ASSOCIATE PROFESSOR DAVID ANDERSON RECALLS 25 YEARS AT BURNET

FROM 1986 ‘TIL NOW: OUR MAJOR ACHIEVEMENTS

REFLECTING ON THE PAST WITH OUR EYE ON THE FUTURE
It is with great pleasure that I welcome you to this special issue of IMPACT. This year the Burnet Institute celebrates its 25th anniversary, an exciting milestone in our history. This is a wonderful time to reflect on the considerable contributions the Institute has made since 1986 and to thank all those who have made this possible. At the same time, we’re excited about and very focused on the Institute’s future and our increasing capacity to contribute significantly to improving the health of disadvantaged communities everywhere.

As part of our strategic planning process, we recently reviewed the Institute’s mission and focus and it’s fair to say that while there is now greater clarity around these issues, Burnet’s primary reason for being has not changed significantly since we were formed. We continue to expand our work on improving the health of poor and vulnerable population groups through research, education and public health, and we continue our strong focus on viral diseases. We have broadened the scope of our work to include a greater range of infectious diseases such as malaria and influenza, and increased our strength in immunology, mainly to underpin the development of vaccines against diseases of global relevance.

This issue of IMPACT takes us on a journey, from our early beginnings at the Fairfield Infectious Diseases Hospital; the growth and development of our research, education and public health programs; the move to the Alfred Medical Research and Education Precinct (AMREP); the merger of the Austin Research Institute and Burnet Institute; our new facilities within The Alfred Centre; and now, a new period of growth and consolidation. We hear from each of our former directors, and look at the many contributions we have made as an Institute in the areas of virology, immunology, population health and international health.

We continue to differentiate ourselves from other medical research institutes, being the only accredited medical research institute in Australia to also hold accreditation as a non-government organisation (NGO). This unique status enables us to work both at a high-level and at the grassroots level in many resource-poor countries and use our scientific and public health knowledge to drive policy and behaviour change to improve the health of at risk communities. Support from the Australian Agency for International Development (AusAID) has played a very significant role in the development of our Centre for International Health and the ability to implement innovative public health activities internationally. The quality of our research and our ability to translate our new discoveries into tangible, long-lasting health benefits such as new preventative measures, rapid diagnostic tests, candidate vaccines and new therapies have been recognised by our peers and are promoted by global health decision makers, including in 2010 by Michele Sidibé, the Executive Director of UNAIDS.

On behalf of the Board of Directors and the staff and students of the Institute, I would like to express our sincere thanks to all those who have contributed to making the Burnet Institute what it is today. We all have much to celebrate and to be proud of.

We look forward to a strong future, filled with tremendous possibility to improve the health of those that need it most.

Professor Brendan Crabb, Director and CEO
“BURNET IN 100 WORDS”

This was what we asked of our past and present Chairs. An invidious task.

Alastair Lucas, AM
CHAIR, BURNET INSTITUTE 2002–PRESENT

So let me just say this on the Institute’s 25th birthday: Burnet is an organisation I revere. I could give many reasons for this opinion, but the word limit means I must summarise.

I love Burnet because its sole focus is the betterment of humans who, through nothing but happenstance, are marginalised and deprived. No other research institute in Australia makes its focus the world’s – including Australia’s – poor.

It’s impossible to assess how many thousands of lives are being improved, and indeed saved, by Burnet’s actions. So I also revere Burnet because it’s effective: it gets things done, on the ground, day after day, on a sustainable basis.

Although ‘unique’ is a much over-used word I am at a loss to identify an adjective which better describes this wonderful organisation.

The Honourable Geoffrey Connard, AM
CHAIR, BURNET INSTITUTE 1986–1990

I am delighted to congratulate the Burnet Institute on celebrating its 25th anniversary. I’m very honoured to have played a part in the development of the Institute, as the founding Chairman of the Macfarlane Burnet Centre for Medical Research, as it was known originally, and to have witnessed its growth and development into one of the leading medical research and public health institutes in Australia and our region. It’s fair to say that the vision our founding Director Professor Ian Gust and myself had for the Institute has certainly met and exceeded our expectations. Congratulations to all those who have played a part in the Institute achieving its success and for your contribution to helping create a healthier world.

CONGRATULATIONS BURNET
Messages of congratulations from the Governor of Victoria and the Minister for Innovation.

The Honourable Alex Chernov, AO, QC
GOVERNOR OF VICTORIA

As Patron-in-Chief of the Burnet Institute, it gives me great pleasure to congratulate the Institute on it’s wonderful milestone – your 25th anniversary. Over this significant time frame, the Burnet Institute has established itself as a world leader in medical research. It has achieved this reputation by focusing its energy on some of the most complex diseases confronting the scientific and medical community and affecting very large numbers of people worldwide. The Institute’s work encompasses fundamental biological studies at the sub-cellular level to the very practical issues facing patients with infectious diseases, as well as the assisting in the development of preventive strategies so critical in dealing with public health issues. This portfolio of activities requires the provision of the most modern and complex instrumentation at The Alfred hospital complex as well as the necessary support of other staff who are engaged in various aspects of field-work in developing countries in projects related to HIV, hepatitis and avian flu.

The significance of the work that the Burnet Institute undertakes is based on the innovation of its scientists and programs of collaborative action together with international agencies. I commend those who have been and are currently involved in ensuring that the reputation earned continues to be nurtured and fostered over the next 25 years of it’s history. I look forward to seeing the exciting developments of the Institute unfold into the future.

The Honourable Louise Asher, MP
MINISTER FOR INNOVATION, SERVICES AND SMALL BUSINESS; MINISTER FOR TOURISM AND MAJOR EVENTS

I am delighted to offer my warmest congratulations to the Burnet Institute on its 25th Anniversary.

Medical and public health research are vital to improving the prevention, detection and treatment of disease. Innovation through research can deliver far-reaching health benefits for our whole community and Burnet is a world leader in such research.

Since its formal establishment 25 years ago, and even before that in its earlier incarnations at The Fairfield Hospital for Infectious Diseases, the Burnet Institute has addressed serious health problems that affect large numbers of lives all over the world. Its current programs in virology, immunology, public health and international health continue this mission, seeking solutions to diseases such as HIV/AIDS, hepatitis, measles, tuberculosis, malaria, influenza, sexually transmitted diseases, autoimmune diseases and cancer.

Burnet is not only committed to creating the passion, vision and environment for innovation to flourish, it is committed to implementing its research findings to deliver better health outcomes. The Institute’s role in health policy development and in delivery of public and community health programs, both in Australia and in many countries overseas in Asia and Africa, are testament to its focus on making a real difference.

After 25 years, the Burnet Institute is stronger than ever and, with its new, expanded facilities at the Alfred Medical Research and Education Precinct, is poised for another successful chapter in its history of innovative research.

I congratulate the Burnet Institute and its former and current members and its Board on this, its 25th Anniversary, and look forward to further great things from a great Institute.
1986
Macfarlane Burnet Centre for Medical Research formally launched by the then Federal Health Minister The Hon Neil Blewett, MP – Founding Director Professor Ian Gust and Founding Chairman The Honourable Geoffrey Connard.

1989
Macfarlane Burnet Centre for Medical Research was incorporated.

1989–1995
The Victorian Injecting Drug Users Cohort Study is launched – the first Australian cohort study of injecting drug users.

1990
The Austin Research Institute is incorporated on 1 June – Founding Director Professor Ian McKenzie and Founding President and Chairman Mr Harry M Hearn.

1991
The Austin Research Institute successfully clones human genes CD48, CD99, Ly-9, Thb. These are important genes for immune regulation.

1992
Professor John Mills is appointed as Director. Dr Nick Crofts forms the International Epidemiology and Social Research Unit (ESRU) and recruits Rob Moodie as the head.

1994
Commencement of the Healthy Start for Child Survival Project in Indonesia.

1995
Identification of an attenuated strain of HIV-1 that is a possible basis of a vaccine for HIV.

1996
First crystallisation of Fc receptor in 1996 – a breakthrough with the potential for designer drugs with major anti-inflammatory action.

