School of Medical Science

Discipline of PHYSIOLOGY

Biennial Report 2002 & 2003
Editor: Professor Brian J. Morris

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Front cover:
John Atherton Young served Physiology as its Head, and later was Dean of Medicine, followed by Pro-Vice Chancellor of The College of Health Sciences. His life of contributions to the discipline and University are described in an obituary on pp 64-65.
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Head of Physiology Report

The years of 2002–2003 allowed us to build on earlier strategic initiatives. The Anderson Stuart refurbishment was extended in small but important areas, the new units of study in second and third year Physiology attracted increasing numbers of students and the establishment of the School of Biomedical Sciences fostered increased interactions and joint facilities. Physiology, together with the Disciplines of Anatomy & Histology, Pharmacology and Pathology form the School of Medical Sciences (formerly the School of Biomedical Sciences). Physiology has major responsibilities for teaching coursework students in the Faculties of Science, Medicine, Dentistry and Pharmacy as well as a large cohort of Honours and Postgraduate research students. The research groups in Physiology study the molecular and cellular regulation of major organ systems and the pathogenesis of a variety of disease states including cystic fibrosis, hypertension, osteoporosis and hearing loss. Physiology is recognized for its strengths in molecular and cellular physiology, cardiovascular science and neuroscience. Some highlights of the period 2002–2003 are outlined below:

Research

High levels of research productivity are a notable feature of Physiology, as measured by publications in high impact journals and citation rates. Despite the increasingly competitive nature of most grant schemes, researchers in the Discipline were awarded well over $3 million dollars of grant income in both 2002 and 2003, considerably higher than the previous two year period. Neuroscience research has been given a further major boost by our association, through Professor Max Bennett, with the new Brain and Mind Research Institute, established at Mallett St. This Institute has attracted highly acclaimed scientists and state-of-the-art investigative facilities. In 2003, the Ramaciotti Foundation awarded the Brain and Mind Research Institute one million dollars to purchase a micro-PET scanner for brain imaging. Early in 2004, Professor David Allen, along with colleagues from the Victor Chang Institute were awarded a Program Grant worth $7.7 million dollars over 5 years to study “Molecular mechanisms of cardiac function and disease”. Prestigious Centenary Medals were awarded to Professor Max Bennett for service to Australian society and science in neuroscience and to Professor John Young (who sadly passed away early in 2004) for service to Australian society and science in epithelial transport and university administration. Two of our Emeritus Professors also received these awards – Emeritus Professor Peter Bishop, for service to Australian society and science in neurophysiology, and Emeritus Professor Paul Korner, for service to Australian society and science in medical research. In 2003, Professor Martin Johnson, a world leader in mammalian embryology, who has been collaborating with Professor David Cook and Dr Margot Day in Physiology since 1989, was awarded a Federation Fellowship to study the cellular and molecular basis of the measurement of time and of spatial location in the pre-implantation period, and the mechanisms by which these measurements lead to the construction of the embryo. Unfortunately, for reasons beyond Professor Johnson’s control, he was unable to relocate permanently to Sydney, though the collaborations will continue. Many accolades have been heaped on Professor Max Bennett. Professor Bennett was elected Chair of the Council of the International Society for Autonomic Neuroscience for the period 2001–3; he received the ‘Academia Ophthalmologica Internationalis Award’ at the International Congress of Ophthalmology in 2002; he was one of six distinguished graduates, including the Chief Justice of New South Wales, chosen to discuss the past and future of the University in the areas of research, scholarship, training and funding at a colloquium as part of The University of Sydney Sesquicentenary celebrations in 2002. In 2003, Professor Brian Morris was elected a Fellow of the American Heart Association.

Service

Many of our academic staff provide advice to state and federal government and organizations such as the NHMRC and the ARC. Professor Bennett was appointed to the Mental Health Council of Australia and to the National Research Infrastructure Taskforce representing the Minister for Education, Science and Training. He also serves on the NHMRC Neuroscience and Neurology National Programs Grant committee (2001–7). Professor David Allen chaired a Grant Review Panel for the NHMRC in 2002 and A/Prof Rebecca Mason was a member of an NHMRC Grant Review Panel in 2001–2. Professor David Cook has chaired the Clinical Trials Committee for the Central Sydney Area Health Service since 1991, is a member of the ARC Biological Sciences and Biotechnology Expert Advisory Committee and Deputy Director of the Scientific Advisory Committee to the NSW Health Department.

Teaching

During 2002–3, new, Advanced streams were introduced for second and third year Science units of study. These Advanced units of study attracted excellent students who undertook special library or laboratory-based research projects, instead of some aspects of the more standard unit of study. These students were supervised by individual academics. Quite a number of them have subsequently become research students in Physiology and the Advanced streams have continued to grow in popularity. In 2003, a Teaching Improvement Fund grant was awarded to Dr Miriam Frommer, Dr Meloni Muir, Ms Irene Schneider, Dr Lynne Cotter and Ms Francoise Janod Groves to develop a formative assessment tool using WebCT. This project resulted in very positive outcomes and some innovative uses of WebCT.

Staff matters

Staff and students mourned the death of Professor John Young in February 2004. Professor Young joined Physiology as a Senior Lecturer in 1966 and maintained a long and highly productive involvement thereafter. An obituary for Professor Young appears in a later section of this Report. Two new lecturers, Drs Dario Protti and Cathy Leamey joined Physiology in 2003. Dario’s research interests encompass visual neuroscience and Cathy’s are in the development of the mammalian central nervous system. Dr David Alais, a QEII Fellow, also joined us in 2003, working on audio-visual interactions. A/Prof Paul Martin, a long-time member of Physiology and leader of the Vision Laboratory, left at the end of 2002 to take up a Professorial position at the University of
Melbourne and the very prestigious appointment of Director of Research at the National Vision Research Institute of Australia. Senior Lecturer, Dr Grünert and other members of Paul's group also moved to the Vision Research Institute. Although A/Prof Martin's many contributions are very much missed here, we are all proud of his achievements and look forward to many more in his new position. It is very pleasing to note that the promotion of Dr Miriam Frommer to Senior Lecturer took effect from January 1st, 2002, and that of Ms Irene Schneider to Lecturer took effect from January 1st, 2003. During the calendar year of 2003, promotions of Drs Margot Day, Ann Goodchild and Anuwat Dinudom were all approved, to take effect from the beginning of 2004.

Acknowledgments
Physiology is well recognized as a very research active and leading teaching discipline. This would not be possible without enthusiastic and intelligent support from administrative, technical and computing teams led by Louise Loomes, John Cossey and John Dodson, respectively. In many matters, their influence extends far beyond this discipline. Physiology forms part of the School of Medical Sciences. This close interaction between the relevant disciplines has facilitated cooperative teaching and research opportunities. Our researchers are members of the Institute for Biomedical Research (IBR). The IBR has continued to increase the range of facilities available to researchers in molecular biology and advanced imaging, to mount scientific symposia on a variety of research topics and to foster the training and interaction of research students through weekly meetings, social functions and formal symposia. These developments, as well as the very important individual activities of staff and students, have contributed to our achievements in research and teaching in 2002 and 2003.

Rebecca S Mason
April 2004
Academic Staff

Level E Professors

M R Bennett
D G Allen
D I Cook
R A L Dampney
B J Morris

Level D - Reader

J F Y Hoh
S Carlile
R S Mason
C O'Neill
P M Pilowsky

Level D - Associate Professors

Level C - Senior Lecturers

L J Cottee
M Day
M Frommer
A K Goodchild
W D Phillips

Level B - Lecturers

F Janod-Groves
C A Leamey
M M Muir
D A Pratti
I Schneider

Emeritus Professors

W Burke
A E Sefton
Research Staff ...cont

Research Assistants

N Chiniah
S S Deo
P Dickens
S Killinger
T Liaw

Research Laboratory Staff

H Mangs
E Millar
A Mitchell
L J Morris

Associate Research Fellows

C Jin
M Oud
A van Schaik
M Slater

CJ Martin Fellows

D Adams
L van der Weyden

Affiliated Senior Investigator

J Chalmers

Research Staff not Pictured
Honorary Associate: Ella Young.
Postdoctoral Research Fellows: Aviv Chana and David Lu.
Senior Research Officer: Pemsa Komwatana.
Research Laboratory Staff member: Judith O'Neill.
Postgraduate Students ...cont
PhD Candidates ...cont

F Sanei  M Seyedabadi  M J Sheriff  D Springell  P S P Tan
MSc Candidate

T Verner  E Werry  I Williams  W Zhong  N Gunay

Postgraduate Students not Pictured
MDent Candidate: Juliette Scott.

General Staff
Class Laboratory Staff  Computing Staff

J F Cossey  A Mitry  J W A Dodson  L Jin  J Pridham
Elec. W'shop Staff  Manager  Administrative Officers

V H W Cheung  L Loomes  L J Harrison  L J Jacob  D Lawrey
Physiology Staff List
as at early 2004

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

Emeritus Professors
W (Liam) Burke, BSc PhD Lond
Ann E Sefton AO, BSc(Med) MB BS PhD DSc

Reader (Level D Academic)
Joseph FY Hoh, BSc(Med) MB BS DSc PhD ANU. Retired March 2004

Associate Professors (Level D Academics)
Simon Carliile, BSc PhD
Rebecca S Mason, MB BS PhD
Christopher O’Neill, BSc PhD Newcastle (NSW)
Paul M Pilowsky, BMedSc BM BS PhD, NHMRC Principal Research Fellow

Senior Lecturers (Level C Academics)
Lynne J Cotton, 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 MAppSc UTAS
Catherine A Leamney, BSc PhD
Meloni M Muir, BSc Purdue PhD McGill
Dario A Protti, PhD Buenos Aires
Irene Schneider, BSc UNSW MSc(Prelim) GradCertHigherEd

Honorary Associates
Michael Slater, PhD
Ella Yeung (P/T)

Associate Research Fellows
Craig Jin BSc Stanford MSc Caltech PhD
Mireille Oud
Andre van Schaik

Postdoctoral Research Fellows
David Alais PhD, QE2 Fellow
Anuwat Dinudom, MSc Mahidol PhD, NHMRC Senior Research Fellow
Aviv Cahana, PhD Tel Aviv
Yutaka Hosoda, BSc PhD

David Lu, PhD
Christine Lucas, BSc PhD
Ramin Rohanizadeh PhD Nantes (France)

Postdoctoral Researcher
Vlado Buljan, PhD (Physics) Sanaevo, PhD

Senior Research Officers
Othon Leonardo de Avelar Santos Gervasio, DDS PhD UFMG, Belo Horizonte (Brazil)
Jouji Horiuchi, BSc PhD Yamanashi
Lele Jiang, BEng MSc Beijing PhD
Permsak Komwatana, MS MCV PhD UVa
Yue-Kun Ju, MD Xian PhD ANU
Qun Li, PhD
Yong Qii (William) Lin, BSc China MSc China MSc PhD
Guo Jun Liu MD, Changchun PhD Gifu
Andrea Markus, BSc PhD Mainz (Germany)
Angeles Sanchez-Perez, BSc PhD Salamanca
Helen JL Speirs, BSc Glas PhD Edin
Qi-Jian Sun, BSc PhD ANU, Garnett Passe and Rodney Williams Memorial Foundation Senior Research Officer

Research Officers
Les Farnell
Omar Chami, PhD
Nicholas Whitehead
Xiao-Hui Xiao

Research Assistants
Jennifer Brockhausen
Nira Chiniah, BTech Austin (P/T)
Shivashni S Deo, BMedSc
Paul Dickens, BSc (Adv)
Luke Ekersley, BSc
Justin Hernandez, BMedSc
Wen-Bing Huang, BSc
Suzanne Killinger, BSc
Tracey Law
Helena Mangs, MSc Linkoping Licentiate Karolinskaet (Sweden)
E Millar, BSc
Rebecca Thomas (P/T)

CJ Martin Fellows
At Wellcome Trust Sanger Institute (UK):
David J Adams, BSc UTS PhD
Louise van der Weyden, BSc UTS PhD

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, MB BS (Hons) MD FRACS. Professor of Neurosurgery. Cerebrovascular Neurosurgeon, Royal North Shore Hospital
Robert G Berkowitz, MB BS FRACS. Head of Otorhinolaryngology, Royal Children's Hospital Melbourne
Richard Piper, BMSc BMBS(Hons) PhD MD FRACP FJFICM. Senior Staff Specialist, Intensive Care, Royal North Shore Hospital
Susan J Duval, BSc PhD. Assistant Professor, Epidemiology, UMinn

PhD Candidates in 2004
Kachina Allen, BSc Macq
Roberto Arrighi (visiting), BSc UniFi
Shaimaa Atwa BMEdSc, UNSW
Virginia Best BMedSc
Duncan Blair, BSc
Tara C Brennan, BMEdSc
Jennifer Brockhausen, BSc Dalhousie
Craig Campbell, BSc Qld
Vasheetharan Chandrakanthan, BMEdSc
Abdolreza Danesh, BSc MScPhys
Kiran Deol, BMEdSc MBBS
Ben Dickson BMEdSc
Katie M Dixon, BMEdSc
Haibin Hu MB BS SUMS MMed
Xing Liang Jing, BSc
Edward Kitzana, BSc
Natasha Kumar, BMEdSc
Greg Lemon, BSc
Aiqing Li, BSc
Yan Li, BSc
Alice A Lim, BMEdSc
John Makeham, BMed Newcastle
Lachlan M McDowall, BSc
Terence Moopanar, BMedSc
Jemima Neale, BLibStud
Lauren M O'Mullane
James Padley, BMedSc
Isabel Pons-Meneghetti, BSc
Bruce D Reading, MMed UNSW MBBS
Valin Reja, BSc UWS
Hannah Rhee, BMedSc
Farid Sanai, GradDipSc
Maryam Seyedabadi, BDentSc MBBS
Mohammed J Sheriff, BMedSc
Deborah Springell, BSc
Peter SP Tan, BMEdSc
Todd Verner, BSc
Eryn Werry, BMedSc
Iwan Williams, BSc
Wendy Zhong, MBBS Guangzhou

