AuPS News

December, 2008

President's Report

First and foremost, my congratulations to Gordon Lynch and the Local Organising Committee for an outstanding annual AuPS meeting held at the University of Melbourne at the beginning of this month. The quality of the plenary lectures, 45 invited symposia presentations, 56 oral communication and 46 poster communications were excellent and it was pleasing that the meeting was attended by over 180 registrants. My congratulations to Dr. James Ryall, University of Melbourne, winner of the A.K. McIntyre Prize for 2007 and to all postdoctoral and student winners of publication, oral and poster prizes at the AuPS meeting. My thanks to SDR Clinical Technology, Blackwell Science and CEPP for their continued support of these awards.

At the recent AGM my term as President was extended for a further two years and I sincerely thank the Council and membership for their confidence and support. I strongly support the introduction of a President-elect system which will require a change to the Constitution. In 2009, the Council will seek nominations for Treasurer, Editor, Webmaster and 3 Councillors whose terms expire at the January 2010 AGM. I encourage AuPS Ordinary members to consider nominating for these positions and become involved in your professional Society.

I wish to encourage members to attend the 36th International Congress of Physiological Sciences (IUPS) which will take place in Kyoto, Japan 27 July - 1 August 2009. The scientific programme and early registration is available on their website http://www.iups2009.com/. The Society will make available up to 10 travel grants in the amount of $1,000 to student members presenting at IUPS Kyoto. Planning is well underway by the Local Organising Committee (AuPS representatives: Anuwat Dinudom, Jamie Vandenberg, Trevor Lewis) chaired by Roger Dampney, University of Sydney, for the 2010 Annual Meeting and 50th Anniversary of AuPS to be held jointly with the Australian Neuroscience Society (ANS) at the Sydney Convention Centre (31st January – 3rd February, 2010). I encourage the Special Interest Groups and members to submit suggestions for symposia to the Local Organising Committee as soon as possible.

In early 2009, we are likely to see the Government's responses to the Bradley Review of Higher Education and the Cutler Review of the National Innovation System followed by the budget in May. Given the acute changes in the global economy and Federal budget environment, the prospect of increases in the quantum of funding appear remote. Other items of potential interest to members include the recently released NHMRC Annual Report 2007-2008 and the Excellence in Research for Australia (ERA) Indicator Principles and ERA Indicator Descriptors, two key documents that will assist institutions as they prepare for a trial of ERA in 2009 (http://www.arc.gov.au/era/indicators.htm).

I would like to thank all members of the AuPS Council for their input, advice and good humour. I invite you to join me in continuing to work to increase AuPS membership and raise the profile of physiology in Australia. I was delighted that 59 new members (28 Ordinary and 31 Student members) were approved at the 2008 AGM in Melbourne and I hope that our membership may reach 500 by 2010, the 50th Anniversary of AuPS.

Finally, I wish all AuPS members a joyous Christmas and a successful 2009.

David Adams
President, AuPS

Australian Physiological Society (AuPS) Melbourne, 2009

Annual General Meeting

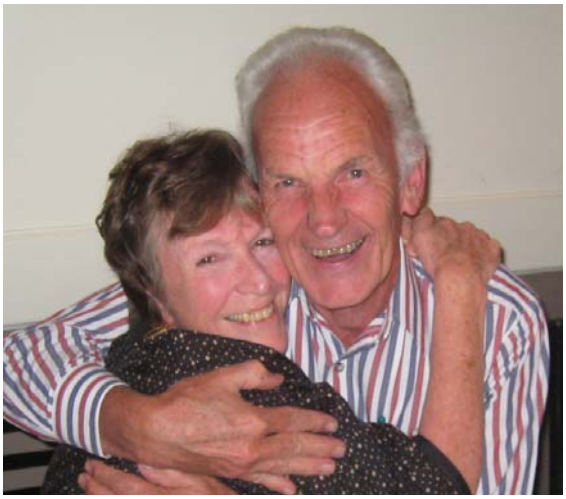
Election of Honorary Members

Members who have made significant contributions to Physiology and the Society may be nominated by members, for honorary membership, at any time by advising the secretary of the society. Nominees by Council are then elected by the membership at the Annual meeting. The following members were elected as **Honorary Members** to the Society in 2009.