1997
First accreditation of Burnet as an NGO by AusAID.

1997–2001
First project in Tibet – Burnet provided technical input to the Tibet Primary Health Care and Water Supply Project seeing a significant increase in safe childbirth, a decline in childhood illnesses and increased access to safe water sources.

1999–2000
The Fairfield ‘lookback’ cohort study (a follow-up of people admitted to Fairfield Hospital with hepatitis in the 1970s) produced many insights into the natural history of chronic hepatitis C in Australia.

2001
Our name changed to Macfarlane Burnet Institute for Medical Research and Public Health Ltd (Burnet Institute) to reflect the increase in public health programs undertaken by the Institute. Opening of the first overseas Burnet office in Vientiane, Lao PDR.

2002
Professor Steve Wesselingh is appointed as Director. The Burnet Institute moves from Fairfield to the Alfred Medical Research and Education Precinct in Prahran. The Institute opens its second overseas office in Bali, Indonesia.

2003
Burnet opens its third overseas office in Yangon, Burma.

2004
Opening of the Institute’s fourth overseas office in Maputo, Mozambique.

2004–2007
Burnet conducts surveys measuring mortality in the Democratic Republic of Congo, which remain the largest mortality surveys ever conducted in a conflict setting. Significant findings (published in The Lancet) demonstrate that preventable and treatable diseases, not violence, cause the overwhelming majority of deaths.

2005
Burnet piloted a linked HIV sentinel surveillance system for the Victorian Government – the first of its kind in Australia paving the way for similar surveillance systems with chlamydia.

2006
Austin Research Institute officially merges with the Burnet Institute on 1 January.

2007
Professor Mark Hogarth is appointed as acting Director. Burnet scientists identify a small version of a HCV viral protein that binds to a lock on the host cell surface to gain entry in to the target cell. This forms the basis of extensive, ongoing studies to develop an effective vaccine against HCV.

2008
Professor Brendan Crabb is appointed as Director and CEO. Burnet’s Clinical Research Laboratory accredited as a World Health Organization regional HIV drug resistance laboratory for the Asia-Pacific regions.

2010
Low cost point-of-care CD4+ T-cell assay developed. This hand-held test can be used in the field by a non-medically trained community health worker.

Burnet ImmunoMonitoring Facility achieves NATA (R&D) accreditation to develop and perform validated immunoassays.

The new floor on level 7 of The Alfred Centre allowed the completion of the merger with the Austin Institute and the relocation of the final groups on to the one site.

2011
Centre for Population Health, in collaboration with researchers from other institutes, universities and organisations, was awarded a prestigious NMHRC Centre for Research Excellence (CRE) funding for injecting drug use.
The Queens Memorial Infectious Diseases Hospital was established in 1902, located in Yarra Bend Park, Fairfield. For most of its history it was led by three distinguished physician superintendents: Victor Scholes, Sandy McLorinan and WW2 veteran, John Forbes. In the late 1950s, fascinated by the potential of cell-culture technology to provide insights into human viral infections, Forbes persuaded John Doble to donate funds for the establishment of a small virus laboratory. From these early days at Fairfield, a world-renowned Institute was born.

THE EARLY DAYS
I spent the summer of 1965 as a Registered Medical Officer at Fairfield Hospital. I enjoyed it so much that I decided to become a medical virologist and returned as a medical registrar the following year. There I remained, apart from post-graduate studies in London and Glasgow and two sabbaticals at NIH, for the next 25 years.

My appointment as Director of the Virus Laboratory was made in 1971, after Alan Ferris moved from Fairfield to Monash University. Despite having less than 10 staff, the laboratory had developed an international reputation and had been designated a WHO Collaborating Centre (for respiratory viruses other than influenza), then one of only a small number of such Centres in the world.

As John Forbes was a strong believer that advances in clinical practice should be underpinned by good research, there were ample opportunities for the staff at Fairfield to pursue their own research interests. However, this was not always to be the case – when I returned from sabbatical in 1979 John Forbes had retired and the hospital’s attitude towards research had changed dramatically.

When a new Board was appointed in 1982 I made the case that the existing research activities should be consolidated into a new entity, the Fairfield Hospital Research Centre. The Board agreed and invited me to become the Director. I immediately contacted Sir Macfarlane Burnet, who had been the honorary epidemiologist to the hospital for many years, inviting him to become the patron of the Centre – to which he readily agreed.

GAINING INDEPENDENCE
In 1983 our research activities increased with the discovery of the first Australian case of AIDS and the designation of Fairfield as the preferred centre for the care of Victorian patients. This work brought further resources and both the National Reference Laboratory for HIV serology and the NHMRC Special Unit for AIDS Virology to Fairfield.

It became clear that the capacity of the Research Centre to grow was likely to be constrained if it remained a department of the hospital and that it would be preferable for us if it became an independent Institute – closely linked to the hospital but with its own Board and the ability to raise funds in its own right. This was a delicate situation, with our research activities being a great source of public support for the hospital.

GUIDANCE AND GOVERNANCE: SHAPING A NEW INSTITUTE

Professor Ian Gust, AO, the founding Director of what was then known as the Macfarlane Burnet Centre for Medical Research, recounts his early years with the Institute.
A compromise was reached and it was agreed that I could proceed – provided that the new entity remained under the effective control of the hospital Board and had the same Chair.

The original Board comprised Geoffrey Connard, John McQuay, Ron Lucas, and myself as Director. It was decided that the Centre should focus on our greatest strength, virology. Our point of differentiation from other research institutes would be a focus on ensuring that advances in basic research were translated into lasting health benefits, especially for people in the developing world.

Following Sir Mac’s death in 1985, I wrote to his widow asking permission to name the Centre after him and received a positive response.

GROWTH AND EXPANSION

With the prestige and reputation of Mac’s name and the laboratory, we attracted a number of important patrons, including the Chancellors and Deans of Medicine from Melbourne and Monash Universities and the Governor General. The Centre was formally launched in 1986 by the then Federal Health Minister, the Hon Neil Blewett, MP. The next step was to try and raise some money to endow a number of positions for full-time researchers.

Richard Pratt, the well-known philanthropist, accepted the challenge of raising $3 million for the Centre, which was then known as the Macfarlane Burnet Centre for Medical Research. Dick was both persuasive and effective; within 18 months we had reached our target and were able to make our first new appointment: Suzanne Crowe. Richard’s involvement had further benefit in that it introduced Graeme Hannan to the Centre. Graeme was to become the first independent Chairman of the Board and a major force in its survival and successful relocation to The Alfred hospital precinct after The Fairfield Hospital was closed.

I also had a number of other roles both on the campus and with the Government, directing the virus laboratory, the NHMRC Special Unit for AIDS Virology and the National HIV Reference Laboratory, as well as being a member of the AIDS task force. The hospital Board agreed to lighten my load and Richard Doherty, a brilliant young physician researcher then at Harvard on a Fulbright scholarship, was recruited to fill the role of Deputy Director.

By 1989 it became evident that the clinical service provided by Fairfield hospital was threatened by the emergence of sophisticated infectious diseases units in the major teaching hospitals; I became convinced that it would be better for the Centre to have a Director who was not employed by the hospital, but could represent its interests separately.

In 1990 I resigned to take up the position of R&D Director at the Commonwealth Serum Laboratories; the Director, Brian McNamee, allowed me to continue to assist the Centre part-time until a new Director was appointed. The Board, chaired by Graeme Hannan, recruited Professor John Mills as the new Director in 1992.

One of the first babies to benefit from Burnet’s inaugural immunisation program in Lombok, Indonesia, circa 1986.

CONTRIBUTION TO SCIENCE

During the 1970s Ian Gust used new techniques of immune electron microscopy with colleagues to conduct a series of important studies on viral hepatitis. These studies led to:

- the first identification of hepatitis A virus in patients with naturally acquired disease
- a series of class-specific diagnostic assays
- biophysical characterisation of the hepatitis virus
- pioneering studies on the epidemiology of hepatitis B in the Western Pacific region
- the world’s first universal Hepatitis B immunisation program, which was conducted in Nauru.