MSc Candidate in 2004
Nida Gunay

MDent Candidate in 2004
Juliette Scott, BDS

BMEdSc(Hons) candidates in 2004
Martin Dobes
Jorgen Ferguson
Andrianna Kalous
Han Shin Lee
Darryl Raley
Jae Won Shin
Anne Stanaway

BSc(Hons) candidates in 2004
Toby Blackman
Stan Djambazov
Hal Henke (co-supervised Mathematics: Prof WG Gibson)
Thomas Nguyen
Amanda Parker
Craig Vonhoff
Peta Wood (co-supervised Pharmacology: Dr Hilary Lloyd)

Research Laboratory Staff
Andrea Mitchell, BBus QUT
Judith O'Neill, RN BA(Health Sci-Nursing) CSsturt (P/T)
Lillian J Morris, DipBioSc STC DipInTntlKb Coll Vis Comm(P/T)

Manager
Louise Loomes, BA GradDipAcctg

Administrative Officers
Louise Harrison, BT CSU BED UNSW
Lali Jo Jacob, BA Econ MBA
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 MIIE I Eng. Computer Network Manager
Li Jin
Joseph Pridham

Electronics Workshop Staff
Vincent HW Cheung, HND H K Polytechnic CEI Part 2 UK.
Senior Technical Officer
Personnel in each Research Laboratory 2002&2003

Audio-Visual Research Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institute</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>David Alais</td>
<td>Australian Research Fellow</td>
<td>ARC (2003-2007)</td>
<td>2003-</td>
</tr>
<tr>
<td>Roberto Arrighi</td>
<td>Visiting PhD student (12 month exchange)</td>
<td></td>
<td>2003-</td>
</tr>
<tr>
<td><strong>Total effective full-time personnel:</strong></td>
<td></td>
<td></td>
<td>2003: 2.0</td>
</tr>
</tbody>
</table>

Muscle Cell Function Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institute</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>Lele Jiang</td>
<td>Senior Research Officer</td>
<td>Pfizer</td>
<td>2002-2003</td>
</tr>
<tr>
<td>Xiao-Hui Xiao</td>
<td>Research Officer</td>
<td>NHF</td>
<td>1997-2003</td>
</tr>
<tr>
<td>Chris Balnave</td>
<td>Research Officer</td>
<td>NHMRC</td>
<td>1999-2002</td>
</tr>
<tr>
<td>Nicholas Whitehead</td>
<td>Research Officer</td>
<td>ARC</td>
<td>2002-</td>
</tr>
<tr>
<td>Wen-Bing Huang</td>
<td>Research Assistant</td>
<td>NHMRC</td>
<td>2001-2002</td>
</tr>
<tr>
<td>Ella Yeung</td>
<td>Honorary Associate (0.2)</td>
<td></td>
<td>2001-</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>Alex Nicholls</td>
<td>BMedSc(Hons) student</td>
<td></td>
<td>2002-</td>
</tr>
<tr>
<td>Jessica Tipene</td>
<td>BSc(Hons) student</td>
<td></td>
<td>2003-</td>
</tr>
<tr>
<td><strong>Total effective full-time personnel:</strong></td>
<td></td>
<td></td>
<td>2002: 9.4 2003: 8.4</td>
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</table>

Neurobiology Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institute</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max 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-</td>
</tr>
<tr>
<td>Vlado Buljan</td>
<td>Postdoctoral Research Officer</td>
<td></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>Duncan Blair</td>
<td>PhD student</td>
<td>ARC</td>
<td>1998-2003</td>
</tr>
<tr>
<td>Greg Lemon</td>
<td>Res Ass/PhD student (co-supervised Mathematics)</td>
<td></td>
<td>1999-2003</td>
</tr>
<tr>
<td>Joshua Van Kleeft</td>
<td>PhD student (co-supervised Mathematics)</td>
<td></td>
<td>1999-2003</td>
</tr>
<tr>
<td>Jennifer Brockhausen</td>
<td>Research Assistant</td>
<td>NHF</td>
<td>2000-2002</td>
</tr>
<tr>
<td>Paul Dickens</td>
<td>Research Assistant</td>
<td>NHMRC</td>
<td>1999-2002</td>
</tr>
<tr>
<td>Justin Hernandez</td>
<td>Research Assistant (0.2)</td>
<td>NHMRC</td>
<td>2003-</td>
</tr>
<tr>
<td>Tracey Liaw</td>
<td>Research Assistant</td>
<td>NHMRC</td>
<td>2002-</td>
</tr>
<tr>
<td>Andrea Abdipranoto</td>
<td>Honours student</td>
<td></td>
<td>2002-</td>
</tr>
<tr>
<td>Michele Cavazzini</td>
<td>Honours student</td>
<td></td>
<td>2002-</td>
</tr>
<tr>
<td>Penelope Eliz</td>
<td>Honours student (co-supervised Pharmacology)</td>
<td></td>
<td>2002-</td>
</tr>
<tr>
<td>Ryan Downey</td>
<td>Honours student</td>
<td></td>
<td>2003-</td>
</tr>
<tr>
<td>Eryn Werry</td>
<td>Honours student</td>
<td></td>
<td>2003-</td>
</tr>
<tr>
<td>Farid Sanai</td>
<td>Grad Dip Sci student (co-supervised Pharmacology)</td>
<td></td>
<td>2003-</td>
</tr>
<tr>
<td>Andrea Mitchell</td>
<td>Manager, SUN Project</td>
<td>University</td>
<td>2002-</td>
</tr>
<tr>
<td>Jennifer Cantrill</td>
<td>Admin Assistant, Casual (0.2)</td>
<td>NHMRC</td>
<td>1982-</td>
</tr>
<tr>
<td><strong>Total effective full-time personnel:</strong></td>
<td></td>
<td></td>
<td>2002: 13.9 2003: 11.9</td>
</tr>
</tbody>
</table>

Brain Research Laboratory

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institute</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>W (Liam) Burke</td>
<td>Emeritus Professor and &quot;Retired&quot;(87-) Honorary Associate (also Hon Assoc in Disc of Anatomy &amp; Histology)</td>
<td></td>
<td>1956-</td>
</tr>
</tbody>
</table>
Auditory Neuroscience Laboratory

Simon Carlile  Associate Professor *(in-charge)* (0.25)  1993-
(Assistant Pro-Vice-Chancellor (IT) 0.75; 1998-2002)

Oliver Behrend  Postdoctoral Fellow  Natural Scientists/Leopoldina2000-02

Craig Jin  Associate Research Fellow  2002-

Andre van Schaik  Associate Research Fellow  2002-

Mireille Oud  Associate Research Fellow  2003-

Johann Leung  PhD student  DSTO  1997-2002

Rubin Kurilovich  PhD student (GMP/PhD)  1997-

Virginia Best  PhD student  APA  2000-

Ben Dickson  PhD student  2002-

Senan Al-Mahaidi  BSc Graduate Diploma student  2003

*Total effective full-time personnel:*  2002: 7.25  2003: 8.0

Epithelial Transport Laboratory

David I Cook  Professor of Cellular Physiology  University  1999-

John A Young  Professor of Physiology  University  1999-

(Pro Vice Chancellor Health Sciences)  Deceased Feb 2004

Anuwat Dinudom  RD Wright Fellow  NHMRC  2000-2003

Permsak Komwatana  Senior Research Officer  NHMRC  1991-

Angeles Sanchez-Perez  Senior Research Officer (0.5)  NHMRC  1997-

Yuuka Hosoda  Postdoctoral Fellow  NHMRC  2000-

Lauren M O’Mullane  Research Assistant  Medical Foundation  1999-2003

Justin Hernandez  Research Assistant  Medical Foundation  2002-2003

Michelle C Cummins  PhD student  1999-2002

Haifi Hu  PhD student  2002-

*Total effective full-time personnel:*  2002: 9.5  2003: 7.5

Cardiovascular Neuroscience Laboratory

Roger AL Dampney  Professor of Cardiovascular Physiology *(in-charge)*  University  1977-

Jouji Horituchi  Senior Research Officer  NHMRC  2001-

Suzanne Killinger  Research Assistant  NHMRC (01-)  2001-

Ainslie J Marsh  Honorary Associate  2001-

Jason Potas  PhD student  APA  2000-2003

Mohammed J Sheriff  PhD student  APA  2002-

Peter SP Tan  PhD student  APA  2003-

*Total effective full-time personnel*  2002: 6.0  2003: 7.0

Developmental Physiology Laboratory

Margot L Day  Lecturer *(in-charge)*  University  1999-

Nicola J Winston  Senior Research Officer  NHMRC  1999-

Isabel A Pons-Meneghetti  PhD student  APA  2000-

Alice Lim  PhD student  APA  2003-

Sandra Jones  Honours student  2003

Han Shin Lee  Honours student  2003-2004

*Total effective full-time personnel:*  2002: 3.0  2003: 6.0

Muscle Research Laboratory

Joseph FY Hoh  Reader *(in-charge)* (0.5)  University  1971-

Christine CA Lucas  Research Officer  NHMRC  1997-
Wendy WH Zhong  
PhD student  
Fac Med scholarship  
1999-

Hannah SM Rhee  
PhD student  
2001-

Mark K Mariathas  
MSc student (0.5)  
1999-2003

**Total effective full-time personnel:**  
2002: 4.0  
2003: 4.0

**Cortical Development Laboratory**

Catherine A Leamey  
Lecturer (in-charge)  
University  
2003-

Luke Ekersley  
Research Assistant  
Sesqui R&D  
2003-

**Total effective full-time personnel:**  
2003: 2.0

**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

Michael Slater  
Honorary Associate

Shivashni S Deo  
Research Assistant  
Cancer Council NSW  
2003-

Sutharshani Sivagurunathan  
(aka Dharshi Siva)  
PhD student  
Astra Zeneca  
2000-2004

Shaimaa Atwa  
PhD student  
NHMRC grant scholarship  
2003-

Katie M Dixon  
BMedSc(Hons)/PhD student  
APA  
2003/2004-

Tara C Brennan  
BMedSc(Hons)/PhD student  
APA/OA Res Fund  
2003/2004-

Juliette Scott  
MDent student (part time)  
2002-2004

**Total effective full-time personnel:**  
2002: 3.5  
2003: 8.0

**Basic & Clinical Genomics Laboratory**

Brian J Morris  
Professor of Molecular Medical Sciences  
University  
1978-

M Andrea Markus  
Research Officer (0.8)  
ARC (99-)  
1998-

Helena Mangs  
Molecular Biologist/RA  
NHMRC  
2001-

Helen JL Speirs  
Research Officer  
NHMRC  
2003-

Ruby CY Lin  
PhD student  
APA  
1998-2003

Adam V Benjahmed  
PhD student (99-)  
APA  
1998-

Ksenia Katyk  
BMedSc(Hons) student  
2002

Natasha Kumar  
BMedSc(Hons) student  
2002

William YS Wang  
Honorary Associate (01-)  
1995-

David J Adams  
Honorary Associate (C) Martin Fellow  
Sanger Inst, UK  
1997-

Louise van der Weyden  
Honorary Associate (C) Martin Fellow  
Sanger Inst, UK  
1999-

Judith O'Neill  
Nursing sister/Venepuncturist (0.1)  
NHMRC  
1996-

Lilian J Morris  
General Assistant (0.2)  
2001-

**Total effective full-time personnel:**  
2002: 7.1  
2003: 7.1

**Human Reproduction Unit**

Christopher O'Neill  
Associate Professor (in-charge)  
1999-

Aviv Cahana  
Postdoctoral Fellow  
NHMRC  
2002

David Lu  
Postdoctoral Fellow  
NHMRC  
2000-

Omar Chami  
Research Officer  
RNSH  
2003-

Rebecca Thomas  
Research Assistant (P/T)  
NHMRC  
2002-

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-

Nida Guay  
MSc student  
2002-
Molecular Neuroscience Laboratory

William D Phillips  Senior Lecturer (in-charge)  University  1992-
Othon Gervasio  Research Officer  NHMRC  2003-
Anne Turnbull  Research Assistant  Sesqui  2001-2002
Nira Chiniah  Research Assistant (0.4)  NHMRC  2002-
Jennifer Brockhausen  PhD student  NHMRC  2003-

