School of Medical Sciences

Discipline of PHYSIOLOGY

Biennial Report 2004 & 2005
Discipline of
PHYSIOLOGY

School of Medical Sciences
The University of Sydney

2004 & 2005 Biennial Report
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The Discipline of Physiology is part of the School of Medical Sciences, which also includes the Disciplines of Anatomy & Histology, Infectious Diseases, Molecular and Microbial Biosciences, Pathology, and Pharmacology. Physiology has major responsibilities for teaching coursework to students in the Faculties of Science, Pharmacy, Dentistry and Medicine, as well as training a large cohort of Honours and post-graduate research students. The researchers in Physiology have contributed to improved understanding and better care in many problems related to human health, including cystic fibrosis, hearing loss, early development, hypertension, muscle damage, memory loss, vision abnormalities, skin cancer and ageing.

Staff matters
As noted in the Physiology Report for 2003 & 2004, Professor John Young, a former Head of Physiology, Dean of Medicine and Pro-Vice Chancellor of the College of Health Sciences passed away in February 2004. An obituary for Professor Young appeared in that biennial report. Over 2004 and 2005, a number of long-term staff members retired or moved to positions interstate. Long serving Reader Joe Hob officially retired during this period, but continues to undertake research in muscle function and to train research students. Dr Lynne Cottie, a neuroscientist, also retired after serving on the research and teaching staff for very many years. Irene Schneider, who coordinated the Heart and Circulation 3rd year unit of study, moved to Queensland. Francoise Janod-Groves, who coordinated the Bachelor of Medical Science degree so efficiently for many years also officially retired, but still comes in to help with teaching activities. A number of new appointments were made. Dr Meloni Muir, who was an ARC Research Fellow (Industry), was appointed as a Lecturer and coordinator of Physiology for Science 2. Dr Bronwyn McAllan, formerly of University of New England, took up a Lectureship and coordinates the Physiology for Pharmacy unit of study. Dr Sam Solomon, a former research student of Physiology, accepted a Sesqui Lectureship in 2005. This is a joint appointment with Anatomy & Histology and with the Brain & Mind Research Institute. Dr Atomu Sawatari, a cognitive neuroscientist, accepted a Lectureship towards the end of 2005. Lali Jacobs was appointed Discipline Manager in 2005. Dr David Alais and Dr Yue-Kun Ju were promoted to Level C (Senior Lecturer) Research-only academics in 2004. Professor of Physiology and vision researcher, Professor Ann Sefton was appointed Deputy Chancellor in 2004. Professor John Hearn, recruited from the Australian National University to be Deputy Vice-Chancellor, a member of the Senior Executive Group of the University, was also welcomed as a Professor in Physiology.

Research
Research productivity in Physiology measured by publications in high ranking international journals and by citations of articles remains high. Around $3 million dollars of competitive grant income was awarded to Physiology researchers in each of 2004 and 2005, with additional funds from industry and government. In 2004, Professor David Cook was elected a Fellow of the prestigious Australian Academy of Science. Professor David Allen was a key member of a group of investigators awarded an NHMRC Program Grant in 2004 of nearly $8 million dollars over 5 years. The award was to examine ‘molecular mechanisms of cardiac function and disease.’ Later that year, Professor Max Bennett was a lead member of a group of researchers awarded a State Government Program Grant of $1 million to study ‘the properties of microglia in the brain’. Professor Bennett has been hugely successful in raising large sums of money for Infrastructure for the Brain & Mind Research Institute, including $6 million from the State Government and $9 million from the Federal Department of Health and Ageing as part of the Medical Research Infrastructure Program. The first stage of the Brain & Mind Research Institute building was opened in September 2004. A research article published by Dr David Alais and colleague in 2004 on factors which influence the spatial localization of sound, popularly known as ventriloquism, resulted in considerable coverage in the general press and attracted comment in Nature and Nature Neuroscience. Our research students continue to excel. Juliette Scott, a dental Masters student completing her research project with A/Prof Rebecca Mason, was awarded the 2004 Colgate/Australia New Zealand Society of Paediatric Dentistry Postgraduate Research Award. Dr David Adams, who completed a PhD under the supervision of Professor Brian Morris, received a 2004 NSW Young Tall Poppy Award for exceptional achievement.

Service
A large number of Physiology academics serve on University, National and International Organizations. Amongst new appointments, Professor Paul Pilowsky1 was appointed in 2004 to the Executive Committee of the International Society for Neuroscience. Professor Max Bennett was appointed by Health Minister Tony Abbott in 2004 to the National Neuroscience Consultative Taskforce. The aim of the Taskforce is to provide the Minister with detailed recommendations on the development of a National Brain and Mind Research Alliance to ensure greater collaboration across research disciplines in order to reduce the current and future burden of brain and mind disorders in the Australian community. In 2005, A/Prof Rebecca Mason was appointed to the Technical Committee on Sunlight, Health and Vitamin D of the Commission Internationale de L’Eclairage (International Commission of Illumination). In addition to his many roles on Research committees for the Faculty, the University, the State Government and the Australian Research Council, Professor David Cook also chairs ethics committees for the Sydney South West Area Health Service.

1 Paul Pilowsky became a Professor in 2006
Teaching
Partly as a result of the decision by the University to mandate units of study of a uniform 6 credit points as well as the introduction of Advanced units of study, the number of units of study taught by Physiology (excluding Medicine and Dentistry) increased from 16 in 2003 to 24 in 2005. Student numbers (excluding Medicine and Dentistry) increased from around 1700 in 2003 to over 2100 in 2005. Thanks to the dedicated efforts of our unit of study coordinators and the rest of our staff, this was seen as an opportunity to design new units of study with revised teaching, learning and assessment requirements. In general, these new developments were well received by students. Considerable progress was made in developing new uses of the Internet. Dr Meloni Muir, Dr Miriam Frommer and Irene Schneider received certificates from the College of Health Sciences in 2004 in recognition of “exemplary site design .... selected as an example of excellent use of Information and Communication Technology” for the development of the Integrated Physiology B website. This site was chosen as a model for learning in the Foundation Disciplines. Integrated Physiology B was included for its particular strengths in three areas: use of one WebCT site for several units of study, with conditional release, organization of material for different streams, and use of quizzes with both summative and formative components. In the following year, a prize of $500 for the best presentation in the e-learning section at the College of Health Sciences Ed Health Conference, Innovation to Practice, was awarded for the following paper from Physiology: 'An online interactive approach to improving practical report writing' by Meloni Muir, Helen Drury (Learning Centre), Miriam Frommer, Janet Jones (Learning Centre), Gosia Mendrela (Flexible Online Learning Team), Irene Schneider and Helen Wozniak.

Acknowledgements
Teaching and research in Physiology is greatly facilitated by a team of dedicated general staff, particularly the information technology group led by John Dodson with Li Jin, Joe Pridham and others, the administrative unit, led by Discipline Manager, Lali Jacobs with Louise Harrison, student liaison officer, Amy Cumarasingham (new in 2006), David Lawrey and Jerome Rasja, the classroom and infrastructure group led by John Cossey with Adel Mitry, and our electronic workshop run by Vincent Cheung. Laboratories in Physiology also form part of the Institute for Biomedical Research (which became the Bosch Institute in 2006). Under the leadership of Professor Nick Hunt, the Institute continues to provide much needed facilities and training in molecular biology, advanced imaging and more recently, cell sorting. Considerable appreciation is due to Professor Chris Murphy, Associate Dean of the School of Medical Sciences, whose leadership has helped to maintain and support the collegiality in decision making that is possible within a Discipline and at the same time garner the substantial benefits of collaboration as a School.

Rebecca S Mason
June, 2006
Academic Staff

Level E Professors

Max Bennett
David Allen
Roger Dampney
David Cook
Brian Morris

Level D Associate Professors

John Hearn
Simon Carlile
Rebecca Mason
Chris O’Neill
Paul Pilowsky

Level C Senior Lecturers

Lynne Cottee
Margot Day
Miriam Frommer
Ann Goodchild
William Phillips

Level B Lecturers

Francoise Janod-Groves
Cathy Leamey
Meloni Muir
Dario Potti
Atomu Sawatari

Research Fellows

Sam Solomon
Irene Schnieder
David Alais
Anuwat Dinudom
Research Staff

Postdoctoral Research Fellows

Vlado Buljan  Il-Ha Lee  Gou Jun Liu  Andrea Markus  Vincent Nguyen

Senior Research Officers

Mark Rybchyn  Othon Gervasio  Jouj Horiuchi  Yue-Kun Ju  Qun Li

Research Officers

Angeles Sanchez-Perez  Qi-Jian Sun  Yong Qi Lin  Omar Chami  Yi Chu

Research Assistants

Les Farnell  Nicholas Whitehead  Melissa Barron  Jess Gardner  Kelly Glendining

Associate Research Fellows

Suzanne Jennings  Elizabeth Miller  Craig Jin  Andre van Schaik  Louise van der Weyden

CJ Martin Fellow
General Staff

Class Laboratory Staff

- John Cossey
- Adel Mitry
- John Dodson
- Li Jin
- Joseph Pridham

Elec. W’shop Staff

- Vincent Cheung
- Lali Jacob
- Louise Harrison
- Amy Cumarasingam
- David Lawrey

Research Laboratory Staff

- Lilian Morris

Honorary Professors

- William Burke
- Ann Sefton

Honorary Associate Professors

- David Davey
- Arthur Everitt
- Joesph Hoh
- Annick Ansselin
- Peter Maitz

Honorary Associates

- Ainsley Marsh
- Elaine Mulcahy
- Philip Poronnik
- Michael Slater
- Helen Speirs
Postgraduate Students

PhD Candidates ➤

Kachina Allen  Isabel Arnaiz  Shaimaa Atwa  Tara Brennon  Jennifer Brockhausen

Craig Campbell  Vashi Chandrakanthan  Rebecca Cole  Joel Cooper  Kiran Deoi

Ben Dickson  Katie Dixon  Lakshi Ganesan  Haibi Hu  Henry Huang

Xing Jing  Natasha Kumar  Aiqing Li  Yan Li  Lachlan McDowall

Helena Mangs  Sam Merlin  Terence Moopanar  Jemima Neale  Lauren O’Mullane
Postgraduate Students ...cont.

PhD Candidates ...cont.

Research Staff not Pictured:
Senior Research Officer: Permsak Komwatana. Research Assistants: Rebecca Thomas, Hilal Uzun.

Honorary Staff not Pictured:

Postgraduate Students not Pictured:
Physiology Staff List
as at early 2006

Professors (Level E Academics)
Maxwell Richard Bennett, AO, BE MSc PhD Melb DSc, FAA. Appointed 1981
David Grant Allen, BSc MB BS PhD Lond, FAA. Appointed 1989
Roger AL Dampney, PhD DSc. Appointed 1997
David I Cook, BSc(Med) MB BS MSc MD, FRACP, FAA. University of Sydney Medical Foundation Fellow. Appointed 1998
Brian J Morris, BSc Adel PhD Monash DSc FAHA. Appointed 1999
John Hearn, MSc UCD PhD ANU Appointed 2004

Associate Professors (Level D Academics)
Simon Carlyle, BSc PhD
Rebecca S Mason, MBBS PhD
Christopher O’Neill, BSc PhD Newcastle (NSW). Clinical Associate Professor at Royal North Shore Hospital
Paul M Pilowsky, BMedSc BM BS PhD Flin. NHMRC Principal Research Fellow

Senior Lecturers (Level C Academics)
Lynne J Cottee, BSc PhD
Margot Day, BSc PhD
Miriam Frommer, BSc PhD Lond
Ann K Goodchild, BSc PhD, Foundation for High Blood Pressure Research Fellow
William D Phillips, BSc PhD

Lecturers (Level B Academics)
Francoise Janod-Groves, BSc NSWIT MApplSc UTS
Catherine A Leamey, BSc PhD
Meloni M Muir, BSc Purdue PhD McG
Dario A Protti, PhD BAires
Atomu Sawatari, PhD UCSD
Sam Solomon, PhD
Irene Schneider, BSc UNSW MSc(Prelim) GradCertHigherEd

Research Fellows
David Alais, PhD. QEII Fellow
Anuwart Dinudom BSc Prince of Songkla MS Mahidol PhD. NHMRC Senior Research Fellow

Associate Research Fellows
Craig Jin, BSc Stanford MSc Caltech PhD
Andre van Schaik, MSEE Twente (Netherlands) PhD Lausanne (Switzerland)

Postdoctoral Research Fellows
Vlado Buljan, PhD (Physics) Sarajevo, PhD
Il-Ha Lee, PhD Catholic Univ of Seoul
Guo Jun Liu, MD Changchun PhD Gifu
Andrea Markus, BSc PhD Mainz (Germany)
Vincent Nguyen, PhD
Mark Rybchyn, BSc(Adv) PhD

Senior Research Officers
Othon Gervasio, DDS PhD UFMG Belo Horizonte (Brazil)
Jouji Horiuchi, PhD Yamanashi (Japan)
Yue-Kun Ju, MD Xian PhD ANU
Permsak Komwatanana, BSc Chulalongkhon MS Virginia PhD Virginia
Qun Li, PhD
Angelo Sanchez-Perez, BSc PhD Salamanca
Qi-Jian Sun, BSc PhD ANU. Garnett Passe and Rodney Williams Memorial Foundation Senior Research Officer
Yong Qi (William) Liu, BSc China MSc China PhD

Research Officers
Omar Chami, PhD
Yi Chu, MD Shanghai PhD UWA
Les Farnell, D.Phil Oxford
Nicholas Whitehead, BSc PhD

Research Assistants
Melissa Barron, BSc (Casual)
Jessica Gardner, BSc (Casual)
Kelly Glendining, MSc Otago
Suzanne Jennings, BMedSc
Elizabeth Millar, BSc
Rebecca Thomas, (P/T)
Hilal Uzun, BMedSc (Casual)

CJ Martin Fellow
Louise van der Weyden, BSc UTS PhD located at Wellcome Trust Sanger Institute (UK)

