

AuPS News – September 2020

Member Profile:

Dr Danielle Hiam, Victoria University

Can you tell us about your current role and your experiences so far in physiology?

I began my journey in research after a Biomedical Science degree, when I undertook an Honours degree at Deakin University with A/Prof Glenn Wadley in 2010. There I discovered my passion for epigenetics research and how to do a really good Western Blot (Thanks Glenn). I took a two year break overseas before returning and working as an RA for the late Professor Nigel Stepto who subsequently took me on as a PhD student at Victoria University. I would like to sincerely thank Nigel for giving me the opportunity to do my PhD after being out of science for 2 years and for the incredible opportunities I was given during my PhD, including a 2 month secondment at The Novo Nordisk Foundation Center for Basic Metabolic Research in Copenhagen with Professor Romain Barres. My PhD thesis explored the role of epigenetics in the molecular basis of the aetiology of Polycystic Ovary Syndrome. In particular, I identified specific epigenetic marks (DNA methylation) that influence molecular signals that drive impairments in reproductive and immune function in PCOS.

What research are you currently working on?

Since completing my PhD in 2018, I have been a post-doctoral research fellow in A/Prof Nir Eynon's (Production Editor for AuPS) research team at Victoria University. I am part of the team that established the unique Gene SMART (Genes and the Skeletal Muscle Adaptive Response to Training) study. Using this cohort as a basis, I am examining



sex-specific differences in the expression of microRNAs, another form of epigenetic marks, in human skeletal muscle. This unique study addresses the critical under-representation of females in clinical and medical research. I have benefited greatly working with A/Prof Nir Eynon, who has been an excellent mentor and provided me with ample opportunities to upskill and from whom I have learnt a great deal. This project is in collaboration with another AuPS member and the treasurer of AuPS Dr Severine Lamon, from Deakin University. Being a member of AuPS has no doubt been key in providing me with these opportunities to network and collaborate.

Can you tell us about your role on AuPS council?

I joined AuPS in 2010 as a student member where I presented for the first time during my honours, I distinctly remember how nervous I was! Since 2016 I have attended the AuPS conference yearly and it has become my favourite conference to attend. I find AuPS to be a welcoming and supportive society and I learn a great deal from the annual conferences. Importantly, AuPS has provided an excellent platform for me to network and make some excellent friends and start collaborations with other members including in my current research. In 2019 I was offered the position on the council as the IT manager, taking over from A/Prof Dave Davey, leaving big shoes to fill. I have been responsible for implementing the new registration and membership portal and have played a role behind the scenes in co-ordinating this years' [student and ECR on-line forum](#).

This year has been like no other, how have you adapted to working under the restrictions associated with the COVID-19 pandemic?

This year has been quite the year. I was not expecting in March to still be in lockdown in September and no doubt in years to come, we will look back and realise

how extraordinary this year has been. It has been incredibly challenging both on professional and personal levels. While everyone's experience with the COVID pandemic has been unique with different hardships, I have to consider myself lucky that my partner and I moved from a small 1 bedroom apartment into our new house 2 months before the lockdown! Since lock-down in March, I have become somewhat of a 'gym junkie' where I do F45, 6 days a week via zoom in our garage, which my partner reluctantly shares with me as I take up his go-kart and workbench tinkering space.

On a professional note, without the commute I have found that I have more time to develop my skills in research, in particular, data science. I have taken the opportunity to undertake R programming courses and attend many seminars in order to continue my learning in bioinformatics and programming. I cannot wait to get back into the laboratory again and resume trials but until then I will continue to find unique ways to keep my track record going and find silver linings such as being able to wear active wear all day, every day. Bring on 2021 and the 60th AuPS meeting on the Gold Coast!

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Help us to communicate the achievements of our members to the wider world with our AuPS Twitter account.

So what are you waiting for? Follow us and use our twitter handle to communicate the achievements of our members [@AuPhysiolSoc](#)



The AK McIntyre Award

Sponsored by SDR Scientific



The Society's prestigious A.K. McIntyre award is awarded annually to a member of the Society who is judged to have made significant contributions to Australian physiological science over their pre-doctoral and early post-doctoral years.