Total effective full-time personnel: 2002: 7.0  2003: 10.0

Hypertension & Stroke Research Laboratories

Paul Pilowsky  NHMRC PRF, Associate Professor (in-charge)  University  1996-
Ann Goodchild  NHMRC SRO, Lecturer  University  1996-
Qi-Jian Sun  GPRWMF Fellow  University  1997-
Naoki Oshima  Post Doctoral Fellow  Tokyo  2002-2003
Qun Li  Senior Research Officer  University  2002-
Elizabeth Millar  NSHRF Research Assistant  RNSH  1996-
Tina Stasinopoulos  PhD student  University  1998-2002
Kiran Deol  PhD student  University  2003-
Valin Reja  PhD student  University  1999-
John Makeham  PhD student  University  1999-
Maryam Seyedabadi  PhD student  University  2000-
Laura Castelnoble  MSc student  UTS  2001-2002
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  BDentSc/PhD  University  2003-
Alaina Taylor  BMedSc(Hons) student  University  2002
Kuan-Chi Wang  BMedSc(Hons) student  University  2003
Andrea Gaede  Visiting student, Vanderbilt  University  2003
Natalie Costin  BMedSc(Hons) student, Research Admin Asst  RNSH  2002-
Diana Peck  Administrative Assistant  RNSH  1998-

Total effective full-time personnel: 2002: 16.0  2003: 19.0


Paul R Martin  Associate Professor (in-charge)  University  1991-2002
Ulrike Grüner  Senior Lecturer/Senior Research Officer  NHMRC  1996-2002
Jason Forte  Research Fellow  ARC  2002-
Ana Lara  Research Assistant  NHMRC  1994-2002
Esther M Blessing  PhD student  APA  2002
Patricia Jusuf  PhD student  APA  2002
William J Dobbie  BSc(Hons) student  2002
Sammy Lee  BSc(Hons) student  2002
Brett Szmajda  BSc(Hons) student  2002

Total effective full-time personnel: 2002: 9.0

Vision Laboratory (2003)

Dario A Protti  Lecturer(in-charge)  University  2003-

Total effective full-time personnel: 2002: 1.0
Research Activities of Individual Laboratories

Audio-Visual Research Laboratory
David Alais
This Laboratory pursues psychophysical and cognitive research directed at understanding the processes underlying visual perception, auditory perception, and importantly, audiovisual interactions. Recent activity in this group has been focused on the publication of an edited book bringing together the work of the leading figures in the field of binocular rivalry. This field of visual perception has seen a lot of recent interest as it provides a paradigm for studying how the visual system deals with conflicting inputs, and more generally, because it provides a paradigm for studying the neural correlates of consciousness itself. The book, entitled Binocular Rivalry, will be published by MIT Press and appear late in 2004. Other purely visual research dealing with binocular rivalry has been completed and has shown that the strength of suppression of the non-dominant visual image during binocular rivalry increases for more complex stimuli. Because increasingly complex stimuli are processed by higher visual cortical areas, this finding is consistent with the idea that low-level cortical areas are not directly involved in consciousness, but that higher levels are, meaning that rivalry between complex, high-level visual stimuli requires deep suppression to eliminate them from conscious awareness. Other visual studies have looked at the type of processing that underlies temporal modulations of visual stimuli, concluding that just two temporal channels are involved in a symmetrical bandpass arrangement. This contradicts several existing accounts, although limitations in the stimuli traditionally used in these studies and the novel stimuli we developed to overcome these strongly support our conclusions. The Laboratory has published several significant results form studies exploring audiovisual themes. First, a study of audiovisual and of purely auditory versions of the so-called visual 'flash-lag effect' has been published. The advantage of demonstrating auditory and cross-modal versions of this effect is that it effectively ruled out one of the main theories of this effect: that it resulted from differential neural latencies. A second audiovisual study explored the well-known phenomenon of ventriloquism. The study found that classical ventriloquism -- visual capture of auditory location -- was not inevitable. We succeeded in showing reverse ventriloquism (which occurred when visual stimuli were degraded through blurring) and also offered a flexible model that explained both classical ventriloquism and reverse ventriloquism in a single framework. Finally, a study of concurrent auditory and visual motion processing showed that there were no facilitatory interactions between these modalities even for auditory and visual motion signals that were spatiotemporally correlated.

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/Ca exchanger provides a current which influences firing rate. In recent work we have explored the effects of metabolic inhibition on calcium handling and the Na/Ca exchange function. We have also determined the effects of extracellular ATP on the firing rate of pacemaker cells. Currently Iwan Williams is developing the mouse isolated pacemaker cell as method of studying mammalian pacemaker function. Studies of the ischaemic heart with Dr Xiao have confirmed the role of the Na/H exchanger in causing damage to the heart on reperfusion and recent work has explored the regulation of this exchanger by endogenously produced angiotensin and the drug AICAR. Terence Moopenan is investigating the effects of temperature on muscle fatigue and has shown that at body temperature reactive oxygen species have an important role which is not apparent at room temperature. Ella Yeung, an academic visitor from Hong Kong, and Nicholas Whitehead 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 Ca 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.

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
Liam Burke divides his time about equally between the Brain Research Laboratory in Physiology and the Visual Pathway and Development Laboratory in Anatomy & Histology.
• Brain Research Laboratory
Work in this Laboratory is mainly concerned with two topics: (i) elucidation of the mechanism whereby entry of gallamine, d-tubocurarine or other substances into the central nervous system causes myoclonus (spontaneous synchronized jerking of the body); (ii) human psychophysical studies related to the development of a macular hole (detachment of the retina at the fovea), treatment of this condition by vitrectomy and certain sequelae of this operation such as cystoid macular oedema.

(i) We have shown that injection of gallamine into the ventricular system of the brain of a cat leads to the appearance of a novel substance in the cerebrospinal fluid and the concentra-
tion of this substance runs a time course similar to that of the myoclonus. This work is being done in collaboration with Dr Iqbal Ramzan (Pharmacy). Our immediate aim is to identify the chemical nature of the novel substance.

(ii) This work has been done in collaboration with A/Prof DF Davey and with Dr Paul Ng and Dr Alex P Hunyor (ophthalmologists, in private practice). A novel method of measuring regional acuity has been developed. The time course of recovery of visual acuity following vitrectomy has been mapped. A method for determining the most appropriate dose of acetazolamide (a carbonic anhydrase inhibitor) for the treatment of cystoid macular oedema has been developed.

• Visual Pathway and Development Laboratory

Work in this Laboratory has been done in collaboration with Professor B Dreher, Dr C Wang and students in Anatomy & Histology, with Professor MB Calford in Newcastle and Dr WJ Walszczyn in Warsaw. Research during 2002 and 2003 has centred on two topics: (i) the effect of retinal lesions on the receptive field properties of neurons in the primary visual areas of the cat; (ii) the influence of feedback pathways on these same neurons.

(i) A retinal lesion initially causes the deafferentation of a group of neurons in the visual cortex. Since most of these cells are binocular they can still be activated from the non-lesioned eye. After some days or weeks the deafferented neurons recover photic sensitivity but the receptive fields are now displaced to regions of retina outside the lesioned part. Nevertheless, the responsiveness of the cells is much less than in the normal animal. However, if the lesions are made in the kitten, responsiveness recovers to almost normal levels.

(ii) There is massive feedback in the cerebral cortex from a variety of ‘higher’ areas. We study the influence of a particular area on the receptive field properties of neurons in striate cortex by cooling that particular area to about 10°C, a procedure that silences the output of the area. The principal effect of this is to reduce the responsiveness of neurons in striate cortex, implying that the feedback is ‘facilitatory’. However, in a minority of cases the response of striate neurons is increased, implying an inhibitory feedback. Other receptive field properties are sometimes affected. Different areas seem to have different mixes of facilitatory and inhibitory outputs.

Epithelial Transport Laboratory
David I Cook

In 2002 and 2003 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 the ubiquitin protein ligase, Nedd4-2, is a potential regulator of epithelial Na+ channels and has defined the mechanisms by which it, and by which closely related protein, Nedd4, interact with Na+ channels. It also investigated the role of the Nedd4 binding proteins, N4BP5 and N4BP5a, and the role of kinases such as the serum- and glucocorticoid-regulated kinase (Sgk), in regulating epithelial Na+ channels. Furthermore, the Laboratory extended its finding that influenza virus triggers the rapid inactivation of epithelial Na+ channels in the respiratory epithelium by examining the effects of other viruses on ion transport by epithelial cells. In the field of Ca2+ signalling, the Laboratory has identified the signalling pathway by which purinergic, P2Y2, receptors inhibit sustained Ca2+ influx following the emptying of intracellular Ca2+ stores.

Cardiovascular Neuroscience Laboratory
Roger AL Dampney

Professor Dampney’s Laboratory studies the brain mechanisms that control the circulation. The current 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. Previous 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 pathways by which neurons in the midline medulla produce profound decreases in sympathetic activity and blood pressure; (2) the mechanisms involved in the physiological responses to anaphylactic and other types of shock; (3) the pathways and mechanisms by which neurons in the dorsomedial hypothalamic nucleus and other
hypothalamic nuclei regulate sympathetic vasomotor activity and modulate the baroreceptor reflex; (4) the mechanisms by which certain hormones (eg, angiotensin II) act on the hypothalamus and medulla to influence sympathetic activity and blood pressure. Since the hypothalamus is a key brain region regulating the cardiovascular system as part of more generalised responses to environmental stimuli (eg, 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 subservice this regulation.

Developmental Physiology Laboratory
Margot L Day
Research in this Lab is aimed at understanding the regulation and role of ion transport systems during preimplantation development of the embryo. Potassium channels play important roles in many cellular processes including cell proliferation and differentiation. Several members of the ether-a-go-go K channel family are expressed during early development. Expression of one member of this family, ERGAL, is increased in the 8-cell stage when the channel becomes localised to the basolateral surface of the cells during compaction. Pharmacological inhibition of the ERGAL channel prevents the polarisation of the channel protein and reduction in the number of cells present in the blastocyst stage embryo.

Muscle Research Laboratory
Joseph FY Hoh
The Lab discovered an extraocular muscle-specific embryonic isoform of the myosin heavy chain (MyHC) in the rabbit that differed electrophoretically from that in developing skeletal muscles. This isoform is dominant at birth, but both isoforms are present in the adult. Using a panel of highly specific antibodies we developed against MyHCs, we studied their complex distribution in extraocular muscle (EOM) fibres. In the orbital layer of the rabbit EOM, both fast and slow fibres show MyHC variation around the end-plate zone (EPZ). Orbital fast fibres express the very fast EO MyHC at the EPZ, whereas elsewhere they express the slower embryonic MyHC. Orbital slow fibres express α-cardiac MyHC around the EPZ, but the much slower tonic and embryonic MyHCs at the end segments. These variations are correlated with functionally concordant ultrastructural features. Orbital fibres insert into the recently discovered soft tissue pulleys. We found that global layer fibres of the EOM also show some variation along the length in MyHC expression. The dominant population of fibres here are those coexpressing EO and fast 2B MyHCs. We suggest that the functional significance of these bizarre specializations are that they (1) enable rapid movements of the pulley to implement Listings law for ocular rotation during saccades, (2) protect EOM fibres from eccentric contraction-induced damage during saccades, and (3) couple ripple-free eyeball fixation with rapid eyeball rotation. The development of EO MyHC expression in fast orbital fibre was investigated in collaboration with Dr Neil Rubinstein of the University of Pennsylvania. We showed that at birth, these fibres in the rat express embryonic MyHC homogeneously, and that the focal expression of EO MyHC and inhibition of embryonic MyHC at the EPZ starts at age 11 days, before their eyes open. In collaboration with Dr Paul Flint of the University of the Johns Hopkins University, We showed that human laryngeal muscles do not express the fastest MyHCs (EO, 2B) found in rat laryngeal muscles. Further, expression of 2X MyHC, the next fastest isoform, is confined to vocal fold adductors involved in airway protection. We extended our comparative study of marsupial muscle fibre types to the bandicoot, a representative of the 4th major Australian marsupial order, and found that it also expresses the same fast and slow myosins in limb muscles and masticatory myosin in jaw-closers, as do most representatives of the other three major orders. In collaboration with Dr Maki Yamaguchi of the Jikei University, Tokyo, we used X-ray diffraction to study the mechanism of posttetanic twitch potentiation in fast muscles. Data suggest that swinging of cross-bridges towards the thin filament as a result of posttetanic phosphorylation of myosin light chain is a likely mechanism for this phenomenon.

Cortical Development Laboratory
Catherine Leamney
The research focus of this newly-established Laboratory is the development of the mammalian central nervous system. A microarray screen was performed to identify molecules that may play a role in regulating the connectivity of the mammalian brain. A number of extremely promising candidates were identified and current work is focused on determining what role these genes play in regulating the development of the cortex and visual pathways. Modern molecular techniques which permit localised over-expression of the genes in vivo are being used to analyse their function in addition to analysis of knockout mice. A collaboration with Dr Lauren Marote at the Australian National University has been established which gives access to neonatal wallabies. This permits access to the developing brain at very early developmental stages and thus permits localised manipulation of gene expression patterns at critical early developmental time points.

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
Studies with glucocorticoids in vivo and in vitro showed an increase in bone-resorbing activity, which could decrease bone mass and increase fracture risk. Glucocorticoids were shown to increase bone-resorbing signals from osteoblasts and to increase the life span of bone-resorbing cells from rodents, but not human donors. In human cell systems, but not rodent models, glucocorticoids increased responsiveness of resorbing cell precursors to bone resorbing signals. An antibody to the new phosphate wasting hormone, FGF23, was developed and used in clinical studies of this hormone in patients with hypophosphataemia. FGF23 expression in bone was found to be higher than other normal tissues and regulated by phosphate, suggesting that FGF23 may be an important part of the bone-kidney phosphate regulating axis. The active vitamin D hormone was found to protect skin cells from UV-induced DNA damage - both pyrimidine dimer damage and oxidative damage in cell culture and in animal studies. This protective
effect was shown to be via the rapid/non-genomic pathway and likely to involve enhanced DNA repair, in part, through a reduction in nitric oxide metabolites.