In 1978 during a sabbatical year at the US’ National Institutes of Health (NIH), Professor Gust also succeeded in adapting an Australian strain of hepatitis A Virus (HM175) to growth in cell culture, attenuated it by serial passage, characterised the changes at a genetic level and demonstrated that the attenuated virus would protect both marmosets and chimpanzees from challenge with wild virus. NIH subsequently licensed this technology to GSK, which used it to develop the world’s first hepatitis A vaccine, Havrix™.
1986–2011

FROM BURNET’S BEGINNINGS:
RECOLLECTIONS FROM THE PAST 25 YEARS

AUTHORS: ASSOCIATE PROFESSOR GILDA TACHEDJIAN, PROFESSOR SUZANNE CROWE, AM, ASSOCIATE PROFESSOR DAVID ANDERSON

The Macfarlane Burnet Centre for Medical Research (MBCMR) was formed in 1986 with the aim of undertaking research to understand the basic biology and epidemiology of virus infections of public health importance, building on the seminal achievements of Professor Ian Gust and his colleagues. The ethos of medical research underpinning practical action and public health outcomes is especially important for the developing world; the mission of the MBCMC, later renamed the Burnet Institute, remains focused on this goal.

We have been part of Burnet from its early days at Fairfield Hospital, through relocation to The Alfred hospital campus in 2002, merger with the Austin Research Institute in 2006, and completion of our new expanded facilities in The Alfred Centre in 2009. We have been honoured to have had the outstanding leadership of Professors Ian Gust, John Mills, Steve Wesselingh, Mark Hogarth and Brendan Crabb over this time. The one thing that has not changed is Burnet’s mission – and it is our privilege to have the opportunity to contribute to its fulfillment.

Prior to 1983, the Virology Department of Fairfield Hospital had very active research programs focused on respiratory viruses, gastroenteritis (rotaviruses) and the then-known hepatitis viruses (hepatitis A and hepatitis B). This focus quickly expanded to include AIDS, first seen in small numbers of patients in 1981 in the USA and in 1982 in Australia.
David Anderson speaks with Governor General the Rt Hon Davis McCaughey about his hepatitis work, circa 1987.

Above: Gilda Tachedjian (left) and Carolyn Luscombe, circa 1990.

THE CAUSATIVE AGENT OF AIDS

HIV, the causative agent of AIDS, is a novel retrovirus that was first identified in 1983, but it was quickly recognised that this was the beginning of an epidemic of global importance. By 2004, HIV deaths peaked at 2.1 million per year and an estimated 33 million adults and children were living with HIV infection worldwide at the end of 2010.

In the early days of Burnet, laboratory studies of HIV were focused on characterising local HIV isolates and understanding how the virus enters and replicates in specialised white blood cells. Studies were performed to identify drugs that block HIV replication in the test-tube, how the virus becomes resistant to these drugs, and the study of HIV infection in patients. In the years before effective antiviral therapies became available, we were all able to see first-hand the devastating effect of HIV on patients – which is sadly still the case for many infected patients in developing countries. Many of our HIV researchers were privileged to have close interactions with the Fairfield Hospital clinicians who cared for HIV-infected patients, providing an added focus to the importance of our work. As one example, collaborative studies between Burnet and the Fairfield Hospital in 1991 provided what remain as the definitive guidelines on the appropriate use of antibiotics to prevent the opportunistic infections that define AIDS.

The first HIV antiviral drug, zidovudine or AZT, was approved in 1987 and provided enormous clinical benefit to previously ill patients, but over the following years it became clear that HIV could quickly become resistant to this and other drugs. Drug resistance has been a major focus of Burnet's research since that time, with seminal discoveries of many viral mutations that are responsible for drug resistance. The later availability of new classes of HIV drugs has led to the use of triple combination therapy or HAART, resulting in a substantial decrease in the morbidity and mortality of AIDS in developed countries since its introduction in 1996.

It has also been shown that antiviral drugs may prove useful in the prevention of HIV transmission. Microbicides are agents that can be applied topically to prevent infection with HIV and other sexually transmissible infections (STIs), and a landmark trial in 2010 demonstrated that a gel containing the antiviral drug tenofovir protects women from acquiring HIV from men. Since 2004, Burnet researchers in collaboration with Starpharma Pty Ltd have been developing a microbicide based on dendrimer nanoparticles, which block HIV and other viral STIs from entering cells, and it is hoped that further studies combining the dendrimers with specific antiviral drugs will provide an important tool in HIV prevention.

With the advent of drug therapy came the need for better markers to monitor how well the drugs were working. One of these markers is to measure the amount of virus in patient blood, often referred to as 'viral load'. 1991 saw the establishment of the Clinical Research Laboratory at Burnet, initially to perform CD4 tests, and subsequently in 1996 HIV viral load testing for patients in Victoria and Tasmania, and in 1999 the establishment of genotype (drug resistance) testing. These tests have been invaluable for guiding clinical treatment in patients and have provided a bank of more than 44,000 plasma samples for research use. Underscoring the vital role of the Clinical Research Laboratory in the region, it was accredited in 2008 as a World Health Organization Regional HIV Drug Resistance Laboratory for the Asia-Pacific Region.

In 1995, Burnet researchers characterised the genome structure of a weakened HIV strain originating from a blood transfusion donor and which was also present in a cohort of six blood or blood product recipients.

**AN INNOVATIVE APPROACH**

CD4 tests that monitor the immune system and determine when to initiate HIV therapy generally require expensive equipment and highly trained technical staff and can take days to report a result. Burnet has developed a low cost, point-of-care CD4+ T-cell assay, which is instrument-free and currently undergoing field trials. A regular CD4+ test would cost $10-70 compared to around $2 for Burnet’s test. This innovative approach was lauded in 2010 by Michele Sidibé, Executive Director of UNAIDS, as being an important breakthrough in expanding access to anti-HIV drugs for individuals in resource-poor countries.
who remained disease free for many years. The researchers found that the virus harboured defects in an essential gene called ‘Nef’, demonstrating its vital role in the development of AIDS. This provided the basis for a concerted attempt to develop an attenuated vaccine to prevent HIV infection, though ultimately without success.

**VIRAL HEPATITIS**

Hepatitis (liver inflammation) is caused by several different viruses acquired through either contaminated water or food (hepatitis A and E), or blood and other body fluids (hepatitis B, C and D). Hepatitis A, known as ‘infectious’ hepatitis and hepatitis B, the ‘serum’ hepatitis, were major areas of research at Burnet in its early years. Vaccines are now available to prevent hepatitis A and hepatitis B, with Fairfield Hospital and later Burnet playing significant roles. The first hepatitis A vaccine, Havrix, was based on the HM175 virus strain isolated at Fairfield, and further developed at the US NIH. At the same time, studies on the island of Lombok, Indonesia by Tilman Ruff and his colleagues provided a vital evidence base for the integration of universal hepatitis B immunisation into the routine immunisation schedule. This work provided a model for hepatitis B immunisation now used throughout the developing world, and also provided a very concrete example of the need to combine both public health and biomedical approaches to disease control, which remains an important part of Burnet’s approach.

In the mid-1970s, it was recognised that viruses other than hepatitis A and B were capable of causing hepatitis; known for many years as ‘Non-A, Non-B’ hepatitis. These viruses were finally identified in 1989 (hepatitis C) and 1990 (hepatitis E), a very exciting time in hepatitis research. Hepatitis E (HEV) is now recognised as a significant public health problem in the developing world, responsible for large outbreaks of acute hepatitis and high mortality in pregnant women. In the early 1990s, the tests available to detect HEV infection had very poor sensitivity. Studies at Burnet in collaboration with Professor Zhuang Hui and Dr Fan Li from Beijing Medical University led to the identification of a novel HEV protein that was incorporated into improved laboratory-based tests. These tests were used in 1995-96 to determine the prevalence of HEV infection in Nepal in collaboration with the then Epidemiology and Social Research Unit at Burnet and Dr Iswar Lal Shrestha in Kathmandu. This led to the recognition that HEV was the leading cause of acute hepatitis in that country. The laboratory-based test was subsequently developed into a new ‘point-of-care’ rapid diagnostic test in collaboration with AMRAD ICT, and both tests were commercialised in 2005. This experience also provided the impetus for the current Burnet programs in development, of point-of-care tests for syphilis and other disease markers.

