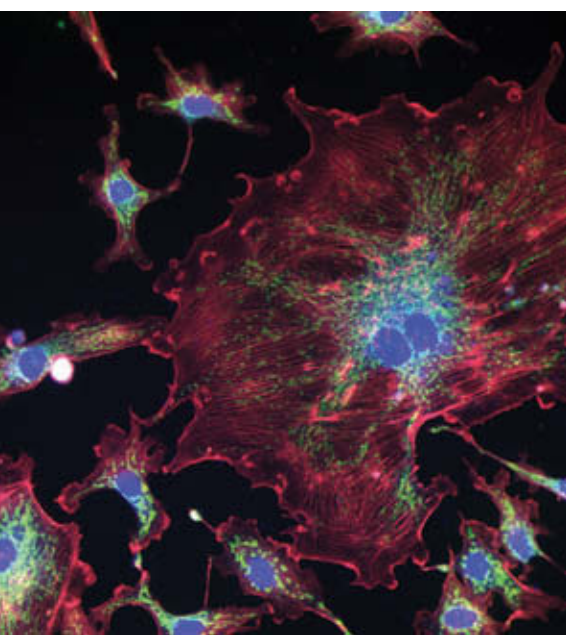


2010 - 2011

ANNUAL REVIEW



Alfred Medical Research and Education Precinct



Alfred Medical Research
and Education Precinct
www.amrep.org.au



The Alfred
www.alfred.org.au



Baker IDI Heart and
Diabetes Institute
www.bakeridi.edu.au



Burnet Institute
www.burnet.edu.au



Monash University
School of Public Health
and Preventive Medicine
www.med.monash.edu.au/sphpm



Monash University
Central Clinical School
www.med.monash.edu.au/cecs



Nucleus Network
www.nucleusnetwork.com.au



Australian Centre for
Blood Diseases
www.acbd.monash.org



Monash Alfred
Psychiatry Research
Centre
www.maprc.org.au



National Trauma
Research Institute
www.ntri.org.au



Australasian Cochrane
Centre
acc.cochrane.org



Australian Centre for
Health Innovation
www.healthinnovation.com.au



La Trobe/Alfred Clinical
School
www.latrobe.edu.au



Alfred/Deakin Nursing
Research Centre
www.deakin.edu.au

CONTENTS

- 2 About AMREP
- 4 Report of Chair, AMREP Council
- 6 Research Highlights
- 8 Research Outputs
- 10 Resources and Platform Technologies
- 13 AMREP Location and Site Plan

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Melbourne, Victoria 3004
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www.amrep.org.au

Acknowledgements

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Design by Liana Friedman and abCreative

The AMREP Research Report 2010 is
available from www.amrep.org.au

About AMREP

AMREP – Alfred Medical Research and Education Precinct – was established in 2002 as a partnership between Alfred Health, Monash University, Baker IDI Heart and Diabetes Institute and the Macfarlane Burnet Institute for Medical Research and Public Health (Burnet Institute). La Trobe University and Deakin University joined the partnership in 2005.

The AMREP partners have collaborated to achieve the construction of outstanding research, education and clinical facilities. The partners share resources such as the centrally located Ian Potter Library, education and seminar centre, and small animal facility. Several services are operated jointly, and a number of research platforms (page 10 of this report) have been developed for the benefit of all partners.

At AMREP, more than 1,500 researchers work across the spectrum from basic laboratory research to public health, epidemiology and clinical research. Much of the research is translational, whereby research findings from the laboratory bench are further developed to improve treatments and health outcomes in hospital and in the community. Co-location of the partner institutions has led to many highly productive research collaborations.

Research at AMREP is largely focused on the key clinical themes of

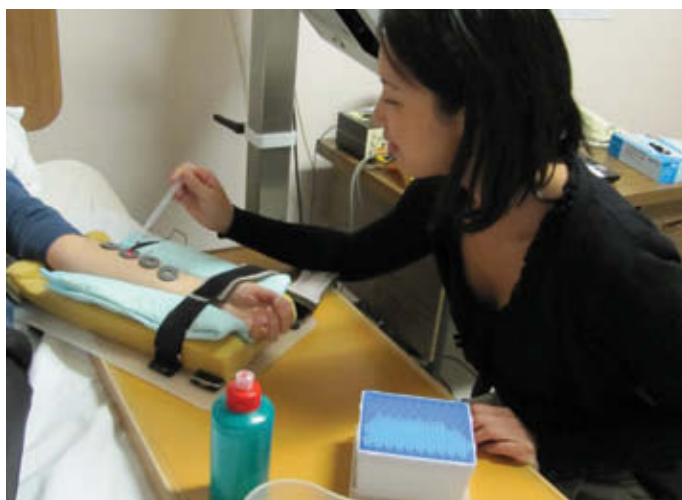
- Cardiovascular Disease and Diabetes
- Infection and Immunity
- Trauma, Critical Care and Perioperative Medicine
- Blood Diseases and Cancer
- Mental Health and Neurosciences

Details of AMREP's research programs and highlights are available in the 2010 AMREP Research Report (online at www.amrep.org.au) and in the annual reports of the partner institutions.

Over 300 students are currently completing higher degrees by research at AMREP; most of these are undertaking PhD studies through Monash University. AMREP runs an Honours Scholarships scheme, which was devised to attract outstanding students to complete their Honours year at AMREP.



Research physicist Wen Chuan-Dong aligns the MapCHECK phantom to check the delivery of William Buckland Radiation Oncology's new breathing motion compensated radiotherapy treatment.



Clinical Pharmacology PhD student Lavinia Tran conducts an iontophoresis study to assess vascular tone.

The AMREP Council

The AMREP Council is responsible for the overall management of AMREP and also has an important research governance role. The Alfred Human Research Ethics Committee, AMREP Animal Ethics Committee, AMREP Scientific Advisory Committee and operational working groups report to the AMREP Council.