Basic & Clinical Genomics Laboratory
Brian J Morris

This Laboratory has streams of research directed at the molecular genetics of cardiovascular disease and the molecular biology of renin as well as of several novel proteins. A genome scan for human essential hypertension in 300 affected sibpairs and fine-mapping yielded a suggestive locus on chromosome 4. In case-control studies of polymorphisms of the aldosterone synthase gene implicated this gene in human hypertension. Further work on the tumour necrosis factor receptor superfamily member 1B gene showed little support for a role in hypertension for six polymorphisms, nor did we find support in experimental models of hypertension in mice and rats. Polymorphisms of the endothelin receptor A and G-protein-coupled receptor kinase 4 genes were associated with hypertension, but those for SAH, WNK4, FKBP11, HSD11B1 and PTP1B were not. In research on renin a mouse was produced in which a far-upstream enhancer was ‘knocked-out’. In collaboration with Professor Peter Leadman and Dianna Beveridge at UWA, we also elucidated the mechanism of post-transcriptional control of human renin mRNA by showing that HADHB destabilizes human renin mRNA, whereas HnR and CP1 stabilize it. Activation of cyclic AMP second messenger pathways enhanced expression of genes for these proteins. A protein that is down-regulated in concert with renin during prolonged primary culture of juxtaglomerular cells, ZNF265, was studied further. The 3D structure of the first zinc finger in collaboration with Dr Joel Mackay suggested that it was an RNA-binding protein and was found to bind cyclin B1 mRNA, consistent with a role in cell cycle control. We discovered that ZNF265 binds XE7 and went on to characterize this little-known protein, including its subnuclear localization and effect on splicing of pre-mRNA. Similarly, we characterized human Lark, discovering that it is a component of the spliceosome and binds to the tumour suppressor WT1, an effect that reduces the activity of Lark to stimulate alternative splicing. Lark was localized in speckles, nucleoli, and during mitosis, in centrosomes.

Human Reproduction Unit
Christopher O’Neill

This Laboratory studies the control of mammalian fertilization and early embryo development, with emphasis on the regulation of the growth and development of the early mammalian embryo and the formation of embryonic stem cells. Our aims are to foster safe and effective use of assisted reproductive technologies and embryonic stem cell therapy. Our major focuses are: (1) the regulation of expression of essential embryonic growth factors, with particular emphasis being to identify the fertilization events responsible for triggering their production; (2) the mechanisms by which embryos respond to these growth factors; (3) the consequence of assisted reproductive technologies (such as IVF) on these basic physiological processes, (4) the processes that lead to normal formation of embryonic stem cell lineages and their pluripotency; and (5) the safety assessment of assisted reproductive technologies and stem cell therapy.

Molecular Neuroscience Laboratory
William D Phillips

The central goal of this Laboratory is to clarify molecular mechanisms that underlie the structure, function and adaptability of synapses between neurons and their target cells. As we grow from an embryo, synapses form between our motor nerves and muscle fibres. These synapses grow to adapt and can reform after nerve or muscle damage. When a synapse fails to develop properly or to function efficiently in adult life, it is often due to a genetic fault or autoimmune reaction against one of neurotransmitter receptors or associated synaptic proteins. The receptors and many of the proteins responsible for helping to cluster receptors for the chemical neurotransmitter at the synapse have now been identified. This clustering is essential for proper transmission of the synaptic signals that control our muscles. We are now investigating how these synaptic proteins interact in living muscle cells to form and maintain synapses. For instance, mutations in a protein called rapsyn, that binds to the cytoplasmic parts of the nicotinic acetylcholine (neurotransmitter) receptor, cause congenital myasthenia gravis leading to muscle weakness and death in some people. We know that rapsyn is essential for forming clusters of acetylcholine receptors during the development of nerve-muscle synapses in embryonic life. We are using fluorescently-tagged rapsyn to investigate exactly how rapsyn interacts with the acetylcholine receptors at living synapses in mice. This is helping to clarify how rapsyn maintains the functioning synapse. It is also providing clues on how rapsyn may be enlisted to help stabilise the receptors when they are under autoimmune attack. Agrin is a chemical signal released from the nerve. We are now investigating how agrin, acting through a tyrosine kinase receptor, MuSK, instructs rapsyn where and when to cluster acetylcholine receptors. Other proteins we are studying that bind to rapsyn may serve as intermediaries in this chain of command. The long term goal of this research is to increase the sophistication of our understanding of the molecular processes by which synapses are formed, maintained and modified. This will facilitate new, and more effective interventions in disorders that plague the nervous system.

Hypertension & Stroke Research Laboratory
Paul Pilowsky & Ann K Goodchild

The goal of this Laboratory is to identify the brainstem and spinal cord mechanisms that are involved in the central neural control of airways, breathing and the circulation. This work has both basic physiological aspects in terms of understanding the mechanisms by which neurons interact with each other at the molecular, cellular and network levels, as well as pathophysiological aspects including investigation of disorders such as hypertension and derangements of cardiovascular control in critically ill patients.

(1) Molecular Investigations: In order to determine which transmitters are used by neurons that are involved in air-
ways, breathing and circulation we employ tools to study
the expression of neurotransmitters in individual cells and in
whole nuclei. Thus we take advantage of the techniques of in
situ hybridisation to look at the messenger RNA expressed in
single neurons and we use real time PCR to investigate gene
expression in whole nuclei. These methods have allowed us
to explore changes in gene expression in cardiovascular re-
gions of the brainstem. We showed that enzymes regulating
catecholamine biosynthesis were up regulated in discrete brain
regions following haemorrhage.

(2) Neuroanatomical Studies: A special interest is to work out
how neurons involved in vital functions communicate with
each other and to work out if respiratory neurons “talk” to
cardiovascular neurons. One of the ways that we do this is
by using immunocytochemical and tract tracing techniques
to determine if specific populations of neurons that project to
specific areas contain defined neurotransmitters.

(3) Pharmacological and Physiological Studies: Having es-
established that the vital neurons we are interested in express
particular neurotransmitters and that the neurons that express
these transmitters form specific connections, we are then inter-
ested in determining what the physiological effects of applying
neurotransmitters, their antagonists or related agents is, as
well as determining what the physiological role of these path-
ways is, for example, in reflex control. Over the past two years
we have investigated a number of neurotransmitter related
compounds including the recently discovered peptide apelin
13, mu-opiate receptors, delta opiate receptors, cannabinoid
receptors as well as determining the role of calcium channels in
the ventrolateral medulla of the adult rat. The results of these
studies indicate that specific reflexes within crucial sites of the
brainstem are mediated by different populations of neurons
utilising different types of neurotransmitter acting on specific
subpopulations of receptors.

Vision Laboratory
Paul R Martin

Our research has been on the connectivity of nerve cells
(neurons) in the central nervous system, and the functional
properties of neurons which transmit the signals that underlie
the perception of the colour, form, and movement of objects
in the visual sensorium.

(1) Nerve pathways for colour vision: The parvocellular divi-
sion of the afferent visual pathway is the carrier of signals for
the red-green dimension of colour vision as well as for high-
resolution spatial vision. In order to understand how these
signals are combined, we recorded the responses of individual
neurons to visual stimuli that vary in both the chromatic and
spatial domains. We compared the properties of parvocellular
cells in dichromatic (“red-green colour-blind”) and trichro-
amatic individuals of a species of New World monkey, the
marmoset. These basic experiments give new knowledge of
the most effective stimuli for functionally isolating specific
nerve pathways, and ultimately can lead to more sensitive
tests for visual diseases such as glaucoma.

(2) Neural connectivity of the primate retina: The retina is part
of the central nervous system and is the best-studied model
system for neural information processing in sensory pathways.
Neural communication in the retina and brain is effected by
the release of transmitter molecules (neurotransmitters) at
specialized junctions between neurons called synapses. Speci-
ﬁcated receptor proteins at the synapse are activated by only
a restricted range of neurotransmitters, enabling distinct func-
tions such as inhibition or excitation at the appropriate part
of each neural circuit. In anatomical studies we investigated
the neurotransmitter receptors involved in distinct synaptic
pathways within the retina. The goal of these experiments is to
establish whether different neurotransmitters are involved in
pathways devoted to colour and motion information processing
in the retina.

Dario Protti

In March 2003, Dr Protti was appointed as a lecturer and
started activities in the Vision Laboratory vacated by Paul
Martin. This Laboratory is mainly focused on the study of
signal processing in the visual system. We are interested in the
mechanisms underlying the generation of surround inhibition
of the receptive field in retinal ganglion cells, investigating in
particular the retinal circuits and neurotransmitter receptors
which shape these responses. Another line of research is the
study of the mechanisms involved in the dark light switch
which mediate the transition from the rod to the cone circuit
in the retina. We are looking in particular at the changes that
take place in the inner plexiform layer, where dopaminergic
amacrine cells play a key role in this transition. During 2003,
most activities were related to setting up the Laboratory, which
required purchase of all the equipment necessary to do patch
dclamp electrophysiological recordings in dark adapted con-
ditions in retinal slices and whole mount preparation. After
all the equipment was ordered and received, the “set up” for
electrophysiological recordings was set up and calibrated. By
the end 2003 the first experiments were successfully carried
out, including an investigation of the role of dopamine in the
dark light transition in the retina.
Audio-Visual Research Laboratory
David Alais

Muscle Cell Function Laboratory
David G Allen

Neurobiology Laboratory
Maxwell R Bennett

Brain Research Laboratory
Liam Burke

Visual Pathway and Development Laboratory
(Anatomy & Histology)
Liam Burke

Auditory Neuroscience Laboratory
Simon Carlile

Epithelial Transport Laboratory
David I Cook

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
Developmental Physiology Laboratory
Margot L Day

Muscle Research Laboratory
Joseph FY Hoh

Vision Laboratory
Paul R Martin

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

Hypertension & Stroke Research Laboratories
Paul Pilowsky
Moon EA, Goodchild AK, Pilowsky PM. Lateralisation of projections from the rostral ventrolateral medulla to sympathetic preganglionic neurons in the rat. *Brain Res* 2002;929:121-90.
Miyawaki T, Goodchild AK, Pilowsky PM. Activation of mu-opioid receptors in rat ventrolateral medulla selectively blocks baroreceptor reflexes while activation of delta-receptors blocks somatosympathetic reflexes. *Neuroscience* 2002;109:133-44.
Audio-Visual Research Laboratory
David Alais

Muscle Cell Function Laboratory
David G Allen

Neurobiology Laboratory
Maxwell R Bennett
Liu GJ, Brockhausen J, Bennett MR. P2X1 receptor currents after disruption of the PKC site and its surroundings by dominant negative mutations in HEK293 cells. Auton Neurosci 2003;108:12-16.

Brain Research Laboratory
Liam Burke

Visual Pathway and Development Laboratory (Anatomy & Histology)
Liam Burke

Epithelial Transport Laboratory
David I Cook

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
Dampney RAL, Polson JW, Potts PD, Hirooka Y, Horiuchi


Laboratory of Developmental Physiology
Margot L Day


Muscle Research Laboratory
Joseph FY Day


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


Hypertension & Stroke Research Laboratories
Paul Pilowski


Padley JR, Q Li, Pilowsky PM, Goodchild AK. Cannabinoid receptor activation in the rostral ventrolateral medulla oblongata evokes cardiorespiratory effects in anaesthetised rats. *Brit J Pharmacol* 2003;140:384-94.


## 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 year 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 2002 and 2003 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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Mean ± SD of impact factors for journals of publication = 3.1 ± 2.3 for 2002
3.5 ± 2.1 for 2003
3.7 ± 3.3 for five years of publication 1999 – 2003

% published in top 5% of journals (ie, impact factor > 3.5) = 47% for five years of publication
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*ND – not disclosed
Books

2003

Chapters in Books

2002

2003

DVD & CD Production

Brian J Morris
Life Extension Symposium, Sydney, 2003 (DVD set)
Life Extension Symposium, Brisbane, 2003 (CD set)

Letters to the Editor (Journals)

2002

2003

Magazine Articles

2003
Morris BJ. Scientists mix up a recipe for human longevity. *Australian Doctor* 18 Apr 2003, pp 40-41

News Media

Brian J Morris
Letters to the Editor (Newspapers)
*Sunday Telegraph* 24 Aug 2003, p. 92 – critique, pointing out errors in Dr Cindy Pan’s column on circumcision in ‘Body & Soul’ section.

In Newspaper Articles
Brian J Morris, Cutting to the point. *The Age* 18-19 Apr 2003 Insight p 6
Scientists ponder matters of life and death. *University of Sydney News* 35 (8) 23 May 2003, pp 1 & 4

Television
ABC Catalyst programme 20 Jun 2002 8.00-8.30 pm on circumcision

Radio
ABC Newcastle 12 March 2002 2.10 pm – Life Extension Symposium
ABC Brisbane 12 March 2002 9.00 pm – Life Extension Symposium
2SM Sydney 15 March 2002 2.15 pm – Life Extension Symposium
6PR Perth 4 April 2003 12.05 pm – Benefits of circumcision
ABC National 5 Nov 2003 2.15 pm – Benefits of circumcision


Arthur V Everitt
In Newspaper Articles

Ruby C Y Lin
In Newspaper Articles
The gene pool. *The Age* 10 Jul 2003, p 8

Natasha Kumar
In Newspaper Articles
Stalking the stalker – tracing the clues to a killer disease in our genes. *University of Sydney News* 24 Sep 2003, p 3
Auditory Neuroscience Laboratory
Simon Carlile

2003


Commercial Activities

Auditory Neuroscience Laboratory
Simon Carlile

Completed the NSW Enterprise workshop (Department of State and Regional Development) Autumn program. Won the Best Business Case award and Best Operations Plan for the Program.