Affiliated Senior Investigators
John Chalmers, AC FAA PhD MD(Hon Qld, UNSW) FRACP FRCP(Hon Lond. Edin. Glasg) FACP(Hon) FRACS(Hon) FRACMA. Professor of Medicine
Michael K Morgan, MBBS MD FRACS Professor of Neurosurgery, Cerebrovascular Neurosurgeon, Royal North Shore Hospital
Robert G Berkowitz, MD BS FRACS Head of Otorhinolaryngology, Royal Children’s Hospital Melbourne
Richard Piper, BMSc BS(Hons) PhD MD FRACP FFICM Senior Staff Specialist, Intensive Care, RNS Hospital
Susan J Duval, BSc PhD Assistant Professor, Epidemiology, Univ of Minnesota
PhD Candidates in 2006
Kachina Allen, BSc Macq
Isabel Arnaiz, BSc
Shaimaa Atwa, BMedSc UNSW
Tara C Brennan, BMedSc
Jennifer Brochause, BSc Dalhousie (Canada)
Craig Campbell, BSc QLD
Vasantharan Chandrakanthan, BMedSc
Rebecca Cole, BSc Victoria (Wellington, NZ)
Joel Cooper, BSc
Dan Dane (co-supervised Pharmacology Dr H Lloyd)
Kiran Deol, BMedSc MBBS
Ben Dickson, BMedSc
Katie M Dixon, BMedSc UTS BMedSc(Hons)
Luke Eckersley, BSc MBBS (co-supervised Prof D Tomlinson, Manchester, UK)
Lakshi Ganeshan BSc
Haibi Hu, MBBS MMed
Henry Huang, BVetMed MVetMed National Chung Hsing (Taiwan)
Vikram Jagannath, BSc
Xing Liang Jing, BSc
Prathibha Kahapatipitya, BSc
Edward Kitzana, BSc
Natasha Kumar, BMedSc
Rubin Kurilowich, BSc
Aiqing Li, BSc
Yan Li, BSc
Lachlan M McDowall, BSc
John Makeham, BMed Newcastle
Helena Mangs MSc Linkoping Licentiate Karolinska (Sweden)
Sam Merlin, BSc Melb
Terence Mooparan, BMedSc
Jemima Neale, BLibStud
Lauren O’Mullane, BSc Wgong
James Padley, BMedSc
Trent Reardon, BSc
Hannah Rheo, BMedSc
Valin Reja, BSc LJWS
Deborah Springell, BSc
Farid Sanai, GradDipSc (co-supervised Pharmacology Dr H Lloyd)
Maryam Seyedabadi, BDentSc MBBS
Javed Sheriff, BMedSc
Peter Tan, BMedSc
Muhammed Umar, BSc
Todd Verner, BSc
Craig Vonhoff, BSc
Eryn Werry, BMedSc
Iwan Williams, BSc
Wendy Zhong, MBBS Guanzhou

MSc Candidate in 2004
Nida Gunay, BSc

MMed Candidates (early 2006)
Norman Chan, MB BS

BMedSc(Hons) Candidates (early 2006)
Anita Avesta
Blaine Allen
Andrew Sedgwick
Catherine Pham
Marvin Nguyen
Vanessa Sequeira
Ritu Mohan

BSc(Hons) Candidates (early 2006)
Abbey Cole-Clark
Susanna Lam
Marvin Nguyen

MBBS(Hons) Candidates (early 2006)
Justin Ruixen-Ker, BSc

Research Laboratory Staff
Lilian J Morris, DipBiolSc STC DipIntDes Kvb Coll Vis Comm

Manager
Lali Jo Jacob, BA Econ MBA

Administrative Officers
Louise Harrison, BT CSU BED UNSW
Amy Cumarsingam
David Lawrey, BVA

Class Laboratory Staff
John F Cossey, BTC STC. Senior Technical Officer (in-charge)
Adel Mitry, BVSc Cairo ACC STC. Senior Technical Officer

Computing Staff
John WA Dodson, HND Lond MIEEIE I Eng. Computer Network Manager
Li Jin
Joseph Pridham

Electronics Workshop Staff
Vincent HW Cheung, HND HK Polytechnic CEI Part 2 (UK). Senior Technical Officer
**Honorary Professors**
William (Liam) Burke, BSc PhD *Lond*
Paul Korner, AO, BSc PhD. Australian Academy of Science Fellow
David le Couteur MBBS, FRACP, Grad Cert Ed, PhD
Ann E Selton, AO, BSc(Med) MBBS PhD DSc
Allan Snyder, PhD UCLond MS Harvard SM MIT

**Honorary Reader**
Joseph FY Hob, BSc(Med), MBBS, PhD ANU, DSc

**Honorary Associate Professors**
David F Davey, BSc MScMed PhD McG
Arthur Everitt, PhD BSc
Barry S Gow, MDS PhD, FRACDS

**Honorary Senior Lecturer**
Annick Ansselin, BA *Macq* MSc PhD

**Honorary Associates**
Ruby CY Lin, MSc(Hons) *Otago* PhD
Peter K M Maitz AM, MD PhD BA MAppSc
Ainsley Marsh, BAdvSc
Elaine Mulcahy, PhD
Anne E Nelson, BSc MSc(prelim)
Philip Poronnik, BSc PhD
Michael Slater, PhD
Helen JL Speirs, BSc *Glas* PhD Edin
William Wang, MM BS
Ella Yeung, BSc *South Aust* MSc *South Aust* PhD HKU
Personnel in each Research Laboratory 2004&2005

**Muscle Cell Function Laboratory**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>David G Allen</td>
<td>Professor (in-charge)</td>
<td>University</td>
<td>1989</td>
</tr>
<tr>
<td>Yue-kun Ju</td>
<td>Senior Research Officer</td>
<td>NHMRC</td>
<td>1996</td>
</tr>
<tr>
<td>Nicholas Whitehead</td>
<td>Research Officer</td>
<td>ARC</td>
<td>2002</td>
</tr>
<tr>
<td>Yi Chu</td>
<td>Research Officer</td>
<td>ARC</td>
<td>2005</td>
</tr>
<tr>
<td>Terence Moopanar</td>
<td>PhD student</td>
<td>APA</td>
<td>2002</td>
</tr>
<tr>
<td>Edward Kitzana</td>
<td>PhD student (0.2)</td>
<td>NHF</td>
<td>2001</td>
</tr>
<tr>
<td>Iwan Williams</td>
<td>PhD student</td>
<td>Northcote Trust (UK)</td>
<td>2003</td>
</tr>
<tr>
<td>Trent Reardon</td>
<td>PhD student</td>
<td>APA</td>
<td>2005</td>
</tr>
<tr>
<td>Ella Yeung</td>
<td>Honorary Associate (0.2)</td>
<td></td>
<td>2001</td>
</tr>
<tr>
<td>Marie Ward</td>
<td>Academic Visitor (0.1)</td>
<td></td>
<td>2005</td>
</tr>
</tbody>
</table>

*Total effective full-time personnel: 2004: 5.4  2005: 7.5*

**Neurobiology Laboratory**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxwell R Bennett</td>
<td>Professor &amp; University Chair (in-charge)</td>
<td>University</td>
<td>1969</td>
</tr>
<tr>
<td>Guo Jun Liu</td>
<td>Senior Research Officer</td>
<td>NHMRC</td>
<td>2001</td>
</tr>
<tr>
<td>Yong Qi William Lin</td>
<td>Senior Research Officer</td>
<td>NHMRC</td>
<td>1990–2004</td>
</tr>
<tr>
<td>Vlado Buljan</td>
<td>Postdoctoral Research Officer</td>
<td>NHMRC</td>
<td>2003</td>
</tr>
<tr>
<td>Les Farnell</td>
<td>Research Officer (0.5)</td>
<td>ARC</td>
<td>1994</td>
</tr>
<tr>
<td>Andrea Mitchell</td>
<td>Manager, SUN Project</td>
<td>University</td>
<td>2002–2004</td>
</tr>
<tr>
<td>Jennifer Cantrill</td>
<td>Admin Assistant (0.2)</td>
<td>NHMRC</td>
<td>1982</td>
</tr>
</tbody>
</table>

*Total effective full-time personnel: 2004: 5.7  2005: 3.7*

**Brain Research Laboratory**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>William (Liam) Burke</td>
<td>Emeritus Professor and ‘Retired’ (87 –)</td>
<td>Honorory Associate (also Hon Assoc in Disc of Anatomy &amp; Histology)</td>
<td>1956</td>
</tr>
<tr>
<td>David F Davey</td>
<td>Collaborator</td>
<td></td>
<td>2000</td>
</tr>
</tbody>
</table>

**Auditory Neuroscience Laboratory**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simon Carlile</td>
<td>Associate Professor</td>
<td>University</td>
<td>1993</td>
</tr>
<tr>
<td>Dr Andre van Schaik</td>
<td>Associate Research Fellow</td>
<td></td>
<td>2002</td>
</tr>
<tr>
<td>Dr Craig Jin</td>
<td>Associate Research Fellow</td>
<td></td>
<td>2002</td>
</tr>
<tr>
<td>Rubin Kurilowich</td>
<td>PhD student (GMP/PhD)</td>
<td>APA</td>
<td>1997</td>
</tr>
<tr>
<td>Virginia Best</td>
<td>PhD student</td>
<td>APA</td>
<td>2000–2004</td>
</tr>
<tr>
<td>Ben Dickson</td>
<td>PhD student</td>
<td></td>
<td>2002</td>
</tr>
<tr>
<td>Kachina Allen</td>
<td>PhD student</td>
<td></td>
<td>2004</td>
</tr>
<tr>
<td>Joel Cooper</td>
<td>PhD student</td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Jorge Mejia</td>
<td>PhD student,</td>
<td></td>
<td>2004</td>
</tr>
<tr>
<td>Kirsty Gardner Maud</td>
<td>PhD student</td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Toby Blackman</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>David Schonstein</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2005</td>
</tr>
</tbody>
</table>

*Total effective full-time personnel: 2004: 8.0  2005: 11.0*
### Epithelial Transport Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>David I Cook</td>
<td>Professor</td>
<td>University</td>
<td>1986—</td>
</tr>
<tr>
<td>Anuwat Dinudom</td>
<td>Senior Research Fellow</td>
<td>NHMRC</td>
<td>2000—</td>
</tr>
<tr>
<td>Permsak Komwatana</td>
<td>Senior Research Officer</td>
<td>NHMRC</td>
<td>1991—</td>
</tr>
<tr>
<td>Angeles Sanchez-Perez</td>
<td>Senior Research Officer (0.5)</td>
<td>ARC</td>
<td>1997–2006</td>
</tr>
<tr>
<td>Il-Ha Lee</td>
<td>Postdoctoral Fellow</td>
<td>ARC</td>
<td>2004—</td>
</tr>
<tr>
<td>Lauren O’Mullane</td>
<td>PhD student</td>
<td></td>
<td>2004—</td>
</tr>
<tr>
<td>Haibi Hu</td>
<td>PhD student</td>
<td></td>
<td>2002—</td>
</tr>
<tr>
<td>Craig Campbell</td>
<td>PhD student</td>
<td></td>
<td>2004—</td>
</tr>
</tbody>
</table>

**Total effective full-time personnel:** 2004: 6.5  2005: 6.5

### Cardiovascular Neuroscience Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roger AL Dampney</td>
<td>Professor of Cardiovascular Physiology</td>
<td>University</td>
<td>1977—</td>
</tr>
<tr>
<td>Jouji Horiuchi</td>
<td>Senior Research Officer</td>
<td>NHMRC</td>
<td>2001—</td>
</tr>
<tr>
<td>Suzanne Jennings</td>
<td>Research Assistant</td>
<td>NHMRC</td>
<td>2001—</td>
</tr>
<tr>
<td>Javed Sheriff</td>
<td>PhD student</td>
<td>APA</td>
<td>2002—</td>
</tr>
<tr>
<td>Peter SP Tan</td>
<td>PhD student</td>
<td>APA</td>
<td>2003—</td>
</tr>
<tr>
<td>Lachlan McDowall</td>
<td>PhD student</td>
<td>APA</td>
<td>2003—</td>
</tr>
<tr>
<td>Anita Avesta</td>
<td>BMSc(Hons) student</td>
<td></td>
<td>2006—</td>
</tr>
<tr>
<td>Abbey Cole-Clark</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2006—</td>
</tr>
<tr>
<td>Ainsley Marsh</td>
<td>Hon Assoc</td>
<td></td>
<td>2001—</td>
</tr>
</tbody>
</table>

**Total effective full-time personnel** 2004: 8.0  2005: 8.0

### Developmental Physiology Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margot L Day</td>
<td>Senior Lecturer</td>
<td>University</td>
<td>2004—</td>
</tr>
<tr>
<td>Isabel Arnaiz</td>
<td>PhD student (0.5)</td>
<td></td>
<td>2000—</td>
</tr>
<tr>
<td>Vanessa Franklin</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Han-Shin Lee</td>
<td>BSc(Hons) student (0.5)</td>
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<td>2003–2004</td>
</tr>
</tbody>
</table>

**Total effective full-time personnel** 2004: 3.0  2005: 2.5

### Muscle Research Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph FY Hoh</td>
<td>Reader (—04)</td>
<td>University</td>
<td>1971—</td>
</tr>
<tr>
<td></td>
<td>Hon Assoc (04–05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hon Assoc Prof (05—)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christine A Lucas</td>
<td>Research Officer (01–04)</td>
<td>NHMRC</td>
<td>1997—</td>
</tr>
<tr>
<td>Wendy WH Zhong</td>
<td>PhD student (—04)</td>
<td>Fac Med Sch’shp</td>
<td>1999—</td>
</tr>
<tr>
<td>Hannah SM Rhee</td>
<td>PhD student</td>
<td></td>
<td>2001—</td>
</tr>
<tr>
<td>Michael Jun Man</td>
<td>Visiting scholar</td>
<td></td>
<td>2004–2005</td>
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### Developmental Neurobiology Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catherine Leamey</td>
<td>Lecturer</td>
<td>University</td>
<td>2003—</td>
</tr>
<tr>
<td>Sam Merlin</td>
<td>Research Assistant</td>
<td>NHMRC</td>
<td>2004–2005</td>
</tr>
<tr>
<td>Paul Lattouf</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Natasha Demel</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2005</td>
</tr>
</tbody>
</table>

