

BOSCH
INSTITUTE



*Today's Research -
Tomorrow's Medicine*

*Biennial Report
2006 - 2007*



The University of Sydney

SYDNEY SOUTH WEST
AREA HEALTH SERVICE
NSW HEALTH

The Bosch Institute will contribute to the health outcomes of Australians and will deliver excellent leadership and training to the next generation of Australian researchers.

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THE BOSCH INSTITUTE – HIGHLIGHTS 2006 - 2007

Bosch Incorporated

The Bosch Institute was incorporated on 20 April 2006. The Institute is a joint initiative of the University of Sydney and the Sydney South West Area Health Service.

Inaugural Annual Scientific Meeting

The inaugural Bosch Annual Scientific Meeting “Basic research: the foundation for improving health” was held in July 2006. A celebration dinner for 100 guests was held in the Holme Building.

Nature Article - Amyloid at the blood vessel wall

Dr Karen Cullen’s paper on amyloid at the blood vessel wall and its relationship to Alzheimer disease was published in the July 2006 edition of Nature Medicine.

Establishment of Core Facilities and Professional Officers

The Bosch Institute established Core Facilities in Molecular Biology, Advanced Microscopy and Flow Cytometry. The appointment of Professional Officers provides all Bosch Members with expert training and advice.

Tissue Engineering Symposium



In November 2006 over 110 attendees including 2 international speakers attended the Tissue Engineering Symposium. The day was supported by the Faculties of Engineering and Medicine.

Bosch Young Investigator Symposium

The Bosch Young Investigators Symposium was held on Friday 15 December 2006. The one day symposium was the 6th Young Investigators Symposium but the first one under the Bosch banner.



Mr Bob Kotic, COO & Deputy Vice Chancellor, presented Marayam Seyedabadi with the 2006 Bercovici Prize

Cure Cancer Fellowships

In February 2007 Doctors Robert Sutak and Xiao Huang were awarded Cure Cancer Australia Fellowships.

Bosch Young Investigator receives Promega Award

Helena Mangs, a PhD student in Professor Morris’ Lab, won the Promega Award at the 2007 Lorne Genome Conference.

Nature Article – “the Machinery of Colour Vision”

A review article on “the Machinery of Colour Vision” co-authored by Samuel Solomon of the Bosch Institute was the featured article (and cover) of the April 2007 issue of Nature Reviews Neuroscience.



Honours Students Orientation Program



Honours Students attended the Bosch orientation program in March 2007. This unique training course is convened and organized by Associate Professor Frank Lovicu, Bosch Young Investigator Coordinator.

Cancer Institute NSW Infrastructure Grant

In April 2007 the Cancer Institute NSW awarded Bosch researchers \$340,450 for the purchase of molecular biology equipment and support staff salary.

Nature Article - "Cortical reorganization"

Joshua Young and Professor Bogdan Dreher published a paper on "Cortical reorganisation" in Nature Neuroscience in May 2007.

Nature "News & Views"

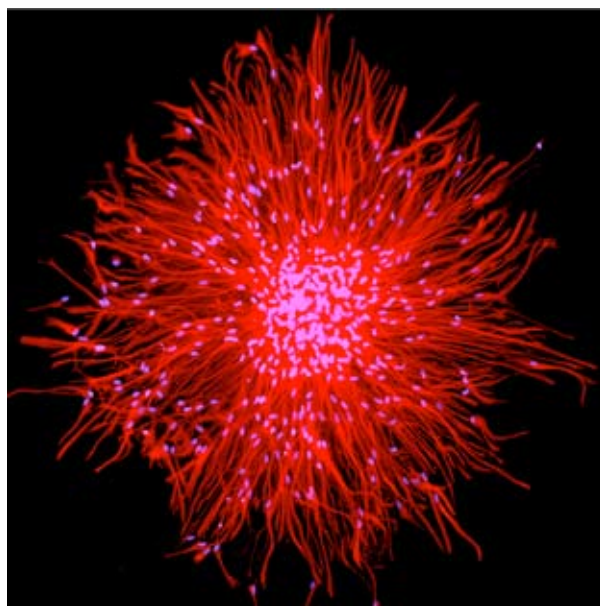
Executive Director of the Bosch Institute, Professor Nicholas Hunt, and colleague Professor Roland Stocker, Head of the Vascular Research Laboratory of the Bosch Institute, were invited to submit a "News and Views" article on "Heme moves to center stage in cerebral malaria" that appeared in Nature Medicine, Volume 13, Number 6, June 2007.

Opening of Confocal Microscope



On 1 November 2007, Professor Brown, Vice Chancellor of the University of Sydney, officially opened the Bosch confocal facility.

2007 Micrograph of the Year



Dr Michael Weible's winning image. Multipotent neural stem cells isolated from human spinal cord. These neural cells have been marked with an antibody to GFAP (red) and the nuclei counterstained with DAPI (purple). Image taken with the Zeiss deconvolution microscope.

Cooper & Bercovici Prize Recipients



From l to r: Professor Anne Sefton, Deputy Chancellor, University of Sydney, Joshua Young, Dr Renae Ryan and Professor Carol Armour, Acting PVC Research, University of Sydney.

FROM THE EXECUTIVE DIRECTOR



The first two years of operation of the Bosch Institute have been exciting and challenging. Elsewhere in this report are details of some of the Institute's achievements in publication of research findings and our burgeoning success in obtaining research grant support from government and charitable sources. There also have been many positive outcomes that are just as important but difficult to quantify. For example, we have brought our scientists together into five Research Themes, which increases collaboration and the ability to tackle major human disease problems. Each of these Research Themes has developed, or is in the process of developing, coherent programmes to tackle those health issues.

Another important achievement has been to create and expand three core research facilities, the Advanced Microscopy Facility, Molecular Biology Facility and Flow Cytometry Facility. Each of these is directed by a highly qualified researcher who manages equipment, develops new research applications and trains scientists in the proper use of the available technologies.

This education function is important for another major goal of the Bosch Institute, namely to provide structured training in research and career development for Young Investigators. The Institute is very proud of the achievements of its Young Investigators, which you can read about in this report. Bosch Institute members strongly believe that proper training and mentoring is very important not only for the young researchers themselves, but also for the future of medical research.

Finally, the Institute has made great strides in encouraging interactions between laboratory scientists and clinical researchers. Around 25% of our members interact with patients on a regular basis and this helps to give a proper emphasis and direction to research within the Institute.

We look forward to an exciting future prospect, the development by the University of Sydney of a major medical research building that will be occupied by University researchers, research institutes including the Bosch, and clinical researchers from Royal Prince Alfred Hospital. This state-of-the-art building will help the Institute to overcome the dislocation inherent in having researchers based in several separate buildings around the University of Sydney / Royal Prince Alfred Hospital campus. Further core facilities are planned for Bosch in this new setting, and training opportunities will be increased. During this next exciting stage of development, the Institute's contribution to medical research in 2006 and 2007 will increase both in scale and in impact on preventing, diagnosing and treating human disease.

"The Bosch Institute is the "smart" bridge between the fundamental researchers from the University of Sydney and the clinicians from the Sydney South West Area Health Service. Our goal is to filter, interpret and add to fundamental knowledge in the pursuit of delivering better health outcomes"

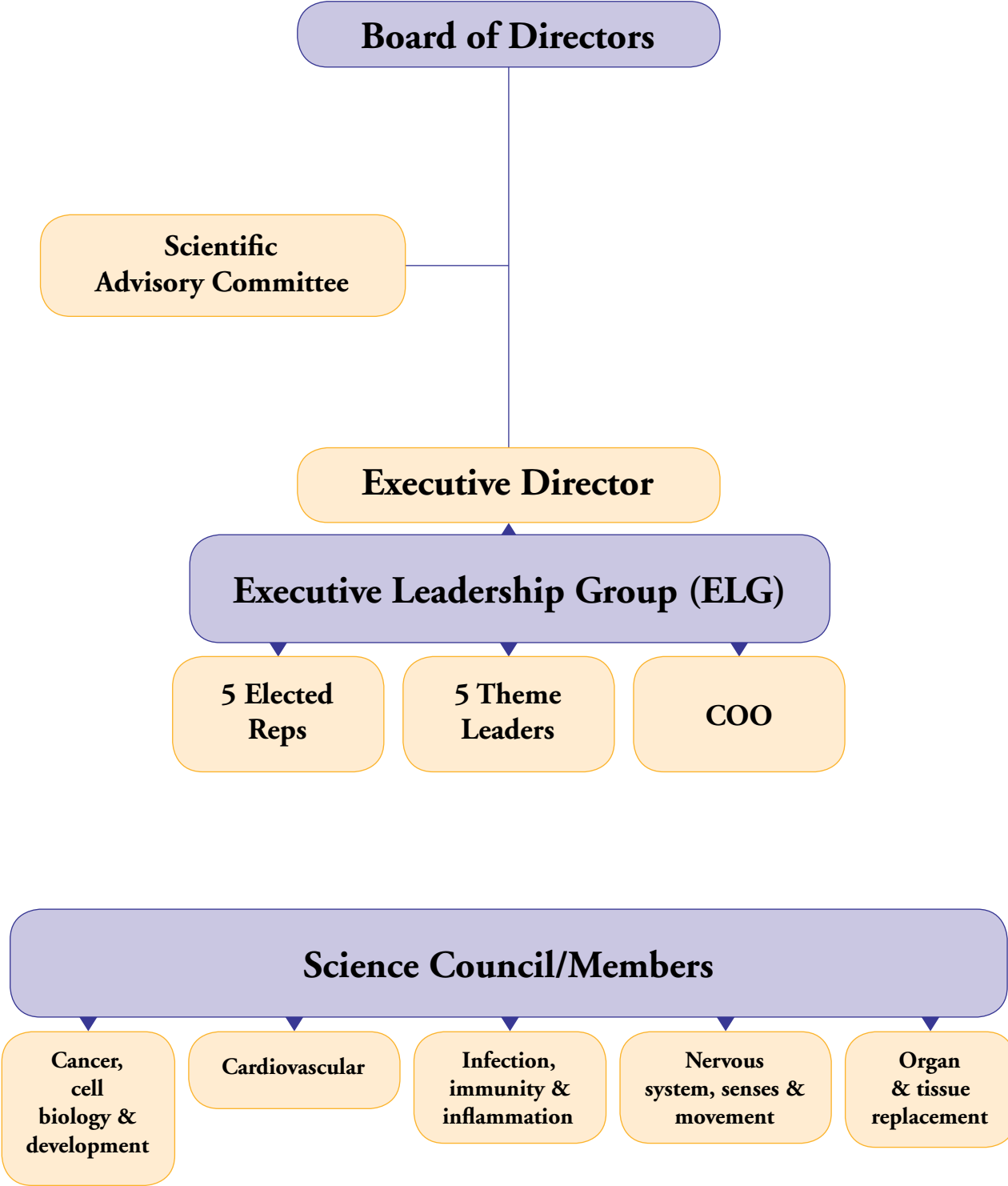
A handwritten signature in black ink that reads "Nick Hunt".

Nick Hunt
July 2008

THE BOSCH INSTITUTE

Registered Office	Edward Ford Building, A27 University of Sydney NSW 2006
Board Board (as at March 2008)	Mr John Stumbles (Chairman) Professor David Burke Professor Merlin Crossley Dr Roy Donnelly Professor Ben Freedman Mr Michael Good Dr Michael Jackson Professor Philip Kuchel Professor Chris Murphy Professor Jonathon Stone Ms Janice Taylor
Executive Director	Professor Nicholas Hunt
Chief Operating Officer	Ms Jacquie Stratford
Research Theme Leaders: <i>Nervous system, senses & movement</i> <i>Infection, immunity & inflammation</i> <i>Cancer, cell biology & development</i> <i>Organ & tissue replacement</i> <i>Cardiovascular</i>	Professor David Allen Professor Nick King Professor Des Richardson Dr Alexandra Sharland Professor Roland Stocker
Executive Leadership Group: <i>(includes Executive Director, Chief Operating Officer, Research Theme Leaders and these 5 Elected Members)</i>	Associate Professor Tailoi Chan-Ling Associate Professor Frank Lovicu Professor Rebecca Mason Associate Professor Stephen Twigg Associate Professor Robert Vandenberg
Scientific Advisory Committee	Professor John W Eaton Professor Simon C Gandevia Professor Robert M Graham E/Professor Thomas John Martin Professor Christopher R Parish
Company Secretary	Mr Mark Easson
Executive Assistant	Ms Kathleen Evans
Administrative Assistant	Ms Jennifer Stevenson

ORGANISATIONAL STRUCTURE



RESEARCH STAFF

The Bosch Institute brings together research scientists and clinicians primarily from the disciplines of Anatomy, Physiology, Pathology and Pharmacology but also includes a number of key researchers from the disciplines of Medicine and Surgery, the School of Molecular and Microbial Biosciences (MMB) and the Faculty of Engineering, as well as staff of Royal Prince Alfred Hospital.

