

New South Wales

Scientific Title Improving the treatment for childhood cancer: Neuroblastoma as a model

Administering Institution University of New South Wales

Recommended Budget \$4,737,600

Chief Investigators

CIA Assoc Prof Glenn Marshall

CIB Assoc Prof Murray Norris

CIC Prof Michelle Haber

Lay Description

Why do cancers start in children? What kicks them off? And what is the best way of getting the treatment to the cancer cell without harming other cells in the body?

These are some of the main questions being considered by Associate Professor Glenn Marshall and a team from the University of New South Wales.

They will continue their study of the biology of childhood cancers, and correlating what they learn with the treatment of children with cancer. By doing this, they plan to develop new treatments for cancer in children, and possibly even some forms of prevention, that are safe, effective and non-toxic.

Scientific Title Molecular determinants of risk, progression and treatment response in melanoma

Administering Institution University of Sydney

Recommended Budget \$7,895,340

Chief Investigators

CIA Prof Richard Kefford

CIB Prof John Thompson

CIC Prof Peter Hersey

CID Assoc Prof Graham Mann

CIE Dr Richard Scolyer

Lay description

Professor Richard Kefford and colleagues from the Sydney Melanoma Unit and the University of Sydney have recruited a large number of people who are at high risk of developing melanoma into a research study.

By investigating these people thoroughly, and by careful treatment of those who develop melanoma, they aim to be able to better predict who is likely to develop the disease, and in whom it is likely to spread. With this information, they aim to improve the care of people at risk of the disease, and also improve the treatment of people who develop it.

Scientific Title Regulation of gene expression: biomolecular interactions in cellular development and disease

Administering Institution University of Sydney

Recommended Budget \$2,823,805

Chief Investigators

CIA Prof Merlin Crossley

CIB Dr Joel Mackay

CIC Dr Jacqueline Matthews

Lay Description

Genes do not simply determine the colour of your eyes. They are highly complex structures which turn on and off throughout life, regulating many different types of functions in the body. When genes turn on and off at the right time, the body grows and develops normally. When genes turn on and off at the wrong times, things go wrong. Most importantly, cancers can develop.

Professor Merlin Crossley and colleagues from the University of Sydney will study how and why genes are switched on and off. Specifically, they will look at transcription factors, which are networks of proteins which interact with each other and with DNA, and which are partly responsible for turning genes on and off.

The researchers will first learn more about the transcription factors themselves, and will then develop chemical compounds that interact with these transcription factors as a way of turning genes on and off. The aim is to provide enough knowledge about genes so that cancer can, to some extent, be prevented.

Scientific Title Equitable access to stuttering treatments: Developing distance and self managed treatment models

Administering Institution University of Sydney

Recommended Budget \$4,068,410

Chief Investigators

CIA Prof Mark Onslow

CIB Dr Ann Packman

CIC Assoc Prof Ross Menzies

Lay Description

Stuttering is a serious problem for many people. Effective treatments are available, but there are not enough well-funded speech pathology services, especially in rural areas, to get help to all who need it.

Professor Mark Onslow and colleagues from the University of Sydney aim to determine, through research trials, ways to adapt existing treatments for delivery by distance learning to rural patients who may not have access to speech pathology services. The research will also examine the effectiveness of self-management techniques to help people keep on top of their stuttering and prevent it from coming back.

Other research will look at social phobia – a form of extreme shyness suffered by about half of adults who stutter – and find ways to overcome it. All of the research in this program will attempt to gain greater understanding of why people stutter.

Scientific Title Screening and Test Evaluation Program (STEP)

Administering Institution University of Sydney

Recommended Budget \$6,316,140

Chief Investigators

CIA Prof Les Irwig

CIB Dr Jonathan Craig

CIC Assoc Prof Glenn Salkeld

CID Ms Petra Macaskill

Lay Description

Professor Les Irwig and a team from the University of Sydney are studying the under-researched area of medical tests. Should a particular test be done or not? When should it be done? How should it be done? Which test is best?

The researchers will look at how these decisions are made. They will also look at the trade-off between the benefits of tests (knowledge, helping with a diagnosis, guiding a treatment) and the harms (side-effects of the test itself, inaccurate tests, tests which lead to further unnecessary tests).

This research will benefit consumers, health professionals and policy-makers, all of whom are being tested, using tests or funding tests without being fully aware of their accuracy and effects.

Victoria

Scientific Title Novel strategies for improving respiratory support and outcomes for very preterm babies

Administering Institution Monash University

Recommended Budget \$7,895,340

Chief Investigators

CIA Prof Richard Harding

CIB Colin Morley

CIC Assoc Prof Stuart Hooper

CID Dr Peter Davis

CIE Dr Timothy Cole

Lay Description

Professor Richard Harding and his team at Monash University in Melbourne will carry out a range of studies to learn more about why premature birth causes so many problems for a baby's lungs, and to improve the way premature babies with lung problems are treated.

Researchers will study the lungs of prematurely born animals closely to understand better how their lungs work, and don't work. A number of methods will be trialled to improve lung performance in prematurely born animals.

