

# excellence innovation impact

ANNUAL REPORT  
FOR THE YEAR ENDED  
31 DECEMBER 2015



**Burnet Institute**  
Medical Research. Practical Action.

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## OFFICES

**Back** Australia and overseas offices



**Cover:** Mother and baby in Kokopo, Papua New Guinea

### **Director and CEO:**

Professor Brendan Crabb AC, BSc(Hons), PhD

### **Deputy Directors:**

Associate Professor David Anderson, BSc(Hons), PhD;  
Professor Michael Toole AM, MBBS, BMedSc

**Company Secretary:** Mr Peter Spiller, BBus, CPA

**Editorial Manager:** Tracy Parish

**Design:** Francis Maurice Design

**Editorial Contributor:** Angus Morgan

Burnet Institute gratefully acknowledges funds received from the Victorian Government principally under its Operational Infrastructure Support Program, and from the Federal Government principally through the Department of Foreign Affairs and Trade, and NHMRC.

A full copy of this Annual Financial Report is available on our website, or if you would prefer a printed copy, please call +61 3 9282 2111. This Annual Financial Report has been prepared in accordance with the requirements set out in the Corporations Act, 2001 and the ACFID Code of Conduct. Burnet Institute is a member of the Australian Council for International Development (ACFID) and is a committed signatory to the ACFID Code of Conduct, which is a voluntary, self-regulatory sector code of good practice. The Code requires members to meet high standards of corporate governance, public accountability and financial management.

More information on the Code, including how to make a complaint, can be obtained from [www.acfid.asn.au](http://www.acfid.asn.au) or emailing [complaints@acfid.asn.au](mailto:complaints@acfid.asn.au). Burnet Institute also has its own complaints handling policy which can be activated by phoning Paul Rathbone on +61 3 9282 2111 or emailing [feedback@burnet.edu.au](mailto:feedback@burnet.edu.au).

Burnet Institute is a member of the Association of Australian Medical Research Institutes (AAMRI), the peak body representing Australia's pre-eminent independent medical research institutes. All members of AAMRI are internationally recognised as leaders in health and medical research.

### **Auditors:** KPMG

**Partner:** Alison Kitchen

Registered Company Auditor, 147 Collins St, Melbourne, Victoria, 3204.

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For more information about our work visit [burnet.edu.au](http://burnet.edu.au) or ring +613 9282 2111.





Burnet Institute is an Australian, unaligned, independent, not-for-profit organisation whose purpose is to improve the health of disadvantaged, poor or otherwise vulnerable people throughout the world.

## OUR MISSION

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To achieve better health for poor and vulnerable communities in Australia and internationally through research, education and public health.

## OUR VALUES

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We are passionate in our commitment to working and growing together to create a healthier world. We value excellence, innovation and social justice, and share a desire to extend the boundaries of knowledge and understanding.

## OUR UNIQUE APPROACH

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Linking medical research with public health action enables us to respond with comprehensive and innovative solutions to complex health issues through:

- 1) generating new knowledge and health intervention tools,
- 2) applying the best available evidence to community-level public health programs.

Burnet Institute is a formally accredited medical research organisation with the National Health and Medical Research Council (NHMRC) and as a non-government organisation (NGO) with the Australian Department of Foreign Affairs and Trade – Australian Aid. We are the only organisation in Australia with this dual accreditation.

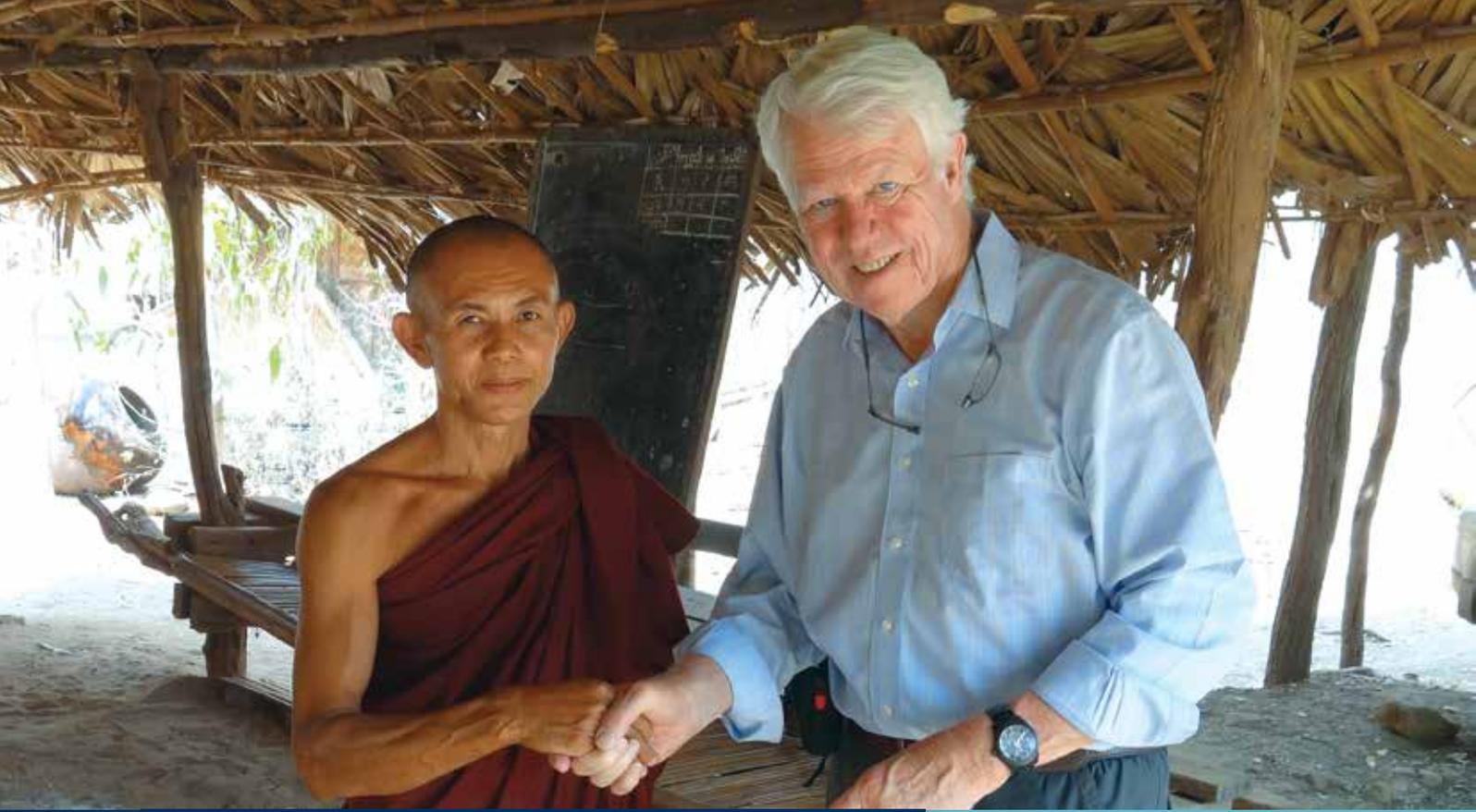
We have particular expertise in specific infectious diseases of global health significance (especially HIV, malaria, tuberculosis, hepatitis, influenza and emerging infectious diseases), and in understanding immune responses and developing therapies for these infections and other human diseases, including some cancers.

Burnet also focuses on women's and children's health; alcohol, drugs and harm reduction; sexual and reproductive health; and young people's health.

While based in Melbourne, Burnet Institute has offices and representatives in Myanmar, Papua New Guinea, China (Tibet Autonomous Region) and Lao PDR, as well as activities in other Asian and Pacific countries. Approximately a third of our staff is based in these overseas offices.

*Burnet Institute is named in honour of Sir Frank Macfarlane Burnet OM, AK, KBE, who received the Nobel Prize for Medicine in 1960.*

# ABOUT US



## CHAIR'S REPORT

The past year has been a challenging yet highly successful time for the Institute.

Challenging on many levels, but the greatest coming with the sad loss of our long-standing Chair Alastair Lucas AO, businessman, philanthropist and a close friend to many. Alastair stood aside from his responsibilities as Chair in September 2014 to focus his efforts on recovering from ill health. Unfortunately this was not to be and he sadly passed away in July 2015. Alastair made an enormous contribution to the Institute, guiding it through many difficult and also tremendously successful times. His legacy is a strong and robust Burnet Institute. His passion for improving the health of the poor and vulnerable is embedded into the psyche of all who work at the Institute. Alastair's influence extended well beyond Burnet, making a huge contribution to the medical research sector through his continued political advocacy. There is no doubt that his lobbying played an important role in the development of the Medical Research Future Fund (MRFF). I am honoured to be Burnet Institute Chair and will continue to work as Alastair did, in helping create a healthier world for all. I am delighted to present this annual report to you.

Firstly, I would like to acknowledge the talented and dedicated staff at Burnet and the significant contribution they make in improving the lives of the poor and vulnerable. Their enthusiasm and commitment is truly inspiring, and I thank each and every one for their amazing contribution.

I would also like to thank Brendan Crabb for his leadership over the past 12 months. Brendan's resilience and his strategic approach has steered the Institute through one of its most productive years. The Institute continues to meet and exceed many of its key performance measures. Peer-reviewed publications have reached an all-time high, NHMRC grant funding was well above the national average, and our success in establishing our Healthy Mothers, Healthy Babies program in Papua New Guinea are among key accomplishments. Financially the Institute is well positioned as it moves into 2016 with a strong balance sheet and growing asset base resulting from its strategic investments.

Burnet and other medical research institutes are indebted to Brendan for his leadership of the Association of Australian Medical Research Institutes during the period when intense negotiations were occurring with the major parties, resulting in the establishment of the MRFF. His contributions to medical science as a prominent researcher, particularly in the field of malaria, as an advocate for the sector, and as a mentor and administrator were appropriately recognised with a Companion of the Order of Australia (AC) on Australia Day.

Development of our new strategic plan will commence in the first quarter of 2016 with a review that covers all aspects of Burnet's activities. This review will help form the basis of our strategic plan for the next five years and into the longer term. We continue to look at our organisational efficiency and effectiveness, and how we can make a greater impact on global health in a challenging fiscal environment.

I was privileged to be able to visit Papua New Guinea during the year and see first-hand the tremendous work being done by our Healthy Mothers, Healthy Babies team in East New Britain. This flagship program is focused on identifying key interventions through research to reduce the staggering numbers of women and their newborn babies that die every year as a result of pregnancy and childbirth. This program is currently funded purely through the generous support of donors, and while we're still seeking additional funding, has the capacity to really improve the survival rates of women and their children. I commend the extraordinary work being done by the team across the Institute and their collaborating agencies.

Over the past few years the Institute has played a significant role in developing a strategy focused on the elimination of hepatitis C as a public health issue in Australia. Just prior to Christmas, the Federal Minister for Health, the Hon Sussan Ley announced the listing of new direct-acting antiviral drugs on the PBS. These new drugs have a greater than 90 per cent cure rate and will make a huge impact on the lives of thousands of Australians. Burnet staff have driven much of the government advocacy around the use of these new drugs and the need for access. These drugs, together with our candidate vaccine for hepatitis C developed by Associate Professor Heidi Drummer and her team, make elimination of hepatitis C a real possibility.

The official launch of Nanjing BioPoint in China was a highlight of 2015. This new facility, funded by Burnet and private investment partner GuoMinXinHe Group, will develop rapid diagnostic test technologies to address health priorities in China and the region. The initial focus will be the development of a rapid diagnostic test for liver disease, a major issue in the region.

I would like to thank all board members for their significant contributions during the year and for the support shown to me in my time as acting Chair. All board members give their time voluntarily and are enormously talented. Thank you to those directors who also serve on the various subcommittees for your additional contributions.

Thank you to John Dowling for his significant contributions to the Institute during his time as a board member. John joined the Board in 2000 while the Institute was still on the Fairfield Hospital campus. He played a major role in the relocation of the Institute to the Alfred Medical Research and Education Precinct, in the development of the Burnet Tower and in the subsequent development of the Alfred Centre Stage Two. John has been an active participant in the Research Advisory and Audit Committees, and his advice and contributions have been greatly appreciated.



I would like to acknowledge the talented and dedicated staff at Burnet and the significant contribution they make in improving the lives of the poor and vulnerable.

The Institute has been significantly strengthened at Board level by the appointment of Ms Helen Evans. Helen is an expert in public health, international development and social policy, and was deputy CEO at two of the largest, most exciting and innovative public private partnerships in global health, the Global Fund for HIV, TB and Malaria, and at GAVI – the Vaccine Alliance. We also welcome Mr Michael Ziegelaar. Michael is the head of the Melbourne Corporate Group and the co-head of the Australian Equity Capital Markets Group at Herbert Smith Freehills. He has been a partner in the Corporate Group for over 15 years and been involved in some of Australia's major transactions. Michael brings enormous business and commercial expertise to the board.

I would also like to welcome four new patrons to the Institute: advocate for women's and children's rights in Papua New Guinea and former PNG parliamentarian Dame Carol Kidu DBE, former board members and Ambassador for Women and Girls, Ms Natasha Stott Despoja AM and Mrs Maria Myers AC, and managing director of the Lamana Group of Companies in Papua New Guinea, Sir Kostas Constantinou OBE. It is tremendous to have such a passionate and enthusiastic group of leaders in our community aligned with the Institute's mission and values promoting our work to others.

Thank you to all those who support the Institute financially and in kind. Our ability to be innovative in our research and public health activities and address many of the health challenges we face has only been made possible because of you. We are very appreciative of your support.



**Mr Robert Milne**  
Chair



## DIRECTOR'S REPORT



While the past year was outstanding for the Institute in many respects, it came with a dark cloud with the loss of our long-term Chair, the late Alastair Lucas AO. It is fair to say that without his support and guidance over 14 years, and his sheer determination, the Institute would not be in such a sound position.

He was passionate about Burnet and everything we stand for, and was in awe of the amazing talent, passion and dedication of the Burnet staff. The Alastair Lucas Prize for Medical Research has been established in his honour. It will be supported through an endowment fund, which has been seed funded through Macquarie Group, Goldman Sachs and GuoMinXinHe Group. I am indebted to the Board and staff for their support during this difficult time, especially long-standing board member Mr Robert Milne who has taken on the role of Burnet Institute Chair.

In other ways, it was a highly successful year – from Australian-centred public health research into high-risk behaviours in young people, through to our international programs improving the health of poor communities in our region, and laboratory-based research where discoveries and new innovations underpin health solutions to the problems we see in the field. In 2015, we raised and spent around AUD\$41 million on finding solutions to the health problems of the poorest and most vulnerable people.

The Healthy Mothers, Healthy Babies (HMHB) research program in East New Britain, Papua New Guinea (PNG) has become a flagship activity for the Institute. HMHB is a transformative program, linking our divergent skills in public health and development with our capacity for sound research to tackle one of the region's most intractable health problems; terribly poor outcomes for mothers and their newborn babies. It is a hugely ambitious research program; the results of which we hope will transform the lives of thousands of people each year. A range of corporate partners will be supporting the program through financial contributions. As always, we are very grateful to all our partners in PNG. Without them, success would be impossible. We are now looking at extending the HMHB concept to activities in Zimbabwe and Myanmar.