Members in 2011

Andrew Way (Chair)
Chief Executive, Alfred Health

Professor Stephen Jane
Director of Research, Alfred Health and Head of Monash University Central Clinical School

Professor Steve Wesselingh / Professor Christina Mitchell
Dean, Faculty of Medicine, Nursing & Health Sciences, Monash University

Professor Hatem Salem AM
Director, Australian Centre for Blood Diseases, Monash University

Professor Garry Jennings AM
Director, Baker IDI Heart and Diabetes Institute

Hilary Bolton
Executive General Manager - Operations, Baker IDI Heart and Diabetes Institute

Professor Brendan Crabb
Director, Burnet Institute

Professor P Mark Hogarth
Director of Research, Burnet Institute

Professor Karen Dodd

Deputy Dean, Faculty of Health Sciences, La Trobe University

Professor Mari Botti

Professor, School of Nursing, Deakin University

Dr Lee Hamley

Chief Medical Officer, Alfred Health

Associate Professor Sharon Donovan / Janet Weir-Phyland

Chief Nursing Officer, Alfred Health

Professor John McNeil AM

Chair, The Alfred Human Research Ethics Committee

Dr Andrew Giddy

Chair, AMREP Animal Ethics Governance and Policy Committee

Professor Mark Cooper

Chair, AMREP Scientific Advisory Committee

In attendance

Bill O'Shea

Alfred Health Corporate Counsel

Geoff McDonald

Director, Capital and Infrastructure, Alfred Health

Heather Gallichio (Secretary)

General Manager, Alfred & Baker IDI Research Office



Burnet Institute Ambassador Ms Princess Kasune Zulu, author and AIDS activist, with Associate Professor Johnson Mak.



Professor John Wilson, Head of The Alfred Cystic Fibrosis Service, showed Prime Minister Julia Gillard the Tele-health electronic health record for people with cystic fibrosis.



AMREP in 2010/2011

Andrew Way
Chief Executive, Alfred Health
Chair, AMREP Council

Since my last report, the benefits of Academic Health Science Centres (AHSCs) have become widely discussed in Australian health and medical research organisations. The development of a virtuous spiral of healthcare delivery, education of clinical professionals and clinical research all enhancing each other to the benefit of patient care and clinical outcomes is starting to influence the way in which groups of organisations relate to each other to have an impact on the health of a population.

AMREP, established in 2002, is Australia's first and longest existing example of such an endeavour, although when created no one at the time would have thought – Academic Health Science Centre. Although long standing, high quality and successful in many ways, on a world stage AMREP remains relatively small when considering patient volumes, research funding and outputs.

Over the last year, a larger collaboration has begun to emerge. This collaboration between AMREP and the Monash Health Translation Precinct brings together Alfred Health, Monash University, Baker IDI Heart and Diabetes Institute, Burnet Institute, Southern Health, Prince Henry's Institute, Cabrini Health and Epworth Healthcare, and promises to enhance the health and wellbeing of our community through the integration of healthcare, education and research. Known as Monash Partners Academic Health Science Centre, this will be the largest such grouping in Australia and is well equipped to be recognised for its clinical service, research and education activities on a world stage. The partnership will grow to include primary care and other education partners as it develops.

The Monash Partners AHSC Steering Committee has recently identified seven Themes on which future activities will be focused:

- Cardiovascular Disease: Innovation, Intervention, Imaging and Care
- Infection and Inflammation
- Critical Care, Trauma and Perioperative Medicine
- Endocrinology, Diabetes and Metabolic Health
- Cancer and Blood Diseases
- Neuroscience and Mental Health
- Women's, Children's and Reproductive Health

The AMREP Council will continue to promote and coordinate activities on our Commercial Road campus, and to that end I was delighted to welcome Professor Stephen Jane as Director of Research for Alfred Health and Head of the Central Clinical School for Monash University.

This year has seen some major grants funded from The Alfred Research Trusts, each valued up to \$500,000. I was pleased we attracted such high quality applications, and look forward to hearing the findings of these grants made to Professor Peter Cameron in Emergency, Professor Paul Fitzgerald in the Monash Alfred Psychiatry Research Centre, Associate Professor Andrew Davies in Intensive Care, Professor Robyn O'Hehir in Allergy, Immunology and Respiratory Medicine, and their respective research teams.

Finally, I would like to place on record my thanks to our two very dedicated support teams in the research office and the ethics office, without whom much of what AMREP achieves would not be possible.

New AMREP Lecture Theatre

Construction group Monaco Hickey commenced demolition work in November in preparation for the construction of a 200-seat AMREP lecture theatre in the central forecourt between the Baker IDI and Burnet Institute buildings. The new theatre, intended for completion late in 2012, will add a much-needed larger venue to the current seminar and meeting room complex.

Restructure of Monash Central Clinical School

In a major restructure of the Monash Central Clinical School (CCS), Infectious Diseases, Respiratory Medicine and Gastroenterology were established as departments in the School. Previously, they were incorporated under the Department of Medicine. Linked to this development is the creation of a Department of Clinical Sciences that includes Medicine, Surgery, Pathology, Neurology, Endocrine, Anaesthetics, NTRI and Ethics. The Department of Gastroenterology from Box Hill Hospital (Eastern Health Clinical School) and the Monash Alfred Psychiatry Research Centre both join CCS in 2012.

Research Outputs

AMREP's external competitive research revenue rose 4.4% from 2009 to almost \$95 million in 2010. Of this, half came from the National Health and Medical Research Council (NHMRC) and the US National Institutes of Health. At the same time, the number of publications (refereed journal articles, book chapters and books) increased by nearly 25% to 1,462 in 2010. Both research revenue and publication numbers have trebled since the establishment of AMREP in 2002.

Research Funding Success

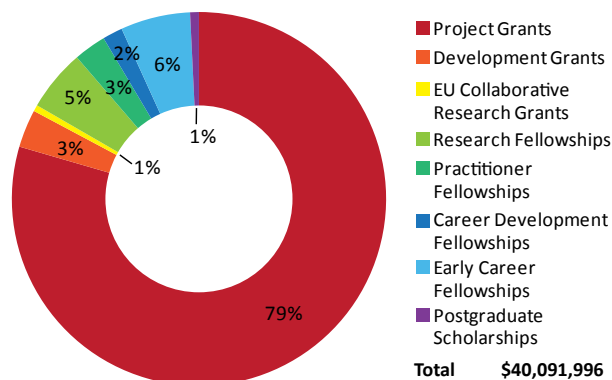
AMREP researchers have been successful in gaining over \$40 million in new NHMRC funding commencing in 2012. Included were 50 new Project Grants totalling almost \$32 million, two with budgets of over \$2 million to conduct large-scale clinical trials. Other research project funding was for three Development Grants and a European Union collaborative grant. A team led by Professor David Kaye was successful in securing a five-year \$12.4 million NHMRC Program Grant commencing in 2013 to pursue an innovative program in translational cardiovascular medicine.

