



AuPS News

June, 2006

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Newsletter

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President's Message

An extraordinary meeting of the AuPS Council was held in Brisbane on the 7th April 2006, primarily to discuss the planning of the upcoming ComBio 2006 meeting with the Local Organising Committee, as well as future strategies to raise the profile and membership of the Society. The role and constitution of the Special Interest Groups (SIGs) was discussed at the Council meeting. It is hoped that the SIGs will take a proactive role in organising symposia and nominating Plenary speakers for future AuPS meetings. Our initiative to formalise an Exchange Lecture Program with the American Physiological Society (APS) has been positively received by the APS Council. The involvement of APS Councillor, Dee Silverthorn, in the Education Workshop at the ComBio 2006 meeting will greatly assist in the success of this initiative. I believe that it is time for the Society to develop a 5-year Strategic Plan which can be communicated to our members. The Executive will prepare a draft Strategic Plan which can be discussed at the next AGM.

I wish to thank the Local Organising Committee and in particular AProf. Phil Poron-

nik, UQ in the organisation of the upcoming AuPS / ComBio meeting to be held at the Brisbane Convention Centre, 24-28 September 2006. The programme promises to be outstanding with numerous international physiologists either giving Plenary Lectures or participating in Symposia.



I am delighted that Professor Caroline McMillen, Pro Vice-Chancellor and Vice President: Research and Innovation, University of South Australia, will continue the tradition of prominent Australia physiologists giving the AuPS Invited Annual Lecture. The Physiological Society (UK) Exchange Lecturer is Professor Mark Dunne, University of Manchester, who will also be available to visit Physiology departments around the country willing to host his visit. The young physiologists (student members) will be hosting an event on the Tuesday evening at which Professor David Clapham, Harvard Medical School, is the invited speaker. Finally, ComBio2006 provides an excellent opportunity for Australian physiology researchers, educators and students to submit abstracts and attend the upcoming meeting. I look forward to seeing you in Brisbane.

David Adams
President




**2006 AuPS Scientific Meeting
at ComBio 2006
Brisbane Convention Centre
24 to 28 September 2006**

The AuPS Scientific Meeting will be held in conjunction with ComBio2006 in Brisbane this September. ComBio2006 brings together the Australian Society for Biochemistry & Molecular Biology, the Australian Society of Plant Scientists, the Australian Physiological Society, the Australia and New Zealand Society for Cell and Developmental Biology, the New Zealand Society for Biochemistry and Molecular Biology and the New Zealand Society of Plant Physiologists in one fully integrated meeting.

The Brisbane Convention Centre is located in the heart of Brisbane's unique Southbank Precinct – a creative, cultural, entertainment and lifestyle precinct alongside the Brisbane River. Southbank is home to the Queensland Art Gallery, the Queensland Performing Arts Complex and the Queensland Museum, as well as a variety of cafes, bars and restaurants. Downtown Brisbane is also within easy reach across the Goodwill Bridge.

The online registration submission form and the online abstract submission form are now available. Please note that your abstract can only be accepted if submitted online via the ComBio web site and if your registration and payment have been received. Early bird registration and the abstract deadline is:

Friday, 23 June 2006.

Before submitting your abstract, please ensure that it complies with the domestic rules of the AuPS. In particular, any abstract that deals

Registration:

www.asbmb.org.au/combio2006/registration.html

Abstract submission:

www.asbmb.org.au/combio2006/abstracts.html

ComBio2006 program page:

www.asbmb.org.au/combio2006/program.html

with animal experimentation *in vivo* should include the names, doses (where applicable) and modes of administration of all anaesthetic, tranquillizing and muscle relaxant drugs employed.

The meeting comprises a four day scientific and trade exhibition programme with over 60 symposia, including two on education. AuPS has a total of sixteen 90 minute slots and we will have nine symposia, which are:

- Regulation of membrane transport.
- Molecular determinants of Ca²⁺ signalling.
- Neurophysiology (two sessions).
- Homeostatic control of calcium and the diseased heart.
- Myopathies and muscle regeneration.
- Extrinsic and intrinsic control of smooth muscle in health and disease.
- Endocrinology: signalling and cross-talk.

- The environment and genome in development: signalling from the beginning.

In addition to these symposia, we will have seven free communication sessions. Plenary lectures will be presented by Prof. David Clapham (*Harvard University*), Prof. Mark Donowitz (*Johns Hopkins University*), Prof. Gerry Oxford (*University of Indiana*) and Prof. John Faulkner (*University of Michigan*)

Full information on the program, including profiles of plenary speakers is now available online via the ComBio2006 web page.

For further information, contact the Local Secretary, **Phil Poronnik** (phone 07-3365-2299 email: p.poronnik@uq.edu.au) or the ComBio secretariat **Sally Jay Confernces** (phone: 08-8362-0009 email: combio@asbmb.org.au).

KEY DATES

23 June
Abstract submission deadline

23 June
End of early bird registration deadline

28 July
Notification of acceptance of abstracts

21 August
Guaranteed hotel reservation deadline

24 - 28 September
ComBio2006

24 September
Education workshop

Education Workshop Sunday 24 September 2006

The ComBio2006 will begin on Sunday September 24 with a free education workshop entitled '**Biological and Biomedical Science Education: Current and Future.**' It will be held from 11.00 am to 4.00 pm at the Brisbane Convention Centre. The workshop will explore strategies for improving the quality of teaching, learning and assessment with emphasis on the role of scholarly research.

A special guest at the workshop will be Dr Dee Silverthorn (University of Texas), present editor-in-chief of *Advances in Physiology Education* and past chair of the Teaching Section of the American Physiological Society. Dr Silverthorn has organized education workshops and symposia for the International Union of Physiological Sciences, International Society for Pathophysiology, the African Association of Physiological Sciences, and the Federation of European Physiological Societies. She is the author of the textbook *Human Physiology: An Integrated Approach*, and has won numerous teaching awards.

Places are limited so those wishing to participate should register for ComBio2006 as soon as possible and register their interest in attending the workshop by ticking the appropriate box on the registration form. Note there is no additional fee for the Workshop.

Phil Poronnik

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AuPS Announcements



Council vacancies

There will be three positions on the AuPS Council that will become vacant at the AGM this year. This is a great opportunity for physiologists to have input into the running of the Society. The AuPS depends upon the contributions of members for the proper functioning and scholarly activities of the Society. Nominations for Council require the support of any three Members and the willingness of the nominated person to stand for election to the Council. The National Secretary will email forms to members in due course, with nominations due by Monday 31 July.

A.K. McIntyre Award

Nominations are called for the A.K McIntyre Prize. This Prize is awarded in recognition of significant contributions to Australian physiological science made by members of the Society over their pre-doctoral and early post-doctoral years. The Prize includes the A.K. McIntyre medal and \$1000. Nominees for the Prize must be proposed by two financial members of the Society who should provide a statement of not more than 500 words summarising the nominee's achievements. The nominee should also provide a *curriculum vitae* and a list of published works, including conference proceedings. Nominations are due by Monday 31 July. More information can be found on the Society web site.

Student and Post-Doc Publication Awards

The AuPS awards an annual prize for the best post-doctoral publication and the best PhD student publication. Nominees for these awards must be financial members of the Society and should normally be first author. An award of \$500 is offered by the AuPS for each of these prizes, as a contribution towards travel to a scientific meeting. More information can be found on the AuPS web site. Applications should reach the National Secretary by Monday 31 July.

David Saint

National Secretary
secretary@auaps.org.au

Further information: <http://www.auaps.org.au/Prizes/>



Postcard from Sweden

It is difficult to believe that almost seven years have past since I left Australia. It was in 1991 in Canberra that I together with Prof. Peter Gage started working with the GABA_A receptors - the channels that 'grow' in conductance. I have continued the work at Lund University in Sweden. The channels are located extrasynaptically so we've nicknamed them GABARex. After 15 years, we finally understand how GABA controls the conductance and the GABARex activity (Lindquist and Birnir 2006). The channels are activated by about one million-times lower GABA concentration than the synaptic counterparts and they generate a tonic current in neurons, which has recently been shown to modify neuronal and network activity. What started out as a curiosity-driven basic research has opened up a new window in medical research. GABA can no longer be viewed as a molecule of the synapse but is a part of the homeostatic mechanism in the brain.

We are now using this information: In type-2 diabetes we study the interplay between the metabolic hormones and the tonic inhibition in the hypothalamus and in type-1 diabetes we are looking at the interplay between pancreatic GABA-producing- β -cells / neurons / T-cells, similar to a recent study done in collaboration with the immunologist Shohreh Issazadeh-Navikas (Liu *et al.* 2006). But, a question remains; How does the variable GABARex channel conductance come about? Here we believe biophysical methods can differentiate between the coupled co-channels or the induced-fit models that have been proposed.

In addition, I chair MTP-net, a subgroup on membrane transport within the Scandinavian

Physiological Society. My stay in Sweden has been rewarding but eight years in Australia makes Oz home too!

Bryndis Birnir

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The postcard shows Bryndis with a painting by an aboriginal painter Emily Kngwarreye and she is pointing to what may well be five units that surround a central hole - the perfect GABA channel!

References:

1. Lindquist CE and Birnir B (2006). Graded response to GABA by native extrasynaptic GABA receptors. *Journal of Neurochemistry* 97(5):1349-56.
2. Liu Y, Teige I, Birnir B, Issazadeh-Navikas S. (2006). Neuron-mediated generation of regulatory T cells from encephalitogenic T cells suppresses EAE. *Nature Medicine* 12(5):518-25.
3. MTP-net: www.membranetransportsandinavia.net

How Can Educational Research be Useful in the Teaching of Physiology?

Historically, research into education and the pragmatic teaching of science have not mixed well. While acknowledging that 'the plural of anecdote is not data', many Physiology researcher-teachers and Physiology-educationists still view each other with mutual scepticism. However, a nexus between educational research and teaching is essential, given the significant threats to our discipline resulting from the dilution of physiology into renewed undergraduate programs and the gearing of performance funding to student attrition.

So, how can educational research be useful for Physiology? Firstly, educational research encompasses 'scientific' approaches which build upon the existing professional skills of Physiologists. These include projects based on NRC guidelines¹: empirical research designs, explanatory theories and models, quantitative methodologies, coherent chain of reasoning, generality of findings and disclosure of research. Support for this evidence-based educational research has also come from leading educationists². Secondly, it provides a systematic framework to understand the myriad inputs, processes and products which influence learning, teaching and assessment. These include ideas about what Physiology students need to learn, the skills they should have and how these might be fostered. Thirdly,

Endorsed by the High Blood Pressure Research Council of Australia (HBPRCA) and the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT)

Clinical and Experimental Pharmacology and Physiology

CEPP



Edited by:
Warwick P. Anderson
Print ISSN:
0305-1870
Online ISSN:
1440-1681
Frequency:
Monthly

Current Volume: 33
Impact Factor: 1.672

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it can provide a sustainable culture of enquiry to challenge entrenched ideas and focus on innovations in Physiology.

At UQ, this philosophy has underpinned the approach of our Educational Research Unit to Physiology. Our first case study focusing on improving assessment (one of the six APS tenets of effective teaching³) illustrates how educational research is useful in the teaching of Physiology⁴.

Roger Moni

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References:

1. National Research Council (2002). Scientific Research in Education. Committee on Scientific Principles for Education Research. Shavelson, R.J., and Towne, L., Editors. Washington, DC: National Academy Press.
2. Slavin, R. E. (2003). A reader's guide to scientifically based-research. *Educational Leadership* 60(5): 12-16.
3. American Physiological Society Education Online. <http://www.the-aps.org/education>.
4. Moni, R.W., Beswick, E. Moni, K.B. (2005). Using student feedback to construct an assessment rubric for a concept map in physiology. *Advances in Physiology Education*, 29: 197-203.

Prof David Allen elected to the Australian Academy of Science

The achievements of Professor David Allen (University of Sydney) were celebrated recently with his election to the Australian Academy of Science. Prof Allen was admitted to the Fellowship of the Academy in a ceremony at the Shine Dome in May.



Prof Allen was born in Canberra but brought up and educated in the London where he studied Medicine and Physiology at University College London. As a post-doctoral fellow at the Mayo Clinic, Minnesota, he made the first measurements of intracellular calcium in the heart and showed that calcium regulated the force of contraction of the heart. Returning to University College he published a series of studies defining the role of intracellular calcium in the response of the heart to muscle length, pH, ischaemia and many drugs. He was appointed to the Chair of

Physiology at the University of Sydney in 1989 and in recent years has studied the effects of fatigue and muscle damage in skeletal muscle.

Prof Allen's early work culminated in the demonstration that intracellular calcium was the central regulator of activation in the heart. From these fundamental findings, he elucidated the role of calcium in the cardiac length-tension relation, unravelled the role of calcium in cardiac ischaemia and identified a new pacemaker current which regulates the heart rate. These studies have become part of the mainstream of cardiac physiology and have been extensively utilized by the pharmaceutical industry in the design of drugs to increase cardiac output and to ameliorate the effects of ischaemia.

In parallel studies of skeletal muscle, Prof Allen established that muscle fatigue is primarily caused by failure of intracellular calcium release and this work has contributed to the demise of the lactic acid theory of fatigue. Most recently Allen has discovered that the muscle damage is a consequence of calcium entry through a stretch-activated channel. In a major development with possible therapeutic implications, he has shown that this channel is also important in muscular dystrophy and drugs which block this channel are able to reduce muscle damage.

The Society congratulates Prof Allen on his election to the Academy.

Trevor Lewis

I would like to acknowledge the assistance of the Australian Academy of Science, Prof George Stephenson and Prof David Allen in the preparation of this article.

Further information is available on the AAS web site where there is a complete list of newly elected Fellows:

<http://www.science.org.au/academy/fellows/2006.htm>

Australian Academy of Science Fellows

Prof Allen joins a prestigious list of physiologists that are Fellows of the Academy. The AuPS is honoured to have seventeen current members that are Fellows of the Academy. These are:

- Prof David Allen (University of Sydney)
- Prof Peter Bishop (University of Sydney)
- Prof Geoffrey Burnstock (University College Medical School, London)
- Prof John Chalmers (The George Institute for International Health)
- Prof David Cook (University of Sydney)
- Prof Marcello Costa (Flinders University)
- EProf David Curtis (Australian National University)
- Prof Simon Gandevia (Prince of Wales Medical Research Institute)
- EProf Mollie Holman (Monash University)
- EProf Paul Korner (University of Melbourne)
- Prof Bill Levick (Australian National University)
- EProf Eugenie Lumbers (University of New South Wales)
- Prof Fred Mendelsohn (University of Melbourne)
- Prof Elspeth McLachlan (Prince of Wales Medical Research Institute)
- EProf Robert Porter (Australian National University and Monash University)
- Prof George Stephenson (La Trobe University)
- HonProf Marelyn Wintour-Coghlan (Monash University)

Trevor Lewis

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Distribution of the AuPS Newsletter

To date, the AuPS Newsletter has been distributed to members as an attachment to an email message. This provides the convenience of the Newsletter directly on your desktop. However, for some members that are accessing their email over a dial-up connection, the attachment of a PDF may be more of a nuisance, taking some time to download. It may also be a problem for members that have a limit on the size of their email inbox, particularly when you are away from the office, attending a conference (for example).

Therefore, I would like to hear from you. Would you prefer to receive the newsletter as an attachment to an email or just an email with a 'table of contents' and a link to the Newsletter on the AuPS web site? Please let me know.

Trevor Lewis
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IMPORTANT DATES

15-18 October 2006

The 6th Congress of the Federation of Asian and Oceanian Physiological Societies, Seoul, Korea. <http://www.faops2006.org/>

28 November 2006

Symposium: *Exercise, skeletal muscle and health*, sponsored by AuPS, as part of the Australian Health and Medical Research Congress (26 Nov - 1 Dec 2006) <http://www.ahmrcongress.org.au/>

This issue of AuPS News has been compiled by Trevor Lewis. The next issue of AuPS News will be distributed to members in September 2006. Any contributions for AuPS News or any comments / feedback on the newsletter should be sent to Trevor Lewis at: t.lewis@unsw.edu.au

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