2017 $'000
Sub-total	203	267
Fringe benefits tax expense	80	142
	283	409
Total	**61,432**	**57,325**
The number of employees including full-time, part-time and casual employees measured on a full-time equivalent basis is:	569	525

Employee benefits
Wages and salaries, employer superannuation contributions, annual leave expense and long service leave levies are regarded as employee benefits.

Accounting policy – Wages & salaries
Accruals for wages, salaries and annual leave expense due but unpaid at reporting dates are recognised in the Statement of Financial Position at current salary rates. Annual leave entitlements are recognized at their undiscounted values and are classified as current liabilities as Council does not have the unconditional right to defer settlement for the next 12 months.

Accounting policy – Sick leave
As sick leave is non-vesting, an expense is recognised for this leave as it is taken. Prior history indicates that on average, sick leave taken each reporting period is less than the existing accumulated entitlements and thus no liability for unused sick leave entitlements is recognised. This is expected to continue in future periods.

Accounting policy - Long service leave
Under the Queensland Government's long service leave scheme, a levy is made on the statutory body to cover the cost of employees' long service leave. The levies are expensed in the period in which they are payable. Amounts paid to employees for long service leave are claimed from the scheme quarterly in arrears.

Accounting policy – Superannuation
Employer superannuation contributions are paid to QSuper, the superannuation scheme for Queensland Government employees, at rates specified under the Enterprise Agreement. Contributions are expensed in the period in which they are paid or payable. The Council's obligation is limited to its contribution to QSuper. The QSuper scheme has defined benefit and defined contribution categories. The liability for defined benefits is held on a whole-of-government basis and reported in those financial statements pursuant to AASB 1049 *Whole of Government and General Government Sector Financial Reporting.*

Accounting policy – Workers' compensation premiums
The Council pays premiums to WorkCover Queensland and inter-state QBE in respect of its obligations for employee compensation. Workers' compensation insurance is a consequence of employing employees, but is not counted in an employee's total remuneration package. It is not an employee benefit and is recognised separately as employee related expenses.

Key management personnel and remuneration
Key management personnel and remuneration disclosures are made in accordance with section 3C of the Financial Reporting Requirements for Queensland Government Agencies issued by Queensland Treasury. Refer note 29 for the disclosures on key management personnel and remuneration.

Notes to the financial statements
For the year ended 30 June 2018

	2018	2017
	$'000	$'000
8. Supplies and services		
Supplies and consumables	13,287	14,272
Consultants and contractors	4,998	5,148
Utilities	2,591	2,568
Service contracts	2,234	2,189
Travel	1,455	1,484
Minor equipment and software purchases	1,112	1,152
Rent	8	17
Operating lease rentals	59	38
Total	**25,744**	**26,868**

Accounting policy - Leases
Operating lease payments are representative of the pattern of benefits derived from the leased assets and are expensed in the periods in which they are incurred.

9. Other expenses		
Scientific collaboration distributions	10,168	11,575
Insurance	583	538
Legal expenses	185	227
Audit & other fees - internal	96	135
Audit fees - external *	67	65
Net loss on foreign exchange transactions	2	19
Other	18	68
Total	**11,119**	**12,627**

* Total external audit fees to be paid to the Queensland Audit Office relating to the 2017-18 financial year are expected to be $67,000 (2017: $65,000). There are no non-audit services included in this amount.

Accounting policy - Insurance
The Council's non-current physical assets and other risks are insured through the Queensland Government Insurance Fund (QGIF), premiums being paid on a risk assessment basis. In addition, the Council has policies with private insurance companies to cover risks not included by QGIF.

Accounting policy - Scientific collaboration distributions
Council has a number of research collaboration agreements in place with various granting bodies and universities. Distributions are made in terms of these collaboration agreements and are recognised as an expense in the period in which they are incurred. The Institute has a number of commercial/licence arrangements in place. Under the Institute's Intellectual Property Policy, distributions to inventors or contributors are recognised as an expense at time of milestone invoicing under these contractual arrangements. Payments to inventors or contributors are generally made in the subsequent financial year following their recognition.

Notes to the financial statements
For the year ended 30 June 2018

NOTES ABOUT OUR FINANCIAL POSITION

	2018	2017
	$'000	$'000
10. Cash and cash equivalents		
Term deposits	16,415	18,997
Cash at bank and on call	1,214	2,396
Imprest accounts	-	1
Total	**17,629**	**21,394**

The Council's term deposits consist entirely of unspent research grant funds. Refer note 18.

Accounting policy - Cash and cash equivalents
For the purposes of the Statement of Financial Position and the Statement of Cash Flows, cash assets include all cash and cheques receipted but not banked at 30 June as well as deposits at call with financial institutions.

11. Receivables		
Trade debtors	7,984	5,324
GST receivable	175	214
Long service leave reimbursements	164	152
Accrued interest	135	106
Other	1,716	1,616
Total	**10,174**	**7,412**

Accounting policy - Receivables
Receivables are measured at amortised cost which approximates their fair value at reporting date.

Trade debtors are recognised at the amounts due at the time of sale or service delivery i.e. the agreed purchase/contract price. Settlement of these amounts is required within 30 days of invoice date.

The collectability of receivables is assessed periodically with provision being made for impairment. Any known bad debts are written-off as at 30 June. All receivables within terms and expected to be fully collectible are considered of good credit quality based on recent collection history. Credit risk management strategies are detailed in note 21.

Other debtors generally arise from transactions outside the usual operating activities of the Council and are recognised at their assessed values. Terms are a maximum of 30 days, no interest is charged and no security is obtained.

Disclosure - Credit risk exposure of receivables
The maximum exposure to credit risk at balance date for receivables is the gross carrying amount of those assets inclusive of any provisions for impairment.

No collateral is held as security and no credit enhancements relate to receivables held by the Council.

Notes to the financial statements
For the year ended 30 June 2018

11. Receivables (cont'd)

Accounting policy – Impairment of receivables
The method for calculating any provision for impairment is based on past experience, current and expected changes in economic conditions and changes in client credit ratings. These economic and geographic changes form part of the Council's documented risk analysis assessment in conjunction with historic experience and associated industry data. This analysis has identified that none of the Council's financial assets are impaired and subsequently provisions for impairment have not been raised.

No financial assets have had their terms renegotiated so as to prevent them from being past due or impaired, and are stated at the carrying amounts as indicated.

Disclosure - Ageing of past due but not impaired receivables
Ageing of past due but not impaired financial assets is disclosed in the following tables. No financial assets were assessed as being impaired as at 30 June 2018.

2018 Financial assets past due but not impaired

	Not Due	Overdue				Not due and overdue
	<30 days $'000	30-60 days $'000	61-90 days $'000	>90 days $'000	Total $'000	Total $'000
Financial assets						
Receivables	8,783	359	90	942	1,391	10,174
Total	**8,783**	**359**	**90**	**942**	**1,391**	**10,174**

2017 Financial assets past due but not impaired

	Not Due	Overdue				Not due and overdue
	<30 days $'000	30-60 days $'000	61-90 days $'000	>90 days $'000	Total $'000	Total $'000
Financial assets						
Receivables	3,529	1,808	709	1,366	3,883	7,412
Total	**3,529**	**1,808**	**709**	**1,366**	**3,883**	**7,412**

Notes to the financial statements
For the year ended 30 June 2018

	2018	2017
	$'000	$'000
12. Inventories		
Supplies and consumables – at cost	256	253
Total	**256**	**253**

Accounting policy - Inventories
Inventories are represented by consumable laboratory supplies valued at the lower of cost and net realisable value.

Cost is assigned on a weighted average basis and includes expenditure incurred in acquiring the inventories and bringing them to their existing condition. During the 2017-18 financial year $1.1m of inventories (2017: $1.1m) were expensed.

Net realisable value is determined by estimating the selling price in the ordinary course of business, less the estimated costs of completion and selling expenses. No inventory assets have been classified as inventories held for distribution.

All inventories on hand at 30 June are expected to be utilised within 12 months.

13. Other financial assets

Current		
Managed fund investments		
Budgeted drawdowns	15,000	25,000
Grant funds	4,675	-
Total	**19,675**	**25,000**
Non current		
Managed fund investments	119,524	106,340
Total	**119,524**	**106,340**

Accounting policy - Other financial assets
Other financial assets held at fair value through profit or loss represent investments in managed funds. The investments are stated at current market value at the reporting date. Changes in the market value of these instruments, whether realised or unrealised, are recognised in the Statement of Comprehensive Income. These investments were originally classified at fair value through profit or loss upon initial recognition and the Council manages these investments and makes purchases and sales decisions based on their fair value in accordance with the Council's documented investment strategy.

All managed fund investments are categorised as level 1 investments in accordance with the fair value hierarchy which reflects the unadjusted quoted market price. Refer note 21 for liquidity risk management. The current portion of managed funds is made up of unspent grant funds invested (refer note 18) plus drawdowns approved by Council in the 2018/19 Budget which can be used for operational cash requirements if needed.