Lab Heads and Senior researchers

The Bosch Institute has 88 Lab Heads and Senior Researchers in 73 laboratories. As many of our researchers are actively involved in undergraduate teaching, all staff numbers are expressed as research FTE's.

Bosch Members (as at March 2008)

Bosch	FTE's
Executive	3.5
Senior Researchers	53
Research/Postdoctoral Fellows	86
Research Students	192
Core Officers	2.5
Other Research Support Staff	48.5
Visiting Fellows	10
Total	395.5

The Bosch Institute is a joint initiative of the University of Sydney and the Sydney South West Area Health Service. It has an MOU with the Sydney Institutes for Health & Medical Research (SIHMR) and the Executive Director and Chief

Operating Officer are members of the SIHMR Advisory Council.

The Bosch Institute's laboratories are located across the main campus of the University of Sydney. Researchers are based in the Anderson Stuart Building, the Bosch/Blackburn Precinct and the Medical Foundation Building. In addition there are Bosch laboratories within Royal Prince Alfred Hospital as well as the School of Molecular and Microbial Biosciences and the Faculty of Engineering.

This offers the opportunity for the basic researchers to interact directly with the clinical scientists and their patients thereby ensuring a comprehensive and cohesive approach to basic, translational and clinical research aimed at improving health outcomes.

Core Facility Officers

The Bosch Institute has established three vital multi-user facilities:

- Advanced Microscopy Facility
Dr Louise Cole
- Flow Cytometry Facility
Dr Sabita Rana
- Molecular Biology Facility
Dr Donna Lai

RESEARCH STRATEGY

The Bosch institute has already established itself as one of the largest, health outcomes focussed, biomedical research institutes within the state of NSW. In its short history the Bosch Institute has successfully brought together a number of world leaders and strategically aligned these researchers into five key areas or **Research Themes**.

- Cancer, cell biology & development
- Cardiovascular
- Infection, immunity & inflammation
- Nervous system (mental health), senses & movement
- Organ & tissue replacement

These **Research Themes** focus on the strengths of existing researchers and the major health issues affecting the people in this state.

Three of our Research Themes focus on cardiovascular diseases, cancer and the nervous system (mental illness), which account for well over half of the overall burden of disease in NSW.

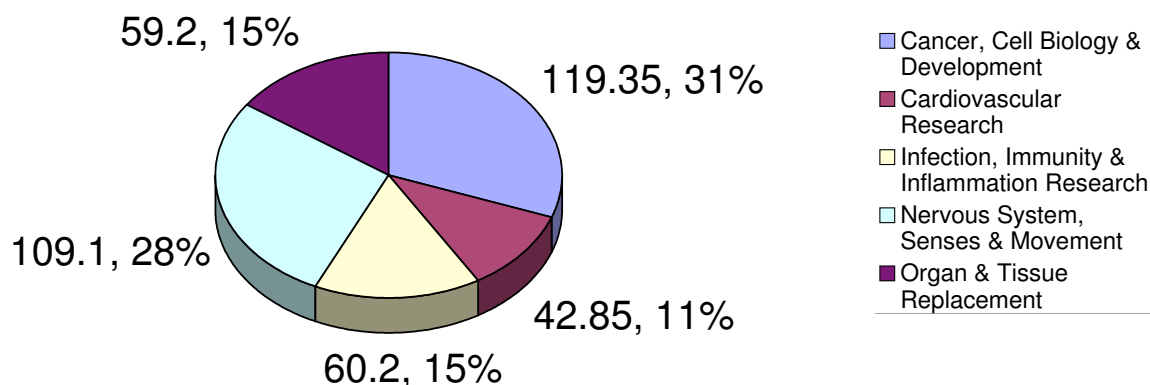
The fourth theme, organ and tissue replacement, aims to address the ever growing need for transplantation or tissue renewal or regeneration as well as optimising the yield and quality of donor organs.

The focus of the infection, immunity and inflammation Research Theme is on major diseases affecting over 2/3rds of the developing world, including malaria and West Nile virus.

“Over 45,000 people die in NSW every year, with over one third still dying prematurely. This represents a considerable loss of potential years of life. The most common causes of death in the State are cardiovascular diseases, including coronary heart disease and stroke, cancers, chronic respiratory diseases, nervous system diseases, unintentional injuries and poisoning, and digestive system diseases.”

A New Direction for NSW State Health Plan, Towards 2010

Research FTE within Themes



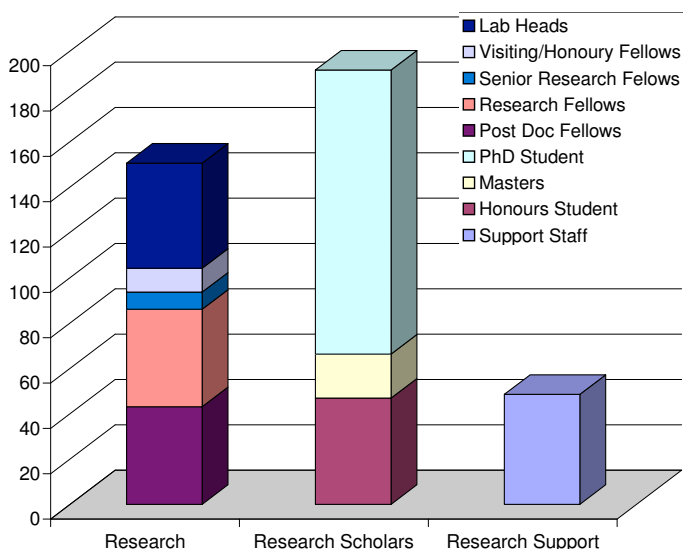


RESEARCH TRAINING PROGRAMS - BOSCH YOUNG INVESTIGATORS (BYI)

BYI Coordinator – A/Professor Frank Lovicu

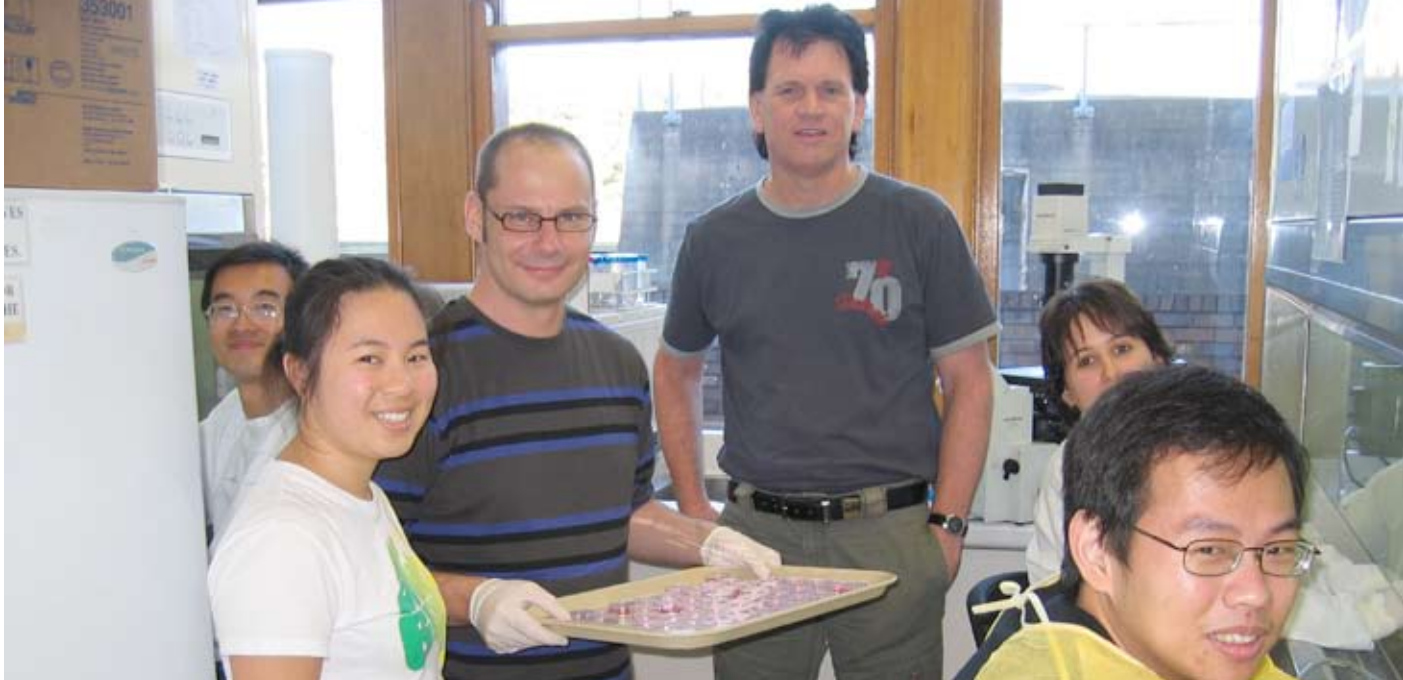
The Bosch Institute provides outstanding training for young biomedical researchers. With over 230 young researchers, currently comprised of 53 honours students, 166 masters and PhD students and a number of postdoctoral trainees, the Bosch Young Investigators are central to the future success of the Institute.

Bosch has created a structure for the training and career development of young biomedical researchers. This training spans the period from undergraduate Honours (students enrolled in the Bachelor of Science and Medical Science degrees), through to approximately 10 years post-PhD or MBBS.



The key elements of this program include:

- New Investigator Induction programs covering ethics, safety and generic research attributes such as Experimental Design, Statistics, Data Analysis and Oral Presentation Skills, Scientific writing of abstracts, theses and manuscripts, as well as an introduction to all the core facilities available in the Institute and on campus.
- Many training courses in technical aspects of molecular biology, advanced microscopy and flow cytometry delivered by the Core Facility Officers.
- Quarterly scientific seminars organised and run by the Young Investigators themselves.
- Annual postgraduate student retreat at Kioloa, based around scientific presentations and career development sessions.
- Annual Young Investigator Symposium, organised and run by the Young Investigators themselves.
- Career development sessions for Early Career Researchers (approximately 3 – 7 years postdoctoral).



CANCER, CELL BIOLOGY & DEVELOPMENT

Theme Leader - Professor Des Richardson

Cancer research deals with a set of fundamental issues: individual susceptibility to developing cancer; cancer prevention (e.g. through lifestyle changes); early detection and treatment; monitoring treatment response; identifying the changes in cells that lead to cancerous growth; living with the consequences of cancer. Many of these challenges are being tackled within the Bosch Institute's Cancer, Cell Biology and Development Research Theme.

During the development of a baby inside its mother, all its cells divide and multiply at some stage. Later in development, most of these cells stop dividing on a regular basis but retain the ability to do so if required. Further growth occurs during childhood, and in adult life some cells that are continually being used up (e.g. those of the skin or blood) need to be continually replenished. Just as cells need to be stimulated to divide and multiply, so they need to be "instructed" when to stop that multiplication. In cancer, the balance between the chemical signals that induce cells to divide and those that switch off division is disturbed, resulting in uncontrolled proliferation of the affected cells. Sometimes the cells spread locally within the tissue (malignant cancer), or enter the blood vessels and spread to other parts of the body (malignant metastatic cancer). The consequences can be life-threatening.

Cancer research is carried out in laboratories in test tubes, or in hospitals, and at all points in between. Many areas of biomedical research are relevant to

understanding cancer. Someone in a laboratory may notice something abnormal about the way that the DNA of a cell is arranged; someone in a clinical setting may spot a pattern in the cancers that he or she is treating. Ideally, these researchers will interact with each other, which is one of the aims of the Cancer, Cell Biology and Development Research Theme. Understanding the ways that cells control their everyday behaviour is vitally important. So is an appreciation of the biology of foetal development. Bosch researchers in these areas interact with those who have a specific focus on cancer. Others are concerned with the development of anti-cancer drugs – some very promising ones have been identified recently. Within Royal Prince Alfred Hospital, the haematologists study various aspects of leukaemia.

Above all, cancer is about genes – whether they are switched on or off, whether they become mutated so that their products act abnormally, how they influence the processes of cell division, and so on. Researchers in several Bosch laboratories are tackling these key questions. Recently, several research groups have come together to focus in novel and productive ways on the increasing problem in Australia of prostate cancer.