Three of AMREP's clinician scientists were awarded new five-year Practitioner Fellowships, providing them with the opportunity to expand their research programs. Those successful were Professor Henry Krum, Professor Russell Gruen and Associate Professor Peter Kistler, with Professor Krum's application rated best nationally.

2011 AMREP Honours
Scholarship winners.
Left: Jodie Abramovitch.
Right: Elyse Di Marco.



New NHMRC Funding 2012



Other successful NHMRC funding announced in 2011 was a \$2.5 million Centre of Research Excellence awarded to Professor Peter Cameron for the Australian Resuscitation Outcomes Consortium and a \$1.5 million NHMRC Partnership Projects Grant awarded to Professor Sharon Lewin and Dr Julian Elliot to undertake a trial of interactive self-care plans to prevent and manage chronic conditions in people living with HIV. Recently, Professor Lewin was one of a group of seven of the world's best HIV researchers (and the only Australian) to receive a \$20 million NIH grant to find a cure for HIV.

In support for early career scientists, Dr Charbel Darido (Monash CCS) was awarded the newly established Clare Oliver Memorial Fellowship in skin cancer research from the Victorian Cancer Agency to trial novel therapeutic approaches to squamous cell carcinoma. Dr Karly Sourris (Baker IDI) received a Diabetes Australia Research Trust Viertel Fellowship for research into the development and progression of diabetic nephropathy.

Research Day 2011

Alfred Week Research Day was held on Tuesday, 18 October. A successful lunchtime session featured keynote speaker Professor David de Kretser AC, followed by four short presentations on some of the latest research from AMREP. Professor de Kretser presented the AMREP Research Prizes (clinical and basic) for the highest impact original journal articles published in 2010. These were awarded to Professor Murray Esler and Associate Professor Markus Schlaich, both of Baker IDI, for publications in *The Lancet* and *Molecular Psychiatry* respectively. A selection of posters showcasing AMREP research was displayed in the hospital for the duration of Alfred Week.

Australia Day and Queen's Birthday Honours 2011

Several AMREP staff and affiliates were recognised for outstanding contributions to their respective fields in this year's Australia Day and Queen's Birthday Honours.

Those honoured were:

- Professor Hatem Salem, Member of the Order of Australia (AM)
- Professor Gregory Snell, Medal of the Order of Australia (OAM)
- Professor Jeffrey Rosenfeld, Member of the Order of Australia (AM)
- Professor Suzanne Crowe, Member of the Order of Australia (AM)
- Professor Andrew Tonkin, Medal of the Order of Australia (OAM)
- Alastair Lucas, Chair of Burnet Institute Board of Directors, Member of the Order of Australia (AM)
- Natasha Stott Despoja, member of Burnet Institute Board of Directors, Member of the Order of Australia (AM)

Top Award for Alfred Health

Alfred Health was named Metropolitan Health Service of the Year in 2011. The award, presented by the Premier Ted Baillieu at the 2011 Victorian Public Healthcare Awards, is the Premier's highest honour, and recognises leadership and excellence in the provision of healthcare to the people of Victoria.

Alfred Health was recognised as a leader in healthcare delivery and improvement, achieving the best health outcomes for the community through the integration of clinical practice, research and education. The health service treated more than 90,000 inpatients and over 130,000 outpatients in 2010/11.

Health Initiatives

Alfred Health achieved membership with the World Health Organization's International Network of Health Promoting Hospitals and Health Services. This status recognises the health service's achievements to date, as well as its commitment to future health promotion efforts. Kristan Corben has been appointed as Lead for Population Health and Health Promotion to facilitate the integration of a health promotion philosophy throughout the organisation.

Internationally-recognised teams at CSIRO and Baker IDI collaborated to produce *The CSIRO and Baker IDI Diabetes Diet and Lifestyle Plan*, launched in May 2011. The book offers comprehensive plans to support a healthy lifestyle and covers every aspect of diabetes prevention and control. Featured are exercise plans to increase physical activity, practical assistance for smart shopping and tips for healthy food choices when eating out, and recipes for creating healthy meals.

AMREP Honours Scholarships

The AMREP Honours Scholarships scheme was devised to attract outstanding Science and Biomedical Science students to undertake their Honours year at AMREP. Scholarship recipients for 2011 were Jodie Abramovitch (Monash Department of Immunology) and Elyse Di Marco (Baker IDI Heart and Diabetes Institute), pictured above.

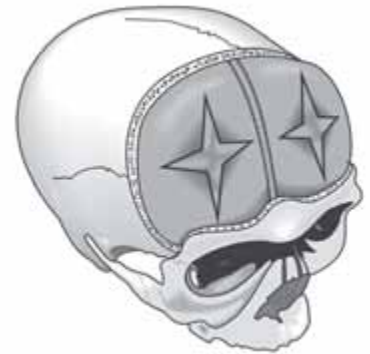
RESEARCH HIGHLIGHTS

Landmark intensive care trial completed

Results from the seven-year decompressive craniectomy (DECRA) Trial involving 155 adult patients in Australia, New Zealand and Saudi Arabia have led to a worldwide change of practice for the treatment of traumatic brain injury (TBI) in intensive care units.

Led by Professor Jamie Cooper of The Alfred's Intensive Care Unit and Monash University SPHPM, the DECRA Trial compared a neurosurgical procedure with standard intensive medical care in patients with generalised TBI and found that, for patients with diffuse brain injury, standard medical therapy was better than the surgical treatment. Decompressive craniectomy, however, was more effective in reducing pressure on the brain and decreasing time spent in intensive care.