Notes to the financial statements
For the year ended 30 June 2018

	2018 $'000	2017 $'000
14. Intangible assets		
Software purchased: At cost		
Gross	679	679
Less: Accumulated amortisation	(586)	(517)
	93	**162**
Software internally generated: At cost		
Gross	474	474
Less: Accumulated amortisation	(171)	(125)
	303	**349**
Total	**396**	**511**

Accounting policy - Recognition and measurement of intangibles
Intangible assets with a cost or other acquisition value equal to or greater than $100,000 are recognised in the Statement of Financial Position; items with a lesser value are expensed.

It has been determined that there is not an active market for any of the Council's intangible assets. As such, the assets are recognised and carried at cost less accumulated amortisation and accumulated impairment losses.

No intangible assets have been classified as held for sale or form part of a disposal group held for sale.

Key Judgement: Council also controls a number of significant software assets that are not recognised as assets because they fail to meet the AASB 138 recognition criteria.

Accounting policy - Amortisation expense
All intangibles assets of the Council have finite useful lives and are amortised on a straight line basis over their estimated useful life to the Council. Straight line amortisation is used reflecting the expected consumption of economic benefits on a progressive basis over the intangible's useful life. The residual value of all Council's intangible assets is zero.

Useful life
Key estimate: For each class of intangible asset the following amortisation rates are used:

Intangible Asset	Useful life
Purchased software	10 years
Internally generated software	10 years

14. Intangible assets (cont'd)

Accounting policy – Impairment
All intangible assets are assessed for indicators of impairment on an annual basis. If an indicator of possible impairment exists, the Council determines the asset's recoverable amount. Any amount by which the asset's carrying amount exceeds the recoverable amount is recorded as an impairment loss.

Intangible assets are principally assessed for impairment by reference to the actual and expected continuing use of the asset by the Council, including discontinuing the use of software. The recoverable amount is determined as the higher of the asset's fair value less costs to sell and its value-in-use.

Intangible assets– balances and reconciliations of carrying amount

Intangibles reconciliation of carrying amount	**Software internally generated**	**Software purchased**	**Software work in progress**	**Total**
	2018 $'000	**2018 $'000**	**2018 $'000**	**2018 $'000**
Carrying amount at 1 July 2017	350	161	-	511
Acquisitions	-	-	-	-
Disposals	-	-	-	-
Transfers between classes	-	-	-	-
Amortisation	(47)	(68)	-	(115)
Carrying amount at 30 June 2018	**303**	**93**	**-**	**396**

	Software internally generated	**Software purchased**	**Software work in progress**	**Total**
	2017 $'000	**2017 $'000**	**2017 $'000**	**2017 $'000**
Carrying amount at 1 July 2016	65	229	165	459
Acquisitions	-	-	140	140
Disposals	-	-	-	-
Transfers between classes	305	-	(305)	-
Amortisation	(20)	(68)	-	(88)
Carrying amount at 30 June 2017	**350**	**161**	**-**	**511**

Notes to the financial statements
For the year ended 30 June 2018

	2018 $'000	2017 $'000
15. Property, plant and equipment		
Buildings: At fair value		
Gross	340,923	338,877
Less: Accumulated depreciation	(79,468)	(73,198)
	261,455	**265,679**
Plant & equipment: At cost		
Gross	63,143	59,527
Less: Accumulated depreciation	(41,881)	(37,180)
	21,262	**22,347**
Work in progress: At cost *	978	427
	978	**427**
Total	**283,695**	**288,453**

* Work in progress includes various building improvement and renewal projects which are ongoing as at 30 June 2018.

Property plant and equipment – balances and reconciliations of carrying amount (including fair value level).

	Buildings (Research Facilities) Level 3	Heritage & cultural Level 3	Plant & equipment	Work in progress	Total
	2018 $'000	2018 $'000	2018 $'000	2018 $'000	2018 $'000
Carrying amount at 1 July 2017	265,679	-	22,347	427	288,453
Acquisitions	-	-	4,386	2,597	6,983
Disposals	-	-	(121)	-	(121)
Transfers between classes	2,046	-	-	(2,046)	-
Revaluation increments	-	-	-	-	-
Depreciation	(6,270)	-	(5,350)	-	(11,620)
Carrying amount at 30 June 2018	**261,455**	**-**	**21,262**	**978**	**283,695**

Notes to the financial statements
For the year ended 30 June 2018

15. Property, plant and equipment (cont'd)

	Buildings (Research Facilities) Level 3	Heritage & cultural Level 3	Plant & equipment	Work in progress	Total
	2017 $'000	2017 $'000	2017 $'000	2017 $'000	2017 $'000
Carrying amount at 1 July 2016	270,528	104	24,442	1,375	296,450
Acquisitions	137	-	3,421	451	4,009
Disposals	-	(104)	(95)	-	(199)
Transfers between classes	1,399	-	-	(1,399)	-
Revaluation increments	363	-	-	-	363
Depreciation	(6,748)	-	(5,421)	-	(12,169)
Carrying amount at 30 June 2017	**265,679**	**-**	**22,347**	**427**	**288,453**

Accounting policy – Recognition
Items of property, plant and equipment with a cost or other value equal to or in excess of the following thresholds are recognised for financial reporting purposes in the year of acquisition:

Class	Threshold
Buildings	$10,000
Plant and equipment	$5,000
Other (including heritage & cultural)	$5,000

Items with a lesser value are expensed in the year of acquisition.

Expenditure on property, plant and equipment is only capitalised if it increases the service potential or useful life of the existing asset. Maintenance expenditure that merely restores original service potential (arising from ordinary wear and tear) is expensed.

The Council owns and occupies three buildings situated on Crown land reserved and set apart for hospital purposes. The land is under the control of Metro North Hospital & Health Service (MNHHS) on behalf of The State of Queensland.

Leases for the land occupied by two of the buildings (the Bancroft Centre and the Clive Berghofer Cancer Research Centre) exist between the Council and The State of Queensland (represented by Queensland Health) at a nominal rental, terminating on 27 June 2066. A new lease for the land occupied by all three buildings is expected to be entered into between Council and MNHHS at nominal rental, terminating on 27 June 2066. Upon commencement of the new lease, the existing leases will be surrendered. Refer note 31.

Accounting policy – Cost of acquisition
Actual cost is used for the initial recording of all non-current physical asset acquisitions. Cost is determined as the value given as consideration plus costs incidental to the acquisition and those incurred in getting the assets ready for use.

15. Property, plant and equipment (cont'd)

Where assets are received free of charge from another Queensland Government entity, the acquisition cost is recognised as the gross carrying amount in the books of the transferor immediately prior to the transfer together with any accumulated depreciation.

Assets acquired at no cost or for nominal consideration, other than from another Queensland Government entity, are recognised at their fair value at the date of acquisition.

Accounting policy – Measurement using historical cost
Plant and equipment is measured at cost in accordance with Queensland Treasury *Non-Current Asset Policies*. The carrying amounts for plant and equipment at cost does not materially differ from their fair value.

Accounting policy – Measurement using fair value
Buildings are measured at fair value in accordance with AASB 116 *Property, Plant and Equipment*, AASB 13 *Fair Value Measurement* and Queensland Treasury *Non-Current Asset Policies* for the Queensland Public Sector. These assets are reported at their revalued amounts, being the fair value at the date of valuation, less accumulated depreciation and impairment losses where applicable. In respect of these asset classes, the cost of items acquired during the financial year has been judged by Council to materially represent their fair value at the end of the reporting period.

Buildings measured at fair value are revalued on an annual basis either by appraisals undertaken by an independent professional valuer, or by the use of appropriate and relevant indices, where the movement in fair value is material.

Use of independent valuation
Revaluations using an independent valuer are undertaken at least once every five years, the most recent being as at 30 June 2017 by the firm AECOM.

The fair values reported by the Council are based on appropriate valuation techniques that maximise the use of available and relevant observable inputs and minimise the use of unobservable inputs. As there is no active market for research facilities as the majority of building floor space is specialist research laboratories, the basis of the valuation is on a cost approach which involves estimating the amount that would currently be required to replace the service capacity of an asset (referred to as Current Replacement Cost). This is a level 3 categorisation, as referenced in Note 20.

The Replacement Cost is the total construction cost (including design fees and typical levels of contingency) if the asset was replaced on the valuation date with a modern day equivalent applying the 'highest and best use' principles.

For the valuation as at 30 June 2017, the Council elected to retain management's accumulated depreciation which is based on the estimated standard life of a mixed laboratory/office building of 50 years.

Use of Indices
Where buildings have not been independently valued in the reporting period, their previous valuations are materially kept up-to-date via the application of relevant indices, ensuring the resulting value is a valid estimation of the buildings' fair values at reporting date. In the absence of another appropriate published index, the Council uses the CPI (*Consumer Price Index (a): All groups, Brisbane and weighted average of eight capital cities*) published by the Australian Bureau of Statistics.

15. Property, plant and equipment (cont'd)

As at 30 June 2018, the change in the index since the last valuation is not considered material (less than 5% change) and consequently the carrying values of the three buildings have not been adjusted in the reporting period.

Accounting for changes in Fair Value
Any increment arising on the revaluation of buildings is credited to the asset revaluation reserve, except to the extent it reverses a revaluation decrement previously recognised as an expense. A decrease in the carrying amount on revaluation is charged as an expense, to the extent it exceeds the balance, if any, in the revaluation surplus.

Accounting policy – Depreciation of property, plant and equipment
Property, plant and equipment is depreciated on a straight-line basis so as to allocate the net cost or revalued amount of each asset, less its estimated residual value, progressively over its estimated useful life to the Council, consistent with the even consumption of service potential.

Assets under construction (work-in-progress) are not depreciated until they reach service delivery capacity. Service delivery capacity relates to when construction is complete and the asset is first put to use or is installed ready for use in accordance with its intended application. These assets are then reclassified to the relevant classes within property, plant and equipment.

Buildings including structure and components are treated for accounting depreciation purposes as a single asset and depreciated over 50 years.

Any expenditure that increases the originally assessed capacity or service potential of an asset is capitalised and the new depreciable amount is depreciated over the remaining useful life of the asset to the Council.

For the Council's depreciable assets, the estimated amount to be received on disposal at the end of their useful life (residual value) is determined to be zero.

Useful life
Key estimate: For each class of depreciable assets the following useful lives are used:

Property, Plant and Equipment Asset	Useful life
Buildings	50 years
Plant and Equipment	3-20 years

Accounting policy – Impairment of non-current assets
All non-current physical assets are assessed for indicators of impairment on an annual basis or, where the asset is measured at fair value, for indicators of a change in fair value/service potential since the last valuation was completed. Where indicators of a material change in fair value or service potential since the last valuation arise, the asset is revalued at the reporting date under AASB 13 *Fair Value Measurement*. If an indicator of possible impairment exists, the Council determines the asset's recoverable amount under AASB 136 *Impairment of Assets.* Any amount by which the asset's carrying amount exceeds the recoverable amount is recorded as an impairment loss.

Recoverable amount is equal to the higher of the fair value less costs of disposal and the asset's value in use subject to the following:

15. Property, plant and equipment (cont'd)

- As a not-for-profit entity, certain property, plant and equipment of the Council is held for the continuing use of its service capacity and not for the generation of cash flows. Such assets are typically specialised in nature. In accordance with AASB 136, where such assets are measured at fair value under AASB 13, that fair value (with no adjustment for disposal costs) is effectively deemed to be the recoverable amount. As a consequence, AASB 136 does not apply to such assets unless they are measured at cost.
- For other non-specialised property, plant and equipment measured at fair value, where indicators of impairment exist, the only difference between the asset's fair value and its fair value less costs of disposal is the incremental costs attributable to the disposal of the asset. Consequently, the fair value of the asset determined under AASB 13 will materially approximate its recoverable amount where the disposal costs attributable to the asset are negligible. After the revaluation requirements of AASB 13 are first applied to these assets, applicable disposal costs are assessed and, in the circumstances where such costs are not negligible, further adjustments to the recoverable amount are made in accordance with AASB 136.

For all other remaining assets measured at cost, and assets within the economic entity held for the generation of cash flows recoverable amount is equal to the higher of the fair value less costs of disposal and the asset's value in use.

Value in use is equal to the present value of the future cash flows expected to be derived from the asset, or where Council no longer uses an asset and has made a formal decision not to reuse or replace the asset, the value in use is the present value of net disposal proceeds.

Recognising Impairment Losses
For assets measured at fair value, an impairment loss is treated as a revaluation decrease and offset against the asset revaluation surplus of the relevant class to the extent available. Where no asset revaluation surplus is available in respect of the class of asset, the loss is expensed in the statement of comprehensive income as a revaluation decrement.

For assets measured at cost, an impairment loss is recognised immediately in the statement of comprehensive income.

	2018 $'000	2017 $'000
16. Payables		
Accrued expenses	2,660	3,480
Accrued wages	2,317	1,146
Trade creditors	1,556	2,776
Other	3,629	2,852
Total	**10,162**	**10,254**

Accounting Policy – Payables
Trade creditors are recognised upon receipt of the goods or services ordered and are measured at the nominal amount i.e. agreed purchase/contract price, gross of applicable trade and other discounts. Standard payment terms are end of month following month of invoice. Amounts owing are unsecured.

Notes to the financial statements
For the year ended 30 June 2018

	2018 $'000	2017 $'000
17. Accrued employee benefits		
Current		
Annual leave entitlements payable	4,921	4,545
Long service leave levy payable	298	277
Other	240	183
Total	**5,459**	**5,005**

Accounting policy – Accrued employee benefits

No provision for long service leave is recognised in the Council's financial statements, the liability being held on a whole-of-government basis and reported in those financial statements pursuant to AASB 1049 *Whole of Government and General Government Sector Financial Reporting.*

Accruals for wages, salaries and annual leave expense due but unpaid at reporting dates are recognised in the Statement of Financial Position at the current salary rates.

Annual leave entitlements are recognized at their undiscounted values and are classified as current liabilities as Council does not have the unconditional right to defer settlement for the next 12 months.

18. Unearned Revenue

	Balance b/f 1July 2017 $'000	Funds received $'000	Expenditure $'000	Balance c/f 30 June 2018 $'000
National Health & Medical Research Council	11,565	27,175	(24,502)	14,238
Australian Research Council	339	200	(608)	(69)
Cancer Council Qld	345	718	(791)	272
Dept. of Science, Information Technology & Innovation	10	770	(399)	381
Medicines for Malaria Venture (MMV)	179	2,310	(2,443)	46
Perpetual Trustees Australia Limited	188	671	(491)	368
US Department of Defence	(134)	947	(989)	(176)
Other granting bodies	5,570	6,999	(6,539)	6,030
Granting bodies – sub total	**18,062**	**39,790**	**(36,762)**	**21,090**
Commercial partners	6,190	6,580	(4,885)	7,885
Total	**24,252**	**46,370**	**(41,647)**	**28,975**

Notes to the financial statements
For the year ended 30 June 2018

18. Unearned Revenue (cont'd)

	Balance b/f 1July 2016 $'000	Funds received $'000	Expenditure $'000	Balance c/f 30 June 2017 $'000
National Health & Medical Research Council	11,059	27,340	(26,834)	11,565
Australian Research Council	692	576	(929)	339
Cancer Council Qld	98	1,280	(1,033)	345
Dept. of Science, Information Technology & Innovation	47	234	(272)	10
Medicines for Malaria Venture (MMV)	217	1,769	(1,807)	179
Perpetual Trustees Australia Limited	246	422	(480)	188
US Department of Defence	(107)	346	(373)	(134)
Other granting bodies	7,510	3,863	(5,803)	5,570
Granting bodies – sub total	**19,762**	**35,830**	**(37,530)**	**18,062**
Commercial partners	3,743	7,614	(5,167)	6,190
Total	**23,505**	**43,444**	**(42,697)**	**24,252**

Funds received from Universities for supervising students have previously been reported as Unearned Revenue. As there is no agreement attached to the funds to make them reciprocal in nature, $0.68m has been removed from 2018. As the value is not considered material, comparatives have not been changed (2017: $0.63m).

Unspent grant funds of $16.41m (2017:$18.99m) are held in term deposits (refer note 10) and $4.67m (2017:$0) in other financial assets (refer note 13). Where the grantors funding rules require unspent funds to be held in a bank account, those funds are in term deposits.

Accounting policy - Unearned revenue

Where grants and funds from commercial partners are received that are reciprocal in nature, revenue is progressively recognised as it is earned according to the terms of the funding agreements. A liability has been recognised to show funds not earned at balance date.

Notes to the financial statements
For the year ended 30 June 2018

19. Asset revaluation surplus by class

	Buildings	Heritage & Cultural	Total
	$'000	$'000	$'000
Balance as at 1 July 2017	72,499	-	72,499
Revaluation increments/(decrements)	-	-	-
Balance as at 30 June 2018	**72,499**	**-**	**72,499**

	Buildings	Heritage & Cultural	Total
	$'000	$'000	$'000
Balance as at 1 July 2016	72,136	4	72,140
Revaluation increments/(decrements)	363	(4)	359
Balance as at 30 June 2017	**72,499**	**-**	**72,499**

Accounting policy - Asset revaluation surplus

The asset revaluation surplus represents the net effect of upwards and downwards revaluations of assets to fair value.

NOTES ABOUT RISKS AND OTHER ACCOUNTING UNCERTAINTIES

20. Fair value measurement

Accounting policy – Inputs for fair values
Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date under current market conditions (i.e. an exit price) regardless of whether that price is directly derived from observable inputs or estimated using another valuation technique.

Observable inputs are publicly available data that are relevant to the characteristics of the assets/liabilities being valued.

Unobservable inputs are data, assumptions and judgements that are not available publicly, but are relevant to the characteristics of the assets/liabilities being valued. Significant unobservable inputs used by the Council include, but are not limited to, subjective adjustments made to observable data to take account of the characteristics of the Council's assets/liabilities, internal records of recent construction costs (and/or estimates of such costs) for asset's characteristics/functionality, and assessments of physical condition and remaining useful life. Unobservable inputs are used to the extent that sufficient relevant and reliable observable inputs are not available for similar assets/liabilities.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

Fair value measurement hierarchy
All assets of the Council for which fair value is measured or disclosed in the financial statements are categorised within the following fair value hierarchy, based on the data and assumptions used in the most recent specific appraisals:

Level 1	represents fair value measurements that reflect unadjusted quoted market prices in active markets for identical assets;
Level 2	represents fair value measurements that are substantially derived from inputs (other than quoted prices included within level 1) that are observable, either directly or indirectly; and
Level 3	represents fair value measurements that are substantially derived from unobservable inputs.

There were no transfers of assets between fair value hierarchy levels during the current or prior years.

Basis for fair values of assets
Refer to note 15 for details of the basis for fair value measurement of buildings held by QIMR Berghofer.

Notes to the financial statements
For the year ended 30 June 2018

21. Financial risk disclosures

(a) Financial instrument categories

Accounting policy – Financial instruments

Recognition

Financial assets and financial liabilities are recognised in the Statement of Financial Position when Council becomes party to the contractual provisions of the financial instrument.

The Council has the following categories of financial assets and financial liabilities:

	2018 $'000	2017 $'000
Financial assets		
Financial assets held at fair value through profit or loss:		
Cash and cash equivalents	17,629	21,394
Other financial assets	139,199	131,340
Financial assets held at amortised cost:		
Receivables	10,174	7,412
	167,002	**160,146**
Financial liabilities		
Financial liabilities measured at amortised cost:		
Payables	10,162	10,254
	10,162	**10,254**

No financial assets and financial liabilities have been offset and presented net in the Statement of Financial Position.

The Council does not enter into transactions for speculative purposes, or for hedging.

(b) Financial risk management

Risk exposure

Financial risk management is implemented pursuant to Government and Council policy. These policies focus on the unpredictability of financial markets and seek to minimise potential adverse effects on the financial performance of the Council.

All financial risk is managed by the Institute under policies approved by the Council. The Council provides written principles for overall risk management, as well as policies covering specific areas.

Council's activities expose it to a variety of financial risks as set out in the following table:

Notes to the financial statements
For the year ended 30 June 2018

21. Financial risk disclosures (cont'd)

Risk Exposure	Definition	Exposure
Credit risk	Credit risk exposure refers to the situation where the Council may incur financial loss as a result of another party to a financial instrument failing to discharge their obligation.	The Council is exposed to credit risk in respect of its receivables (note 11).
Liquidity risk	Liquidity risk refers to the situation where the Council may encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset.	The Council is exposed to liquidity risk in respect of its payables (note 16).
Market risk	The risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises three types of risk: currency risk, interest rate risk and other price risk. Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates.	The Council is exposed to market risk on its managed funds (note 13). The Council is exposed to currency risk in respect of its commercial contracts entered into denominated in US dollars. It maintains a bank account in Hong Kong with an immaterial cash balance denominated in HK dollars used to fund the operations of a local study. The Council is exposed to interest rate risk through its cash deposited in interest bearing accounts (note 10).

Risk measurement and management strategies
Council measures risk exposure using a variety of methods as follows:

Risk Exposure	Measurement Method	Risk Management Strategies
Credit risk	Ageing analysis, earnings at risk	The Council manages credit risk through the use of a credit management strategy. This strategy aims to reduce the exposure to credit default by ensuring that the Council invests in secure assets and monitors all funds owed on a timely basis. Exposure to credit risk is monitored on an ongoing basis.

Notes to the financial statements
For the year ended 30 June 2018

21. Financial risk disclosures (cont'd)

Risk Exposure	Measurement Method	Risk Management Strategies
Liquidity risk	Sensitivity analysis	The Council manages liquidity risk through the use of a liquidity management strategy. This strategy aims to reduce the exposure to liquidity risk by ensuring the Council has sufficient funds available to meet employee and supplier obligations as they fall due. This is achieved by ensuring that minimum levels of cash are held within the various bank accounts so as to match the expected duration of the various employee and supplier liabilities. Managed funds held under 'Other Financial Assets' represent investments that are the Institutes long term endowment type funds as well as funds invested in excess of short term operational requirements. These funds can, if required, be redeemed by Council within a relatively short period of time to meet operational cash requirements (note 13).
Market risk	Interest rate sensitivity analysis	The Council does not undertake any hedging in relation to interest risk and manages its risk as per the Council's liquidity risk management strategy articulated in the Council's policies. The Council is exposed to movements in interest rate risk through its investment in externally managed funds and its holdings in cash and cash equivalents. The Council does not undertake any hedging in relation to foreign currency risk and manages this through conservative exchange rate estimates when pricing commercial contracts. The Council places managed funds with three separate fund managers. The Investment Committee (a committee of Council) oversees the performance of these funds.

22. Contingencies

(a) Contingent assets

Contributions to Queensland Community Foundation
The QIMR Trust established a fund with the Queensland Community Foundation (QCF) for the purpose of generating future income and donations. This fund was transferred to Council upon abolition of the QIMR Trust on 1 February 2011. All contributions made to this named fund within QCF are held in a charitable trust (with The Public Trustee of Queensland as Trustee) and invested in perpetuity with net income distributed to the Council at the discretion of the Trustee in accordance with the Queensland Community Fund Declaration of Trust. Council may, from time to time, become eligible to receive a distribution from the Foundation, but does not have a proprietary or legal interest in the Foundation nor does the Foundation hold property for Council's benefit. Based on previous distributions, Council expects any future income from the Fund to be immaterial.

22. Contingencies (cont'd)

(b) Contingent liabilities

Except for the contingent liability relating to Q-Pharm Pty Ltd outlined in note 30(a), the Council does not have any other contingent liabilities at 30 June 2018.

23. Commitments

(a) Non-cancellable operating leases

Commitments under operating leases at reporting date are inclusive of anticipated GST and are payable as follows:

	2018 $'000	2017 $'000
Payable:		
Not later than one year	53	54
Later than one year and not later than five years	119	171
Total	**172**	**225**

Operating leases have renewal options, however, no leases have escalation clauses other than in the event of payment default. No lease arrangements create restrictions on other financing transactions.

(b) Capital expenditure commitments

Building works	378	89
Other capital commitments	249	328
	627	**417**

Building works represents 60% of capital expenditure commitments (2017: 21%). The values shown are based on the committed contract value inclusive of anticipated GST.

Payable:		
Not later than one year	627	417
Total	**627**	**417**

(c) Operating lease receivable

Licence fees receivable for use of the premises are as follows:

Payable:		
Not later than one year	2,000	1,500
Later than one year and not later than five years	8,000	8,000
Later than five years	5,000	7,000
Total	**15,000**	**16,500**

The lease term is for 10 years from commencement date (1 January 2016). These amounts do not include licence fees which may become receivable under the lease on the basis of registered associates on the premises in excess of stipulated minimums and do not include any recovery of expenses such as scientific services, electricity and water costs.

Notes to the financial statements
For the year ended 30 June 2018

24. Events occurring after balance date

There are no events occurring after balance date having a material impact on the figures reported in these financial statements.

25. Economic dependency

The Council's activities are predominantly funded by grants received from a range of funding agencies, the majority of which are Commonwealth and State Government bodies. The ability of the Council to source sufficient grant funding is dependent upon those entities continuing to have the ability to fund research activities and for the Institute to be successful in its funding applications. At balance date the Council had no indication that operational and research funding would not be provided as per the funding agreements. Should unforeseen fluctuations in the amount of available grant funding occur the Council would use its cash assets (refer note 10) and managed fund investments (refer note 13) to cover short term operational cash requirements.

26. Future impact of accounting standards not yet effective

At the date of authorisation of the financial report, the expected impacts of new or amended Australian Accounting Standards issued but with future commencement dates are set out below:

AASB 9 *Financial Instruments* and *AASB 2014-7 Amendments to Australian Accounting Standards arising from* AASB 9 *(December 2014)*

These Standards will first apply to the Council from its financial statements for 2018-19 with a 1 July 2018 date of transition. The main impacts of these standards on the Council are that they will change the requirements for the classification, measurement, impairment and disclosures associated with the Council's financial assets. AASB 9 will introduce different criteria for whether financial assets can be measured at amortised cost or fair value.

The Council has reviewed the impact of AASB 9 on the classification and measurement of its financial assets. At this stage, and assuming no change in the types of transactions the Council enters into, all of the Council's financial assets are expected to be required to be measured at fair value (instead of the measurement classifications presently used in note 21). In the case of the Council's current receivables, as they are short-term in nature, the carrying amount is expected to be a reasonable approximation of fair value. Changes in the fair value of those assets will be reflected in the Council's operating result.

The following summarises the estimated impact of AASB 9 will change the categorisation and valuation of the amounts:

- There will be no change to either the classification or valuation of the cash and cash equivalent item.

- Trade receivables will be classified and measured at amortised cost. However, new impairment requirements will result in a provision being applied to all receivables rather than only on those receivables that are credit impaired. Council will be adopting the simplified approach under AASB 9 and measure lifetime expected credit losses on all trade receivables and contract assets using a provision matrix approach as a practical expedient to measure the impairment provision. Assuming no substantial change in the nature of receivables, as they don't include a significant financing component on initial adoption of AASB 9, the Council will need to determine the expected credit losses for its receivables by comparing the credit risk at that time to the credit risk that existed when those receivables were initially recognised. Council does not expect a material change in the reported value of receivables.

26. Future impact of accounting standards not yet effective (cont'd)

- All financial liabilities listed in note 21 will continue to be measured at amortised cost. The Council does not expect a material change in the reported value of financial liabilities.

AASB 15 *Revenue from Contracts with Customers* and AASB 1058 *Income of Not-for-Profit Entities*

These standards will first apply to the Council from its financial statements for 2019-2020.

The Council has commenced analysing the new revenue recognition requirements under these standards and is yet to form conclusions about significant impacts. Potential future impacts identifiable at the date of this report are as follows:

- Grants that are not enforceable and/or not sufficiently specific will not qualify for deferral, and continue to be recognised as revenue as soon as they are controlled. Council receives several grants for which there are no sufficiently specific performance obligations. These grants will continue to be recognised as revenue upfront.
- Depending on the specific contractual terms, the new requirements may potentially result in a change to the timing of revenue from sales of the Council's goods and services, such that some revenue may need to be deferred to a later reporting period to the extent that the Council has received cash but has not met its associated obligations (such amounts would be reported as a liability (unearned revenue) in the meantime). The Council is yet to complete its analysis of current arrangements for sale of its goods and services, but at this stage does not expect a significant impact on its present accounting practices.

A range of new disclosures will also be required by the new standards in respect of the Council's revenue.

AASB 16 *Leases* and AASB 1058 *Income of Not-for-Profit Entities*

These standards will first apply to the Council from its financial statements for 2019-20. When applied, the standard supersedes AASB 117 *Leases*, AASB Interpretation 4 *Determining whether an Arrangement contains a Lease*, AASB Interpretation 115 *Operating Leases – Incentives* and AASB Interpretation 127 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease*.

Impact for Lessees

Unlike AABS 117 Leases, AASB 16 introduces a single lease accounting model for lessees. Lessees will be required to recognise a right-of-use asset (ROUA) (representing rights to use the underlying leased asset) and a liability (representing the obligation to make lease payments) for all leases with a term of more than 12 months, unless the underlying assets are of low value.

In effect, the majority of operating leases (as defined by the current AASB 117) will be reported on the statement of financial position under AASB 16. The impact on the reported assets and liabilities would be largely in proportion to the scale of the Council's leasing activities.

26. Future impact of accounting standards not yet effective (cont'd)

A ROUA will be initially recognised at cost, consisting of the initial amount of the associated lease liability, plus any lease payments made to the lessor at or before the effective date, less any lease incentive received, the initial estimate of restoration costs and any initial direct costs incurred by the lessee. The ROUA will give rise to a depreciation expense.

The lease liability will be initially recognised at an amount equal to the present value of the lease payments during the lease term that are not yet paid. Current operating lease rental payments will no longer be expensed in the Statement of Comprehensive Income. They will be apportioned between a reduction in the recognised lease liability and the implicit finance charge (the effective rate of interest) in the lease. The finance cost will also be recognised as an expense.

AASB 16 allows a 'cumulative approach' rather than full retrospective application to recognising existing operating leases. If a lessee chooses to apply the 'cumulative approach', it does not need to restate comparative information. Instead, the cumulative effect of applying the standard is recognised as an adjustment to the opening balance of accumulated surplus (or other component of equity, as appropriate) at the date of initial application.

The Council's buildings are built on land owned by Metro North Hospital & Health Services (MNHHS). It is anticipated that Council will enter into a peppercorn lease, for a 40 year term, with MNHHS in the reporting period ending 30 June 2019. Leases currently in place for the land occupied by Bancroft and CBCRC buildings (refer note 15) are to be terminated at this time.

With the introduction of AASB 1058 Income of Not-for-Profit Entities (AASB 1058) Council may be required to recognise a ROUA for this lease with MNHHS at fair value, as per AASB16. This will occur for the first time in the reporting period ending 30 June 2020. The potential impacts of this standard are yet to be fully determined.

All other Australian accounting standards and interpretations with future commencement dates are either not applicable to the Council's activities, or have no material impact on the Council.

Notes to the financial statements
For the year ended 30 June 2018

NOTES ON OUR PERFORMANCE COMPARED TO BUDGET

27. Budgetary reporting disclosures

This section contains explanations of major variances between Council's actual 2017-18 financial results and the original budget which was approved by the Council on 21 March 2017.

Budget to actual comparison - Statement of comprehensive income

	Notes	Actual 2018 $'000	Original Budget 2018 $'000	Budget Variance 2018 $'000
Income from continuing operations				
Grants and other contributions	a	64,942	82,628	(17,686)
User charges and fees		26,467	27,160	(693)
Other revenue		10,308	9,592	716
Interest		588	797	(209)
Total Revenue		102,305	120,177	(17,872)
Gains on sale/revaluation of assets		5,486	5,091	395
Total income from continuing operations		**107,791**	**125,268**	**(17,477)**
Expenses from continuing operations				
Employee expenses	b	(61,432)	(65,827)	4,395
Supplies and services	c	(25,744)	(36,030)	10,286
Depreciation and amortisation		(11,735)	(12,646)	911
Other expenses	d	(11,119)	(10,086)	(1,033)
Finance costs		(697)	(679)	(18)
Total expenses from continuing operations		**(110,727)**	**(125,268)**	**14,541**
Operating result from continuing operations		**(2,936)**	**-**	**(2,936)**
Other comprehensive income				
Items that will not be reclassified subsequently to operating result				
Increase in asset revaluation surplus		-	-	-
		-	**-**	**-**
Total other comprehensive income		**-**	**-**	**-**
Total comprehensive income/(loss)		**(2,936)**	**-**	**(2,936)**

Notes to the financial statements
For the year ended 30 June 2018

27. Budgetary reporting disclosures (cont'd)

Budget to actual comparison - Statement of financial position

	Notes	Actual 2018 $'000	Original Budget 2018 $'000	Budget Variance 2018 $'000
Current assets				
Cash and cash equivalents	e	17,629	24,031	(6,402)
Receivables	f	10,174	4,107	6,067
Other financial assets		19,675	21,000	(1,325)
Inventories		256	252	4
Other		645	116	529
Total current assets		**48,379**	**49,506**	**(1,127)**
Non-current assets				
Other financial assets		119,524	113,454	6,070
Property, plant and equipment		283,695	288,744	(5,049)
Intangible assets		396	291	105
Controlled and jointly controlled entities		23	23	-
Total non-current assets		**403,638**	**402,512**	**1,126**
Total assets		**452,017**	**452,018**	**(1)**
Current liabilities				
Payables	g	10,162	5,884	4,278
Accrued employee benefits		5,459	4,852	607
Unearned revenue		28,975	29,074	(99)
Total current liabilities		**44,596**	**39,810**	**4,786**
Total liabilities		**44,596**	**39,810**	**4,786**
Net assets		**407,421**	**412,208**	**(4,787)**
Equity				
Total equity		**407,421**	**412,208**	**(4,787)**

Notes to the financial statements
For the year ended 30 June 2018

27. Budgetary reporting disclosures (cont'd)

Budget to actual comparison - Statement of cash flows

	Notes	Actual 2018 $'000	Original Budget 2018 $'000	Budget Variance 2018 $'000
Cash flows from operating activities				
Inflows:				
Grants and other contributions	h	68,262	83,658	(15,396)
User charges and fees	i	24,365	27,141	(2,776)
Other income		2,311	4,182	(1,871)
Interest income		559	797	(238)
GST input tax credits from ATO		3,397	-	3,397
GST collected from customers		1,590	-	1,590
Outflows:				
Employee expenses	j	(60,215)	(65,698)	5,483
Supplies and services	k	(29,512)	(37,565)	8,053
Finance costs		(697)	(679)	(18)
GST paid to suppliers		(3,403)	-	(3,403)
GST remitted to ATO		(1,600)	-	(1,600)
Other	l	(5,537)	(9,715)	4,178
Net cash provided by operating activities		**(480)**	**2,121**	**(2,601)**
Cash flows from investing activities				
Inflows:				
Redemptions of other financial assets	m	10,500	25,000	(14,500)
Sale of property, plant and equipment		119	-	119
Outflows:				
Investments in other financial assets		(6,127)	(13,438)	7,311
Acquisition of property, plant and equipment	n	(7,777)	(11,963)	4,186
Net cash used in investing activities		**(3,285)**	**(401)**	**(2,884)**
Net decrease in cash and cash equivalents		(3,765)	1,720	(5,485)
Cash and cash equivalents at beginning of financial year		21,394	22,311	(917)
Cash and cash equivalents at end of financial year		**17,629**	**24,031**	**6,402**

27. Budgetary reporting disclosures (cont'd)

Explanation of major variances
Statement of comprehensive income

a. Competitive research grant funding received from the National Health and Medical Research Council (NHMRC) and other funding agencies has been lower than budget by $7.4m. Capital grants are $2.5m below budget with an award from the Australian Cancer Research Foundation of $1.8m awarded in 2017-18 but not yet received. Total donations and bequests were below budget by $7.8m. This is predominantly due to major gift, bequest and corporate donation income being below budgeted levels.
b. Employee expenses in 2017-18 were lower than budget due to lower than expected competitive research grant funding being available to fund research positions.
c. Lower than budget competitive research grant funding and donation income has led to reduced spending on supplies and services in 2017-18.
d. Other expenses are $1.0m above budget in 2017-18 due to increased payments of grant funds to research project collaborators.

Statement of financial position

e. Cash and cash equivalents balance is kept at minimum levels required for short term cash requirements and to meet NHMRC grant funding rules. Excess funds are invested where possible to maximise returns. The budget estimated a higher balance based on higher anticipated levels of grant based income.
f. The closing 2017-18 receivables balance is above budgeted levels due to the recognition of a commercial license option fee of $4.0m following execution of the contract just prior to 30 June. Investment distributions and franking credits accrued of $1.7m at 30 June were higher than budget.
g. Payables balance is higher than budget as at 30 June 2018. The amount payable for scientific collaboration distributions are $1.7m above budget. $1.1m has been accrued for salaries and wages payable under the latest Enterprise Agreement which has not yet been finalised, but will be back dated to 1 September 2017 and paid in the 2018-19 financial year.

Statement of cash flows

h. Donation and bequest income received by the Institute in 2017-18 were below the budgeted level by $7.8m. This is coupled with lower grant fund receipts of $7.7m, including $2.5m in a budgeted capital grant income not received.
i. Cash inflows from commercialisation activities were $2.2m below budget due to the timing of receipt of invoiced funds falling in July 2018. Receipts from rent/licence fees were $0.9m below budget.
j. Lower than budgeted competitive research grant funding combined with the delay of the 2017 Enterprise Agreement has contributed to lower employee expenses for 2017-18.
k. Cash outflows on supplies and services are below budget due to lower funding available from competitive grants for research.
l. Other expenses cash outflow is below budget due to lower distributions to scientific collaborators and contributors on commercial projects.
m. Redemptions from other financial assets were $14.5m lower than budget due to lower than budgeted capital expenditure combined with the release of cash from the lower term deposit levels held to cover unspent research funds relative to budget . Most government research fund grantors require unspent grant funds to be held in bank deposits. The level of term deposits held by the Institute aligns with these grantor's requirements and has reduced relative to that budgeted.
n. Capital expenditure has been lower than budget due to grant funding specifically for capital equipment not being received before 30 June resulting in a delay to procurement of that equipment ($2.3m), and lower than budget purchases of equipment using Institute and research grant funds ($2.5m). This is offset by cash outflows for equipment purchased in June 2017 for which payment was not made until the current financial year ($0.7m).

Notes to the financial statements
For the year ended 30 June 2018

WHAT WE LOOK AFTER ON BEHALF OF WHOLE-OF-GOVERNMENT AND THIRD PARTIES

28. Trust transactions and balances

(a) Trust II for the CRC for Vaccine Technology (CRCVT Trust II)

The Council was the Trustee of the CRC for Vaccine Technology Trust II (CRCVT Trust II), a trust responsible for managing patent families and licensing arrangements on behalf of the participants in the CRCVT since winding up in June 2006. Income received from licensing arrangements is distributed to the members in the trust according to their participating share in the CRCVT as of June 2006. The members of the CRCVT Trust II were: The Council of the Queensland Institute of Medical Research, CSIRO, CSL Limited, The University of Melbourne, Walter and Eliza Hall Institute of Medical Research, Monash University, Australian Red Cross Blood Service and La Trobe University.

During 2016-17 a Deed of Termination was entered into, with all the members agreeing to the distribution of the Trust Property in accordance with their participating share in the trust. The final distributions were paid out in full to participants during 2017-18 and the trust was terminated during the financial year.

As the Council performed only a custodial role in respect of these transactions and balances, they are not recognised in the financial statements but are disclosed in this note for the information of users.

	2018 $'000	2017 $'000
This is a summary of the financial transactions and balances for CRC for Vaccine Technology Trust II:		
Income	-	-
Expenses	(2)	(10)
Net deficit	**(2)**	**(10)**
Cash	-	29
Receivables	-	-
Net assets	**-**	**29**
Payables	-	-
Beneficiaries entitlements payable	-	29
Total liabilities	**-**	**29**
Trust net assets	**-**	**-**

CRCVT Trust II was not required to prepare financial statements for the year's ended 30 June 2018 and 30 June 2017, however, the transactions disclosed above have been audited. There were no external audit fees relating to the 2017-18 financial year (2017: $0).

The Council undertook certain custodial services on behalf of the Cooperative Research Centre Vaccine Technology Trust II (CRCVT) up to termination for which no fees were received by Council.

Notes to the financial statements
For the year ended 30 June 2018

28. Trust transactions and balances (cont'd)

(b) Employee Research Services

The Council undertakes a custodial role in respect of transactions and balances relating to Employee Research Services (ERS). Transactions for ERS are not recognised in the financial statements but are disclosed in this note for the information of users. The balance of cash held in trust is recognised in cash and cash equivalents.

This is a summary of the financial transactions and balances for Employee Research Services:

	2018 $'000	2017 $'000
Income	3,249	3,842
Expenses	(2,312)	(1,981)
Increase in net balance	**937**	**1,861**
Cash held in short term deposits	6,640	5,703
Total trust assets	**6,640**	**5,703**

The Council undertakes certain trustee transactions on behalf of employees' research activities, for which no fees are received by Council for providing such services.

Notes to the financial statements
For the year ended 30 June 2018

OTHER INFORMATION

29. Key management personnel (KMP) disclosures

(a) Key management personnel

The following details for key management personnel include those positions that had authority and responsibility for planning, directing and controlling the activities of the Institute during 2016-17 and 2017-18. Appointment is made by the Governor in Council under s5 & s10 of the *Queensland Institute of Medical Research Act 1945.*

The functions of the Council are to: (a) control and manage the Institute; (b) raise and accept moneys for the purposes of the Institute; (c) invest moneys raised and accepted by the Council for the purposes of the Institute; and (d) invest moneys derived from any property or other invested moneys of the Council for the purposes of the Institute.

Position	Incumbents term		2017-18	2016-17
	Date of initial appointment	Date of cessation		
Council members				
Dr Douglas McTaggart - Chair	27 Nov 2014		√	√
Mr Christopher Coyne - Deputy Chair	2 Jun 2005		√	√
Emeritus Prof John de Jersey	27 Nov 2014		√	√
Mr Ian Fraser	9 Aug 2012		√	√
Assoc Prof Paula Marlton	16 Feb 2006		√	√
Prof Alan Pettigrew	9 Sep 2011		√	√
Mr Michael Sargent^^	27 Nov 2014		√	√
Prof John Shine	27 Nov 2014		√	√
Dr Jeannette Young^	20 Sep 2005		√	√
Director/ CEO				
Prof Frank Gannon*^^	4 Jan 2011		√	√

^ Officer of the public service

* Also a Director of Q-Pharm Pty Ltd which is a controlled entity of Council (refer note 30)

^^ Also a Director of genomiQa Pty Ltd which is a controlled entity of Council (refer note 30)

Position	Position responsibility
Council member	Overall authority and responsibility for overseeing, directing and controlling the activities of the Institute
Director/ CEO	Overall efficient and effective administration of the Council operations

(b) Remuneration policies

The Chairperson and members of Council receive sitting fees in line with the 'Remuneration of part-time Chairs and Members of Government Boards, Committees and Statutory Authorities' guideline issued by the Queensland Government. Any member of the Council who is an officer of the public service does not receive fees or allowances for attendance at a meeting of the Council.

Notes to the financial statements
For the year ended 30 June 2018

29. Key management personnel (KMP) disclosures (cont'd)

The remuneration policy for the Director/CEO is set by Council and approved by the Governor in Council as provided for under the *Queensland Institute of Medical Research Act 1945*. The remuneration and other terms of employment for the Director/CEO are specified in the employment contract. The contract provides for the provision of other benefits including a motor vehicle.

The remuneration package for the Director/CEO comprises the following components:

i. Short term employee expenses which include:

- Base – consisting of base salary, allowances and leave entitlements paid and provided for the entire year or for that part of the year during which the Director/CEO occupied the specified position. Amounts disclosed equal the amount expensed in the Statement of Comprehensive Income; and
- Non-monetary benefits – consisting of provision of living-away-from-home-allowance, travel, vehicle and other minor benefits together with fringe benefits tax applicable to these benefits.

ii. Long term employee expenses include amounts expensed in respect of long service leave entitlements earned.

iii. Post-employment expenses include amounts expensed in respect of employer superannuation obligations.

iv. Termination benefits are not provided for within the Director/CEO's contract of employment. The contract of employment provides only for notice periods or payment in lieu of notice on termination, regardless of the reason for termination.

v. There are no performance bonuses paid or payable to the Director/CEO.

Key management personnel remuneration expense
The following disclosures focus on the expenses incurred by Council that is attributable to key management positions during the respective reporting periods. Therefore, the amounts disclosed reflect expenses recognised in the Statement of Comprehensive Income.