The Bosch Institute's Cancer, Cell Biology & Development Theme comprises the following Laboratories (as at March 2008)

Andrology Research Group

Dr Stephen Assinder	Head
Mr Sleitini Hayssam	M Phil
Ms Edith Au	Honours Student
Mr Philip Smith	Honours Student

Animal Development Group

Professor Maria Byrne	Head
Dr Paula Cisternas	Post-doc Fellow
Dr Inke Falkner	Post-doc Fellow
Dr Paulina Selvakumaraswamy	Post-doc Fellow
Mr Sergio Barbosa	PhD Student
Miss Hong Dao Nguyen	PhD Student
Miss Laura Elia	PhD Student
Miss Rosemary Golding	PhD Student
Mr Hugh Jones	PhD Student
Mr Thomas Prowse	PhD Student
Miss Melanie Ho	Honours Student
Miss Jessica Lee	Research Assistant
Miss Natalie Soars	Research Assistant

Chemical Biology in Drug Discovery Laboratory

Dr Rachel Codd	Head
Mrs Najwa Braich	PhD Student
Mr Joe Liu	M Phil
Ms Douha Lozi	Honours Student
Ms Cho Zin Soe	Research Assistant

Molecular Nutrition Laboratory

A/Professor Arthur Conigrave	Head
Dr Vimesh Avlani	Post-doc Fellow
Dr Hee-chang Mun	Post-doc Fellow
Ms Sarah Brennan	PhD Student
Mahvash Khan	PhD Student
Mr Geoffrey Broadhead	Honours Student
Mr Roy Chan	Research Assistant

Epithelial Transport Laboratory

Professor David I Cook	Head
Dr Anuwat Dinudom	NH&MRC SRF
Dr Il-Ha Lee	Post-doc Fellow
Dr Lauren O'Mullane	Post-doc Fellow
Mr Craig Campbell	PhD Student
Ms Sung-He Song	PhD Student
Mr Jason Han	Honours Student

Developmental Physiology Laboratory

Dr Margot Day	Head
Mr Shannon Chu	Honours Student
Mr Alexander Chen	Honours Student

Cancer Biology Group

Dr Qihan Dong	Head
Dr Jaskirat Singh	Research Fellow
Dr Mu Yao	Research Fellow
Mr Sheng Hua	PhD Student
Ms Caroline Kurek	PhD Student
Ms Marzy Niknami	PhD Student
Mr Rob Salomon	PhD Student
Mr Soma Vignarajan	PhD Student
Mr Edward Kim	Honours Student

Ms Anna Egardt	Visiting Student
Ms Christina Nilsson	Visiting Student

Blood Stem Cell Transplantation Unit

Clinical A/Professor John Gibson Head

Dermatology Research Laboratories

Professor Gary Halliday	Head
A/Professor Diona Damian	CI Research Fellow
Dr Fergal Moloney	Research Fellow
Dr Scott Byrne	Research Fellow
Dr Kirsten Hammond	Research Fellow
Dr Xiao Huang	Research Fellow
Dr Guy Lyons	Research Fellow
Dr JooHong Park	Research Fellow
Dr Sabita Rana	Research Fellow
Dr Yue Zhou	Visiting Fellow
Dr Arash Javeri	PhD Student
Dr Yuang Ying Peng	PhD Student
Dr Yasmin Renwick	PhD Student
Dr Geetha Sivapirabu	Masters Student
Mr Paul Sou	Masters Student
Ms Clare O'Sullivan	Honours Student
Ms Christa Boehm	Laboratory Manager
Ms Clare Beaugie	Research Assistant
Ms Carling Chan	Research Assistant
Ms Linda MacDonald	Research Assistant
Ms Naomi Roue	Research Assistant

Molecular Pathogenesis Group - Myeloma

Clinical A/Professor P. Joy Ho	Head
Professor Doug Joshua	Head
Dr Ross Brown	Principal Scientist
Ms Esther Aklulu	Research Assistant
Ms Karieshma Kabani	Research Assistant
Ms Shihong Yang	Research Assistant

Molecular & Cellular Biology of Leukemia Unit

Clinical A/Prof Harry Iland	Head
Clinical A/Prof Graham Young	Senior Staff Specialist
Dr Alberto Catalano	Senior Hospital Scientist
Dr Shane Supple	Hospital Scientist
Dr Chong Li	Hospital Scientist
Ms Francisca Springall	Hospital Scientist
Ms Cheryl Paul	Hospital Scientist
Dr Christina Brown	CI Research Fellow
Dr Bi-ke Zhu	Hospital Scientist

Cancer Pathology Laboratory

Clinical Prof Cheok Soon Lee	Head
Dr Joo Shin	PhD Student
Dr Wendy Cooper	PhD Student
Dr Rooshdiya Karim	PhD Student
Dr Angela Hong	Research Associate
Ms Susan D'Silva	STO
Ms Trina Lum	Scientific Officer

Lens Research Laboratory

A/ Professor Frank Lovicu	Head
Ms Hailey Shin	PhD Student
Ms Jessica Boros	Research Assistant

Bone & Skin Laboratory

Professor Rebecca S Mason	Head
Dr Clare Gordon-Thomson	Research Fellow
Dr Mark Rybchyn	Research Academic
Mr Henry Huang	PhD Student
Ms Melissa Barron	PhD Student
Ms Vanessa Sequiera	PhD Student

Cell & Reproductive Biology Laboratory

Professor Chris Murphy	Head
Dr Susan Adams	Honorary Associate
Dr Suzanne Ollerenshaw	Honorary Associate
Dr Michael Slater	Honorary Associate
Professor Mike Thompson	Honorary Associate
Dr Laura Lindsay	Post-doc Fellow
Dr Scott Parker	Post-doc Fellow
Ms Joanna Biazik	PhD Student
Ms Romina Ilad	PhD Student
Ms Yui Kaneko	PhD Student
Ms Bridget Murphy	PhD Student
Ms Laura Venuto	PhD Student
Ms Monique Atkinson	BMedSci
Ms Nicole Tom	Honours Student
Ms Jaquie Herbet	Research Assistant

Human Reproduction Unit

A/Professor Chris O'Neill	Head
Ms Lakshmi Ganeshan	PhD Student

Human Molecular Genetics Laboratory

Professor Juergen Reichardt	Head
Dr Sarah Curtis	Post-doc Fellow
Dr Lucia Musumeci	Post-doc Fellow

Florence Cheung	PhD Student
Francine Marques Coelho	PhD Student
Raffaele Ottaviano	Visiting Volunteer

Iron Metabolism & Chelation Program

Professor Des Richardson	Head
Dr Erika Becker	Research Fellow
Dr David Lovejoy	Research Fellow
Dr Robert Sutak	Research Fellow
Dr Katie Dixon	Research Officer
Dr Minh Hyunh	Research Officer
Dr Patric Jansson	Research Officer
Dr Danuta Kalinowski	Research Officer
Dr Maggie Lok	Research Officer
Dr Rosei Siafaka	Research Officer
Dr Yohan Suryo Rahmanto	Research Officer
Mr Michael Huang	PhD Student
Miss Zaklina Kovacevic	PhD Student
Mrs Federica Saletta	PhD Student
Miss Megan Whitnall	PhD Student
Mr Tetsuo Yamagishi	PhD Student
Miss Yu Yu	PhD Student
Mr Tom Prichard	Honours Student
Mr Edwin Lim	Research Assistant
Miss Dan Lu	Research Assistant
Mrs Vera Richardson	Research Assistant

Reproductive Toxicology Laboratory & CHALUS

Professor Bill Webster	Head
Dr Andrew Howe	Hon Res Fellow
Dr Helen Ritchie	Research Fellow
Dr Diana Oakes	Research Fellow
Ms Deena Ababneh	PhD Student

Dr David Lovejoy

David is a senior researcher in Professor Des Richardson's Laboratory and works with, compounds that bind tightly to iron and prevent it carrying out some key functions in cells. These chelators have exciting properties including the ability to stop cancer cell growth.

David commented "We have designed novel iron chelators for cancer treatment and discovered potent and selective anti-cancer activity of the first generation chelator, Dp44mT, in human tumour cells."

David is the recipient of a Cancer Institute NSW Early Career Development Fellowship. The Fellowship is for three years (2008 – 2010) and total funds awarded \$587,637.

"This Fellowship will enable clinical development of our highly active agents, which we believe will lead to better clinical outcomes for cancer patients" added David.



CARDIOVASCULAR RESEARCH

Theme Leader - Professor Roland Stocker

Cardiovascular disease is a general term for conditions that involve the heart or blood vessels. Atherosclerosis (hardening of the blood vessels) is the single major underlying cause of cardiovascular disease, and often causes an interrupted or diminished blood flow through arteries to major organs such as the heart and brain. The main cardiovascular diseases are heart attack, stroke and peripheral vascular (vessel) disease. Cardiovascular disease is the leading cause of death in Australia and other Western countries. In 2001, an estimated 3.2 million Australians, or 17 per cent of the population, suffered from cardiovascular conditions. Cardiovascular disease is set to become the major cause of disability and death worldwide.

A focus within the Bosch Cardiovascular Theme is atherosclerosis. The Vascular Research Laboratory is the University of Sydney's node of a national organisation, the Centre for Vascular Research. It studies the contribution of oxidation and inflammation to atherosclerosis. The group has patented novel molecules that have promise as potential new drugs against heart disease.

The Muscle Research Unit focuses on molecular defects in the failing human heart. Over the years, the Unit has acquired a large collection of diseased and human hearts. This unique and most valuable resource is available to the Theme for research. The complementary research activities of the Cardiac Proteomics Laboratory encompass the biochemistry

of heart failure. There also are collaborations within the Theme on ischemia-reperfusion injury in the heart and on restenosis after vascular injury, the latter being the propensity of atherosclerotic arteries that have been mechanically unblocked to again become occluded.

Several laboratories are studying the regulation of blood pressure. The Cardiovascular Neuroscience laboratory investigates the control of blood pressure and sympathetic nerve activity by the brain, both under normal conditions and under abnormal conditions such as high blood pressure. Evidence suggests that sympathetic nerve activity may be increased in long-term conditions, such as hypertension and heart failure, as well as in short-term conditions, such as acute stress and exercise. The Basic & Clinical Genomics Laboratory continues its studies of the relationship between genes and blood pressure regulation, building on its long tradition of innovation in research into renin, a major control molecule. Researchers in the Medical Genetics group are studying the interaction of genes and the environment in determining the performance of the human heart. Of particular interest are the hearts of elite athletes. Finally, several laboratories have come together to jointly investigate the role of tryptophan products in the regulation of vascular tone during inflammation.

The Bosch Institute's Cardiovascular Theme comprises the following Laboratories (as at March 2008)

Basic & Clinical Genomics Laboratory

Professor Brian Morris	Head
Dr Andrea Markus	Post-doc Fellow
Ms Helena Mangs	PhD Student
Ms Christine Goy	Research Technician

Cardiac Proteomics Laboratory

Professor Richmond Jeremy	Head
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Cardiac Proteomics Laboratory Macromolecular Structure Laboratory

A/Professor Brett Hambly	Head
Ms Angie Harris	PhD Student
Ms Komal Prabhu	PhD Student
Ms Joo-Mee Hwang	PhD Student

Cardiovascular Disease Detection and Prevention

Professor David Celmaj	Head
Dr Julian Ayer	PhD Student
Dr Bernie Changsiri	PhD Student
Dr Rahn Ilsar	PhD Student
Dr Sanjay Patel	PhD Student
Ms Clementine David	Honours Student
Mr Jason Harmer	Research Assistant
Ms Rebecca Micallef	Research Assistant

Medical Genetics Laboratory

Professor Ron Trent	Head
Dr Thein Ga Tut	Research Officer
Dr Bing Yu	Senior Lecturer
Dr Tony Roscioli	NHMRC Fellow
Ms Julia Morahan	Post-doc Fellow
Ms Natasha Luquin	PhD Student
Ms Angela Zhou	Honours Student
Ms Daniela Barreto	Research Assistant
Ms Rebecca Saunderson	Research Assistant

Microbial & Cardiac Proteomics Group

Dr Stuart Cordwell	Head
Dr Melanie White	NHMRC (CJ Martin Fellow)
Mr Alistair Edwards	PhD Student
Mr Nathan Hare	PhD Student
Mr Nichollas Scott	PhD Student
Ms Lia Moshkanbaryans	Honours Student
Mr Ben Parker	Honours Student
Mr Nestor Solis	Honours Student
Ms Angela Connolly	Research Assistant

Muscle Research Unit

Professor Cristobal dos Remedios	Head
Dr Neil Nosworthy	Research Fellow
Dr Deepak Chhabra	Post-doc Fellow
Dr Sean Lal	PhD Student
Mr Claude Soto	PhD Student
Mr Maurizio Stefani	PhD Student
Ms Colleen Estigoy	Masters Student
Mr Rajeev Koundinya	Masters Student
Ms Alana Mohamed	Masters Student
Mr Ahmad Alcheikh	Honours Student
Dr Lisa Nguyen	Honours Student

Vascular Research Laboratory

Professor Roland Stocker	Head
Dr Sabine Wimmer-Kleikamp	Research Fellow
Dr Konstanze Beck	Post-doc Fellow
Dr Emma Collinson	Post-doc Fellow
Dr Joanne Dennis	Post-doc Fellow
Dr Neil Hime	Post-doc Fellow
Dr Ghassan Maghzal	Post-doc Fellow
Dr Robyn Midwinter	Post-doc Fellow
Dr Yutang Wang	Post-doc Fellow
Dr Dechaboon Changsiri	PhD Student
Cheng Li	PhD Student
Xiao Suo Wang	PhD Student
Bettina Fuchs	Honours Student
Jie Liu	Research Assistant
Dr Cacang Suarna	Research Assistant

Dr Ghassan Maghzal



Ghassan is a postdoctoral research fellow working in the University of Sydney node of the Centre for Vascular Research (CVR), under the supervision of Professor Roland Stocker. His research focus is primarily in the field of redox biochemistry and free radical biology and medicine, and placed within the Cardiovascular Theme of the Bosch Institute. He has a particular interest in establishing methods to examine cellular oxidative stress, especially those involved in heart disease and diabetes. In his current project, he has found that IDO, a protein that breaks down the essential amino acid tryptophan, is activated by cytochrome b5 and not a reduced form of oxygen, as has been widely thought. This is important as IDO is involved in multiple cellular pathways including immune regulation, neuropathology, microbe and tumor defense, and regulation of blood pressure. Understanding the mechanism of IDO activation may help in the development of novel therapies against heart disease, cancer and infection.