**Total effective full-time personnel** 2004: 2.0  2005: 4.0
Skin & Bone Laboratory (Endocrine Regulation)

Rebecca S Mason  Associate Professor (in-charge)  University  1988—
Meloni M Muir  Lecturer Level B (2002—)  University  1999—
Ramin Rohanizadeh  Postdoctoral Research Fellow  NHMRC  2003–2004
Mark Rybchyn  Postdoctoral Research Fellow  Industry Grant  2005—
Sutharshani Sivagurunathan  PhD Student  ARC  2000–2004
(aka Dharshi Siva)
Shaimaa Atwa  PhD student  Osteoporosis Australia  2003—
Tara C Brennan  PhD student  APA  2004—
Katie M Dixon  PhD student  APA/Cancer Institute  2004—
Henry Huang  PhD student  2004—
Juliette Scott  MDent student (0.5)  2003–2004
Gordon Wong  BMedSc(Hons) student  2004
Melissa Barron  BSc(Hons) student  2005
Jessica Gardner  BSc(Hons) student  2005
Karl Pobre  BMedSc(Hons) student  2005
Shivashini S Deo  Research Assistant  Cancer Council NSW  2003–2005
Hilal Uzun  Research Assistant (Casual)  NHMRC  2005—
Anita Haywood  Research Assistant (Casual)  NHMRC  2005
Total effective full-time personnel: 2002: 8.5  2003: 11.0

Basic & Clinical Genomics Laboratory

Brian J Morris  Professor of Mol Med Sci  University  1978—
Andrea M Markus  Research Officer (0.8)  ARC  1998—
Helena A Mangs  PhD student (05—)  APA  2001—
Helen JL Speirs  Research Officer (03–04)  NHMRC  2003—
William YS Wang  Hon Assoc (06—)  1995—
David J Adams  Hon Assoc (02—)  1997—
Louise van der Weyden  Hon Assoc (02—)  1998–
Ruby CY Lin  Hon Assoc (04—)  1998–
Maurizio Stefani  BSc(Hons) student  2005
Lilian J Morris  General Assistant (0.2)  2001—
Total effective full-time personnel: 2004: 4.0  2003: 4.0

Human Reproduction Unit

Christopher O'Neill  Associate Professor (in-charge)  University  1999—
Omar Chami  Research Officer  RNSH  2003—
Rebecca Thomas  Research Assistant (P/T)  NHMRC  2002—
Greg Mulhern  Unit Manager  2004—
Yan Li  PhD student  UPA  2003—
Aiqing Li  PhD student  2001—
Vashe Chandrakanthan  PhD student  APA  2002—
Xing Liang Jin  PhD student  Fac Med scholarship  2003—
Vikram Jagannath  PhD student  2004—
Lakshi Ganesan  PhD student  2004—
Prathibha Kahatapitya  PhD student  2004—
Muhammed Umar  PhD student  2004–2006
Nida Gunay  MSc student  2002—
Bahar Mahsoudi  MSc student  2004—
Xiaofang Mu  MSc student  2004—
Anne Stanley  BSc(Hons) student  2004
Jessie Zhong  BSc(Hons) student  2004
Melissa Farnham  BSc(Hons) student  2005
Total effective full-time personnel:  2002: 14.5  2003: 19.5

**Molecular Neuroscience Laboratory**
William D Phillips  Senior Lecturer *(in-charge)*  University  1992—
Othon Gervasio  Research Officer  NHMRC  2003–2005
Jennifer Brockhausen  PhD student  NHMRC  2003—
Total effective full-time personnel:  2004: 3.0  2005: 3.0

**Hypertension & Stroke Research Laboratories**
Paul Pilowsky  Principal Research Fellow,  NHMRC/  1996—
Ann Goodchild  Associate Professor *(in-charge)*  University  1996—
Qi-Jian Sun  GPRWF Fellow  University  1997—
Qun Li  Senior Research Officer  University  2002—
Elizabeth Millar  Scientific Officer  RNSH  1996—
Kiran Deol  PhD student  University  2003—
Valin Reja  PhD student  University  1999–2004
John Makeham  PhD student  University  1999—
Deborah Springell  PhD student  University  2001—
Todd Verner  PhD student  University  2001—
Natasha Kumar  PhD student  University  2003—
James Padley  PhD student  University  2003—
Jemima Neale  PhD student  University  2003—
Maryam Seyedabadi  BDentSc/MBBS/PhD student  University  2000—
Natalie Costin  Research Admin Asst  RNSH  2002—
Talia Smith  Administrative Assistant  RNSH  2004—
Total effective full-time personnel:  2004: 16.0  2005: 15.0

**Vision Laboratory**
Dario A. Protti  Lecturer  University  2003—
Vincent Nguyen  Postdoctoral Fellow  NHMRC  2005—
Craig Vonhoff  PhD student  APA  2005—
Martin Dobes  BSc(Hons) student  2004—
Craig Vonhoff  BSc(Hons) student  2004—
Total effective full-time personnel:  2004: 3.0  2005: 5.0
Research Activities of Individual Laboratories

**Muscle Cell Function Laboratory**
**David G Allen**

The main focus of the Laboratory is the regulation of ions in muscle tissues and the influence of ionic changes on muscle function. Work on the pacemaker cells with Dr Ju has shown that the Na+/Ca2+ exchanger provides a current which influences firing rate. In recent work we have discovered a store-operated channel is active in the intact mouse pacemaker region and we are currently exploring its role in pacemaker function. Dr Chu is contributing to the studies on pacemaker cells by using her skills in immunohistochemistry to understand the distribution of various proteins in the pacemaker region. Dr Whitehead and Dr Yeung are investigating the role of stretch-activated channels in muscle damage and in muscular dystrophy. We have discovered that stretch-activated channels are opened following contractions in which the muscle is stretched and that entry of Na+ and Ca2+ through these channels contributes to muscle damage. The aminoglycoside antibiotics, such as streptomycin, block these channels and we are using streptomycin as a tool to test the importance of this damage pathway in mdx mice, which have a disease similar to human muscular dystrophy. Iwan Williams is studying the calcium transients and expression of calcium handling proteins in the mdx mouse heart with the aim of understanding why the mdx mouse develops a dilated cardiomyopathy. Terence Moopanar is investigating the role of reactive oxygen species in muscle fatigue and has shown that they contribute to a decline in the Ca2+ sensitivity of the contractile proteins. Trent Reardon hopes to extend this work by identifying the proteins involved in the changes of Ca2+ sensitivity. Dr Ward, a visitor from Auckland, has been studying the role of stretch-activated channels in the slow increase in calcium and force which follows muscle stretch.

**Collaborations**
- **Fatigue in skeletal muscle** Dr H Westerblad, Karolinska Institute, Sweden (1987—).
- **Hypertrophy of skeletal muscle** Prof R M Graham, Victor Chang Institute, Sydney (1999—).
- **Role calcium stores and phosphate in skeletal muscle fatigue** Dr D Laver, Newcastle Univ (2001—).
- **Mechanism of eccentric muscle damage** Dr Ella Yeung, Hong Kong Polytechnic Univ (2000—).
- **Stretch-activated channels** Prof F Sachs, Univ of New York, Buffalo, USA (2003—)
- **Mechanism of stretch inotropy in cardiac muscle** Dr M Ward, University of Auckland, NZ (2004—)

**Neurobiology Laboratory**
**Maxwell R Bennett**

It has been thought until recently that the normal functioning of the synaptic connections in the nervous system that underlie the psychological attributes of humans (as in memory, perception and emotional state) only change relatively slowly. Clearly when the functioning of these synapses goes awry, as in stroke, dementia and psychotic disorders, there may be some recovery over months or none at all. We have recently discovered that synapses may change their properties and connections over minutes, and this involves the dynamic activity of the enveloping glial cells. Furthermore, blood capillaries play a major role in the maintenance of synaptic activity. This Laboratory is therefore investigating the role of glial cells and capillaries in maintaining and instigating the dynamic properties of synapses associated with diseased states of the nervous system.

**Brain Research Laboratory**
**W (Liam) Burke**

During the two years 2004 and 2005 work has been concerned mainly with psychophysical testing of my own vision. My left eye has a condition termed ‘cystoid macular oedema’ which is usually treated successfully with anti-inflammatory eye-drops, but in my case is very resistant to these and other drugs. Nevertheless, the daily testing of visual acuity has enabled me to evaluate the relative merits of different drugs and treatments. The condition is believed to be due to a defect in the blood-retinal barrier (probably identical with the blood-brain barrier) and therefore an approach based on drugs capable of healing the blood-brain barrier may be helpful.

As a method of monitoring my vision I have also developed charts to replace the Amsler chart used in Ophthalmology. This work is almost complete and should be useful in the assessment of several diseases in ophthalmology.

**Auditory Neuroscience Laboratory**
**Simon Carlile**

The Auditory Neuroscience Laboratory hosts a multidisciplinary research program examining auditory spatial perception and its dependent neural processes. These studies blend together bioacoustic, psychophysical, neurophysiological and computational modeling approaches with state of the art, virtual space technologies. Research is currently focused on how the auditory system solves the ‘cocktail party’ problem; that is, our amazing ability to focus on a particular conversation of interest occurring against a noisy background. These projects are examining the nature of the acoustic cues available to the auditory system, the way in which differences in the spatial locations of the sound sources are exploited, the perceptual encoding of speech and the role of auditory spatial attention. The results of this pure research is feeding into a practical development program in collaboration with VAST Audio Pty Ltd to produce a radical new spatial hearing aid. The Laboratory is playing a key role in the clinical testing and commercialization of this technology.
Epithelial Transport Laboratory
David I Cook
In 2004 and 2005 the Laboratory continued its studies on the regulation of epithelial Na⁺ channels and on the mechanisms of Ca²⁺ signalling in epithelial cells. In the field of Na⁺ channel regulation, the Laboratory showed that epithelial Na⁺ channels are phosphorylated by the G protein-coupled receptor kinase, Grk2 (Grk2 is also known as the β-adrenoceptor kinase). We found that Grk2 phosphorylates the C-terminus of the β-subunit of the epithelial Na⁺ channel, rendering it unable to bind the ubiquitin-protein ligases Nedd4 and Nedd4-2. Nedd4 and Nedd4-2 ubiquitinate and inactivate the channels and mediate inhibition of the channels by increases in intracellular Na⁺. Hence Grk2 regulates the sensitivity of epithelial Na⁺ channels to Na⁺ feedback regulation. In addition, we investigated whether the serum- and glucocorticoid-stimulated kinase, Sgk, activates epithelial Na⁺ channels as a consequence of inactivating Na⁺ feedback regulation of the channels. We undertook this investigation because reports in the literature suggested that Sgk may be activating the channels as a consequence of phosphorylating Nedd4-2 and rendering it incapable of binding to, and inactivate, the channels. We found, however, that in the Xenopus oocyte expression system and in salivary duct cells studied using whole-cell patch-clamp techniques, that activation of Sgk had no effect at all on the ability of the Na⁺ feedback system to inhibit epithelial Na⁺ channels. In addition, we continued our studies on the intracellular signalling pathways by mechanisms by which ATP regulates Na⁺ channels in epithelia and commenced two new projects. One of these investigates the mechanisms by which insulin activates epithelial Na⁺ channels and the other investigates the mechanisms by which phospholipids regulate epithelial Na⁺ channels. In the field of Ca²⁺ signalling, the Laboratory has been using siRNA to study the role of the various isoforms of phospholipase Cβ in mediating the actions of muscarinic, M3, receptors and purinergic, P2Y2, receptors on intracellular Ca²⁺ in HT29 colon cancer cells.

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
This Lab studies the brain mechanisms that control the circulation. The main research interests of the laboratory are the role of the hypothalamus and the medulla oblongata in the short-term and long-term regulation of blood pressure and sympathetic vasomotor activity. Earlier research in the Laboratory clearly established the importance of a group of neurons in the rostral ventrolateral medulla (RVLM) in the regulation of sympathetic vasomotor activity. In the last two years, the main areas of investigation have been: (1) the long-term effects of circulating angiotensin II on the hypothalamic mechanisms that regulate sympathetic activity and blood pressure; (2) the means by which angiotensin II can modulate the reflex control of the circulation, by an action on key nuclei in the lower brainstem; (3) the modulation of the baroreceptor reflex by the hypothalamus; (4) the role of serotonin receptors in the brain, particularly the 5-HT1A sub-type, in modulating central pathways subserving the cardiovascular responses integrated within the hypothalamus; (5) the hypothalamic mechanisms responsible for the sustained increased blood pressure in salt-sensitive hypertension. Since the hypothalamus is a key brain region regulating the cardiovascular system as part of more generalized responses to environmental stimuli (e.g., changes in salt or water intake, or temperature), we hope this research will lead to a better definition of the neural pathways and mechanisms that subserve this regulation.

Developmental Physiology Laboratory
Margot L Day
Research in this Laboratory is aimed at understanding the regulation and role of ion transport mechanisms during pre-implantation development of the mouse embryo. Potassium channels are known to play important roles in many cellular processes including cell proliferation and differentiation. In the early mouse embryo we have shown that at least three distinct channels are regulated by the cell cycle in the early mouse embryo. One of these channels is a 240 pS K⁺ channel that is active during M and G1 phases and inactive during S and G2. This cyclic activation and inactivation occurs for at least the first four cell cycles after fertilization. In parallel with these oscillations in K⁺ channel activity are changes in the cell membrane potential, being hyperpolarized when the channel is active. We have demonstrated that there is a novel cytoplasmic cell cycle in the embryo that runs in parallel with the well-known nuclear cell cycle and regulates the activity of the 240 pS K⁺ channel.

In an attempt to determine the molecular identity of the 240 pS K⁺ channel in embryos we have examined the expression of members of the ether-a-go-go (Eag) K⁺ channel family. Eag has been implicated in cell cycle regulation in a number of different cell types and changes in the activity of EAG are involved in cell differentiation. We have demonstrated that four members of the Eag K⁺ channel family are expressed in the early mouse embryo, namely Eag1, Eag2, ERG1A together with a splice variant of ERG1A. Our studies on the role of ERG1A (RCNH2) suggest that it is not the cell cycle regulated K⁺ channel in early embryos; instead it may influence the allocation of cells to the inner cell mass at the blastocyst stage. Our studies on Eag1 show, however, that it is required for early development, since preventing its expression with antisense oligonucleotides caused arrest before the second cleavage and siRNA against EAG caused trophoblast cells to arrest in the G1 phase of the cell cycle.