In Myanmar, Burnet's activities continue to go from strength to strength. Almost 200 public health and research staff are working throughout the country and we are impacting significantly on a range of the country's most significant health problems. PNG, China (especially Tibet) and Zimbabwe are other geographical areas of major international focus and strength for us.

In 2016 we will expand our range of ‘whole-of-institute’ initiatives, especially through the establishment of our disease elimination initiative. Over the next 3-5 years, this initiative will focus on how to eliminate diseases rather than just treating and controlling them. This includes elimination science for hepatitis C, malaria and HIV. A trial of direct-acting antivirals for the cure of people infected with HCV infection is already underway. Our work towards a hepatitis C vaccine is making progress with potential for clinical trials with a new international partner. HIV has always been a major focus for Burnet. Innovations, especially in the laboratory, appear to be accelerating in ways that underpin how the world might approach elimination of HIV. For example, our laboratory research has identified key hiding places of HIV in the brain, revealed new ways of making anti-HIV drugs, and developed a game-changing, field-based, diagnostic test that promises to open up therapy to hundreds of thousands of people in poor and remote settings.

We have been challenged by the significant increase in multidrug-resistant tuberculosis in PNG and how best to respond to this outbreak. Working closely with the PNG and Australian governments, we have expanded our team, focused on identifying new cases and the treatment and care of patients, and building capacity together with our partners in PNG.

Our peer-reviewed publications are at an all time high with many outstanding publications in high-impact, scientific journals. The entire Institute now contributes greatly to this success. The 218 scholarly publications published in 2015 build on the global body of knowledge in a significant way. They describe innovations and technological advances, new knowledge about causes of disease and how they transmit, and provide insights into how health interventions might work better. The institute can be very proud of its research performance this year.

Government funding is hugely welcome and we are extremely grateful for the support received from the Federal and State governments. Funding research, however, is a complicated business. The most significant problem is that competitively awarded government grants fall far short of providing the full cost of the research that they are intended to fund. This major gap has to be made up in other ways. The funds required to provide the environment to have the research conducted in an Institute like ours, the physical and human infrastructure, are particularly scarce. This situation is significantly worsening every year in Victoria. It is the most significant ongoing operating issue we face at the Institute.

On a more positive note however, I am delighted that the hard work in developing the Medical Research Future Fund has paid dividends, with legislation passing through the Senate during 2015, and the first disbursements from the fund to be made in 2016. This is a very welcome sign from the Federal government. But this new scheme will not close the gap. What is needed are new funds to help operate grants like those from the MRFF to provide human resources and physical infrastructure that our top researchers need. Without that part of the funding equation being properly addressed, government grants cannot yield their full potential.

While it was a tough year nationally for NHMRC grant funding, the government’s primary source of medical research funds, we continued to better the national average for the third year running. In fact, over that period our success rate has been around double the national average. This is testament to the incredible quality of our researchers and the hard work that is put into refining our grant applications.

While Burnet’s work continues to attract considerable mainstream media coverage, our highly successful social media strategy has enabled us to profile our research initiatives to new supporters internationally. We have built a strong following of more than 20,000 fans on Facebook and 3,200 Twitter followers. This is a tremendous result, providing us with a great opportunity to engage with our friends, donors and other stakeholders on a global scale.

Our business development activities expanded with the official opening of our Nanjing BioPoint facility in China and the formation of 360biolabs, a merger of Burnet’s ImmunoMonitoring Facility and Innoviron. These initiatives will increase our breadth and depth of expertise, and create new business opportunities for the Institute. Congratulations to all involved in bringing these important activities to fruition.

Of course, none of the activities that I have mentioned would be possible without the support of our Corporate Services teams: public affairs and development, finance, IT, facilities management and human resources. Thank you for your significant contributions during the year.

In 2016 we begin our strategic planning process to take us through to 2020. A strategic review will be undertaken in the first quarter, to help inform the process and development of our short-term and long-term strategies.

Finally, thank you to the staff, board and to the executive management team for another tremendous year. I deeply appreciate your support and contributions. I would especially like to single out our new Chair Rob Milne for special mention and thanks. For more than a decade as a board member he has been a crucial pillar on which this institute has been built. In 2015 he stepped up even further and deserves huge credit for our success this year.

I look forward with tremendous energy and enthusiasm to working with you all in 2016.



A handwritten signature in black ink, appearing to read 'B Crabb', written in a cursive style.

**Professor Brendan Crabb AC**  
Director and CEO

# LEADERSHIP



## CHAIR

Mr Robert L Milne



## DIRECTOR AND CHIEF EXECUTIVE OFFICER

Professor Brendan Crabb AC

## DIRECTORS



Mr Robin Bishop



Professor Peter Colman



Mr Ross E Cooke



Mr John K Dowling



Associate Professor Helen Evans



Mr Ben Foskett



Mr Garry Hounsell



Professor Sharon R Lewin



Mr Alastair Lucas AO



Professor Christina Mitchell



Ms Mary Padbury



Ms Louise Pratt



Dr Jane A Thomason



Professor Mike Toole AM



Ms Mary Waldron



Mr Michael Ziegelhaar

## DEPUTY DIRECTORS

**Associate Professor David Anderson**

**Professor Michael Toole AM**

## ASSOCIATE DIRECTORS

**Professor Suzanne Crowe AM**

**Professor Margaret Hellard**

## EXECUTIVE MANAGEMENT

**Professor Brendan Crabb AC**

Director and CEO

**Associate Professor David Anderson**

Deputy Director, and  
Head, Business Development, Innovation and Research

**Professor Michael Toole AM**

Deputy Director

**Professor Suzanne Crowe AM**

Associate Director

**Professor Margaret Hellard**

Associate Director, and  
Head, Centre for Population Health

**Professor Paul Dietze**

Deputy Head, Centre for Population Health

**Professor Robert Power**

Head, Centre for International Health

**Professor James Beeson**

Head, Centre for Biomedical Research

**Associate Professor Heidi Drummer**

Deputy Head, Centre for Biomedical Research

**Mr Geoff Drenkhahn**

Chief Operating Officer

**Mr Paul Rathbone**

Executive Officer, and  
Head, Public Affairs and Development

**Mr Peter Spiller**

Chief Financial Officer, and  
Company Secretary

**Mr Paul Duffy**

Head, Human Resources

## SENIOR MANAGEMENT

**Associate Professor Bruce Loveland**

Head, Research Support and Facilities

**Mr Mark Tennent**

General Manager, Centre for International Health

**Dr Margarete White**

Manager, Occupational Health and Safety

**Mr Dyson Simmons**

Chief Information Officer

# AWARDS

## PRESTIGIOUS FENNER AWARD FOR PROFESSOR JAMES BEESON

Professor James Beeson's outstanding contribution to medical research, particularly in malaria research, was recognised with the Institute's prestigious 2015 Fenner Award.

The Fenner Award, named in honour of Australian virologist, the late Professor Frank Fenner AC, is awarded to a Burnet Institute staff member whose work has made a major contribution towards our mission of achieving better health for poor and vulnerable communities.

Currently Head of the Centre for Biomedical Research, Professor Beeson joined Burnet in 2011 and has worked in malaria research in Africa and Asia for more than 15 years.



## OUTSTANDING YEAR FOR DR MEGAN LIM

Dr Megan Lim was awarded the prestigious 2015 Gust-McKenzie Medal for her research into young people's health and the role of new communications technologies in public health. The medal is awarded to a mid-career Burnet Institute staff member in recognition of excellence in research and/or public health.

Head of Sexual Health and Young People's Health research in the Centre for Population Health, Dr Lim was also the recipient of the 2015 Beaver Fellowship Award. The award will enable Dr Lim to continue research into how technologies (e.g. mobile phones, smartphone apps, and social networking sites) can be used for health promotion, but also how these media expose young people to health risks, particularly in sexual health and alcohol.



## NHMRC RESEARCH EXCELLENCE AWARD

Professor Brendan Crabb AC and Professor James Beeson were acknowledged with one of the Australian National Health and Medical Research Council's (NHMRC) highest honours. They received a prestigious NHMRC Research Excellence Award for the Highest Ranked Program Grant for 2014 as members of a team seeking to develop improved strategies to prevent and treat malaria.

Their collaboration with lead investigator Professor Alan Cowman and Professor Ivo Mueller, both from the Walter and Eliza Hall Institute, and Dr Stephen Rogerson from the University of Melbourne, focuses on the biology, transmission and public health effects of malaria. The approach includes understanding the interaction of the malaria parasite with the immune system, identifying potential antimalarial drug targets and developing tools to track malaria transmission.



## TRAVEL AWARDS

Seven talented researchers received Travel Awards that will enable them to attend conferences or participate in further training and study.

### Harold Mitchell Postdoctoral Fellowships

**Dr Nick Scott,**  
Centre for Population Health

**Dr Sushama Telwatte,**  
Tachedjian Laboratory,  
Centre for Biomedical Research

### Harold Mitchell Postgraduate Travel Fellowship

**Mr Josh Hayward,**  
Tachedjian Laboratory,  
Centre for Biomedical Research

### Pauline Speedy Travel Fellowship

**Dr Cath Latham,**  
Tachedjian Laboratory,  
Centre for Biomedical Research

### Miller Foundation Biomedical Travel Fellowship

**Ms Jessica Anania,**  
Hogarth Laboratory,  
Centre for Biomedical Research

### Miller Foundation Public Health Travel Fellowship

**Ms Kathleen Ryan,**  
Centre for Population Health

### Geoffrey Connard Travel Fellowship

**Dr Sarah Charnaud,**  
Gilson/Crabb Laboratory,  
Centre for Biomedical Research

# EXCELLENCE. INNOVATION. IMPACT.

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**\$40+ million**

spent on improving health  
for poor and vulnerable people

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**218**

peer-reviewed publications

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**\$7+ million**

in grants and fellowships

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**400+** scientists  
& public health professionals

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**76** students

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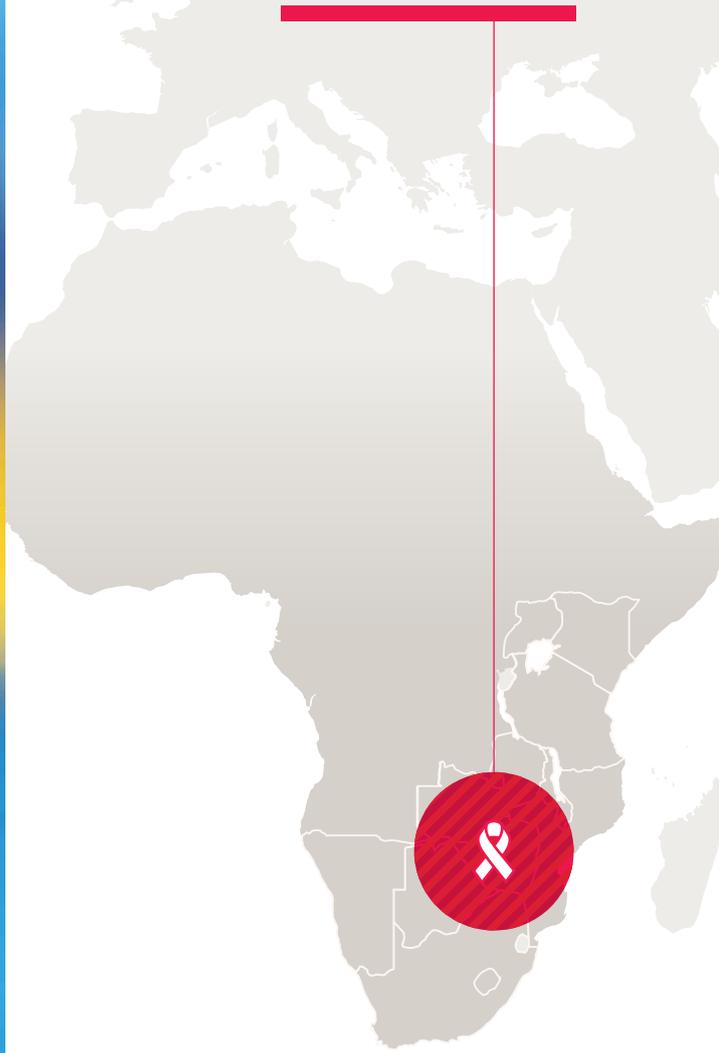
**24** labs

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**37 million**  
people live with  
HIV globally, mostly  
women and children

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Every 45 seconds  
**a child dies**  
from malaria





**Myanmar**  
**130+** staff  
**15** public health  
 and research  
 projects across  
**86** townships



Nanjing BioPoint  
 facility **launched**  
 in Jiangsu Province,  
 China to develop  
**low-cost**  
**diagnostic tests**



**300+**  
**mums & babies**  
 enrolled in Study 1 of  
 Healthy Mothers,  
 Healthy Babies  
 program in Kokopo,  
 East New Britain

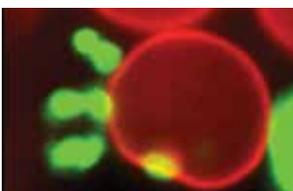


Burnet's  
**HMHB**  
 laboratory  
**officially opens**  
 in Kokopo to test for  
 STIs and other diseases



Discovery of  
**malaria-**  
**blocking**

immune response  
 opens door for vaccine



Building blocks  
 discovered for new drug  
 classes to prevent and  
**treat HIV**



New contract research  
 organisation offers  
**quality-assured**  
 laboratory services





Editor-in-Chief of The Lancet, Dr Richard Horton delivers the 2015 Burnet Oration.



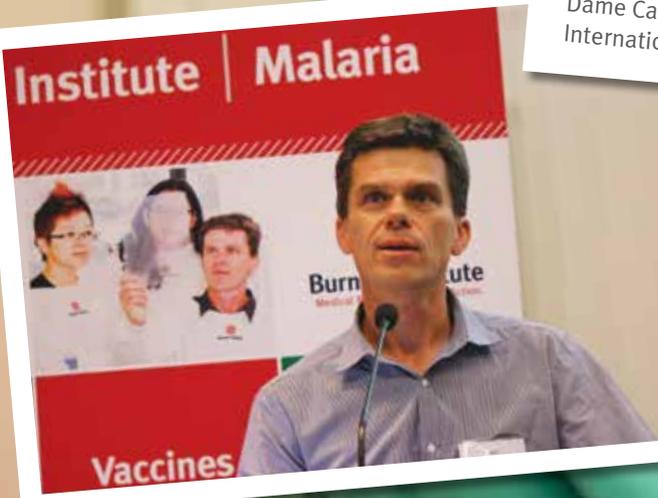
The gala launch of the Healthy Mothers, Healthy Babies program in Kokopo, East New Britain.



Provincial Health Advisor, Mr Nicholas Larme officially opens the HMHB Kokopo laboratory.



Dame Carol Kidu DBE presents on International Women's Day.