Geoffrey Burnstock (London UK)
http://www.ucl.ac.uk/ani/prof-GB.htm

Elspeth McLachlan
http://www.science.org.au/scientists/notesem.htm
Uwe Proske (biography in AuPS News, March 2008)
Department of Physiology, Monash University

Colin Gibbs,
Department of Physiology, Monash University.



Elspeth and Uwe at the Council dinner, clearly pleased to be nominated as Honorary members.

Students are reminded they may apply for Travel Awards having attended the Melbourne Meeting. Funds available vary depending on were you travelled from, being Adelaide, Sydney, ACT $150. Brisbane, $200 and Perth, $400.

Student presenters at IUPS Kyoto, 2009
$1,000 travel awards available on application.

Please apply to the Secretary, Joe Lynch.

Prizes

The A.K. McIntyre Prize and medal for 2008, was awarded to Dr. James Ryall.

Congratulations James.

Best Postdoctoral Publication
Awarded to Dr. Jonathan Schertzer, for his article;

Modulation of Insulin-like Growth Factor (IGF)-I and IGF-Binding Protein Interactions Enhances Skeletal Muscle Regeneration and Ameliorates the Dystrophic Pathology in *mdx* Mice

Jonathan D. Schertzer, Stefan M. Gehrig, James G. Ryall, and Gordon S. Lynch

From the Basic and Clinical Myology Laboratory, Department of Physiology, The University of Melbourne, Melbourne, Victoria, Australia

The American Journal of Pathology, Vol. 171, No. 4, October 2007

Best Student Publication
Presented by The Society president David Adams to Sonja Kowalczuk

A novel digestive complex and its role in Hartnup disorder: trafficking of the neutral amino acid transporter B^0AT1 by angiotensin converting enzyme 2 (ACE2)

S. Kowalczuk,[1] A. Bröer,[1] N. Tietze,[1] J.M. Vanslambrouck,[2] J.E.J. Rasko[2,3] and S. Bröer,[1] [1]School of Biochemistry and Molecular Biology, Australian National University,

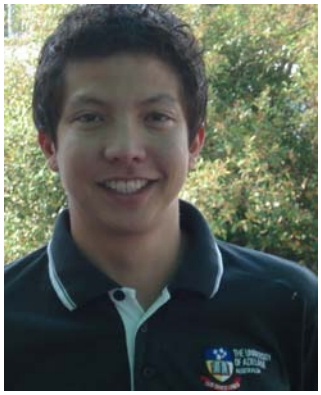
Sonja, also received the ASMR Young Tall Poppy Award for Oral Presentation.
Congratulations on your terrific achievements!

Student Oral Presentation Prizes.
The SDR Prize to Stefan Gehrig (below) and the CEPP Prize to LinLin Ma (right)

SDR CLINICAL TECHNOLOGY

SDR prize presented to Stefan Gehrig for his presentation of;
Local insulin-like growth factor binding proteins are essential for successful skeletal muscle regeneration — *S.M. Gehrig, J.D. Schertzer, J.E. Church and G.S. Lynch, Basic and Clinical Myology Laboratory, Department of Physiology, The University of Melbourne*

SDR CLINICAL TECHNOLOGY



The **SDR Student Poster Prize** was awarded to;
Nathan Scrimegeour
Store independent activation and properties of Orai3/STIM1 mediated current
N.R. Scrimgeour and G.Y. Rychkov, Department of Physiology, University of Adelaide

CEPP Clinical and Experimental Pharmacology and Physiology

FRET study of C-terminal movements of the cytoplasmic tail of human skeletal muscle chloride channel, hClC-1, during gating
L. Ma,[1,2] G.Y. Rychkov,[2] E.A. Bykova,[3] J. Zheng[3] and A.H. Bretag,[1] [1]Sansom Institute, University of South Australia, North Terrace, Adelaide, SA 5000, Australia, [2]Physiology Discipline, School of Molecular and Biomedical Science, University of Adelaide

The **CEPP / Wiley-Blackwell poster prize** was awarded to Helena Viola
Identifying the site of the source of reactive oxygen species within the mitochondria after transient exposure of cardiac myocytes to hydrogen peroxide
H.M. Viola,[1] E. Ingley,[2] P.G. Arthur[1] and L.C. Hool,[1] [1]School of Biomedical, Biomolecular and Chemical Sciences, University of Western Australia, and [2]Western Australian Institute for Medical Research,

WILEY-BLACKWELL

The conference Dinner.

Many thanks to Gordon Lynch for his excellent hospitality and to Fiona Colarosso for organizing the many events and having them run so smoothly.

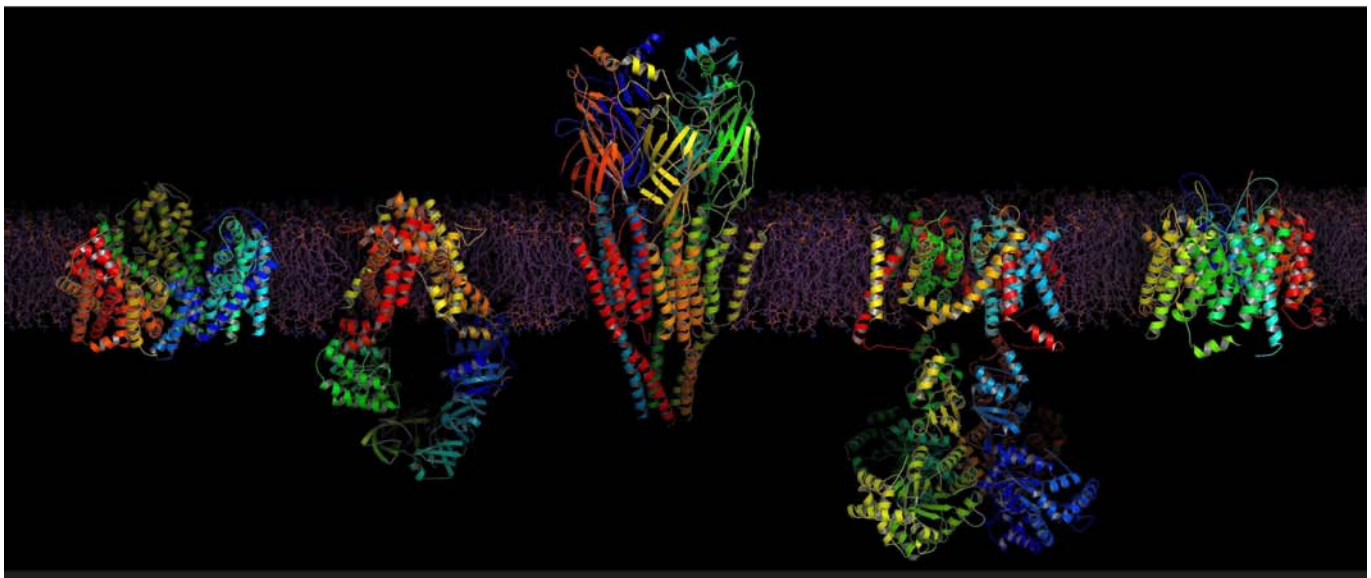
A selection of photos from the Conference Dinner, sorry I couldn't include them all. Identify the famous person competition coming soon!

Australians Abroad

The Scandanavian Physiological Society,
Annual Meeting, Oulu, Finland, August 15-17, 2008.
Prof. Greg Stuart, ANU, was the Invited Lecturer and from all reports presented an excellent lecture and was warmly welcomed as demonstrated by display of the Australian flag with those from the Scandanavian countries. Well done Greg .

AuPS Exchange Lectures

This year our United Kingdom exchange lecturer program has ceased by UK request. Colin Sibley's excellent presentation at the Melbourne meeting was the final exchange lecture in the UK – Australia exchange program.
The Scandanavian Physiological Society is keen to initiate an exchange program. The AuPS Council welcomes expressions of interest from AuPS members interested in establishing any future Exchange Programs.



The Curtin Conference on Ion Channels and Transporters

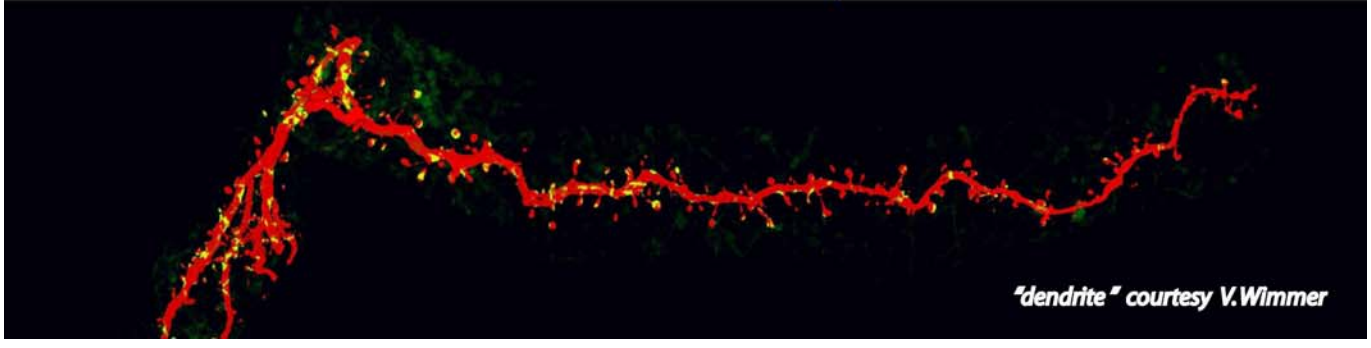
in honour of Peter Gage.

Canberra Boys Grammar School, ACT
15-17th April 2009

This meeting aims to re-establish the earlier series of Curtin Conferences organised by Peter Gage and encompass all aspects of the biology of ion channels and transporters - including molecular mechanisms, regulation, physiology, neurophysiology, pharmacology and pathology. We will invite registration and abstract submission in early 2009.

Organising Committee
Brett Cromer, Angela Dulhunty, Louise Tierney Jamie Vandenberg, Dan Markovich, David Adams

Further Information: http://channelsandtransporters.florey.edu.au.
email: brett.cromer@florey.edu.au



Abnormal Breathing Research in the Himalayas

Earlier this year, a group of scientists and clinicians led by Dr. Keith Burgess (Peninsula Private Sleep Laboratory, Manly Hospital, NSW) and Dr Phil Ainslie (Otago University), took part in a research project investigating abnormal periodic breathing. The experiments were conducted at sea level as well as in the Pyramid Research Laboratory on K2, Himalaya Mountains at 5050 m above sea level.

Abnormal periodic breathing occurs in heart failure patients and characteristically precedes death. It is also present during sleep at high altitude, making the location of the Pyramid Research Laboratory ideal as it nullifies the confounding influence of cardiovascular disease. The aim of the study was to examine the mechanisms by which abnormal breathing develops at high altitude using sleep monitoring and brain blood flow imaging techniques with pharmacological intervention.

Four Experiment Groups:
Four types of experiments were carried out in the Pyramid Research Lab over 14 days. Two rooms were set up as laboratories and experiments were conducted simultaneously in both locations. As the use of the Pyramid Research Lab is highly sought by researchers around the world, the time allocated to Dr. Keith Burgess and Dr Phil Ainslie's group was well utilized: research was carried almost 24/7 with both awake and asleep subjects.

1. Ventilatory Control and Abnormal Breathing During Sleep

In this experiment participants were administered drugs to increase or decrease the flow of blood in the brain. The study investigated the effects of increased and decreased blood flow on the control of breathing by getting the individuals to breathe various gas mixtures that included:

- High O_2 and high CO_2
- Low O_2 and high CO_2
- Low O_2

The study subjects were connected to a number of electrodes and sensors following the ventilatory tests before and after drug administration. The results of these experiments aim to shed light on the mechanisms by which abnormal breathing occurs during sleep.

2. Sympathetic Blockade
A large increase in the sympathetic nervous system activity and an increased heart rate at high altitude are common phenomena. In order to examine whether such sympathetic changes have any major effects on breathing and brain blood flow, 'blocking' of the elevations in sympathetic nerve activity was necessary.

Volunteers were administered alpha and beta-blockers to inhibit the sympathetic nervous system. Following the drug administration, tests that were conducted included:

- An ultrasound scan of the brachial artery to measure the ability of the artery to dilate following forearm occlusion
- Using a neck chamber to alter the pressure surrounding the neck and measure the body's control of blood pressure
- Force breathing against a closed tube and recording blood pressure responsiveness
- Breathing various mixtures of gases in a closed bag to investigate the control of breathing

3. Endothelial Function and Arterial Stiffness Experiments

Individuals living at high-altitude, and patients exposed to low levels of oxygen, have a shorter life expectancy than people living at low altitude. They also have stiffer arteries and a reduced endothelial function. The hypothesis that hypoxia at high altitude may reduce endothelial function an increase the stiffness of arteries.

The experiments carried out on locals and visitors examined arterial stiffness and their ability to dilate following a shear stress response, orally administered nitric oxide and breathing in 100% O2 at high altitude. Changes in blood vessel diameter and velocity, arterial stiffness of the carotid, brachial and femoral arteries were recorded using Doppler and pulse-wave velocity probes.

4. Neuromuscular Tests

These tests looked at the relationship between the brain and muscle groups such as the quadriceps and the diaphragm. A magnetic coil was placed over the part of the brain that controls muscle contraction.

The discharges stimulation caused involuntary muscle contraction of the muscles under investigation and resulting EMG signals were recorded. The stimulation was performed before and after strenuous exercises to try to evaluate communication changes during environmental stress such as hypoxia.

ADInstruments equipment was used for the physiological measurements. According to Phil Ainslie, the equipment proved to be reliable at high altitudes. “In our previous experience, and that of others, the actual measurements of end tidal gases and ventilation have been near on impossible to make above 4000 m. We spent almost over 2 weeks at 5050 m and basically turned the ADInstruments equipment on when we arrived and it ran almost continuously for the duration of the experiments, which were done during sleep in day and night time. We got all of our data," said Dr Phil Ainslie.

More photos at:
http://www.adinstruments.com/news/271008/Abnormal-Breathing-Research-in-the-Himalayas/corporate/?fromflash=y

ADINSTRUMENTS
making science easier

ADInstruments
Unit 13, 22 Lexington Drive
Bella Vista, NSW 2153
Phone: +61 2 8818 3400, Fax: +61 2 8818 3499
Email: s.hay@adinstruments.com
or t.turner@adinstruments.com
Web: www.adInstruments.com
Mr. Scott Hay and Ms. Tanya Turner

AuPS - Special Interest Group Coordinators

Muscle
- Graham Lamb
- Gordon Lynch

Smooth Muscle and Autonomic NS
- Caryl Hill
- Dirk Van Helden
- James Brock

Physiology Education
- Phil Poronnik
- Jeff Schwartz
- Anne Sefton

Endocrinology, Reproduction and Fetal Development
- Chen Chen
- Karen Gibson

Cardiovascular
- Livia Hool
- David Allen
- Lea Delbridge

Neurophysiology
- Pankaj Sah

Exercise
- Mark Hargreaves
- Mike McKenna

Metabolism and Signalling
- Mark Febbraio

Cell signalling
- David Cook
- Grigori Rychkov

Channels and Transporters
- Stefan Broer
- Jamie Vandenberg

New Special Interest Groups

Nominations for Special Interest Group topics and coordinators are welcome at any time. With the upcoming 50th Anniversary meeting, 31st January – 3rd February, 2010, consider forming a SIG around your topic of interest and plan a symposium.

CARDIOVASCULAR RESEARCH SCHOLARSHIP

The **Wansay Asars Cardiovascular Research Scholarship** is seeking expressions of interest for Research Higher Degree candidature commencing in 2009.

The Scholarship is a bequest to the **Faculty of Health at the University of Newcastle**. A living allowance of $26,669 per annum for a Research Masters or PhD study is available. In addition thesis, relocation, and travel/conference allowances are also offered.

Applicants must have completed at least four years of higher education and their research proposal must align with the following themes.

- Cardiovascular and Lung Control Systems
- Cardiac pacemaking and arrhythmias
- Nutraceuticals for Cardivascular Health:
- Targeted diet and physical activity interventions to improve cardiovascular health

For further information please contact Ms Shirley Savy,
Research and Research Training Officer on +61 02 4921 5603 or Shirley.Savy@newcastle.edu.au.
Applicants should discuss their application with the proposed supervisor and forward their CV and a one page research proposal, prepared in consultation with the intended project supervisor by 30th January 2009 to

Research and Research Training Officer
Faculty of Health
University of Newcastle
University Drive
CALLAGHAN NSW 2308 Or Shirley.Savy@newcastle.edu.au

Primary selection will be on the basis of academic merit and research potential in the area of cardiovascular disease as judged from:

- The Curriculum Vitae of the applicant
- A one-page proposal, prepared by the applicant, in consultation with the intended research project, including:
  - A brief background to set the project in context and identify its importance
  - The novelty of the approach, including specific hypothesis to be tested (if any)
  - The research training opportunities provided by the project and the research group.

Meetings in 2009

Invitation for Travel Grant Application for IUPS 2009 in Kyoto
Application for Young Investigators' Travel Grants are now open.
For more information please visit: http://www.iups2009.com
Send the application to: Travel Grant Committee
Secretariat of IUPS 2009
c/o Japan Convention Services, Inc.
18th floor Daido Seimei Kasumigaseki Bldg.
1-4-2, Kasumigaseki, Chiyoda-ku
Tokyo 100-0013, Japan
Email: iups2009@iups2009.com

AuPS travel awards available for students presenting at this meeting -$1,000

14th Australian and New Zealand Microcirculation Society Meeting

Queenstown, NZ, August 25-27, 2009

http://www.anzms.org/site/anzms_upcoming_conferences.html

American Thoracic Society International Conference

May 15-20, 2009. San Diego, California.

A comprehensive review of the latest information on the diagnosis and treatment of respiratory, critical care and sleep disorders. In addition, more than 5,500 original research abstracts will be presented, giving attendees new perspectives on the clinical, basic science and translational discoveries that will shape the future of adult and pediatric respiratory care. Among the many topics to be covered are asthma, COPD, lung cancer, obstructive sleep apnea, pulmonary hypertension, cystic fibrosis, ARDS, and sarcoidosis. The Advance Program with registration form will be available in January 2009 at http://www.thoracic.org/ . For more information, please contact the ATS International Conference ats2009@thoracic.org.

AuPS Sustaining members

Thank you to all the sustaining members for your terrific support in 2008.

This issue of AuPS News has been compiled by Simon Potocnik with many thanks to the generous contributors. The next issue of AuPS News will be distributed to members in March 2009. Any contributions for AuPS News should be sent to: newsletter@aups.org.au.