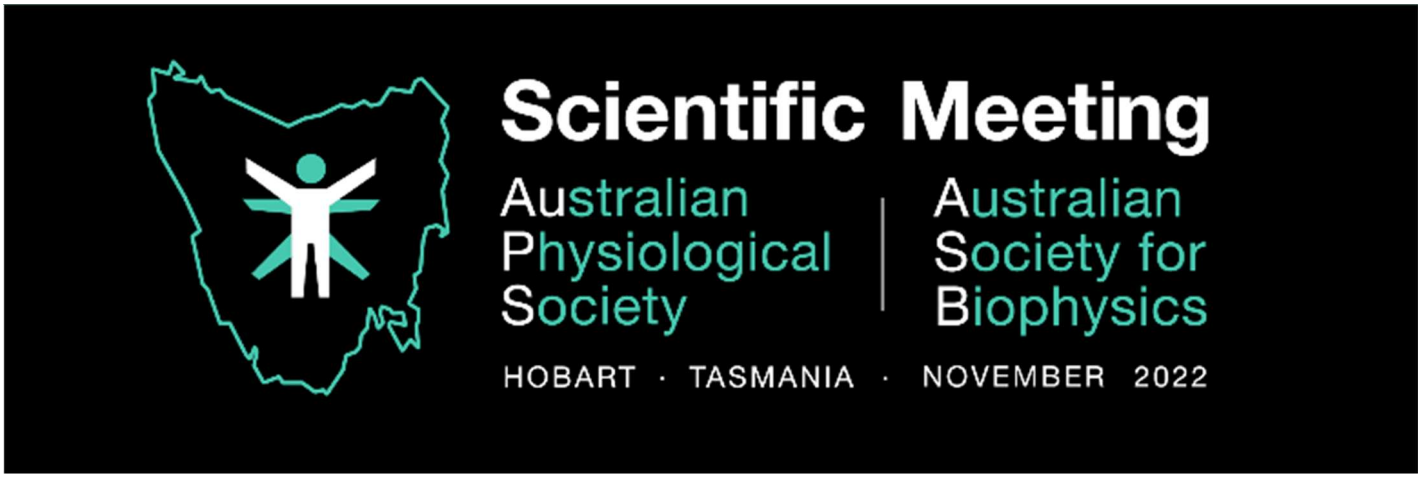
Australian Physiological Society

THE PROFESSIONAL ASSOCIATION FOR AUSTRALIAN PHYSIOLOGISTS

AuPS News – September 2022



We invite you to attend the 2022 AuPS/ASB Scientific Meeting hosted by the University of Tasmania

Sunday 20th - Wednesday 23rd November 2022

Abstract submission closes 23rd September (5pm AEST)

This is a joint meeting of AuPS and ASB. The program contains joint sessions, in addition to dedicated streams for each Society. The full conference program and associated events, are open to all delegates registered for the conference.

Scientific Programme

The conference will feature invited lectures, symposia, free communication sessions and poster presentations spanning a range of physiological sciences.

Physiology Education Programme

Our commitment to supporting Physiology Education continues with a dedicated Education stream, run both face-to-face and as a virtual event.