Application and Eligibility

To be considered for this award, nominees must:

- be financial Ordinary Members of the Society (note: provisional members are not eligible to apply).
- normally have completed their doctoral degree not more than 7 years prior to the time of their application.
- be proposed by two financial members of the Society, who should each provide a statement of not more than 500 words summarising their nominees achievements.
- provide a curriculum vitae which includes any involvement with AuPS, along with a list of published works, including conference proceedings.

In considering nominations, the judges will take into account the nominee's contributions to scientific meetings of the Society. No individual may be awarded the prize more than once.

The Prize, sponsored by SDR Scientific consists of a medal and the sum of \$1000. The winner will be invited to present their work at the Physiological Society of New Zealand meeting in Queenstown in the following year, travel costs will be supported.

The prize winner will be announced at the conclusion of the ECR forum (November 26th) and in the December Newsletter.

Closing Date: **Applications close 5 pm, 9th October 2020.**

Please email applications to the National Secretary, Glenn Wadley: glenn.wadley@deakin.edu.au

Eligibility and selection criteria can be found here: <http://aups.org.au/Prizes/McIntyre.html>

Details of other AuPS prizes can be found later in this newsletter and on our website.



Former AK McIntyre winners at the AuPS conference dinner in 2017. Pictures from left to right; Gordon Lynch (1995), Brad Launikonis (2005), Paul Gregorevic (2006), James Ryall (2008), Robyn Murphy (2010), Kate Murphy (2011), James Bell (2012), Natalie Trevaskis (2015), Kim Mellor (2016) and James Cuffe (2017).

A full list of previous winners can be found on the [AuPS website](http://aups.org.au).

Vale Geoffrey Burnstock – 1929-2020

It was with great sadness the scientific community received the news of Professor Geoffrey Burnstock's passing on 2nd June 2020, at the age of 91.

Geoff was best known internationally as the founder of purinergic research with his most famous article, "Purinergic Nerves", published in the journal *Pharmacological Reviews* in 1972. In this review, Geoff coined the word 'purinergic' and came up with the purinergic hypothesis; nucleotides at P2 purinergic receptors are found in nearly every tissue and organ and are today recognised as one of the most important transmitter systems. He was also known as the 'smooth muscle man' due to his early research career focusing on the biology of smooth muscle. Over his long and very eminent career, Geoff published more than 1500 original papers, reviews and books with his papers cited over 118,800 times (h-index of 156). The impact and contribution of his research to the scientific community was recognised by the Institute of Scientific Information list, where he placed first of most cited scientists in Pharmacology and Toxicology (1994-2008).

Geoff's early studies, however, was in mathematics and physics having completed a BSc degree at King's College, University of London in 1953. He then moved into the field of zoology studying fish gut motility using organ bath pharmacology and histology, completing his PhD in 1957. An invitation from Wilhelm Feldberg (National Institute for Medical Research, London) allowed Geoff to learn more sophisticated electrophysiology techniques. It was during this time that Geoff, together with Ralph Straub, developed a novel technique for recording membrane activities from smooth muscle using the "sucrose gap technique", first introduced by Robert Stämpfli in 1954 to study action potentials in nerve fibres. Geoff's work led to an invitation to join Edith Bülbring's group in the Department of Pharmacology, Oxford University, where Geoff studied the effect of the neurotransmitters