Cooper DJ, Rosenfeld JV, Murray L, Arabi YM, Davies AR, D'Urso P, Kossmann T, Ponsford J, Seppelt I, Reilly P, Wolfe R; DECRA Trial Investigators; Australian and New Zealand Intensive Care Society Clinical Trials Group. Decompressive craniectomy in diffuse traumatic brain injury. *N Engl J Med.* 2011;364(16):1493-502. Erratum in: *N Engl J Med.* 2011;365(21):2040.



National recognition for hypertension breakthrough

Professor Murray Esler and Associate Professor Markus Schlaich of Baker IDI Heart and Diabetes Institute received national acclaim for their research on a new treatment for resistant hypertension, winning the 2011 Australian Museum Eureka Prize for Medical Research Translation.

Hypertension affects about one-third of the Australian population and is responsible for more than 7 million deaths a year worldwide. Resistant hypertension, which affects 15–20 per cent of hypertensive patients, is diagnosed when blood pressure continues to be elevated despite trying combination therapy with three drugs.

The new procedure trialed by Professors Esler and Schlaich involves inserting a radiofrequency-emitting catheter into the kidney arteries and using radio waves to target and destroy the sympathetic nerves in the lining of the artery walls. Trials not only showed a substantial drop in participants' blood pressure, but also that the effects are sustained over time, suggesting that long-term control of blood pressure may be achieved. This success has been replicated in further trials and the procedure is now being implemented in routine clinical practice in Australia and overseas.

Symlicity HTN-2 Investigators, Esler MD, Krum H, Sobotka PA, Schlaich MP, Schmieder RE, Böhm M. Renal sympathetic denervation in patients with treatment-resistant hypertension (The Symlicity HTN-2 Trial): a randomised controlled trial. *Lancet.* 2010;376(9756):1903-9.



Associate Professor Markus Schlaich (left) and Professor Murray Esler AM.

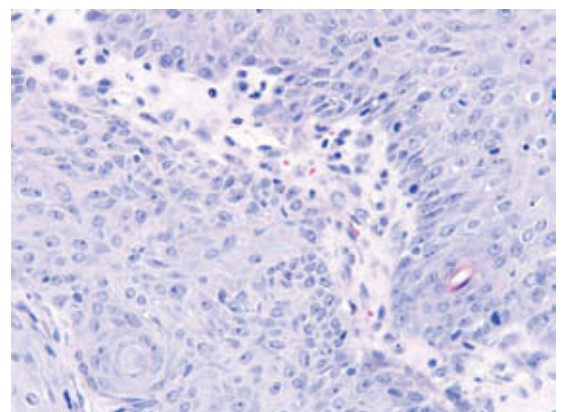
Stop signal discovered for skin cancer cells

A breakthrough in understanding what stops a common form of skin cancer from developing could make new cancer treatments and prevention available to the public in five years. In research published in November 2011 in international cancer journal, *Cancer Cell*, a team of scientists led by Professor Stephen Jane and Dr Charbel Darido of Monash University's Central Clinical School, has discovered a gene that helps protect the body from squamous cell carcinoma (SCC) of the skin.

Professor Jane and his team discovered that a gene with an important role in skin development in the foetus is missing in adult SCC tumour cells. Although the researchers initially focused on skin cancer, they found that the protective gene is also lost in SCC that arises in other tissues, including head and neck cancers that are often associated with a very poor outcome for the patient.

They showed that loss of this particular gene knocks out the signal to stop skin cells from growing. Without this stop signal, the cells keep increasing in number and eventually form a cancer. Identifying this driver of cancer in skin and other organs provides a clear direction for developing strategies for both prevention and treatment in the relatively near future.

Darido C, Georgy SR, Wilanowski T, Dworkin S, Auden A, Zhao Q, Rank G, Srivastava S, Finlay MJ, Papenfuss AT, Pandolfi PP, Pearson RB, Jane SM. Targeting of the tumor suppressor GRHL3 by a miR-21-dependent proto-oncogenic network results in PTEN loss and tumorigenesis. *Cancer Cell.* 2011;20(5):635-48.



Developing SCC on the skin. Cells are growing in an uncontrolled fashion after damaging the tumour suppressor gene.

Point-of-care testing for HIV

With the support of an NHMRC Development Grant, Burnet Institute scientists, Associate Professor David Anderson and Professor Suzanne Crowe, have developed a rapid, disposable, point-of-care (POC) test for measurement of CD4+ T-cells that could potentially benefit 15 million HIV-infected individuals worldwide, including many in developing countries. This research featured in the recent NHMRC "Ten of the Best Medical Research Projects 2011".

Antiretroviral drugs are the most effective treatment for HIV infection but appropriate use of these therapies requires regular testing of each patient's immune system to determine when they should commence therapy. Testing determines the number of a type of white blood cell known as the CD4+ T-cell.

The researchers have worked with Melbourne-based Axxin Ltd (with partial funding from an ACH2 grant) to develop the Burnet AX-2 CD4 test reader. This simple robust instrument provides stepwise instructions for the assay, then captures a detailed image and produces a precise readout of the test line signals in the disposable visual CD4 test device.

The CD4 test has performed well in small-scale trials in Australia and the US, and larger trials are planned to commence shortly. If the trials are successful, the technology will be transferred to large-scale manufacturers to enable the production of test kits at around \$2 each.

Anderson DA, Crowe SM, Garcia M. Point-of-care testing. *Curr HIV/AIDS Rep.* 2011;8(1):31-7.



The Burnet CD4 test and AX-2 CD4 test reader.

New lupus therapy

Research conducted by Professor Fabienne Mackay, Head of the Monash Department of Immunology, has played a crucial role in the development of the first major lupus treatment breakthrough for over 50 years.

Lupus is an autoimmune inflammatory disease where the body's immune system attacks connective tissue in the joints, lungs, kidneys and heart, causing joint and skin diseases in most patients, and organ and blood disorders in about half of sufferers.