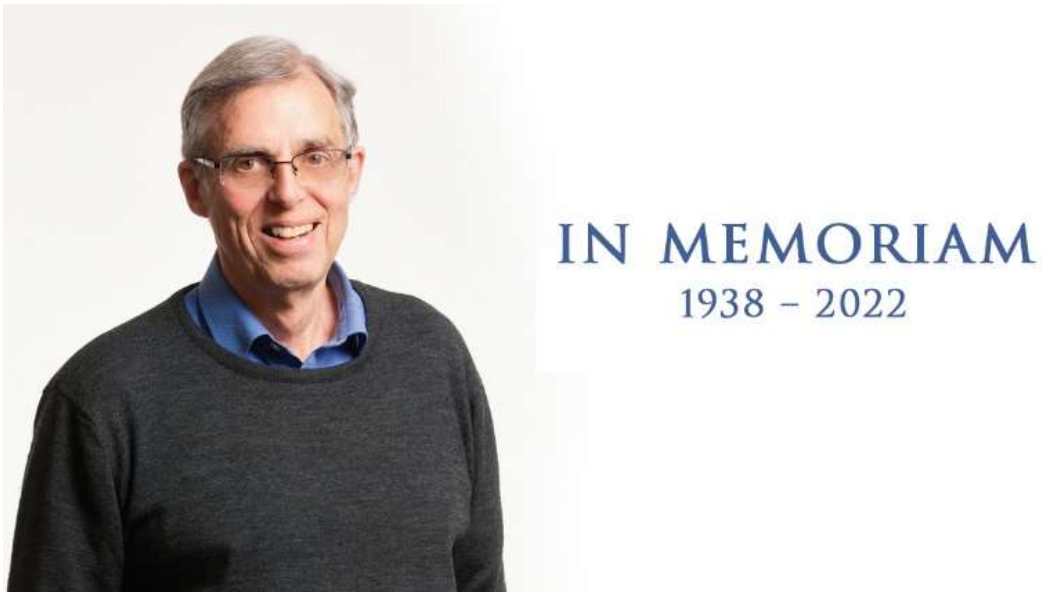
Early Career Researchers

We continue to help support and develop our students and ECRs and will be offering a number of ECR specific events and workshops during the event.

REGISTER NOW!

Vale

Emeritus Professor Tony Macknight, MD, PhD, FRSN



It is with great sadness that we share the news of the passing of Emeritus Professor Tony Macknight, MD, PhD, FRSNZ on July 13 after a brief illness.

Tony graduated MBChB from the University of Otago Medical School in 1963, and then joined the Department of Physiology where he completed a PhD in 1968 studying aspects of cell volume regulation, and an MD in 1969. He undertook postdoctoral research at the Massachusetts General Hospital, Harvard Medical School working on epithelial transport. He returned to a position as Lecturer in Physiology at the University of Otago in 1971. In 1981 he was elected a Fellow of the Royal Society of New Zealand and in 1984 he was appointed as the Wolf Harris Professor of Physiology at the University of Otago and remained there until his retirement in 2002. He continued his research until 2007 at Otago focused mainly on transport pathways involved in the production of the aqueous humour.

I first met Tony in Christchurch in 2001, where he was the chairman of the Organising Committee for the 34th International Congress of the International Union of Physiological Sciences (IUPS) and the Chairman of the International Scientific Program Committee for that Congress. He had a strong connection with the IUPS and was a member of the Council from 2001 to 2009. I last saw Tony at the Federation of the Asian and Oceanian Physiological Societies Congress Teaching workshop in Kobe, Japan in March 2019. He was inspirational with his passion for and commitment to Physiology and Physiology education.

Most of us will know of Tony through his significant contributions to Physiology education, and how he was at the forefront of developing technologies that enhance student learning. Tony's important contribution to Physiology education commenced with his major role in the introduction of problem-based, case-oriented learning in physiology for

medical students at the University of Otago in 1987. In the 1990s he was a key member of the Curriculum Development group that designed and implemented a new, systems-based, case-related two year preclinical medical course at Otago. More notably, along with his son Michael, Tony was the co-founder of ADInstruments, a long-standing sponsor of the Australian Physiology Society. This team developed the PowerLab data acquisition and analysis system. PowerLab was developed by the need for an improved method of recording and analysing physiological signals. The PowerLab system is used in universities, research institutes and industry throughout the world.

Many Physiology educators across the globe remembered Tony fondly on notification of his passing. They all noted his love of teaching and his contributions to Physiology education, with messages of condolence from all over the globe. This message shared with the IUPS Teaching community expresses the sentiments that most of us feel towards Tony:

Tony had an inspiring intellect, was a true gentleman, and made a huge difference to physiology education. He achieved more than any other physiology educator in improving and modernizing our approach to teaching and learning.
Penny Hansen, Professional Associate, Memorial University of Newfoundland, Canada