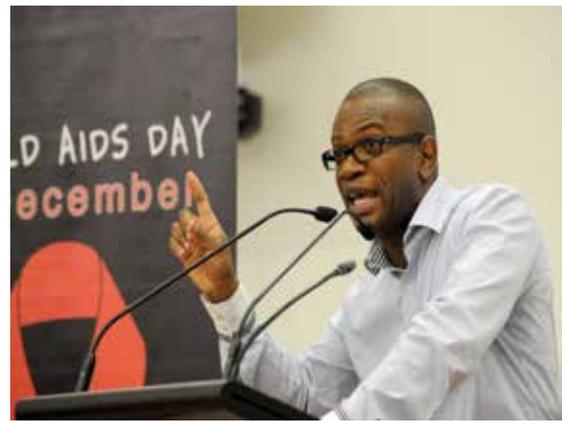
Professor James Beeson at World Malaria Day Symposium.



Professor Margaret Hellard, Ms Kirsten Horsburgh, Professor Paul Dietze at the CREIDU Colloquium.



Professor Paul Dietze at Student Information Night.



Dr Clovis Palmer delivered an inspiring and evocative World AIDS Day address.



'Glovesman' was popular once again at Midsumma Carnival.



Day of Immunology Discovery Tours.



Associate Professor Gilda Tachedjian (right) and great supporters, the Beever family, at a Burnet donor function.



Professor Steve Graham and Dr Suman Majumdar at the Infectious Diseases Symposium.



*Everyone has a family member who has been affected by a preventable health condition. It's impossible to describe the grief of the families of the women and children who are left behind.*

– DR ELIZABETH PEACH, RESEARCH PROJECT MANAGER, HMHB



The rate of maternal and child death in Papua New Guinea is staggeringly high. Each year, more than 5,000 newborns perish in the first month of life and another 7,000 children don't reach their fifth birthday. Two-thirds of these newborn deaths could be prevented with basic but effective interventions.

In response to these appalling mortality rates, Burnet Institute's philanthropically funded, collaborative research program, Healthy Mothers, Healthy Babies (HMHB) is aimed at providing lifesaving health care for women and children in PNG. HMHB involves partnering with local representatives at the district, provincial and national level in PNG, with initial research programs based in Kokopo, East New Britain (ENB).

The HMHB program aims to define the major causes of poor maternal, newborn, and child health, and to identify or develop feasible, acceptable and effective interventions and health service delivery strategies to improve reproductive, maternal, and child health in PNG. To achieve these objectives, a broad research program will investigate biomedical causes and risk factors of poor health, social factors influencing health, provision of health services, and operational and implementation issues.

There are five research objectives for the HMHB program to be achieved over the next five years:

1. Identify preventable and treatable causes of poor pregnancy outcomes and quantify their importance.
2. Evaluate reproductive, maternal, newborn and child health services in ENB and identify strategies to improve or optimise services aimed at reducing morbidity and mortality in pregnant women, newborns and infants.

3. Assess the understanding, attitudes and practical issues affecting use of maternal and child health services among the community, particularly among families who rarely access health care.
4. Determine sexual and reproductive health knowledge, attitudes and practices among older adolescents and young adults, and the prevalence of sexually transmitted infections in this group.
5. Develop new interventions and strategies to improve maternal and child health, strengthen health care services, and determine the most effective ways to implement new health interventions and services.

The first of five separate but complementary studies is underway. The studies will generate evidence that has immediate use in ENB to improve services, and that can inform future health policy in PNG and similar settings.





## Study 1: Mothers and Babies Follow-up Study

COMMENCED MARCH 2015

This study aims to enrol 700 pregnant women from their first antenatal clinic attendance through to delivery, and follow-up both mother and baby to 12 months after birth. Women are randomly recruited from the five busiest health facilities in the province, including urban and rural communities. The five health centres are Nonga General Hospital, St Mary's Hospital Vunapope, Keravat Rural Hospital, Napapar Health Centre, and Papatava Health Centre.

As of March 2016, 314 Mums are enrolled in Study 1 and our HMHB research staff have assessed 192 mothers and babies at delivery, and followed up 158 of the mother-baby pairs at one month postpartum. Six-month follow-ups with 80 mother-baby pairs, many conducted in their local village, have been completed. Principal research investigator with HMHB, Dr Chris Morgan, said the longitudinal nature of Study 1 is starting to indicate some early trends.

"We are seeing surprisingly high numbers of preventable infections, of many types, and of under-nutrition, among these women," he said.

HMHB research staff, coordinated by Dr Liz Peach and Ms Pele Melepiea, have to overcome many daily challenges to achieve these vital follow-up checks with mothers and their babies.

"Following up women in the community to track deliveries, and later contact points is very tough – working on weekends, taxing dirt roads and walking tracks to reach remote villages, and dealing with difficult conversations around illness are some of the challenges our staff face," Dr Morgan said.

The female research officers – Noelyne, Priscah, Zoe, Gabriella and Noreen – will be joined by three more field staff in mid-2016. Testing of field samples are being conducted in the purpose-built HMHB Kokopo laboratory by Ms Ruth Fidelis and Mr Duk Duk Kabiu, with Mr Wilson Philip managing the study's database. The Kokopo office has now also become head office for Burnet's operations in PNG. If activities are maintained and strengthened in 2016, the research team will have enough vital information on the health of mothers and babies in East New Britain to be able to start to instigate real change. Knowledge of the major causes of illness among local mothers, newborns and infants coupled with knowledge of families' use of essential health care services will enable planning for the most effective solutions to these serious, but entirely preventable, conditions.

## HMHB Partners

<i>PNG Institute of Medical Research</i>	<i>University of PNG</i>
<i>East New Britain Provincial Government</i>	<i>National Department of Health</i>

## HMHB Kokopo Laboratory and Research Field Office

Burnet's research team is led by Professor James Beeson, Dr Chris Morgan, Dr Elizabeth Peach and in 2015, Dr Michelle Scoullar. Thirteen local staff are based in Kokopo with additional support from Melbourne-based researchers and public health professionals. A purpose-built HMHB laboratory within St Mary's Hospital was fitted out in 2015 thanks to the generous support of donors. Provincial Health Advisor, Mr Nicholas Larme officially opened the HMHB laboratory on 25 June in front of local dignitaries, collaborating partners, staff and supporters. Burnet Director and CEO, Professor Brendan Crabb AC said the opening of the HMHB laboratory at St Mary's was an important milestone for all the participating partners.

"The laboratory is physically small, but it is a really significant step forward. Research comes in many forms. Often the missing link because of logistics is laboratory capacity," he said.

Professor Crabb acknowledged the support of HMHB partners in 2015 including PNG Institute for Medical Research, East New Britain Provincial Government, National Department of Health, The University of Papua New Guinea and The Kirby Institute. He thanked Southern Enterprises for helping to outfit the laboratory.

**2 out of 3**  
newborn deaths  
in PNG are  
preventable

**80** mother and  
baby pairs seen  
at **6 months**  
postpartum

**314** women  
enrolled in Study 1

**5** hospitals and  
health centre local  
partners

**192** mother and  
baby pairs seen  
at **delivery**

**6** field research  
officers

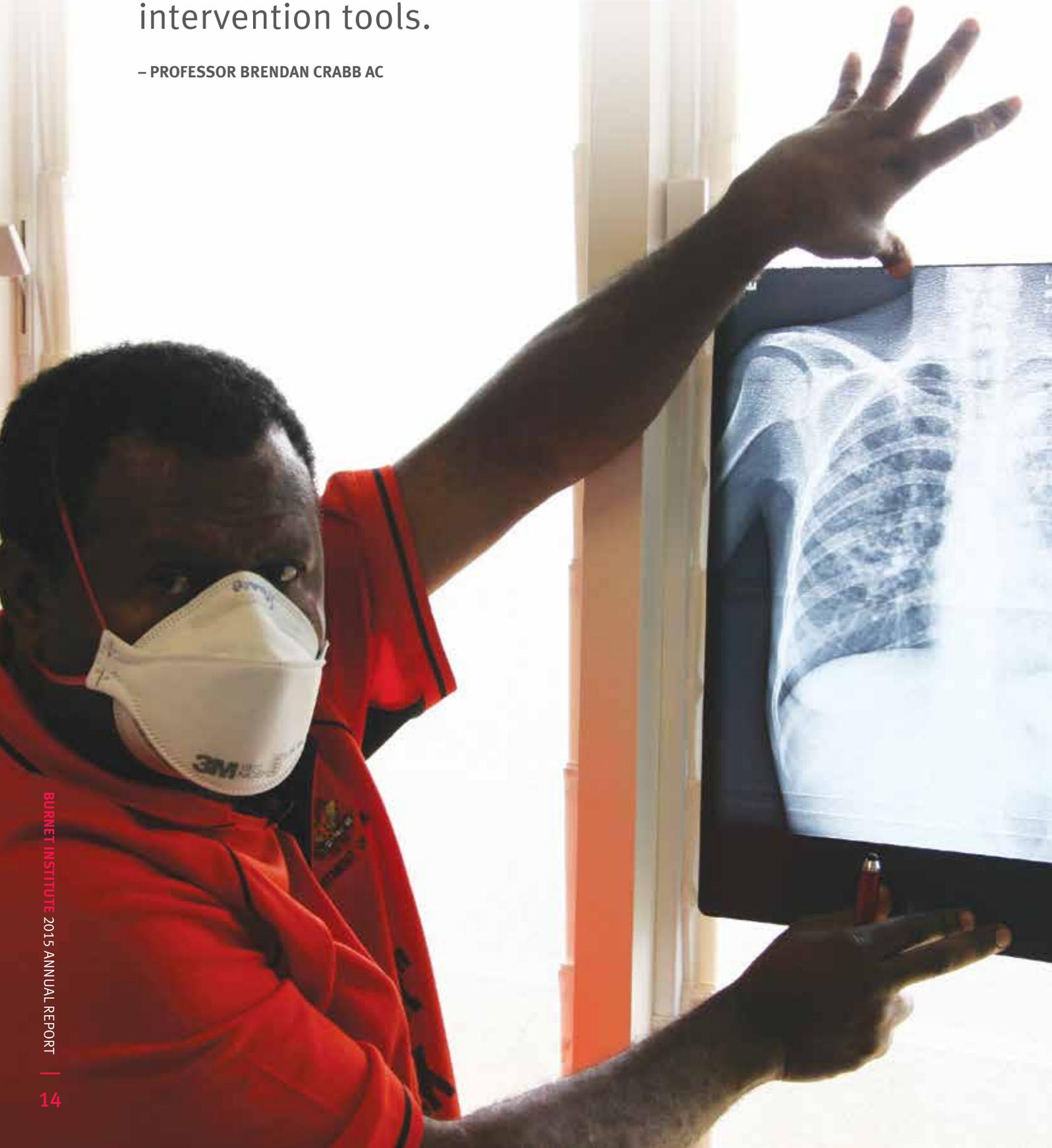
**158** mother  
and baby pairs  
seen at **1 month**  
postpartum

**5** support staff

**2** laboratory  
scientists

“  
Our research-to-development response recognises that addressing TB and multidrug-resistant TB is not just a matter of scaling up existing intervention tools.

– PROFESSOR BRENDAN CRABB AC



# INFECTIOUS DISEASES

## PRINCIPALS:

Associate Professor Heidi Drummer  
Dr Jack Richards

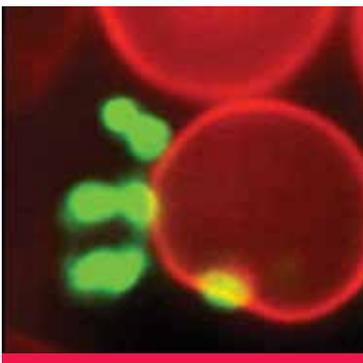
Malaria, HIV and tuberculosis are preventable infectious diseases yet remain among the leading causes of mortality in low-resource countries in our region. Globally, 37 million people are living with HIV, almost 10 million new cases of TB were diagnosed last year and malaria claimed more than 600,000 deaths, mostly children.

## Burnet discovery of building blocks for new drugs classes to prevent and treat HIV

Burnet Institute research, published in *The Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, revealed the discovery of new drug building blocks that target a critical HIV molecule in ways that are distinct from the action of drugs currently used for HIV treatment and prevention. The discovery, by researchers in the Tachedjian Laboratory, of new chemical building blocks that inhibit a proven HIV drug target in new ways, is critical for the development of drugs able to combat virus resistance to currently available HIV inhibitors. A relatively new paradigm in drug discovery, fragment-based drug design was used to identify very small chemicals called 'fragments' that are half the size of conventional drugs and are efficient at binding to new drug sites on the viral target.

## Video offers new perspective of malaria invasion of red blood cells

The development of an effective malaria vaccine is a critical step toward the elimination of this disease. Understanding the interactions required for the parasite to invade its erythrocyte host is important for the development of drug-based therapies and vaccines. For the first time, Burnet scientists, led by Dr Paul Gilson, filmed *Plasmodium falciparum*, the deadliest of the malaria-causing parasites, invading erythrocytes while systematically blocking several specific interactions between the parasite and the erythrocyte, demonstrating interactions in at least four steps leading up to invasion. Previous vaccine attempts have targeted one or two of these steps. If a single vaccine were designed to block interactions at all four steps, the combined effect might so reduce invasion that parasite growth and disease progression would be arrested.



**Left:** A video still image of malaria parasites deforming a red blood cell.

## Burnet TB Initiative a commitment to research and leadership

Burnet Institute prioritised the fight against tuberculosis (TB) with the announcement on World TB Day of the Burnet TB Initiative, to be headed by Professor Steve Graham. A boost in our capacity to carry out TB research and development, the Initiative formalises Burnet's response to TB in the context of the emergence of drug-resistant TB in our nearest neighbours. This includes a research-to-development response and regional technical leadership. This was demonstrated by Burnet's support for the first GeneXpert machine to be incorporated into Timor-Leste's national TB program. The machine provides rapid and accurate diagnosis of TB, which is a major health problem in Timor-Leste with an estimated 8,000 active cases nationally.

## New hepatitis C DAAs make elimination possible

The Federal Government's announcement that new, highly effective hepatitis C direct-acting antiviral drugs (DAA) would soon be available through the pharmaceutical benefits scheme was widely welcomed as a watershed initiative. Used in combination with opioid substitution therapy, and high-quality harm reduction and needle and syringe programs, it is forecast the DAAs could enable the elimination of hepatitis C in Australia within 10 years. The next challenge is to prevent infection and reinfection through the development of a hepatitis C vaccine. The Drummer Laboratory is in the late pre-clinical stage of vaccine development that is showing great promise.

## New Xpert MTB/RIF machine installed in Timor-Leste

Burnet supported the installation of Xpert MTB/RIF equipment for the diagnosis of tuberculosis (TB) into the National Health Laboratory in Dili, Timor-Leste. Operational research is being conducted so that it can be used for optimum long-term public health impact. Testing for STI's chlamydia and gonorrhoea has also been established in partnership with the Victorian Infectious Diseases Reference Laboratory. This has now enabled the best testing available in Australia to be implemented at the National Health Laboratory in Timor-Leste and will lead to local capacity to diagnose and treat these diseases.