INFECTION, IMMUNITY AND INFLAMMATION RESEARCH

Acting Theme Leader - Professor Iain Campbell

Our body is under constant challenge from various threats in the environment and from within. Our immune system has evolved to detect and defend us against many of these threats. The weapons of the immune system include specialized cells called leukocytes (e.g. lymphocytes, macrophages and granulocytes) and an arsenal of ammunition including antibodies, cytokines and complement. Working together these immune weapons produce a reaction known as inflammation, which can be seen in the pain, redness, swelling and heat that accompany a splinter in the finger. Without a properly functioning immune system we would succumb quickly to colonisation and attack from invaders such as viruses, bacteria, protozoa and fungi. We also would be much more prone to develop cancer as rogue tumour cells escape surveillance and destruction by our leukocytes. Yet, even though the immune system is crucial for our survival, an over-vigorous or mis-targeted immune response arising from an infection or other challenge can cause malfunction, damage and even death of tissues and cells. This can give rise to undesirable side-effects, as is seen in allergies, or be the cause of disabling and life-threatening diseases ranging from sepsis and encephalitis to autoimmune disorders exemplified by multiple sclerosis and rheumatoid arthritis.

Bosch researchers in this Theme are developing a detailed understanding of the initiating factors and mechanisms of damage and disease elicited by

different infectious agents in relation to the immune response. The overriding objective is eventually to use what we learn from this research to harness the immune response to more effectively fight or even prevent (through vaccination) infection, but at the same time limiting collateral damage to the body. Some key microbial targets include the malaria parasite which is responsible for some of the highest death rates in the world from an infectious agent, West Nile Virus which has emerged as a major cause of encephalitis, and the H5N1 variant of “bird flu” which threatens a catastrophic pandemic. A further important focus of researchers in this theme is to understand the mechanisms that drive inflammation in tissues such as the blood vessels, brain, gut, lungs and skin. This research has important implications for understanding the causes of diseases such as asthma, atherosclerosis, multiple sclerosis, inflammatory bowel disease, colon cancer and melanoma and for developing strategies to prevent them.

Iain Campbell heads the Neuroimmunology Program within the Bosch Institute and is serving as the temporary leader for the Infection, Immunity and Inflammation Theme, replacing Professor Nicholas King who is on sabbatical leave. Iain’s research focuses on the mechanisms of immune and virally-induced disease in the central nervous system.

The Bosch Institute's Infection, Immunity and Inflammation Theme comprises the following Laboratories (as at March 2008)

Molecular Immunopathology Unit

Professor Nicholas Hunt	Head
Dr Hajime Yuasa	Visiting Fellow
Dr Christopher Austin	Post-doc Fellow
Dr Helen Ball	Post-doc Fellow
Ms Leia Hee	PhD Student
Mr Loke Khaw	PhD Student
Mr James McQuillan	PhD Student
Ms Tareen Ho	Masters Student
Ms Meichien Say	Research Assistant
Ms Mariam Chaalan	Laboratory Technician

Molecular Virology Unit

Professor Peter McMinn	Head
Dr Chee Choy Kok	Post-doc Fellow
Dr Patchara Phuекtes	Post-doc Fellow
Ms Lorraine Sue	Honours Student

Mucosal Immunology Laboratory

Dr Bob Bao	Head
Ms Charmere Coon	PhD Student
Mr Tony Lin	PhD Student
Ms Nasim Nik Travacole	PhD Student
Mr Brian Tan	PhD Student
Mr Belel Charm	Honours Student

Neuroimmunology Laboratory

Professor Iain Campbell	Head
Ms Vanessa Gysbers	Associate Lecturer
Dr Marcus Hofer	Post-doc Fellow
Dr Peter Manders	Post-doc Fellow
Ms Sally Carter	PhD Student
Mr Rick Frausto	PhD Student
Ms Wen Li	PhD Student
Ms Kathy Kua	Honours Student
Ms Tehara Wickremeratne	Honours Student
Ms Sue Ling Lim	Research Assistant
Ms Regina Zabaraz	Research Assistant
Ms Laura Parker	Research Technician

Respiratory Research Group

Professor Judith Black	Head
Dr Janette Burgess	NHMRC (RD Wright Fellow)
Dr Brian Oliver	Research Fellow

Respiratory Research Group (cont)

Dr Yukikazu Ichimaru	Post-doc Fellow
Dr Lyn Moir	Post-doc Fellow
Dr Markus Weckmann	Post-doc Fellow
Ms Qi Ge	PhD Student
Ms Karryn Grafton	PhD Student
Mr David Krimmer	PhD Student
Mr Curtis Kuo	PhD Student
Miss Justine Lau	PhD Student
Ms Jessica Barron	Honours Student
Mr David Van Ly	Honours Student
Mr Pablo Britos	Technical Assistant
Ms Rachel Sutton	Research Assistant
Ms Maree Svolos	Research Assistant

Smooth Muscle Mechanics Laboratory

Dr Brent McParland	Head
Dr Thomas Trian	Post-doc Fellow
Mr Pranavan Sothirajah	Masters Student
Ms Clare Cheung	Honours Student
Mr Gurinder Sidhu	Honours Student

Vascular Immunology Laboratory

Professor Georges Grau	Head
Dr Valery Combes	Senior Research Fellow
Dr Angeles Sanchez-Perez	Research Fellow
Dr Pauline Goh	Visiting Researcher
Dr Ronan Jambou	Visiting Fellow
Fatma El-Assaad	PhD Student
Araz Shogher Boghossian	Honours Student
Amandine Bonhoure	Research Assistant
Marie Jose Jambou	Research Assistant
Petronella Fielding	Administration

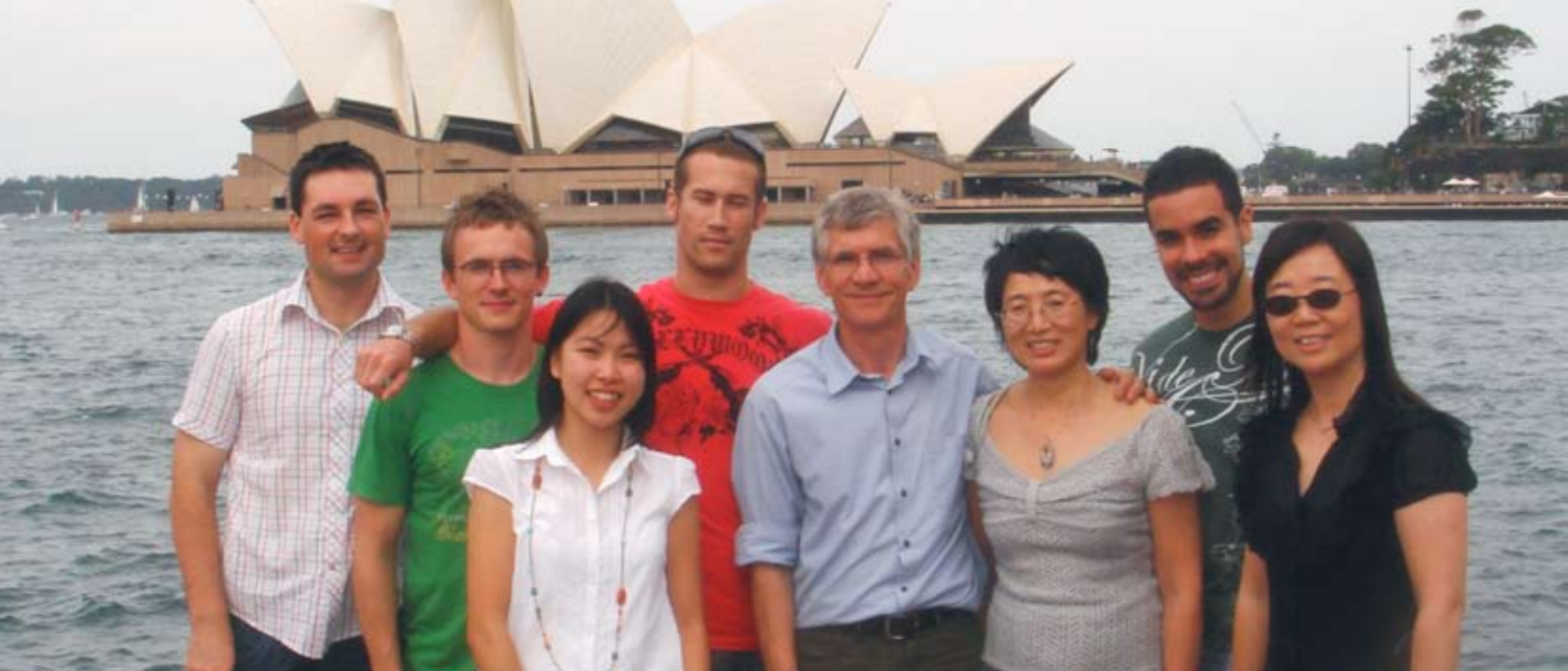
Viral Immunopathology Unit

Professor Nicholas King	Head
Ms Ariane Davison	PhD Student
Mr Zheng Ling	PhD Student
Ms Rachel Terry	PhD Student
Ms Amanda Yeung	PhD Student
Mr Luis Munoz-Erazo	Masters Student

Leia Hee



Leia Hee and her supervisor, Professor Nick Hunt, attended the Rotarians Against Malaria Conference in Brisbane in June 2007. Leia, who is the recipient of the only PhD Scholarship for malaria research so far given by Australian Rotarians, spoke of her research into the causes of lung complications in malaria. Many people who contract severe malaria after being bitten by an infected mosquito go on to develop lung oedema. The air spaces in the lung, essential for proper exchange of oxygen and carbon dioxide, become filled with fluid that has escaped from blood vessels. This is very difficult to treat and so Leia's research aims to understand the processes in the lung that cause oedema, so that ways of preventing its occurrence can be developed. Working with Professor David Cook and Dr Anuwat Dinudom of the Bosch Institute she has found that a particular cellular process that normally removes fluid from the air spaces is partially disabled in some cases of malaria.



NERVOUS SYSTEM, SENSES & MOVEMENT

Theme Leader - Professor David Allen

The brain and the nervous system are the most complex and fascinating components of the body and responsible for all our interactions with the external world. Studies of brain function are the most rapidly growing area of biomedical research, triggered by an explosion of new methods, in particular molecular and imaging techniques. A further reason for the acceleration of research on the brain is the huge impact of neurological disease on the community, particularly depression, drug abuse and schizophrenia. As understanding of brain function improves, the tools to understand and treat neurological disease are starting to emerge.

The nervous system, senses & movement theme is the most diverse theme in the Bosch Institute with more than 35 laboratories and 150 researchers. One of the themes' greatest strengths is basic studies of mammalian brain function, including vision, hearing, the regulation of the cardiovascular system, pain perception, synapses, transmitters and receptors. There are also strong groups investigating movement, nerves, neuromuscular junction, muscle & bone with a particular focus on diseases of bone such as osteoporosis. An increasingly large area of study is the diseases of the nervous system, including Alzheimers, motor neuron disease, Parkinsons, alcoholism, schizophrenia, blindness, deafness, cerebral malaria, myasthenia gravis and muscular dystrophy. Recent advances include a new theory of Alzheimers disease in which capillary haemorrhages have a central role, the discovery of a gene whose

absence causes binocular blindness and the identification of a mechanosensitive channel whose enhanced activity contributes to muscular dystrophy.

A current focus of the theme is a concerted effort to obtain a multi-photon confocal which will allow us to study neurons during their normal activity in the living cortex. This exciting and cutting-edge technology will act as a focus for new directions and collaborations across the theme.