Professor Mackay was the first to show that the overproduction of BAFF (B cell Activating Factor) drives the most common form of lupus, affecting 70% of sufferers. In a follow-up study, elevated levels of BAFF were discovered in patients with a number of autoimmune diseases including lupus, rheumatoid arthritis and Sjögren's syndrome. This exciting discovery implied that if BAFF production can be blocked, the entire cascade resulting in autoimmune disease could be prevented.

GlaxoSmithKline and Human Genome Sciences Inc. have developed a new medication (Benlysta) for lupus based on the discoveries from Professor Mackay's experimental data.



Professor Fabienne Mackay.

Study to combat hypertension demonstrates significant success

A study led by Professor Simon Stewart of Baker IDI has revealed that an intensive and structured approach to the treatment of high blood pressure (hypertension), including more frequent GP visits and higher treatment doses, can control an individual's blood pressure more effectively than a more traditional regime using fewer adjustments to treatment and fewer GP visits. In Australia, hypertension affects about a third of the population and is a major contributor to heart disease and stroke.

Supported by Novartis Pharmaceuticals Australia, the VIPER-BP (Valsartan Intensified Primary care Reduction of Blood Pressure) Study recruited over 2,300 Australians with hypertension being managed by more than 250 GPs from around Australia. Using a systematic treatment program according to the risk of the individual patient, the study evaluated whether different approaches to the management of high blood pressure helped patients to meet their target blood pressure levels.

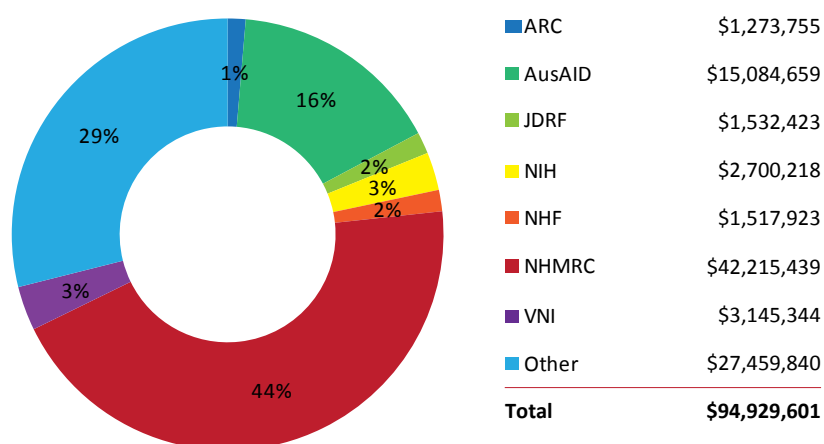
The VIPER-BP Study has provided clinicians in Australia and worldwide with a more effective strategy to apply proven treatments to achieve lower blood pressure in high-risk patients.

Stewart S, Carrington MJ, Swemmer C, Kurstjens N, Jennings GL. Optimising management of hypertension in primary care: The Valsartan Intensified Primary Care Reduction of Blood Pressure (VIPER-BP) Study. *Int J Cardiol.* 2011;153(3):317-22.

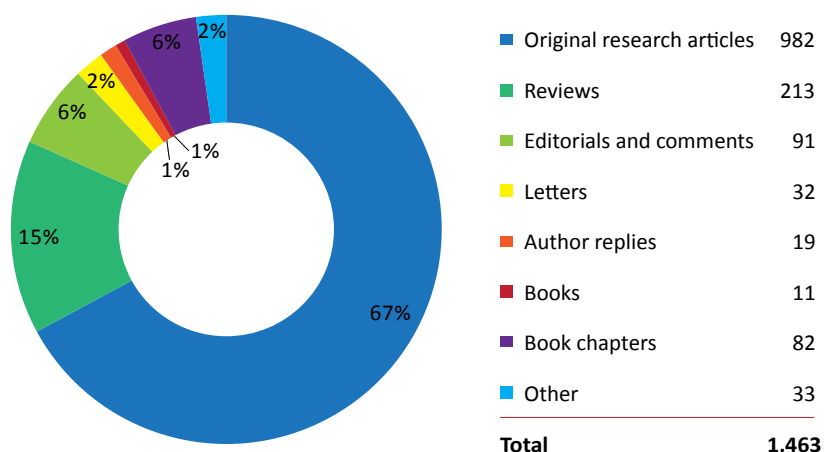


Professor Simon Stewart.

External funding received



Publications



In 2010, AMREP researchers published original research articles in top-ranking international journals including

New England Journal of Medicine
[IF: 53.484]

Nature Genetics [IF: 36.377]

Nature [IF: 36.101]

The Lancet [IF: 33.633]

Cell [IF: 32.401]

Journal of the American Medical Association [IF: 30.011]

The average impact factor of all journal articles published in 2010 was 4.298.

25.1% of all articles were published in journals with an impact factor of ≥ 5 .

2010 impact factors

For a complete list of publications by AMREP staff in 2010, see the 2010 AMREP Research Report (www.amrep.org.au).

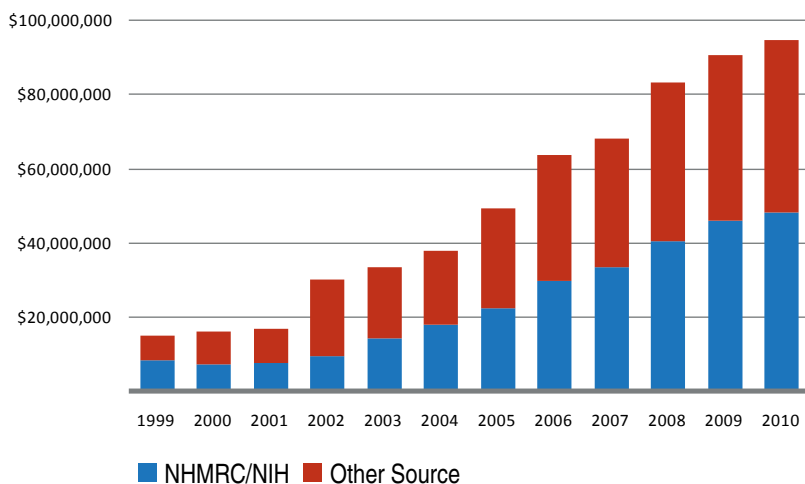
Higher degree completions

34 PhD completions
4 Other doctoral completions
130 Masters completions

In 2010, there were 324 PhD and 50 other doctoral students at AMREP.