We have attempted to investigate the role of the 240 pS K⁺ channel in the embryonic cell cycle by examining the effect of a variety of K⁺ channel blockers on channel activity. The most effective inhibitor of the channel that we have found so far is quinacrine. Quinacrine, however, is also known to inhibit DNA synthesis and phospholipase A2, and due to this lack of specificity it cannot be used to study the role of the K⁺ channel during the cell cycle. Therefore, in studies (in collaboration with A/Prof J Rasko and Dr C Bailey, Centenary Institute, Sydney) aimed at testing whether the cycling of K⁺ channel activity is required for progression of the cell cycle.

In these studies we used an adenoviral construct containing a constitutively active mutant of the K⁺ channel IKR1. Embryos were transduced with the D172N-IRK1 containing adenovirus
at the late 2-cell stage. Since this adenoviral construct also expressed green fluorescent protein (GFP), successful transduction of embryos was determined by the expression of GFP. Whole-cell patch-clamp experiments were then performed to confirm the expression of an inwardly-rectifying K+ current in the GFP positive embryos. Expression of D172N-IRK1 in embryos caused the membrane potential to be hyperpolarized and development to the 16-cell stage was prevented. These data imply K+ channel inactivation is critical for cell cycle progression in the early embryo.

**Muscle Research Laboratory**

Joseph FY Hoh

During this period, the Lab studied muscle fibre type distribution in rabbit tongue muscle and in laryngeal muscles of rat, cat, rabbit, baboon, cattle and horse. Rabbit tongue muscles are predominantly 2X fibres in the longitudinal core bundles and 2A fibres in the peripheral bundles. Distribution of laryngeal muscle fibre types are related to body size: the fastest fibres containing EO and 2B myosin heavy chains are only found in the smallest animals (rat and rabbit) while large animals contain only the two slowest isoforms, 2X and slow. 2B, the fastest of limb fibres in rats and rabbits, are found in abundance in cat laryngeal muscles, but in low abundance in baboon and virtually absent in cattle and horse laryngeal muscles. These fibres are absent in limb muscles of these animals. This correlation between fibre type distribution and body size is related to the scaling of specific metabolic rate and respiratory rate. We continued to study the comparative physiology of marsupial cardiac and skeletal muscles, and showed that gastrocnemius muscles of hopping macropods are devoid of 2B fibres, even though these fibres abound in their other limb muscles, raising the possibility that this may be related to the storage and recovery of elastic energy during their very efficient hopping locomotion. Kangaroos and wallabies express significantly more of the more powerful α-cardiac myosin in their heart relative to their body size compared with possums, suggesting that this may be due to their more athletic nature. We continue to collaborate with Dr Maki Yamaguchi of the Jikei University, Tokyo, to use X-ray diffraction at the synchrotron facility at SPring-8 to study the molecular mechanism of high force development in dog jaw-closing muscle fibres.

**Developmental Neurobiology Laboratory**

Catherine A Leamey

Research in this Laboratory seeks to understand how some of the connections which characterize the mammalian brain are specified during development. Over the last 2 years we have shown that a transmembrane protein Ten_m3 is highly expressed in the developing visual system. Further we have shown that it plays a key role in establishing the normal connectivity of the visual pathway. Mice which lack the molecule have marked changes in the organization of neuronal projections from the eye to the brain, and appear to be axonal guidance or targeting defects. As a consequence of this mistargeting, the projections which come from the two eyes to form binocular maps in brain centres are misaligned. We have also demonstrated that these mice have profound deficits in visually-mediated behaviours, suggesting visual perception is altered in these mice. Current work is focused on understanding the mechanisms by which this molecule works as well as determining the consequences of the change in the pattern of visual connectivity which we have demonstrated.

**Skin & Bone Laboratory (Endocrine Regulation)**

Rebecca S Mason

Work in this Laboratory is directed towards a better understanding of the problems of osteoporosis and its treatment and of protection from ultraviolet irradiation. Agents which regulate bone turnover and bone mass are studied in human bone cells using molecular techniques. The work has shown that glucocorticoids, commonly used to treat immune diseases, but which increase fracture risk, not only impair bone forming cell activity, but by at least 2 mechanisms contribute to excessive bone resorption. A novel phosphate regulator, FGFB23, was shown to come principally from normal bone tissue under physiological conditions. A number of studies were also undertaken, in collaboration with Biomedical Engineering, to test the ability of a variety of synthetic materials which could be used for bone implants, to support the growth of bone cells. Vitamin D is important for normal bone and muscle function and is made in skin. Studies by this group have shown that in human skin cells and in mice, vitamin D compounds contribute in important ways to protection from ultraviolet/sun damage. Examination of how this photoprotective effect is produced is also a focus of the Laboratory and may lead to new agents to enhance sun protection.

**Basic & Clinical Genomics Laboratory**

Brian J Morris

During the period the Lab studied the molecular biology of human renin, splicing factors and completed a decade of work scanning the genome to find loci responsible for essential hypertension. The function of the novel factors RBM4 (Lark) and XE7 established their identity as regulators of alternative splicing of pre-mRNA. The localization of each in subnuclear compartments concerned with transcription and splicing was shown. In collaboration with Ruth Sperling’s Lab in Israel, RBM4 and a splicing factor we had characterized previously, ZNF265, were found in supra-spliceosomes. Production of a renin enhancer knockout (REKO) mouse was completed. These mice exhibited markedly lower renin expression in kidney and extrarenal tissues in which renin is normally expressed at lower levels. This was shown by immunohistochemistry in collaboration with Frank Lovicu in Anatomy, as well as by renin mRNA and renin measurements. Detailed histopathology by collaborators in Cambridge highlighted striking hyperplasia of the macula densa in the kidney, but the animal appeared otherwise normal. Plasma electrolytes were normal, but creatinine was elevated significantly. Physiological studies involving telemetry conducted by Geoff Head and Dmitry Mayorov at the Baker Medical Research Institute in Melbourne showed significantly lower 24 hour blood pressure and locomoter activity of the REKO mice. They also showed a
blunted response to stress. We also conducted further studies of the mechanism of posttranscriptional control of human renin mRNA. We found for the first time that renin was expressed in two breast cancer cell lines. Specific siRNAs to the factors HADHB, HuR and CPI that we showed previously regulate renin mRNA stability modulated renin expression in Calu-6 cells that have high renin expression. siRNA directed at renin mRNA reduced proliferation of Calu-6 cells. Finally, in studies of cultured primary human fibroblasts, we found that the red grape polyphenol resveratrol reduced markers of senescence and, by gene expression profiling in collaboration with Ruby Lin at UNSW, altered expression of a number of genes. Resveratrol is known to activate the sirtuin SIRT1, a NAD-dependent deacetylase, and we found that nicotinamide increased senescence markers. Genes affected by resveratrol included ones that encode members of the Ras pathway. The ubiquitin conjugating enzyme UBE2D3 was downregulated and this may underlie resveratrol’s ability to modulate stress-induced apoptosis via p53 and NF-κB. FOXO3a, a transcription factor thought to mediate the effects of sirtuins on gene expression, was shown to shuttle between the nucleus and cytoplasm, and we could knock it down by siRNA.

Human Reproduction Unit
Christopher O’Neill
The major research findings of the Unit in 2004 and 2005 were: (1) the discovery of a mechanism of survival signalling in the preimplantation embryo. This discovery refuted the long held paradigm that the early embryo survives independently of survival factor signalling. It showed that the embryo requires survival factors, but that these are generated by the embryo itself. These autocrine survival factors act via receptors to stimulate the PI3 kinase survival signalling pathway. The activation of this pathway was essential for the normal survival of the embryo; (2) the first discovery of an autocrine mechanism of initiation of luteolysis in females. This discovery showed that the apparently spontaneous onset of luteolytic PGF2α pulses generated by the uterus were in fact generated by steroid-induced activation of an autocrine mediated signalling pathway within the endometrium. This pathway leads to the production of PGF2α. During pregnancy this pathway is disrupted by the production of interferon tau by the embryo, thus preventing luteolysis.

Molecular Neuroscience Laboratory
William D Phillips
This Lab is concerned with the mechanisms that underlie the development and modification of synapses in health and disease. In this period the Lab’s work has focused on the synapse between nerve and voluntary muscle cell. This synapse is vital for human mobility and is the target of a variety of genetic and autoimmune disorders called Myasthenias, all of which result in muscle weakness. Many of these disorders result from the loss of acetylcholine receptors on the postsynaptic side of the synapse. We have been studying the role of three proteins: neural agrin, the muscle specific kinase (MuSK) and rapsyn. During embryonic life neural agrin released by the motor nerve terminal activates MuSK on the muscle cell membrane, activation of which leads to the clustering of acetylcholine receptors within the postsynaptic membrane by rapsyn. Our working hypothesis is that this pathway functions throughout life and is essential for regulating the degree of aggregation of postsynaptic receptors. To this end we showed that after the level of rapsyn expression within muscle fibres was increased by experimental gene transfer of rapsyn into muscles of living mice the acetylcholine receptors became more metabolically stable. This is significant because in autoimmune Myasthenia gravis anti-receptor antibodies accelerate the loss of acetylcholine receptors. We have also found that neural agrin, presumably working via MuSK, can increase the level of expression of rapsyn, offering a potential new way of stabilizing postsynaptic receptors in Myasthenia gravis. In some Myasthenia gravis patients autoantibodies attack MuSK rather than the acetylcholine receptor. We have begun to investigate the cell biological processes involved.

Vision Laboratory
Dario Protti
During this period, the Lab studied the effect of modulation of different neurotransmitter systems on the electrical activity of retinal cells and retinal function and. The effect of dopamine on calcium and sodium currents in AII amacrine cells was investigated. Dopamine was shown to moderately reduce voltage-dependent calcium influx in AII cells. Calcium currents recorded in ruptured whole-cell mode were shown to run down to ~50% of their initial amplitude in less that 2 minutes of dialysis, an undesired effect likely to be due to wash-out of intracellular metabolites. The effects of WIN 55212-2, a cannabinoid receptor antagonist with the opposite function to dopamine, were also investigated. Application of WIN 55212-2 resulted in only a modest increase in calcium current amplitude. In order to prevent run-down of calcium currents, we started to carry out experiments in perforated whole-cell mode. This technique is proving to be technically challenging, but, when successful recordings are achieved, calcium currents do not run-down for over 40 minutes. Moreover, WIN 55212-2 had a strong effect in one cell recorded in perforated mode, suggesting the requirement of an intact intracellular milieu in order to observe effects that depend on second messenger cascades. Dopamine showed a blocking effect on sodium currents from AII amacrine cells. This effect was consistent with its reported effect on ganglion cells. We are continuing these studies in perforated patch clamp conditions. We have also investigated the effects of interfering with the inhibitory neurotransmitter GABA on retinal ganglion cells as an approach to understand the role of inhibitory input in gain control in the visual system. We have found that ganglion cells display tonic inhibitory currents mediated by GABA. These currents were blocked in the presence of GABAₐ antagonists and enhanced upon application of a GABA uptake blocker. The Lab is currently pursuing these experiments and exploring the role of inhibition in gain control by looking at the effect of manipulating inhibitory inputs on light responses at different intensity levels.
**Muscle Cell Function Laboratory**
David G Allen

Cooper ST, Maxwell AL, Kizana E, Ghodduzi M, Hardeman EC, Alexander LE, Allen DG. North KN. C2C12 co-culture on a fibroblast substratum enables sustained survival of contractile, highly differentiated myotubes with peripheral nuclei and adult fast myosin expression. *Cell Motil Cytoskel* 2004; 58: 200-211.


**Epithelial Transport Laboratory**
David I Cook


**Neurobiology Laboratory**
Maxwell R Bennett

Bennett MR, Farnell L, Gibson WG. The facilitated probability of quantal secretion within an array of calcium channels of an active zone at the amphibian neuromuscular junction. *Biophys J* 2004; 86: 2674-2690.


**Brain Research Laboratory**
Liam Burke


**Auditory Neuroscience Laboratory**
Simon Carlile


**Cardiovascular Neuroscience Laboratory**
Roger AL Dampney


**Developmental Physiology Laboratory**
Margot L Day

Muscle Research Laboratory
Joseph FY Hoh


Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason


Basic & Clinical Genomics Laboratory
Brian J Morris
Speirs HJL, Morris BJ. WNK4 intron 10 polymorphism is not associated with hypertension. Hypertension 2004; 43: 766-768.


Human Reproduction Unit
Christopher O'Neill


Molecular Neuroscience Laboratory
William D. Phillips

Hypertension & Stroke Research Laboratories
Paul Pilowsky


Publications by Honoray Staff
Ann E Sefton

Sefton AE. Graduate entry to medical school. Med Educ 2004; 38: 132-134
Journal Articles 2005

Muscle Cell Function Laboratory
David G Allen


Neurobiology Laboratory
Maxwell R Bennett


Auditory Neuroscience Laboratory
Simon Carlile


Cardiovascular Neuroscience Laboratory
Roger AL Dampney


Muscle Research Laboratory
Joseph FY Hoh


Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason


**Basic & Clinical Genomics Laboratory**

**Brian J Morris**


**Human Reproduction Unit**

**Christopher O’Neill**


**Molecular Neuroscience Laboratory**

**William D Phillips**

Gervásio OL, Phillips WD. Increased ratio of rapsyn to ACh receptor stabilizes postsynaptic receptors at the mouse neuromuscular synapse. J Physiol 2005; 562.3: 673–685

**Hypertension & Stroke Research laboratories**

**Paul Pilowsky**


**Vision Laboratory**

**Dario A Protti**


**Publications by Honoray Staff**

**Ann E Sefton**


Sefton AE. Medical education at the University of Sydney; the last forty years. Canc Forum 2005; 29: 102–106.
Journals of Publication

Number in each, and ranking for Discipline of Physiology in the last five years
From SCI® Journal Citation Reports: based on source items in 2003

The rankings of journals are made according to the 2003 SCI® Science Citation Index ‘impact factor’, which is a measure of the frequency with the ‘average article’ in a given journal in a given journal has been cited in a given year. It is a ratio between citations and citable items published. The 2003 impact factor for a journal has been calculated by dividing the number of all the SCI® Science Citation Index source journals’ 2003 citations of articles that journal published in 2004 and 2005 by the total number of source items it published in 2002 and 2003. For all journals covered by the Index, a plot impact factor score vs number of journals with that score gives a distribution skewed towards the higher scores and having a median of 0.6 and a mode of 0.1. (In the left column below NL means that the journal has not been listed in the index.)