The Bosch Institute's Nervous System, Senses & Movement Theme comprises the following Laboratories (as at March 2008)

Adult and Developing Visual System Group

Professor Bogdan Dreher Head
 Dr Chun Wong Senior Research Officer
 Mr Philip A Romo PhD Student

Auditory Neuroscience Laboratory

A/Professor Simon Carlile Head
 Dr Virginia Best Post-doc Fellow
 Mr Bilal Amin PhD Student
 Ms Cait Corkhill PhD Student
 Mr Johann Leung PhD Student
 Mr Jorge Mejia PhD Student
 Mr Joel Cooper Masters Student
 Ms Kirstie Gardner-Berry Masters Student

Cannabinoid Research Group

Dr Jonathon Arnold Head
 Ms Aurelie Boucher PhD Student
 Mr Nathan Gunasekaran PhD Student
 Ms Deepinder Miller PhD Student
 Mr Jarrah Spencer PhD Student

Cardiovascular Neuroscience Laboratory

Professor Roger Dampney Head
 Dr Jouji Horiuchi Senior Res Fellow
 Dr Lachlan McDowall Research Officer
 Dr Teri Furlong Research Officer

Cerebral Microvasculature & Inflammation Laboratory

Dr Karen Cullen Head
 Erikar Eco PhD Student
 Allan Arraf Masters Student
 David Betar Masters Student

Chemical Neuroanatomy Laboratory

A/Professor Vladimir Balcar Head
 Khoa Nguyen PhD Student
 Ellas Nanitsos PhD Student

Comparative Auditory Neuroscience Laboratory

Dr Christine Koepl Head
 Mr Erik Wibowo Research Assistant

Environmental Control of Physiology Lab

Dr Bronwyn McAllan

Laboratory of Developmental Neurobiology

Dr Catherine Leamey Head
 Dr Patricia Ruma-Haynes Post-doc Fellow
 Ms Kelly Glendining PhD Student
 Mr Sam Merlin PhD Student
 Mr Timothy Young PhD Student

Laboratory of Motor and Sensory Systems

Dr Haydn Allbutt Head
 Ms Rena Cheng Honours Student
 Ms Shafnaz Karim Honours Student

Laboratory of Neural Structure and Function

A/Professor Kevin Keay Head
 Dr Paul Austin Post-doc Fellow
 Mr Alfonso Argueta PhD Student

Ms Alison Bembrick PhD Student
 Ms Zoe Brett PhD Student
 Ms Rebecca Brown PhD Student
 Mr David Mor PhD Student
 Mr Daniel Vagg PhD Student
 Mr Vignaraja Thiruvarakarasu M Phil Student
 Mr Alexander Borecki Honours Student
 Ms Eszter Kalman Honours Student
 Mr Abhijit Pal Honours Student
 Ms Georgia Richie Research Assistant

Laboratory of Neuroglycobiology and Sensation

Dr Michelle Gerke (Maternity Leave)

Laboratory of Vision and Cognition

Dr Samuel Solomon Head
 Dr Aaron Camp Post-doc Fellow
 Mrs Erin Goddard PhD Student
 Ms Lucy Parkhina Honours Student

Medicinal Chemistry Group

A/Professor Robin Allan Head
 Ms Katherine Locock PhD Student
 Ms Irene Ng Honours Student

Molecular Neuropathology Laboratory

Professor Clive Harper Head
 Dr Cheryl Cordery Research and Computer Support
 Miss Judith Grogan Registrar
 Mr Roger Stankovic Sen Hosp Scientist
 Ms Helen Blake UoB Coordinator
 Ms Therese Garrick TRC Manager
 Ms Xanthe Glaw Clinical Officer
 Ms Clare Hunt Technical Officer
 Mr Stephen Kuw Jew Technical Assistant
 Ms Robyn Miller Clinical Officer
 Mrs Donna Sheedy Data Manager
 Ms Jasna Uberai Lab Assistant

Molecular Neuroscience Laboratory

Dr William Phillips Head
 Ms Jennifer Brockhausen PhD Student
 Ms Rebecca Cole PhD Student
 Ms Nazanin Ghazanfari Honours Student

Muscle Cell Function Laboratory

Professor David G Allen Head
 Dr Yue-kun Ju Post-doc Fellow (S)
 Dr Nicholas Whitehead Post-doc Fellow (S)
 Dr Yi Chu Post-doc Fellow
 Dr Othon Gervasio Post-doc Fellow
 Mr Trent Reardon PhD Student
 Ms Bonny Lee Honours Student

Neural Imaging Laboratory

Dr Luke Henderson Head

Neurodegenerative Pathology Laboratory

A/Professor Jillian Kril Head
 Dr Cindy Kersaitis Honorary Lecturer
 Dr Raymond Schwartz PhD Student

Ms Janet van Eersel	PhD Student
Ms Marina Piljic	Honours Student
Mr Marshall Dalton	Research Assistant

Neuropharmacology Laboratory

Dr Tina Hinton	Head
Professor Graham Johnston	Head
Dr Sebastian Fernandez	Postdoc Fellow
Ms Chiu Chin Ng	PhD Student
Ms Kelly Skilbeck	PhD Student
Mr Timothy Bakas	M Phil
Dr Ken Mewtt	Senior Res Officer
Dr Rujee Duke	Senior Res Officer

Parkinson's Disease Laboratory

Dr Jasmine Henderson	Head
Dr Robyn Billing	Postdoctoral Researcher
Ms Susan Molesworth	MPhil
Ms Linda Truong	MPhil
Ms Christina Lui	Honours student
Ms Suzanne Olding	Pharmacy Advanced Student
Mr Nathan Creber	Research Assistant

Physical Anthropology & Comparative Anatomy

Dr Denise Donlon	Head
Mrs Ann Macintosh	Hon Res Fellow
E/Professor Richard Wright	Hon Res Fellow
Ms Sarah Croker	PhD Student
Mr Marcus Robinson	PhD Student
Ms Christina Anthonypillai	Honours Student

Retinal and Cerebral Neurobiology

Professor Jonathan Stone	Head
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SIDS & Sleep Apnoea Group

Dr Rita Machaalani	Head
Associate Professor Karen Waters	Head
Ms Samantha Tang	PhD Student

Motor Neuron Disease Laboratory

A/Professor Roger Pamphlett	Head
Dr Julia Morahan	Postdoc Fellow
Ms Lorel Adams	DNA Bank Manager
Ms Natasha Luquin	PhD Student
Ms Daniela Barreto	Research Student

Systems Neuroscience Laboratory

Dr Atomu Sawatari	Head
Hyunchul Lee	PhD Student
Michael Bourke	Honours Student
Teresa Simonetti	Honours Student
Bhavneet Singh	Honours Student

Transporter Biology Group

A/Professor Robert Vandenberg	Head
Dr Ann Mitrovic	Research Fellow
Dr Renae Ryan	Research Fellow
Ms Shiwei Huang	PhD Student
Ms Xin Liu	PhD Student
Ms Tan Sirivanta	PhD Student
Ms Amelai Edington	Honours Student
Mr Nick Kort	Honours Student
Ms Cheryl Handford	Research Assistant
Ms Audra McKinzie	Research Assistant

Vision Laboratory

Dr Dario Protti	Head
Mr Craig Vonhoff	PhD Student
Mr Terence Middleton	Honours Student

Dr Catherine Leamey

Dr Catherine Leamey heads the Developmental Neurobiology Laboratory of the Bosch Institute. In collaboration with her colleagues from the Massachusetts Institute of Technology (MIT) and the Max-Planck Institute for Biochemistry in Germany, Dr Leamey's team has identified an important gene responsible for binocular vision. They have shown that the gene *Ten_m3* is critical for the brain to meld images from the two eyes into one useful picture in the brain. This discovery may lead to new treatments for sensory disorders in which people experience the strange phenomenon of seeing better with one eye covered.

This gene is important because it explains how we normally see a single in-depth view of visual space that integrates signals from both eyes; this process is disrupted in people with visual disorders such as strabismic amblyopia.



*Dr Atomu Sawatari, Dr Catherine Leamey and Dr Sam Merlin
(l to r)*



ORGAN & TISSUE REPLACEMENT

Theme Leader – Dr Alexandra Sharland

Organ and tissue failure affects an ever-increasing number of Australians and is very costly to the community both in human and economic terms. Transplantation is the treatment of choice for the majority of patients with end-stage organ failure, but access to transplants is severely limited by the nation's extremely low availability of organs. Even if the current organ donor campaign were able to double donation rates, Australia would not be able to meet its projected needs for organ and tissue replacement from this source alone. Researchers within the Organ and Tissue Replacement Theme have adopted a multifaceted approach to the problem, with a focus both on the prevention of organ failure and graft rejection and on the development of new sources of organs and tissues.

A major current project aims to optimise the way donor organs are preserved, since the quality of a donor organ at the time of transplantation plays an important role in how the organ functions and what the outcome is for the patient. Organs from deceased donors suffer a series of injuries during the process of brain death and transplantation, and the team is investigating novel resuscitation and preservation strategies which aim to minimise the adverse consequences of these injuries. These strategies are likely to become increasingly important with the expanded use of marginal donors. The Collaborative Transplantation Group aims to understand the molecular basis of graft rejection and tolerance, and team members have also been exploring novel

approaches to the transfer of immunomodulatory genes to transplanted organs. High-level expression of transferred genes has been achieved in a model of liver transplantation, and testing of several candidate genes for their ability to protect against ischaemia-reperfusion injury and graft rejection is underway. Fibrosis is the final common pathway for the failure of both native and transplanted organs, and an important focus of the Diabetes Complications Group is to understand and intervene in the dysregulation of extracellular matrix turnover which leads to fibrosis.

Another area of strength for the research theme is in Tissue Engineering. Several groups are involved in various aspects of hard and soft tissue engineering, and some current areas of interest for these groups include understanding the physical properties of human skin, using recombinant Elastin to create biocompatible elastic scaffolds for engineered blood vessels and hollow organs, and developing novel biomaterials for tissue engineering in the musculoskeletal system. Theme members have established the Sydney University Tissue Engineering Network to promote further collaboration both within and beyond the Bosch Institute.

The Bosch Institute's Organ & Tissue Replacement Theme comprises the following Laboratories (as at March 2008)

Collaborative Transplantation Group

Professor Richard Allen	Group Leader
Dr Alexandra Sharland	Group Leader
Dr Alex Bishop	Group Leader
Clinical A/Prof Steve Chadban	Group Leader
Dr Chuanmin Wang	Senior Scientist
Dr Jianlin Yin	Senior Scientist
Dr Huiling Wu	Senior Scientist
Dr Szun Szun Tay	Post-doc Fellow
Mr Honda Ko	PhD Student
Mr Eric Chen	PhD Student
Mr Peng Wand	PhD Student
Mr Jin Ma	PhD Student
Dr Chi-Vien Duong	M Surg
Dr Frank Casimir	M Surg
Dr Tina Ghoraishi	M Med
Mr Peyman Obeidy	Honours Student
Ms Rebecca Morton	Research Assistant
Ms Theresa Corpuz	Research Assistant
Mr Juntang Lu	Research Assistant

Retinal Biology Laboratory

Associate Professor Tailoi Chan-Ling	Head
Dr Anastasia Korlimbinis	Post-doc Fellow
Dr Michael Weible II	Post-doc Fellow
Dr Masoud Adibmoradi	Post-doc Fellow - Visiting
Mr Hussein Mansour	PhD Student
Mr Evan McFarland	PhD Student
Mr Richard Sarafian	PhD Student
Mr Steven Yun	Masters Student
Ms Louise Baxter	Research Assistant
Ms Bonnie Li	Admin Assistant

Embryonic Stem Cell Laboratory

Dr Michael Morris	Head
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Cell Biology & Diabetes Laboratory

Dr Anne M Swan	Head
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Elastin and Elastic Tissue Engineering

Professor Anthony Weiss	Head
Dr Dan Bax	Post-doc Fellow
Dr Steven Wise	Post-doc Fellow

Elastin and Elastic Tissue Engineering (cont)

Dr Suzanne Mithieux	Post-doc Fellow
Ms Jessica Almine	PhD Student
Ms Lisa Nivison-Smith	PhD Student
Ms Caroline Reddel	PhD Student
Ms Jelena Rnjak	PhD Student
Ms Kevin Yidong Tu	PhD Student
Ms Anna Waterhouse	PhD Student
Mr Steven Eamegool	Honours Student
Ms Kelvin Yu Xie	Honours Student
Ms Orsola Regaglia	Lab Manager

Diabetic Complications Group

A/Professor Stephen Twigg	Head
Professor Dennis Yue	Head
Dr Susan McLennan	Senior Research Fellow
Dr Paul Williams	Principal Hospital Scientist
Dr Danqing Ming	Senior Hospital Scientist
Mr James Bonner	Hospital Scientist
Mr Wensheng Bao	PhD Student
Ms Elizabeth Boughton	PhD Student
Ms Lisa Lo	PhD Student
Ms Yu Lui	PhD Student
Mr Auro Midhro	PhD Student
Mr William Song	PhD Student
Ms Sally Thomson	PhD Student
Ms Xiaoyu Wang	PhD Student
Ms Lisa Yu	PhD Student
Ms Frances Henshaw	Masters Student
Mr Amit Sarker	Masters Student
Mr Surya Sutanto	Honours Student
Ms Anna Charleton	Technical Officer