Board Membership as University of Sydney Nominee
CRC For Construction Innovation
Icon Pty Ltd
Access On-Line Pty Ltd
The National Forum (Chair)
CRC for Smart Internet Technology (Observer)

Other Boards
VAST Audio Pty Ltd (Chair)
Published Conference Proceedings (Articles)

**Auditory Neuroscience Laboratory**
Simon Cartile

2002


2003


Best V, van Schaik A, Carlile S. Spatial effects on the segregation of sounds in virtual auditory space. *Eighth Western Pacific Acoustics Conference*. Melbourne, Australia, Apr 2003, pp 1090M.

Conference Abstracts and Presentations 2002
(O, oral; P, poster)

Audio-Visual Research Laboratory
David Alais


Alais D, Burr D, Arrighi R. Auditory and cross-modal (audio-visual) versions of the 'visual' flash-lag effect. Third International Multisensory Research Forum, 2002; 63.


Muscle Cell Function Laboratory
David G Allen

AHRMC, Melbourne, Nov 2002 (6 oral)

Neurobiology Laboratory
Maxwell R Bennett

Dickens PA, Bennett MR. The mechanism of calcium sequestration following single impulses and short trains of impulses at the amphibian (Bufo marinus) neuromuscular junction. Proceedings 22nd Annual Meeting Australian Neuroscience Society, Sydney, 2002; 13:83


Brain Research Laboratory
W (Liam) Burke


Auditory Neuroscience Laboratory
Simon Carlile


Epithelial Transport Laboratory
David I Cook & John A Young

Nothing supplied

Cardiovascular Neuroscience Laboratory
Roger AL Dampney


Developmental Physiology Laboratory
Margot L Day
APPS (3)
Curtin Conference (2)

Muscle Research Laboratory
Joseph FY Hoh

Vision Laboratory
Paul R Martin


Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason


Basic & Clinical Genomics Laboratory
Brian J Morris


Molecular Neuroscience Laboratory
William D Phillips


Hypertension & Stroke Research Laboratories
Paul Pilowsky and Ann Goodchild


Li Q, Castelnoble LA, Goodchild AK, Pilowsky PM. Hemorrhage increases neuropeptide Y but not preproenkephalin or PNMT mRNA expression: A real-time RT-PCR study in rat medulla oblongata. 19th Scientific Meeting of the International Society for Hypertension, 12th European Meeting on Hypertension, Prague, 2002:1231 S291.


Pilowsky PM. Stress is in the brain of the beholder: Vessels. Invited Speaker, ASEANZ, Cardiovascular & Lipid Forum, Melbourne.


Pilowsky PM, Miyawaki T, Goodchild AK. Maintenance of sympathetic tone by a nickel chloride sensitive mechanism in the rostral ventrolateral medulla of the adult rat. Society for Neuroscience 32nd Annual Meeting, Orlando, USA, 2002: 862.5


Springell DA, Costin NS, Goodchild AK, Pilowsky PM. The phosphorylated form of mitogen-activated protein kinase identifies activated neurons in the brainstem and spinal cord: Catecholamine phenotype and effects of anaesthesia. Royal North Shore Hospital/University of Technology Sydney XIXth Scientific Research Meeting, Sydney, 2002:P47.


Padley JR, Goodchild AK, Li Q, Reja V, Pilowsky PM. Cannabinoid receptor activation evokes cardiorespiratory effects in the rostral ventrolateral medulla oblongata of anaesthetised rats. High Blood Pressure Research Council of Australia Annual Scientific Meeting, Melbourne, 2002:A34.


Audio-Visual Research Laboratory
David Alais


Muscle Cell Function Laboratory
David G Allen
APPS, Sydney, September 2003 (6 oral)

Australian Gene Therapy Society Meeting (1 poster)

American Heart Association Meeting (1 poster)

Brain Research Laboratory
W (Liam) Burke


Auditory Neuroscience Laboratory
Simon Carlile


Cardiovascular Neuroscience Laboratory
Roger AL Dampney


Tan P, Dampney RAL. Angiotensin II microinjections in the nucleus tractus solitarius has an inhibitory effect on the cardiac but not the non-cardiac sympathetic component of the baroreceptor reflex. Proceedings of the Australian Physiological and Pharmacological Society, 2003;34:145.


Developmental Physiology Laboratory
Margot L Day

APPs (7)
Society for Reproductive Biology (1)

Muscle Research Laboratory
Joseph FY Hoh


Lucas CA, Hoh JFY. Variation in myosin expression along the length of orbital fibres in the rabbit extraocular muscle. 33rd Annual Conference of the Physiological and Pharmacological Society, Sydney, 29 Sep-1 Oct 2003: 63P.

Rhee HS, Lucas CA, Hoh JFY. Fibre types on rat laryngeal muscles and their transformations following denervation and reinnervation. 33rd Annual Conference of the Physiological and Pharmacological Society, Sydney, 29 Sep-1 Oct 2003:64P.

Cortical Development Laboratory
Catherine A Leamney


Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason


Basic & Clinical Genomics Laboratory
Brian J Morris


Mangs H, Markus MA, Morris BJ. The pseudoautosomal gene product XE7 binds to ZNF265 and could be a spliceosomal component. 24th Lorne Genome Conference, Lorne, 16-20 Feb 2003, Poster 1-24.


Molecular Neuroscience Laboratory
William D Phillips


Vision Laboratory
Dario A Protti

Hypertension & Stroke Research Laboratories
Paul Pilowsky and Ann Goodchild


Reja V, Makeham JM, Goodchild AK, Pilowsky PM. AT1 receptors in the RVLM do not play a significant role in maintaining high blood pressures observed in renovascular hypertensive rats. *Thirteenth European Meeting on Hypertension*, Milan, 2003: S196, P2.265.


Reja V, Goodchild AK, Pilowsky PM. AT1 receptors in the RVLM do not play a significant role in maintaining high blood pressures observed in renovascular hypertensive rats. *High Blood Pressure Research Council of Australia Silver Jubilee Scientific Meeting*, Melbourne, 2003:24.

Official for Scientific Societies at National or International Conferences

Maxwell R Bennett

2002
President, International Society for Autonomic Neuroscience (ISAN)
Chair, Genes, Neurons and Mental Illness, Sydney
Chair, Neuroscience and Neurology National Programs, Canberra

2003
President, International Society for Autonomic Neuroscience (ISAN)
President at International Society for Autonomic Neuroscience Conference, Calgary
Chair, Genes, Neurons and Mental Illness, Sydney
Chair, Neuroscience and Neurology National Programs, Canberra

Brian J Morris

2002
Chair, Hypertension Session, 18th International Congress of Clinical Chemistry and Laboratory Medicine, Kyoto, Japan
Chair, Austin Doyle Lecture, Australian Health and Medical Research Congress, Melbourne, 2002.

2003
Chair, Medical and Scientific Executive Committee, International Conference on Longevity, Sydney Convention Centre, Darling Harbour, 5-7 Mar 2003.

Simon Carlile

2003

William D Phillips

2003

Roger AL Dampney

2003
Chair, Featured Research Session of the Annual Scientific meeting of the Japanese Circulation Society, Fukuoka, Japan, Mar 2003.

Paul Pilowsky

2002
Convenor, NSW Cardiovascular Club

2003
Executive Council member, High Blood Pressure Research Council of Australia
Convenor, NSW Cardiovascular Club

Ann Goodchild

2002
Treasurer, NSW Cardiovascular Club

2003
Treasurer, NSW Cardiovascular Club

Joseph FY Hoh

2002

Paul R Martin

2002
Editor and Executive Member, Australian Neuroscience Society.

Rebecca S Mason

2002
Council Member, Australia and New Zealand Society for Bone and Mineral Research.
Invited Presentations at National or International Conferences

David G Allen
2002  
Sodium and the Heart, Göttingen, Germany  
Ion channels and transporters, Curtin Conference, Canberra  
Session Chair, Muscle Mechanics and Energetics, Melbourne  
Symposium on Cardiac Ischaemia and Hypertrophy, Australian Health and Medical Research Congress, Melbourne

2003  
Curtin Conference on Muscle, Canberra  
Invited Chair, Gordon Conference on Excitation-Contraction Coupling, New Hampshire, USA  
Calcium in Pacemaker Cells, International Soc Heart Res (Australian Section), Melbourne  
Stretch-induced Muscle Damage, World Congress on Medical Physics, Sydney  
APPS Invited Lecture, Sydney  
Chair, Stretch-induced Muscle Damage Symposium, APPS Meeting, Sydney  
Chair, Integrating Cardiac Function Symposium, APPS Meeting, Sydney

Maxwell R Bennett
2002  
Featured speaker, XIVth World Congress of Cardiology, Sydney  
Academia Ophthalmologica Internationalis Oration, Sydney

Simon Carlile
2002  
Eighth International Conference on Auditory Display, Kyoto.  
Invited Lecture and invited pre-conference tutorial.  
Eighth Western Pacific Acoustics, Melbourne.  
Ninth International Conference on Auditory Display, Boston.

2003  
International workshop on binaural hearing, Utrecht NL

David I Cook
2002  
Curtin Conference, Canberra  
Federation of Asian and Oceania Physiological Societies Conference, Kuala Lumpur, Malaysia

2003  
Gordon Conference, Ventura, USA  
Symposium on Epithelial Transport in Health and Disease, Halle, Germany  
Federation of European Physiological Societies Conference, Nice, France  
World Congress of Nephrology, Berlin, Germany  
American Physiological Society conference in Aldosterone and ENaC, Banff, Canada

Roger AL Dampney
2002  
Leuvenhulme Lecture, Univ of Bristol, Sep 2002.

2003  

Margot L Day
2002  
NSW Cell and Developmental Biology Group Meeting V, The Victor Chang Cardiac Research Institute, Oct 2002.

2003  

Paul R Martin
2002  
Invited lecture, SUNY College of Optometry, New York, USA, Jun 2002.  

Brian J Morris
2002  
18th International Congress of Clinical Chemistry and Laboratory Medicine, Kyoto, Japan, 20-25 Oct 2002

2003  

Paul Pilowsky
2002  
Invited Speaker, ASEANZ Cardiovascular and Lipid Forum, 11-13 Oct 2003, Melbourne
Conferences and Symposia Organized

David Alais
2002
Organiser, San Miniato Workshop on Binocular Rivalry, San Miniato, Italy, Jun 2002.

David G Allen
2002
Australian Physiological and Pharmacological Society Symposium Co-organiser: Cardiac Ischaemia and Hypertrophy, Australian Health and Medical Research Congress, Melbourne, Nov 2002.

2003

Maxwell Bennett
2002
Genes, Neurons and Mental Health, Univ of Sydney, Jun 2002.

2003
Genes, Neurons and Mental Health, Univ of Sydney, Aug 2003.

Margot Day
2003
Australian Physiological and Pharmacological Society Annual Scientific Meeting, Sydney, Aug 2003.

Brian J Morris
2002
Life Extension Symposium (full day event accredited by RACGP), Univ of Sydney, Eastern Avenue Auditorium, 16 Mar 2002.

2003
Life Extension Symposium (full day event accredited by RACGP) Univ of Melbourne, 10 May 2003.

Life Extension Symposium (full day event accredited by RACGP), Univ of Sydney, Veterinary Science Conference Centre, 17 May 2003.

Life Extension Symposium (full day event accredited by RACGP), Brisbane Convention and Exhibition Centre, 24 May 2003.
Awards, Prizes and Other Recognition

Academic Staff

2002

Maxwell R Bennett
*Academia Ophthalmologica Internationalis Award*

Brian J Morris
Elected as a Fellow of the American Heart Association (Council for High Blood Pressure Research)

2003

David G Allen
APPS Invited Lecture and Medal

Maxwell R Bennett
Centenary Medal

Joseph FY Hoh
Travel grant from the Australian Academy of Science to participate in X-ray diffraction analysis on muscle fibres using the Spring-8 synchrotron facility of the Japan Synchrotron Radiation Research Institute at Mikazuki, Japan.

Paul Pilowsky
Elected as a Fellow of the American Heart Association (Council for High Blood Pressure Research)
Member of Ranking Panel for Career Awards (formerly RD Wright) for NHMRC
Invited Member, NSW Division of the National Heart Foundation

Students

2002

Andrea Abdirapanoto
Colin Dunlop Prize

Alex Nichols
*Poster Prize*, Australian Physiological and Pharmacological Society Meeting

2003

Edward Kitzana
*Douglas Rege Young Investigator Award*, Westmead Children’s Hospital
*Young Investigator Award*, Australasian Gene Therapy Society

Jemima Neale
David Monk Adams Prize

James Padley
Colin Dunlop Prize

Iwan Williams
*Northcote International Postgraduate Scholarship*, UK

K-C Wang
Claude Bernard Prize, most proficient student in Heart and Circulation

Student Travel Awards

2002

Ritu Gupta
Travel scholarship from World Congress of Dermatology, Paris (one of only 2 awarded to Australians). Travel funds from Australian Dermatology Research Foundation Education Fund to attend conference.
Travel Scholarship to attend ANZBMS meeting, Adelaide, and oral presentation in Young Investigator Finalist session.