Hepatitis C (HCV) currently infects an estimated 170 million individuals worldwide with up to 20 per cent of infections leading to liver cirrhosis and the associated risk of hepatocellular carcinoma. Unlike HIV, many patients are able to clear HCV infection, suggesting that an HCV vaccine is feasible, but the diversity of HCV strains has been a major hurdle. Work at Burnet over the past four years has led to the development of a novel form of HCV envelope protein that may overcome this hurdle, and forms the basis of extensive, ongoing studies to develop an effective vaccine. Burnet’s work in both HEV and HCV provides good examples of basic research studies being translated into practical outcomes, eventually allowing these benefits to reach patient populations worldwide.

**MEDICAL RESEARCH. PRACTICAL ACTION.**

A defining aspect of work at Burnet has always been the dual approach of biomedical research and public health, together with strong engagement with at-risk communities in Australia and overseas. Despite the absence of effective vaccines or permanent cures for HIV, much progress has been made in controlling the spread of the epidemic through public health approaches. The work of Nick Crofts and later Rob Moodie, Margaret Hellard, Robert Power and their many colleagues at Burnet has been instrumental in helping control the spread of both HIV and hepatitis C. The very early adoption of needle and syringe exchange programs in Australia has contributed to the low incidence of HIV in injecting drug users and the general population compared to other countries. These and other successful approaches are being progressively implemented through Burnet’s programs throughout the developing world.
In planning for the next five years, we took the opportunity of looking back at the issues that have defined the Institute over the past 25 years. We then set about matching the expertise, interests, passions and values developed over that time with local and global health priorities as they are today. As a result, we developed a new Institute mission statement: to achieve better health for poor and vulnerable communities in Australia and overseas, through research, education and public health. This statement emphasises the particular communities we serve, and provides the flexibility to respond to changing health needs. It also embraces the Institute’s unique mix; especially the two-pronged research and public health approach that allows us to address the same health issue at any point along the basic research to health intervention spectrum. This enables us to address complex global health problems such as HIV, hepatitis C and malaria, because current intervention tools are insufficient to control these diseases. In practice, this means we can be busy building the capacity of affected communities to implement the best available health interventions, while at the same time, our research teams are discovering better and more accessible ways to address these same health concerns.

As part of our strategic planning process specific objectives were identified that will create a greater focus and more critical mass, and provide additional synergies across the research to public health spectrum. We will address six major health themes, three...
of which have a particular population focus (Maternal and Child Health; Sexual and Reproductive Health and Young People’s Health), and three with a more technical focus (Infectious Diseases; Alcohol, Other Drugs and Harm Reduction; and Immunity, Vaccines and Immunisation). Each of these should be seen in the context of resource poor or otherwise disadvantaged and vulnerable communities.

**Infectious Diseases** are a major global issue with more than 11 million people dying each year, the majority of these young children. HIV continues to be a major focus of the Institute, with more than 50 per cent of our work addressing the laboratory-based research and public health aspects of the disease. Other significant infectious diseases such as malaria, hepatitis viruses especially hepatitis C, and new and emerging diseases such as influenza and multi-drug resistant tuberculosis continue to challenge our researchers and public health staff to find ways to reduce their impact. Issues such as prevention and treatment of disease through new and improved vaccines and therapies, development of new rapid diagnostic tools which help manage patient care, and a greater understanding of how microorganisms invade the body, replicate and cause disease are major areas of our work. In addition, we need to understand the impact that climate change might have on infectious diseases, especially those mosquito-borne diseases such as malaria and dengue fever.

**Alcohol, Other Drugs and Harm Reduction** are major issues which face many communities, both as risk factors in acquiring infections and as significant health problems. Burnet provides evidence-based data, which informs policy development and identifies innovative ways to create behaviour change. Alcohol and drug misuse can lead to the spread of blood-borne infectious diseases such as hepatitis C, as well as HIV and other sexually transmissible infections. Burnet and its collaborating partners have recently received a $2.5million NHMRC grant to establish a Centre for Research Excellence into Injecting Drug Use. The Centre will generate new evidence on ways to reduce the high level of health problems and social harm in the community as a result of injecting drug use and develop tools for translating research into policy and practice.

**Immunity, Vaccines and Immunisation** play a critical part in developing new ways to prevent or treat major infectious diseases, cancers and autoimmune diseases such as rheumatoid arthritis and lupus. Understanding the immune system and immunity underpins the development of new and improved vaccines and leads to

---

*Burnet has been working to implement an antiretroviral therapy program for people with AIDS in Myanmar.*

*Youth-friendly health services make a difference to adolescent health in Vanuatu.*
the development of programs by which these can be effectively delivered into the community. The Institute has been part of a very successful program on measles immunisation in PNG and hepatitis B vaccination in Indonesia; has a major research program identifying malaria vaccine candidates; has a patented candidate vaccine for hepatitis C under development; and clinical trials are underway with therapeutic vaccines against breast cancer.

 › **SEXUAL AND REPRODUCTIVE HEALTH** is a fundamental issue for women throughout the world, which impacts from adolescence through to old age. Our work in this area encompasses research and public health programs which focus on building the capacity of health systems to address women’s health across the broad spectrum of: family planning, sexual health, infectious diseases such as HIV and other STIs, pregnancy, and women’s health in emergency settings.

 › **MATERNAL AND CHILD HEALTH** is an important issue in resource-poor communities where women are more likely to die during or after childbirth and newborn or infant mortality is high. Burnet will work with communities to: increase access to information and services, strengthen the capacity of health systems to provide quality care, and support the development of programs focused on vaccination of newborns and young children against common diseases such as measles and hepatitis.

 › **YOUNG PEOPLE’S HEALTH** is an important part of Burnet’s focus because they can be vulnerable to a range of infectious diseases such as HIV, hepatitis C and sexually transmissible infections as a result of alcohol and drug use, and risky sexual behaviour. Our work with young people uses innovative research approaches to understand risk and various behaviours, and to develop strategies to reduce the transmission of disease.

 Other thematic areas that will grow over time will include a greater focus on the complex issues associated with Australian indigenous health. In addition, we will build our capacity and expertise to deal with the threat of new, emerging and re-emerging infectious diseases.

 We are now very focused and excited by what’s ahead for Burnet. We have both a plan and a resolve to improve the health of communities that need it most.
Over the past 25 years, philanthropic support from the community has been instrumental in helping Burnet understand, treat and prevent diseases of global significance. We share here with you recent philanthropic initiatives made possible by committed individuals and organisations, helping us to make a sustainable difference to people’s health.

**Blain Bequest Celebration**

On 9 June 2011, Burnet hosted a visit from 11 friends and relatives of the late Robert (Bob) Blain, a long-term donor to the Institute. Bob, who passed away last year, very generously left a significant bequest to the Institute. He was an inquiring, informed man, whose belief in the importance of medical research was a strong force during his long life. Bob is remembered as a friendly, happy, giving and generous man and we’re very proud and honoured that he thought so highly of the work of the Institute to leave such a legacy. During the celebration, and in honour of Bob’s support, plaques were unveiled in the foyer of both the Burnet Tower and The Alfred Centre’s Level 7. We will also present an annual Robert Blain Award as part of our excellence awards program, which will be held later this year.

**Healthy Mothers Healthy Babies Appeal**

Our 2010 Healthy Mothers Healthy Babies Appeal raised a total of $53,000. These funds are supporting the training of village health workers in remote parts of Papua New Guinea (PNG) to assist women in labour and are helping local partners provide clean delivery kits and important childhood vaccinations.