## ALCOHOL, OTHER DRUGS & HARM REDUCTION

### PRINCIPALS:

Professor Robert Power  
Professor Paul Dietze

Burnet is committed to addressing the adverse health affects of alcohol and other drug use through the application of behavioural and clinical research, treatment practice and community-based harm reduction programs based on sound evidence.

### Delivering harm reduction services in Myanmar and Indonesia

Harm reduction is one of the thematic priorities of Burnet's international public health work. In Myanmar the provision of harm reduction services to people who inject drugs continued in 2015. This included supplying more than 900,000 clean needles and syringes, 50,000 condoms, and more than 2,000 HIV tests. The program continues to broaden its scope, including an increasing focus on addressing viral hepatitis, with an aim to test and vaccinate for hepatitis B (HBV) and increase access to testing and treatment for hepatitis C (HCV) infection.

Burnet continued as Technical Lead for the HIV Co-Operation Program for Indonesia (HCPI). Funded by the Australian Government, HCPI delivered comprehensive harm reduction services both in the prison setting and in the wider community. The introduction of a model prison program in 11 prisons and the development of Comprehensive Guidelines for HIV in Prisons (endorsed by the Ministry of Justice) were considerable achievements. Local agency partners also conducted intensive behaviour change interventions in eight provinces at the community level. This involved working closely with local government-run community health centres to refer people who inject drugs to methadone maintenance treatment, providing sterile needles and condoms, testing and treatment of HIV, and other related health care services.

### Impact of stockpiling needle and syringes by people who inject drugs in Australia

One of the key measures of the effectiveness of harm reduction programs is coverage – the extent to which a program reaches those for whom it is intended. In relation to needle and syringe programs, a commonly-used measure is individual needle and syringe coverage – the number of clean needles and syringes obtained (minus those given away or sold) divided by the number of injections reported by a person who injects drugs (PWID) over a specified timeframe (e.g., two weeks). This measure is widely used to assess program effectiveness because it has been shown that higher levels of coverage are associated with reduced risk and better outcomes for PWID.

Researchers from the Centre for Population Health examined whether a sample of around 900 people who inject drugs stockpiled needle and syringes and, if so, how this impacted on measurement of individual-level syringe coverage. They showed that Australian PWID did stockpile and that this impacted on coverage measurement; when stockpiling was taken into account their sample showed higher levels of coverage. Further, this new measure was better at identifying risky injecting practices.

This work has implications for the understanding of program effectiveness and Burnet is now actively exploring how coverage measures can be further enhanced.



## IMMUNISATION, VACCINES & IMMUNITY

### PRINCIPALS:

Dr Chris Morgan  
Dr Meredith O’Keeffe  
Professor Paul Gorry

Developing vaccines against infectious diseases including malaria, tuberculosis, hepatitis C, hepatitis B and HIV, or to cancer, requires a deep understanding of how key elements of the immune system interact.

### Discovery of malaria-blocking immune response opens door for vaccine

Burnet researchers from the Beeson Laboratory achieved a major advance in the quest for a vaccine against malaria, with the discovery of a key strategy used by the body’s immune system to protect against malaria infection. The research, published in the prestigious international journal *Immunity*, reveals how antibodies work in partnership with other proteins in the blood (known as complement) in blocking malaria infection. The findings represent a major advance in understanding immunity to malaria and provide a new and valuable strategy for the development and evaluation of vaccines. Burnet collaborated with researchers from the Kenya Medical Research Institute, Queensland Institute of Medical Research, London School of Hygiene and Tropical Medicine, La Trobe University, and Walter and Eliza Hall Institute.

### Hepatitis C vaccine development

The quest for a hepatitis C (HCV) vaccine is advancing strongly on several fronts. In a recent publication in the *Journal of Virology*, researchers from the Drummer/Poumbourios Laboratory and collaborators from Monash University described how the removal of variable regions from the major HCV surface protein improves the binding of protective antibodies, and how these variable regions modulate interactions with cellular attachment molecules used by the virus to initiate replication. This research supports work on Associate Professor Heidi Drummer’s prophylactic HCV vaccine that is in late pre-clinical development by suggesting that the variable regions reduce the ability of protective antibodies to recognise HCV.

### Integrating immunisation in international health programs

The Centre for International Health and Burnet Myanmar won a grant from the International Initiative for Impact Evaluation to investigate new ways to involve communities in immunisation services in challenging settings such as in rural Myanmar. This project will run through 2016. Integrating immunisation is a core component of our maternal and child health programs underway in PNG, Lao PDR, Zimbabwe and Myanmar. Burnet also provides expertise in support of global immunization. Professor Mike Toole AM contributes through independent monitoring of the Global Polio Eradication Initiative. Dr Chris Morgan chairs the World Health Organization’s Immunization Practices Advisory Committee, which in 2015 examined issues such as the best future deployment of new Ebola vaccines and how existing services could incorporate a new pilot malaria vaccine.

### Identifying new biomarkers for early detection of autoimmunity

The Gugasyan Laboratory and collaborators have identified the essential function of a regulatory protein called NF-kB1 that prevents premature ageing and multi-organ autoimmune disease. Using a mouse model lacking the NF-kB1 gene, they demonstrated that B cells produce excessive levels of the inflammatory protein interleukin-6. This promotes self-reacting antibodies and the consequent destruction of target organs. Importantly, NF-kB1 prevents disease by silencing the gene for interleukin-6. Future studies will consider whether genetic mutations in NF-kB1 in humans represent suitable biomarkers for the early detection of autoimmunity.

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Every child deserves a healthy start in life. Burnet's research into the major causes of poor maternal, newborn and child health will save lives.



# MATERNAL & CHILD HEALTH

**PRINCIPALS:**  
Professor James Beeson  
Dr Elissa Kennedy

Without proper access to quality health care, more than 6.6 million women and children continue to suffer and die each year from preventable illnesses and diseases in developing countries.

Burnet is working with many communities in resource-poor settings to better understand and address the underlying factors that prevent access to crucial health care services such as family planning, postnatal and newborn care, vaccinations, management of childhood illnesses and nutrition.

## Healthy Mothers, Healthy Babies

The first of five separate but linked studies in Burnet's Healthy Mothers, Healthy Babies (HMHB) program is underway in East New Britain (ENB) province in Papua New Guinea. Each year in PNG, more than 1,500 mothers die and up to 5,000 newborns perish in the first month of life. HMHB aims to define the major causes of poor maternal, newborn, and child health, and to identify feasible, acceptable and effective interventions and service delivery strategies to improve reproductive, maternal, neonatal and child health outcomes in PNG. The emphasis is on the generation of evidence that has immediate use in ENB in improving services and that can inform future health policy in PNG and similar settings. Find out more about HMHB on pages 12-13.

## Improving maternal and infant health in rural Zimbabwe

Burnet is working with a local partner in a rural area of Zimbabwe that has one of the highest infant mortality rates in the country to increase uptake of an essential package of services during pregnancy and the first two years of life, known as the '1,000-day window of

opportunity'. The program supports eight rural and remote clinics to provide quality services, and engages surrounding communities to address barriers that prevent women and children from reaching these services. Our work empowers women to make informed decisions about seeking care, and supports men to challenge harmful gender norms and community practices that restrict care-seeking. A cluster-randomised controlled trial has been incorporated into program delivery. This is expected to generate evidence for how to overcome barriers to care-seeking in resource-constrained rural settings, such as in Zimbabwe.

## Addressing undernutrition in Lao PDR

A Burnet Institute project aimed at reducing child undernutrition (stunting) in Lao PDR was awarded a significant AUD\$1.5 million National Health and Medical Research Council (NHMRC) grant in 2015. Based on a successful pilot study, a three-year randomised controlled trial of a package of community-based nutrition interventions to prevent child stunting at the age of 18 months will begin in 204 villages in July 2016. The grant evolved from Burnet's primary health care and nutrition project in Vilabouly in Southern Lao PDR, which ran initially from 2008 to 2011. The rate of chronic undernutrition among children in Lao PDR is 44 per cent and as high as 60 per cent in some rural districts. Burnet's Professor Mike Toole AM and Dr Ben Coghlan will work on the new project led by the University of Western Sydney's Professor Andre Renzaho.



*Above: Conditions for giving birth in Papua New Guinea can be extremely challenging.*

## SEXUAL & REPRODUCTIVE HEALTH

### PRINCIPALS:

Associate Professor Gilda Tachedjian  
Associate Professor Mark Stoové  
Associate Professor Stanley Luchters

Sexual and reproductive health problems contribute significantly to the global burden of ill health. Greater efforts are needed to achieve access to quality SRV services for all women and men, including among adolescents and those who are marginalised.

### mHealth to prevent unintended pregnancy among female sex workers in Kenya

Reducing the unmet need for contraception could prevent 52 million unintended pregnancies, 70,000 maternal deaths, and 500,000 newborn deaths annually. Unmet need is a particular concern for female sex workers. In Kenya, approximately 25 per cent of sex workers experience an unintended pregnancy each year. Mobile phones offer a promising means of accessing this population given their widespread use across the country. In collaboration with research partners (ICRH-Kenya and FHI360) and with female sex workers, Burnet has developed an mHealth intervention consisting of 70 SMS and six role model stories aimed at reducing unintended pregnancy. A cluster-randomised trial is now underway to assess the effectiveness of this intervention among more than 800 female sex workers in Mombasa, Kenya.

### Study of PrEP acceptability among men who have sex with men (MSM) in Myanmar

HIV pre-exposure prophylaxis (PrEP) – HIV-negative individuals taking drugs to reduce their HIV risk – is an emerging global HIV prevention strategy. PrEP effectiveness depends on adherence to taking PrEP drugs and safe PrEP provision relies on regularly attending health services. PrEP effectiveness is therefore contingent on local health systems, barriers to accessing health services and acceptability of PrEP among HIV risk populations.

Burnet's Centres for Population Health and International Health conducted the first PrEP acceptability study among men who have sex with men (MSM) in Myanmar. While HIV prevention resourcing and health system limitations remain a challenge, MSM participating in the study viewed PrEP favourably. Community-based HIV services like those provided by Burnet Institute and other trusted organisations are likely to be crucial to delivering PrEP to MSM in Myanmar in the future.

### Immune modulatory effects of vaginal microbiota factors and HIV susceptibility

The vaginal microbiome, comprising bacterial communities that colonise the vagina, can either protect or promote susceptibility to HIV and other sexually transmissible infections (STIs). However, how the microbiota mediate these effects is largely unknown. To address this question, the Tachedjian Laboratory was awarded NHMRC funding to elucidate how factors produced by beneficial and detrimental vaginal microbiota modify the innate immune responses elicited by cells at the vaginal luminal surface and how these responses modulate infection of HIV target cells in the mucosa. These studies could lead to the development of improved HIV prevention strategies for women. The antiviral and immune modulatory effects of these microbiota factors was highlighted in a major invited review (Aldunate et al 2015 *Frontiers in Physiology* 6:164).

*Image above: An electron micrograph of HIV-infected cells with HIV particles budding out.*



## YOUNG PEOPLE'S HEALTH

**PRINCIPAL:**  
Professor Margaret Hellard

During young adulthood sexual risk behaviours and related health problems, mental health conditions, and use of alcohol, tobacco and other drugs often emerge or peak. Burnet is responding to these issues through innovative research, and by designing and implementing programs that reduce young people's risk.

### The Mobile Intervention for Drinking in Young People (MIDY)

Burnet has developed a novel alcohol intervention for risky young drinkers delivered via mobile phones. In MIDY, young people receive individually tailored SMS alerts whilst out on a night drinking, encouraging them to monitor or reduce their alcohol intake and ensure they get home safely. The intervention involves hourly mobile assessment and feedback. The online questionnaire collects hourly reports of their alcohol consumption and spending, location and mood. In response to these data they will receive an individually tailored feedback message via SMS which aims to stop or slow down their drinking or avoid harmful consequences of drinking. Participants have found MIDY highly engaging and ongoing trials will determine its impact on alcohol consumption. The intervention design and content have been developed and piloted with young people using a theory-driven participatory approach. In early 2015, Burnet received a VicHealth Innovation Research Grant to conduct a trial with 300 young people to test the impact of the intervention on binge drinking.

### Improving sexual health research for gender and sexually diverse young people

A series of workshops conducted by Burnet with young people used a range of gender and sexual identities to better understand issues around the inclusion of sexual health research. These insights into heteronormative practices and assumptions in research, education and health services will help make sexual health research more inclusive and effective.

### SMS4Health in Indonesia

This innovative project aimed at assessing acceptability of SMS to improve adolescent sexual and reproductive health, and reduce smoking among youth in Indonesia. In Central Java, Burnet recruited 523 young people from universities and high schools for an eight-week SMS intervention. Each person received 12 health promotion SMS relating to sexual and reproductive health and harms from smoking, tailored to the individual risk profile and gender. Baseline and follow-up evaluation surveys assessed the acceptability and feasibility of conducting a larger randomised controlled trial. Most participants reported that SMS was interesting or entertaining (60 per cent), informative and useful reminders (95 per cent) and that they had learnt something from them (96 per cent).

### Adolescents and HIV in Asia

In many Asian cities, 15–19-year-olds are neglected in HIV testing and treatment strategies. In 2015 Burnet worked with UNICEF in Indonesia and in the Philippines to bring together key populations, health services staff and policymakers. Key populations included young men who have sex with men, transgender women, sex workers, and adolescents who inject drugs. They discussed ways to make HIV testing and treatment more accessible to young people. These initiatives are now being expanded to four cities in Indonesia and another four in the Philippines.

# CENTRE FOR BIOMEDICAL RESEARCH



Through integrating discovery-based research, translational research, and clinical and population research, we aim to achieve new advances in treatments, vaccines, diagnostic tests and prevention strategies to address diseases of major global importance.

*Image: HIV scientist, Dr Clovis Palmer.*

**CENTRE HEAD:**  
**Professor James Beeson**  
Tel: +61 3 8506 2442  
beeson@burnet.edu.au

The Centre has a broad research program in infectious diseases, autoimmune and inflammatory diseases, and cancer. This includes the infectious diseases HIV, malaria, hepatitis B and C, tuberculosis and influenza, as well as the autoimmune diseases arthritis and lupus.

There were many major achievements in 2015 across the key themes of our research reflected in publications, successes in national and international funding, and advances in the development of vaccines, therapeutics and diagnostics.

Four successful scientific symposia hosted by the Centre during the year showcased areas of Burnet's research and development activities. More than 200 malaria researchers and students attended the Working Toward Malaria Elimination Symposium ahead of World Malaria Day in April. Key updates and research progress in priority areas of developing malaria vaccines, drug resistance, identification of new antimalarials, epidemiology and control, and other issues important for disease elimination were presented. The Infectious Diseases Research Symposium in August centred around four diseases of global importance – HIV, TB, malaria, and hepatitis C. The symposium focused on strategies for the prevention of disease, translation of research into the clinic and community, the pathway to curing disease, and overcoming resistance. The Centre was also co-organiser of mHIVE's World AIDS Day Symposium at the Peter Doherty Institute for Infection and Immunity, with Dr Clovis Palmer presenting a keynote speech alongside the Victorian Minister for Health, the Hon Jill Hennessy MP. The Burnet-RMIT Vaccines, Diagnostics and Therapeutics Mini Symposium was also held, with the aim of identifying collaborative opportunities for innovative research.