Michiko Mirams
Plenary Poster presentation ASBMR, San Antonio
Travel Scholarship to attend ANZBMS meeting, Adelaide, and oral presentation in Young Investigator Finalist session.

Dharshi Siva (S Sivagurunathan)
Travel Scholarship from Australia and New Zealand Orthopaedic Research Society to attend Annual Scientific Meeting

Deborah Springell
Westpac scholarship (RNSH), Australian Neuroscience Society Poster Prize

Jemima Neale
Gore Hill Research Laboratories Best Poster Prize
RNSH/UTS, High Blood Pressure Research Council of Australia (NHMRC) Best Poster Prize

James Padley
High Blood Pressure Research Council of Australia (Australian Health and Medical Research Congress), Best Oral Presentation Prize
Douglas Piper award for Best Oral, RNSH/UTS conference

Alaina Taylor
Best Poster prize RNSH/UTS conference

Valin Reja
Runner-up, Best Oral Presentation (PRSS Northern Clinical School)

2003

Natasha Kumar
Josephine Anderson Memorial Prize, Best Poster Award at the IBR Postgraduate and Postdoctoral Conference 2003

Michiko Mirams
Travel scholarship to International Bone and Mineral Society meeting Coolum, Qld, Jun 2003.

Dharshi Siva (S Sivagurunathan)
Awarded Travel Scholarship from Australia and New Zealand Orthopaedic Research Society to attend Annual Scientific Meeting, 2003.
PhDs Awarded

2002

Neurobiology Laboratory
Maxwell R Bennett
Lin YQ. Plasticity of presynaptic mechanisms in autonomic ganglia.

Epithelial Transport Laboratory
David I Cook
Cummins MC.

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
Potas J. Central mechanisms mediating sympathoinhibition.

Vision Laboratory
Paul R Martin
Lin B.

Hypertension & Stroke Research Laboratories
Paul Pilowsky
Stasinopoulos T. Opioid receptors in the central control of cardiorespiratory function (with Pharmacology).

Master of Medicine Awarded

2002

Epithelial Transport Laboratory
David I Cook
Hu H.

Master of Science Awarded

2003

Hypertension & Stroke Research Laboratories
Paul Pilowsky
Castelnoble L. Gene expression in cardiovascular nuclei in response to hypotensive haemorrhage: hypertensive vs. normotensive rats. (With Univ of Technology, Sydney)

2003

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
Gupta R. 1,25dihydroxyvitamin D3 is photoprotective in human skin cells.

Basic & Clinical Genomics Laboratory
Brian J Morris
Lin RCY. Molecular genetic studies of hypertension and association disorders in humans and of gene expression in hypertensive rats.
BMEDSC (Hons) Awarded

2002

Neurobiology Laboratory
Maxwell R Bennett
Abdipranoto A. Secretion of ATP from cultured cortical astrocytes induced by neurotransmitters. Result: Class 1, Colin Dunlop Prize.
Cavazzini M. Calcium and synaptic vesicle kinetics at the amphibian motor nerve terminal: a quantitative model of synaptic plasticity. Result: Class 1
Elix P. (co-supervised Pharmacology, Dr Hilary Lloyd).

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
Tan P. Cardiovascular responses to angiotension II in the nucleus of the solitary tract. Result: Class 1

Developmental Physiology Laboratory
Margot Day
Lim AA. Real-time PCR quantification of circadian mRNA in mouse liver and uterus. Result: Class 2.1

Vision Laboratory
Paul R Martin
Lee S. (co-supervised with U Grünert). Result: Class 1

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
Wong G. Photoprotective effects of vitamin D compounds. Result: Class 1

Basic & Clinical Genomics Laboratory
Brian J Morris
Katyk K. Association of endothelin receptor type A, G-protein receptor lievase 4, beta-adalucin, but not endothelial nitric oxide synthase with essential hypertensin in Anglo-Celtic population from Sydney. Result: Class 1
Kumar N. Association analysis of candidate genes in essential hypertensin. Result: Class 1

Molecular Neuroscience Laboratory
William D Phillips
Jigau M. Identification and subcellular targeting of putative rapsyn-binding proteins. Class 2.1

Hypertension & Stroke Research Laboratory
Paul Pilowsky
Padley J. Cannabinoceptors in the central control of cardiorespiratory function. Result: Class 1

Higher Degrees Awarded and Theses Passed

2003

Neurobiology Laboratory
Maxwell R Bennett
Downey R. Intracellular calcium responses of superior cervical ganglion satellite cells to neurotransmitter. Result: Class 1
Werry E. The modulation at glutamate-stimulated ATP release from spinal cord astrocytes by substance P. Result: Class 1

Developmental Physiology Laboratory
Margot Day
Jones S. Involvement of the ether-a-go-go K channel in the cell cycle and development of the mouse preimplantation embryo. Result: Class 1

Skin & Bone Laboratory (Endocrine Regulation)
Rebecca S Mason
Brennan T. The role of the calcium sensing receptor in bone cells. Result: Class 1
Dixon KM. Photoprotective effects and mechanisms of action of vitamin D and its analogues. Result: Class 1

Hypertension & Stroke Research Laboratory
Paul Pilowsky
Wang KC. Cardiorespiratory effects of NK1 receptor activation in the ventrolateral medulla. Result: Class 1
BSc(Hons) Awarded

2002

Muscle Cell Function Laboratory
David G Allen
Nichols A. The effect of adenosine on angiotensin II-mediated Na+/H+ exchange stimulation in ischemic rat ventricular myocytes. Result: Class 1

Vision Laboratory
Paul M Martin
Szmadja B. (co-supervised with U Grünert). Result: Class 1
Dobbie W. Result: Class 1

Hypertension & Stroke Research Laboratory
Paul Pilowsky
Taylor, A. The role of beta endorphin in respiration and cardiovascular function: a study of beta endorphin knockout mice. Result: Class 1 (co-supervised Pharmacology)

2003

Muscle Cell Function Laboratory
David G Allen
Tipene J. The time course of inactivation and reactivation of the cardiac sodium/proton exchanger during metabolic inhibition. Result: Class 1

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
McDowall LM. Role of hypothalamic nuclei in cardiovascular regulation. Result: Class 1.

BLibStud(Hons) Awarded

Hypertension & Stroke Research Laboratories
Paul Pilowsky
Neale J. Bulbospinal catecholaminergic neurons play a critical role in sympathetic reflexes. Result: Class 1

Graduate Diploma Awarded

Auditory Neuroscience Laboratory
Simon Carlile
Al-Mahaidi S. Graduate Diploma

Neurobiology Laboratory
Maxwell R Bennett
Sanai F. Cholinergic contribution to the mouse vas deferens contractile response and its effect on resensitisation to α,β-methylene ATP. Result: passed (co-supervised Pharmacology)

Scholarships and Fellowships Awarded

Muscle Cell Function Laboratory
David G Allen
2002
Moopanar T. Australian Postgraduate Award

Cardiovascular Neuroscience Laboratory
Roger AL Dampney
2002
Tan P. University Postgraduate Award.
2003
McDowall LM. University Postgraduate Award.

Vision Laboratory
Paul R Martin
2002
Solomon S. CJ Martin Fellowship NHMRC (2003-2006)

Basic & Clinical Genomics Laboratory
Brian J Morris
2002
van der Weyden L. CJ Martin Fellowship NHMRC (2003-2006)

Hypertension & Stroke Research Laboratories
Paul Pilowsky
2002
Seyedabadi M. Dora Lush Fellowship NHMRC
Makeham J. Andrew Olle Postgraduate Award, Australian Postgraduate Award
Verner T. Faculty of Medicine Scholarship
2003
Kumar N. Australian Postgraduate Award
Deol K. Australian Postgraduate Award
Padley J. Australian Postgraduate Award, Centenary Foundation Scholarship (1 year)
Neale J. University Postgraduate Award, Dora Lush NHMRC
Verner T. Postgraduate Research Support Scheme Travel Grant
Makeham J. Doug White AVM Foundation Award
Manuscripts Reviewed for Journals

David Alais (11)
2002 (5)
  Perception (1), Vision Res (4)

2003 (6)

David G Allen (57)
2002 (28)
  Pflügers Arch (8), J Physiol (7), Circ Res (4), J App Physiol (4),
  Am J Physiol (2), FASEB J (2), Cell Calcium (1)

2003 (29)
  J Physiol (8), Pflügers Arch (6), Circ Res (3), J App Physiol (3),
  Cardiovasc Res (3), Am J Physiol (1), J Gen Physiol (1), Europ J
  App Physiol (1), J Membr Biol (1), Medicina (1), Can J Physiol
  Pharmacol (1)

Maxwell R Bennett
2003 (1)
  J Neurocytol (1)

Liam Burke
2003 (2)

Simon Carlile (3)
2003 (3)
  J Acoust Soc Am (2), J Assoc Res Otolaryngol (1)

Margot L Day (7)
2002 (5)
  Bioessays (1), Biol Reprod (2), Int J Dev Biol (2)

2003 (2)
  Pathology (1), Biol Reprod (1)

Ann Goodchild (6)
2002 (2)
  Auton Neurosci (1), Neuroscience (1)

2003 (4)
  Auton Neurosci (1), Brain Res (1), Brain Res Bul (1), Clin Exp
  Pharmacol Physiol (1)

Joseph FY Hoh (10)
2002 (3)
  Vis Sci (1).

2003 (2)

Catherine A Leamey (1)
2003 (1)
  Eur J Neurosci (1)

Paul R Martin (2)
2002 (2)
  Brain Res (1), Vis Neurosci (1)

Rebecca S Mason (18)
2002 (13)
  J Bone Mineral Res (9), Bone (1), J Biol Chem (1), Med J Aust (1),
  Intern Med J (1)

2003 (5)
  J Bone Mineral Res (2), Bone (1), Carcinogenesis (1), Tiss Cell (1)

Brian J Morris (54)
2002 (26)
  Hypertension (7), Circulation (3), Am J Hypertens (3), Biochim
  Biophys Acta (2), Hum Mol Genet (1), Biochem J (1), Pharmacogenetics (1),
  Physiol Genomics (1), Am J Physiol (1), Arterioscl Thromb Vasc Biol (1),
  Am J Kid Dis (1), Mol Cell Endocrinol (1), Haematologica (1), J Lipid Res (1), Life Sciences (1)

2003 (28)
  Am J Hypertens (9), Hypertension (6), Clin Exp Pharmacol Physiol
  (2), Circulation (1), J Clin Endocr Metab (1), Endocrinology (1),
  Physiol Genomics (1), Brit Med J (1), J Hypertens (1), Kidney Int
  Aging (1)

Paul Pilowsky (31)
2002 (17)
  Hypertension (1), Am J Physiol (1), Brain Res (4), Clin Exp Phar-
  macol Physiol (1), Eur J Neurol (1), Exp Physiol (1), J Cardiovascular
  Pharmacol (1), J Comp Neurol (2), J Pharmacy Pharmacol (1), ANBAC
  (1), Neuropharmacol (2), Resp Phys Neurol (1)

2003 (14)
  Hypertension (5), Clin Exp Pharmacol Physiol (1), Am J Physiol
  (2), Neurosci Letters (1), Brain Res (1), Neuropharmacol (1), Resp
  Phys Neurol (2), J Neurophys (1)

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Grant and Award Applications Assessed

David Alais (2)
2003 (2)
Dutch Social Science Research Council (1), US National Science Foundation (1)

David G Allen
2002
NHMRC (Chair of GRP 110), ARC (4), NHF (3), South African MRC (1), NSF, USA (1)
2003 (11)
NHMRC (4), ARC (3), NHF (4)

Maxwell R Bennett
2002
NHMRC (40), NHMRC Fellowship (1), ARC, NHF, Wellcome Trust Overseas Fellowship (1)
2003
NHMRC (36), ARC, NHF, Churchill Fellowships (105), Northern Sydney Area Research Grant (1)

Liam Burke (3)
2002 (1)
ARC (1)
2003 (2)
ARC (2)

Simon Carlile (3)
2003 (3)
NHMRC (1), NSF (1), AFOSR (1)

Roger Al. Dampney (51)
2002 (18)
NHMRC (10), ARC (5), NHF (3)
2003 (33)
NHMRC (10), ARC (20), NHF (3)

Margot Day (1)
2002 (1)
ARC (1)

Ann Goodchild (11)
2002 (4)
NHMRC (2), NHF (2)
2003 (7)
NHMRC (3), NHF (4)

Joseph FY Hoh (4)
2002 (3)
NHMRC (2), ARC (1)
2003 (2)
NHMRC (1), ANU Postgraduate Scholarship Application (1)

Catherine A Leamey
2003 (5)
NHMRC (5)

Paul R Martin
2002 (8)
NHMRC (2)
ARC (6)

Rebecca S Mason (13)
2002 (11)
NHMRC (10), ARC (1)
2003 (2)
ARC (1), Royal Adelaide Hospital Howard Florey Fellowship (1)

Brian J Morris (20)
2002 (11)
NHMRC (1), ARC (5), NHF (1), Medical Research Council UK Program Grant (2), Foundation for High Blood Pressure Research Postdoctoral Award (2)
2003 (9)
NHMRC (5), ARC (1), NHF (1), The 2003 Howard Florey Young Investigators Award (2)