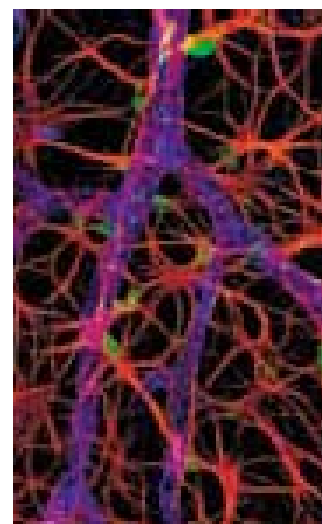
Biomaterials and Tissue Engineering Research Unit

Dr Hala Zreiqat	Head
A. Prof Colin Dunstan	Associate Professor
Dr Katie Jones	Research Associate
Dr Chengtie Wu	Post-doc Fellow
Mrs Yogambha Ramaswamy	PhD Student
Mrs Barbara James	Research Assistant

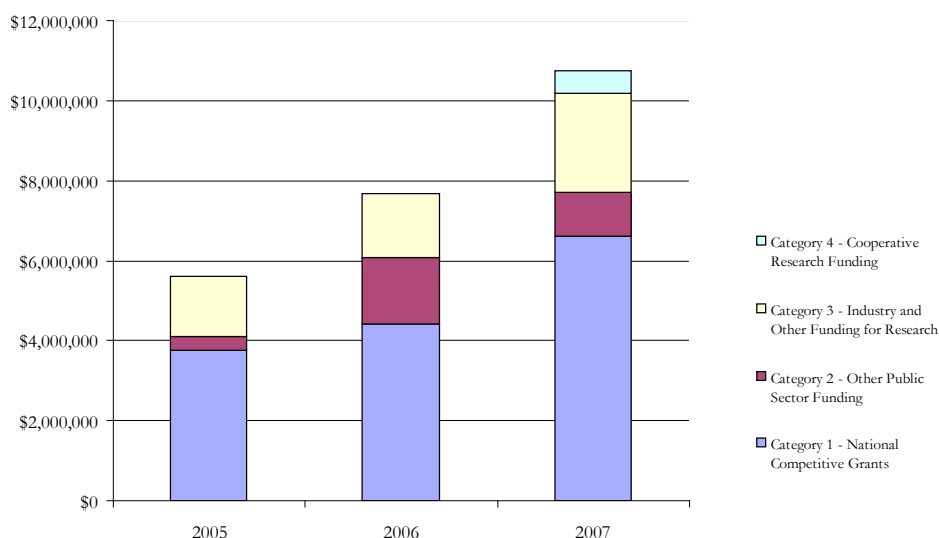
Hussein Mansour



Hussein Mansour is undertaking his PhD under the supervision of A/Professor Chan-Ling in the Retinal Biology Laboratory. Hussein is the recipient of the inaugural scholarship for Alzheimer's disease research presented by the Medical Foundation and the Bluesand Foundation. Hussein is investigating how astrocytes change as the central nervous system ages. Hussein is also the winner of the 2005 Olympus BioScapes International Digital Imaging Competition for his microphotograph, seen on the right, which shows the relationship between astrocytes (the supportive cells of the nervous system) and the blood vessels in the eye of a rat, printed in Issue 438, Dec 2005, pp1063.



GRANT INCOME 2005 – 2007



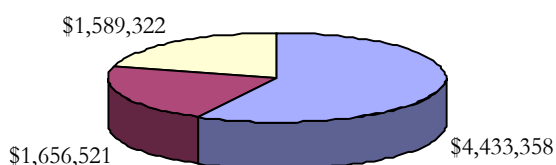
The Bosch Institute achieved a 91% increase in peer reviewed grant income (PRGI) between 2005 and 2007. For Category 1, the prestigious and fiercely contested National Competitive Grants, the increase was 76%.

Over this period there also was an increase in the number of laboratory heads and other senior investigators within the Bosch Institute. When adjusted for this increase, the overall rise in 2007

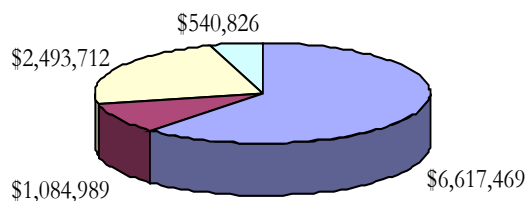
competitive research grant income was 29% over the 2005 figure and for Category 1 grants a 19% increase was achieved.

This outstanding performance is a reflection of the quality of the research carried out within the Bosch Institute member laboratories. The provision of well managed core research facilities and increased training opportunities also have contributed to these excellent outcomes.

Grant Income 2006



Grant Income 2007



- Category 1 - National Competitive Grants
- Category 2 - Other Public Sector Funding
- Category 3 - Industry and Other Funding for Research
- Category 4 - Cooperative Research Funding

Further breakdown of the figures shows that performance has been particularly strong in Category 1 grants, and also income in Category 3, which includes funding from a whole range of sources including industry.

THE BOSCH INSTITUTE – MAIN ACHIEVEMENTS 2006 – 2007

April 2006

Bosch Incorporated

The Bosch Institute was incorporated on 20 April 2006. The Institute is a joint initiative of the University of Sydney and the Sydney South West Area Health Service and both a company limited by guarantee and a public company.

Research Themes Established

Research activity in Bosch is divided into five Research Themes:

- **Nervous system, senses & movement** (brain, nerves, hearing, vision, muscles, bone); Leader David Allen
- **Circulation & respiration** (heart, vessels, lungs); Leader Brett Hambly 2006 - 2007
- **Cardiovascular** (replaces circulation & respiration); Leader Roland Stocker
- **Cancer, cell biology & development** (cellular physiology, developmental biology, malignancy); Leader Des Richardson
- **Infection, immunity & inflammation** (infectious diseases, inflammatory disease, immunology); Leader Nick King
- **Organ & tissue replacement** (transplantation, complications of diabetes, wound healing, growth factors, stem cell biology, bioengineering of tissues and organs, biomaterials); Leader Alex Sharland

Board meets

The first meeting of the Board took place on April 24 with most members in attendance. Among several items of business the Board approved the design for the logo and appointed Professor Nick Hunt as Executive Director.

May 2006

Bosch Institute website goes live

The all-new website went live on 1 May.



Plenary Lecture

Professor Nick Hunt, Executive Director of the Bosch Institute, gave a Plenary lecture at the 7th International Symposium on Neurovirology in Philadelphia.

A new way of looking at Alzheimer's Disease?

Dr Karen Cullen of the Bosch Institute and Professor Jonathon Stone of the Australian National University have proposed that Alzheimer's Disease is related to cumulative damage to the fine blood vessels in the brain. This theory has support not only from their detailed neurohistopathological studies, but also through the similarity in risk factors for Alzheimer's Disease and cardiovascular disease.

This gives a message of hope in that people can attempt to reduce their risk of Alzheimer's Disease through some common sense measures.

An interesting article about the work of Drs Cullen and Stone appeared in the Australian Financial Review on Thursday 18 May, page 59.

June 2006

COSTAM / SFRR International Workshop

Professor Nick Hunt gave a presentation at the 6th COSTAM / SFRR International Workshop on Micronutrients, oxidative stress and the environment in Kuching, Malaysian Borneo.

July 2006

Inaugural Scientific Conference and Dinner

In July 2006 the inaugural Conference “Basic research: the foundation for improving health” was held. The meeting, organised by Roger Dampney and Nick Hunt with the invaluable assistance of Yvonne Smythe, featured a range of speakers with past associations with the Institute’s predecessor, together with contributions from the most recent appointees to Bosch. The same evening, a dinner for 100 guests drawn from Bosch, the University, the Area Health Service, industry and the community was held in the Holme Building.

Bosch Executive Director gives Keynote address

Professor Nick Hunt gave a Keynote address at the 11th meeting of the International Study Group for Tryptophan Research in Tokyo, Japan.

Establishment of Core Facilities and Professional Officers



Molecular Biology is currently located in the Anderson Stuart Building but work is under way on a second facility within the Blackburn building. The Molecular Biology Officer is Dr Donna Lai who has an MBA as well as a PhD in Molecular Biology. Donna’s previous position was with the Victor Chang Institute where she acquired a wide range of molecular biology skills.

Advanced Microscopy operates in both the Anderson Stuart and Blackburn Buildings. The Advanced Microscopy Officer is Dr Louise Cole who came to this position from the Electron Microscopy Unit (EMU), and before that her doctoral studies in Plant Biology. Louise has very broad experience of light and fluorescence microscopy, from sample preparation to labeling to instrumentation.

Flow Cytology facilities are currently available in the Blackburn building. Dr Sabita Rana obtained her PhD in the King laboratory in Pathology, where she became an expert in flow cytometry. She serves as 0.5FTE Flow Cytometry Officer while continuing her immunology research with Professor Gary Halliday.

Dozens of Bosch students and staff have benefited from the excellent training courses and individual help given by the Officers.

Nature Article - Amyloid at the blood vessel wall

Dr Karen Cullen was successful in having her ideas on amyloid at the blood vessel wall and its relationship to Alzheimer disease published in the July 2006 edition of Nature Medicine.

October 2006

Appointment of Chief Operating Officer

Jacquie Stratford commenced as Chief Operating Officer, Bosch Institute on 27 October. Jacquie was the outstanding candidate among several highly qualified applicants. Jacquie’s previous role was General Manager of the Melanoma Foundation and Melanoma and Skin Cancer Research Institute, a position she had held since 2000. Her other relevant experience includes a wide range of positions within the University of Sydney.

\$550,000 Secured for the purchase of Confocal Microscope

Grant applications prepared by Associate Professor Tailoi Chan-Ling and Dr Louise Cole have won over \$550,000 to purchase a new confocal microscope, which will be installed by the middle of July 2007. The University has agreed to renovate the Advanced Microscopy Facility in the Anderson-Stuart Building to allow for the installation of this piece of equipment.

Bosch Researcher Interviewed on ABC National

Associate Professor Tailoi Chan-Ling, of the Discipline of Anatomy and Histology, gave an interview to The Health Report on ABC Radio National on the 9th October, on Retinopathy of prematurity.

International Sciences Linkages grant awarded to Bosch researcher

Dr Chan-Ling also had success in obtaining a large International Sciences Linkages grant of \$206K from the Department of Education Science and Training, for her project "Maximising repair functions of hematopoietic stem cells in stemming vision loss".

Hunter Prize

Bosch Young Investigators Cedric Bardy and Laxmi Iyengar, were the joint recipients of the Inaugural Hunter Prize of the Discipline of Anatomy, University of Sydney.

November 2006

Inaugural Tissue Engineering Symposium



The inaugural Tissue Engineering Symposium took place on 23 November 2006, the chief organiser being Dr Hala Zreiqat with input from Dr Alex Sharland and assistance from Jacquie Stratford. There were 110 attendees including 2 international speakers. The day was a huge success and demonstrated the power of cross-disciplinary collaboration.

The Symposium was supported by the Faculties of Engineering and Medicine, as well as the Bosch Institute. Development of the "Organ and Tissue Renewal" Research Theme is a key strategic role for Bosch.

Award for Excellence in Research Higher Degree Supervision

In November 2006, Bosch Senior Researcher, Professor Brian Morris of the University of Sydney, School of Medical Sciences, was awarded the Faculty of Medicine Award for Excellence in Research Higher Degree Supervision.

RPA Foundation Medal

Bosch Senior Researcher, Professor Clive Harper was awarded the prestigious RPA Foundation Medal for his work on the link between thiamine and the prevention of alcohol-induced brain damage.

December 2006

Bosch Young Investigators Symposium

The Bosch Young Investigators Symposium held on Friday 15 December 2006 was heralded "A great success" by Deputy Vice Chancellor of Research, Professor Merlin Crossley.

The program of the symposium was an exciting one, with a number of outstanding oral and poster presentations. The one day symposium was the 6th Young Investigators Symposium but the first one under the Bosch banner.

Sessions included: Neuroscience; Cell Biology; Muscle & Respiration; and Pharmacology. There were more than 170 registrants.



Congratulations to the following prize recipients:

Postdoctoral presentation prize:

- Othon Gevasio

Postgraduate student oral prizes:

- Iwan Williams and Erin Werry

Postgraduate student poster prizes:

- Linda Truong and Shaimaa Atwa

Rebecca L Cooper Prize



In 2006 the prestigious Rebecca L Cooper Prize for excellence in published research was awarded to Dr Andrea Markus.

Bercovici Prize



Maryam Seyedabadi was the recipient of the 2006 Bercovici Prize and Medal. Mr Bob Kotic, Deputy Vice Chancellor, presented Marayam with her award at the Bosch Young Investigators Symposium.

