

AuPS News – June 2020

Mid-Year Update from the National Secretary: Associate Professor Glenn Wadley, Deakin University

Well, what a different year this has been so far! I'm sure we'll all have some stories to tell our grandchildren about the great pandemic of 2020. Professionally speaking, for many of us we've endured a crash course in delivering remote teaching and learning and have all had to master the many online meetings. For most physiologists, from PhD students to senior researchers the shut-down has had a dramatic impact on our research programs, not to mention the stress and uncertainty this has had on our lives and those of our families, friends and colleagues. And for those of us with school children it was great days indeed when school resumed.

From an AuPS perspective, I'd like to thank outgoing National Secretary A/Prof Deanne Skelly for showing me the ropes and inducting me into the goings on of AuPS. It's a credit to Deanne and her hard work that AuPS is in such great shape. It was an honour to be asked to take on the role of National Secretary and although I have big shoes to fill I'm looking forward to the challenge.

The hugely successful Canberra meeting in 2019, hosted by the Australian National University was well received by all. Our local organising committee chair Stefan Bröer and his team along with Nicole Beard ensured this successful meeting ran seamlessly. Such a great opportunity to network and to discuss the research of our fellow AuPS members. The scientific quality of the meeting was first-class and it was terrific to see such a diverse array of topics and a wide range of junior and established physiologists. I was privileged to attend the 'Savant Thakur ECR Workshop' that explored some of the



professional and personal adversities that we must all overcome in physiology research.

At the end of 2019 we said thank you to several people who stepped down from their roles on Council. Both Prof David Allen and A/Prof Dave Davey have made huge contributions to AuPS over many years as our President Prof Gordon Lynch detailed in the March newsletter. For myself they provided considerable mentoring and support in my prior roles on Council and I'll certainly miss the regular interactions. We also said goodbye to one of our student representatives – Giselle Allsopp, who did a terrific job representing student members on Council – good luck with the thesis submission Giselle. We welcome Cassandra Smith, who will join

Macsue Jacques into the new role. Our current council consists of early-career, mid-career and more senior physiologists. In August this year we will be putting out a call for nominations for 3 new Council members, so please consider joining the AuPS Council.

On a sad note, we recently lost a friend, colleague and long-time AuPS member in Prof Nigel Stepto. I'd like to thank Prof Mike McKenna for the touching tribute to Nigel in the March newsletter. The tribute highlighted to me how many people Nigel influenced over his career, but also how short life can be and how much he will be missed.

We recently announced the outcomes from the AuPS PhD grants scheme. Congratulations to Aldo Meizoso (University of Queensland), Amanda Denniss (University of Canberra) and Daniel Singh (University of Queensland) who were awarded grants from a very competitive field towards the costs of their research.

Without doubt, the biggest decision Council have had to make this year was to postpone the 2020 Annual Scientific Meeting, which was to be hosted by Griffith University on the Gold Coast. In the end, the travel restrictions and the fact that we wanted our 60th Diamond Jubilee to be well attended made it a rather straight-forward decision. I'd like to thank local organising committee chair, A/Prof Deanne Skelly for all the work she has done to date, and for working with Council towards holding it in November 2021. When we have confirmation of room bookings, we will announce the new 2021 Conference dates. Nevertheless, I would like to congratulate Prof Matthew Watt for being selected to

present the AuPS Invited Lecture and A/Prof Andrew Moorhouse who will be presenting the Michael Roberts Excellence in Teaching Award lecture in 2021.

Even though our 2020 Scientific meeting has been postponed, I would like to remind you that our annual prizes for Michael Roberts Teaching Award, AK McIntyre Award, the Post-Doctoral and PhD publication prizes will still be going ahead this year. These award open in July this year, so please refer to our website for more information.

Early this year, just as we went into lock-down we were forced to postpone our Research Training Awards for PhD members, which was to be held at Victoria University in July. We are still hopeful we can hold these in early December this year and we will inform the applicants when we have more details about this event. Many thanks to our student Council representatives Macsue Jacques, Cassandra Smith and to our Council members Danielle Hiam and Nir Eynon for organising this event.