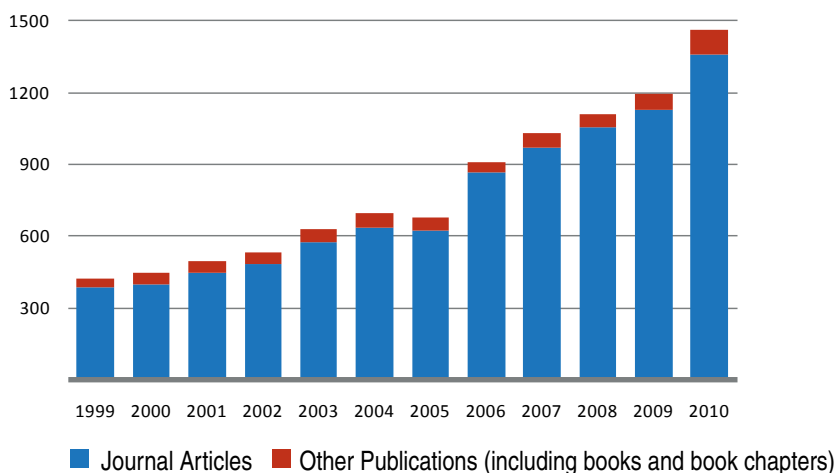
For details of all current doctoral students in 2010, see the 2010 AMREP Research Report (www.amrep.org.au).

External research funding received



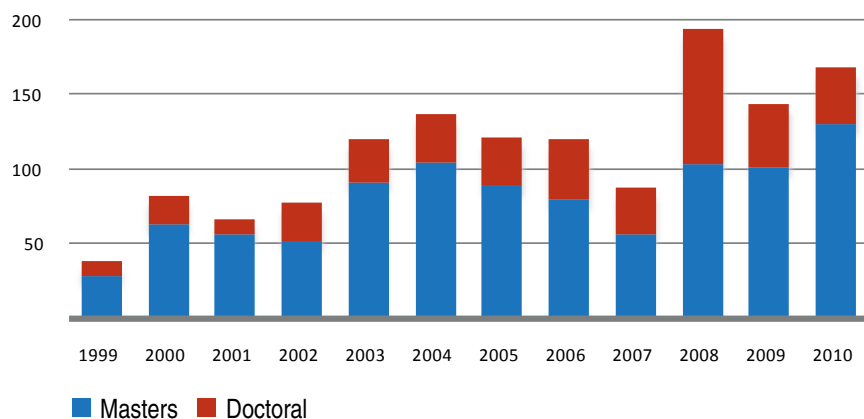
External research funding includes funds received from peer reviewed funding schemes (e.g. NHMRC, National Heart Foundation, NIH), other government grants (e.g. Department of Human Services), industry and university grants. Funds received from commercially sponsored clinical trials/ contract research are not included.

Publications



Abstracts, conference proceedings and 'in press' articles are not included.

Completed and passed higher degrees



Masters include course work and research degrees.

Clinical Registries



*Emily Kelly of the SPHPM
Clinical Informatics and Data
Management Centre.*

AMREP is home to the largest concentration of clinical registries in Australia. At present over 20 major registries are located on site, mainly within the Centre of Research Excellence in Patient Safety (CREPS). CREPS was established as an NHMRC Centre within the Monash University School of Public Health and Preventive Medicine (SPHPM) to provide national leadership and research into the measurement of quality of care. Registries provide measurement and benchmarking of the outcomes of high significance clinical procedures. They are also used to monitor the safety of new drugs, devices and surgical procedures.

Clinical registries collect an identical minimum data set from patients treated at participating hospitals. Outcomes of treatment are also measured in a systematic way using identical definitions. The data are fed back to clinical teams to allow their performance to be measured against other units, nationally and internationally. Some registries also collect details of treatment allowing the measurement of compliance with treatment guidelines and exploring variations in care which are still prevalent, even for common conditions such as prostate cancer.

Registries managed include:

- Australian Society of Cardiac and Thoracic Surgeons (ASCTS) Database
- Australian Rheumatology Association Database (ARAD)
- Bosentan Patient Registry
- Haemostasis Registry
- Melbourne Interventional Group (MIG) Interventional Cardiology Registry
- REduction of Atherothrombosis for Continued Health (REACH) Registry
- Population-based prostate cancer clinical registry
- Surveillance of Australian workplace Based Respiratory Events (SABRE)
- Victorian Cardiac Arrest Registry
- Victoria Lung Cancer Registry
- Victorian Orthopaedic Trauma Outcomes Registry (VOTOR)
- Victorian State Trauma Outcomes Registry (VSTORM)

New registries currently under development at AMREP include lung cancer, cardiac procedures, major transfusion and breast implants. For more information, visit www.med.monash.edu.au/epidemiology/research/registries.html

The Healthy Lifestyle Research Centre at Baker IDI

In a bid to combat the epidemic of obesity and diabetes as well as subsequent development of heart and vascular disease, Baker IDI opened the Healthy Lifestyle Research Centre (on level 4 of the Alfred Centre) in May 2010. The Healthy Lifestyle Research Centre's research program encompasses physical activity and nutrition supported by basic and clinical physiology. A principal aim is development of evidence-based, sustainable, interventions to combat obesity and its consequences.

Physical Activity Research

The physical activity program builds on a strong Baker IDI track record in research underpinning national and international exercise guidelines. More recently, time spent sitting has been identified as an independent risk factor for metabolic and vascular disease. The centre has a comprehensive program focused on sedentary behaviour reduction, including understanding mechanisms and development and evaluation of sustainable interventions to reduce sedentary time.



Both aerobic and resistance exercise intervention research are conducted in the research gymnasium.

Nutrition Research

Diet and nutrition are important factors in the promotion and maintenance of good health throughout life. Their role as determinants of chronic non-communicable diseases is well established and consequently, they occupy a prominent position in prevention activities. Lifestyle modification is the cornerstone of treating and preventing diseases of obesity. The nutrition program will examine and endeavour to optimise diets for people with obesity, cardiovascular disease, insulin resistance and Type 2 diabetes.