Video recordings will also be made of premature babies, to ensure that the treatment they receive is the best possible. As well, new forms of artificial ventilation in premature babies will be trialled, to find the one which is the safest and most effective. New drugs will also be trialled to see if they improve a premature baby's chance of a healthy life.

Scientific Title Epilepsy: Molecular basis and mechanisms in the era of functional genomics

Administering Institution University of Melbourne

Recommended Budget \$11,361,890

Chief Investigators

CIA Prof Samuel Berkovic

CIB Prof Graeme Jackson

CIC Dr John Mulley

CID Assoc Prof David Reutens

CIE Dr Steven Petrou

CIF Dr Ingrid Scheffer

CIG Dr Josef Gecz

CIH Prof Alan Connelly

CII Dr David Abbott

Lay Description

Professor Samuel Berkovic and colleagues from the University of Melbourne are focussing on epilepsy, through a number of different avenues. One is to continue to study the genes that are involved in epilepsy. They will develop animal models with the exact genetic variations of people with epilepsy, and study them closely.

They will also carry out investigations such as magnetic resonance imaging and positron emission tomography on people with epilepsy. This will improve their understanding of the relationship between abnormalities in genes, abnormalities in the brain's structure and epilepsy.

These different forms of research will, when combined, help the team towards their goal of developing new and better forms of diagnosis and treatment for people with epilepsy.

Scientific Title Neurodegeneration in the ageing brain: how the pathways leading to aggregated protein cause disease

Administering Institution University of Melbourne

Recommended Budget \$11,601,890

Chief Investigators

CIA Prof Colin Masters

CIB Dr Kevin Barnham

CIC Assoc Prof Ashley Bush

CID Dr Robert Cappai

CIE Dr Robert Cherny

CIF Dr Steven Collins

CIG Dr Andrew Hill

CIH Dr Anthony White

Lay Description

A basic science research program by Professor Colin Masters and colleagues at the University of Melbourne aims to understand how and why the brain degenerates in certain conditions. The particular conditions being studied are Alzheimer's disease and Creutzfeldt-Jakob disease.

In both these conditions, proteins which should not normally be there build up, and the connections between nerve cells in the brain break down.

This research aims to understand what is happening inside the cells in the brain to make these things happen. Only with this understanding, will doctors be able to test for and treat these diseases properly.

Scientific Title Host parasite interactions: disease, pathogenesis and control

Administering Institution Walter & Eliza Hall Institute

Recommended Budget \$12,940,270

Chief Investigators

CIA Prof Alan Cowman

CIB Prof Graham Brown

CIC Dr Brendan Crabb

CID Dr Emanuela Handman

CIE Dr Malcolm McConville

CIF Assoc Prof Geoffrey McFadden

CIG Dr Louis Schofield

CIH Prof Terence Speed

Lay Description

Professor Alan Cowman and a team from the Walter and Eliza Hall Institute in Melbourne will carry out research into how parasites cause disease in humans. They will study two particular parasitic diseases which cause enormous problems around the world – malaria and leishmaniasis.

They will study how the parasites recognise a human body, and how they invade it – these are prime times which could be interrupted by the right drugs or vaccines. They will study the parasites' chemical make-up and metabolic pathways closely to see which ones could be damaged by drugs. They will also study how humans respond to the parasites.

The aim is to develop drugs and/or vaccines which can either prevent infection with these parasites, or reduce the amount of illness they cause if infection does occur.

Queensland

Scientific Title Immunobiology of Human Herpesvirus Infections

Administering Institution Queensland Institute of Medical Research

Recommended Budget \$4,737,600

Chief Investigators

CIA Prof Dennis Moss

CIB Dr Rajiv Khanna

CIC Dr Scott Burrows

Lay Description

Epstein-Barr virus causes glandular fever and is associated with numbers of cancers such as Burkitt's lymphoma, which affects the immune system. Human cytomegalovirus can cause birth defects, and is a cause of serious infections in people who have had organ transplants or who have HIV/AIDS.

Professor Denis Moss and a team from the Queensland Institute of Medical Research is investigating how the body's immune system controls these viruses – what makes them infect some people and not others? What makes it serious for some people and not others? How does the body keep the viruses under control? From this knowledge, the team hopes to develop new treatments for Epstein-Barr virus and cytomegalovirus.

Western Australia

Scientific Title Interactions between adaptable pathogens, drugs and the human host

Administering Institution Murdoch University

Recommended Budget \$5,646,950

Chief Investigators

CIA Prof Simon Mallal

CIB Dr David Nolan

CIC Dr Mina John

CID Prof Ian James

CIE Dr Corey Moore

CIF Dr Annalise Martin

Lay Description

Professor Simon Mallal and colleagues at the Centre for Clinical Immunology and Biomedical Statistics in Perth are investigating a range of issues in the viral diseases HIV and hepatitis C.

In one project, they will continue their study of the genes of different strains of HIV and hepatitis C. In another, they will look at why some drugs used to treat HIV cause life-threatening allergic reactions. In a third, they will investigate the role of drugs in one of the more serious complications of HIV, which is loss of fat tissue from the body.

Their overall aim is to provide the knowledge and tools so doctors can care for people with HIV and hepatitis C in a safer and more effective way.