Federal Minister for Aging visits Bosch



The Federal Minister for Aging made a brief visit to the Bosch Institute on Tuesday 12 December 2006.

Promotion of Bosch Senior Researcher

Bosch Senior Researcher and Lab Head Rebecca Mason was promoted to Professor.

The Sydney Arc

At the Bosch Young Investigator's Symposium Mr Bob Kotic, DVC announced the development of an exciting new Biomedical Research building, currently called the Sydney Arc, which will be developed in stages from approximately 2011 onwards. The Bosch Institute will be a major occupant of this building, which will allow, for the first time, most Bosch researchers to be co-located, bringing an enormous dividend in research collaborations both within the Institute and with other researchers that will occupy the Sydney Arc. Nick Hunt and Jacquie Stratford are working within the SIHMR structure to advance the planning of this inspiring development, which currently is at the conceptual stage.



January 2007

Australian Day Honours

Professor Judith Black was made an Officer of the Order of Australia for service to medicine.

Professor Clive Harper was awarded the Order of Australia (member (AM) in the General Division).

ARC Discovery Grants

Professors Maria Byrne, David Cook, Georges Grau and Des Richardson obtained new Discovery Grant funding commencing January 2007.

ARC LIEF Grants

Bosch researchers Jurgen Reichardt, Ron Trent, Nick Hunt, Chris Murphy and Cris dos Remedios were Chief Investigators on LIEF Grants for 2007.

NH&MRC Research Grants

The Bosch Institute congratulates its members on their success in NH&MRC funding for 2007:

Professor Des Richardson's Research Fellowship was renewed. Project Grants were awarded to the following Bosch members: Associate Professor Tailoi Chan-Ling, Professor Bogdan Dreher, Dr Michelle Gerke, Professor Georges Grau, Dr Kevin Keay, Professor Nicholas King, Dr Frank Lovicu, Professor Des Richardson, Dr Samuel Solomon, Associate Professor Stephen Twigg and Associate Professor Robert Vandenberg.

Australia Day Award

In recognition of Professor Morris's work in public health advocacy and scientific achievement he was awarded a 'Scroll of Honour' Australia Day Award by the Waverley Council.

University Fellowship

Professor Roland Stocker was awarded a University of Sydney Professorial Research Fellowship.

February 2007

Cure Cancer Grants

Doctors Robert Sutak and Xiao Huang were awarded Cure Cancer Australia Fellowships.

Bosch Young Investigator receives Promega Award

Helena Mangs, a PhD student in Professor Morris' Lab, won the Promega Award at the 2007 Lorne Genome Conference.

March 2007

NHMRC Equipment Grants.

NH & MRC Equipment Grants were awarded to Professor Des Richardson (\$74,000), Dr Frank Lovicu (\$48,000), Dr Bing Yu (\$15,000), Professor George Grau (\$73,000), and Associate Professor Arthur Conigrave (\$94,000).

2007 Honours Students

The 2007 Honours Students attended an orientation program on 5 & 6 March 2007. Many Bosch members contributed to this well received training course which was convened and organized by Dr Frank Lovicu. The students received instruction in

a range of activities relevant to their development as scientists.



Visiting Professor



Professor Suat-Cheng Peh from the University of Malaysia in Kuala Lumpur spent a very productive two days at the Bosch Institute in March 2007. The main purpose of her visit was to explore opportunities for research collaboration in areas such as stem cell biology, cancer, cardiovascular science and tissue engineering.

Rebecca L Cooper Foundation

On Saturday 17 March 2007 the Rebecca L Cooper Awards Dinner was held at the Crowne Plaza Coogee. At the dinner grants were awarded to Professors George Grau, Clive Harper, Chris

Murphy and Judy Black and to Doctors Tailoi Chan-Ling, Louise Cole, Irina Dedova, Michelle Gerke, and Michael Weible of the Bosch Institute.

Appointment of Kathleen Evans

Kathleen Evans commenced as Executive Assistant on 19 March and comes with a wealth of experience in the area of administration and conference/event management. Kathleen's previous roles have included Course Coordinator, Continuing Education Program, Faculty of Dentistry as well as positions within the clinical research/trial divisions for GlaxoSmithKline and Eli Lilly. Kathleen's most recent role was that of new mother. Kathleen is the key contact person for the Bosch Institute and can be contacted on 90363338 or kathleen.evans@bosch.org.au.

April 2007

Cancer Institute NSW Infrastructure Grant

The Cancer Institute NSW has awarded Bosch researchers \$340,450, which includes \$124,666 for physical infrastructure (PHERAstar and POLARstar Optima Multi-functional Plate Readers with Robotic High Throughput Screening System) with the remainder to be used as part salaries for support and training over four years. Other financial contributions towards the equipment have been committed by the Bosch Institute, the Faculty of Medicine and the Deputy Vice-Chancellor (Research).

The grant was a joint submission from the cancer researchers within the Cancer, Cell Biology and Development Theme of the Bosch Institute. Des Richardson acknowledged the significant support and assistance he had received from the other members of the theme and in particular from the Bosch Molecular Biology Officer, Donna Lai.

Nature Article – “the Machinery of Colour Vision”



A review article on “the Machinery of Colour Vision” co-authored by Samuel Solomon of the Bosch Institute was the featured article (and cover) of the April 2007 issue of Nature Reviews Neuroscience.

Medical Foundation Fellowship

Professor Roland Stocker was awarded the University of Sydney Medical Foundation Fellowship for the years 2007 – 2009. This award was for his work on “New Frontiers in Vascular Medicine” and comprised \$600,000 for the three years.

Bosch Young Investigators – Harbour Cruise



The Bosch Young Investigators (BYIs) continue to be enterprising in their activities. Their monthly seminar series continued throughout 2007 and their traditional Welcome Harbour Cruise took place on 13 April 2007. Late in June 2007 a “BYI Retreat” was held in Kiola.

The further development of a “Bosch Student experience” is a priority for the Institute.

May 2007

Distinguished Seminar Series



The second Bosch Distinguished Seminar in the 2006/2007 series was held on Friday 18 May in the Anderson Stuart Seminar Room. The presentation entitled “An Iron Key for unlocking the treatment

of Cancer and neurodegenerative disease” was attended by 119 members and students of the Institute. Presenter Des Richardson is a Professor and NHMRC Principal Research Fellow in the Discipline of Pathology, University of Sydney. Des is also the Research Theme Leader for the Cancer, Cell Biology and Development Research Theme of the Bosch Institute. The session was sponsored by Glaxo Smith Kline.

Nature Article - “Cortical reorganization”

Joshua Young, a student in the Bosch Institute, and his supervisor Professor Bogdan Dreher published a paper titled “Cortical reorganisation consistent with spike timing – but not correlation–dependant plasticity” in Nature Neuroscience in May 2007.

June 2007

Sir Zelman Cowen Universities Fund

The Sir Zelman Cowen Universities Fund has awarded \$30,000 to the Bosch Institute to support exchange visits between researchers from the Institute and the Hebrew University of Jerusalem over the next 12 months. The purpose of these visits is to establish research collaborations, as part of the internationalisation strategy of the Bosch Institute.

New Cervical Cancer Diagnostic Tool

The battle against Cervical Cancer is gaining momentum but the illness is still claiming lives. Early detection is the most effective way of stopping cervical cancer, so pap smears are essential. For many women this is a difficult task due to factors such as remote location or religious grounds. The Bosch Institute’s Professor Brian Morris was interviewed on Kerrie-Anne Kennerley’s show on channel 9 to discuss the launch of his revolutionary self sampling kit where women can take a cervical sample and send it to a laboratory for accurate testing.

PhD Student Recruitment



One of the key objectives of the Bosch Institute is to position itself as the preeminent centre for the training of future researcher. There is currently spare capacity for Research Students to be trained and carry out their research within the Bosch Institute. Together with the Office of the DVC (Research), University of Sydney, Nick Hunt has worked to develop a new campaign to attract more PhD students to the University in the area of biomedical research. Given the quality of research within the Bosch Institute we can predict that there will be an increase in the number of research students within the Institute from 2008 onwards.

Early Career Researchers Scheme

A number of young researchers at the Postdoctoral or junior Research and Teaching Academic levels have asked for a scheme tailored to supporting their career development. With Sydney Learning and the Pro Vice-Chancellor (Research), Professor Carol Armour, Nick Hunt has been developing such a scheme for second semester 2007. Again, this will be for biomedical researchers across the whole University but, naturally, will be available to Early Career Researchers within the Bosch Institute. It will include a series of half-day workshops and also a mentoring scheme.

July 2007

Bosch Researcher receives prestigious award

Dr Samuel Solomon heads the Laboratory of Vision and Cognition within the Bosch Institute. In July 2007, at the annual meeting of the Australian Neuroscience Society (held in conjunction with that of the International Brain Research Organisation) in Melbourne, Sam was presented with the AW Campbell award. This prestigious award acknowledges the best contribution to the field by a member of the society in their first five postdoctoral years, and commemorates the eminent Australian neurologist whose “Histological studies on the localisation of cerebral function” in 1905 founded cerebral cytoarchitectonics.



Dr Solomon with Dr Judy Morris, Flinders University (l) and Prof Glenda Halliday, President, ANS (r)

Distinguished Scientist Visits Bosch

Dr Ronan Jambou, a researcher from the Pasteur Institute, is presently spending 24 months in the laboratory of Professor Georges Grau, Vascular Immunology Unit, Faculty of Medicine & Bosch Institute.

As a distinguished researcher in clinical and experimental malaria, Dr Jambou will develop several projects and implement collaborative works with Professors Grau and Hunt. This will build on the existing collaborations between them, and European as well as African scientists, funded through a European Union Framework 6 grant on the role of microparticles in cerebral malaria.



Professor Grau & Dr Jambou

Nature Article

Executive Director of the Bosch Institute, Professor Nicholas Hunt, and colleague Professor Roland Stocker, Head of the Vascular Research Laboratory of the Bosch Institute, were invited to submit a “News and Views” article on “Heme moves to center stage in cerebral malaria” in *Nature Medicine*, Volume 13, Number 6, June 2007.

Major Equipment Grants

The Bosch Institute has been successful with two applications to the Faculty of Medicine Major Equipment Grants Scheme totalling \$80,000. These funds will be used to purchase equipment for the molecular biology core facilities in both the Anderson Stuart and Blackburn buildings. These grants were supported by 30 Senior Researchers in the Bosch Institute.



Professor Des Richardson (centre) with colleagues in his lab.

Chief Investigator Professor Des Richardson said “These funds are of great value to grow our core facilities”. He further added that “This was a good example of the benefits of researchers working in a cohesive manner to attract vital funding and grow capacity in biomedical research within the Bosch Institute and the University of Sydney”. Des also commended Molecular Biology Officer Dr Donna Lai for her invaluable support with the grant applications.

August 2007

Bosch Research Team Discovers Binocular Vision Gene

Dr Catherine Leamey heads the Developmental Neurobiology Laboratory of the Bosch Institute. In collaboration with her colleagues from the Massachusetts Institute of Technology (MIT) and the Max-Planck Institute for Biochemistry in Germany, Dr Leamey’s team has identified an important gene responsible for binocular vision. The researchers previously discovered *Ten_m3* in a screen to identify genes that are important in establishing appropriate patterns of neural connectivity in the developing visual system. They have now shown that *Ten_m3* is critical for the brain to meld images from the two eyes into one useful picture in the brain. This discovery may lead to new treatments for sensory disorders in which people experience the strange phenomena of seeing better with one eye covered.

This is important for humans who normally see a single in depth view of visual space that integrates signals from both eyes; this process is disrupted in people with visual disorders such as strabismic amblyopia, for example.



Dr Atomu Sawatari, Dr Catherine Leamey and Dr Sam Merlin (l to r)

This work was funded by the National Health and Medical Research Council, The National Institutes of Health and the Simons Foundation. Information related to these studies can be found at this website:

<http://biology.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pbio.0050241>

September 2007

Prize Lecture



Professor David Allen was awarded the Prize Lecture of the Australian and UK Physiological Societies. He was the guest of the UK Physiological Society and presented his lecture entitled 'Of

muscle damage in mice and men; role of stretch-activated channels and reactive oxygen species' at nine different institutions around the UK in September 2007. He also gave the 2007 Basic Science Lecture at the Cardiac Society of Australia and New Zealand in Christchurch in Aug 2007.

Travelling Fellowship for Bosch Young Investigator

Katie Dixon is undertaking her PhD in Vitamin D and protection from sun damage under the supervision of Professor Rebecca Mason, Head of the Bone & Skin Laboratory, Bosch Institute.

Katie was successful in securing a travelling fellowship from the Education and Training Committee of the European Society for Photobiology to attend the European Photobiology Society meeting in Bath, UK at the beginning of September.