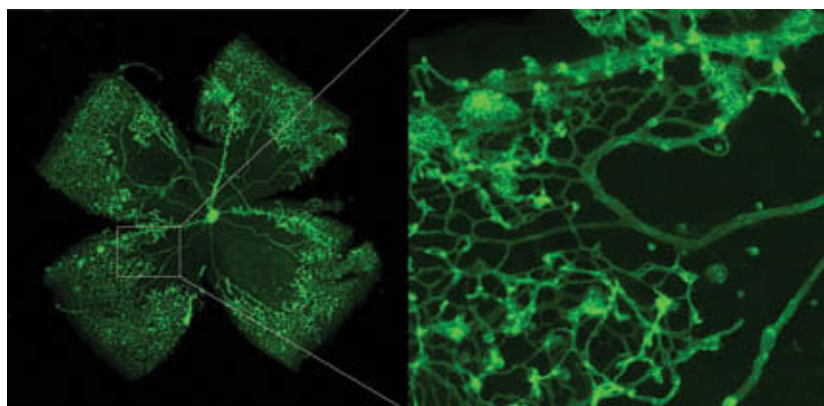
Access

Enquiries about accessing facilities at the Healthy Lifestyle Research Centre should be directed to Professor Bronwyn Kingwell (bronwyn.kingwell@bakeridi.edu.au).

Monash Micro Imaging at AMREP (MMI@AMREP)

Monash Micro Imaging at AMREP manages core imaging resources within Baker IDI Heart and Diabetes Institute, Monash University Central Clinical School and the Burnet Cell Imaging Facility. Stephen Cody coordinates and facilitates microscopy developments, and is responsible for microscopy training and research support.

Currently, MMI@AMREP manages three confocal and several conventional fluorescence microscopes within PC2 laboratories. There is also a dedicated deconvolution microscope within a PC3 laboratory forming part of the Burnet Cell Imaging Facility. MMI@AMREP staff are available to help with experimental design, and techniques such as: live and fixed cell imaging, time-lapse, 3D, high resolution of large areas, fluorescence, brightfield, phase, DIC, ion imaging such as Ca^{2+} and pH.



Oxygen-induced retinopathy. High resolution image of a whole mouse retina. The 'tiled' image on the left is 'stitched' together from a mosaic of high resolution images; an example of one tile is on the right. Image by Devy Deliyanti and Genevieve Tan, Department of Immunology, Monash University.

Training on microscopes is conducted on request and is usually coupled with a discussion on the imaging requirements of the research project. This ensures that the training is targeted to the needs of the project, and that the experimental design is appropriate. Training seminars and workshops are also conducted to help broaden the understanding of imaging. MMI@AMREP staff are keen to assist when purchasing a new microscope, ensuring researchers order the right technology to suit their needs and have expertise in negotiating discounted pricing.

Contact Stephen Cody (stephen.cody@monash.edu) for microscopy related issues, including training, research support, instrument demonstrations and promotions, and new technology, or visit www.microimaging.monash.org

Burnet ImmunoMonitoring Facility

The Burnet ImmunoMonitoring Facility (IMF) is a certified NATA Research and Development (R&D) accredited facility. Under the direction of Associate Professor Rosemary Ffrench, the facility develops optimised and validated immunological assays for clinical trials and pre-clinical research compliant to ISO/AS17025. The development of vaccines and immunotherapies requires the sophisticated assessment of immune responses in both animals and in human clinical trials. Cell-mediated immunity is a key biomarker for most vaccines and immunotherapies and involves the activity of specialised cells including macrophages, dendritic cells, natural killer cells, antigen-specific cytotoxic T-lymphocytes, helper T-lymphocytes and the release of various cytokines in response to antigen stimulation.



The Burnet IMF aims to support both internal and external research in vaccine development by conducting and validating relevant immunological assays to Good Laboratory Practice standards. Increasingly, regulatory authorities request that assays showing markers of vaccine efficacy are robust and standardised. These assays are often difficult to complete and require a high level of operator skill and specialised equipment.

Analysis of the biological samples is performed using the following appropriately validated analytical techniques and processes: isolation and cryopreservation of mononuclear cells, plasma and serum; ELISpot assays; multiplex bead array systems; ELISA; neutralisation activity assays; phagocytic function and oxidative burst activity analysis.

Enquiries about the Burnet IMF should be directed to Associate Professor Rose Ffrench, Facility Director (ffrench@burnet.edu.au) or Kylie Goy, Facility Coordinator (kgoy@burnet.edu.au).

RESOURCES AND PLATFORM TECHNOLOGIES

Mouse Metabolic Phenotyping

Devising new therapies to combat obesity is challenging due to the complex nature of metabolic disease, which involves the interaction between genetics and the environment. Mice provide an essential model for studying metabolic disorders since the whole mouse genome has been sequenced and candidate genes for coronary disease, cardiomyopathy, diabetes, obesity and other disorders of metabolism have been identified. Transgenic technology and gene targeting protocols have allowed researchers to create new mouse lines with specific phenotypes and well-defined DNA structural changes that enable diseases of metabolism to be better understood.



The Mouse Metabolic Phenotyping Facility at Baker IDI Heart and Diabetes Institute provides services to scientists using mice to study obesity, diabetes, cardiovascular disease and other metabolic diseases. Using state-of-the-art tools and methods, the facility provides sophisticated, standardised, high quality metabolic and physiologic phenotyping services for rodent models. This service enables scientists to identify and study new mouse models of complex metabolic diseases. By manipulating candidate genes in mice, scientists will gain a better understanding of the genetic origins of obesity and related diseases, and the effects of different environmental factors.

For more information, contact Professor Mark Febbraio (mark.february@bakeridi.edu.au).

Flow Cytometry

The AMREP Flow Cytometry Facility is a state-of-the-art, world class cell sorting and cell analysis laboratory, catering for the scientific research community based at AMREP and broader Melbourne. The facility is located in the Monash Department of Immunology, with some instruments located within the Burnet Institute.



