



Victoria's Leadership in Medical Research

Victoria is continuing to build on a long established international reputation for excellence in biomedical research and biotechnology. Victorian researchers are focused on translating discoveries into improved health and quality of life for all global citizens – Victorian discoveries are already making a difference to the lives of millions of people worldwide. The State wins the lion's share of national medical research funding, with over 40 per cent of grants consistently awarded to Victorian researchers. Victoria also leads Australia in public and preventive health research and initiatives. Victorian Government support and leadership have enhanced the capacity of researchers, institutions and companies to attract international partnerships and investment.

New discoveries

ECG for the mind (Oct 2009)

Monash University biomedical engineer Brian Lithgow has developed a world-first 'ECG for the mind', where patterns of electrical activity in the brain's vestibular (or balance) system are measured against distinct response patterns found in depression, schizophrenia and other Central Nervous System (CNS) disorders. Working with psychiatry researchers at Monash University's Alfred Psychiatry Research Centre, he tested volunteers and found distinct response patterns, or biomarkers, that distinguished different CNS diseases from each other and from regular activity. Monash has teamed up with corporate partner Neural Diagnostics to develop and patent the system, called EVestG™.

Melbourne researchers end 10-year debate over cell death (Oct 2009)

Walter and Eliza Hall Institute researchers have put an end to a 10-year debate over which form of a molecular messenger called Fas ligand is responsible for killing cells during programmed cell death (also called apoptosis). Aberrant apoptosis can cause cancer development and diseases where the immune system attacks the body's own tissues, such as in lupus or insulin-dependent diabetes. This research, led by Professor Andreas Strasser was published in the prestigious international journal *Nature*.



www.biotechnology.vic.gov.au

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3D view of sperm development pathway (Oct 2009)

Prince Henry's Institute researchers have revealed new complexities in how healthy sperm are formed in the testis. Their findings provide a 3D view of how genes and hormones interact in diverse ways during sperm production. This deeper understanding may lead to novel male contraceptive formulations and new ways of examining the fertility problems seen in some 1 in 20 men.

Research suggests stroke surgery not effective (Oct 2009)

Research conducted at Melbourne's Baker IDI Heart and Diabetes Institute, and published in the journal *Stroke*, suggests that thousands of Australians may be having unnecessary operations to protect them from a stroke. Asymptomatic severe carotid stenosis, a dangerous narrowing of the major neck artery, is often a cue for surgery because of the increased stroke risk. But Dr Anne Abbott has shown that modern medical treatment, including lifestyle changes and the latest drugs, has preventative power as good as the surgical fix – at less risk to the patient, and at one-third to one-eighth the price.

Australian Synchrotron used to design new drugs in partnership (Aug 2009)

Following earlier work using the Chicago Synchrotron, Professor Michael Parker's team at St Vincent's Institute has used the Australian Synchrotron to more precisely visualise the GM-CSF receptor – a protein which is involved in cancers such as leukaemia, and which is the target for developing a new type of anti-cancer drug. The work was carried out in collaboration with CSL, Australia's leading biotechnology company, and colleagues at Adelaide's Centre for Cancer Biology. The scientists are using the Australian Synchrotron's protein crystallography beam-lines to unravel the 3D structure of several proteins that are thought to play crucial roles in cancer, memory loss, obesity and the swine flu pandemic.

Hope for new malaria treatment (June 2009)

Melbourne scientists have identified a chink in the life cycle of malaria, which offers hope for the development of new treatment options for this devastating disease. The research has been undertaken in a collaboration that includes two of Australia's leading medical research institutes, the Burnet Institute and the Walter and Eliza Hall Institute for Medical Research, together with Deakin University's new Medical School. The team of scientists, led by Professor Brendan Crabb, discovered a critical cell membrane pore, which can now be used as the target for new anti-malarial therapies. The work was published in leading scientific journal *Nature*.

Public and Preventive Health

ASPREE – the largest prevention trial ever in Australia (Oct 2009)

Monash University is jointly leading a new US\$50m international trial investigating the effect of low-dose aspirin on cardiovascular, cancer and mental health outcomes in the elderly. The study, funded by the National Institute on Aging, one of the US National Institutes of Health, is called ASPREE – ASPirin in Reducing Events in the Elderly and will be the largest prevention trial ever to take place in Australia.

Intervention trial halves postnatal depression (Oct 2009)

An intervention program led by the University of Melbourne, which aimed to reduce postnatal depression, has halved the incidence of depression and anxiety in women with no history of psychiatric problems in the first six months after giving birth. Close to 400 women were recruited for the study, which is the only mental health prevention program to date to include the partner and the newborn baby. Co-investigators Associate Professor Jane Fisher and Dr Heather Rowe of the Key Centre for Women's Health in Society at the University of Melbourne conducted the trial in locally accessible Maternal and Child Health Centres in regional and metropolitan areas in Victoria. This study provides promising evidence that the inclusion of fathers and infants in additional small group education programs has sustained benefits.