Mel Barron, Katie Dixon and Tara Brennan are PhD students in the Mason Lab.

Flow Cytometry Conference



Dr Sabita Rana, Flow Cytometry Officer, Bosch Institute attended two international conferences in Brazil and the United Kingdom. In addition to her

duties in the Bosch Flow Cytometry Facility, Dr Rana is a research member of the Dermatology Laboratories. Her studies examining the effects of ultraviolet radiation on T cell immune responses was accepted as an oral presentation at the 13th International Congress of Immunology (ICI) conference (Rio de Janeiro, Brazil) and at the 12th Congress of the European Society for Photobiology (ESP) conference (Bath, UK). Other members of the Bosch Institute were also active participants at ICI and ESP. For Dr Rana, some of the research highlights of the meetings included learning about a novel population of regulatory T cells in abdominal fat tissue and discovering that 5 minutes of total body exposure to sunlight is all you need to provide a sufficient daily dose of vitamin D.

Bosch CJ Martin Fellow



Dr Renae Ryan is a CJ Martin Fellow in the Bosch Institute. Dr Ryan completed her PhD in the Discipline of Pharmacology under the supervision of Associate Professor Rob Vandenberg,

Head of the Molecular Pharmacology Laboratory within the Bosch Institute.

Dr Ryan has recently returned to the Bosch Institute following a 3 year Postdoctoral Fellowship, 1 year in the lab of Eric Gouaux at Columbia University and 2 years at the NIH/NINDS with Joe Mindell.

Dr Ryan's research focuses on the structure and function of glutamate transporters. These transporters play an important role in regulating normal neurotransmission in the brain and their dysfunction has been implicated in disease states such as Alzheimer's disease, Motor Neurone Disease and Ischemia following a stroke. Dr Ryan was involved in determining the crystal structure of a

bacterial glutamate transporter which has revealed an atomic level snapshot of this protein. The structure of the bacterial transporter allows us to predict the structure of the human glutamate transporters, the conformational changes that occur during transport and also how drugs bind to and affect these proteins. Her work in this area has been highly successful and has been acknowledged with two articles published in *Nature*¹ and *Nature Structural and Molecular Biology*² early in 2007.

Dr Ryan's CJ Martin Fellowship will continue for a final 2 years and she is looking forward to resuming her research in Associate Professor Vandenberg's Lab. Renae will ultimately seek her own funding and hopes to have her own lab that will focus on the structure and function of membrane proteins by the time the new ARC building is completed.

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2. Ryan RM and Mindell JA (2007) The uncoupled chloride conductance of a bacterial glutamate transporter homolog. *Nature Structural and Molecular Biology*, 14, 365-71.

Bosch Visiting Scholar



Dr Hajime Yuasa from Kochi University, Japan, arrived in September to spend one year on study leave in Professor Nick Hunt's Laboratory. Dr Yuasa is an expert on the enzyme indoleamine dioxygenase (IDO).

Recently, Dr Helen Ball in Professor Hunt's laboratory identified a gene that makes a protein that has some properties similar to IDO. They called this protein "IDO-2" and their paper reporting this discovery (Ball HJ et al. *Gene* 396, 203 - 213, 2007) has provoked a lot of interest from scientists in the USA.

The IDO-1 and IDO-2 genes arose by a "gene duplication" event more than 300 million years ago according to the work of Dr Ball and Dr Lars Jermiin from the School of Biological Sciences.

Dr Yuasa will work with the Hunt Laboratory to investigate the evolution of IDO-like proteins and to identify the roles in human beings of the newly-discovered IDO-2.

October 2007

Bosch Tours



Visiting Bosch laboratories located in the Anderson Stuart Building. From l to r: Piyush Bhatt, Peter Whitfield, Geoff Brown, Chris Murphy, Andrew Cooper, Nick Kovari, Nick Hunt and Bruce Meikle

Professor Nick Hunt extended an invitation to senior staff from the University's financial and administrative divisions to tour the Bosch Institute.

The tours proved to be an outstanding success and those in attendance were most impressed by the explanation of the research undertaken in the laboratories of Professors Mason and Murphy as well as the explanation and "hands on" demonstration of the new confocal microscope.

Success for Graham Johnston

Professor Graham Johnston was awarded an honorary doctorate in Pharmaceutical Science (doctor pharmaciae honoris causa) by the University of Copenhagen in recognition of his work in promoting research links between that university and the University of Sydney. Over many years there has been a very active research collaboration and exchange of staff and students between Copenhagen and Sydney in the areas of pharmacology and pharmaceutical chemistry.

The honorary degree was the first awarded by the newly established Faculty of Pharmaceutical Sciences, which resulted from the recent incorporation of the Royal Danish School of Pharmacy into the University of Copenhagen.

The award was one of 15 honorary doctorates made at a ceremony in Copenhagen on 16 November. HRH Queen Margrethe II and HRH Prince Henrik attended the ceremony and greeted the Honorary Doctors. The ceremony was followed by a reception and later in the evening the Honorary Doctors and other guests of the University were invited to see *La Bohème* in the Copenhagen Opera House.

Invited Speaker

Professor Stocker gave “The Paul Nestel” Lecture at the 2007 Annual Scientific Meeting of the Australian Atherosclerosis Society.

National Heart Foundation Grant

Congratulations to Roger Dampney and Jouji Horiuchi who received a grant from the National Heart Foundation for 2 years (2008-2009) for their work on Angiotensin-induced hypertension: brain pathways and mechanisms.

Success for Professor Roland Stocker

Professor Roland Stocker was elected as Co-Chair of the International CoQ10 Association and was successful in the 2008 Round of the International Program Development Fund - International Network Research Collaborations. The support received will help establish new collaborations with the laboratory of Professor Jay Heinecke (University of Washington, Seattle U.S.A.) and Professor Markus Wenk (National University of Singapore). The research relates to the development of new therapeutics against cardiovascular disease, using state-of-the-art proteomics and lipidomics methodologies.



November 2007

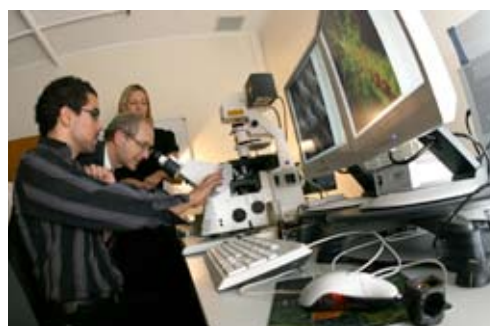
Official Opening of Confocal Microscope

On 1 November 2007, Professor Brown, Vice Chancellor of the University of Sydney, officially opened the new Zeiss LSM 510 Meta confocal microscope.



Vice Chancellor, Professor Gavin Brown; Gavin Symonds, Zeiss; Professor Carol Armour, PVC Research; Professor Nicholas Hunt, ED Bosch; and Dr Louise Cole, Manager, Bosch Advanced Imaging Unit.

The function was held in the Anderson Stuart Building and was well attended by invited guests, Bosch members and senior representatives from Carl Zeiss Australia who sponsored the event.

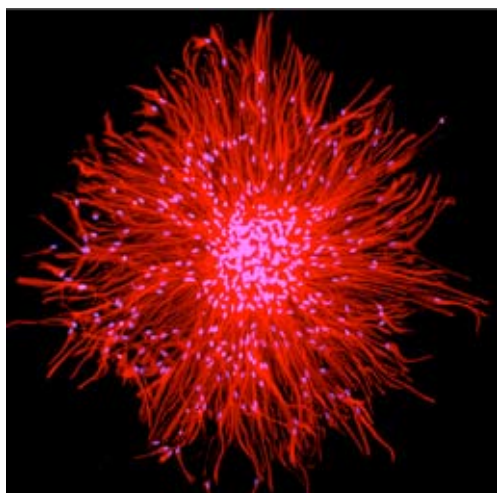


Dr Othon Gervasio demonstrates the new microscope to Bosch Chairman John Stumbles.

This instrument was purchased with funding from NHMRC Equipment Grant, University of Sydney Major Equipment Grant, Rebecca L. Cooper Medical Foundation and Research Infrastructure Block Grant. Executive Director, Professor Nicholas Hunt expressed his gratitude to the funding bodies and commented on the cost effectiveness of providing large and highly specialized equipment through the Institute. The Advanced Microscopy Unit is one of three Bosch Core Facilities providing excellent training and on-going advice to all Bosch members.

The event marked nearly 12 months of negotiations and refurbishments in order to accommodate this state of the art instrument. The Bosch Institute also acknowledges the tremendous support it received from the Procurement Team and the Facilities Management Team of the University of Sydney and Professor Chris Murphy, Associate Dean, School of Medical Science.

Micrograph of the Year



Dr Michael Weible's winning image. Multipotent neural stem cells isolated from human spinal cord. These neural cells have been marked with an antibody to GFAP (red) and the nuclei counterstained with DAPI (purple). Image taken with the Zeiss deconvolution microscope.

On display at the official opening of the Confocal Microscope 48 stunning micrographs taken by Bosch Young Investigators using a microscope in the Bosch Advanced Imaging Unit.

Congratulations to Dr Michael Weible, who won the 2007 Micrograph of the Year Award and to runners up Dr Richard Sarafian, and Dr Andrea Markus who were both given honourable mention.

Our thanks to Associate Professor Filip Braet (far right), Deputy Director of the Electron Microscope Unit, for judging the competition and Gavin Symonds (middle), Carl Zeiss Australia, who presented the awards.



A New Golden Age in Biomedical Research?

A senior Bosch researcher has heralded a new 'golden age' of modern biochemistry and molecular biology brought about by our complete sequencing of the human genome.



In a paper entitled 'Qua vadis, genoma?' which appears in the December 2007 issue of the prestigious journal Trends in Biochemical Sciences, Professor Juergen Reichardt, Plunkett Chair of Molecular Biology (Medicine), says that the complete sequencing of the human genome has led to the discovery of about 10,000 "unknown function" genes and millions of unknown genetic variants.

This discovery precedes a huge growth in biochemical and molecular investigations, pointing to the large number of 'unknown' genes that still exist in the human genome despite it now being fully sequenced for over 6 years. Reichardt points out that these genes will be hugely important in future personalised disease prevention strategies and individualised therapies.

'Because of the scale of the gene products that we effectively know nothing or very little about, it is highly likely that many hitherto unknown biochemical and molecular pathways remain to be discovered,' he said.

Book



Bosch Researcher Professor Christobal Dos Remedios from the Muscle Research Unit is the editor of a new book "Protein Reviews – Actin-Binding Proteins and Disease". The book is published through Springer and is the first book to link actin-binding proteins to diseases.

Bosch Young Investigators Symposium 2007

On Friday 14 December the 7th Annual Young Investigators Symposium was held in the Eastern Avenue Complex, University of Sydney. With 20 oral presentations and an additional 42 poster presentations the day was heralded a great success and congratulations must go to the Symposium Organising Committee:

- Chris Austin (Pathology)
- Cedric Bardy (Anatomy & Histology)
- Angus Brown (Anatomy & Histology)
- Aaron Camp (Physiology)
- Rebecca Cole (Physiology)
- Nathan Gunasekaran (Pharmacology)
- Andrea Markus (Physiology)
- Sam Merlin (Physiology)
- Komal Prabhu (Pathology) and
- Kelly Skilbeck (Pharmacology)

Each year cash prizes and certificates are awarded for outstanding oral and poster presentations and the 2007 awards were presented by Associate Professor Frank Lovicu who has taken on the role of academic coordinator for the Bosch Young Investigators for the past 2 years.

A highlight of the event was the announcement of the Bercovici and Rebecca L Cooper Prize recipients. These annual medals and prizes are awarded for excellence in published research. Joshua Young received the Bercovici Prize (postgraduate) for his paper “Cortical reorganization consistent with spike timing – but not correlation-dependent plasticity” *Nature Neuroscience*, and the Rebecca L Cooper (post doctoral) was awarded to Renae Ryan for her paper “The uncoupled chloride conductance of a bacterial glutamate transport homolog” *Nature Structural & Molecular Biology*. Professor Carol Armour, Acting PVC Research and Professor Anne Sefton, Deputy Chancellor, University of Sydney presented the awards and commented that it was quite extraordinary for both publications to be in the prestigious *Nature* family of journals.

The symposium was sponsored by 15 companies including: Genesearch; Biorad; John Morris Scientific; Biolab; Lomb Scientific; SDR Clinical Technology; Intergrated Sciences; Promega; Leica; Merck; Sigma-Aldrich; Sapphire Bioscience; Abacus ALS and Olympus that all hosted valuable trade displays.



From l to r: Professor Anne Sefton, Joshua Young, Dr Renae Ryan and Professor Carol Armour.

Fellow of the Australian Academy of Science



Professor David Allen of the Bosch Institute (pictured left) was elected a Fellow of the Australian Academy of Science in March 2006. This is a great honour and a worthy recognition of his enormous contribution to research into muscle function.

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