Dr Alexandra Ziegler utilises the LSR II, one of AMREP's most advanced cell analysers.

The Flow Cytometry Facility offers comprehensive training and education, experimental design and protocol guidance specifically targeting effective data generation and interpretation. Services catering for both animal and human cell sorting in a PC2 environment are offered. The facility can also handle infectious sample sorting (e.g. HIV, Hepatitis C) in a dedicated PC3 environment, which is unique to Melbourne. The facility offers two FACSria high throughput sorting platforms and five flow cytometers: an LSR II, a FACSCanto II with a 96-well High Throughput Sampler and three FACSCalibur units.

For more information on the platforms available and the services offered, contact the Manager of the facility, Geza Paukovic (paukovic@burnet.edu.au) or Assistant Manager Michael Thomson (thomson@burnet.edu.au), or visit www.amrepflow.org.au

Ian Potter Library

The Ian Potter Library provides a single integrated library and information service to staff and students of AMREP. Acting as the hub of the Alfred Health Library Service, the Ian Potter Library also supports the local library services at Caulfield Hospital and Sandringham Hospital.

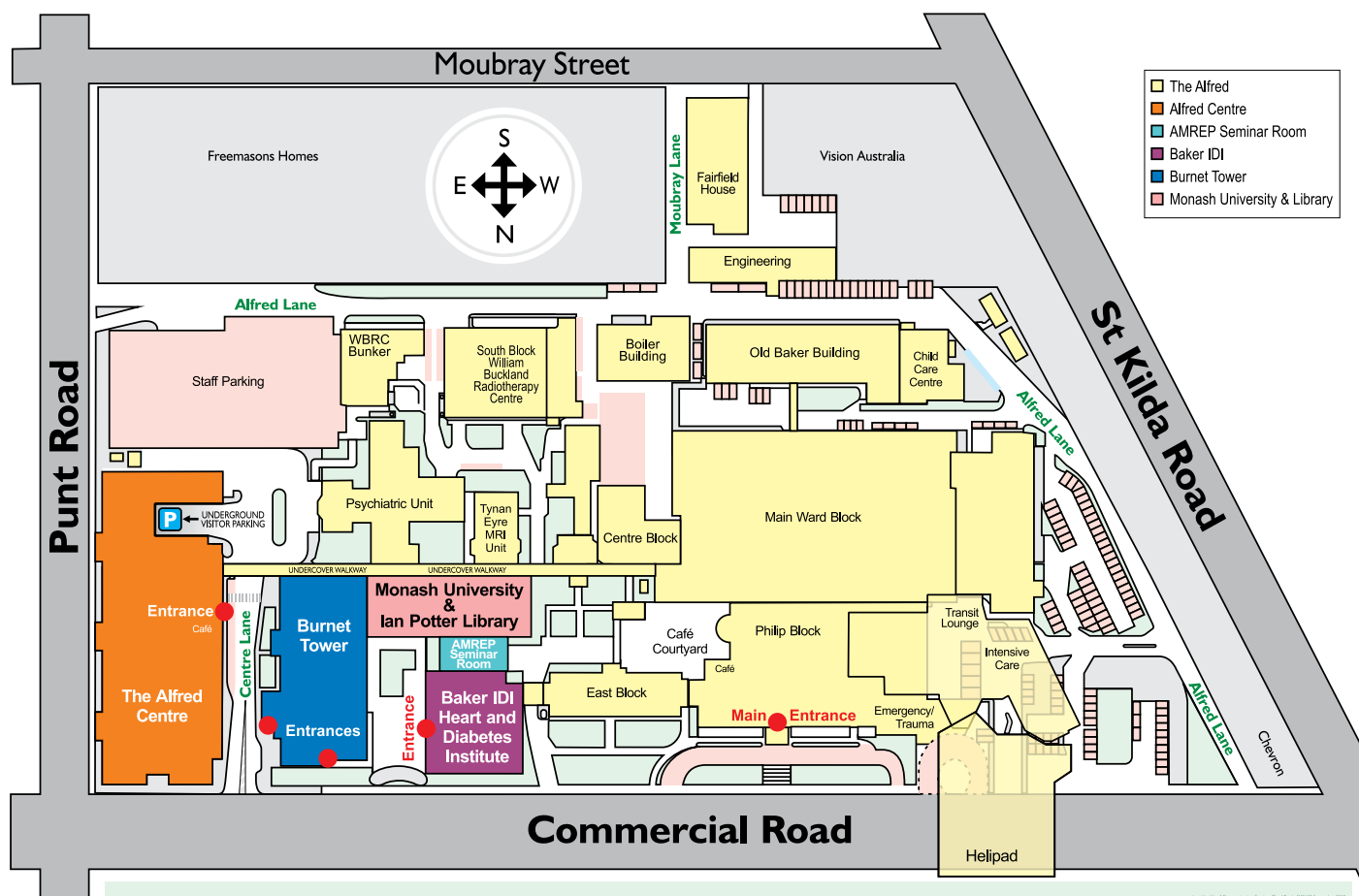
The library organises its information resources to support patient care, educational training and research activities of the AMREP institutions. Supporting research is a major focus for the library, and keeping abreast of new research programs and developments is important. With representatives of all the AMREP institutions, the Library Advisory Committee advises on information services and resources required by research scientists and students. Key resources include access to full-text electronic journals, bibliographical databases in biomedicine, technical monographs, specialist reference texts and overseas document requests.



The trend towards replacing library print journal subscriptions with online-only journal subscriptions continued in 2010. The library was able to expand access to the range of titles offered by publishers Elsevier, Nature, Springer and Wiley. With online archival access to journal content locked-in, it is possible to consider disposing of back-runs of print journals when extra library shelving space is required. Full-text article downloads from library resources totalled 167,000 in 2010.

The library provides a busy schedule of training classes for library users. The most popular classes in 2010 were for EndNote and Medline. The library also provided classes for EMBASE, CINAHL, Cochrane Library and general library orientation.

AMREP LOCATION AND SITE PLAN



Alfred Medical Research & Education Precinct
Commercial Road, Melbourne, Victoria 3004, Australia