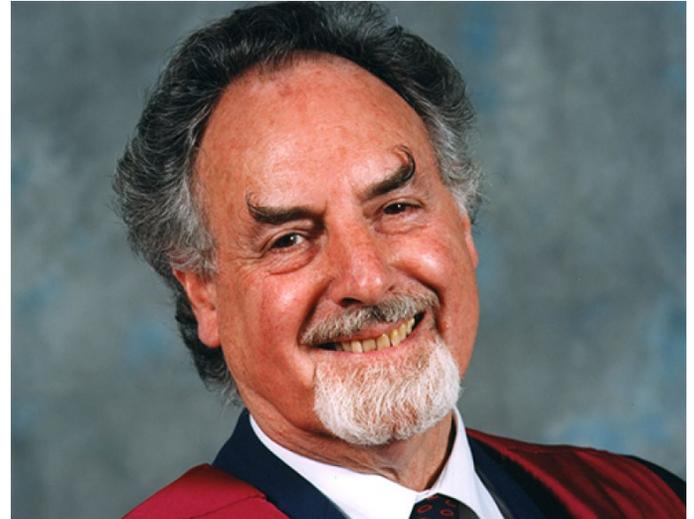


Image: <https://www.ucl.ac.uk/news/2017/may/spotlight-professor-geoff-burnstock>

acetylcholine and noradrenaline on the guinea pig taenia coli smooth muscle preparation. After spending a year at the University of Illinois working with Clifford Ladd Prosser (thanks to a Rockefeller Travelling Fellowship), Geoff and his wife Nomi moved to Melbourne in 1959 where he accepted a Senior Lectureship in the Department of Zoology at the University of Melbourne. This was Geoff's first important academic engagement.

Geoff presented at the inaugural AuPS meeting in 1960 alongside Mollie Holman, whom he had met in Oxford. Their joint interest of how nerves and smooth muscles communicate to initiate contraction had led to the initiation of what was to become a very successful collaboration. This collaboration was made easier with Geoff's move to Melbourne in 1959 and Holman's return to Australia from Oxford in 1958 and a joint NIH grant. Their presentation at the AuPS meeting on smooth muscle action potentials was pioneering with a series of papers published, the first one being a one-page note titled "Autonomic Nerve-Smooth Muscle Transmission" to *Nature* in 1960. Geoff became an AuPS member in 1961 and was the Invited Lecturer in 1972. In November 2009, Geoff chaired the historical seminar to mark the 50th

anniversary of AuPS at the University of Sydney. The year before that he was made an Honorary member by the Society.

In 1964, Geoff was appointed Professor and Chair of Zoology at The University of Melbourne where he stayed until 1975. It was during this time he established the basic mechanisms of purinergic signalling which led to his aforementioned publication “Purinergic Nerves” in 1972. It all started with a critical experiment showing that despite blocking the only known autonomic nervous system transmitter molecules, the muscle still relaxed. Many more experiments later, Geoff concluded that the transmitter in this case was the purine nucleotide, ATP. He was heavily criticised for his provoking idea that ATP functions as an extracellular signalling molecule and neurotransmitter. Many of the scientific community were sceptical and he was ridiculed at numerous international meetings. Nonetheless, this did not deter Geoff who kept pursuing his ideas and collecting evidence. The purinergic hypothesis finally gained momentum in the early 1990s when Geoff and Eric Barnard, a former fellow PhD student and old friend, cloned the first G protein-coupled receptor for ATP (P2Y₁). Shortly after, the first two ATP-gated ionotropic receptors (P2X₁ and P2X₂) were cloned. It was not long before seven P2X and eight P2Y receptor subtypes were cloned and characterised, cementing Geoff’s prediction.

After 11 years at The University of Melbourne, Geoff, Nomi and their three daughters, made the move back to the UK, where Geoff took up a position as the Head of Department of Anatomy and Developmental Biology, University College London, in 1975. At the same time, he was appointed Convenor of the Centre of Neuroscience. This was followed by the appointment as the Director of the Autonomic Neuroscience Centre at the Royal Free Hospital School of Medicine in 1997; an appointment he held until his retirement in October 2017 at the age of 88. A month after retiring, Geoff and Nomi moved back to Melbourne where he, at the time of his death, was a Professorial Fellow at the Department of Pharmacology and Therapeutics, The University of

Melbourne, and an Honorary Professorial Fellow at the Florey Institute of Neuroscience and Mental Health.

Geoff served on many journal editorial boards, was Editor-in-Chief of the journal *Autonomic Neuroscience* (1985-2016) and the journal *Purinergic Signalling* (2004-2020), which he founded in 2004 and led until his passing. His continued passion for, and influence of, purinergic research has led to the establishment of eight Purine Clubs world-wide, with the Australian-New Zealand Purine Club established in mid-2018, with Geoff as the President.