Funds raised are already generating tangible results. Health centre staff have been trained on birth dose vaccination and postnatal care and administration. We have conducted training with village health volunteers in six remote villages on recognising danger signs associated with birth. With volunteers sharing their knowledge with fellow community members and with 83 per cent of births being assisted with vaccination (compared to a local average of 18 per cent), the chance of survival of newborns and their mothers is improving throughout the region as a result of this program and the generosity of our benefactors.

**PHILANTHROPY IN ACTION**

"Our volunteers are a lifeline for many women and newborns in PNG."

Dr Chris Morgan (above) with East Sepik Health Volunteers.
In June this year, Burnet launched its Medical Equipment Appeal. We feel heartened by the positive response received thus far and are grateful to all who have contributed to this important initiative.

Burnet performs some of the world’s most advanced medical research. Such research requires the best minds as well as state-of-the-art laboratory equipment if it is to transform the lives of poor and vulnerable communities.

Philanthropic support of all kinds enables us to use this intellect and equipment to their highest possible potential.

Specifically, gifts received as part of this Appeal will enhance our capacity to develop new therapies against HIV/AIDS and malaria by upgrading our cell imaging facilities and acquiring a high performance centrifuge.

Competitive research grant schemes do not normally support this type of endeavour. That is why community support is crucial.

If you would like to support the Appeal and have not yet had the opportunity to do so, please complete the attached coupon and return to us in the enclosed envelope.

The future of medical science starts with you. Thank you for your support.

THE JIM AND MARGARET BEEVER FELLOWSHIPS

It has been widely reported that Australia faces a constant battle to retain its brightest stars, particularly in the period after graduation and before they have published major articles.

Shortly after the establishment of the Burnet Institute in 1986, Jim Beever generously donated the M. Florence Beever Memorial Bequest, providing a partial scholarship to Burnet to support the completion of a PhD by Elizabeth Grgacic (co-funded by NHMRC). Elizabeth worked with Dr David Anderson in studying the replication of the duck hepatitis B virus (DHBV), followed by a very successful postdoc with Heinz Schaller in Heidelberg, Germany.

Elizabeth then returned to the Burnet Institute and has continued studies of the hepatitis B virus, as well as being extensively involved in research and development of a novel virus-like particle (VLP) vaccine technology based on DHBV. This technology is now the subject of a granted US patent and is now licensed to ARTES Biotechnology, Germany.

Elizabeth’s current work at Burnet focuses on a different VLP approach that she has developed, which holds particular promise in
the search for effective vaccines against HIV, and may also prove useful for influenza and other diseases.

Jim and Margaret Beever had a very clear and focused sense of philanthropy. After several conversations and visits to us here at Burnet, Jim declared his intention to bequeath Burnet a legacy in support of infectious diseases.

The Bequest from the Jim and Margaret Beever Foundation will provide funding in perpetuity for postdoctoral researchers. This will provide surety in the long-term planning and development of research projects as well as being a vital step on the career path of brilliant young scientists.

Professor Brendan Crabb described Jim Beever’s legacy as an extraordinary gift to Australian medical science, which will make a very great contribution to the stability and continuity of this Institute’s crucial work in infectious disease for many years to come.

**Ian Potter Foundation**

$750,000 granted in May 2011

We are extremely grateful to the Ian Potter Foundation who recently announced that Burnet was successful in their competitive submission to fund the establishment of the Malaria Research Laboratory. The donation of $750,000, which is the largest Ian Potter Foundation medical grant made in 2011, will fund the laboratory fit-out and high-technology equipment to house Dr James Beeson and his team of malaria researchers in the broader context of our malaria vaccine program. It will also support the purchase of equipment for the wider Centre for Immunology, with more than 60 staff and students that Dr Beeson will head. The Malaria Research Laboratory will be based on the 7th floor of The Alfred Centre. Congratulations to everyone involved in the success of this grant!

**Ivy H Thomas & Arthur A Thomas Trust – Equity Trustees**

$52,000 over two years granted in December 2010

Since 2006, the Burnet Institute, supported by the Ivy H & Arthur A Thomas Trust as administered by Equity Trustees Limited, has been working to improve the sexual health and education of female sex workers. As a result of this partnership, young women in the provinces of Vientiane and Sayabouli (Lao PDR) have been provided with the information and skills required to protect themselves from HIV and other sexually transmitted infections.

With high turnover in the sex industry and new young women constantly arriving in the target areas, a two-year continuation and expansion of the program in Vientiane Province has become vital in ensuring the continued education and tailored behavioural interventions to enable these women to protect their own health and reduce infections.

This can now happen, with thanks to the valued support of the Ivy H & Arthur A Thomas Trust.
Since the beginning of his career, a very large part of Professor Ian Gust’s work had been in working on international health issues, as an extension of his building of the virological capacity at Fairfield Hospital. This commitment to make a difference, led Ian to support Dr Nick Crofts to spend a year on a National Health and Medical Research Council (NHMRC) Fellowship at the Communicable Diseases Surveillance Centre in London, and then for a year with the AIDS Branch at the Centers for Disease Control (CDC) in Atlanta.

Arriving back in Australia in 1989, Nick began a new Unit at the Macfarlane Burnet Centre for Medical Research (MBCMR) called the Epidemiological Research Unit, built around a surveillance program for HIV and other sexually transmissible infections (STIs) for Victoria. He received his first NHMRC research grant – VICS, the Victorian Injecting Drug Users’ Cohort Study – which, while it was designed to monitor and investigate HIV transmission among people who inject drugs, was in danger of failing – for lack of HIV! But in 1990 a test for antibody to the hepatitis C virus became available – and a program of research was born, investigating the detailed epidemiology of the hepatitis C virus.

While this domestic focus was building, the desire to establish an international health arm of Burnet was also growing strong. Nick had met with Dr Mike Toole, then working at CDC, and promised him an international health focus in Melbourne for him to come back to – at that time there was none. The opportunity came when Dr Rob Moodie was looking to return from Harvard where he had been on a Fellowship completing his Master of Public Health.

Rob started working on HIV/AIDS projects with Dr Tamara Kwarteng in 1992 and together with Dr Tilman Ruff and Dr Bev Biggs who were working on hepatitis B vaccination in Indonesia, a small International Health Unit began. Supported by Trish Clark, the Unit brought in such talented people as Bruce Parnell, Dr Peter Deutschmann, Dr Mike Toole and Dr Wendy Holmes. The first major project was a large five-year HIV prevention program in Indonesia, which was led by the late Kathleen Kay and Felicity Young, now a senior figure at RTI International. Mike took over as head of the Unit in 1995 and began building the Centre for International Health into a major force on the Australian health and development landscape.

From these small beginnings, the public health programs at the Burnet Institute now account for over half of the Institute’s work. With more than 200 staff and offices in eight countries, the Institute’s public health programs cover the six major themes of the Institute which include: infectious diseases, sexual and reproductive health, young people’s health, alcohol, other drugs and harm reduction, maternal and child health, and immunity, vaccines and immunisation.
HIV researcher Associate Professor Paul Gorry has been presented with the 2011 Gust-McKenzie Medal which is awarded to a mid-career Burnet Institute staff member in recognition of excellence in research and/or public health.

Associate Professor Gorry has spent all but three years of his career at the Institute, coming here as a research assistant in 1994, completing his PhD and then heading to the US for three years at Harvard Medical School before returning to Burnet to set up his own group in 2002.

“My research aims to understand the very earliest steps in the HIV life cycle, which is principally how the virus attaches to cells – a very complex mechanism,” Associate Professor Gorry said.

“The Centre consists of representatives from the Burnet Institute; the National Drug and Alcohol Research Centre, University of New South Wales; Turning Point Alcohol and Drug Centre; National Centre in HIV Epidemiology and Clinical Research, University of Queensland; and the National Drug Research Institute, Curtin University.”

The Centre will generate new evidence on ways to reduce the level of health problems and social harm in the community as a result of injecting drug use, and develop tools for translating research into policy and practice.