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## Publications

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Mean ± SD of impact factors for journals of publication = 4.1 ± 4.8 for 2005
4.4 ± 3.0 for 2006
4.0 ± 3.4 for five years of publication 2001 – 2005

% published in top 5% of journals (ie, impact factor > 3.5) = 52% for five years of publication

5 Year Total: 263
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*ND, not disclosed
Editorial Commentaries

2004
Roger AL Dampney

2005
Brian J Morris

Co-Authored Book

2004
Ann E Sefton

Edited Book

2004
Paul Pilowsky

Chapters in Books

2004
David G Allen

Maxwell R Bennett

Paul Pilowsky

2005
Simon Carlile

Ann E Sefton

Cover of Book

Brian J Morris. Review on cover of Ed Schoen MD on Circumcision. Timely Information for Parents and Professionals from America’s #1 Expert on Circumcision. RDR Books, Berkley, California

Letters to the Editor (Journals)

2004
Brian J Morris

2005
Brian J Morris

Newsletter Articles

2004
Brian J Morris

2005
Brian J Morris
TV Interviews

2004
Maxwell R Bennett
Troubled Minds: the Lithium Revolution SBS Television.

Brian J Morris

2005
Rebecca S Mason
WIN TV Canberra News 3 Mar 2005

Brian J Morris
Channel 10 Evening News, 17 Mar 2005 – Childhood obesity to reduce lifespan; tax junk food.
ABC Channel 2 Evening News, 17 Mar 2005 – Childhood obesity to reduce lifespan; tax junk food.

Radio Interviews

2004
David G Allen

2005
Rebecca S Mason

Brian J Morris
2GB, 13 Apr 2004, 4.30 pm on criticism of Karl Kruszelnicki on circumcision.
6PR, 15 Mar 2005, 9.20 am on genes for longevity.
ABC, 17 Mar 2005, 3.10 pm on childhood obesity to reduce lifespan; tax junk food.
3AW, 18 Mar 2005, 10.05 am on childhood obesity to reduce lifespan; tax junk food.
3AA, 21 Mar 2005, 3.10 pm on childhood obesity to reduce lifespan; tax junk food.
ABC North Qld, Morning show, 5 Apr 2005 on childhood obesity to reduce lifespan; tax junk food.

ABC Sydney, 22 Jun 2005, 1.05 pm on resveratrol and longevity
ABC Darwin, 27 Jun 2005, 10.15 am on resveratrol and longevity

Newspapers

2004
David J Adams
‘Extra fertiliser for Sydney’s Tall Poppies.’ Uninews 36 (9), 4 Jun 2004 (front page)

David G Allen
Quoted in The Australian 20 Aug 2004 on role of lactic acid in muscle fatigue.

Brian J Morris
Morris BJ. Letter to the Editor criticizing Karl Kruszelnicki’s 'Mythconceptions’ column. Good Weekend Magazine (Fairfax newspapers: Sydney Morning Herald, The Age, Hobart Mercury)

‘To cut or not to cut is still a vexed question’. West Australian, 31 Apr 2004.
‘NTEU working for academic staff’. NTEU Newsletter 2004 (photo).
‘How to live to 100 and do you really want to?’ Sunday Life magazine (Fairfax newspapers), Wellbeing section, 5 Dec 2004, pp 22-27.

2005
Rebecca S Mason
Newspapers ...cont.


**Brian J Morris**


‘Cancer cells could be key to longer life’. *Sunshine Coast Daily* 19 Mar 2005, p 16.

‘Cancer cells may hold the key to immortality’. *AAP Newswire* 18 Mar 2005.


‘Cancer offers clue to immortality’. *West Australian* 19 Mar 2005, p 64


*Westworth Courier*: 22 Jun 2005 p 36


**Maurizio Stefani**

‘Red elixir – scientists are cultivating the answer to a long life.’ *Sydney Morning Herald* 22 Jun 2005, p 3 (and photo).

**Online**

**2005**

**Brian J Morris** Finding that circumcision reduces AIDS infections won’t end debate. CNSNEWS.COM, 21 Jul 2005.

Promote circumcision in the fight against AIDS, expert urges. CNSNEWS.COM, 8 Aug 2005.

Patent Applications

**Auditory Neuroscience Laboratory**

**Simon Carlile**

2004


2005


**Commercial Activities**

**Auditory Neuroscience Laboratory**

**Simon Carlile**

Over 2004 and 2005 Simon Carlile has successfully raised more than $1.5 M from venture capital and AusIndustry funds to support the commercialization activities of the University of Sydney spin off company VAST Audio Pty Ltd. The phase one clinical trials of a spatial hearing aid have been completed in conjunctions with the National Acoustic Laboratories (Chatswood) and Phase 2 trials are just beginning in conjunction with a major international hearing-aid manufacturer. VAST Audio and its spatial hearing-aid product has been featured in a range of television, radio and print journal articles as well as the ARC Annual Report, the University of Sydney Annual Report and been showcased by the NSW Government and the University of Sydney at a number of National and International high technology and business innovation trade shows.

Other activities include business advisor/mentoring and business analyst/consultant for a number of start up companies as well as presenting at a number of entrepreneurial workshop organised by the ATPI and the NSW Enterprise Workshop.

He is the Chair or the board of VAST Audio Pty Ltd.

**Published Conference Proceedings (Articles)**

**Auditory Neuroscience Laboratory**

**Simon Carlile**

Conference Abstracts and Presentations 2004

(O: oral, P: poster, P+O: poster with short oral)

Muscle Cell Function Laboratory
David G Allen
2 communications at the 3rd Asian and Oceanian Myology Centre, Singapore, Jan 2004
2 communications at the International Society for Heart Research, Brisbane, Aug 2004

Neurobiology Laboratory
Maxwell R Bennett
Werry EL, Liu GJ, Bennett MR. Substance P modulates glutamate-stimulated adenosine triphosphate release from spinal cord astrocytes Proceedings of the Australian Health and Medical Research Congress 2004, Sydney, Nov 2004; 2, p 119 P+O

Auditory Neuroscience Laboratory
Simon Carlile

Cardiovascular Neuroscience Laboratory
Roger AL Dampney


Tan PSP, Dampney RAL. The role of AT1 receptors in the area postrema in the modulation of the cardiac and sympathetic components of the baroreflex by circulating angiotensin II. Proceedings of the Australian Health and Medical Research Congress 2004, Sydney Nov 2004, p 303 P

Developmental Physiology Laboratory
Margot L Day
Lim AA, Lee H-S, Day ML. DNA damage pathways in mouse pre-implantation embryos Institute for Biomedical Research IVth Annual Young Investigator Symposium, Sydney 2004 P

Developmental Neurobiology Laboratory
Cathy Learney

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
Scott JM, Mason R, Swain M. Establishment of a primary culture system for human odontoblasts. XIIIth Australian and New Zealand Society of Paediatric Dentistry Federal Convention, Melbourne Exhibition Centre, 18-20 Mar 2004 O

Mason RS. Vitamin D and bone health. General Practitioner Conference and Exhibition Meeting, May 2004 O

Mason RS. The pathophysiology of osteoporosis: new understanding. Association of Regulatory and Clinical Scientists - Therapeutic Training Area: Osteoporosis, Sydney, May 2004 O

Mason RS. Osteoporosis as an abnormality of bone cell function. VIIIth World Congress on Clinical Pharmacology and Therapeutics, Brisbane, Aug 2004 O

Mason RS. Vitamin D deficiency. Endocrine Society Australia Seminar Meeting, Apr 2004 O

Atwa S, Brennan T, Conigrave AD, Mason RS. Controversies in calcium-sensing in bone. Australian and New Zealand Bone and Mineral Society, Hunter Valley, Aug 2004 (Young Investigator Award session) O

Brennan TC, Muir MM, Conigrave AD, Mason RS. Functional responses of bone cells to stimulation by strontium. Australian and New Zealand Bone and Mineral Society, Hunter Valley, Aug 2004 (Young Investigator Award session) O


Mason RS. The benefit of sun exposure — The Vitamin D story. *Clinical Oncological Society of Australia Conference*, Nov 2004  


### Basic & Clinical Genomics Laboratory

**Brian J Morris**  

Mangs H, Speirs HJL, Markus MA, Stamm S, Morris BJ. XE7 binds to the splicing proteins ASF/SF2 and ZNF265, colocalizes with SR proteins in speckles and could be a component of the mRNA splicing complex. *XIIIth NSW Scientific Meeting of the Australian Society for Medical Research, Powerhouse Museum, Sydney, 7 Jun 2004, p 27*  

Adams DJ, Beveridge DJ, van der Weyden L, Mangs H, Leedman PJ, Morris BJ. HADHB, HuR and CP1 bind to the distal 3'-UTR of human renin mRNA and differentially modulate renin expression. *XIIIth NSW Scientific Meeting of the Australian Society for Medical Research, Powerhouse Museum, Sydney, 7 Jun 2004, p 66*  


Mangs H, Speirs HJL, Markus MA, Stamm S, Morris BJ. The protein product of the pseudoautosomal gene XE7 binds several spliceosomal proteins and could be involved in pre-mRNA splicing. *“From Cell to Society 4”. Fourth College of Health Sciences Research Conference 2004, Leura, 3-4 Nov 2004, miniposter 10-8*  


Speirs HJL, Morris BJ. No association of podocin (NPHS2) polymorphism in essential hypertension. *“From Cell to Society 4”. Fourth College of Health Sciences Research Conference 2004, Leura, 3-4 Nov 2004, miniposter 22-10*  

Speirs HJL, Benjafiel AV, Morris BJ. Association analyses of tumor necrosis factor receptor 2 gene (TNFRSF1B) polymorphisms in essential hypertension. *“From Cell to Society 4”. Fourth College of Health Sciences Research Conference 2004, Leura, 3-4 Nov 2004, miniposter 22-11*  


**Molecular Neuroscience Laboratory**

William D Phillips


**Hypertension & Stroke Research Laboratories**

Paul Pilowsky


Sun Q-J, Berkowitz RG, Pilowsky PM. Opposite effects of GABA(A) and glycine antagonists on the firing pattern of laryngeal constrictor motoneurons in the rat. *Proceedings of the Australian Neuroscience Society 24th Annual Meeting*, Melbourne, 2004


**Vision Laboratory**

Dario A Protti


Conference Abstracts and Presentations 2005

**Muscle Cell Function Laboratory**
David G Allen
1 communication at the International Society for Heart Research, Norway, Jun 2005.
1 communication at the Physiological Society Symposium on the Heart, Bristol, Jun 2005.
6 communications and 1 poster at the Australian Physiological Society meeting, Canberra, Sep 2005

**Neurobiology Laboratory**
Maxwell R Bennett
Werry EL, Liu GJ, Bennett MR. Substance P allows glutamate to stimulate ATP release through NMDA and metabotropic glutamate receptors on spinal cord astrocytes. Proceedings of the Australian Neuroscience Society, Perth, 2005; 16: 42. O

**Auditory Neuroscience Laboratory**
Simon Carlile
Allen K, Froid K, Alais D, Carlile S. Speech intelligibility demonstrates a spatial gradient of attention. Association for Research in Otologyngology, 29th Winter meeting, Baltimore MD, USA, 2005

**Cardiovascular Neuroscience Laboratory**
Roger AL Dampney
Tan PSP, Dampney RAL. The role of AT_{1} receptors in the area postrema in the modulation of the cardiac and sympathetic components of the baroreflex by circulating angiotensin II. Proceedings of the Australian Neuroscience Society Meeting, Perth 30 Jan–2 Feb 2005, p 22 O
Tan PSP & Dampney RAL (2005) The role of AT_{1} receptors in the area postrema in the modulation of the cardiac and sympathetic components of the baroreflex by circulating angiotensin II. XXXV International Congress of Physiological Sciences, San Diego. Apr 2005, Abstract 357.4 P
Horiuchi J, Wakabayashi S, Dampney RAL. Role of 5-HT_{1A} receptors in the cardiovascular response elicited from the dorsomedial hypothalamic nucleus in the rat. XXXV International Congress of Physiological Sciences, San Diego. Apr 2005, Abstract 354.28 P
Sheriff MJ, Fontes MAP, Killinger S, Dampney RAL. Blockade of AT_{1} receptor in the rostral ventrolateral medulla increases sympathetic activity under hypoxic conditions. XXXV International Congress of Physiological Sciences, San Diego. Apr 2005, Abstract 354.4 P
Horiuchi J, Wakabayashi S, Dampney RAL. Role of 5-HT_{1A} receptors in the cardiovascular response elicited from the dorsomedial hypothalamic nucleus in the rat. 4th Congress of the International Society for Autonomic Neuroscience, Marseilles, France, Jul 2005. P
Horiuchi J, Wakabayashi S, Dampney RAL. Role of 5-HT_{1A} receptors in the cardiovascular response elicited from the dorsomedial hypothalamic nucleus in the rat. Proceedings of the Physiological Society, Bristol, U.K., Jul 2005, J Physiology 567P: C38 O
Developmental Physiology Laboratory
Margot L Day


Muscle Research Laboratory
Joseph FY Hoh

Developmental Neurobiology Laboratory
Cathy Leamey

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason


Atwa S, Lewis N, Brennan TC, Conigrave AD, Mason RS. Calcium sensing receptor properties in osteoblastic cells. Institute for Biomedical Research Young Investigators Symposium, Sydney, Dec 2005.


Basic & Clinical Genomics Laboratory
Brian J Morris


Markus MA, Stamm S, Mangs HA, Adams DJ, Morris BJ. WT1 is a regulator of the new splicing factor RBM4. XIVth NSW Scientific Meeting of the Australian Society for Medical Research, Powerhouse Museum, Sydney, 6 Jun 2005.


**Molecular Neuroscience Laboratory**

**William D Phillips**


Phillips WD, Gervasio OL. The receptor-associated protein, rapsyn, and regulation of postsynaptic acetylcholine receptor packing density and turnover at the neuromuscular synapse. *Australian Physiological Society Annual Meeting*, Canberra, Sep 2005.


**Hypertension & Stroke Research Laboratories**

**Paul Pilowsky**


**Vision Laboratory**

**Dario A Protti**

Official for Scientific Societies at National or International Conferences

Simon Carlile
2004
Organizing Committee, 10th International Conference on Auditory Display, Sydney, Jul 2004.