Research identifies unrecognised HIV infection in Melbourne's gay community (Sept 2009)

Innovative research carried out by the Burnet Institute has revealed that some HIV positive men in Melbourne are unaware that they have the infection. The 'Suck it and See' study, the first of its kind in Australia to estimate HIV prevalence and the prevalence of unrecognised HIV infection, involved 745 men who completed a behavioural survey and provided an anonymous saliva sample (oral fluid specimen) for HIV antibody testing.

Victoria leads world first trial of routine chlamydia testing (Sept 2009)

A world-first trial of routine chlamydia testing, targeting all sexually active young people, will be undertaken in Australian general practice and led by the University of Melbourne. The trial is being led by its School of Population Health, in conjunction with the University's Department of General Practice, the National Centre in HIV Epidemiology and Clinical Research at the University of New South Wales and the Institute of Social and Preventive Medicine at University of Bern, Switzerland. Other collaborators in the project include the National Centre in HIV Social Research at the University of New South Wales, Melbourne Sexual Health Centre, Deakin University, La Trobe University, the Burnet Institute, the Royal Women's Hospital, and the Victorian Cytology Service. The Australian Chlamydia Control Effectiveness Pilot (ACCEPt) will be the largest project of its kind worldwide.

Research shows better policies needed to prevent childhood obesity (Sept 2009)

Current national guidelines for general practitioners to help overweight and obese children lose weight are costly and ineffective, according to a new Australian study published online in the *British Medical Journal*. Research led by Professor Melissa Wake at Melbourne's Murdoch Childrens Research Institute, found current strategies in countries including Australia, the UK and US, did not help children lose weight and were costly to run, highlighting the urgent need for improved primary health care strategies to help prevent and treat obesity.

Pandemic H1N1 flu vaccine trialled in Melbourne (July 2009)

About 100 Victorian children aged between 6 months and 8 years have been recruited for the pandemic H1N1 flu vaccine trial, run by the Murdoch Childrens Research Institute and the University of Melbourne. They are

among 400 children recruited across five states for the Federal Government required trials of the vaccine, produced by Melbourne biopharmaceutical company CSL.

Awards

International recognition for endocrinology researchers (Oct 2009)

Two researchers from Melbourne's Prince Henry's Institute (PHI) have received medal honours from the UK Society for Endocrinology. The awards recognise their international contributions to hormone research. Professor Evan Simpson, Head of the Metabolism and Cancer Laboratory at PHI, will be awarded the 2011 Dale Medal, the highest accolade bestowed by the Society. Professor Peter Fuller, Associate Director of PHI and Head of the Steroid Receptor Biology Laboratory, is to be awarded The Hoffenberg International Medal, which promotes international collaboration between researchers. Both award recipients will travel to the UK in March 2011 when they will give their medal lectures at the Society for Endocrinology annual meeting.

Stem cell researcher *Cosmopolitan* 2009 Woman of the Year (Oct 2009)

Dr Tu'uhevaha Kaitu'u-Lino from the Monash Institute of Medical Research (MIMR) received two awards at the *Cosmopolitan* 2009 Fun Fearless Female awards, the Inspirational Role Model Award and the overall 2009 Fun, Fearless Female: Woman of the Year. The Fun Fearless Female awards recognise 11 categories of women's achievements in TV, radio, fashion, sport, music, business, and inspirational role models. Other winners included some of Australia's most recognised women. Dr Kaitu'u-Lino is currently investigating the role stem cells play in common gynaecological diseases such as endometriosis.

For Women in Science Fellowship for WEHI researcher (Aug 2009)

Dr Marnie Blewitt, a researcher at the Walter and Eliza Hall Institute, was awarded one of three prestigious L'Oréal Australia *For Women in Science* Fellowships. Dr Blewitt received the AU\$20,000 award to support her work on epigenetics – how genes get turned on and off. She is currently investigating how epigenetic modifications affect or change the progression of cancer, information that could potentially help develop new treatments.

Baker IDI Scientist wins prestigious Victoria Prize (July 2009)

Professor Murray Esler, from the Baker IDI Heart and Diabetes Research Institute, was awarded the 2009 Victoria Prize in recognition of his internationally renowned contributions to cardiovascular neuroscience. Over the past 30 years, Professor Esler has pioneered a new discipline in medical research, through his discoveries in the biology of human stress, heart failure and high blood pressure, with sufficient importance to change the practice of medicine, and critically, to save lives.

Cancer researchers win 2009 GSK Award for Excellence (June 2009)

Professors Joe Trapani and Mark Smyth, leading researchers from Melbourne's Peter MacCallum Cancer Centre, were presented with the GlaxoSmithKline (GSK) Award for Research Excellence for their breakthrough research proving the link between the immune system and cancer, potentially unlocking the door to an exciting new way to treat this often fatal disease. The GSK Award

for Research Excellence is regarded as one of the most prestigious within the Australian research community. It is awarded annually to recognise Australia's world-class scientists for their outstanding research discoveries that have the potential to lead to significant benefits in human health.