The Centre appointed Dr Clovis Palmer as Lab Head, Immunometabolism in HIV and Inflammatory Diseases. Dr Palmer was previously a senior postdoctoral researcher in the Crowe Laboratory. Dr Meredith O'Keefe, Dr Irene Caminschi and Dr Mireille Lahoud were recruited to Monash University, and Dr Paul Ramsland moved to RMIT at the end of the year after receiving the prestigious Vice Chancellor's Senior Research Fellowship.

### Collaborative Research Programs

The innovative collaborative research programs (CRPs) feature across four major themes of the Centre's work:

- HIV and Hepatitis
- Malaria and Tropical Diseases
- Vaccines, Diagnostics and Therapeutics
- Immune Function in Health, Ageing and Disease.

The CRPs aim to maximise research achievements and their translation into health improvements. They also promote collaborations and partnerships, strengthening the academic environment and research support for staff and students.

### Publications

Our researchers were highly productive, with 120 publications in international journals, including some of the world's leading journals, with several publications receiving considerable media coverage. This is a strong indicator of innovative and high-quality research.

### Grants and Funding

Researchers in the Centre received significant competitive research funding during 2015. The Churchill Laboratory received NHMRC grants for two major projects on "HIV phenotypes important for the establishment of persistent reservoirs in the central nervous system and which impact neurotropism and neuropathogenesis" and "Viral determinants of HIV-1 transcriptional latency in the central nervous system: impact on cure strategies". The Drummer/Poumbourios Laboratory received an NHMRC grant on "Profiling the specificity of the neutralizing antibody response in people who have long-term protection from developing chronic HCV", and the Jaworowski Laboratory project, "A new monocyte atherogenic phenotype in chronic HIV disease" was also successful. Dr Freya Fowkes and Professor Mark Hogarth were investigators on other successful NHMRC grants. Dr Fowkes was a co-investigator on an NIH grant, "Immunity to Placental Malaria: Persistence of Antibodies to VAR2CSA" that will investigate immunity to malaria in pregnant women in Cameroon. Dr Clovis Palmer and Professor Suzanne Crowe AM were successful in receiving a grant from Merck Sharpe & Dohme. Dr Jack Richards along with Dr Suman Majumdar, Professor Steve Graham and Ms Tope Adepoiyibi from the Centre for International Health were recipients of a generous donor gift to help fund TB projects in Timor-Leste. Dr Jack Richards also received a grant from The Global Fund to help support the Regional Artemisinin Initiative (a joint initiative between Burnet Institute, the Vietnamese National Malaria Program and the NGO, Health Poverty Action), addressing the issues of malaria elimination and drug resistance in the Greater Mekong.



*Image: Associate Professor Heidi Drummer is working towards a vaccine for hepatitis C.*



## A new drug class for HIV treatment and prevention

TACHEDJIAN LABORATORY

Antiretroviral drugs form the foundation of global treatment and prevention guidelines to help eliminate HIV. However, drug resistance, toxicity and intolerance could lead to exhaustion of drug options with little in the way of new drug classes in the pipeline. To address this unmet need we have employed a relatively new paradigm in drug discovery to identify new drug building-blocks with unique modes of action in blocking a vital HIV molecule. These small chemical building blocks represent highly promising starting points for development of an entirely new drug class for HIV.

### Identification of mechanistically distinct inhibitors of HIV-1 reverse transcriptase through fragment screening.

La J, Latham CF, Tinetti RN, Johnson A, Tyssen D, Huber KD, Sluis-Cremer N, Simpson JS, Headey SJ, Chalmers DK, Tachedjian G. *Proc Natl Acad Sci USA*. 2015 Jun 2.

## Why HIV causes atherosclerosis

JAWOROWSKI LABORATORY

HIV-infected individuals have higher risk of atherosclerosis and coronary artery disease, even when successfully treated by antiretroviral therapy. We showed that circulating monocytes from these individuals have a higher propensity to differentiate into fatty foam cells, the cells that characterise atherosclerotic plaques, after migrating across an activated endothelium. These properties were associated with altered expression of molecular transporters for cholesterol. This work points to new diagnostic tests and treatment modalities for coronary artery disease in HIV-infected individuals and others with chronic inflammatory conditions.

### Monocytes from HIV+ individuals show impaired cholesterol efflux and increased foam cell formation after transendothelial migration.

Maisa A, Hearps AC, Angelovich TA, Pereira CF, Zhou J, Shi MDY, Palmer CS, William A. Muller, Crowe SM, Jaworowski A. *AIDS*. 2015 Jun 29.

## Promising HIV cure drugs less effective on the virus in the brain

CHURCHILL LABORATORY

This study identified that HIV found in the brain is genetically distinct to HIV found in the blood of the same patient. These differences mapped to a region of the virus responsible for viral replication. We showed that brain viruses had less efficient replication and this was primarily due to the reduced recruitment of a cellular protein called Sp1. Importantly, we showed that drugs being trialled for the cure of HIV were less effective against brain viruses. These findings suggest HIV cure strategies may have different outcomes depending on the location of the HIV reservoir.

### CNS-specific regulatory elements in brain-derived HIV-1 strains affect responses to latency reversing agents with implications for cure strategies.

Gray L, Cowley D, Welsh C, Lu H, Brew B, Lewin S, Wesselingh S, Gorry P, Churchill M. *Molecular Psychiatry*. 2016 April 21.

## Illuminating malaria's hidden secrets

GILSON/CRABB LABORATORY

Malaria is a deadly infectious disease caused by parasites that invade, grow and reproduce inside the body's red blood cells. It is important we understand how the parasites invade if we are going to develop new drugs and vaccines to stop the disease. Unfortunately, much of invasion is a mystery to us because the parasites are too small and invade too quickly to see properly. Burnet scientists have overcome these problems with state-of-the-art microscopy technology and have revealed for the first time how parasites invade and the various molecular steps that take place. This important work could help fellow scientists develop novel ways to treat and prevent disease.

### Revealing the sequence and resulting cellular morphology of receptor-ligand interactions during Plasmodium falciparum invasion of erythrocytes.

Weiss GE, Gilson PR, Taechalertpaisarn T, Tham W-H, de Jong NWM, Harvey KL, Fowkes FJI, Barlow PN, Rayner JC, Wright GJ, Cowman AF and Crabb BS. *PLoS Pathogens*. 2015 Feb 11.

## Discovery of malaria-blocking immune response opens door for vaccine

BEESON LABORATORY

Knowledge on how the immune system fights malaria infection is crucial for developing vaccines. New studies have revealed that antibodies work in partnership with other proteins in the blood, known as complement, to block and kill malaria infection. The team showed that people living in malaria-endemic areas who had developed high levels of this immune activity were generally protected from malaria, and that this protective activity could be generated by experimental malaria vaccines. These findings have identified a new pathway towards developing a highly effective vaccine.

### Human antibodies fix complement to inhibit Plasmodium falciparum invasion of erythrocytes and are associated with protection against malaria.

Boyle MJ, Reiling L, Feng G, Langer C, Osier FH, Aspeling-Jones H, Cheng YS, Stubbs J, Tetteh KK, Conway DJ, McCarthy JS, Muller I, Marsh K, Anders RF, Beeson JG. *Immunity*. 2015 Mar.

## AWARDS

- **Professor Brendan Crabb AC** – Director, Burnet Institute and Co-head, Gilson/Crabb Laboratory was awarded the Companion of the Order of Australia at the Australia Day Awards for his contributions to medical research and global health.
- **Dr Jacqueline Flynn** – Three-year RMIT Vice Chancellor’s Research Fellowship
- **Dr Paul Ramsland** – RMIT Vice Chancellor’s Senior Research Fellowship.
- **Professor Brendan Crabb AC** and **Professor Suzanne Crowe AM** were appointed fellows of the prestigious Australian Academy of Health and Medical Sciences.
- **Professor Brendan Crabb AC** and **Professor James Beeson** were awarded the NHMRC Research Excellence Award for the Highest Ranked Program Grant for 2015 as co-investigators on a five-year NHMRC Program Grant on malaria.
- As part of AMREP Health Week, the **Gilson/Crabb Laboratory** was awarded the major prize for their research, “PTEX is an essential nexus for protein export in malaria parasites”, whilst **Dr Sushama Telwatte** received the Burnet Prize for Infectious Diseases Research for her research, “Silent mutations in HIV-1 reverse transcriptase restore viral fitness and alleviate indel formation in subtype B HIV-1 containing D67N and K70R drug resistance mutations”.

Our postdoctoral researchers received numerous awards during the year:

- **Dr Michelle Boyle** – prestigious Post-doctoral Investigator Award from the National Association of Research Fellows.
- **Dr Sushama Telwatte** – 2015 Australian Society for Microbiology BD Student Award, the highly competitive Monash Postgraduate Publication Award, the Harold Mitchell Post-Doctoral Fellowship Award and a CROI Young Investigator Award to attend and present her poster at CROI 2016.

- **Dr Anna Hearps** – Travel award to attend the 12th Innate Immunity conference in Crete, Greece.
- **Dr Ricardo Ataide** – Ian Potter Travel Award to attend the American Society of Tropical Medicine and Hygiene (ASTMH) conference in Philadelphia.
- **Dr Herbert Opi** – Elsevier Best Postdoctoral Poster Presentation.
- **Dr Ricardo Ataide** – International Journal of Parasitology Best Postdoctoral Oral Presentation at the Malaria in Melbourne conference.
- **Dr Cath Latham** – Pauline Speedy Travel Fellowship.
- **Dr Sarah Charnaud** – Geoffrey Connard Travel Fellowship.

Our PhD students were also highly competitive and several received awards during the year:

- **Ms Liriye Kurtovic** – Nairn Prize in Immunology from Monash University, which is awarded to the top immunology BSc/BMS honours student.
- **Ms Kerry Moore** – ASTMH Travel Award to attend the conference in Philadelphia.
- **Ms Jessica Anania** – one of the 60 recipients selected from all biological disciplines throughout Australia to attend the EMBL Australia PhD course in Perth and the recipient of the Miller Foundation Biomedical Travel Fellowship.
- **Ms Elisha de Valle** – BD Best Oral Presentation prize at the 6th Australian B cell Dialogue Meeting in Melbourne.
- **Mr Berhan Haile** – ViiV HealthCare Young Investigator Poster Prize (PhD student category)
- **Ms Muriel Aldunate** – inaugural winner of the ViiV HealthCare Young Investigator Award for her oral presentation at the mHIVE World AIDS Day Symposium.
- **Mr Joshua Hayward** – Harold Mitchell Postgraduate Travel Fellowship.



*Above: Dr Sushama Telwatte presented with the Harold Mitchell Postdoctoral Travel Fellowship by Associate Professor David Anderson.*



## OUR RESEARCH WORKING GROUPS

**Anderson Laboratory:** Diagnostics Development

**Beeson Laboratory:** Malaria Immunity and Vaccines

**Caminschi Laboratory:** Dendritic Cell Biology and Immunotherapy

**Churchill Laboratory:** HIV Neuropathogenesis

**Crosby Laboratory:** Hepatitis B Antivirals

**Crowe Laboratory:** International Clinical Research

**Drummer/Poumbourios Laboratory:** Virus Entry and Vaccines

**Ffrench Laboratory:** Viral Immunology

**Fowkes Laboratory:** Malaria and Infectious Diseases Epidemiology

**Gilson/Crabb Laboratory:** Malaria Research

**Gorry Laboratory:** HIV Molecular Pathogenesis

**Gowans/Loveland Laboratory:** Hepatitis C

**Gugasyan Laboratory:** Lymphocyte Biology

**Hogarth Laboratory:** Inflammation, Cancer and Infection

**International Clinical Research Laboratory (iCRL)**

**Jaworowski Laboratory:** Infection, Inflammation and Innate Immunity

**Lahoud Laboratory:** Dendritic Cell Receptors

**O'Keeffe Laboratory:** Dendritic Cells Research

**Palmer Laboratory:** Immunometabolism in HIV and Inflammatory Diseases

**Pietersz Laboratory:** Bio-Organic and Medicinal Chemistry

**Ramslund Laboratory:** Structural Immunology

**Tachedjian Laboratory:** Retroviral Biology and Antivirals

**Tannock Laboratory:** Influenza

**Wright Group:** Strategies for HIV prevention and management of acute and chronic HIV infection

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# CENTRE FOR POPULATION HEALTH



We aim to improve the health of the community by conducting high-quality, policy-relevant and innovative research that addresses the major public health problems associated with infectious diseases, drugs and related behaviours.

**CENTRE HEAD:**  
Professor Margaret Hellard  
Tel: +61 3 8506 2304  
[hellard@burnet.edu.au](mailto:hellard@burnet.edu.au)

## Elimination: A strategic priority

In 2015 the Centre established Elimination as a strategic priority for the next five years. The Centre's work focused on providing an evidence base for the elimination of HIV, hepatitis C, hepatitis B, malaria and tuberculosis, and the elimination of harms associated with alcohol use, other drug use and sexual risk behaviour in our region and globally. The Centre's work recognises that many of these diseases and risk behaviours are intimately interlinked, requiring a multidisciplinary, cohesive approach to measure, predict, intervene and eliminate these global health problems.

## Assessing the effectiveness of mosquito repellent in artemisinin resistance containment programs in south-eastern Myanmar

A randomised controlled trial of the effectiveness of mosquito repellent in artemisinin (antimalarial) resistance containment programs began in April 2015 in south-eastern Myanmar. There is currently little published evidence supporting the use of mosquito repellents for malaria control in Myanmar and South-East Asia. This study aims to discover whether distributing personal insect repellent to high-risk populations (mobile and migrant people and forest dwellers) through Village Health Volunteers reduces malaria and the spread of antimalarial drug resistance. The trial, involving approximately 30,000 participants from 116 villages in eastern Myanmar, will finish in July 2016. Principal investigators, Dr Freya Fowkes (Burnet Institute, Melbourne) and Dr Win Han Oo (Burnet Institute Myanmar-BIMM) are supported by co-investigators from all three Centres – Dr Julia Cutts and Mr Paul Agius (Centre for Population Health), Ms Naanki Pasricha (Centre for International Health), Professor James Beeson and Professor Brendan Crabb AC (Centre for Biomedical Research), as well as postdoctoral researchers and PhD students. This trial will be BIMM's first involving the collection of biological samples from participants. Laboratory analysis to detect parasites in blood samples and parasite genetic analysis to detect drug-resistant parasites is currently underway.

## The TAP Study – a world first

The world-first Hepatitis C Treatment And Prevention (TAP) Study aims to deliver new oral hepatitis treatments to people who inject drugs using an innovative nurse-led model of care. It also aims to show how treatment of the injecting network can prevent hepatitis C transmission, which will be critical to its elimination. The study has recruited more than 100 participants, many of whom have completed their 12-week treatment course. Participants are followed for 18 months to monitor hepatitis transmission and reinfection, and offered harm reduction services and education when needed.