Also, despite our postponed Scientific meeting, Council are hard at work planning some replacement opportunities for 2020. We are currently planning to host a 1 day online Physiology Education forum in late November, whilst an online Graduate student symposium is also being planned for later this year. More details will follow on these activities.

A/Prof Glenn Wadley

Australian Physiological Society National Secretary

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The Michael Roberts Excellence in Physiology Education Award 2019:

A/Prof Andrew Moorhouse, University of New South Wales

Can you tell us about your career in Physiology Research and Education to date?

I remember my first taste of scientific research. It was during the final term in my BSc degree at the University of Sydney where I spent one day a week in the Pharmacology Labs in the now demolished Bosch Building. I was using the isolated rat phrenic nerve diaphragm preparation to study the Box Jellyfish poison. I thought “here’s a toxin that kills people and no-one knows how this occurs. And here is me, just a novice, but being the first to see that it can run down muscle contractility. Awesome!”. So I was hooked on scientific discovery. And I still get the same buzz today when a small new aspect to physiology is revealed (especially if by our lab!). And as a teaching academic, I get the same buzz when my students reach some understanding of an aspect of Physiology or develop this same passion for discovery.

My own journey continued in the Pharmacology Department at the University of Sydney with an honours and PhD under supervision of Ian Spence. I was studying spinal cord reflexes and synaptic transmission using some traditional extracellular and intracellular electrophysiology recordings. Ian taught me that Science should be fun, and allowed me lots of independence to develop my skills. He also taught me critical evaluation. I recall entering his office with a recent paper describing some finding to which he would flatly respond with “I don’t believe it”! It was an important lesson that not everything I read in textbooks and even journals was accurate. I subsequently spent an enjoyable overseas postdoc with Frances Ashcroft at Oxford learning about patch clamping and about ATP-sensitive K⁺ channels amongst the rustic buildings and lovely countryside. Fran had great vision and a sharp mind – our big



paper from this time was some of the more straightforward experiments I’ve ever done, but had exquisite timing – clarifying the nature of newly cloned receptors and inward rectifier channels. I returned to Sydney to join Peter Barry’s lab at UNSW, where biophysics complemented my developing interests in ion channels. Peter was another wonderful mentor, instilling the importance of patience and rigorous quantification, and I had two

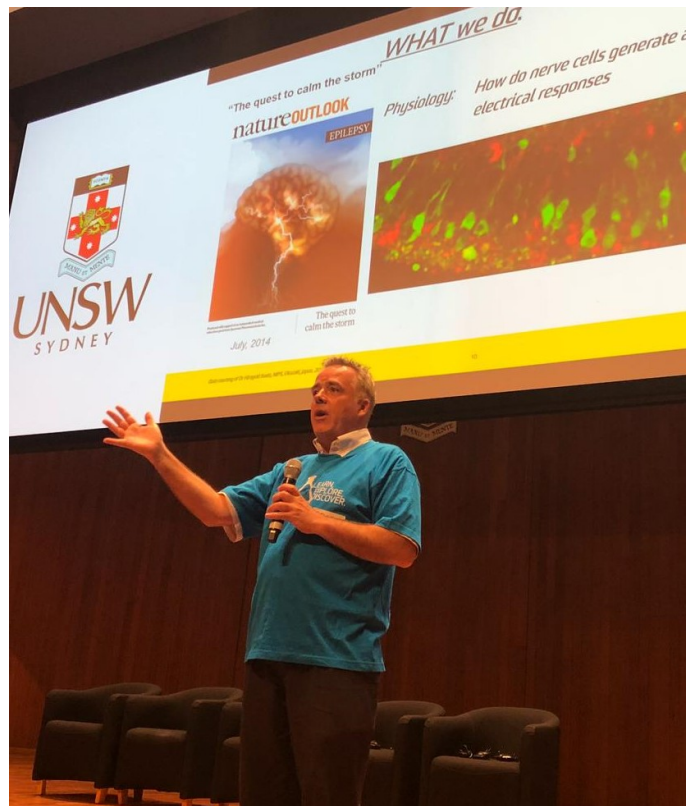
NHMRC postdoc stints working on ion permeation in glycine receptors with Peter. But I had always dreamed of an academic position and, after temporary research contracts in Canberra (Peter Gage) and Japan (Norio Akaike), I finally secured a Lectureship at UNSW. I continue to undertake research in cellular mechanisms of neuronal excitability, both in our own small lab group at UNSW focusing on neuronal Cl homeostasis in health and in disease, and in collaborative work in Japan (Profs Nabekura and Wake) with a focus on glial cells and neural circuits.