The important contributions of Tony in Physiology are recognised by many awards, including the American Physiology Society (APS) Claude Bernard Distinguished lecture in 2015. In his accompanying manuscript [1] Tony reflected: "Indeed, I believe that we are experiencing the most revolutionary time in education since the invention of the printing press." How true this sentiment is for today. The APS also honoured Tony as part of their Living History of Physiology series:
https://www.youtube.com/watch?v=wQJIrYMkEek

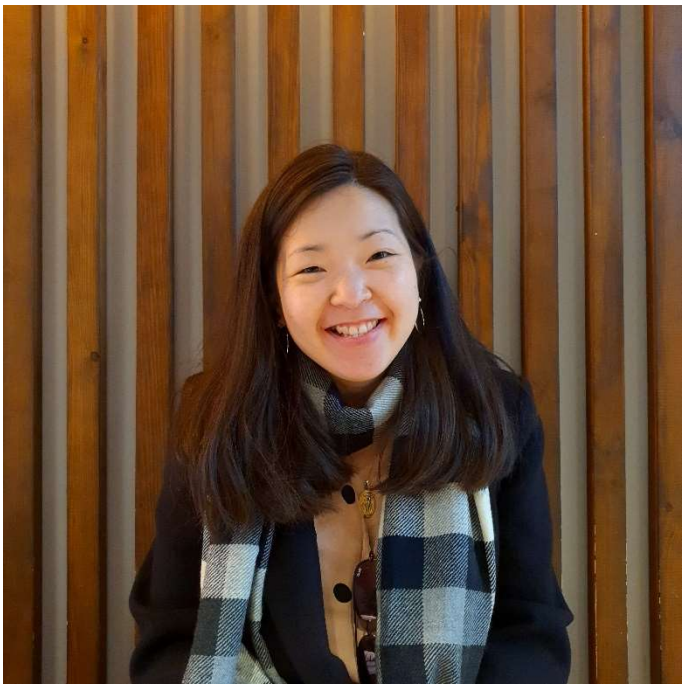
Tony will be remembered as a pioneer who embraced a teaching pedagogy which focused on a more active learning, student-centred environment that helps students to understand and engage with their disciplines. The Australian Physiological Society extends its deepest condolences to Tony's family, friends and colleagues at ADInstruments. May he rest in peace.

A/Prof. Deanne Hryciw

References

1. Macknight, A. D. C., Adventures in education. Advances in Physiology Education 2016, 40, (3), 377-382

The AuPS Physiology Education Grant winner 2021 Profile



Dr Iris Lim
Bond University

The AuPS Physiology Education Grant scheme was initiated to support early to mid-career academics and members of AuPS. The grant was established to support an education research project and will be mentored by a senior education researcher and former recipient of the Michael Roberts Prize. The applications are assessed on how the research will benefit physiology education or enhance student engagement in physiology, and the award includes $3000 to support the project. Dr Iris Lim was awarded the grant in 2021

Congratulations on being awarded the grant. Can you tell us more about the proposal and progress so far?

Thank you so much. I am very grateful to the society for their support of this education project. The growing confluence of technology and higher education practice, and the advent of the millennial generation with radically different learning styles and needs present educators with challenges and opportunities within their teaching practice. Gamification is becoming increasingly popular in higher education learning environments and its development is viewed as a renewal of educational practice. Quitch is a novel mobile learning app developed to provide an integrated gamified e-learning platform, where educators can create their own quizzes and resources, specific to the needs of their class (https://quitch.com/). The aim of this education project is to determine whether and how this mobile app affects student engagement and whether learner activity within the platform correlates to their final grades as a measure of academic achievement in a neurophysiology and anatomy subject.

As educators, I am sure we all agree that teaching practice does not remain static and the desire for continuous improvement by educators allied to the continual change in educational context means that new tools and techniques are constantly evolving. The outcomes of this study will report on the effectiveness of utilising Quitch in physiology education in the higher education setting, which can inform educators on their choice to implement this technology in their teaching practice. It will also pave the way for effective deployment of the tool. Additionally, it will provide the developers of application with feedback on their product. It could also impact gamification practices in other settings including associations and workplaces. Currently, data collection has been completed and we are in the process of data analysis.

Can you tell us briefly about your research background, and what made you interested in teaching practice/research?

I was awarded a PhD investigating mechanisms controlling ureteral motility in 2017. Since then, I

have been expanding my research in physiology and pharmacology of the urinary tract by exploring treatments for kidney stone passage. My teaching career is focused on neurophysiology and anatomy education, particularly in the Biomedical Science and Medical programs within Bond University. Following years of keen observation and ongoing reflection on my own teaching and learning experience, my teaching philosophy has developed into a belief that every student is unique and they each progress in their learning differently. I aspire to create a stimulating educational environment that promotes effective learning, assists students to achieve their full potential and engage them to integrate and apply their knowledge. Neuroscience is an area that students tend to struggle with. However, I am determined to instil passion for this subject in my students, as I believe this allows them to eventually excel in the subject regardless of the pace of their progress and more importantly, appreciate the relevance of the content beyond the course. Ultimately, the foundation of my teaching philosophy and practice is a learner-centred approach, which extends both inside and outside the classroom. I endeavour to investigate and explore novel didactic tools to achieve this learning environment.

What do you see as future challenges for physiology educators in the coming years?

I believe that one of the biggest challenges physiology educators will face in the next few years is finding ways to build and maintain true connections with learners in an increasingly online, faceless and technological education world, which has been shown to be important for effective learning. To achieve a safe, engaging and positive student-focused environment, a lot of time and effort are required, which we know educators are poor of. However, I also believe that with creativity and collaboration, we will be able to find new ways and methods to achieve this and I look forward to seeing what we can come up with.

Member Profile

Winner 'Best Student Oral Presentation' at the 2021 Gold Coast AuPS meeting.

Johannes V Janssens

University of Melbourne

What sparked your interest in physiology?

My initial undergrad focus was mostly chemistry, maths, and physics. I did a little bit of physiology, which was OK-ish. Then, in my last semester I signed up for the subject 'Experimental Physiology', which at the time was run by Charles Sevigny. That subject really turned me into a physiology fan! We were able to design and implement our own physiology experiment. I vaguely remember my group tested whether caffeine or alcohol influenced the blood pressure baroreceptor response in a supine-to-standing manoeuvre. Not sure if we found anything interesting but it was good fun (especially for the ethanol test group)!

Since then, I've developed a great passion for muscle physiology, particularly heart muscle physiology. This has grown throughout my Masters and PhD working in Lea Delbridge's team. Although I confess, I did much better in the neurophysiology subjects than in cardiovascular physiology in my undergrad years.

Tell us more about the research you presented at AuPS 2021

In our research team (Cardiac Research Consortium) we're all really fascinated with processes which allow the heart muscle to relax and stretch, from beat-to-beat, to adjust to blood volume variation. The heart spends more time filling up with blood than pumping it out, so filling must be super important! As the prevalence of cardiometabolic disease (obesity, hypertension, diabetes etc.) has burgeoned over the last few decades, it's become clear that there are distinct cardiac hallmarks that accompany these systemic phenotypes. Impaired ability to relax and distend in response to an incoming blood volume (diastolic dysfunction) is an early and common cardiac feature across the cardiometabolic disease spectrum. This occurs because the ventricular walls become non-compliant or stiff. Sometimes this is because the walls undergo an adaptive hypertrophy response – i.e. the walls get thicker. This isn't always the case though. So, we wanted to know whether there was a change in the 'intrinsic' stiffness of the heart muscle (independent of thickness) that could be attributed to particular components of the cardiomyocyte sarcomere.

We isolated and measured stiffness of single cardiac muscle cells from a cardiometabolic disease model (high-fat/sugar diet) using a device called a myostretcher. We can pace and stretch cardiomyocytes while simultaneously measuring force. It's a really cool, but pretty technically challenging methodology. We showed that in cardiometabolic disease, cardiomyocytes get stiff as hearts get stiff (as determined by echocardiography). We also showed that increasing cardiomyocyte pacing frequency is linked to increased stiffness only in cardiometabolic disease. We think this means there's residual cross-bridge interaction during diastole in the cardiometabolic disease cardiomyocytes which may contribute to the elevated stiffness particularly when the heart needs to pump quickly (e.g. during exercise).

What research or projects are you undertaking currently?

Based on the single cell mechanical findings, I've now shifted my focus from a biophysics to a molecular biology approach to look for stiffness substrates. We're interested in disease-specific myofilament post-translational modifications that may induce or emerge concomitant with in vivo diastolic dysfunction. This has allowed me to take a deep-dive into the world of mass spectrometry based 'discovery' and 'targeted-precision' proteomics which has been both fun and challenging. It's great to work in a research consortium with shared funding across 3 institutions (U Melbourne, La Trobe U & U Auckland) and lots of international interaction. We are actively expanding, and I really enjoy having autonomy to do my thing while also being part of a growing and diverse team.

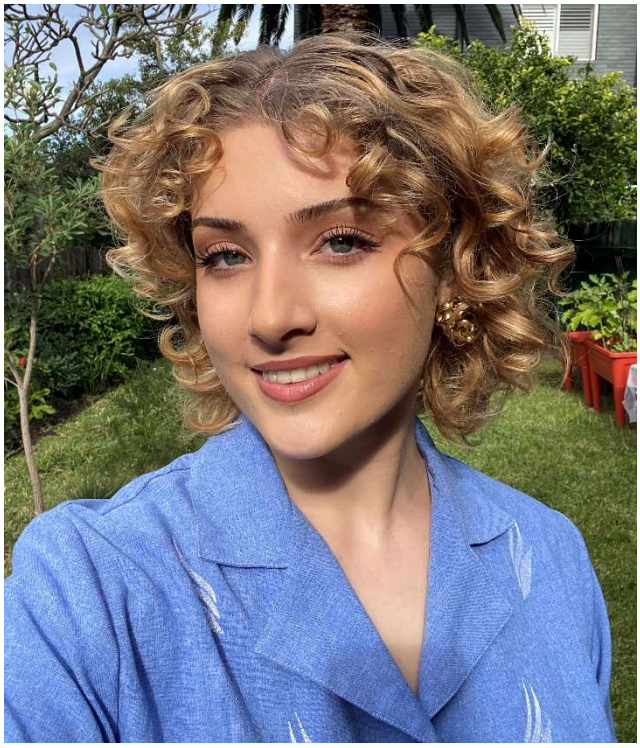
Where do you see yourself in the future?

I'm right at the end of my PhD at the moment. Very excited to get that done and dusted and get a few papers out at the same time. I've been very fortunate to receive a Fulbright Postdoctoral Scholarship to continue my proteomics journey in the lab of Prof Jenny Van Eyk at Cedars-Sinai Medical Hospital in Los Angeles. Their lab is an absolute mass spec powerhouse, with great commercialization and translational emphasis so really looking forward to absorbing all the sage knowledge over there. I'm going to spend a year or two soaking up the LA lifestyle, making new friends and hopefully lots of new scientific insights.

In the long-term I'm not entirely sure what I'd like to do. I think physiology is the nexus for a range of diagnostic and therapeutic research streams. There are lots of options in academia, industry and government for a physiologist. I think I'd like to see myself in a position that spans academia and industry and has something to do with developing diagnostics for acquired disease. Excited to see what opportunities the research journey holds!

Member Profile

Winner 'Best Student Poster Presentation' at the 2021 Gold Coast AuPS meeting.



Lily Pearson

UNSW

What sparked your interest in physiology?

I first was exposed to physiology in a comparative physiology class, at the time I thought I would be an evolutionary biologist because I loved thinking about why organisms exist in certain niches. I realised in this class, while comparing the inner workings of reptiles, mammals, birds, ferns, pines and flowering plants, that the product of evolution is diverse physiology. I am still blown away by how similar function can be performed by such a variety of different structures. I liked imagining the way these different structures evolved from continuous selection of the most favourable interactions and eventually created the diversity of life around us.

With my fascination of unique structures, it is no surprise I eventually fell into studying the incredible tonotopically mapped and spiralling structure of the cochlea. Many of my friends were studying music and it was an incredible cross over, where we would always discuss how we were able to encode sound for enjoyment. Now, working in translational hearing physiology excites me as we investigate how probing genetics can help us to link structure and function and think about what goes wrong with hearing loss.

Tell us more about the research you presented at AuPS 2021

At the AuPS meeting in 2021 I presented a poster about the mouse model I am investigating for my PhD project, which looks to determine the function of a newly identified subpopulation of inner ear neurons identified by reporter gene expression. These animals were created by random integration of a transgene into the genome. The transgene is driven by promoter elements of the peripherin gene. Peripherin is a protein that is important for neuron axon and dendrite growth, particularly in unmyelinated sensory neurons. Our transgene substituted the peripherin coding region for two functional elements: the human diphtheria toxin receptor to mediate conditional ablation (knock-out of whole neurons) and the mCherry fluorescent reporter (to visualise "red" neurons). We used this strategy because peripherin is selectively expressed in the type II spiral ganglion neurons in the cochlea. These neurons innervate the outer hair cells whose key role is to amplify and filter sound vibration, while the majority of (type I) neurons innervate the inner hair cells.

When characterizing several lines of mice generated using this peripherin 'reporter' transgene, I found that none of the lines expressed the mCherry in the type II neurons as planned. Surprisingly, I found mCherry positive neurons localized a cluster at the base of the spiral ganglion, and in a subpopulation of vestibular ganglion neurons. Although the overlap of mCherry positive neurons is mismatched, this strange

population displays a restricted expression pattern that has not previously been seen and evidently reflects a novel sub-class of auditory primary afferent neurons.

"Getting to the bottom" of the distribution of this transgene was initially conducted with traditional sectioning and immunohistochemistry methods, which provided stunning high-resolution images of the overlap of transgenic neurons and peripherin positive neurons at multiple ages (so some of the neurons were type II), but not all. The spiralling structure of the cochlea and the fact that these neurons were in the 'hook' region (highest sound frequency) meant they were hard to resolve as a population. This mismatch was consistent for postnatal day 1, 7 and in adult mice. I used a CUBIC/PEGASOS clearing and refractive index matching technique to make the inner ear tissue completely transparent. A laser could shine the whole way through the sample, so a whole structure could be imaged intact by the Zeiss Light Sheet Z1 microscope in a series of optical slices on a macro-scale. I was able to capture the entire population of transgenic neurons and then used Imaris software to segment each cell, so we could accurately resolve the entire population of these neurons, consistently across multiple cochleae at different developmental ages. I only wish I could have shown a few videos taking you flying around these massive images in the poster. There is no better way to experience such an interesting structure.

What research or projects are you undertaking currently?

I am still working on my PhD project that I began in 2021. Now I have fully characterised this model, we are undertaking functional studies with conditional ablation, electrophysiology, and transcriptomic studies to understand the neuron population and single neuron function and diversity. We are currently validating the application of diphtheria toxin to conditionally ablate neurons in single cell culture. Moving these ablation studies to the whole organ is going to be exciting too, we will be able to assess the function of the whole population of neurons with hearing testing (round window recordings and auditory brainstem response evoked potentials) and balance testing (gait, rotarod and balance beam). These experiments will provide such an exciting link between genetic expression patterns and system function.

Patch clamp electrophysiology will be used to test the function of individual mCherry positive neurons and adjacent unlabelled neurons for comparison. I have been practicing my patch clamp technique through a different project our lab is pursuing, with a variety of HEK cells that express different potassium channels. I have been enjoying branching out into these kinds of electrophysiological techniques and can't wait to apply it to my own project to understand the physiological conditions of neurons in the transgenic subpopulation.

We are also trying to place these transgene positive neurons into the types and subtypes of neurons that have been genetically identified with single cell RNA sequencing. We aim to uncover the overlap of Type-I (a, b and c) and Type-II spiral ganglion neurons using their transcriptomic profiles, and also using antibodies for particular genes that are newly characterised markers of these types and subtypes. Visualising these markers throughout the entire cochlea with the optimised clearing and light sheet imaging method is exciting and hasn't been done before. I really appreciate the Ph.D. project funding provided by AuPS to assist me with obtaining the antibodies I need to distinguish these classes of auditory neurons. I would love to get images of my 'immuno' ready in time for the next AuPS meeting, so keep an eye out.

Where do you see yourself in the future?

I always hope to pursue what I enjoy, and so far that has challenged me to try an understand a tiny population of high frequency-encoding auditory neurons with genetics, microscopy and physiology. I

have loved learning from everyone around me at the Translational Neuroscience Facility and having such a community goal towards new knowledge has been my favourite part. My supervisor Gary Housley has shared so much with me as a mentor, in his scientific wisdom and in how to communicate to all kinds of people. I hope to have a team of people like he does one day, that work towards addressing research interests that inspire us all.

Another thing I've been enjoying is being able to take advantage of the wonderful technologies at our fingertips. Thinking about genetic manipulation. I have been particularly enjoying working with microscopes and the specialist microscopists in the Katerina Gaus Light Microscopy Facility at UNSW. I wouldn't be surprised if I pursued more of this kind of work down the track.

I still think about my interest in evolutionary and biology and more broad biological influences. I haven't quite figured out how I am going to incorporate all my interests into understanding the incredible way knowing about physiology enables us to appreciate and share the wonder of organisms…but writing this article has certainly got me thinking about it.

AuPS Awards and Prizes

Complete information, such as the application process and assessment criteria, for each prize is found on our website http://aups.org.au/Prizes/

Please note the below information is a summary.

A K McIntyre Prize

Sponsored by AuPS

The A K McIntyre Prize is named in honour of the Society's first President. The Prize shall be awarded periodically to members of the Society who are judged to have made significant contributions to Australian physiological science and to AuPS over their pre-doctoral and early post-doctoral years.

Application & Eligibility:
To be considered for this award, nominees 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.
- Provide a curriculum vitae and a list of published works, including conference proceedings and citations. Include a specific section that provides details of any contributions to scientific meetings of the Society.
- Normally have graduated from their PhD or equivalent doctoral degree by 1st November not more than seven years before the year of application. Where the time exceeds seven years, please include details of relative to opportunity.
- Be a current financial Ordinary Members of the Society (note: provisional members* are not eligible to apply)

The Prize:
The Prize 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.

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

Closing date:
Applications close 5pm (AEST), 7th October 2022.

Michael Roberts Excellence in Physiology Education Award

Sponsored by AuPS

The Michael Roberts Excellence in Physiology Education Award is an award bestowed periodically by the Australian Physiological Society in memory of 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.

Application & Eligibility:
The award is open to current ordinary financial members of the Australian Physiological Society who are actively engaged in physiology education (note: provisional members* are not eligible to apply).

Prize:
The recipient of this award will be presented with a medal and a cash award, at the conference dinner in the year of the award and will be invited to deliver a keynote lecture at the Educational Symposium in the following year's AuPS conference.

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

Closing date:
Applications close 5pm (AEST), 7th October 2022.

AuPS Postdoctoral Publication Prize

Sponsored by AuPS
An annual award for the best original paper published by an AuPS member during their first seven postdoctoral years.

Eligibility:
To be considered for this award:

- The paper must be based on work carried out and published during your first seven postdoctoral years.
- The paper must have been published (either on paper or online) in the 12-month period between 30th September to the 1st October in the year of application.
- Applicants must be current financial Members of the Society (provisional members* are not eligible to apply)
-

Prize:
The Prize consist of a $500 award, 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 during the conference dinner of the following AuPS meeting and in the December AuPS newsletter.

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

Closing date:
Applications close 5pm (AEST), 7th October 2022.

AuPS PhD Student Publication Prize

Sponsored by AuPS

An annual award for the best original paper published by an AuPS member during the course of their PhD studies.

Eligibility:
To be considered for this award:

- The paper must be based on work carried out during your PhD and accepted for publication during your PhD or up to one year after the acceptance of your PhD.
- The paper must have been published (either on paper or online) in the 12-month period between 30th September to the 1st October in the year of application.
- Applicants must be current financial Members of the Society (provisional members* are not eligible to apply)

Prize:
The Prize consist of a $500 award, 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 during the conference dinner of the following AuPS meeting and in the December AuPS newsletter.

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

Closing date:
Applications close 5pm (AEST), 7th October 2022.

AuPS Physiology Education Grant Scheme

Sponsored by AuPS

The AuPS Physiology Education Grant scheme to support an education-based research project that has the potential to benefit physiology education and /or student engagement in Physiology. A condition of the grant is that the research outcomes of the funded project must be presented at the AuPS meeting the following year, and it is expected that they will be suitable for publication over the subsequent 1-2 years. The recipient(s) will be mentored by a senior physiology education researcher appointed by the AuPS council, typically a former recipient of the Michael Roberts Prize.

One $3000 AUD grant is available, awarded to the best application from members of the AuPS.

Application & Eligibility:
The scheme is open to early to mid-career academics who have been in academic positions for up to 10 years and who are all current ordinary financial members of the Australian Physiological Society (Provisional members* are not eligible to apply).

Individuals or Teams may apply, but all team members should adhere to these eligibility criteria and a Chief and Associate Investigator should be identified.

The application is assessed on the significance, innovation, clarity and feasibility of the proposal; justification of the budget; potential benefits for physiology education and/or engaging students in Physiology including breadth of potential impact across institutions. Applications will be ranked by at least two selected members of the AuPS Council, and the successful applicant will be announced at the annual AGM.

Note that funds will not be provided for conference attendance or travel (unless an integral part of the proposal).

Successful applicant(s) must provide a half -page report the following year to the AuPS Council, describing how funds were spent, and the outcomes of the project (including presentation at the meeting and publication plans). The report may be published in the AuPS Newsletter.

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

Closing date:
Applications close 5pm, Friday October 7th 2022 (AEDT)

Postdoctoral Opportunity

Postdoctoral Research Associate, Integrative Muscle Physiology & Energetics Laboratory

For full listing and to apply, see: https://employment.marquette.edu/postings/16830

Posting Number 201103275
Position Title Postdoctoral Research Associate, Integrative Muscle Physiology & Energetics Laboratory
State WI
Employment Status Full Time
Position Status Limited Term
If Limited Term (End Date of Assignment, Project, or Grant) 08/14/2023
Position Type Faculty

Position Overview A postdoctoral research associate position is available to work on a National Institute of Aging grant investigating the mechanisms of muscle fatigue with aging and the protective effects of exercise. The successful applicant will work in the Integrative Muscle Physiology & Energetics Laboratory under the guidance of principal investigator Dr. Christopher Sundberg. The research associate position is for Individuals who are highly motivated and able to work independently and as an integral part of our research team, which includes Co-PIs Professors Sandra Hunter and Robert Fitts.

Duties and Responsibilities
The major responsibility of the successful applicant will be to lead and conduct scientific research in the mechanisms of muscle fatigue in older adults, employing a whole-limb to cellular level approach. The successful candidate will be expected to publish scholarly papers, assist with grant writing, as well as mentor undergraduate and graduate students in the lab.

Required Knowledge, Skills and Abilities
Ph.D. degree in one of the following or a related field: Physiology, Exercise Physiology, Cellular Physiology, Bioenergetics, Molecular Biology. Fluency in the English language is essential along with strong communication and leadership skills.

Preferred Knowledge, Skills and Abilities
Experience with analysis of human muscle biopsy samples is preferred, such as single fiber isolation for assessment of contractile function, protein isoform identification via SDS-PAGE and/or immunohistochemistry, and experience with epifluorescence and/or video microscopy.

Department Exercise Science
Posting Date 05/16/2022
Closing Date

Please have three references send recommendation letters to Dr. Christopher Sundberg at:
christopher.sundberg@marquette.edu

It is the policy of Marquette University to provide equal employment opportunities (EEO) to all employees and applicants without regard to race, colour, religion, sex, sexual orientation, gender identity, national origin, disability, protected veteran status or any other applicable federal or state-protected classification.

Required Documents
Cover Letter/Letter of Application
Curriculum Vitae
Research Statement
Optional Documents
References

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The next issue of AuPS News will be distributed to members in December 2022.
All contributions for AuPS News should be sent to: associateeditor@aups.org.au before the end of November.

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JGP Journal of General Physiology