Paediatric researcher wins Federal Health Minister's Award (June 2009)

Outstanding medical researcher and paediatrician Professor Melissa Wake was awarded the 2009 Federal Health Minister's Award for Excellence in Health and Medical Research, recognising her landmark work to solve common child health problems. Professor Wake has spent her career focused on finding practical clinical strategies to improve hearing, language and literacy, obesity and early mental health in Australian children. Professor Wake is a paediatrician at the Royal Children's Hospital's Centre for Community Child Health in Melbourne and is one of the Murdoch Childrens Research Institute's leading researchers.

Melbourne researcher the first Australian to win top US oncology Award (May 2009)

Dr Jeanne Tie, from the Melbourne Branch of the Ludwig Institute for Cancer Research, was presented with The Bradley Stuart Beller Merit Award for her research using gene analysis to assist in the selection of patients suitable for a new colorectal cancer drug. Her team used BioGrid, a large clinical database, and the Victorian Cancer Biobank to identify patients harbouring the BRAF^{V600E} mutation.

Director honoured with Heart Foundation Research Medal (May 2009)

Professor Garry Jennings, Director of Melbourne's Baker IDI Heart and Diabetes Institute, was the 2009 joint winner of the Heart Foundation Research Medal for Lifetime Contribution to Cardiovascular Research. The Medal recognises outstanding individual contribution to the fields of heart, stroke and blood vessel disease research in Australia over a sustained period. The other winner was Professor John Chalmers, from the George Institute for International Health in Sydney.

Victoria's national collaborative medical research programs

Cooperative Research Centres (CRCs)

CRC for Biomarker Translation (CRC-BT)

The CRC-BT focuses on the development of diagnostic and therapeutic biomarkers for the treatment of cancer and autoimmune diseases. The CRC-BT is headquartered at La Trobe University in Bundoora, Victoria.

www.biomarkercrc.com.au/

CRC for Biomedical Imaging Development (CRC BID)

The primary aims of the CRC BID are to develop new and advanced imaging techniques and equipment for application in biomedicine, and to foster the growth of Australian expertise in biomedical imaging. The CRC BID is headquartered in Bundoora, Victoria.

www.crcbid.com.au



Cancer Therapeutics CRC (CTx)

The focus of the CTx is working on the discovery and early development of small molecule drugs or enabling therapeutics for the treatment of cancer. CTx is headquartered at the Walter and Eliza Hall Institute's Biotechnology Centre in Bundoora, Victoria.

www.cancercrc.com

CRC for Oral Health Science

The CRC for Oral Health Science brings together scientists, dentists, population health experts and manufacturers to find new and efficient ways of reducing the burden of oral disease in Australia. The CRC for Oral Health Science is headquartered at the Royal Dental Hospital in Carlton, Victoria.

www.crcoralhealthscience.org.au

CRC for Polymers

The research focus of the CRC for Polymers is on developing 'functional' (i.e. responsive to physical or biological stimuli) and higher value-added specialty polymers for emerging high-growth opportunities. The Polymer CRC is headquartered in Notting Hill, Victoria.

www.crcp.com.au

The HEARing CRC

The HEARing CRC brings together an internationally unique consortium dedicated to the common purpose of 'creating sound value' through research - to prevent and better remediate the lost productivity resulting from hearing loss in children and adults. The HEARing CRC is headquartered at the University of Melbourne in Parkville, Victoria.

www.hearingcrc.org

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NHMRC Centres of Clinical Research Excellence (CCREs)

Diabetes CCRE

Based at the University of Melbourne, the Diabetes CCRE seeks to encourage and promote clinical research in diabetes and its complications, with the ultimate goal of improving the treatment and prevention of this disease.

www.diabetesccre.unimelb.edu.au

The Gait CCRE

The Gait CCRE, based at the Murdoch Childrens Research Institute, draws together researchers, academics and clinicians from a range of institutions across Melbourne, to conduct research and research training in clinical gait analysis and rehabilitation, to ensure the appropriate translation of research findings into clinical practice.

www.mcri.edu.au/pages/gait-ccre/default.asp

Immunisation CCRE

The Immunisation CCRE, based at the Murdoch Childrens Research Institute, has three main programs of research: Special Risk Program, Rotavirus Vaccine Program, and the Indigenous Immunisation Program.

www.mcri.edu.au/pages/research/research-group.asp?G=87

CCRE for Translational Clinical Research in Major Eye Diseases (new in 2009)

This CCRE will fund a world-leading, broad-based, clinical and translational research program in Melbourne and Sydney to tackle the four eye diseases that cause the majority of vision loss in Australia: age-related macular degeneration, diabetic retinopathy, cataract, and glaucoma. The CCRE will be headquartered at the Centre for Eye Research Australia in Victoria.

CCRE in Newborn Medicine (new in 2009)

Based at the Murdoch Childrens Research Institute, the CCRE in Newborn Medicine will study adverse outcomes for the brains and lungs of newborn babies.

For further information

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