Geoffrey Burnstock with long term collaborator Mollie Holman - 1960

Geoff held several visiting and contract professor positions throughout his distinguished career: Contract Professor at the University of Siena (1985-87) and University of Milan (1993-94); Visiting Professor at the Department of Pharmacology, UCLA (1970); the Institute of Experimental Medicine, Hungarian Academy of Science (1983); the Royal Society of Medicine Foundation, USA (1988). He was also the Vice-Dean of the Faculty of Medical Sciences, University College London (1980-83).

Throughout his career, Geoff received numerous honours, keynote lectures, awards and medals. The impressive list would be too long to publish here, but

most notable are: Royal Society of Victoria Silver Medal (1970); Fellow of the Australian Academy of Science (FAA) (1971); Fellow of the Royal Society (FRS) (1986); Royal Society Queen's Gold Medal (2000); British Neuroscience Association Annual Award for "Outstanding Contribution to British Neuroscience" (2009); Copernicus Gold Medal, Ferrara (2009); British Pharmacological Society's Gaddum Medal (2010); Erasmus Medal (Academia Europaea 2012); Paton Prize Lecture of IUPS (2013); The Australian Academy of Sciences' McFarlane Burnet Medal and Lecture (2018) and the Companion of the Order of Australia (AC) the same year. He received three honorary doctorates, Doctor Honoris Causa, University of Antwerp (2002); Doctor Honoris Causa Goethe-University (Frankfurt am Main) (2007); and Doctor Honoris Causa University of Leipzig (2011). He was also consultant and adviser to many pharmaceutical companies. Many of Geoff's original pharmacological concepts have proven medical importance, e.g. modulators of purinergic signalling are now designed using sophisticated

structure-based approaches. Another example of his significant contribution to the field is his involvement in the discovery and development of the P2X₃ antagonist gefapixant for chronic cough.

Despite Geoff having officially retired at the end of 2017, his life continued to be centred on research. He authored or co-authored five papers in 2018, seven in 2019 (including three Editorials) and four this year, the latest paper published in March.

Geoff will be deeply missed, but his legacy will live on and continue to inspire future researchers exploring purinergic transmission.

Dr Jennie Cederholm (UNSW Sydney)

Prof. Ronald Sluyter (University of Wollongong)

Co-Presidents, ANZ Purine Club

The Michael Roberts Excellence in Physiology Education Award

The Michael Roberts Excellence in Physiology Education Award, is an award bestowed by the Australian Physiological Society in memory of Professor Michael Roberts who was a lifelong passionate and dedicated advocate of physiology teaching and education. The award is intended to recognise AuPS members who have demonstrated a sustained performance of excellence in the delivery of physiology education at the tertiary level, and make a contribution to the teaching activities of AuPS.



The recipient of this award will be presented with a medal and a cash award. Winners will be announced at the conclusion of the ECR forum (November 26th) and in the December Newsletter. The winner will be invited to deliver a keynote lecture at the Educational Symposium in next year's AuPS conference.

Email applications to the AuPS National Secretary: Glenn Wadley: glenn.wadley@deakin.edu.au

Nominations for the 2020 Michael Roberts Award close on 9th October 2020.

See the [AuPS website](#) for further details.

Professor David Adams inducted as a Fellow of the American Physiological Society



Congratulations to our former president, Professor David J. Adams (Distinguished Professor, IHMRI), on being inducted as a Fellow of the American Physiological Society (FAPS). Professor Adams joins a select group of only four Australian-based physiologists to receive this honour, joining AuPS honorary member Roger Dampney, as well as Robin McAllen and Ida Llewellyn-Smith.

The rank of FAPS is a prized member status reserved to honour distinguished leaders who have

demonstrated excellence in research, have made substantial contributions to the physiological sciences and contributed to the society. Professor Adams first joined the APS in 1993 while Professor at the University of Miami School of Medicine, Miami, FL and was a member of the Editorial Board of the American Journal of Physiology – Heart and Circulatory Physiology (1991-1996).