Led by Burnet, the Centre connects Australia’s leading researchers on injecting drug use and related areas, including blood-borne virus epidemiology and treatment (particularly hepatitis C), overdose prevention, justice and psychiatric health.

Head of Burnet’s Centre for Population Health, Associate Professor Margaret Hellard said that despite the considerable overlaps between injecting drug use, blood-borne viruses, justice health and mental illness, researchers in these fields have mostly worked in isolation and the resultant ‘siloing’ of research and service provision has slowed progress in this area.

“A Centre focused on injecting drug use will draw together an outstanding research team and build on innovative studies currently underway. This new Centre is an ideal mechanism to consolidate Australia’s reputation as a world leader in the development of evidence-based approaches to reducing the harms of injecting drug use,” she said.

In recognition of their outstanding contribution and commitment to the work of the Burnet Institute, head of Virology, Professor Suzanne Crowe, Board Chairman Mr Alastair Lucas and Board Director, Ms Natasha Stott Despoja have each been awarded a Member of the Order of Australia (AM) in the Queen’s Birthday Honours List.

Professor Suzanne Crowe was recognised for her service to medical research in HIV/AIDS medicine and infectious diseases as an academic, clinician and researcher, and to professional associations.

Mr Lucas, who is also Vice Chairman and Managing Director of Goldman Sachs Australia, was recognised for philanthropy and service to the medical research community, his contribution to the finance and banking sector, and wildlife conservation.

Former Democrats Leader and Burnet Board member since 2008, Ms Stott Despoja, was recognised for her service to the Australian Parliament, education and as a role model for women.
VIRUS RESEARCH

From its establishment in 1986, Burnet has had a major focus on gaining an understanding of ‘how viruses work’, combining classical research techniques with new technologies in molecular biology, and using this knowledge to improve the control of viral diseases of global significance, such as HIV and the hepatitis viruses.

The technologies available for studying viruses have grown enormously over the past 25 years, with molecular biology allowing us to characterise viruses in great detail, and genomics and proteomics allowing us to probe the effects of viruses on cells. However, the ability to ‘grow’ viruses in the laboratory remains a fundamental part of our research, especially in work on antiviral drugs and vaccines.

FROM VIRUSES TO DRUGS AND DRUG RESISTANCE

The use of single antiviral drugs against HIV had clinical benefit, but quickly led to drug-resistant strains. The development of combination therapies that are in use today would not have been possible without a detailed understanding of the virus replication cycle, and the genetic mutations that lead to drug resistance. This has been enabled by the molecular biology techniques of ‘reverse genetics’, where individual mutations can be introduced into the cloned genome of the virus and the effects on virus growth, drug resistance, or other functions can be studied in isolation. Burnet research has made major contributions to the understanding of HIV drug resistance and targets for combination therapy, providing direct clinical service to patients in Victoria and Tasmania, and increasing the capacity of developing countries to make effective use of antiviral drugs. The effective introduction of new drugs against hepatitis C virus will greatly benefit from what has been learned about HIV.

TARGETS FOR VACCINE DEVELOPMENT

Effective vaccines must either kill the virus, and/or kill the cells infected with the virus. Hepatitis C and HIV have the ability to rapidly mutate to avoid such killing, but detailed studies of the structure and function of key proteins in hepatitis C virus have revealed conserved parts of the virus, which may allow us to overcome this problem in vaccine development. This work relies on molecular biology in the construction of modified viral proteins, but also more ‘classical’ virology techniques to measure the effectiveness of antibody responses in killing the virus. This underlies the importance of studying the whole virus.

IMPROVED DIAGNOSTICS FOR THE DEVELOPING WORLD

Effective use of vaccines, drugs and other public health measures depends on accurate detection of viral infections. Molecular biology has given us tools to amplify viral genomes from patient samples, greatly improving the detection of many viruses such as hepatitis C – which has proven to be far more widespread than we could have suspected 25 years ago. The development of simple, sensitive and specific tests for use at point-of-care has also greatly advanced, and is now providing tools that can be used to provide an equivalent standard of care to the most disadvantaged populations of the world, without the need for complex and expensive laboratory infrastructure.

THE NEXT 25 YEARS

Viruses will remain a major public health issue in the future, exacerbated by the emergence of new diseases, such as the current outbreak of hendra virus in Queensland, and the re-emergence of old diseases, such as dengue fever.

Burnet will continue to use both cutting-edge technologies and traditional techniques to better understand and control viruses, with a focus on practical solutions that can benefit the most disadvantaged populations of the world.
IMMUNOLOGY AND VACCINE DEVELOPMENT

The 1980s saw the development of simple, effective vaccines that protected against hepatitis B, and then hepatitis A. It has taken however, most of the past 25 years for these vaccines to reach those most at risk of disease: those in the developing world, and poor and marginalised populations worldwide. Meanwhile we still remain without effective vaccines against HIV, hepatitis C and tuberculosis.

The past 25 years have seen an explosion in our understanding of the molecular mechanisms of the immune response, and yet the effective vaccines that are in use today were mostly developed without this knowledge.

There are three main areas of vaccine development and vaccine-related immunology that have been central to the work of Burnet, and the Austin Research Institute prior to our merger in 2006.

UNDERSTANDING IMMUNE RESPONSES FOR VACCINES

Almost all vaccines available today rely on the development of antibodies to protect against disease, but antibody is unlikely to be enough for HIV, hepatitis C or malaria. Burnet researchers have studied the cellular and antibody immune responses of patients, as well as the structure of the viruses and parasites, to understand what immune responses may be effective in a future vaccine. Progress has been made in hepatitis C, with the recent development of a candidate vaccine that induces strong antibody responses against diverse strains of the virus in pre-clinical studies, and in malaria where the target parasite proteins for protective immunity are being identified. Vaccine development has also become more highly regulated over the past decades, and Burnet has established its ImmunoMonitoring Facility, unique in Australia in its ability to provide the complex testing essential for modern-day vaccine development and regulatory approval.

NOVEL VACCINE APPROACHES

When antibody is not enough for a vaccine, novel approaches are required that often build on a detailed understanding of mechanisms underlying the cellular immune response. Our research has identified a number of pathways that can lead to improved immune responses, such as the use of synthetic or virus-derived particles of specific sizes that are optimally recognised by dendritic cells, the key gatekeepers of immunity. Of particular promise is the use of modified carbohydrates to target proteins to these same cells. This technology now forms the basis of commercially-funded work to develop vaccines against cancer using either technically difficult ex-vivo cell therapies, now in late-stage clinical trials, or in-vivo approaches that may in the future provide benefits to patients lacking access to first-world medical care.

THE NEXT 25 YEARS

Vaccines remain one of the most cost-effective tools for improving health, and Burnet’s combination of basic and applied research together with public health programs makes us uniquely placed to contribute to the discovery, development, and implementation of vaccines against priority diseases worldwide. The global eradication of polio and measles through improved delivery of existing vaccines remains an important goal.
Nick Crofts came to the Burnet Institute in 1989 to establish the Epidemiology and Social Research Unit (ESRU). The initial aim of ESRU was to link Burnet’s laboratory-based HIV research with HIV epidemiology to better understand the drivers of HIV infection in the early days of the epidemic in Australia. Nick recognised that a multidisciplinary approach was needed to solve complex public health problems; the Victorian Department of Health agreed and engaged ESRU to run HIV surveillance for Victoria (a core task it performs to this day).

After the establishment of ESRU, the Burnet Institute’s public health activities began to grow rapidly both locally and internationally. The international work soon took on a life of its own, leading to the formation of a separate Centre for International Health (CIH – headed briefly by Rob Moodie, and ever since by Mike Toole). While ESRU retained a strong focus on HIV, it began to conduct research and evaluation aimed at hepatitis C, hepatitis B, and sexually transmissible infections (STIs). Behaviours and social contexts that impact on disease transmission also became research foci, and ESRU’s work expanded into the fields of drug and alcohol use, justice health, adolescent health and health promotion. Increasing demand for expertise in the field of drug-related harm reduction led to the establishment of a Centre for Harm Reduction (now part of CIH) in 1997, and ESRU staff members were soon conducting research, training and advocacy in Asia and internationally. Following the move to the AMREP precinct in 2002, ESRU became the Centre for Population Health (CPH) and, under joint centre heads Associate Professor Margaret Hellard and Professor John Reeder, expanded its research activities to include malaria and influenza, and its disease surveillance responsibilities expanded dramatically to encompass incident hepatitis C, chlamydia and other STIs.