Roger AL Dampney
2004
Chair, Symposium on ‘Vasoactive Peptides – Central Nervous System’, 20th Scientific Meeting of the International Society of Hypertension, Sao Paulo, Brazil, Feb 2004.

2005
Chair, Symposium on ‘Neural Control of the Circulation in Health and Disease’, International Union of Physiological Sciences, San Diego, USA, Apr 2005.

Chair, Symposium on ‘Molecular and Cellular Mechanisms in Hypertension’, Meeting of the Physiological Society, Bristol, UK, Jul 2005.

David I Cook
2004
Chair, Epithelial Transport Section, International Union of Physiological Sciences.

2005
Chair, Epithelial Transport Section, International Union of Physiological Sciences.

Brian J Morris
2004

Chair, Medical and Scientific Executive Committee, International Conference on Longevity, Sydney Convention Centre, Darling Harbour, 5-7 Mar 2004; Brisbane Convention Centre, 18-20 Mar 2005.

2005
Member of Council, International Research Centre for Healthy Ageing and Longevity.

Session Chair, 2nd International Congress on Healthy Ageing and Longevity, Brisbane, 18-20 Mar 2005.

Dario A Protti
2005
Session Chair, Australian Neuroscience Society, Perth, 30 Jan 2005
Invited Presentations at National or International Conferences

David G Allen

2004
Skeletal Muscle Research Forum, Cumberland College, Sydney.
Speaker and Chair, Pacemaker function, International Society for Heart Research, Brisbane.
Muscle disease section, European Muscle Conference, Elba.
Hearts & Minds; Molecular and Cellular Basis of Degenerative Disease, Institute for Biomedical Research Symposium, Sydney.
Stretch-activated channels, Australian Health and Medical Research Congress, Sydney.
Kolling Institute, Royal North Shore Hospital, Sydney.
Department of Medicine, Concord Hospital, Sydney.
2005
Department of Physiology, Univ of Queensland, Brisbane.
Department of Cardiology, Univ of Newcastle, Newcastle.
Prince of Wales Research Institute, Sydney.
Department of Rehabilitation Sciences, Hong Kong Polytechnic Univ, Hong Kong.

Maxwell R Bennett

2004
National Science Week Forum, St Michaels Church, Melbourne.
2005
Blandford Lecture, Eye and Cornea Australia, Sydney.
Plenary Lecture, American Philosophical Association, New York.

Simon Carlile

2005

David I Cook

2004
2005
Symposium in Honour of Professor E. Frömter, Erlangen, Germany, Jul 2005.

Roger AL Dampney

2004
Invited Lecture, ‘Hypothalamic mechanisms regulating sympathetic activity and blood pressure’, at workshop on Central Control of the circulation, Meeting of the International Society for Hypertension, Sao Paulo, Brazil, Feb 2004.
Hunter Heart-Lung Research Guild. Special Lecture ‘The brain angiotensin system and hypertension’, Department of Cardiovascular Medicine, John Hunter Hospital, 3 Mar 2004.
Invited Speaker, Institute for Biomedical Research Symposium on ‘Hearts and Minds: Molecular and Cellular Basis of Degenerative Disease’, Sep 2004.
2005
Invited Speaker, Sir Zelman Cowen University Fund Public Seminar ‘From Test Tube to Treatment’, Univ of Sydney, Nov 2005.

Rebecca S Mason

2004
Vitamin D deficiency, Endocrine Society of Australia Post-Graduate Seminar Meeting, Gold Coast, Qld, May 2004.
Vitamin D and bone health, GPCE (General Practitioner Conference and Exhibition) Meeting, Sydney, May 2004.
Osteoporosis as an abnormality of bone cell function, 8th World conference on Clinical Pharmacology and Therapeutics, Brisbane, Qld, Aug 2004.
Vitamin D and photoprotection, in cancer prevention and cancer treatment: Is there a role for vitamin D, 1α,25(OH)2D or new analogs? Meeting co-sponsored by Vitamin D workshop and National Cancer Institute, NIH, Bethesda, MD, USA, Nov 2004.
Conferences and Symposia Organized

David G Allen
2004
Co-organizer, Hearts & Minds; the Molecular and Cellular Basis of Degenerative diseases, Institute for Biomedical Research Symposium, 2004.

Maxwell Bennett
2004
Chair and Programme Organizer. ‘Responding to the Challenge of Youth Mental Health’, 3rd National Symposium on Genes, Neurons and Mental Illness, Brain & Mind Research Institute, Univ of Sydney, 3 Sep 2004.
2005

David I Cook
2004
2005

Roger AL Dampney
2004
Organizer, Symposium on Future Directions in Central Cardiovascular Control, Royal North Shore Hospital, Sydney, Aug 2004.

Margot Day
2005
Organizing Committee and Session Chair, ‘Ion Channels’, Institute for Biomedical Research Annual Scientific Conference, Univ of Sydney, Jun 2005.
Conferences and Symposia Organized ...cont.

Rebecca Mason
2004

2005

Scientific Program Committee Member, Workshop on Calcium and Vitamin D, Melbourne, 2005.

Scientific advisory/Program committee 2005–6, 13th Workshop on Vitamin D, Victoria, Canada, Apr 2006.

Brian J Morris
2004

2005
Member, Organizing Committee, 2nd International Conference on Healthy Ageing and Longevity 2005, Mar 2005, Brisbane.

Paul Pilowsky
2004
Co-Organizer, National Meeting on Cardiovascular Control, Sydney.


2005
Co-Organiser and Chair of a Symposium’ 25th Meeting of the Australian Neuroscience Society, 2005.

Member of the organising committee for the bid team for a meeting of International Society of Autonomic Neuroscience in Sydney in 2010, 2005 –

Member of the Programming Committee for the 4th Federation

PhDs Awarded

Muscle Cell Function Laboratory
David G Allen
2004
Kizana E. Genetic Manipulation of gap junctions and membrane excitability; towards gene therapy for disorders of cardiac electrical impulse conduction.

Auditory Neuroscience Laboratory
Simon Carlile
2004
Best V. The perception of multiple sound sources and acoustic motion in human listeners.

Muscle Research Laboratory
Joseph FY Hoh
Zhong WWH. A study on fibre types and myosin isoforms of cardiac and skeletal muscles of Australian marsupials.

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
2004
Gupta R. 1,25dihydroxyvitamin D, is photoprotective in human skin cells.

Basic & Clinical Genomics Laboratory
Brian J Morris
2005
Benjafeld AV. Genome linkage and candidate gene studies in hypertension and related disorders.

Master of Dental Science (Awarded with honours)

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
2004
Scott J. A primary culture system for human odontoblasts.
BSc(Hons) Awarded

Audio-Visual Research Laboratory
David Alais
Power L. Perceptual learning: orientation for vision and frequency for audition. Result: 2(i) Class.

Neurobiology Laboratory
Maxwell R Bennett
2004
Henke H. A eural/glial model of retinal function. (Co-supervisor: A/Prof W Gibson, Mathematics). Result: 1st Class.

Auditory Neuroscience Laboratory
Simon Carlile
2005
Schonstein D. The cocktail party phenomenon: evidence for bottom-up informational masking. Result: 1st Class.
Blackman T. Relearning sound localizations. Result: 1st Class.

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
2005
Gardner J. Mechanisms of photoprotection by 1α,25-dihydroxyvitaminD3 in keratinocytes, Result: 1st Class.
Baron M. Development of functional assays for the P2X7 receptor in human bone cells Result: 1st Class.

Basic & Clinical Genomics Laboratory
Brian J Morris
2004

Human Reproduction Unit
Christopher O’Neill
2004
Zhong J. Role of PTEN in the development of pre-implantation embryos. Result: 2(i) Class.
2005
Farnham M. The involvement of ATR and ATM in the nuclear accumulation of Phospho(ser15)-p53 and the survival of murine preimplantation embryos. Result: 1st Class.

Vision Laboratory
Dario A Protti
2004
Vonhoff C. Effects of dopamine on light signalling in the scotopic pathway of the mouse retina. Result: 1st Class.

External Honours Project
Colin Dunstan
2005
Wong K. Regulation of RANKL production in breast cancer cells by female sex hormones Result: 2(i) Class.

Karen Waters
2004
Moore N. Ventilatory control during breastfeeding in term and preterm infants Result: 1st Class.

GDipSci Awarded

External Honours Project
Heather Jeffery
2004
Sacco J. A study investigating whether the CIC hearing aid offers advantages in sound localization and speech intelligibility against spatially separated maskers relative to the BTE and ITE hearing aids.
**BMedSc(Hons) Awarded**

**Muscle Cell Function Laboratory**  
David G Allen  
2005  
Lusambali L. Can you prevent muscle damage in Duchenne muscular dystrophy? Result: 2(i) Class.

**Neurobiology Laboratory**  
Maxwell R Bennett  
2004  
Dobes M. Glial modulation of neural networks in the isolated retina. (co-supervised Dr D. Protti) Result: 1st Class.  
Kalous A. Glutamate receptor-mediated release of ATP from ramified microglia. (co-supervised Dr G.J. Lu) Result: 1st Class.  
Shin JW. Subcellular redistribution of glutamate transporters in cortical astrocytes. (co-supervised Dr V Balcar, Anatomy) Result: 1st Class.  

**Developmental Physiology Laboratory**  
Margot Day  
2004  
Lee H-S. Identification of the link between DNA damage pathways and the p38 MAPK pathways in the pre-implantation embryo. Result: 1st Class.  
2005  
Franklin V. Ion channel activity, membrane potential changes and Ca2+ oscillations in the mouse oocytes. Result 1st Class.

**Developmental Neurobiology Laboratory**  
Cathy Leamey  
2005  
Lattouf P. A role for Ten_m3 in the developing visual system. Result 1st Class.  
Demel N. Ten_m3 and its role in cortical development. Result 2(i) Class.

**Skin & Bone Laboratory (Endocrine Regulation)**  
Rebecca S Mason  
2005  
Pobre K. Investigating the photoprotective properties of vitamin D. Result: 1st Class.

**Human Reproduction Unit**  
Christopher O’Neill  
2004  
Ganeshan L. The role of p53 in the formation of embryonic stem cell lineages. Result: 1st Class.

**Hypertension & Stroke Research Laboratory**  
Paul Pilowsky  
2004  
Raley D. The role of the adenylate cyclase-PKA-cAMP signaling pathway in control of cardiorespiratory function. Result 1st Class, University Medal.  
2005  
Stanton R. Acute intermittent hypoxia causes a long-lasting augmentation of splanchnic sympathetic nerve activity. Result: 1st Class.  
Burke P. Novel inhibitory role of somatostatin in the ventro-lateral brainstem. Result: 1st Class.  
Ann Goodchild  
2005  
Ms Cara Hildreth Autonomic function in conscious animals bred for differing cholinergic sensitivities. Result: 1st Class.

**External Honours Project**  
Heather Jeffery  
2005  
Pulver S. Cardiovascular responses to head-up tilt in newborn babies. Result: 1st Class.

**Vaughan Macefield**  
2004  
Seitz M. Pulmonary and chemoreceptor influences on human muscle vasoconstrictor neurones. Result 1st Class.

**Heather Medbury**  
2004  
Mikhail M. The role of monocyte in wound healing. Result: 2(i) Class.

**Karen Waters**  
2004  
Tam K. Effects of intermittent hypercapnic hypoxia on insulin resistance in piglet model. Result: 2(i) Class. 
Scholarships and Fellowships Awarded

**Neurobiology Laboratory**  
Maxwell R Bennett  
2004  
Australian Postgraduate Award—EL Werry.  
Major Patrick Hore-Ruthven Foundation—EL Werry.

**Developmental Neurobiology Laboratory**  
Cathy Leamey  
2005  
Australian Postgraduate Award—S Merlin.

**Skin & Bone Laboratory (Endocrine Regulation)**  
Rebecca S Mason  
2004  
Australian Postgraduate Award—K Dixon.  
Australian Postgraduate Award—T Brennan.  
Osteoporosis Australia (top-up scholarship)—T Brennan.  
2005  
Osteoporosis Australia, Citracal scholarship—S Atwa.  
Sydney Cancer Institute (top-up scholarship + travel & consumables)—K Dixon.

**Basic & Clinical Genomics Laboratory**  
Brian J Morris  
2005  
Australian Postgraduate Award—M Stefani.

**Hypertension & Stroke Research Laboratories**  
Paul Pilowsky  
2004  
NHM Scholarship—P Burke.

**Vision Laboratory**  
Dario A Protti  
2004  
Australian Postgraduate Award—C Vonhoff.

Awards, Prizes and Other Recognition

**David I Cook**  
2004  
Election as a Fellow of the Australian Academy of Sciences.  
Plenary Lecturer at the annual meeting of the Australian Physiological Society.

**Anuwat Dinudom**  
2004  

**Terence Moopenar**  
2005  
Australian Physiological Society, Best Publication by PhD student 2005.

**Paul Pilowsky**  
2004  
Broyles-Maloney Award of the American Broncho-Esophagealological Association Honorable Mention for paper ‘Response of laryngeal motoneurons to hyperventilation induced apnea.’

Higher Degree Theses examined

**Roger AL Dampney (3)**  
2004 (2)  
MSc: Univ of Sydney (1), PhD: Univ of Melbourne (1)  
2005 (1)  
DSc: Univ of Melbourne (1)

**Margot Day (3)**  
2004  
PhD: Univ of Sydney (1), Univ of Adelaide (1), MSc: Univ of Sydney (1)

**Rebecca S Mason (1)**  
2004  
MSc: Univ of Sydney (1)

**Brian J Morris (1)**  
2004  
MPhil: ANU (1)

**William D Phillips (1)**  
2005  
PhD: Univ of Sydney (1)
Manuscripts Reviewed for Journals

David G Allen (61)
2004 (37)
2005 (24)

Brian J Morris (73)
2004 (39)
2005 (34)

Annick D Ansselin (6)
2004 (3)
Neuroscience (1), J Neuropathol Exp Neurol (2).
2005 (3)
Neuroscience (1), J Neuropathol Exp Neurol (2).

Simon Carlile (8)
2004 (4)
J Acoust Soc Am (4).
2005 (4)
J Acoust Soc Am (4).

Margot L Day (2)
2005 (2)
Human Reprod (2).

Joseph FY Hoh (6)
2004 (4)
2005 (2)

Catherine A Leamey (2)
2004 (1)
Exp Brain Res (1).
2005 (1)
Exp Brain Res (1).