## The PRIME Study

The Prime Study is comparing hepatitis C treatment in primary care versus tertiary care to assess if treatment for hepatitis C can be delivered through community-based clinics and drug and alcohol services. The conventional approach to hepatitis C care involved general practitioners referring all patients to hospitals for specialist-led care, but the new oral medications for hepatitis C enable community-based treatment. Efforts to scale up treatment and eliminate hepatitis C in Australia will require input from general practitioners, given limited treatment access in hospitals. This study has recruited 45 participants and will run until 2017.

## Methamphetamine use and harms

Increasing public concern about methamphetamine use and harms associated with use attracted considerable media interest in Victoria (more than 1000 articles were published in Melbourne's two daily newspapers, The Herald-Sun and The Age, in 2014–15). Our research has shown that the issues around harm relate to increased purity and changes in user behaviour rather than an increase in prevalence of use. However, there is clearly a need for new research about methamphetamine use and harms, particularly as they relate to regional and rural Australia.

The Colonial Foundation Trust has provided seed funding for Burnet's researchers to establish a large cohort of methamphetamine smokers in Melbourne and regional Victoria. It will generate unique data on differences in the methamphetamine markets across the state and the services needed to respond effectively. Funding for the first 18 months will be used to leverage support from other sources.



## 'Sex, Drugs and Rock'n'Roll' study moves online

Following more than a decade of data collection at Melbourne's Big Day Out music festival, the study about risk behaviours and the health of young Australians is now conducted online. In 2015, 1000 young people were surveyed online with a particular focus on social media and health. Of the 1000 participants, more than half had engaged in sexting – the sending of sexual images via mobile phone. Furthermore, 100 per cent of the young men and 81 per cent of young women surveyed had viewed pornography. The average age of first viewing pornography was 13 years among boys and 16 years among girls. Other issues identified included exposure to alcohol advertising on social media, and the popularity of online diet and detox pages, some of which include messages harmful to health and wellbeing.

## ACCESS

In collaboration with the Kirby Institute and the National Reference Laboratory, and with funding from several state governments, Burnet Institute has set up Australia's largest surveillance system for monitoring HIV, hepatitis B, hepatitis C, syphilis, chlamydia and gonorrhoea. The Australian Collaboration for Coordinated Enhanced Sentinel Surveillance (ACCESS system) extracts non-identifiable clinical records and test results from clinics and laboratories in participating states, enabling detailed analyses of the epidemiology of the targeted infections. The first results from ACCESS for all monitored diseases within the Victorian population from 2009–2014 have recently been produced. ACCESS data are critical for monitoring testing rates, particularly in an era of health promotion focused on testing as prevention. They allow health-seeking behaviour in relation to testing, treatment and care to be easily identified to inform interventions. Also, longitudinal measurement enables evaluation of interventions designed to eliminate infections in Victoria and other states.

## Risky drinking

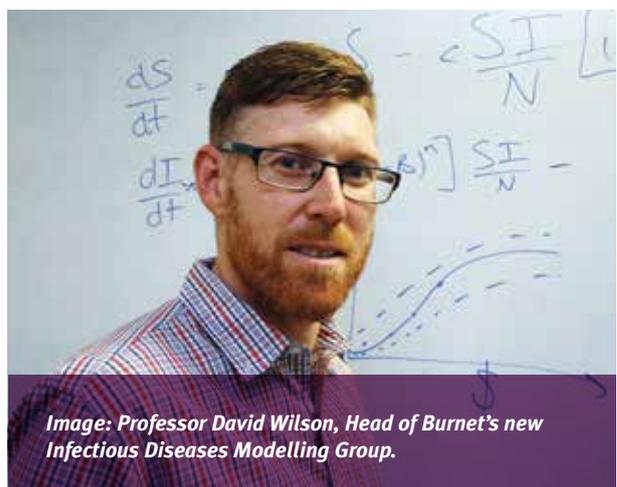
Risky single-occasion drinking (RSOD) by young people in Australia is a serious public health issue, yet little is known about how RSOD develops. The Young Adults and Alcohol Study (YAAS) is addressing this gap. YAAS involves 802 young risky drinkers (aged 18–24 years) from across metropolitan Melbourne, surveyed about their most recent heavy drinking occasion in late 2012 and late 2013. Participants self-report the amount of alcohol consumed and money spent on alcohol. Initial analysis shows a small decrease in overall single-occasion consumption from an average of 13 Australian Standard Drinks (ASD) at baseline to 12.24 ASD at one year later. Reported expenditure (including alcohol 'shouted' by others) barely changed – AUD\$73.65 at baseline and AUD\$74.14 at 12 months. These findings suggest stable peak drinking in the cohort, which contrasts with studies of average consumption that generally show declines over time. Further follow-up is needed to determine whether these risky drinking behaviours persist and the reasons why.

## World-class Optima modelling team joins Burnet

Epidemiological and health economic modelling enables assessment of past and expected epidemic trends, and the population-level health impact of interventions and their financial implications. The Infectious Disease Modelling Group, led by Professor David Wilson, has made major contributions in several areas. Hepatitis C modelling is informing vaccine preparedness strategies and likelihood of achieving the World Health Organization elimination targets, along with informing treatment prioritisation approaches. Tuberculosis modelling has been assessing the relative benefit of various approaches and directly informing national tuberculosis programs in lower-middle-income countries. The internationally renowned Optima modelling team joined Burnet Institute in 2015. Optima ([www.optimamodel.com](http://www.optimamodel.com)) works with policymakers, funders and program managers to optimise allocation of limited resources for greatest population health impact. The Optima HIV tool has been used to address 'allocative efficiency' questions for the United Nations, as well as directly informing practice in more than 30 countries in Eastern Europe, Asia, South America and Africa. This work has had substantial practical impacts with shifts in budget allocations towards programs with greater cost-effectiveness in improving health outcomes, and assisting national strategic plan development and operational planning.



*Image: Dr Joseph Doyle and Professor Margaret Hellard in one of Burnet's hepatitis treatment and monitoring vans.*



*Image: Professor David Wilson, Head of Burnet's new Infectious Diseases Modelling Group.*

*Image: Crystalline form of methamphetamine (ice).*

## OUR RESEARCH WORKING GROUPS

### ALCOHOL AND OTHER DRUGS

**Co-Heads:** Professor Paul Dietze and Dr Peter Higgs

This group studies the nature and extent of alcohol and other drug use in Australia with a view to developing effective policy and practice to reduce harms.

### HIV

**Head:** Associate Professor Mark Stoové

This group conducts innovative research aimed at understanding the transmission and prevention of HIV.

### INFECTIOUS DISEASE MODELLING

**Head:** Professor David Wilson

This group develops and applies epidemiological and economic models to inform better public health decisions around resource allocations to maximise the health of populations.

### INFECTIOUS DISEASES SURVEILLANCE

**Manager:** Ms Carol El-Hayek

This group manages HIV, viral hepatitis and STI surveillance systems, and conducts evaluations of projects and programs.

### JUSTICE HEALTH

**Head:** Associate Professor Mark Stoové

This group undertakes research to build the evidence base for policy and practice to improve outcomes for prisoners and ex-prisoners.

### MALARIA AND INFECTIOUS DISEASES EPIDEMIOLOGY

**Head:** Dr Freya Fowkes

This group undertakes research into malaria dynamics in populations and the implementation of effective public health control measures.

### SEXUAL HEALTH AND YOUNG PEOPLE'S HEALTH

**Head:** Dr Megan Lim

This group focuses on work examining the epidemiology and consequences of risk behaviours among young people.

### VIRAL HEPATITIS

**Head:** Professor Margaret Hellard

This group focuses on increasing our understanding of hepatitis viruses and their transmission, and improving the management and care of people who are already infected.

# CENTRE FOR INTERNATIONAL HEALTH



We respond to health priorities in developing countries through the provision of technical advice and support, organisational capacity building, applied research, policy analysis and development, and training and education programs.

*Image: Naw Thin July Win is a volunteer on Burnet's malaria project in Kayin State, Myanmar.*

**CENTRE HEAD:**  
**Professor Robert Power**  
Tel: +61 3 9282 2169  
robert@burnet.edu.au

Centre for International Health's expertise spans the prevention and care of infectious diseases, women's and children's health, sexual and reproductive health, harm reduction, primary health care, and strengthening national health systems. Innovation, inquiry and influence underpin our public health approach, integrating research and education at every juncture. We respond effectively to local health issues, working closely with communities, civil society organisations, governments, international non-government organisations and UN agencies.

We operate across three thematic areas and in several focal countries, with Myanmar and Papua New Guinea given priority status.

## THEMATIC AREAS:

### Woman's and Children's Health (WCH)

The WCH team implements research and development activities focusing on sexual and reproductive health among women and men, including adolescents. The scope of this work in 2015 included:

1. Two reviews of young people's sexual and reproductive health in Asia and the Pacific for UNFPA. The reviews described young people's health needs and identified effective approaches to inform evidence-based policy and practice in the region.
2. Burnet contributed to the Lancet Commission on Adolescent Health and Wellbeing, led by the University of Melbourne, London School of Hygiene and Tropical Medicine, University College London, and Columbia University. The landmark report will be launched in 2016.
3. In Myanmar, a qualitative inquiry was conducted with colleagues from The Monash Institute of Pharmaceutical Sciences to assess the feasibility and acceptability of a potential new inhaled oxytocin drug that is currently being developed.
4. In partnership with Ipas, Burnet conducted a study into women's access to, and experiences of, post-abortion care in Myanmar. Conducted in three regions, the findings of the study will support work to reduce mortality due to unsafe abortion.

## Infectious Disease and Harm Reduction

Our programs focus primarily on HIV and viral hepatitis, multidrug-resistant tuberculosis (TB) and malaria. In Indonesia and the Philippines Burnet worked through partners to address the rising rates of HIV, focusing efforts on adolescents from key populations, and in linking them to services and models for retaining them in care. In Papua New Guinea Burnet supported the government's response to the emerging multidrug-resistant TB epidemic in Western Province, and in building capacity for home-based testing of malaria in East New Britain (ENB).

In Myanmar we supported program delivery to people who inject drugs and men who have sex with men to access HIV prevention care and support services. In 2015 the HIV prevention program reached more than 10,000 men in these categories, providing 340,000 condoms and lubricant packs, and more than 3000 tests for HIV through Burnet's drop-in centres in five cities. Burnet Institute reached 3800 people who inject drugs with harm reduction services, including distributing more than 900,000 clean needles and syringes, and providing more than 2000 HIV tests.

## Education and Capacity Development

Burnet maintained regular postgraduate teaching and training activities, and supervised nine PhD students, plus two of our own staff who are working towards doctorates. We hosted 20 Fellows visiting from Fiji, Tonga and Myanmar in 2015 as part of the Australian Awards Fellowship program. The Pacific Fellowship program aimed to enhance the overall inclusivity and diversity of rugby and other sports in Fiji and Tonga, with a specific focus on gender, sexual identity and disability. The program also sought to increase awareness of the salient public health issues resulting from inequity and the discrimination of marginalised populations in the Pacific. The Myanmar Fellowship program was designed to build leadership skills, develop organisational capacity, and support advocacy and policy reform of civil society leaders responding to public health issues at national and provincial level.



**Above:** Home Management of Malaria project volunteers Racheal Orim (left) and her mother Wolly Gerson with Burnet's Sakaia Luana (right) in their village near Kokopo, ENB.

## FOCAL PROGRAMS:

### Myanmar

After significant thematic expansion in the previous year, 2015 was a year of consolidation for Burnet's Myanmar program. Since commencing in 2014, our HIV prevention service delivery work has provided harm reduction services for many thousands of people who inject and use drugs, and the introduction of HIV testing and counselling for men who have sex with men. Our partnerships program expanded with a Memorandum of Understanding with Deakin University and a Partnership Agreement with Water Aid Australia, thereby bringing complementary skills and expertise to public health programming and research in Myanmar. We now aim to develop further in two areas. First, to expand the geographical area and extent of our TB service provision to increase active case finding, testing and treating, including paediatrics. Second, we will develop our new adolescent health thematic area through supporting Life Skills education in high schools. This will involve engaging with parents and communities to increase access to health information and services for young people aged 10 to 24 years in rural Myanmar.

### Papua New Guinea (PNG)

Burnet has continued to implement the Home-Based Management of Malaria program with 300 volunteers providing testing, treatment and referral services across three districts. A tool kit designed to address the health of adolescent boys was launched in Port Moresby and is being promoted amongst employers throughout PNG. We also developed capacity in ENB facilities to better inform and prepare women and their partners for pregnancy, childbirth and parenthood. This involved collaborating with the National Department of Health towards improvements in national health research management and coordination systems.

Burnet's contribution to the TB response in the South Fly District in Western Province has been extended for two years. In 2015 the development of the Accelerated Response Plan promoted effective coordination of partners in the response. This plan formed the basis of a collaborative advocacy exercise aimed at generating greater government and partner commitment. Strengthened case management and referral pathways led to a significant increase in the proportion of patients retained on drug-resistant TB treatment, and improvements in the quality of care. This involved regular expert case reviews, improved infection control measures, a significant reduction in dosing errors, improved monitoring and management of treatment side-effects, and the introduction of new drugs for otherwise incurable cases.

In late 2015, Burnet PNG undertook a restructure. Our Head Office relocated to Kokopo, ENB and we refreshed the program team under the management of a new PNG General Operations Manager.

### Other activities

Despite an unpredictable and challenging funding landscape, CIH accumulated 24 new contracts during the year, with a total value nearing AUD\$14 million.

Our Australian Government-funded bilateral programs continued in Indonesia (HIV prevention) and China (providing health system capacity development in the Tibet Autonomous Region). Burnet also worked in Lao PDR, The Philippines, Solomon Islands and Kenya, alongside activities in healthy ageing in Sri Lanka and philanthropic-funded programs in Southern Africa.

As an accredited International Non-Governmental Organisation (a status that proudly distinguishes Burnet from every other independent Medical Research Institute in Australia) Burnet receives funds from the Australian NGO Cooperation Program. More than AUD\$900,000 was disbursed during 2015 for discretionary projects in Myanmar, PNG, Zimbabwe and Lao PDR, primarily focused on safe motherhood and newborn care. Notably, Burnet improved health service provision through renovation of health centres in Myanmar and maternity waiting homes in Zimbabwe; facilitated information sessions with pregnant women and expectant fathers in PNG; and conducted outreach on nutrition in remote parts of Laos.

On the research front, we were successful in each of the three research bids to the National Health and Medical Research Council (NHMRC) where staff members were named as collaborators or investigators, reinforcing our commitment to balancing our development profile with robust research and evidence.



*Image: Burnet's Myanmar Country Representative, Dr Phone Myint Win conducts a briefing session.*



*Image: Male involvement in maternal and newborn health activities in peri-urban Yangon.*



## OUR MANAGEMENT TEAM

Professor Robert Power

Mr Mark Tennent

Ms Lia Burns

Dr Elissa Kennedy

Ms Mary-Ann Nicholas

Associate Professor Stanley Luchters

Mr Chad Hughes

开业庆典  
Grand Opening Ceremony



## BUSINESS DEVELOPMENT, INNOVATION & RESEARCH

*Above: Associate Professor David Anderson with Mr Dou Lihua from the Jiangsu Life Sciences and Technology Innovation Park, at the Nanjing BioPoint opening ceremony.*

‘Medical Research, Practical Action’ drives our commitment to translational research that delivers tangible improvements to health outcomes, especially in areas that address our mission to improve the health of poor and vulnerable communities worldwide.