William D Phillips (6)
2002 (2)
NHMRC (2)
2003 (4)
NHMRC (4)

Paul Pilowsky (26)
2002 (13)
NHMRC (7), NHF (4), Biotechnology and Biological Sciences Research Council (1), North Shore Area Health Service (1)
2003 (13)
NHF Brisbane & Melbourne (10), NHMRC Career Development Award Ranking Panel (1), North Shore Area Health Service (1), USyd/NCU Sesqui R&D and New Staff Support Scheme (1)

Dario A Protti (4)
2003 (4)
NHMRC (1), FONCyT (Fondo para la Investigación Científica y Tecnológica (3)
Membership of Editorial Boards of Journals

**David G Allen**
Pflügers Archiv (1996-)

**Maxwell R Bennett**
Progress in Neurobiology (1998-)
Journal of the Autonomic Nervous System (2000-01)
Autonomic Neuroscience – Basic & Clinical (formerly JANS) (2001-)
NeuroReport (2001-)
Neuroscience News (1999-)

**David I Cook**
Physiological Reviews (1999-)
Cellular Physiology and Biochemistry (2002-)
Pflügers Archiv (2003-)

**Roger AL Dampney**
American Journal of Physiology (2001-)
Experimental Physiology (2001-)

**Rebecca S Mason**

**Brian J Morris**
Hypertension (2002-)
Journal of Hypertension (2003-)

**Paul Pilowsky**
Journal of Hypertension (2002-)
Respiration Physiology and Neurobiology (2002-)
Biomedical-Physiology (2001-)
Clinical and Experimental Pharmacology and Physiology (2002-)
Federation Asian and Oceanic Neuroscience Societies (1996-)

Higher Degree Theses examined

**David G Allen (4)**
2002
PhD: Monash Univ (1)

2003
PhD: Univ of Melbourne (1), Univ of Adelaide (1), La Trobe Univ (1)

**Roger AL Dampney**
2002
PhD: Univ of Sydney (1)

2003
PhD: Univ of Melbourne (1), MSc: Univ of Sydney (1)

**Margot Day**
2002
PhD: Univ of Sydney (1)

**Joseph FY Hoh (1)**
2003
PhD: Univ of Sydney (1)

**Rebecca S Mason (5)**
2002
PhD: Univ of Sydney (1), Univ of Adelaide (1), Univ of NSW (1); BSc(Vet): Uni Sydney (1).

2003
PhD: Univ of Sydney (1)

**Brian J Morris (5)**
2002
PhD: Univ of NSW (2), Qld Univ of Technology (1), Univ of Sydney (1)

2003
PhD: Univ of Wiswatersrand, South Africa (1)

**William D Phillips (3)**
2002
PhD: Univ of Qld (1)

2003
PhD: Univ of Qld (1), Univ of Sydney (1)

**Paul Pilowsky**
2002
PhD: Univ of Sydney (1)
Service to the University

David G Allen
Executive Committee, Institute for Biomedical Research, University of Sydney (1996-)
Laboratory Animal Management Advisory Committee, University of Sydney (1997-)
Sub-Dean Research (Anderson-Stuart Precinct) (2000-)
Chair, Research Management Committee, Faculty of Medicine (2000-02)
Research Development Committee, Faculty of Medicine (2000-)
Research Committee of School of Biomedical Sciences (2001-)
Cochair, Cardiovascular and Respiratory Institutional Research Strengths Group (2000-2)
Medical Foundation Building Planning Group (2001-2)

Maxwell R Bennett
Establishment of the Brain & Mind Research Institute (2002-)

Simon Carlile
As Assistant Pro Vice Chancellor and CIO until the end of 2002, Simon Carlile had direct responsibility for the management and development of all corporate information and communication technologies including data and telephones networks, finance, HR and student administrative systems. He chaired the two peak University committees involved in information technology governance and strategic planning. He was also a member of the Vice Chancellor’s Advisory Committee, the Capital Development Committee, the Library Committee, the Academic Forum and more than ten ad hoc working parties convened by the Vice Chancellor, the Senior Deputy Vice Chancellor and the Registrar to deal with a range of strategic and operational issues.

David I Cook
Chair, Local Fee-Paying Student Working Party (2003)
Chair, Intercalated Degree Working Party (2003-)

Roger AL Dampney
Chair, Cardiovascular Block, University of Sydney Medical Program (2003)
Member, Review Committee, School of Molecular and MicrObial Biosciences (2003)

Margot L Day
Chair USydMP Honours committee (2003-)
Member Zone 2 OHS committee (2000-2002)
Core Member of Faculty of Medicine promotions committee (level B) (2003)
Co-ordinator talented students program for Physiology (2000-)
Co-ordinator BMedSc, Unit of Study 4 (2001-)
Deputy co-ordinator of Physiology Honours (2002-)

Paul R Martin
University Committees:
Member, University Postgraduate Board Awards Committee (2001-2002)

Faculty of Medicine committees:
Chair, CHS Postgraduate Awards Committee (2002)
Member, Board of Graduate Studies (2002)
Chair, Combined Degree Program Committee (2002)
Member, Admissions Committee (2002)
Faculty of Science Committees
Level D Promotion Core Committee (2002)

Rebecca S Mason
University
Major Equipment Committee (2002-2003)
Graduate Medical Program
Block Chair, Endocrinology, Nutrition and Gastroenterology Block (1995-2002)
Basic and Clinical Sciences Committee (1994-)
Teaching, Assessment and Curriculum Committee (Year 1 & 2 content; Content Review Group) (2001-); Deputy Chair (2001-2003)
Associate Dean, Curriculum (2002-)
Faculty Academic Committee (2002-)
Chair, University of Sydney Medical Program Committee (2003-)

Institute for Biomedical Research
Executive (2000-)
Deputy Director (2001-)
 Discipline of Physiology
Head of Discipline (2002-)
Faculty of Science
Undergraduate Studies Committee (2001-2002)

Ann Goodchild
Member, Royal North Shore, University of Technology Sydney, Animal Care & Ethics Committee (2002-2003)
Member of the management committee of Gore Hill Research Laboratories (2002-2003)

William D Phillips
University Committees
Institutional Biosafety (Genetically modified organisms) Committee member (1995-)
Faculty of Medicine Committees
School of Biomedical Sciences Teaching Committee, Chair (2002-)
Faculty Education Committee Member 2003-
Faculty of Science Committees
Undergraduate Studies Committee Member 2002-
Discipline of Physiology
Teaching Committee 2002-

Paul Pilowsky
Northern Clinical School postgraduate teaching committee (2002-2003)
Service to Professional Societies, Grant-giving Bodies or Other External Committees

**David G Allen**
Board Member, Heart Research Institute, Sydney (2002-)
Chair, Scientific Committee, Heart Research Institute, Sydney (2003-)
Chair, Grant Review Panel of NHMRC (2002)

**Rebecca S Mason**
Member, NHMRC Grant Review Panel Council (2001-2)
Council, Australian and New Zealand Bone & Mineral Society (2001-)
Osteoporosis Australia Board (2002-)

**Maxwell R Bennett**
International Society for Autonomic Neuroscience (Chair of Council, 2001-03)
Institute for Biomedical Research (Member of Board, 2002-)
Brain and Mind Research Institute (Director, 2002-)
Neuroscience Australia Ltd (Director, 2002-)
Mental Health Council of Australia (Member of Council, 2002-)
Brain Foundation (Director, 2003-)
Mental Health Research Institute Victoria (Member, Advisory Council, 2003-)
Brain and Mind Australia (Chair, 2003)
Neuroscience and Mental Health Ltd (Convenor, 2003)
Neuroscience and Neurology National Programs (NHMRC, 2001-2007)
Brain and Mind Disorders (PMSEIC - Prime Minister's Science, Engineering and Innovation Council, Working Group, 2003)
NHMRC Program Grants Committee (2002-03)
Churchill Fellowships Committee

**Paul Pilowsky**
Member, Executive Ctee of High Blood Pressure Research Council of Australia (2002)
Member of the Heart Foundation of Australia (NSW Division) (2002)
Chair, Program Committee of the Australian Neuroscience Society (2002)

**David I Cook**
Chair, Clinical Trials Committee, Central Sydney Area Health Service (1991-)
Deputy Chair, Scientific Advisory Committee, NSW Health Department (2002-)
Chair, IUPS Epithelial Transport Section (2001-)
Member, ARC Biological Sciences and Biotechnology Expert Advisory Committee (2002-)

**Roger Al Dampney**
Member of the Board, Prince of Wales Institute of Medical Research (1995-)
Oz Reader, Australian Research Council (2003)
Member of the Selection Committee for Director of the Prince of Wales Institute of Medical Research (2003)

**Paul R Martin**
Australian Neuroscience Society, Editor and Executive (2002-)

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Grant Funding Totals

<table>
<thead>
<tr>
<th>Granting Body</th>
<th>1999</th>
<th>2000</th>
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<td>AKF</td>
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<tr>
<td>ARC (L)</td>
<td>64,994</td>
<td>125,076</td>
<td>231,258</td>
<td>190,200</td>
<td>333,000</td>
<td>945,028</td>
</tr>
<tr>
<td>ARC (S)</td>
<td>159,723</td>
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**Abbreviations:**

AKF: Australian Kidney Foundation  
ARC: Australian Research Council  
ARC (L): Australian Research Council (large grants)  
ARC (S): Australian Research Council (small grants)  
BLO: Business Liaison Office  
CC: Cancer Council  
CRC: Cooperative Research Centre  
DD: Department of Defence  
FacMed: Faculty of Medicine, University of Sydney  
Menzies: Menzies Foundation  
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  
USMFG: University of Sydney Medical Foundation Grant  
USRG: University of Sydney Research Grant  
USYD: University of Sydney
## External Funding to Each Laboratory

### Alais  
**Audio-Visual Research Laboratory**

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<th>Amount (AUD)</th>
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<td>Signal transmission in the mammalian retina: foundations and mechanisms underlying transition from nighttime to daytime vision</td>
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**Abbreviations**
- **ARC**: Australian Research Council
- **NHMRC**: National Health & Medical Research Council
- **NHF**: National Heart Foundation
Recurrent Funding from University to Physiology

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<td>Salaries - general staff</td>
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<td>Part time teaching, casual staff costs, etc</td>
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<td>162,568</td>
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<td>Non-salary:</td>
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<td>All Other Expenses</td>
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<td>Carry forward from previous year</td>
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<td>Balance</td>
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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 2002, funding of $175,185 was provided to the Discipline of Physiology on the basis of 2000 Commonwealth competitive grant values (Mechanism A), and was passed onto laboratories in line with their percentage of such grant funding.

In 2003, funding of $198,338 was provided to the Discipline of Physiology on the basis of 2001 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 2002 an amount for running costs of $102,000 was distributed as $3,000 per academic, $1,500 per full time research student and $750 per Honours research student.

In 2003 an amount for running costs of $90,000 was distributed as $3,000 per academic, $1,500 per full time research student and $750 per Honours research student.
I report the activities of a part-time (0.8FTE) Senior Lecturer whose work is predominately related to teaching. As well, I am the coordinator of two units of study and maintain a research interest by collaborating with Emeritus Professor William Burke of the Disciplines of Physiology and of Anatomy & Histology in the Institute of Biomedical Research, of this university.

Courses Taught
In 2002 and 2003 I presented lectures, practical classes and tutorials in intermediate units of study in the programs of Medical Science, Science (Basic and Integrated units) and Pharmacy. I also supervised practical classes in senior year Neuroscience and was a problem-based learning (PBL) tutor and practical class supervisor in the Medical Program.

In the Tutor Evaluation Reports of both 2002 and 2003 all medical student respondents to the evaluation surveys rated my PBL tutoring as excellent.

Teaching Related Activities
Honours Marker
In both years I marked two Honours essays and related theses, attended the honours students' seminars and participated in the examiners' meeting.

Interviewer
In both years I was an interviewer for the Personal and Professional Development portfolio of year 1 medical students.

Coordinator
I have for many years been the coordinator of Physiology 2A and 2B for Pharmacy. These two consecutive units are taught in the intermediate year of the Bachelor of Pharmacy degree. Coordination tasks include establishing the curriculum, liaising with lecturers regarding the sequence and dates of lectures, selecting the textbook, preparing the Course Guide, updating WebCT resources, being responsible for the preparation, marking and results of assessments and examinations, and presenting the views of the Discipline of Physiology at meetings of the Faculty of Pharmacy.

2003 saw the introduction of new technology in the form of WebCT for communicating with students. This has given the students easy access to additional resources, such as the PowerPoint slides shown in lectures. It has also improved the release of sample questions and their answers at appropriate times and given the students a discussion board. These advances have been embraced enthusiastically and are used frequently in the Pharmacy units of study.

Student surveys have shown that the answer-review sessions with feedback given after the mid-semester assessments are greatly valued. This formative process has been expanded in response to student requests expressed in a survey conducted in Semester 2, 2002.

Teaching Development
In 2002 I attended a teaching forum entitled “What Makes University Teaching Excellent?” organized by the Institute for Teaching and Learning and a computer course “PowerPoint for Office” conducted by the Staff Development Unit. The Powerpoint course was undertaken to improve my lecture presentations and in anticipation of video-conference teaching to the Orange campus of the university in the coming years. In 2003 I changed my lectures to PowerPoint presentations. These were well received.