Rebecca S Mason (6)
2005
Grant and Award Applications Assessed

David G Allen
2004 (7)
NHMRC (Member of GRP), ARC (3), NHF (4).

2005 (16)
NHMRC (Chair of GRP), ARC (3), NHF (4), NSERC (Canada) (2), HRC (New Zealand) (4), NSF (Switzerland) (1), Telethon (Italy) (1), Research into Aging (UK) (1).

Simon Carlile (11)
2004 (5)
NHMRC (3), ARC (2).

2005 (6)
NHMRC (3), ARC (3).

Roger Dampney (10)
2004 (5)
NHMRC (1), ARC (1), NHF (1), Wellcome Foundation (1), NHF of NZ (1).

2005 (5)
NHMRC (1), ARC (1), NHF (1), Wellcome Foundation (1), NHF of NZ (1).

Margot Day (106)
2004 (64)
NHMRC (3), ARC (2), NHMRC Postgraduate Scholarships (59).

2005 (42)
NHMRC Postgraduate Scholarships (42).

Catherine A Leamey (7)
2004 (4)
NHMRC (4).

2005 (3)
NHMRC (3).

Rebecca S Mason (13)
2004 (6)
NHMRC (2 project, 1 scholarship), ARC (1), Sir Charles Gairdner Hospital Foundation (1), Scottish Hospitals Endowments Fund (1).

2005 (10)
NHMRC (3 project, 1 scholarship), Cure Cancer Fund (1), Cancer Research UK (2), Sir Charles Gairdner Hospital Foundation (1), Hanson Research Institute (1), WA Arthritis and Osteoporosis Research Fund (1).

Brian J Morris (13)
2004 (7)
NHMRC (3), NHF (2), NMRC (Singapore) (1), ISH Postdoctoral Fellowship (1).

2005 (6)
NHMRC (4), NHMRC Enabling (1), MRC (UK) (1).

William D Phillips (7)
2004 (2)
NHMRC (1), ARC (1).

2005 (5)
NHMRC (3), ARC (1), Marsden Fund (New Zealand) (1).

Paul Pilowsky (13)
2004 (4)
ARC (1), Foundation for High Blood Pressure Research (1), NHMRC (1), NHF (1).

2005 (9)
Health Research Council of NZ (1), NHMRC (3), NHF (5).

Dario A Protti (6)
2004 (3)
NHMRC (1), Netherlands Organization for Scientific Research (NOW) (1), Argentinean National Research Council (FONCyT) (1).

2005 (3)
NHMRC (1), Netherlands Organization for Scientific Research (NOW) (1), Argentinean National Research Council (FONCyT) (1).
Membership of Editorial Boards of Journals

David G Allen

*Pflügers Archiv* (1996—).
*Heart, Lung & Circulation* (2004—).

Maxwell R Bennett

*Journal of the Autonomic Nervous System* (Review Editor) (1997—).
*Neuroscience News* (Associate Editor) (1997—).
*Progress in Neurobiology* (Associate Editor) (1997—).
*NeuroReport* (Editor) (2001—).
*Purinergic Mechanisms* (Editor) (2005—).

David I Cook

*Pflügers Archiv* (2002—).
*Cellular Physiology and Biochemistry* (2002—).

Roger AL Dampney

*American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* (2001—).

David F Davey


Brian J Morris

*Hypertension* (2002—).
*Journal of Hypertension* (2003—).
*Current Hypertension Reviews* (2005—).

Paul Pilowsky

*American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* (2005—).
*Hypertension* (2004—).
*Current Respiratory Medicine Reviews* (2004—).
*Clinical and Experimental Pharmacology and Physiology* (2002—).
*Respiration Physiology and Neurobiology* (2002—).
*Autonomic Neuroscience: Basic and Clinical* (2001—).
*BioMedCentral Physiology* (2001—).
*Anesthesia and Analgesia* (1999—).
*Federation of Asian and Oceania Neuroscience Societies* (1996—).

Service to the University

David G Allen

Executive Committee, Institute for Biomedical Research (1996—).
Laboratory Animal Management Advisory Committee (1997—).
Sub-Dean Research (Anderson-Stuart Precinct) (2000—).
Member, College of Health Sciences Research Committee (2004—).
Member, Faculty of Medicine Research Committee (2004—).
Member, Sesqui Post-doctoral applications committee (2004).
Member, Selection Committee, Rolf Edgar Lake Fellowship (2004).
Member, Selection Committee, Student Laboratory Fellowships (2005).
Member, Committee to report on RIBG distribution in the Faculty of Medicine (2005).
Member, Selection Committee for Senior/Lectureship in School of Medicine (2005).

Maxwell R Bennett

Establishment of the Brain & Mind Research Institute (2002—).

Simon Carlile

Presentation to new staff at the Vice Chancellors welcome (2004).

David I Cook

University Committees
University of Sydney Research Committee.
College of Health Sciences Research Committee (Deputy Chair).
Innovation Challenge Planning Committee.

Faculty of Medicine Committees
Faculty of Medicine Research Committee.
Faculty of Medicine Budget Planning Committee.
Faculty of Medicine Executive Group.
Working Party on Local Fee-Paying Students (Chair).
Working Party on Intercalated Degrees (Chair).
Working Party on Part-time Enrolment in Medicine (Chair).
Working Party on Interview Procedures for Admission to the Medical Course.

Faculty of Science
Level D Promotion Committee (Core Member).
Service to Professional Organizations

Roger AL Dampney  
Faculty of Medicine Committees  
Block Chair, Cardiovascular Sciences Block.  
Faculty of Science Committees  
Member of Level E Promotions committee.  

Margot L Day  
Chair USydMP Honours committee (2003—).  
Core Member of Faculty of Medicine promotions committee (level B) (2003–2005).  
University of Sydney Medical Program Assessment Committee Member (2003—).  
University of Sydney Medical Program Committee Member (2003—).  
Member USydMP Grading Working Party (2005—).  
Chair, Medical Foundation Building Precinct RIBG Committee (2005—).

Rebecca S Mason  
Undergraduate Studies Committee (2004—).  
Academic Board (2006—).  
Faculty of Medicine committees:  
Associate Dean, Curriculum, Graduate Medical Program, (2002—).  
Faculty Academic Committee (2002—).  
Chair, University of Sydney Medical Program Committee (2003—).  
Faculty Education Committee (2003—).  
Institute for Biomedical Research Executive (2000—).  
Deputy Director (2001-2006).  
Discipline of Physiology  
Head of Discipline (2002—).

Brian J Morris  
University Committees  
Staff Consultative Committee (elected 2005).  

William D Phillips  
University Committees  
University Biosafety Committee (Gene Technology).  
Faculty of Medicine Committees  
Faculty Education Committee.  
Faculty of Science Committees  
Undergraduate Studies Committee.  
School of Medical Sciences  
School of Medical Sciences Teaching Committee (Chair).

Discipline of Physiology  
Physiology Teaching Committee (Chair)

Paul Pilowsky  
Scientific Advisory Committee of the Heart Research Institute of the University of Sydney, Member (2004—)  
Research Committee Northern Clinical School, Royal North Shore Hospital, Member (2000—)  
Nominee of the Sub-Dean (Northern Clinical School) to the University Promotions Committee (3 candidates) (2005—)

Ann E Sefton  
Deputy Chancellor

Service to Professional Societies, Grant-giving Bodies or Other External Committees

David G Allen  
Member, Grant Review Panel NHMRC (2004).  
Chair, Grant Review Panel NHMRC (2005).  
Member, Grant Committee, Health Research Council of New Zealand (2005).  
Service to Outside Bodies  
Board Member, Heart Research Institute, Sydney (2002—).  
Chair, Scientific Committee, Heart Research Institute, Sydney (2003—).  
External Assessor, Chair of Physiology, Univ of Hong Kong (2005).  
Member, Careers advice on Medicine at Sydney Grammar School (2004).  
Physiology Examiner, Royal Australasian College of Dental Surgeons (Sydney and Hong Kong) (2005).

Maxwell R Bennett  
Appointments to Boards and Council  
Institute for Biomedical Research, Member of Board (2002—).  
Brain & Mind Research Institute, Director (2002—).  
Mental Health Council of Australia, Member of Council (2002—).  
Brain Foundation, Scientific Director (2004—).  
Brain & Mind Research Foundation, Member of Council (2004—).
Service to Professional Societies, Grant-giving Bodies or Other External Committees ...cont.

Mental Health Research Institute, Victoria, Member, Advisory Council (2003 —).
Brain & Mind Australia, Chair (2003 —).
Neuroscience and Mental Health Ltd, Convenor (2003 —).

Recent Government appointments

Recent national symposia
Neuroscience and Neurology National Programs, Canberra, Chair (2001–2007).

David I Cook
College of Experts of the Australian Research Council, Member (2004).
Australian Research Council, Ozreader (2005).
Clinical Trials Sub-committee, Royal Prince Alfred Hospital, Chair (2005).
Human Research Ethics Committee, Royal Prince Alfred Hospital, Deputy Chair (2005).
Reference Group on the Shared Scientific Assessment Scheme, NSW Health, Member (2005).
Shared Scientific Assessment Committee, NSW Health, Deputy Chair (2005).
Reference Group on Assessment of Multicentre Clinical Trials, NSW Health, Member (2005).
Asia Exchange Fellowship Committee, Australian Academy of Science, Member (2005).

David F Davey
Australian Physiological Society Editor (2002–2006), Society Executive Member, Society Council Member (2002 —).

Roger AL Dampney
Australian Research Council, Ozreader (2005).

Margot Day
NHMRC Biomedical Scholarships Assessment Committee, Member (2004 —).

Rebecca S Mason
Australia and New Zealand Society for Bone and Mineral Research Council Member (2001 —); Programme Organizing Committee, Member (2003 —).
Bone and Joint Decade, Strategic Planning Committee, Member (2003 —).
Osteoporosis Australia, Board Member (2002 —).

Australian Medical Council, Accreditation Committee for Queensland University Medical Program, Member (2004–5).
Working Party, Clinical Practice Guidelines series — update on the management of cutaneous melanoma, NHMRC, Member (2005 —).
Commission Internationale de L’Eclaireage, International Commission of Illumination, Technical Committee 6-58, Sunlight, Health and Vitamin D, Member (2005—).

Paul Pilowsky
Asia-Pacific Regional Committee of the International Brain Research Organisation: Travel Awards Program, Director (2005 —).
International Society of Autonomic Neuroscience, Secretary and Website Manager (2005 —).
National Association of Research Fellows (NARF) of the NHMRC of Australia, Treasurer and Executive Member (2005).
International Brain Research Organisation, Neuroscience Libraries Committee Member (2005 —).
International Brain Research Organisation, Asia Pacific Regional Committee Member (2004 —).
Federation of Asian and Oceanian Neuroscience Societies, Australian representative (2004 —).
NSW Cardiovascular Health Research Network, Member (2004 —).
Council on High Blood Pressure Research (USA), Fellow (2003 —).
National Health and Medical Research Council of Australia, Principal Research Fellow (2002 —).
Research and Scientific Advisory Committee of the National Heart Foundation, NSW Division, Member (1999 —).
Northern Area Health Services Research Scholarships/Fellowships, Committee Member (1997 —).
Royal North Shore Hospital, Dept of Neurosurgery, Member (1996 —).
Executive Council of the International Society of Autonomic Neuroscience, Member-at-Large (2004).
Basic Science Research Subcommittee, Community Health and Anti-Tuberculosis Association, Member (1999–2004).

Ann E Sefton
Council of the International Union of Physiological Sciences, Member, (2001 —).
## Grant Funding Totals

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### Abbreviations:
- **AKF**: Australian Kidney Foundation
- **ARC**: Australian Research Council
- **BLO**: Business Liaison Office
- **CC**: Cancer Council
- **CRC**: Cooperative Research Centre
- **Fac Med**: Faculty of Medicine, University of Sydney
- **Menzies**: Menzies Foundation
- **MNDRIA**: Motor Neurone Disease Research Institute of Australia
- **NHF**: National Heart Foundation
- **NHMRC**: National Health & Medical Research Council
- **P&W**: Passe & Williams Memorial Foundation Training Fellowship
- **Ramaciotti**: Ramaciotti Foundation
- **RIBG**: Research Infrastructure Block Grant
- **Sesqui**: University of Sydney Sesquicentenary Research Grants
- **Simons**: Simons Foundation
- **USMFG**: University of Sydney Medical Foundation Grant
- **USRG**: University of Sydney Research Grant
- **USYD**: University of Sydney
# External Funding to Each Laboratory

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<td>The role of Na-Ca exchange current in cardiac pacemaker cells.</td>
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| NSW Health Spinal Cord Injury Project Grant | Glial and neuroinflammatory mechanisms of neuronal degeneration and regeneration. Pollard JD, Banati R Bennett MR | 2005 | $250,000 |
|                                             |                                                | 2006 | $250,000 |
|                                             |                                                | 2007 | $250,000 |
|                                             |                                                | 2008 | $250,000 |

| NSW Health Spinal Cord Injury Project Grant | The role of astrocytes in nociceptor pain in transmission in the spinal cord. Bennett MR | 2005 | $265,437 |
|                                             |                                                | 2006 | $182,000 |

### Carlile Auditory Neuroscience Laboratory

<p>| ARC | The roles of spectral cues and auditory plasticity in auditory localisation, speech segregation and speech intelligibility. (DP0452762) Carlile S | 2003 | $66,666 |
|     |                                                                                                                                  | 2004 | $66,666 |
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| ARC | Auditory spatial perception during head movements. (DP0452804) Carlile S                                                                 | 2003 | $76,666 |
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<td>2003  2004 $70,000  2005 $65,000</td>
</tr>
<tr>
<td>ARC</td>
<td>Molecular mechanisms of regulation of human renin mRNA.</td>
</tr>
<tr>
<td></td>
<td>Morris BJ  Leedman PJ</td>
</tr>
<tr>
<td></td>
<td>2005 $130,000  2006 $120,000  2007 $120,000</td>
</tr>
<tr>
<td>ARC</td>
<td>Function of a new splicing factor, RBM4.</td>
</tr>
<tr>
<td></td>
<td>Morris BJ</td>
</tr>
<tr>
<td></td>
<td>2006 $104,000  2007 $94,000</td>
</tr>
<tr>
<td>USyd Cancer Res</td>
<td>Lark, a new splicing factor that binds WT1, may be involved in cancer.</td>
</tr>
<tr>
<td>Fund R&amp;D</td>
<td>Markus MA  Morris BJ</td>
</tr>
<tr>
<td></td>
<td>2004 $40,000</td>
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<tr>
<td>USyd Sesqui R&amp;D</td>
<td>Does ZNF265 influence renin expression?</td>
</tr>
<tr>
<td></td>
<td>Morris BJ  Speirs HJL</td>
</tr>
<tr>
<td></td>
<td>2004 $40,431</td>
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</tbody>
</table>
### Phillips Molecular Neuroscience Laboratory