This acknowledgement of Professor Adams' achievements follows on from becoming a Fellow of the Physiological Society (FTPS) last year, an award that also recognises the experience, commitment and contribution of distinguished members of the Physiological Society. Professor Adams was a member of the editorial board of The Journal of Physiology (London, 2014-2018) and as a FTPS, joins a select group of other Australian physiologists including Roger Dampney, George Fink, Simon Gandevia, Robin McAllen, Norman Saunders and George Stephenson.

Professor Adams said, 'I am committed to raising the profile of Australian physiology and physiologists internationally and willing to support the nomination of AuPS members as Fellows of the American Physiological Society and/or The Physiological Society who fulfil the nomination criteria. It would be great to see the number of Australian Fellows in these societies increase over time'.

Congratulations Professor Adams on this well-deserved recognition of your outstanding contributions to Physiology!

AuPS PhD Student Grant Winners 2020

Congratulations to the recent winners of the AuPS Student grants for 2020. Following a very competitive round with many high quality applications we are pleased to announce that the winners are:

Aldo Meizoso Huesca – University of Queensland

Project title: Spatial distribution of mammalian skeletal muscle thermogenesis.

Amanda Denniss – University of Canberra

Project title: Understanding arrhythmogenic interrelationships between posttranslational modification pathways converging on the cardiac ryanodine receptor, RyR2.

Daniel Singh – University of Queensland

Project Title: Design and validation of a novel malignant hyperthermia diagnostic assay.

Each winner receives \$1500 to support the purchase of equipment, consumables or training to further their research projects. Keep an eye out for future newsletter editions to hear about the work and exciting outcomes from these projects.



The AuPS Postdoctoral and Student Publication Prizes



These are annual awards for the best original paper published by an AuPS member during their first 4 postdoctoral years and during the course of their PhD studies.

Prizes:

The Prizes, sponsored by **SDR Scientific**, consist of \$500 awards, to be used to present work at a conference. (Note: winners will be reimbursed after providing a copy of an invoice of conference expenses). Winners will be announced at the conclusion of the ECR forum (November 26th) and in the December Newsletter.

Eligibility and selection criteria can be found on the AuPS website: <http://aups.org.au/Prizes/>

Email applications to the AuPS National Secretary Glenn Wadley: glenn.wadley@deakin.edu.au

Closing date: Applications close 5pm, 9th October 2020.

AuPS 2020 Virtual Education Forum

We are proud to announce the AuPS Virtual Education Forum, to be held on the 25th of November. This forum provides an opportunity for educators to present their perspectives and findings in relation to the following questions:

PHYSIOLOGY TEACHING AND LEARNING: *PAST, PRESENT AND FUTURE*

The AuPS virtual education forum provides an opportunity for educators to present their perspectives and findings in relation to the following:

PAST: *What is a research paper/discovery that has informed your physiology teaching and been used to inspire your students?*

PRESENT: *What have you discovered from current evaluations of your teaching?*

FUTURE: *How can we educate students to ensure they have the skills to adapt and respond to changing employment situations and environments?*

Keynote: Professor Dee Silverthorn *Physiology education post-COVID: a continuing role for virtual learning platforms*

Presentation prize (AuPS members)

When: 25th November; **Presentations** (10-11:30), **Workshop** (Reflective practice; 2-3:30):

Registration, abstract submission and further details: [here](#)

AUSTRALIAN PHYSIOLOGICAL SOCIETY STUDENT AND ECR FORUM 26TH NOVEMBER 2020

(Hosted via Zoom)

Keynote Speakers



Prof Robyn Murphy

LaTrobe University



Dr. Tanya Cully

University of Otago

REGISTRATION IS FREE

ABSTRACT SUBMISSION

CLOSE 5PM, 18th SEPTEMBER

(visit the [AuPS website](https://www.aups.org.au) for more information)

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From the Archives: AuPS 1960-2020

From Handbook for Members, 1985.