The Office for Business Development, Innovation and Research (OBDIR) coordinates a range of translational research activities from Burnet’s biomedical programs including research and development (R&D), commercialisation technology licensing and start-up ventures. OBDIR also facilitates collaborations with public health programs in key areas of biomedical innovation; provides research administration for Burnet with our funding partners including NHMRC, NIH, and trusts and foundations; and legal support in all areas.

In 2015, Burnet attracted new NHMRC funding of more than AUD\$5.5 million. Additional research grants were awarded by US-based National Institutes of Health (\$325,616) and the Australian Research Council (\$204,338). Burnet continued to be strongly competitive in translational research funding from the Australian Centre for HIV and Hepatitis Virology (ACH2), receiving grants of more than \$1.1 million.



### 360biolabs

A cutting-edge, Melbourne-based contract research organisation, 360biolabs was launched in 2015, merging the Institute’s ImmunoMonitoring Facility (IMF) and Innoviron Pty Ltd. An independent company, 360biolabs offers quality-assured immunology and virology laboratory services supporting clinical trials aimed at developing therapeutics, vaccines and diagnostics. 360biolabs CEO Dr Simon Tucker said the facility will be the Southern Hemisphere’s leading provider of quality-assured laboratory services in virology and immunology. The facility will have PC-2 and PC-3 containment laboratories, quality management systems and NATA accreditation, building on the strong track record of the IMF established by Associate Professor’s Rose Ffrench and Bruce Loveland.



*Above: 360biolabs Executive VP Operations Dr Alistair Draffan, Executive VP Business Development Dr Samantha Brandler, and CEO Dr Simon Tucker.*

16

patent families

1

new provisional patent (2015)

1

company 360biolabs Pty Ltd (2015)

## Access POC Initiative

Burnet's Access Point of Care's mission is to increase access to life-saving treatments for infectious diseases through development, field trialling, and the implementation of novel and existing point-of-care tests. An increasing pipeline of activities is underway, from progressing internally derived technologies to working with partners to assist in field testing and implementation of their novel point-of-care technologies. In 2015, Burnet was successful in winning further support to progress development of an improved point-of-care test for active syphilis from the Thrasher Research Fund. Plans are underway to develop a prototype test by the end of 2016 working closely with licensing partner Omega Diagnostics. Further highlights included the inauguration of Omega Diagnostic's first greenfield manufacturing facility at the International Biotech Park in Pune, India with a major focus on manufacturing VISITECT CD4® (a licensed technology from Burnet Institute).



## HepSeeVax

A wholly owned Burnet Institute company, HepSeeVax Pty Ltd is involved in developing the world's first vaccine to prevent hepatitis C. The lead vaccine candidate has entered the late stages of preclinical development. Support from ACH2 funding enabled continued development of the necessary associated analytical tools to GLP (Good Laboratory Practice) level and preparation for GMP (Good Manufacturing Practice) manufacture of the lead vaccine candidate. Burnet's lead inventor, Associate Professor Heidi Drummer, was invited to present the technology from HepSeeVax during the Asian Biotech Showcase at the BioPharma Asia Convention. Burnet's team also attended BioKorea to pursue partnering opportunities. Partnering discussions continue between HepSeeVax and new potential partners. The HepSeeVaxDelta3™ technology is covered by three major patent families across a wide range of territories worldwide with further jurisdictions expected to be granted in 2016.

## New Opportunities

Burnet researchers continue to develop novel technologies with the potential to become diagnostics, vaccines and therapeutics. Funding and investment support is actively sought to progress these technologies towards market. Opportunities we are currently seeking support for include:

- **New class of HIV Drug**

Burnet researchers are developing a new class of HIV drug which will prove essential in the fight against increasing drug resistance.

## Nanjing BioPoint

Burnet Institute made a major step forward in its vision of a long-term engagement in China with the official launch of the R&D laboratory facility for the Burnet spin-off company, Nanjing BioPoint Diagnostics Technology Co. Ltd. Australian Ambassador to China, HE Ms Frances Adamson officially opened the Nanjing BioPoint facility in Jiangsu Province, with Burnet Institute representatives, investment partners Beijing GuoMinXinHe Group, and high-level officials from both Australia and China in attendance. An agreement for manufacturing facilities for the Company in the Jiangsu Life Science and Technology Innovation Park in Nanjing was also signed.

Burnet Deputy Director, and President and CEO of Nanjing BioPoint, Associate Professor David Anderson said the laboratory facility and future manufacturing capability would translate Burnet's world-renowned diagnostic research and technologies into commercially viable products.

"Nanjing BioPoint is a strong signal of our long-term commitment to collaborative research and development in China, and will facilitate timely delivery of new health technologies to our target populations worldwide through cost-effective commercial development, in conjunction with our partners at GuoMinXinHe Group," Associate Professor Anderson said.



*Above: Senior development scientist Ms Mary Garcia (right) shows Australian Ambassador HE Frances Adamson Burnet's latest diagnostic test with Ms Zhang Zhimei, Nanjing BioPoint laboratory manager (left).*

- **Novel HIV vaccine**

Burnet is continuing to progress our lead vaccine candidate and plans to enter further preclinical studies in 2016.

- **A postbiotic as a method for reducing inflammation in the female reproductive tract**

Our technology aims to reduce cervicovaginal inflammation and potential reduce the incidence of sexually transmitted infections.



## EDUCATION AND TRAINING

Education is a priority at the Burnet Institute, with students undertaking the research component of their university degrees at the Honours and Postgraduate (Masters and PhD) levels in a range of projects. Students are based in one of Burnet's three Centres, but contribute broadly to the research productivity and major mission statement of the Institute. Burnet supervisors provide high-level research and career training in a collaborative team environment. They also actively engage in education and training programs, delivering public and international short courses and university-accredited postgraduate units.

### Research student projects

In 2015, 76 students participated in biomedical laboratory-based projects, epidemiology and field-based research. Our supervisors and their research teams worked to successfully train and mentor 16 Honours students enrolled across three universities:

- Monash University, 13
- University of Melbourne, 1
- La Trobe University, 2

Burnet's PhD program continues to grow in size and productivity with 59 students enrolled in six universities:

- Monash University, 34
- University of Melbourne, 20
- RMIT University, 2
- University of New South Wales, 1
- Queensland University of Technology, 1
- La Trobe University, 1

Research students and supervisors are supported by the Burnet's Research Students Committee (RSC) which has representation from the postgraduate student body, senior scientists from each Burnet Centre, and Honours and Postgraduate Coordinators.

Burnet students continue to have a positive impact on our research output. In 2015, more than a quarter of the peer-reviewed scientific publications produced by Burnet (55 of 218) involved at least one and often multiple students as authors. Our students were first-authors on 32 papers which is an outstanding achievement. Many students received awards based on their poster and oral presentations at major national and international conferences and congresses. Several students who completed or submitted their PhDs this year are pursuing careers in research through postdoctoral positions at leading international research institutes and universities, while others are actively engaged in industry. Our thanks to Dr Paul Ramsland for his contribution as Education Officer in 2015.

## Postgraduate international public health studies

Burnet continues to coordinate and deliver ten accredited postgraduate international public health units for Monash University's Master of Public Health and Master of International Health. These courses encompass the breadth of Burnet's global health expertise including: women's and children's health, infectious diseases, HIV, nutrition, alcohol and other drugs, refugee health, health economics and primary health care and also focus on key communication, training and field methods skills for global health practitioners and researchers. The courses attract domestic and international postgraduate students as well as short course participants from government and non-government organisations in Asia, Africa and the Pacific, with 230 enrolments in 2015.



*Burnet is striving to provide the best possible research environment for its students and aims to create greater opportunities for their learning, such as student symposiums and educational workshops.*

– DR RAFFI GUGASYAN,  
EDUCATION OFFICER, 2016



## EDUCATION IN NUMBERS



**76** students

**59**  
PhD students

**1**  
Masters student

**16**  
Honours students



**10**  
accredited  
postgraduate  
international  
public health  
units

**3**  
**centres**



**230** enrolments in  
public health courses



peer-reviewed  
publications in 2015

# PHD STUDENTS

## CONGRATULATIONS TO THE STUDENTS RECEIVING PHDS IN 2015

Burnet's PhD program continues to flourish with 59 students enrolled in six universities.

We place great emphasis on postgraduate study, providing high-quality research and training in areas related to public health, and basic science in infectious diseases and immunology. Recent PhDs investigated HIV entry and replication, HCV virology and immunology, autoimmune disease, malaria, tuberculosis, drug misuse, sexual health, modelling of infectious diseases, and vaccine development.

*“Burnet provides a unique environment where clinical outcomes in patients influence basic research in the laboratory. Throughout my PhD I greatly benefitted from the strong ties Burnet Institute holds with The Alfred hospital and the HIV-positive community in general, allowing me to evaluate the mechanisms driving non-AIDS related diseases in people currently living with HIV.”*

– DR THOMAS ANGELOVICH PHD  
POSTDOCTORAL SCIENTIST, JAWOROWSKI LABORATORY  
CENTRE FOR BIOMEDICAL RESEARCH

## WE CONGRATULATE THE STUDENTS WHO RECEIVED PHD AWARDS:

**Yousef Al-Hammad**  
Functions of Hepatitis C  
Virus Glycoprotein E2  
Variable Regions

**Thomas (Tom) Angelovich**  
Investigating the impact of  
chronic inflammation on  
monocyte function in HIV+  
individuals and the elderly

**Sarah Charnaud**  
Novel components used  
for protein export and  
functionality in *Plasmodium  
falciparum*.

**Joseph (Joe) Doyle**  
Effectiveness of treating  
recent acquired hepatitis C  
infection in Australia

**Brendan Elsworth**  
Characterisation of the  
*Plasmodium falciparum*  
Export Complex

**Ben Fancke**  
Where It All Begins:  
Exploring Dendritic Cell  
Control of Viral Infection  
and Cell Development  
in the Bone Marrow

**Philippe Latour**  
Development of an  
Immunotherapy to Treat  
Persistent Hepatitis C

**Siti Khayriyyah (Kye)  
Mohd Hanafiah**  
Dimeric IgA (dIgA) and  
cell wall components of  
*M. tuberculosis* (MTB) as  
tools in point-of-care (POC)  
diagnostics Infection

**Rachel Sacks-Davis**  
Hepatitis C Transmission  
and Natural history of newly  
acquired hepatitis C in people  
who inject drugs

**Sushama Telwatte**  
Analysis of ligands and  
calcium signals used  
by *Plasmodium falciparum*  
parasites during the invasion  
of erythrocytes

**Tana Taechalertpaisarn**  
Role of Silent Mutations  
K65K and K66K in Subtype B  
HIV-1 Reverse Transcriptase  
Selected During Drug  
Therapy

**Xu-Dong Zhang (Stella)**  
Vulnerabilities and  
opportunities for improving  
sexual and reproductive  
health and rights for  
adolescent female sex  
workers in Kunming, China



# IN APPRECIATION

Thank you to everyone who supported us in 2015. Thanks to you we're helping to save the lives of vulnerable mothers and babies in Papua New Guinea, Myanmar and Zimbabwe. You made possible advances towards new HIV drugs, bringing renewed optimism for people living with HIV. You enabled us to undertake world-first research into how new technologies can be used to promote better health among young Australians. Thank you for making these and many other achievements possible.

## Bequests

Every bequest, however small or large, is appreciated and makes a difference to Burnet's capacity to improve the health of the world's most disadvantaged people.

We thank the late Emma Louise Beruter, Wilma Keir, Geoffrey Ronald Mathison, Roma Olive McIntyre and V. N. Sanders for their special support of Burnet's work through a gift in their Will.

## Trusts and Foundations

Thank you to the charitable trusts that support us:

- Australian Communities Foundation
- Bell Charitable Fund
- CASS Foundation Ltd
- Eirene Lucas Foundation
- Freemasons Public Charitable Foundation
- Gandel Philanthropy
- Harold Mitchell Foundation
- Ian Potter Foundation
- Invergowrie Foundation
- June Canavan Foundation
- Joe White Bequest
- Lord Mayors Charitable Foundation
- Macquarie Group Foundation
- Perpetual Trustees
- Peter Falvey Foundation managed by Perpetual Trustees
- Rotary Club of Preston Inc
- SBA Foundation managed by Perpetual Trustees
- State Trustees Foundation – Ruby C Thomas and Ronald R Fraser
- William Angliss (Victoria) Charitable Fund

## Corporate

Thank you to the corporations that support us:

- Arnold Bloch Leibler
- Ashurst
- Cockram Construction
- FB Rice
- Goldman Sachs Australia
- Lynton Crabb Photography
- Macquarie Group
- Mineral Resource Development Company
- Piper Alderman
- SP Brewery



*I have seen the critical importance of bequests and gifts to Burnet Institute.*

*A bequest to Burnet Institute in the mid-1990s enabled us to start our educational work in India, helping train doctors to treat HIV infection. Those programs have now expanded into Lao PDR, Myanmar, Indonesia and Fiji. Another bequest contributed to the very earliest stages of development of the HIV VISITECT® CD4 point-of-care test that determines whether an HIV-positive patient needs to start life-saving antiretroviral treatment.*

– **PROFESSOR SUZANNE CROWE AM**  
ASSOCIATE DIRECTOR & HIV RESEARCH SCIENTIST,  
BURNET INSTITUTE



## PHILANTHROPY

Generous philanthropic support enables us to help improve the health of poor and vulnerable communities in Australia and overseas. Our research and public health activities deliver new and innovative ways of tackling the world's greatest health challenges. Thank you for your contributions and sharing our passion for creating a healthier world.



### Healthy Mothers, Healthy Babies

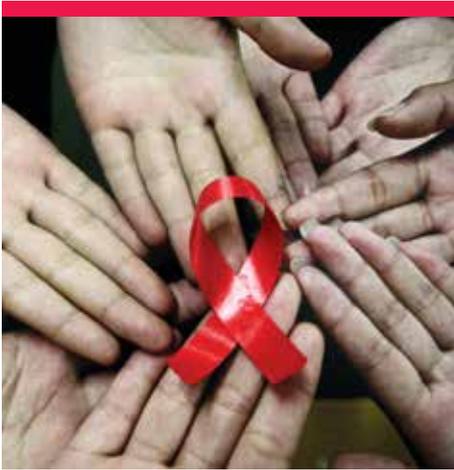
Healthy Mothers, Healthy Babies (HMHB) is an ambitious research program based in East New Britain province in Papua New Guinea that is being funded primarily through philanthropy. Thanks to AUD\$1.1 million in gifts in 2015:

- More than 200 mothers were recruited into the first study, an exceptional achievement. We aim to recruit an additional 500 mothers and follow their progress from their first antenatal clinic visit and for 12 months after their baby is born.
- A new laboratory was officially opened at St Mary's Hospital in Kokopo, East New Britain.
- A GeneXpert machine was installed in the HMHB Kokopo laboratory to enable local testing for infectious diseases such as chlamydia and gonorrhoea.
- Three new research officers were recruited and are collecting important data from field sites.