Today the Centre for Population Health’s mission is 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, drug use and related behaviours. The Centre does this by undertaking novel, multidisciplinary work involving cutting-edge epidemiology, highest-quality laboratory science and excellent clinical and social research to address major health problems, all underpinned by strong public health principles.

Looking to the future, CPH remains committed to its focus on working with at risk and vulnerable communities as the most effective way to improve public health. In particular, CPH researchers aim to identify the key factors that put young people at risk of poor health outcomes and how these harms can be prevented. Exploring ways to reduce or avoid health problems in population groups which are already vulnerable or engaged in high risk behaviours will continue to be a CPH priority.

A world in which climate is changing and new drugs and diseases are emerging means there are exciting times ahead for CPH; our hardworking and innovative team of researchers is looking forward to making new contributions.
INTERNATIONAL HEALTH AND DEVELOPMENT

Six years after the Institute was founded, the International Health Unit was formed. Two years later, Burnet embarked on its first major overseas project – Healthy Start for Child Survival in Lombok, Indonesia. Since then, the number of Burnet staff working in what is now the Centre for International Health has grown to more than 180 based in Melbourne and seven developing countries.

One of the starkest examples of change has been the HIV pandemic, in 1986 a mere 46 cases of AIDS were reported in South Africa. By 2009, an estimated 5.6 million people were living with HIV and AIDS in that country, mainly young adults. We have seen significant HIV epidemics in Thailand, Cambodia, Burma (Myanmar), Papua New Guinea, and parts of India, China, and Indonesia. On the positive side, highly active anti-retroviral therapy was developed in the mid-1990s, which meant that a diagnosis of HIV infection was no longer a death sentence. However, it was not until the past five years that this therapy became affordable and available in low and middle-income countries.

A major milestone in 2000 was the adoption of the Millennium Development Goals (MDGs), three of which focus on health outcomes: maternal health, child health, and the three killer diseases - AIDS, tuberculosis, and malaria. The MDGs helped mobilise unprecedented resources for health development through new mechanisms such as the Global Fund to Fight AIDS, TB, and Malaria, the Global Alliance on Vaccines and Immunization, and the President’s Emergency Plan for AIDS Relief. The Bill and Melinda Gates Foundation, founded in 1999, provides around $800 million annually to global health programs, a budget comparable to the World Health Organization. These new funds have led to some tangible health outcomes in poor countries. For example, there were 800,000 fewer people newly infected with HIV in 2008 compared with 2000. Furthermore, five million people were on antiretroviral drugs in low and middle income countries at the end of 2010 compared with just 300,000 in 2003.

Nevertheless, major global health challenges remain. Progress on reducing maternal deaths has been disappointing. In a number of least developed countries, particularly in Sub-Saharan Africa, child mortality rates remain high and in some countries have risen due to the impact of HIV and AIDS. There has been slow progress in reducing child malnutrition rates, a situation exacerbated by rising food prices. While the number of children paralysed by poliomyelitis has decreased from 400,000 annually in the mid-1980s to fewer than 1,000 in 2010, eradicating this virus in a few remaining countries has been frustratingly difficult. We still do not have effective vaccines against three severe infectious diseases – pulmonary tuberculosis, malaria, and HIV. Finally, there are major changes in the environment affecting health – climate change, urbanisation, industrialisation, emerging infectious diseases derived from livestock, and a rapidly ageing population in many countries. Burnet continues to adapt to these new circumstances and commits to ever-increasing engagement with governments, development partners, and communities in some of the world’s poorest countries.

IN A NUMBER OF LEAST DEVELOPED COUNTRIES, PARTICULARLY IN SUB-SAHARAN AFRICA, CHILD MORTALITY RATES REMAIN HIGH...
The major personal achievement of my period was the establishment of the Centre itself, providing its initial vision and attracting a group of talented, young people to carry it forward.

The two major scientific achievements during my time were: firstly, the work on various aspects of hepatitis A including characterisation of the virus, establishing sensitive assays to detect class-specific antibodies, defining the epidemiology of the disease in various parts of the world, and the collaboration with NIH which led to development and licensing of the world’s first hepatitis A vaccine; and secondly, establishing a unit to study HIV which led to early availability of assays which could be used for diagnostic purposes, and to guide Government policy as well as generating important new knowledge.

In 1990 I took up the position as R&D Director at the Commonwealth Serum Laboratories, then a small government owned producer of vaccines and blood products. Shortly afterwards the organisation was privatised and I became part of an executive team charged with transforming it into a modern pharmaceutical company. This was achieved by focusing on core strengths in plasma fractionation, increasing expenditure on R&D and where appropriate, strategic mergers or acquisitions. CSL is now one of Australia’s largest companies with a market capitalisation of $20 billion and a research budget in excess of $300 million each year.

Since my ‘retirement’ in 2000 I have been a Professorial Fellow at the University of Melbourne and pursue a number of roles in the public and private sector. These include Chairing the Bio 21 Cluster, sitting on the Boards of Biota and Opal Holdings, The International AIDS Vaccine Initiative (in New York), The Paediatric Dengue Initiative (in Seoul), The International AIDS Vaccine Initiative (in New York), The Paediatric Dengue Initiative (in Seoul), and the Nossal Institute for Global Health and Australian International Health Institute (both in Melbourne).

In my spare time I travel, take photos, grow vegetables, play golf and delight in my grandchildren.

The success of Burnet over 25 years is closely linked with a history of dedicated and inspirational leaders and ambassadors. We asked our previous Directors, two of our current Board members, and some of our patrons and ambassadors to reflect on their time with the Institute.
Being Director of the Burnet Institute was a fantastic job and one of the most enjoyable times of my life. The aspect of Burnet that I most valued was the combination of bioscience and public health research in the same Institute. In addition, I greatly valued the ability that Burnet has to impact directly on the health of a community and play a critical role as an advocate for marginalised communities.

The Institute was also a very friendly place to work and I always enjoyed the opportunity to visit the labs and public health groups and catch up on what everyone was doing.

I started my directorship just after the Institute moved across from Fairfield to the new building at AMREP. This was a very important move initiated and led by John Mills and Burnet has benefited enormously – particularly being on the same site as The Alfred hospital, the Baker, and Monash University. Following the move, and the development of strong relationships with the AMREP partners, the next important outcomes were the merger with the Austin Research Institute (ARI) and the development of a plan that created further space for expansion of the Institute and consolidated our financial sustainability.

The merger with ARI broadened the capacity of Burnet and increased its critical mass. The extension of the new Alfred Centre provided both space for the ongoing rapid growth of Burnet and financial sustainability. These outcomes have been taken even further by Brendan Crabb and his leadership team, and looking at Burnet now I am extremely proud to have been associated with it.

The Austin Research Institute (ARI) joined with the Burnet Institute in 2006, but at its peak had more than 130 staff and students. ARI’s focus was primarily immunological but an emphasis on translational research. Future growth however was hampered due to space restrictions and redevelopment funding. The need for Burnet to develop its program in immunology to support its vaccine research, together with new facilities, meant a win:win for the ARI and Burnet merger. Senior researcher and later ARI Director, Professor Mark Hogarth and his team were first to recognise a polymorphism (in the mouse), make monoclonal antibodies, isolate the proteins and clone the genes. They were also first to crystallise an FCR molecule and define structure:function relationships. Other research described the variety of molecules present on the lymphocyte surface, a forerunner to today’s system of classifying cells’ surface molecules.