Total remuneration is calculated on a 'total cost' basis and includes the base and non-monetary benefits, long term employee benefits and post employment benefits. During either financial years no termination benefits have been paid and no KMP remuneration packages provide for performance or bonus payments.

1 July 2017 - 30 June 2018

Position	Short term employee expenses		Long term employee	Post-employment expenses	Total expenses
	Monetary expenses $'000	Non-monetary benefits $'000	$'000	$'000	$'000
Chair of Council (1)	-	-	-	-	-
Council Members (7)	26	-	-	-	26
Director/CEO	641	118	16	57	832
Total	**667**	**118**	**16**	**57**	**858**

29. Key management personnel (KMP) disclosures (cont'd)

1 July 2016 - 30 June 2017

Position	Short term employee expenses		Long term employee	Post-employment expenses	Total expenses
	Monetary expenses $'000	Non-monetary benefits	$'000	$'000	$'000
Chair of Council (1)	-	-	-	-	-
Council Members (6)	25	-	-	-	25
Director/CEO	627	183	16	35	861
Total	**652**	**183**	**16**	**35**	**886**

The table above includes $82,000 in fringe benefits tax paid by Council in 2017-18 in relation to key management remuneration (2017: $127,000).

30. Controlled entities

(a) Q-Pharm Pty Ltd

In August 2014 Council acquired full ownership of clinical trials company Q-Pharm Pty Ltd, for-profit in nature. As at 30 June 2018, the Council holds 100% of the shares of Q-Pharm Pty Ltd (2017: 100%). Q-Pharm Pty Ltd's registered office is in Brisbane, Queensland, with its activities also being conducted there.

	2018 $'000	2017 $'000
Q-Pharm Pty Ltd		
Investment –at cost	23	23
	23	**23**
This is a summary of the financial transactions and balances for Q-Pharm Pty Ltd:		
Income	9,168	5,969
Expenses	9,032	(6,778)
Net surplus/(loss)	**136**	**(809)**
Current assets	2,854	1,197
Non-current assets	405	180
Current liabilities	(3,092)	(1,400)
Non-current liabilities	(104)	(50)
Net assets/(liabilities)	**63**	**(73)**

Q-Pharm Pty Ltd did not have any material contingent liabilities or commitments as at 30 June 2018.

Q-Pharm Pty Ltd is budgeting for a net surplus for the 2018-19 financial year.

The above results for Q-Pharm Pty Ltd have also been audited by the Auditor General of Queensland.

30. Controlled entities (cont'd)

As the results of Q-Pharm Pty Ltd are not consolidated into the results of the Council on the basis of materiality, the net profit for the 2017-18 financial year is not reflected in the Council's statement of comprehensive income.

Council provides support to Q-Pharm Pty Ltd through a Letter of Comfort, duly authorised by a resolution of the Council, which represents a contingent liability for the Council. This Letter of Comfort relates to Type 1 and Type 2 Financial Arrangements, as per the Queensland *Statutory Bodies Financial Arrangements Act 1982.* Approval from Treasury for Council to enter into these Financial Arrangements for Q-Pharm Pty Ltd, as per this Letter of Comfort, has been issued.

(b) Vaccine Solutions Pty Ltd

Vaccine Solutions Pty Ltd was established in 1998, for-profit in nature, to provide clinical trial sponsorship, intellectual property management and commercialisation services to the Cooperative Research Centre for Vaccine Technology (CRCVT). Following the winding up of the CRCVT, Vaccine Solutions manages a number of licensing arrangements for the benefit of the members of CRCVT Trust II.

In July 2015 Council acquired full ownership of Vaccine Solutions Pty Ltd. As at 30 June 2018 the Council holds 100% of the shares of Vaccine Solutions Pty Ltd (2017: 100%). Vaccine Solutions Pty Ltd's registered office is in Brisbane, Queensland, with its activities also being conducted there.

Vaccine Solutions does not own any physical or intellectual property assets on its own and was required to return 97% of all commercial income received from licensing activities to the CRCVT Trust II for distribution to members of that trust. This trust was terminated during this financial year, refer note 28.

This is a summary of the financial transactions and balances for Vaccine Solutions Pty Ltd:

	2018 $'000	2017 $'000
Income	-	4
Expenses	-	(2)
Net surplus/(deficit)	**-**	**2**
Current assets	29	29
Current liabilities	(10)	(10)
Net assets	**19**	**19**

Vaccine Solutions Pty Ltd did not pay a dividend in 2017-18 (2016-17: $0).

Vaccine Solutions Pty Ltd was not required to prepare financial statements for the years 30 June 2018 and 30 June 2017, however, the transactions disclosed above have been audited. The company did not have any material contingent liabilities or commitments as at 30 June 2018 (similar as at 30 June 2017).

(c) genomiQa Pty Ltd

The Minister for Health approved the formation of genomiQa Pty Ltd in May 2017.

genomiQa Pty Ltd is for-profit in nature offering high-quality precision analysis of data from whole genome sequencing. As at 30 June 2018, the Council holds 66% of the shares in genomiQa Pty Ltd (2017: 66%). genomiQa Pty Ltd's registered office is in Brisbane, Queensland, with its activities also being conducted there.

Notes to the financial statements
For the year ended 30 June 2018

30. Controlled entities (cont'd)	2018 $'000	2017 $'000
This is a summary of the financial transactions and balances for genomiQa Ltd:		
Income	10	-
Expenses	-	-
Net surplus	**10**	**-**
Current assets	10	-
Current liabilities	-	-
Net assets	**10**	**-**

genomiQa Pty Ltd was not required to prepare financial statements for 30 June 2018, however, the transactions disclosed above have been audited (at 30 June 2017 no transactions or activity had been undertaken). The company did not have any material contingent liabilities or commitments as at 30 June 2018 (similar as at 30 June 2017).

(d) Q-Gen Pty Ltd

During the 2004-05 financial year, the Council incorporated a wholly owned subsidiary, Q-Gen Pty Ltd. The operations of Q-Gen Pty Ltd were wound up as at 30 June 2009 with activities of the entity being taken over by the Council. The entity still exists as a shelf company but is dormant. A letter confirming current dormancy has been issued by the sole director of Q-Gen Pty Ltd.

Accounting policy – Controlled entities
Controlled entities are entities over which the Council has the power to govern the financial and operating policies, generally accompanying a shareholding of more than one-half of the voting rights. Any controlled entities that are not considered as material are not consolidated with the Council's financial statements and the amount of the investment is recorded at cost.

As at 30 June 2018, the Council holds 100% (2017: 100%) each of directly controlled entities Q-Gen Pty Ltd, Q-Pharm Pty Ltd, Vaccine Solutions Pty Ltd and 66% of genomiQa Pty Ltd (2017: 66%). As the amount of the investments and the transactions of all entities are not considered material, they are not consolidated within the Council's financial statements.

Notes to the financial statements
For the year ended 30 June 2018

31. Related party transactions

	2018 $'000	2017 $'000
Transactions with other related party		
The following transactions occurred with related party Q-Pharm Pty Ltd during the financial year 2017-18:		
Sales and purchases of goods and services		
Sale of scientific services to Q-Pharm Pty Ltd	-	31
Provision of temporary staff and related on-costs to Q-Pharm Pty Ltd	21	299
Purchase of clinical services from Q-Pharm Pty Ltd	180	434
Other transactions		
Cash advances (made and repaid within the year)	300	300
Trade reimbursements of third party expenses	357	52
Outstanding balances arising from sales/purchases of services and reimbursements		
The following balances are outstanding at the end of the reporting period in relation to transactions with Q-Pharm Pty Ltd:		
Current receivables (sales of services and trade reimbursements)	804	397

The Institute also provides some ongoing financial and administrative support services for Q-Pharm Pty Ltd. These services are not charged, and aren't considered material.

No related party transactions occurred with Council's other controlled entities (refer note 30).

Transactions with people/entities related to Key Management Personnel (KMP)

During the 2017/18 financial year Council's KMP did not enter into any transaction/arrangements with any related parties including close family members and entities controlled or jointly controlled by the KMP or a close family member. The 'Declarations of Related Party Information by non-Ministerial KMP' at 30 June 2018 support this disclosure.

Transactions with other Queensland Government–controlled entities

The Council receives an annual operational grant from the Department of Health, Queensland (Queensland Health). Refer notes 2 & 25.

The Council leases land from the State of Queensland (represented by Queensland Health) for two buildings at nominal rental. In addition, the Central Building, completed on 1 June 2012, occupies MNHHS land without a current lease in place. Refer note 15.

The Council undertakes a number of transactions such as employer superannuation contributions, WorkCover premiums, insurance payments to a range of Queensland Government controlled entities on normal terms and conditions.

Notes to the financial statements
For the year ended 30 June 2018

31. Related party transactions (cont'd)

The Council has short term cash on call funds invested in Queensland Treasury Corporation (QTC). Included in term deposits and cash on call is $5.4m as at 30 June 2018. Refer note 10.

The Council has long term research funds invested in managed funds with QIC Limited (QIC). Refer note 13.

32. First year application of new accounting standards or change in accounting policy

Changes in accounting policy

The Council resolved not to change any of its accounting policies during 2017-18.