These exciting developments would not have been possible without your help. Thank you!



*Left: Thanks to the support of an anonymous donor, the GeneXpert machine enables our local staff in PNG to test patient samples for infectious diseases.*



**Left:** HIV is still here. More than 27,000 Australians are living with the virus. Globally, 1.5 million people die from AIDS every year.

### **HIV: getting to zero new infections**

Reducing the spread of HIV has been a long-standing focus of many programs at Burnet Institute since the beginning of the global epidemic. Cutting-edge HIV research is underway in Burnet laboratories and our public health researchers are involved in innovative HIV prevention programs in Australia and internationally with at-risk communities.

Gifts from donors have enabled our scientists to carry out groundbreaking research into new classes of drugs that are kinder on the body and better able to suppress drug resistance. It also helped progress HIV pre-exposure prophylaxis (PrEP) prevention strategies in Australia and internationally.

Thank you for your support of our HIV programs!

### **Improving cancer treatment**

Cancer is a major killer in both developed and developing countries and the need to discover new therapies has never been so great.

With your support a group of Burnet scientists are leading this fight by researching immunotherapy, a promising new form of treatment. Immunotherapy enlists the body's own natural defences to fight cancer cells like they fight infectious diseases. Already, it has made great strides against cancers like melanoma that were once believed incurable.

Philanthropy has been invaluable in progressing this exciting research with the aim of developing new treatments and vaccines against breast, ovarian, cervical and prostate cancer.

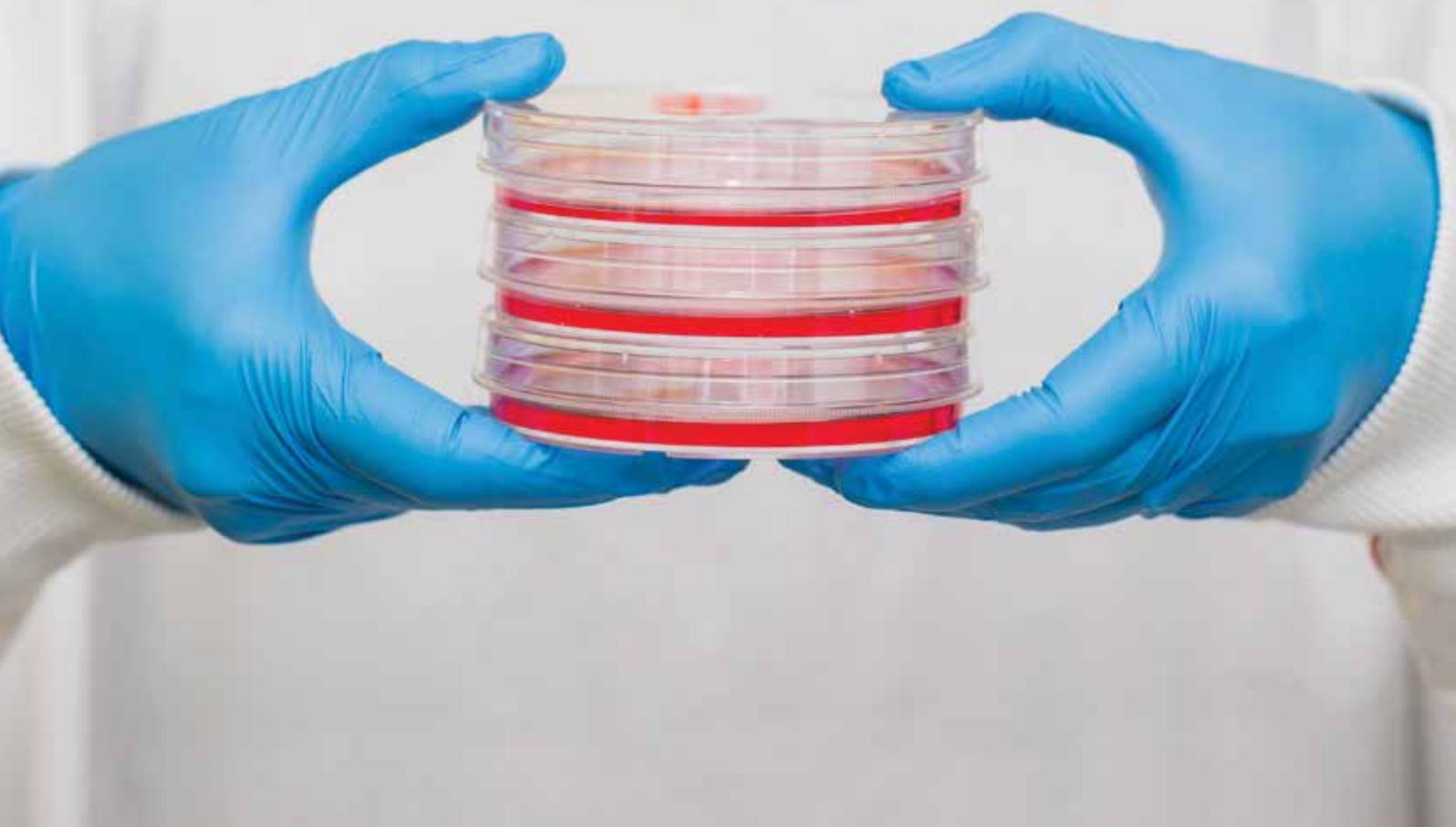
**Below:** With your help, Professor Mark Hogarth (left) and his team are researching how to arm the immune system against cancer.



*We understand the dedication and expense involved with any scientific endeavour, and so we are pleased to support Burnet Institute. Knowing that the results of Burnet's research improve health and quality of life both in Australia and internationally is truly a wonderful feeling.*

– KEN AND JEANNE DEUTSCHER

# FINANCIAL SUMMARY



## In 2015, the Institute spent more than AUD\$40 million on improving health for poor and vulnerable people.

The Statements of Financial Position and Comprehensive Income provided in this section have been extracted from the audited general-purpose financial statements of the consolidated operations of the Burnet Institute. The summary financial information does not include all the information and notes normally included in a statutory financial report.

The statutory financial report (from which the summary financial information has been extracted) has been prepared in accordance with Australian Accounting Standards (AASBs) adopted by the Australian Accounting Standards Board (AASB) and the Corporations Act 2001.

The financial result for the year was a deficit of AUD\$1,787,661 (2014: deficit \$1,343,568). Depreciation and amortisation amounted to \$2,506,610 (2014: \$2,402,869) and income tax is not applicable.

The 2015 result is after consolidating a \$918,818 deficit in the BioPoint subsidiary companies. BioPoint commenced operations in 2014 as a separate R&D diagnostic company

operating out of Nanjing, China. Funding is provided by Chinese investors in the venture and 2015 was the first full year of operations.

Operationally, the Burnet had a highly successful year with respect to publications and continued to perform well with NHMRC success in an increasingly tough environment. Research highlights included the establishment of new companies such as BioPoint and 360biolabs, continued strong progress with HepSeeVax, hepatitis C elimination trials, the Healthy Mothers, Healthy Babies program in Papua New Guinea and the recruitment of Professor David Wilson's Optima research team.

The property business continues to operate as a self-sustainable activity.

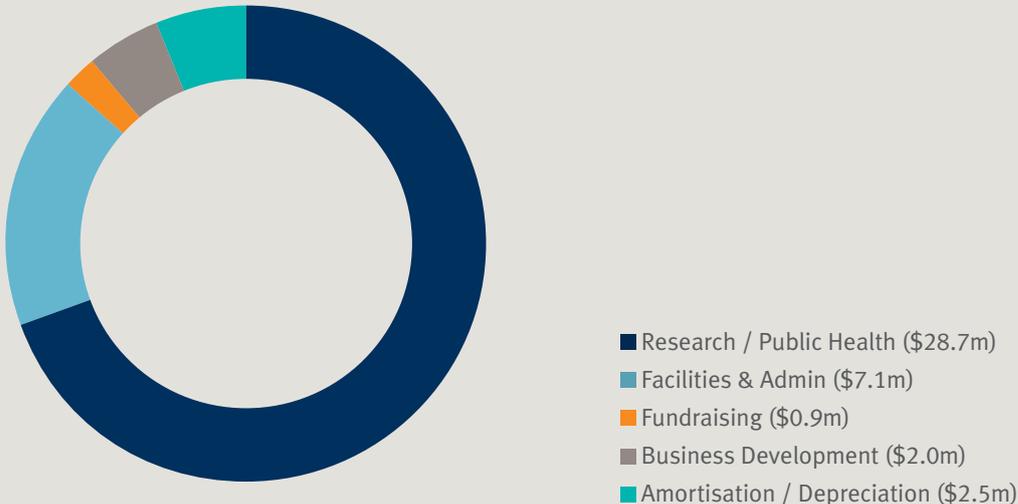
**For a full copy of the 2015 audited general purpose financial report please contact Burnet Institute on +61 3 9282 2111, email [info@burnet.edu.au](mailto:info@burnet.edu.au) or visit our website [www.burnet.edu.au](http://www.burnet.edu.au).**

# FINANCIAL PERFORMANCE AT A GLANCE

## INCOME 2015



## EXPENDITURE 2015



# FINANCIAL STATEMENT

## Consolidated Statement of Comprehensive Income

(FOR THE YEAR ENDED 31 DECEMBER)

	NOTE	2015 \$'000	2014 \$'000
Operating revenue	3	34,630	37,097
Other income	3	4,420	4,486
Research and development laboratory consumables expenses		(2,756)	(3,182)
Personnel expenses	4	(20,575)	(19,828)
Depreciation and amortisation expenses		(1,222)	(1,118)
Depreciation and amortisation expenses – property management		(1,285)	(1,285)
Property management operating costs		–	(169)
Research and development non-laboratory expenses		(9,601)	(9,250)
Other expenses from ordinary activities	5	(4,345)	(5,344)
<b>Results from Operating Activities</b>		(734)	1,407
Financial income	7	362	442
Financial expenses	7	(1,416)	(3,193)
<b>Net Finance Costs</b>		(1,054)	(2,751)
Surplus/(Deficit)Before Income Tax		(1,788)	(1,344)
Income tax expense		–	–
<b>Surplus/(Deficit)After Income Tax</b>		(1,788)	(1,344)
<b>Surplus/(Deficit)After Income Tax Attributable to:</b>			
Members of the Company		(1,593)	(1,340)
Non-controlling interests		(195)	(4)
<b>Surplus/(Deficit)After Income Tax</b>		(1,788)	(1,344)
Other comprehensive income			
Foreign currency translation differences – foreign operations		150	58
<b>Total Comprehensive Income/(Loss) for the Period</b>		(1,638)	(1,286)
<b>Total Comprehensive Income/(Loss) Attributable to:</b>			
Members of the Company		(1,475)	(1,286)
Non-controlling interests		(163)	–
<b>Total Comprehensive Income/(Loss) for the Period</b>		(1,638)	(1,286)

# FINANCIAL STATEMENT

## Consolidated Statement of Financial Position

(AS AT 31 DECEMBER)

	NOTE	2015 \$'000	2014 \$'000
<b>Current Assets</b>			
Cash and cash equivalents	18(i)	17,133	19,378
Trade and other receivables	8	2,910	2,370
Inventories		28	33
Investments	9	–	265
Other Assets - prepayments		481	456
<b>Total Current Assets</b>		20,552	22,502
<b>Non-Current Assets</b>			
Trade and other receivables	8	1,818	1,779
Investments	9	2,265	2,265
Property, plant and equipment	10	62,525	63,991
<b>Total Non-Current Assets</b>		66,608	68,035
<b>Total Assets</b>		87,160	90,537
<b>Current Liabilities</b>			
Trade and other payables		2,294	3,252
Borrowings	11	496	480
Current tax liabilities - FBT	12	75	99
Provisions	13	2,838	2,753
Deferred income	14	11,933	10,749
Derivatives	15	–	112
<b>Total Current Liabilities</b>		17,636	17,445
<b>Non-Current Liabilities</b>			
Borrowings	11	33,450	33,946
Provisions	13	1,162	1,376
Deferred income	14	9,176	10,004
Derivatives	15	3,034	3,426
<b>Total Non-Current Liabilities</b>		46,822	48,752
<b>Total Liabilities</b>		64,458	66,197
<b>Net Assets</b>		22,702	24,340
<b>Equity</b>			
Retained earnings		1,111	4,318
Building reserve		21,131	19,517
Foreign Currency Translation Reserve		225	75
Non-controlling interests		235	430
<b>Total Equity</b>		22,702	24,340

# FINANCIAL STATEMENT

## Burnet Institute International Development Activities Operating Statement

(FOR THE YEAR ENDED 31 DECEMBER)

	2015 \$'000	2014 \$'000
<b>Revenue</b>		
Donations and gifts – monetary	84	203
Donations and gifts – non-monetary	–	–
Bequests and legacies	–	–
Grants:		
• DFAT	6,163	7,282
• Other Australian	1,108	645
• Other Overseas	3,626	3,806
Investment Income	–	–
Other Income	1,562	1,554
Revenue for international political or religious proselytisation programs	–	–
<b>Total revenue</b>	<b>12,543</b>	<b>13,490</b>
<b>Expenditure</b>		
<b>International aid and development programs expenditure</b>		
International programs:		
• Funds to international programs	11,575	12,441
• Program support costs	808	1,007
Community education	–	–
Fundraising costs:		
• Public	–	–
• Government, multilaterals and private	–	–
Accountability and administration	400	358
Non-monetary expenditure	–	–
<b>Total international aid and development programs expenditure</b>	<b>12,783</b>	<b>13,806</b>
Expenditure for international political or religious proselytisation programs	–	–
Domestic programs expenditure	702	197
<b>Total expenditure</b>	<b>13,485</b>	<b>14,003</b>
<b>(Shortfall)/ Excess of revenue over expenditure</b>	<b>(942)</b>	<b>(513)</b>

### Notes:

No single appeal or form of fundraising for a designated purpose generated 10% or greater of the Burnet Institute's total income.

This operating statement and is extracted specifically for the operations of the Centre for International Health as required by the represents IFRS financial information ACFID Code of Conduct.

The deficit represents the Burnet Institute's additional financial contribution to the program.



The Macfarlane Burnet Institute for Medical Research and Public Health Limited is a signatory to the Australian Council for International Development Code of Conduct. The Code requires members to meet high standards of corporate governance, public accountability and financial management. More information about the ACFID Code of Conduct can be obtained from ACFID.

[www.acfid.asn.au](http://www.acfid.asn.au)

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**Burnet Institute**  
Medical Research. Practical Action.

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## OVERSEAS OFFICES

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Burnet has offices or representatives in Myanmar, Papua New Guinea, China (Tibet Autonomous Region) and Lao PDR. For more information contact us at [info@burnet.edu.au](mailto:info@burnet.edu.au) or call +61 3 9282 2111.