Research also included the early development of a candidate vaccine for breast cancer – promising research now in clinical studies. The transplantation unit made major advances in genetic engineering enabling the organs of pigs to be transplanted to humans (xenotransplantation) solving the problem of human organ shortage. Significant discoveries also included the development of cd46 transgenic pigs which express a human gen(cd46) inhibiting graft rejection. Research has subsequently proven that islet transplantation can ‘cure’ diabetes with survival, insulin free for greater than 12 months.

I’ve just mentioned a few of the research projects at Austin some of which are ongoing at Burnet, but we shouldn’t forget the work of the support staff who kept the ARI going, and are now doing the same at Burnet!

I am proud to be a Burnet Board member. This role combines my dual passions of human rights/social justice with science and research.

I relish the fact that I can look at the groundbreaking work going on in the laboratories and offices of Burnet, and then see the direct impact of our work in the field – be it in Australia or around the globe.

Last year’s “Burnet meets Parliament” – which celebrated the 50th anniversary of the Nobel Prize for Sir Frank Macfarlane Burnet – was also an opportunity to show our legislators and leaders the vital work we perform and to remind them of our origins.

The Institute proudly continues Macfarlane Burnet’s legacy with a focus on virology and immunology and an outstanding vision to address the health challenges of marginalised and poor communities in Australia and overseas.

An MRI and a NGO: there’s no doubt we’re unique!

The Burnet Institute is unique in that it combines a dual focus on first-rate laboratory science and the implementation of harm reduction strategies in efforts to decrease the toll of horrible infectious diseases like HIV. Operating both in this country and in the developing world, Burnet presents the very best face of Australian science and compassionate pragmatism to those who are trying to achieve positive outcomes in what can be extremely difficult social contexts. I am personally delighted to be associated with Burnet, and am enormously impressed by what has been achieved over these past 25 years.

The Institute is named in honor of Sir Frank Macfarlane Burnet, immunologist and nobel prize winner, pictured here circa 1965.

I had the privilege of working with Sir Frank Macfarlane Burnet in the 1970s, on a project concerning the role of older people in society. I was then the 38-year-old chair of the Australian Law Reform Commission. To me, the issue was substantially theoretical. Now it is real and practical; it just goes to show how Burnet was always ahead of the game.

At that time nobody knew of HIV or AIDS. I did not fully appreciate then the importance of immunology and the areas of science that Burnet had made his own. Now I am proud to be associated with the Institute that bears his name. It works at the cutting edge of the global scientific endeavour that will one day overcome HIV and AIDS. After 30 years we still do not have a cure or a vaccine. But just imagine how impossible our challenge would be, but for the tools that Burnet and others gave us in the understanding of immunology. His work lives on. Including in the Institute that proudly carries his name.
Being the Burnet Institute’s youth ambassador is a position that I am extremely proud of. The Burnet Institute does amazing work throughout the world impacting positively on a multitude of lives.

Being a professional footballer in the AFL means that we have the potential to use our circle of influence to raise awareness and make action on many things that plague our community both locally and globally.

My partnership with Burnet has broadened my understanding in relation to the extent of people that are vulnerable to the harsh realities of poverty and disease throughout the world.

However most importantly I have witnessed and come to understand first hand how much hope there is when empowering initiatives such as those facilitated by Burnet are implemented.

I feel inspired and honoured to be affiliated with the Burnet Institute.

HIV infects and affects many families and communities around the world. I feel, no matter how much scientific research is done on “the cure” or “medications to prevent and treat HIV” the main aim should be prevention. Prevention solves so much more than a cure.

The Burnet Institute impressed me, not only do they do the research, they also work at the grass roots level in the communities where HIV is on the increase. The Institute gave me the opportunity to travel to Papua New Guinea to see the Tingam Liap program in action. This program builds capacity and empowers communities at higher risk by providing them with knowledge and tools to better respond to the HIV epidemic. It humbled me to be introduced to not only the wonderful communities around PNG, but also to see the level of dedication of the locals committed to the HIV Prevention Programs.

I am proud to support an organisation that supports its community.

In 2010 I met Burnet Director and CEO, Professor Brendan Crabb and Board members Ross Cooke and Natasha Stott Despoja at three separate events. I became captivated by the organisation. Burnet’s expertise from a cellular level to a global level is unique, as is its passion and heart.

When Brendan Crabb offered to partner Princess Zulu and I in our 2011 Warrior Princess tour, designed to educate Australians about southern Africa’s HIV and AIDS pandemic, I was thrilled. I couldn’t wait for Princess to meet the team.

On her arrival Princess too became captivated by the heart of Burnet. As we toured the labs and met the world’s leading researchers and educators, we witnessed the brilliance that blends with the mighty heart.

New to the organisation I pay my respects to all who shaped its past. I am honored to be a Burnet Ambassador, a humbling community to belong to. I cheer on from the sidelines, excited with news of each new finding which I excitedly tweet across the world. I am honored with the opportunity to share Burnet’s future.

Harry (Heretier) O’Brien
AFL Player
Burnet Ambassador from 2008

Deanna Blegg
Elite Athlete
Burnet Ambassador from 2008

Princess Kasune Zulu
AIDS Activist and Author
Burnet Ambassador from 2011

Belinda Collins
AIDS Activist and Author
Burnet Ambassador from 2011
The Burnet Institute can assist you and members of your community realise a philanthropic vision. Your support of Burnet can make a tangible and lifelong difference in the lives of people affected by diseases of global significance such as HIV/AIDS, malaria, hepatitis, and tuberculosis. And being Australia’s only formally accredited medical research institute that is also an accredited non-government organisation, we pride ourselves on being able to invest philanthropic monies in the smartest possible way and where the need is the greatest.

**THE MANY WAYS YOU CAN SUPPORT US**

You can support Burnet through a number of avenues, depending on your personal or professional circumstances and philanthropic objectives:

- **Deferred giving** – where you formalise your intention to make a gift to Burnet at a time in the future through a bequest, annuities or life insurance.
- **Corporate giving** – Burnet can help your organisation achieve its corporate social responsibility objectives through workplace giving and sponsorship programs.
- **Single gift** in support of a specific project.
- **Gift** where payments towards a total amount are spread over a number of years.
- **Gift-in-kind** – a non-monetary gift such as works of art, equipment, expertise or your time. This kind of giving can be just as valuable as cash donations.

**CONTACT US**

For further information on how to make a gift to Burnet, please contact Mark Stewart, Head of Development, on +61 3 9282 2211 or email mstewart@burnet.edu.au.

---

**Overseas Offices**

The Burnet Institute has offices in Africa, South East Asia, the Pacific region and China (Tibet). For more information about our work overseas or to contact our international offices, please email info@burnet.edu.au or call us on +61 3 9282 2111.

**THAILAND – BURNET ASIA REGIONAL OFFICE**

**Bangkok**
Charoen Nakhorn Road Sai 15A, Room 15B
Klongtontsai, Klongsan, Bangkok 10600
Thailand

**BURMA (MYANMAR)**

No 226, 4th Floor, 226 Wizaya Plaza
U’Wisara Road, Bahan Township
Yangon, Myanmar

**CHINA (TIBET)**

Baofa Hotel, No 6 Hong Qi Road
Lhasa 850000, TAR China

**INDONESIA**

**Bali**
Jalan Raya Bypass Ngurah Rai No. 287
Sanur, Bali 80228 Indonesia

**Jakarta**
Jalan Taman Bendungan Asahan II No 7
Bendungan Hilir
Jakarta Pusat 10210, Indonesia

**LAO PDR**

SCL Co Ltd, Building No. 006,
Ban Sihom, Room 4B/01a,
Vientiane, Lao PDR

**MOZAMBIQUE**

Maputo
Praceta Tomas Nduca No 22
1st floor, Maputo Mozambique
Chimoio
Rua 16 de Junho, 360
Chimoio/Manica, Mozambique

**PAPUA NEW GUINEA**

Port Moresby
Motu Congregation, Boroko Dr, Uroro Cres,
5 Mile, Port Moresby
Kokopo
PO Box 1458, Kokopo Post Office
East New Britain
Wewak
c/o Save the Children Office,
PO Box 1383 Wewak, ESP,
Papua New Guinea