Accounting standards early adopted for 2017-18

No Australian Accounting Standards have been early adopted for 2017-18.

Accounting standards applied for the first time in 2017-18

AASB 2016-4 *Amendments to Australian Accounting Standards – Recoverable Amount of Non-Cash Generating Specialised Assets for not-for-Profit Entities* simplified and clarified the impairment testing requirements under AASB 136 for non-cash generating assets held by NFP entities. This amendment has not changed any reported amounts. References to the Depreciated Replacement Costs have been replaced with Current Replacement Cost in line with these amendments (refer notes 1 and 15).

33. Taxation

The Council is a State body as defined under the Income Tax Assessment Act 1936 and is exempt from Commonwealth taxation with the exception of Fringe Benefits Tax (FBT) and Goods and Services Tax (GST). FBT and GST are the only taxes accounted for by the Council. GST credits receivable from, and GST payable to the ATO, are recognised. Refer note 11. A complete legal review of the Institute's tax status has been undertaken and the charitable purpose of the Institute remains unchanged. The operation of the Institute's commercial activities and commercial business entities do not impact on the Institute's charitable status with the ACNC.

The Council of The Queensland Institute of Medical Research

Management Certificate
For the year ended 30 June 2018

Certificate of The Council of the Queensland Institute of Medical Research

These general purpose financial statements have been prepared pursuant to:
– section 62(1) of the Financial *Accountability Act 2009* (the Act),
– section 42 of the *Financial and Performance Management Standard 2009;*
– *Australian Charities and Not-for-profits Commission Act 2012; and*
– *other prescribed requirements.*

In accordance with section 62(1)(b) of the Act we certify that in our opinion:

a. the prescribed requirements for establishing and keeping the accounts have been complied with in all material respects; and

b. the financial statements have been drawn up to present a true and fair view, in accordance with prescribed accounting standards, of the transactions of The Council of the Queensland Institute of Medical Research for the financial year ended 30 June 2018 and of the financial position of the Council at the end of that year; and

c. there are reasonable grounds to believe that the Council of the Queensland Institute of Medical Research will be able to pay its debts as and when they become due and payable; and

d. these assertions are based on an appropriate system of internal controls and risk management processes being effective, in all material aspects, with respect to the financial reporting throughout the reporting period.

Dated at Brisbane this 28th day of August 2018

Dr Douglas McTaggart	**Professor David Whiteman**	**Donna Hancock**
Chair of Council	Acting Director and Chief Executive Officer	Secretary

Queensland Audit Office
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INDEPENDENT AUDITOR'S REPORT

To The Council of the Queensland Institute of Medical Research

Report on the audit of the financial report

Opinion

I have audited the accompanying financial report of The Council of the Queensland Institute of Medical Research.

In my opinion, the financial report:

a) gives a true and fair view of the entity's financial position as at 30 June 2018, and its financial performance and cash flows for the year then ended

b) complies with the *Financial Accountability Act 2009*, the Financial and Performance Management Standard 2009, the *Australian Charities and Not-for-profits Commission Act 2012*, the Australian Charities and Not-for-profits Commission Regulation 2013 and Australian Accounting Standards.

The financial report comprises the statement of financial position as at 30 June 2018, the statement of comprehensive income, statement of changes in equity and statement of cash flows for the year then ended, notes to the financial statements including summaries of significant accounting policies and other explanatory information, and the management certificate.

Basis for opinion

I conducted my audit in accordance with the *Auditor-General of Queensland Auditing Standards*, which incorporate the Australian Auditing Standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Report* section of my report.

I am independent of the entity in accordance with the auditor independence requirements of the *Australian Charities and Not-for-profits Commission Act 2012* and with the ethical requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants* (the Code) that are relevant to my audit of the financial report in Australia. I have also fulfilled my other ethical responsibilities in accordance with the Code and the *Auditor-General of Queensland Auditing Standards*.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Responsibilities of the Council for the financial report

The Council is responsible for the preparation of the financial report that gives a true and fair view in accordance with the *Financial Accountability Act 2009*, the Financial and Performance Management Standard 2009, the *Australian Charities and Not-for-profits Commission Act 2012*, the Australian Charities and Not-for-profits Commission Regulation 2013 and Australian Accounting Standards, and for such internal control as the Council determines is necessary to enable the preparation of the financial report that is free from material misstatement, whether due to fraud or error.

The Council is also responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless it is intended to abolish the entity or to otherwise cease operations.

Auditor's responsibilities for the audit of the financial report

My objectives are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of this financial report.

As part of an audit in accordance with the Australian Auditing Standards, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the financial report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for expressing an opinion on the effectiveness of the entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the entity.
- Conclude on the appropriateness of the entity's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the entity's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial report or, if such disclosures are inadequate, to modify my opinion. I base my conclusions on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial report, including the disclosures, and whether the financial report represents the underlying transactions and events in a manner that achieves fair presentation.

Queensland Audit Office
Better public services

I communicate with the Council regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

In accordance with s.40 of the *Auditor-General Act 2009*, for the year ended 30 June 2018:

a) I received all the information and explanations I required.

b) In my opinion, the prescribed requirements in relation to the establishment and keeping of accounts were complied with in all material respects.

31 August 2018

Carolyn Dougherty
as delegate of the Auditor-General

Queensland Audit Office
Brisbane

COMPLIANCE CHECKLIST

SUMMARY OF REQUIREMENT		BASIS FOR REQUIREMENT	ANNUAL REPORT REFERENCE
Letter of compliance	• **A letter of compliance from the accountable officer or statutory body to the relevant Minister/s**	ARRs – section 7	2
Accessibility	• **Table of contents** • **Glossary**	ARRs – section 9.1	3
	• **Public availability**	ARRs – section 9.2	1
	• **Interpreter service statement**	*Queensland Government Language Services Policy* ARRs – section 9.3	1
	• **Copyright notice**	*Copyright Act 1968* ARRs – section 9.4	1
	• **Information Licensing**	*QGEA – Information Licensing* ARRs – section 9.5	n/a for agencies
General information	• **Introductory Information**	ARRs – section 10.1	4–12
	• **Agency role and main functions**	ARRs – section 10.2	6, 12, 13, 22–23
	• **Machinery of Government changes**	ARRs – section 31 and 32	n/a for agencies
	• **Operating environment**	ARRs – section 10.3	22
Non-financial performance	• **Government's objectives for the community**	ARRs – section 11.1	22–23
	• **Other whole-of-government plans / specific initiatives**	ARRs – section 11.2	n/a for QIMR Berghofer
	• **Agency objectives and performance indicators**	ARRs – section 11.3	24–29
	• **Agency service areas and service standards**	ARRs – section 11.4	n/a for QIMR Berghofer
Financial performance	• **Summary of financial performance**	ARRs – section 12.1	68

Governance – management and structure	• **Organisational structure**	ARRs – section 13.1	20–21
	• **Executive management**	ARRs – section 13.2	13–20
	• **Government bodies (statutory bodies and other entities)**	ARRs – section 13.3	n/a for QIMR Berghofer
	• ***Public Sector Ethics Act 1994***	*Public Sector Ethics Act 1994* ARRs – section 13.4	33
	• **Queensland public service values**	ARRs – section 13.5	33
Governance – risk management and accountability	• **Risk management**	ARRs – section 14.1	33
	• **Audit committee**	ARRs – section 14.2	18
	• **Internal audit**	ARRs – section 14.3	33
	• **External scrutiny**	ARRs – section 14.4	n/a
	• **Information systems and recordkeeping**	ARRs – section 14.5	35
Governance – human resources	• **Strategic workforce planning and performance**	ARRs – section 15.1	34
	• **Early retirement, redundancy and retrenchment**	Directive No.11/12 *Early Retirement, Redundancy and Retrenchment*	n/a for agencies
		Directive No.16/16 *Early Retirement, Redundancy and Retrenchment (from 20 May 2016)* ARRs – section 15.2	n/a for agencies
Open Data	• **Statement advising publication of information**	ARRs – section 16	35
	• **Consultancies**	ARRs – section 33.1	https://data.qld.gov.au
	• **Overseas travel**	ARRs – section 33.2	https://data.qld.gov.au
	• **Queensland Language Services Policy**	ARRs – section 33.3	https://data.qld.gov.au
Financial statements	• **Certification of financial statements**	FAA – section 62 FPMS – sections 42, 43 and 50 ARRs – section 17.1	116
	• **Independent Auditor's Report**	FAA – section 62 FPMS – section 50 ARRs – section 17.2	117–119

FAA *Financial Accountability Act 2009*

FPMS *Financial and Performance Management Standard 2009*

ARRs *Annual report requirements for Queensland Government agencies*

GLOSSARY

MNHHS	Metro North Hospital and Health Service
NHMRC	National Health and Medical Research Council
RBWH	Royal Brisbane and Women's Hospital
QIMR	Queensland Institute of Medical Research
QUT	Queensland University of Technology
TRI	Translational Research Institute
UQ	The University of Queensland

QIMR Berghofer
Medical Research Institute

THE FUTURE OF HEALTH

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ISSN 1839 – 1877

Interpreter