In 2003 I attended two workshops on video-conference technology and techniques. One was “Effective Videoconference Teaching” given by LearnTel Pty Ltd which extended over one and a half days and the other was given by audiovisual staff of the University for one day.

Research
Project
Demyelination and Remyelination after Pressure on the Optic Nerve. LJ Cottee and W Burke
Work has continued on an investigation of recovery of function and remyelination of fibres in the optic nerve following application of pressure which blocks action potential propagation in the large fibres. This has involved both electrophysiological recording and electron microscopy. We have carried out further electron microscopic studies, quantitative image analysis and statistics. The paper was written and published in 2003.

Publication
Courses Taught
Intermediate Physiology – Basic and Integrated Physiology A and B (including Advanced)

Description and major initiatives
The principal change which occurred in the 4 and 8 credit point units of study in second year physiology was a change of name, with the former becoming 'Basic' and the latter 'Integrated', so as to indicate more clearly to students the difference between them. Course Co-ordination was shared with another academic. An Advanced stream of Integrated Physiology was introduced in 2003, which has succeeded in attracting students with excellent academic records, some of whom are also in the Talented Student Program.

Curriculum content was streamlined so that one version of practical notes was produced for all students, with the 8 credit point simply adding on a module in some classes. The instigation of WebCT as the platform of delivery of unit of study material across the University enabled course resources to be more systematically presented. Emphasis was placed on linking the theoretical material covered in lectures more explicitly with the results obtained in practicals, and this was supported by a series of Web links for each practical: Pre-Tests, Difficult Concepts, Challenge Questions, Self-Assessment Questions, plus answers in some cases. Some of these were also linked to exercises in the No Frills Generic Skills Guide in order to focus students’ attention on their development of these skills, and both a general essay and a practical report were included in the summative assessment. Advanced students wrote a longer research essay and were mentored by a member of staff.

Pre-Tests were reformulated from short answer to multiple true-false questions for automatic computer delivery and marking. Explanations were given for each answer when students reviewed their grades (see Grants below). Data test questions were also reformulated to give a mixture of short answer and multiple true-false, with models and answers being provided.

Great emphasis was placed on providing formative Web feedback on all assessments, including data tests, practical reports and essays. Lecturers also provided sample questions and some answers.

The summative assessment of the problem-based learning stream was modified from an original standard written exam, to a take-home exam, to an open-book written exam. In order to pre-empt any bias, Advanced essays were marked by an academic in addition to the one who had been the student’s mentor. Practical reports were marked according to a table of detailed criteria covering both content and writing style, and with particular emphasis on hypothesis generation and testing. A Web tutorial was developed which used one practical as a model and for which correct answers were subsequently made available.

Teaching research interests
My primary research interest relates to the influence on the quality of student learning of resource activities and materials, nowadays provided primarily on WebCT. I have endeavoured to modify the structure of the curriculum so that the students are supported in progressive development of their knowledge base, reasoning skills, writing capability, and oral communication ability, with a particular emphasis on generic skills. The introduction of an Advanced stream and the imminent switch to standardised 6 credit point units of study is producing an enhanced focus on the ways in which students of different abilities, backgrounds and agendas can have their needs for stimulating material met, and be encouraged to become independent, life-long learners.

Publications
Promoting Active Learning with a Generic Skills Guide, Invited speaker and symposium co-organiser.

Feeding back for Enhancing Understanding, one week in the life of a physiology student, participant in Innovative Assessment Workshop

Grants
Teaching Improvement Fund grant of $14,614 for Developing a formative assessment tool using WebCT, with Irene Schneider, Meloni Muir, Lynne Cottee, Françoise Janod-Groves
Pre-tests for use primarily in formative assessment were presented on WebCT prior to each practical class. Explanations were provided for each option when students accessed their results.

The multiple true-false questions with explanations were written by one of us (MF) and the technical aspects of mounting these fortnightly on WebCT, collating and distributing the results to tutors, were carried out by an education officer.

Other Research or Teaching Related Activities
I have acted as a mentor for several students in the Intermediate Advanced stream of Integrated Physiology, meeting weekly to guide them in their library research and the writing of their essay. I am also a resource tutor for students in the Senior Advanced stream of Human Cellular Physiology who cannot attend group tutorials because of timetabled clashes.

My major activities other than in relation to Science teaching are centred around the University of Sydney Medical Program. I tutor in several blocks in first and second year, act as a case co-ordinator and contribute to the management of the online assessment system. I am a member of the Assessment, Evaluation and Admissions Committees, and am involved in the preparation and delivery of sample videotapes for the training of interviewers. I also contribute to the setting and marking of formative and summative assessments for the Basic and Clinical Sciences theme, and assist in the remediation process before the supplementaries.

Other Service to the University
I am on the executive of CHAST (Centre for Human Aspects of Science and Technology) which organises the annual Templeton lecture, and initiated a course in the 2003 Continuing Education Program entitled 'Genes – Use or Misuse'.

Academic Promotion
My promotion from Level B to Level C took effect from 1 Jan 2002.
Meloni Muir - Teaching Report

Course Coordination
Basic Physiology (PHSI2001, 2002)

Courses Taught
Basic Physiology (PHSI2001, 2002)
Intermediate Physiology (PHSI2101, 2102)
Pharmacy (PHSI2605)
BMedSc Physiology
USydMP tutor

Teaching Research Interests
Student understanding and use of formative assessment and feedback
Curriculum development

Grants Relating to Teaching
2003
Science Faculty Education Research Grant – Learning from Feedback: Student interpretation, understanding and use of feedback
Teaching Improvement Fund – Developing a Formative Assessment Tool Using Web CT

Other Research or Teaching Related Activities
Associate supervisor for two PhD students
Supervisor for Advanced Physiology student

Service to the University
Admission Interviewer for USydMP
PPD Reviewer for USydMP students

Irene Schneider - Teaching Report

2002

Teaching activities
Practical classes and tutorials
Intermediate Physiology
BMedSc
Heart and Circulation
Lectures
Pharmacy
Intermediate Physiology
Problem based learning
USydMP
Intermediate Physiology
Assessments
Setting and marking essays, reports and exams for both intermediate and senior units of study.

Coordination duties
Unit of study co-ordinator of Heart and Circulation (PHSI3003)
Coordinator of Summer Vacation Research Program For BMedSc and BSc students

Other Teaching Related Activities
Completion of Graduate Certificate in Educational Studies (Higher Education)

Teaching Research Interests
Curriculum development
Skills transfer between units of study

Grants Relating to Teaching
2003 Teaching Improvement Fund – Developing a formative assessment tool using WebCT

Service to the University
Interviewer for admission into USydMP
Faculty enrolments advisor
PPD Reviewer for USydHP Students

2003
On leave

Other academic staff

All other academic staff of Physiology made substantial teaching contributions in 2002 and 2003. These are not, however, recorded with this report.

David Allen - Teaching Report

Course Coordination
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, commercialisation of research etc.
Honours and Graduate diploma students
2002 - 17
2003 - 18

Other Teaching Roles
Chair Cardiovascular Block, USydMP 2002
Obituary: John Atherton Young (1936-2004)

John Young, Professor of Physiology, former Dean of Medicine and Pro-Vice Chancellor at the University of Sydney died on the 10th of February 2004 at the age of 67. He was an exceptional scientist and a humanist with a passionate and informed interest in classical culture, reformation theology and music.

As an academic administrator he was unafraid of radical reform, while always endeavouring to ensure its implementation was consistent with the traditional values of the University.

He was born in Brisbane on 18 April 1936. His father, William (Bill) Young, an industrial chemist, was the son of an engineer from Ulster who had helped set up the first electricity company in Queensland. John’s mother, Betty, was the youngest daughter of Thomas Arthur Atherton, a grazier whose family had pioneered Northern Queensland in the 1860s.

From 1949 to 1955, John Young attended his father’s old school, Brisbane Church of England Grammar, which fostered his interests in literature and the arts, while, much to his relief, exempting him from rugby. In 1953 he sat the senior public examination, coming eleventh in the state. Although his preferences were arts with a major in history, or law, he chose medicine as a safer career. Despite mediocre results in physiology, attributed by Young to poor teaching (a claim he supported with a repertoire of horror stories), he graduated from medicine at the University of Queensland with first-class honours and the University Medal in 1960.

In 1956 he took a year off to do an honours degree in pathology. That year introduced him to the fascination of science, the joy of making an hypothesis and working out how to test it. It also exposed him to Joe Canney, professor of pathology and an exile from the Kanematsu Institute in Sydney. The Kanematsu had hosted the Nobel prize winners Sir John Eccles and Sir Bernard Katz during the war, and Canney’s stories of the Institute and of life in Sydney convinced John Young that an academic life was worth living and that Sydney was the place to live it.

During his internship at the Royal Brisbane Hospital, John Young was offered a research position at the Kanematsu Institute, which he took up in January 1962, investigating amino acid transport in the kidney. He stayed at St Paul’s College within the University of Sydney. Here he met his life companion, Alexander Cambitoglou, who survives him, and also forged his first links with the University that would be the enduring focus of his activities.

The project at the Kanematsu was highly successful and, in 1964, he won a prestigious CJ Martin Fellowship from the National Health and Medical Research Council. This enabled him to work with a rising star of renal physiology, Karl Ulrich in Berlin. When Young arrived, Ulrich steered him towards salivary glands. Young was nonplussed by this unexpected change in direction, but Ulrich’s advice was well founded. Work on salivary glands and related organs was in its infancy, and Young, with the techniques that Ulrich put at his disposal, established himself as a world authority in the field.

In late 1966, Young returned to a senior lectureship in physiology at the University of Sydney. The choice between this position and one at Macquarie University had been made on his behalf by the heads of the two departments in a chance meeting in a supermarket aisle.

By the 1970s, his research and the monographs that he co-authored with Ernst van Lennep had made him the world expert in salivary physiology. His contribution to scientific knowledge was recognised by election to Fellowship of the Australian Academy of Sciences, where he rose to be Vice-President and Secretary (Biological), and by the award of the prestigious research professorship of the Alexander von Humboldt Stiftung.

The impact of Young’s approach to science on those around him was equally great. He demanded that every experiment be planned well, be performed properly and be reported with accuracy and elegance. All his students and colleagues remember the endless drafts and redrafts while Young satisfied himself that every finding was exactly reported and fairly interpreted.

John Young’s inspiration and guidance ensured that the long line of talented students who worked in his Laboratory reached senior positions in academic medicine and research. Particularly notable was his recognition of the need to foster the careers of women within academia and clinical medicine, and the effort he devoted to meeting this need.

John Young was never narrowly focused on science. In the period between his appointments as Professor of Physiology in 1976 and Dean of Medicine in 1989, he threw himself into academic administration with an energy that marked him out as a future leader. The positions he served in during this period, which ranged from the presidency of the staff union, to membership of the University Senate, gave him an unrivalled knowledge of the University and the people in it, a knowledge which he was later to exploit when reforming the faculties in his care.

Within University politics, he was a radical conservative, dedicated to achieving necessary change, while being careful to preserve the University’s core structures and beliefs.

As John Young would later say of his period as Dean: “I got done what I wanted to get done and I got things done in the way that they should be.”

As Dean, John Young oversaw wide-ranging reform of the Faculty of Medicine. He secured political and financial support to introduce a four-year graduate program that is still at the forefront of medical education. He broke up the centralised departmental structures and established the system of independent clinical schools.

He also established the clinical school at Canberra. His continuing support for physiology and the medical sciences was evident in his success in refurbishing the old medical school (the Anderson Stuart Building), a project which had been on the University’s capital works plan since 1948.

In 1994, Young was appointed Pro-Vice Chancellor (Health Sciences). He faced the difficult task of welding the health and science faculties into a single administrative unit. Given the faculties’ geographical dispersal, and the jealousies among them, the task was not easy. Young, however, took it on with his usual clear vision and determination. Even then he did not forget the medical sciences. He found time to oversee the acquisition and refurbishment of a new research building for the Faculty of Medicine.

John Young’s skills led to invitations to join many boards, including those of the Central Sydney Area Health Service, the Children’s Hospital at Westmead and the Menzies School
of Health Research in Darwin. To all of them he brought the same dedication and good judgement as he brought to his work for the University. As a scientist, however, he was particularly proud of fostering the growth of two medical research institutes, the Kolling Institute at Royal North Shore Hospital and the Anzac Institute at Concord Hospital.

One of the striking features of John Young's life was his willingness to contribute to activities outside his profession. His editorship, with Ann Sefton and Nina Webb, of the Centenary Book of the Faculty of Medicine was to promote his faculty, rather than for personal gain. He worked unstintingly for the Australian Physiological and Pharmacological Society, where he held every office, and was on the council of Musica Viva. His passion for classical art and archaeology led him to play key roles in such initiatives as the Nicholson Museum Concerts, and the creation and development of the Australian Institute of Archaeology in Athens under Professor Cambitoglou.

John Young had a deep love for history, music and the European tradition. His interests ranged from reformation theology, to Goethe through to the static principles underlying Gothic cathedrals and beyond. This made him an entertaining but formidable conversationalist.

He was also eager that students and colleagues should share in his interests. At scientific conferences, he would scoop up students, friends and colleagues and carry them off into a world where scientific presentations, good food, architecture, music and galleries formed a continuum.

As a result everyone who came into contact with John Young came away with a changed view of the world. They were encouraged to move outside the narrow confines of their profession and to enjoy the full range of delights that civilisation has to offer.

Professor David Cook and Emeritus Professor Ann Sefton