<table>
<thead>
<tr>
<th>Organization</th>
<th>Project Description</th>
<th>Investigator(s)</th>
<th>Year(s)</th>
<th>Amount(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHMRC</td>
<td>Protein partners of rapsyn that regulate acetylcholine receptor clustering.</td>
<td>Phillips WD</td>
<td>2003</td>
<td>$130,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2004</td>
<td>$130,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2005</td>
<td>$130,000</td>
</tr>
<tr>
<td>Sesqui R&amp;D</td>
<td>Dynamics of synaptic protein aggregation.</td>
<td>Phillips WD</td>
<td>2003</td>
<td>$46,000</td>
</tr>
<tr>
<td>MNDRIA</td>
<td>Role of the acetylcholine receptor-associated protein, rapsyn, in the mature nervous system.</td>
<td>Phillips WD</td>
<td>2004</td>
<td>$15,000</td>
</tr>
</tbody>
</table>

### Pilowsky Hypertension & Stroke Research Laboratory

<table>
<thead>
<tr>
<th>Organization</th>
<th>Project Description</th>
<th>Investigator(s)</th>
<th>Year(s)</th>
<th>Amount(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHMRC</td>
<td>Central control of blood pressure: neurotransmitters, receptors, signal transduction and gene expression.</td>
<td>Pilowsky PM, Goodchild AK</td>
<td>2002</td>
<td>$187,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2003</td>
<td>$187,500</td>
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<tr>
<td></td>
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<td>$187,500</td>
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<td>2005</td>
<td>$187,500</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2006</td>
<td>$187,500</td>
</tr>
<tr>
<td>NHMRC</td>
<td>Research Fellowship Grant.</td>
<td>Pilowsky PM</td>
<td>2003</td>
<td>$115,000</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>2004</td>
<td>$115,000</td>
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<td>2005</td>
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<td></td>
<td></td>
<td></td>
<td>2006</td>
<td>$115,000</td>
</tr>
<tr>
<td>GPRWMF</td>
<td>Respiratory inputs to laryngeal Motoneurons.</td>
<td>Berkowitz R, Pilowsky PM, Sun Q-J</td>
<td>2003</td>
<td>$85,805</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2004</td>
<td>$89,130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2005</td>
<td>$92,828</td>
</tr>
<tr>
<td>NSC CAH</td>
<td>Autonomic variables as predictors of outcome in the intensive care unit. (2005:27 Project Grant)</td>
<td>Pilowsky PM, Piper R</td>
<td>2005</td>
<td>$35,400</td>
</tr>
<tr>
<td>NCS DETYA</td>
<td>Laser based micropipette puller.</td>
<td>Pilowsky PM</td>
<td>2004</td>
<td>$18,581</td>
</tr>
<tr>
<td>NCS DETYA</td>
<td>Syringe pump, light source and ice machine.</td>
<td>Pilowsky PM</td>
<td>2005</td>
<td>$7,543</td>
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</tbody>
</table>

### Protti Vision Laboratory

<table>
<thead>
<tr>
<th>Organization</th>
<th>Project Description</th>
<th>Investigator(s)</th>
<th>Year(s)</th>
<th>Amount(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHMRC</td>
<td>The role of dopamine and other neuromodulators as light signals in the inner retina: a link to night blindness disorders.</td>
<td>Protti DA</td>
<td>2004</td>
<td>$93,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2005</td>
<td>$75,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2006</td>
<td>$75,000</td>
</tr>
<tr>
<td>USyd Bridging</td>
<td>Function of calcium wave transmission in retinal glial cell networks.</td>
<td>Protti DA</td>
<td>2006</td>
<td>$23,000</td>
</tr>
</tbody>
</table>

### Abbreviations:

- **ARC**: Australian Research Council
- **GPRWMF**: Garnett Passe and Rodney Williams Memorial Foundation
- **MNDRIA**: Motor Neurone Disease Research Institute of Australia
- **NCS DETYA**: Northern Clinical School DETYA Research Infrastructure Block Grant funds
- **NHMRC**: National Health & Medical Research Council
- **NSC CAH**: Northern Sydney Central Coast Area Health: Research Grants
- **Sesqui**: University of Sydney Sesquicentenary Research Grants
- **USYD**: University of Sydney
Recurrent Funding from University to Physiology

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>$2,699,884</td>
<td>$2,585,789</td>
<td>$2,633,679</td>
<td>$2,878,733</td>
</tr>
<tr>
<td>Salaries – academic</td>
<td>$1,530,464</td>
<td>$1,618,160</td>
<td>$1,750,807</td>
<td>$1,795,705</td>
</tr>
<tr>
<td>Salaries – general staff</td>
<td>$451,333</td>
<td>$480,142</td>
<td>$511,143</td>
<td>$521,321</td>
</tr>
<tr>
<td>Part time teaching, casual staff costs, etc.</td>
<td>$147,146</td>
<td>$162,568</td>
<td>$189,815</td>
<td>$181,608</td>
</tr>
<tr>
<td>Non-salary:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumables</td>
<td>$103,803</td>
<td>$114,986</td>
<td>$159,427</td>
<td>$141,743</td>
</tr>
<tr>
<td>Equipment &amp; maintenance</td>
<td>$343,325</td>
<td>$205,942</td>
<td>$172,977</td>
<td>$71,560</td>
</tr>
<tr>
<td>All Other Expenses</td>
<td>$136,385</td>
<td>$117,109</td>
<td>$110,812</td>
<td>$152,398</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>$2,712,456</td>
<td>$2,698,907</td>
<td>$2,894,981</td>
<td>$2,864,335</td>
</tr>
<tr>
<td>Reserves</td>
<td>$306,598</td>
<td>$306,598</td>
<td>$306,598</td>
<td>$306,598</td>
</tr>
<tr>
<td>Carry forward from previous year</td>
<td>$546,418</td>
<td>$476,219</td>
<td>$9,850</td>
<td>$16,791</td>
</tr>
<tr>
<td>Balance</td>
<td>$533,846</td>
<td>$363,101</td>
<td>$251,452</td>
<td>$2,393</td>
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</tbody>
</table>

**Formula funding based on research performance**

**Publications:**
Articles in refereed journals, 1.0 + impact factor of journal where published, up to a maximum of 6.0, and with 1.0 added for articles with > 10 pages; book chapters, 1.0 (with 1.0 added for > 10 pages); patent, 2.0; commissioned report, 2.0; editorship of a research book, 4.0; research book or monograph, 20.0

**Grants:**
Dollar value and number of grants were compiled separately and the following weightings were applied to these values; x 2.0 for ARC, NHMRC, NIH; x 1.5 for other competitive; x 1.0 for other (e.g., contracts).

**Derivation of overall score:**
Publication score as a percentage distribution across the Discipline of Physiology was multiplied by 4. This was added to percentage distribution for grant number and for grant dollar value. The number obtained was divided by 6 to give the final percentage.

**Research Infrastructure Block Grant**
In 2004, funding of $175,415 was provided to the Discipline of Physiology on the basis of 2003 Commonwealth competitive grant values (Mechanism A), and was passed onto Laboratories in line with their percentage of such grant funding.

In 2005, funding of $129,129 was provided to the Discipline of Physiology on the basis of 2004 Commonwealth competitive grant values (Mechanism A), and was passed on to laboratories in line with their percentage of such grant funding.

**Running Costs and Student Support**
In 2004 an amount for running costs of $81,000 was distributed as $1,000 per Laboratory, $1,500 per full time PhD student and $800 per MSc/MMEd student or Honours research student.

In 2005 an amount for running costs of $76,550 was distributed as $1,000 per Laboratory, $1,500 per full time PhD student and $800 per MSc/MMEd student or Honours research student.
This report emphasizes the integration of research into several of my teaching activities.

1. Intermediate Physiology teaching and research activities

Basic (4 credit point) and Integrated (8 credit point) Physiology A and B (including Advanced) changed to Integrated only (6 credit point, including Advanced) in 2005

a) The website originally designed for our Intermediate Physiology normal and advanced units was awarded a certificate as an exemplary site in Learning Foundational Knowledge when the eLearning Resource Centre of the College of Health Sciences was established in 2004.

b) The change to 6 credit point units of study for Intermediate Physiology in 2005 presented a challenge which initially was met by integrating some elements of the very successful PBL stream into modules with practicals. Paper problems and their solutions were made the central focus of these condensed units, which necessitated establishing even more links between lecture, practical and PBL streams, plus integrating generic skills in oral and written communication more effectively into the overall curriculum. Related topics were gathered together into content modules and delivered by various resources provided on the WebCT platform, with detailed student and tutor guides being created. These new materials were presented as posters at the Teaching Workshop of the IUPS in March 2005.

Despite its suitability for enhancing the integration of learning physiology, this model was no longer used in second semester, with the modules being replaced by Inquiry-Based Learning projects, although both types of activity entailed group research and presentations. The first semester PBL-prac modules were tested by a group take-home exam, and the second semester IBLs by a group oral presentation. Curriculum development is continuing.

c) The many significant issues relating to practical report writing - which had been introduced earlier for the non-Advanced cohort - were used as a spur to apply for support for an ICT in Teaching and Learning project in the College of Health Sciences. Our success led to the development of FLERT, the Flexible Electronic Report-Writing Tool, in collaboration with the Flexible Online Learning Team and the Learning Centre. The project is ongoing and will achieve the following outcomes:

1. Development of a pedagogically useful and discipline flexible electronic tool for student scientific report writing with links to resource materials
2. Modification of relevant existing non-interactive resources to more student-focused interactive resources for linkage to the template
3. Evaluation of the ease of use of FLERT by a small group of Senior physiology students
4. Integration of FLERT into Intermediate physiology units of study
5. Establishment of an archive of online materials useful in modifying FLERT for use across a broad range of disciplines
6. Promotion of FLERT in other disciplines which require student report writing.

Older tutorial material has been adapted for the core template, while non-interactive exercises previously made available on WebCT, plus a number of newly written ones, will be linked in interactive formats. Evaluation has begun and modifications in response to student feedback have been incorporated into the structure. Our presentation at the Innovation in Practice Ed Health Conference in Nov 2005 was judged the best in its section.

d) Another teaching project, which has been supported by successive TIF grants, entailed changing the practical class pre-test to a post-test, the aim being to ascertain whether students performed better AFTER they had been taught the relevant material. These were evaluated both quantitatively (for changes in performance outcomes) and qualitatively (for students’ perceptions of usefulness). A new form of question was also created, the Best Explanation Question, designed to test deeper learning by requiring students to identify the reason for an incorrect option being wrong, but only the Right Choice form has already been trialled on students. New, more integrated, post-test questions are currently being formulated with input from students.

2. Intermediate Pharmacy, Bachelor of Medical Science teaching activities

Lecturing, practical demonstrating and assessing were continued in these courses. Curriculum issues relating to co-ordination of two units of study in Medical Science (BMED2803 & 2805) in 2006, as well as overall practical responsibility, are being addressed.

3. Other teaching-related activities—Science, Graduate Medicine & Pharmacy

I have acted as a supervisor for several students in the Intermediate Advanced stream of Integrated Physiology, meeting periodically to guide them in their library research and the writing of their essay. I have also been a tutor for students in the Senior Physiology Human Cellular Physiology and Heart and Circulation units of study, and contributed to the design of the new curriculum for the latter in 2006.

My major activities other than in relation to Science teaching are centred around the Sydney Medical Program. I provide academic assistance in physiology, tutor in several blocks in first and second year, act as a case co-ordinator and occasionally chair tutor meetings. I have been a Written Assessment Chair with responsibility for co-ordinating the setting and marking of formative and summative assessments for the Basic and Clinical Sciences theme in Years 1 and 2, as well as assisting with the supplementaries. I have also been a marker for the summative in Year 3 and participated in portfolio interviews in Year 1.
I am a member of the Assessment, Evaluation and Admissions Committees, serve on the Teaching Awards sub-committee and am involved in the training of interviewers as well as interviewing myself. I have assisted the Faculty of Pharmacy adapt the medical interview to their requirements for the Master of Pharmacy admissions process and have trained all their interviewers using the new handbook.

4. Face-to-Face Teaching in 2004 and 2005

Approximately 220 hours was spent each year in face-to-face teaching. This entailed lectures on haematology and reproduction in Intermediate Science and Pharmacy, lectures on endocrinology, practical classes and tutorials in Science, Medical Science and Medicine, problem- or inquiry-based learning tutorials in Science (Intermediate and Senior) and Medicine (Years 1 and 2), and individual meetings with Advanced students in Intermediate Science.

Time was also spent on setting and marking assessments for all courses except Physiology 3.

5. Other Service to the University

I am on the executive of CHAST (Centre for Human Aspects of Science and Technology) which presents the annual Templeton lecture, and organised a course for the Continuing Education Program titled “Disease, security and society: life in the age of bird flu and bioterrorism” which will be run in the future. I have joined the SUN for Women Mentoring Program after undertaking training, and am currently involved in mentoring two young biologists. I also continue to participate in advising students on career choices at University open days and in training student tutors and demonstrators for teaching in physiology.
Coordinator of Honours students

Honours students spend one year participating in research supervised by a member of staff of the Discipline or an affiliated Laboratory. The Coordinator directs the recruiting, selecting, counselling and examining of Honours students. The Coordinator also chairs a weekly series of seminars attended by all Honours students in which students give a series of presentations on various aspects of their research project. As part of this seminar series students are exposed to a wide range of issues including scientific philosophy, communication skills, experimental methods, animal ethics, statistics, computing, safety issues, commercialization of research etc.

Honours and Graduate diploma students
2004: 18
2005: 17

Other academic staff

All other academic staff of Physiology made substantial teaching contributions in 2004 and 2005. These are not, however, recorded with this Report.