In regards to Physiology education, I had always enjoyed laboratory demonstrating and the odd lecture as a graduate student and postdoc but was thrown into the thick of things once I got my academic position, coordinating Science and Medicine courses and delivering courses of lectures and tutorials. My 1st lectures were very much cutting edge and full of passion, but were a bit like encyclopedias of knowledge! With experience and reflection on student feedback, and with support from a wonderful group of colleagues in Physiology at UNSW and beyond, I've been able to develop my teaching skills and participate in a broader range of learning and teaching activities. I am currently Head of Teaching in Physiology and contribute to teaching of over 1500 students per year in Science and Medicine courses through course development, lectures, practicals and online learning.

Can you describe your achievements and teaching innovations for which you received the award?

I was nominated for the award for “a sustained and collegial contribution to excellence in Physiology education at a National and International level, and for the development of innovative Physiology teaching activities”. With my colleagues at UNSW Physiology, we have developed novel practical classes, online tutorials and peer-reviewed assessments that have enhanced students learning while meeting challenges around engaging large student cohorts. I have also been fortunate to be involved with the International Medical Schools Physiology Quiz over many years that has not only

provided opportunities to interact with Physiology educators from around the world, but is a wonderful way for students to develop deep learning in Physiology and become part of a broader collegium of Medical Physiologists. Led by a group of dedicated UNSW Medicine students, I was delighted and proud to play a small part in establishing the 1st Australian Physiology Quiz Competition in 2018 (<http://auphysiologycompetition.com/>).



What does the society and award mean to you?

I was honoured and delighted to receive this award. I knew Michael Roberts, and enjoyed chatting with him at AuPS and related meetings. He was always interested in how my research and career was progressing, offering friendly and encouraging comments, questions and advice. To me, this is what our society does really well - provide a casual, relaxed annual meeting where peers and senior colleagues are encouraging and helpful. I'm also pleased to see the growth of education sessions at our

annual meeting which I think is becoming an increasingly important way for Physiologists to stay abreast of the latest advances in research and to get ideas about effective approaches to teaching. We have some excellent Physiology educators in our Society, and I reckon there were applicants for this award with equal or greater contributions to teaching than me. I suspect it was my modest, yet consistent, contributions to our Society that tipped the balance in my favour. In its 60th year this year, I thank the society and my fellow members for supporting careers of physiologists like me.

What do you see as the current and future challenges in physiology education?

Technology and the ability to readily source a wealth of quality information from around the globe is changing the way students learn and online and remote learning will continue to be a bigger part of University education. University academics will still need to lead the way in defining clear learning outcomes, developing and/or directing students to good online content to address these outcomes, and scaffolding and assessing students skills as they work

towards these outcomes. While students may more independently learn content, Physiology academics may play a greater role in developing and assessing generic scientific skills like critical evaluation, lateral thinking and innovation, problem solving, teamwork and communication. Some of these skills can be better developed and assessed in labs and small group tutorial sessions, a challenge will be how we maintain and integrate authentic practical class experiences within more online and remote courses. Finally, a constant challenge is managing our time. It takes time to develop quality online learning. And we need time to stay abreast of the latest advances in our discipline and in teaching approaches. And time to reflect and think. There seems a trend for academics in Physiology departments to decrease, while a trend for student numbers, administrative demands and University sectors outside the coal face to increase. So finding time to develop and deliver quality Physiology learning is hard – the continued and even expanded sharing of resources and expertise through our Society may be one way to help meet this challenge.

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.



A/Prof Andrew Moorhouse was awarded the Michael Roberts Excellence in Physiology Education Award at the AuPS 2019 Scientific Meeting. A/Prof Moorhouse will present the Roberts Award Lecture at the 2021 AuPS meeting in the Gold Coast.

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

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

AuPS PhD Student Grant Winners – 2019

The aim of this scheme is to provide opportunities for our student members to develop their CV's and provide experience in preparing grant applications. The funds can be used to develop the students' PhD research programmes through the purchase of equipment or consumables or to attend further training opportunities.

The following reports are provided by the 2019 award recipients, Javier Botella Ruiz and Nirajan Shrestha.

Javier Botella Ruiz – Victoria University



I would like to express my gratitude to AuPS for thinking about the future generations and having a PhD Student Grant in place. I am honoured to be one of last year's awardees.

Can you describe the program of work that the grant contributed to?

The grant proposal included exciting pilot data regarding the interplay of exercise, mitochondria and autophagy in humans, which is the basis of my PhD thesis. Briefly, human participants underwent two different types of exercise: a moderate-continuous exercise and a sprint-exercise. We had obtained pilot data from autophagy flux assays and muscle micrographs (TEM images) from 2-3 participants in

each group, suggesting that sprint-exercise disturbed mitochondrial structure and increased autophagy flux, which was not seen following moderate exercise. The grant was used to increase the sample size of the TEM analyses, as well as to obtain new micrographs from the participants that showed mitochondrial disturbance in the pilot cohort.

What were the outcomes of this work?

These additional results allowed us to confirm our pilot data, and to better characterise the morphological and structural changes in skeletal muscle mitochondria following exercise. Sprint-exercise induced a mitochondrial structural disturbance not seen following moderate exercise. A priori, this would seem negative, but knowing that is transient in time, it could also be beneficial. In fact, these findings fit really well with some evolutionary conserved mechanisms of mitochondrial stress and health, which we are currently following up.

What are the next step in this line of research – or in your own career path?

I am currently analysing the genome-wide transcriptional response to both exercises, as well as looking at cellular and mitochondrial stress markers. I feel we are getting closer to finalising this exciting, yet challenging, project.

Career wise, I am planning to submit my PhD thesis in the upcoming months. After that, I would like to continue in research as a postdoctoral fellow to keep developing my research skills and grow as a researcher. Given my passion for mitochondria, I would love to continue exploring this organelle, but I am open to consider other exciting areas of physiology if the opportunity presents.

I was planning to present this work in two international conferences in Spain. However, given the global pandemic we are going through, plans have changed. If things improve, I will try to present this work at the Muscle Victoria and AuPS meetings later this year.

Nirajan Shrestha - Griffith University



It was a great privilege to be awarded the Australian Physiological Society (AuPS) PhD student grant in 2019. The program provided me opportunity to write a research grant and experience managing a research fund.

Describe the program of work that the grant contributed to?

My PhD focuses on the effect of maternal diet high in linoleic acid on offspring metabolic health. The AuPS PhD grant contributed to part of my PhD research project which investigated the effect of a maternal diet high in linoleic acid (LA) on the lipid metabolism in the liver of her adolescent rat offspring. LA is the major omega-6 polyunsaturated fatty acid which is essential in our diet and is critical for fetal growth and development. In recent years, the consumption of LA has increased worldwide due to increased availability of vegetable oils in our diet. Studies have suggested that elevated LA consumption may be detrimental to human health and when consumed to excess in pregnancy I have previously shown that it may have detrimental effects on fetal development and influence the overall health of offspring. Recently, we have reported in *The Journal of Physiology* that

maternal diet high in LA affect the maternal fatty acid composition, circulating leptin, lipids and the fetal sex ratio. We hypothesized that the maternal diet high in LA can impact lipid metabolism in the liver of offspring. The AuPS PhD grant was funded to analyse the lipid content and the expression of genes related to lipid metabolism in adolescent offspring.

What were the outcomes of this work?

We have observed that maternal diet high in LA alter plasma cholesterol levels in the offspring. We are excited to investigate the hepatic cholesterol level and expression of genes related to lipid metabolism in the liver. The tissues were processed, and RNA was extracted for quantitative PCR. However, the project has been temporarily halted amid COVID-19. When the restrictions have been lifted these experiments will be performed.

What are the next steps in this line of research – or in your own career path?

The immediate next step is to publish this work in a scientific journal. Currently, I am in the final stages of my PhD, which commenced in April 2017. I am planning to submit my thesis on October this year, after publishing a number of my studies in international journals. I am interested in continuing my career in research, and would welcome the opportunity to continue my research career in the field of maternal nutrition, fetal programming and lipid metabolism. I look forward to becoming a Postdoctoral scientist, and contributing to the research field of metabolic health.

I am planning to present the work in AuPS annual meeting this year which is going to be held in Gold Coast. I think it is a valuable experience for students to present their research at AuPS, as this provides me with an opportunity to receive feedback from experts in the field, as well as hear about the cutting-edge research being undertaken by members of our society.

A Personal Reflection of AuPS

Robyn Murphy

Department of Physiology, Anatomy and Microbiology, La Trobe University



“APPS, that’s where you will present your work!” It was 1999, just a few months into my PhD and that was the call from my supervisor, now Prof Rod Snow. I was petrified. Did I realise this is what I was opting for when I would do a PhD?

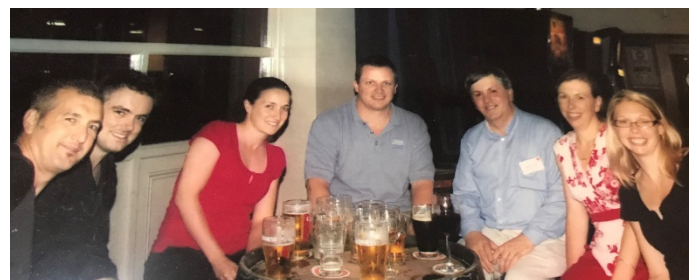
As an undergraduate student (back last century), I did not get many opportunities to finesse an oral presentation. They were not such a thing as they are now in undergrad courses. In three years of undergrad I presented once and then as an Honours student I can recall presenting only once again. Public speaking was not my forte, and as APPS 1999 – RMIT Melbourne – approached, I pushed the thought of such fearful potential activity to the back of my mind.

I no longer suffer the fear I used to, a consequence that usually presents through practice and confidence. In 1960 the Australian Physiological Society (APS) was established, in 1968 it became the Australian

Physiological and Pharmacological Society (APPS) and in 2003 it returned to being the Australian Physiological Society (AuPS). AuPS provided me tremendous opportunities to develop confidence, in particular by way of being the best national forum where I could share my research as an emerging scientist.

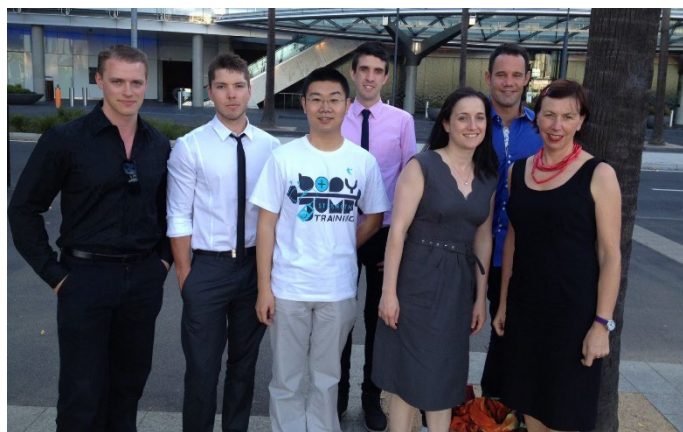
From that first APPS, I started to meet my peers in physiology. I recall some of the student presenters back in 1999, and I got to watch them as they meandered through their careers. I was able to look to them, and to watch their trajectories. I could observe the decisions they must have been making along the way. Attending APPS conferences also helped me gain confidence; such as when my supervisor could share with me “Prof ‘Blank’ was impressed with your work”. I was so happy that Prof ‘Blank’ even remembered by name, let alone my work and my talk, and that they cared enough to share this. This type of impetus worked really well for me, and it is how I hope I act as I see young scientists blossoming into their world of science.

The accessibility of AuPS over my career has been very important, and during my postdoctoral years I believed I was ready to contribute to the Society in a greater way. I nominated to Council in 2008 and was elected. Within 2-years I then accepted the position



Attending the AuPS meeting in Newcastle, 2007.

of National Secretary, a 3-year term. This was a huge task and it coincided with me accepting an academic position at La Trobe University, so if I thought I was reasonable at juggling tasks, my organisational skills were now really going to be put to the test. The National Secretary is the heart of the backend of the Society, supported by the Executive and Council. I had tremendous support and we all worked hard, we nipped out problems and we initiated changes we felt would benefit our members. The best part of the job was getting to work so closely with the local organisers of the annual meetings, to listen to their ideas of how they could make their meeting great, and to decide on who could be approached to run the upcoming meetings. I am very proud to have picked up the planning for our joint meeting in Perth in 2011 and work with Don Roberts and his team; and to have worked with Gary Housley in 2012 – who could forget the conference dinner as the Sydney Harbour cruise? I convinced Stuart Warmington to host our 2012 meeting at Deakin Geelong, Steve Rattigan in 2013 at University of Tasmania in Hobart (which he completely sold to me by saying MONA for the conference dinner) and Brad Launikonis in 2014 at University of Queensland in Brisbane. Brad and I were already friends and collaborators, it was hard for him to say no. AuPS was where Brad and I forged both aspects of our relationship, how can I not say thank you!



About to board the harbour cruise in Sydney with my lab group at the AuPS meeting in 2012.

I believe our Society is best placed being hosted on University campuses. This ensures that costs are kept down, particularly important to help keep meetings accessible for students. Another highlight for me was to be heavily involved in the ongoing growth of the Education focus of our meetings. I watched Education be reasonably stand-alone as a workshop on the Sunday afternoon prior to the AuPS Invited Lecture and opening, then to the Michael Roberts Award lecture being stand-alone, to the first education abstract being embedded in a scientific free communication session and receiving widespread interest to the exercise physiology audience (Glenn Wadley was the presenter), to the inclusion of an education symposium and now to see an entire day running education streams.



Visiting MONA with my extended lab group at the AuPS meeting in Hobart, 2015.

Many other Societies have a paid person at various levels of their administration, but AuPS has always been run as a completely voluntary Society. It requires considerable input by many, many people and the smooth face of the Society is demonstrative of the commitment that must be present by those involved. I encourage you to look at our archives and see the names of those who have contributed over the past 60 years. I am honoured to have my name amongst many, and I look forward to the future of Physiology in our country and interacting in physiology beyond.

Celebrating the 60th Anniversary of AuPS – A Call for Member Contributions

In the lead up to the 60th anniversary celebrations of AuPS, which will now take place at the Gold Coast meeting next year, we will be including personal reflections from our members and delving into the AuPS archives. Therefore, we are asking our members to share their stories and memories of the society for inclusion in the newsletter over the course of this year.

So whether you are a long-standing, or more recent, member of AuPS, we would love to hear about your personal perspective on the society, what it means to you and how it has helped in your professional or personal lives.

Please send your memories, stories and pictures to newsletter@aps.org.au

From the Archives: AuPS 1960-2020



Bill Levick, Bob Porter and Ray Muir, Canberra meeting 1971.



Jack Coombs and Steve Redman, Canberra meeting 1971.



Steve Redman, Peter Gage and unknown (?), APPS dinner, Sydney 1972.



Chris Bell, Mark Rowe, Bob Porter, unknown (?) and Uwe Proske, Sydney 1972.



David Hirst and Molly Holman, Sydney 1972.



Ian McCloskey and unknown, Sydney 1972.



Pansy Wright, Ann McIntyre and Stella O'Donnell, Armidale meeting 1974.



William Rushton and Bob Rodieck, Armidale meeting 1974.



Anne Griffin, Brian Cleland, Michael Waring and Dave Davey, Hobart 1977.



Akos Györy, unknown (?), Trefor Morgan, Graham Boyd, Bruce Scoggins and John Young, Hobart 1977.

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

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

Thank you to the supporters of AuPS:

