Australian Physiological Society

THE PROFESSIONAL ASSOCIATION FOR AUSTRALIAN PHYSIOLOGISTS

AuPS News – September 2018

A.K. McIntyre Award Winner 2017:
Dr James Cuffe, University of Queensland

James was awarded the AuPS AK McIntyre Award at the 2017 Scientific Meeting in Melbourne and is a newly elected council member in 2018.

Can you tell us what winning the AK McIntyre award means to you and about the research that contributed to the award?

I was so honoured to be awarded the AK McIntyre award in 2017, a prize awarded to many amazing researchers who went on to become real leaders in physiology in this country. This award came after several years of heavy involvement in the annual meetings of AuPS (2014-2017), an increasing contribution to physiology teaching and a large number of publications in a range of physiology journals, many of which were published while I was at Griffith University. My success over my PhD and postdoctoral years was strongly influences by a number of really supportive mentors including Karen Moritz, Mary Wlodek, Anthony Perkins and Vicki Clifton. Deanne Skelly and other AUPS members similarly provided me with opportunities within the society which I am very grateful for. Many of my publications undoubtedly contributed to this award but several stand out as most relevant to the Australian physiological society. One of these was published in Acta Physiologica in 2017. This was a largely collaborative study with other AuPS member and in it we demonstrated that while fetal growth restriction induced apoptosis in the fetal kidney, that cross fostering was able to improve renal maturity and partially restored nephron endowment. Other key publications of mine most relevant to AuPS published between 2014 and 2017 demonstrated that prenatal exposure to the stress hormone corticosterone programed altered adrenal function, increased corticosterone and aldosterone secretion, caused dysregulation of the Renin Angiotensin system and renal dysfunction.

How did you begin your career in physiology?

My passion for physiology research began during my undergraduate degree but was really enhanced during my honours year where I focused on understanding how glucocorticoids impair kidney development and program renal disease in offspring. While my PhD initially focused on understanding prenatal origins of renal and cardiovascular physiology, my interest in placental physiology quickly became the focus of my research. Since this time I have investigated how placental adaptations to a range of adverse environmental/dietary

FOLLOW US ON TWITTER:

@AUPHYSIOLSOC

exposures impact cardiovascular, metabolic, endocrine and renal physiology in both the mother and her offspring.

Can you tell us about your current position and the research you are currently involved with?

I was appointed as a teaching and research academic at The University of Queensland (UQ) in January of 2018 after highly productive and exciting postdoctoral positions firstly at UQ (2013-2015) and later at Griffith University (2016-2017). I am currently establishing my own research laboratory focusing on understanding the role of the placenta in maternal and offspring physiology. I also currently serve as one of two chairs of the Queensland Perinatal Consortium (QPaCT), a large collaborative network of scientists and clinicians interested in perinatal research.

I am currently working towards understanding how the placenta mediates gestational diabetes mellitus (GDM) and what impact current GDM treatments that target maternal metabolic dysfunction have on placental development. I am also interested in understanding how specific micronutrients such as selenium and certain B vitamins influence pregnancy health and offspring disease and I am investigating this using both samples from pregnant women and preclinical animal models.

What is the research direction you would like to take in the next 3-5 years?

Over the next five years, I will be expanding my human focused studies in collaboration with colleagues across south east Queensland. I will continue to investigate relationships between maternal dietary factors, maternal stress and gestational diabetes but also investigate cellular mechanisms that contribute to the disease. I also hope to be able to investigate how these placental adaptations relate to a range of physiological parameters in both the mother after pregnancy and her offspring.

What's the best thing about your lab at the moment?

The best thing about my lab at the moment is that it is currently in its infancy and the decisions I make over the next months will influence the direction of my research for many years to come. I am excited to have had recruited a number of new undergraduate, honours and PhD students in a short period of time and am I working closely with each to maximise their research output and career success. I am also working closely with my previous students and I am currently helping the first two of my PhD students to complete the final year of their PhDs. I will be so excited for them when they submit their theses after such hard work and commitment.

Which part of the research process do you most enjoy?

What brings me most joy in research is the look on a student's face when they identify a novel finding and confirm a hypothesis that they had been working so hard to formulate. I am also currently enjoying the transition in human research from animal models.

As a new council member, what do you hope to bring to the AuPS?

I have felt so welcome every time I have come to the annual AuPS meetings and really feel part of the Australian physiological community. Over the last few years, I have encouraged other researchers in my field, particularly students, to join AuPS and I organised symposia to maximise representation of pregnancy and reproductive physiology research within the society. As part of the council, I hope to be able to continue supporting the AuPS community and help to give others the opportunities AuPS has given to me. I also hope to be a strong advocate for pregnancy/reproductive research within this group.

James pictured with two of his current PhD students, Nirajan Shrestha and Lucy Batho (both studying at Griffith University).

The AK McIntyre Award

Sponsored by SDR Scientific

The Society's prestigious A.K. McIntyre award, named in honour of the Society's first President, 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 judging committee shall consist of the Executive Committee of Council (except that any member with a conflict of interest shall be replaced with another Councillor), together with up to two additional members of Council who shall be appointed for each specific round of nominations.

The Prize, sponsored by SDR Scientific consists of a medal and the sum of $1000.

The prize winner will be announced at the AuPS meeting in Sydney in November and in the December Newsletter.

Closing Date: Applications close 5 pm, 26th October 2018.

Please email applications to the National Secretary, Deanne Hryciw: d.skelly@griffith.edu.au

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

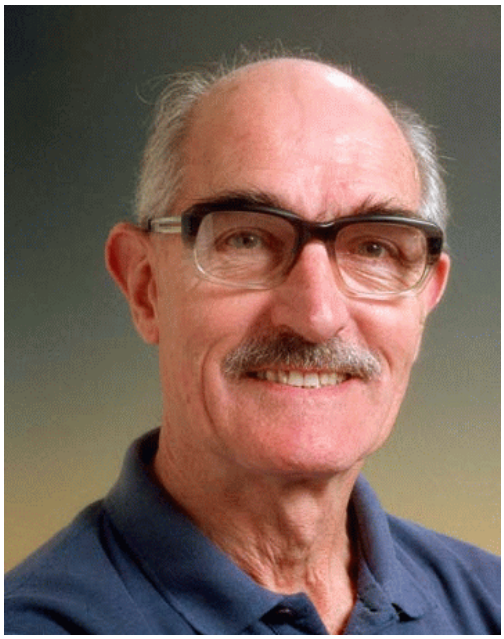
Details of other AuPS prizes can be found later in this newsletter and on our website.

Do you tweet???

We are increasing our ways of communicating our achievements to the wider world with our recent launch of the AuPS Twitter account.

Don't forget to follow us and use our twitter handle when you want to communicate the achievements of our members @AuPhysiolSoc

Vale William (Liam) Burke – 1922-2018



Liam's early study was in pharmacology, first in his home city of Liverpool, then at the University of London. Following his graduation he served from 1946 to 1948 in the Royal Air Force as a pharmacist-dispenser.

Liam then enrolled in science at University College London where he obtained a BSc. His intellectual capacities were recognized by that genius Bernard Katz (Nobel Prize, 1970) who took Liam on as one of the only two PhD students he ever accepted at UCL. There Liam shone, producing wonderful papers on synaptic transmission from motor nerves to slow muscle fibres. He was then encouraged to take up a senior lecturer position in the Department of Physiology at the University of Sydney where he continued research on synaptic transmission but now in the visual pathway. This department under Peter Bishop was fast becoming the greatest in the country and one of the five foremost neurophysiology centres in the world. In the golden era that ensured, Bishop, Burke, Levick, Rodieck, Hayhow and visitors produced a stream of superb papers on teasing out neural mechanisms in the visual pathway. This team broke up in 1967 when Bishop took the chair at ANU on the retirement of Sir John Eccles (Nobel Prize, 1963), with Liam succeeding to the Bishop chair. The papers that Burke and collaborators produced at this time on synaptic transmission in the thalamus and on memory processes were of higher quality than most of those that Eccles produced, considered at that time to be the gold standard.

In the succeeding 50 years, 30 of them post-retirement, Liam never faulted in his enquiries into neurophysiological mechanisms and publishing his observations. During much of this period he carried an administrative load that often included relieving his younger colleagues of such chores, so as to allow them unfettered time in their own research. But the gifts he possessed without peer were integrity, lack of vanity and pomposity, as well as generosity of spirit.

Liam was a gifted teacher, and often said that he could have become an actor as did his brother, so applied theatrical skills in his lectures. During a spoof lecture that Physiology occasionally scheduled for Medicine students, Liam suddenly disappeared below the dais, only to reappear with a black wig and moustache very effectively presenting as Hitler and delivered a short tirade of shouted German that sounded remarkably like a political rallying call. But Liam then said all is not always as it seems, and explained that he had actually quoted a short exposition on homeostasis by Claude Bernard published in German in Pflügers Archiv. Liam was also a great teacher in the lab, and enjoyed practical classes. And of course he trained many successful BSc(Hons), BScMed, and PhD research students.

Liam was present at the first meeting of physiologists and pharmacologists hosted by the Department of Physiology in May 1960, in the Anderson Stuart Building of the University of Sydney, during which the Australian Physiological Society was formally established. Liam attended many of the new Society's meetings in the 1960-70 period, and was elected to Council at the 12th AGM on 19th May at the 1971. He was the Local Secretary for the 1st IUPS Regional Meeting in the following year. He took on the role of Treasurer in 1974 and continued in that post until 1981.

In the years before cheap airfares, people would often travel to APPS meetings in other cities by car, and occasionally post-meeting camping trips were organized. Liam often joined these, though some of his students were

less than keen to travel with him to winter meetings when they learned his old Holden lacked a heater!

Liam was a key player in the organization of the 1983 International Union of Physiological Sciences' 29th Congress in Sydney. He was on the National Advisory Committee and chaired the International Scientific Programme Committee, where he learned how difficult it could be to get firm commitments from overseas scientists to attend a meeting in Australia. His persistence ensured the meeting was a great success.

By the early 2000s Liam was strongly of the view that the inclusion of the word "Pharmacological" in the Society's name had become inappropriate, and that its addition in 1967 should be reversed, returning to the original name. Liam's first attempt to persuade the membership to make the change failed, but succeeded in 2003.

Liam Burke's life to the end was centered on research, with his last paper published in early February of this year, when he died at age 95.

A/Prof Dave Davey

Prof Max Bennett (The University of Sydney)

Upcoming Events:

Student Member Profile:
Macsue Jasques, Victoria University

Macsue was elected as a student representative to the AuPS council earlier this year.

Can you tell us about your current position/role?

I am a PhD student, in my second year, in the 'Genetics, Epigenetics, and Exercise' group (led by A/Prof Nir Eynon) at the Institute for Health and Sport (iHeS), Victoria University.

How did you begin your career in Physiology?

I am originally from Brazil and I have started my career in physiology as an undergraduate intern student at Queensland University. In 2013, as part of my Bachelor degree in science I undertook a one year internship, and worked as Researcher Assistant under the supervision of Professor Jeff Coombes. Over there I discovered that human exercise physiology is my passion and I decided to pursue this career path. In 2016, I graduated with my honours degree (first-class) at Victoria University, under the supervision of Nir Eynon. My thesis focused on investigating the influence of genetic variations on responses to exercise in the Gene SMART study (www.vu.edu.au/speed-gene). In 2017, I secured a PhD scholarship with the same research group.

Can you tell us more about the focus of your PhD studies?

I am in my second year of my PhD, and my thesis is entitled 'The epigenetic basis of variable response to exercise training'. Exercise epigenetics is a new and exciting area of research. We know that exercise responses are influenced by our genes, however recent research from my supervisors, Nir Eynon and Sarah Voisin, and others showed that exercise adaptations do not only depend on our genetic code, but also on epigenetic change (i.e., environmental stimuli influencing the expression of genes without changing the genetic code). The overarching aim of my thesis is to discover epigenetic and subsequently genetic biomarkers that predict fitness changes following exercise training in the Gene SMART cohort. This will hopefully enable us to develop a set of potential genetic and epigenetic biomarkers to predict the response to exercise training. The most extensively studied epigenetic marker is DNA methylation (most commonly at the C of a CpG dinucleotide). The skeletal muscle epigenome is particularly sensitive to physical activity. Exercise training programs caused widespread DNA methylation shifts in genes that are relevant for skeletal muscle health. However, we are still pursuing the missing link between DNA methylation changes and the function of skeletal muscle, i.e, physiological and molecular adaptations to exercise training.

What is the research direction you would like to take in the next 3-5 years?

I am hoping to finish my PhD in the next 2 years and then to pursue a postdoctoral position. I am very aware of the competitive nature of these positions, and fellowships, and I therefore intend to publish quality manuscripts during my PhD and beyond. In the future, I would like to explore the genomic, epigenetic and functional mechanisms prompting the skeletal muscle to adapt to changes in the environment.

What do you hope to bring to the role of the student representative on the AuPS council?

I am very excited to start my role as the student representative at the AuPS. Following the AuPS conference held in Melbourne last year, I have decided to apply for the student representative role in the AuPS council. I wish to be able to have an active part in such an amazing organization as well as to expand my networks as a researcher with a great team of physiologists across Australia. Both undergraduate and postgraduate students represent a significant portion of the physiology community and they are one of the main drivers of the supervisor's/senior academics success. I hope to voice the student's requirements and needs at the AuPS council meetings to enable high involvement of the students in the society. In the few years that I have been in Australia, my team and I have been regularly attending and presenting our work at the AuPS annual meetings.

What do you like to do in your spare time?

One of my biggest hobbies is to go to the beach and surf or watch the surfing when it is on. I love doing any activities that are around nature. I recently found out that I am expecting a baby girl so I am also spending my spare time looking at baby things, I'm very excited to meet my baby daughter!

The Michael Roberts Excellence in Physiology Education Award

The Michael Roberts Excellence in Physiology Education Award is an award bestowed anually by the AuPS 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.

Candidates should provide a single page argued case for their nomination. In addition, candidates must provide evidence of achievement and impact which could include any of the following: letters of support from colleagues familiar with the teaching environment, detail of sustained high level teaching evaluation, student recognition, awards, success in obtaining substantial educational research funding and publications. Applications containing a brief CV and evidence of achievement should be a **maximum** of three pages**, plus a single page argument for their nomination**. In considering nominations, the judges will take into account the nominee's contributions to scientific meetings of the Society.

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 2019 AuPS conference.

Email applications to:

Dr Deanne Hryciw: d.skelly@griffith.edu.au

Closing date: 5pm, 26th October 2018.

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.

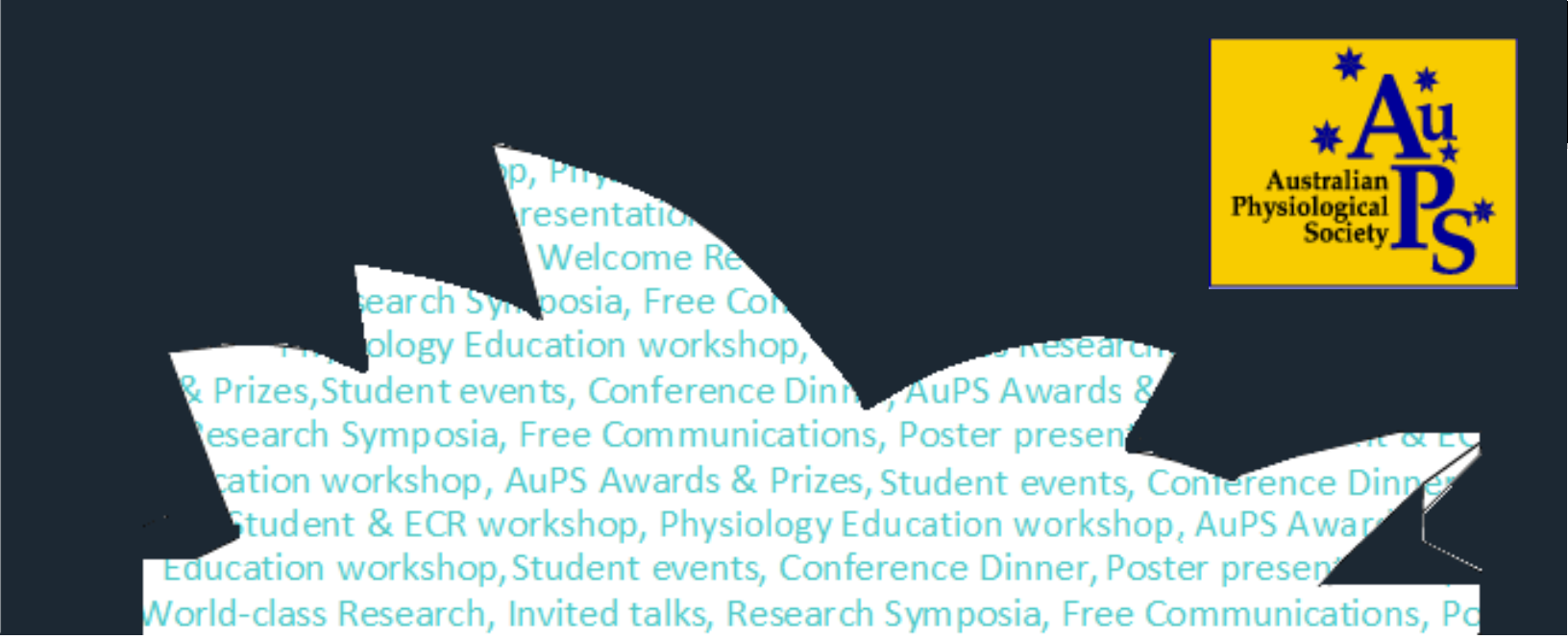
Prizes:

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 during the conference dinner of the AuPS meeting and in the December AuPS newsletter.

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

Email applications to the AuPS National Secretary Dr Deanne Hryciw: d.skelly@griffith.edu.au

Closing date: Applications close 5pm, 26th October 2018.



AUSTRALIAN PHYSIOLOGICAL SOCIETY

2018 SCIENTIFIC MEETING

25th -28th November 2018

Hosted by University of Sydney

REGISTER AND SUBMIT YOUR ABSTRACT NOW!

Early bird registration and abstract submission closes

Monday 24th September

Visit the website and follow us on twitter for the latest news and information on invited speakers, symposia, workshops, ECR events and student travel grants

aups.org.au

@AuPhysiolSoc

Other Upcoming Events:

anzos australian & new zealand obesity society

MONASH BIOMEDICINE DISCOVERY INSTITUTE

Breakthrough Discoveries in Metabolism, Diabetes and Obesity is pleased to announce registrations and abstract submissions are now open!

AuPS Council

President
Prof Gordon Lynch
The University of Melbourne
president@aups.org.au

National Secretary
Dr Deanne Skelly
Griffith University
secretary@aups.org.au

Treasurer
Prof Aaron Russell
Deakin University
treasurer@aups.org.au

Editor
Prof. David Allen
The University of Sydney
editor@aups.org.au

IT Manager & Production Editor
Hon A/Prof Dave Davey
ITmanager@aups.org.au

Webmaster
Dr Renee Ross (Dwyer)
University of Tasmania
webmaster@aups.org.au

Associate Editor
Dr Chris Shaw
Deakin University
newsletter@aups.org.au

Membership Officer
Dr Séverine Lamon
Deakin University
membershipofficer@aups.org.au

Education Officer
Dr Julia Choate
Monash University
educationofficer@aups.org.au

Student Representative
Giselle Allsop
Deakin University

Councillors

Dr Richard Mills
University of Queensland

Dr Nicole Beard
The University of Canberra

Dr Natalie Trevaskis
Monash University

Prof Gary Housley
The University of NSW

Dr Kimberley Mellor
The University of Auckland

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 2018.
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:

Established for more than 30 years, SDR Scientific provides quality equipment, consumables and technical support for life science researchers across Australia and New Zealand.
With the backing of a depth of reputable suppliers, we also provide installation, training and equipment service.
SDR Scientific is proud to be the sponsor of the following AuPS Awards and Prizes:

- A.K. McIntyre Award
- AuPS PhD Student Publication Prize
- AuPS Postdoctoral Publication Prize
- AuPS Student Oral Prize
- AuPS Student Poster Prize

At SDR Scientific, our objective is to make your life easier: helping you get the results you need, for the success you deserve.
Contact our friendly Technical Sales and Support Specialists at:
W: www.sdr.com.au
E: info@sdr.com.au
P: +61 2 9882 2882
F: +61 2 9882 6468

Visit the APAC Scientific exhibit at AuPS to see high quality products for advancing physiology studies including:

- Integrated DMT tissue-strip myographs and tissue organ bath systems
- enos easy-to-customise animal management software that is quickly and easily adapted to suit the needs of any facility
- Oxford Optronics GelCount colony counter for automating the detection, counting and analysis of mammalian cell colonies
- Millar solid-state, high fidelity catheters that measure pressure for respiratory, cardiac and intracompartmental clinical studies

Discover more at: www.apacscientific.com

https://www.adinstruments.com/

Aurora Scientific provides solutions for measuring the dynamic physical properties of muscle and connective tissue. Muscle mechanics systems cover the range from single myocyte to whole large-animal in-situ.
Products:

- Muscle Lever Systems
- Force Transducers
- High-Current Stimulators
- Test Apparatus and Software.

New Products:

- Dynamic Muscle Analysis Software with high throughput module.

aurorascientific.com