THE AUSTRALIAN PHYSIOLOGICAL AND PHARMACOLOGICAL SOCIETY

BRIEF HISTORY

In 1957, Victor Macfarlane, then Professor of Physiology at the University of Queensland in Brisbane, visited Peter Bishop, University of Sydney, Jack Eccles, Australian National University, and Roy Wright and Frank Shaw, University of Melbourne to discuss the need for an Australian Physiological Society. All agreed that a Society for Physiologists and Pharmacologists was overdue but it was not until 1959 that definite steps to establish the Society were taken. In 1959 Victor Macfarlane, then in Canberra, took on the secretarial duties involved in planning an inaugural meeting to be held in Sydney in May 1960. A draft Constitution for the proposed Society was drawn up, with the assistance of Geoffrey Sawyer.

Between May 26th and 28th 1960 one hundred and twenty six Australasian physiologists and pharmacologists attended the inaugural meeting in the Department of Physiology, University of Sydney and heard 84 scientific papers. A business meeting was held on May 26 and comprised 49 of the most senior workers in Physiology and Pharmacology from Australia and New Zealand who had been invited to consider in detail the definitive form of the Society and the draft Constitution. Peter Bishop, as head of the host Department of Physiology, took the Chair and Victor Macfarlane acted as Secretary. The original name of the Society was chosen at this meeting, i.e. The Australian Physiological Society, and it was not until 1967 that Pharmacology was included in the name, although pharmacologists have been strongly represented and very active in the Society from the start. The inaugural meeting chose an inaugural Council of 8 members with Victor Macfarlane as Secretary and Peter Bishop as Treasurer. Since then the Society has been fortunate in having a succession of able and energetic Secretaries (Victor Macfarlane, Paul Korner, Mollie Holman, Bob Hales) and Treasurers (Peter Bishop, Michael Taylor, Alan Day, Peter Gage and Liam Burke), whose activities have enabled the Society to grow in strength and numbers. In 1981, the coming-of-age year of the Society, the Society departed from its past traditions and elected its first President, Professor Archie McIntyre. In 1966, the Society elected its first official archivist, John Hubbard. Subsequently, Rod Westerman took over this position.

In the early years of the Society the possibilities of publishing a journal were considered but it was not until May 1970 that the Society was stable enough financially to publish its own small journal "Proceedings of the Australian Physiological and Pharmacological Society". The first issue was published under an Editorial Committee consisting of Mollie Holman, Alan Day and Laurie Mashford and contained the abstracts of papers presented at the May 1970 meeting held in Melbourne. In 1971, David Curtis was appointed the first Editor of Proceedings. Since its early days the journal has increased in size and scope and in its international circulation and reputation under the editorship firstly of John Young and then Jack Carmody. The Journal has included invited contributions from outstanding Australian physiologists and from APPS Invited Lecturers and also papers written by contributors to many of the symposia held at APPS meetings.

During the 1970s two scientific meetings a year have been held by the Society, hosted by most Departments of Physiology and Pharmacology in Australia. This has involved a lot of APPS members in the work of being Local Secretaries for these various meetings. The Society owes a great deal over the years to these people since the social success of most of our meetings has been due, in no small measure, to their sterling efforts. Many of the Local Secretaries have subsequently become valuable members of the Council.

The Society has been very active on the International scene. In August 1972 at the Department of Physiology, University of Sydney, APPS hosted a South East Asian and Pacific Regional Meeting, under sponsorship of IUPS and the Australian Academy of Science. In August 1983, Australia hosted the IUPS International Congress at the University of New South Wales.

Stella R. O'Donnell
1983

The AuPS Archives

This article entitled 'The Australian Physiological and Pharmacological Society. A brief History' was written by Stella O'Donnell in 1983. The article is from the AuPS archives. A special thanks to Prof Roger Dampney, honorary archivist for the AuPS, for arranging access to these pieces of our history.

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This issue of AuPS News was compiled by Chris Shaw with many thanks to the generous contributors.

The next issue of AuPS News will be distributed to members in December 2020.

All contributions for AuPS News should be sent to: newsletter@aups.org.au before the end of November.

Thank you to the supporters of AuPS:

