

AuPS News – March 2019

Member Profile:

Dr Lorna Daniels, University of Auckland

Lorna was awarded the AuPS prize for best student publication at the 2018 AuPS Scientific Meeting.

The prize is awarded for the best original paper published by an AuPS member during the course of their PhD studies and is sponsored by SDR Scientific.

Congratulations on the prize. Can you tell us about your award winning publication?

It is well established that there is a direct link between diabetes and cardiovascular disease. Yet, there still remains to be no specific therapy for diabetic cardiomyopathy (DCM). To investigate the role of an important modulator of contractility in the diabetic heart, calcium/calmodulin-dependent protein kinase II (CaMKII δ), I carried out *in vivo* and *ex vivo* experiments to generate new knowledge at the cellular and single muscle level that can now aid in improving diabetic heart health. This paper provided new evidence of the role of CaMKII δ in the diabetic heart. The key findings from this paper demonstrate that CaMKII δ inhibition attenuated the reduced force development and impaired rates of contraction and relaxation associated with type 2 diabetes (T2D), and moreover that these effects are independent of Ca²⁺ flux properties, including transient amplitude and Ca²⁺ load. These findings extend our understanding of the role of CaMKII δ in regulating the function of the heart in the context of diabetes and suggest a novel therapeutic potential for CaMKII δ inhibition to reverse impaired contractility and prevent heart failure progression in diabetic patients.



What is your current position/role?

I am currently a post-doctoral research fellow in the Cellular and Molecular Cardiology Lab at the University of Auckland, under the supervision of Dr Kim Mellor. I also work closely with the Cardiac

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Phenomics lab at the University of Melbourne, under the supervision of Professor Lea Delbridge.

What made you want to follow a career in research?

I started my career in research completing an honours project in Professor Keith George's laboratory at Liverpool John Moores University in the UK, where I was investigating athletic heart syndrome - characterising cardiac anatomy and function in endurance and strength based athlete's. I then moved to Kings College London where I completed my MSc in Human and Applied Physiology. There I switched my research focus from cardiac to skeletal muscle, completing a research project in Professor Stephen Harridge's laboratory investigating skeletal muscle aging. My experience in both of these labs really sparked my interest in research and led me to move to the other side of the World, New Zealand, to complete a PhD in the laboratory of Dr Jeff Erickson at the University of Otago, moving back into cardiac research. I feel incredibly lucky to have been able to work in multiple labs in different parts of the world and be surrounded by world class researchers who are extremely passionate about their research. The ability to come into work every day and interact with creative, driven scientists is something I will never take for granted.

Can you tell us about the research you're currently working on?

My current research in the Mellor lab is investigating metabolic disturbances in the diabetic heart. We are really interested in the role of cardiac glycogen and fructose handling from a molecular and functional perspective. I'm extremely fortunate to work with some outstanding researchers in this group and it's going to be very exciting to see where these projects lead over the next few years.

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

Over the next 3-5 years I intend to continue to develop my track record in cardiac physiology with a focus on metabolism and its interaction with function and ultimately transition back to the UK. There is some phenomenal cardiac research carried out in New Zealand and Australia and developing UK-NZ/Aus collaborations is something I am enthusiastic about.

What was your experience of the AuPS meeting in 2018?

The AuPS meeting in 2018 was a great conference with the highlight of meeting Professor Dale Abel from the University of Iowa whose work on the diabetic heart I have followed since the start of my PhD. I also really enjoyed Professor Livia Hool's plenary lecture where she emphasized the need for investment in cardiac research in Australasia.

How do you relax when not working?

When I am not working you will find me doing some sort of exercise, most likely involving handstands whilst enjoying the beautiful country that is New Zealand.

Lorna was awarded the PhD publication prize for the paper:

[Daniels et al. Inhibition of calcium/calmodulin-dependent kinase II restores contraction and relaxation in isolated cardiac muscle from type 2 diabetic rats. Cardiovascular Diabetology 2018, 17:89.](#)

Are you following AuPS yet??



We are increasing our ways of communicating our achievements to the wider world with our 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](https://twitter.com/AuPhysiolSoc)

Congratulations to Associate Professor Julia Choate, Awarded Otto Hutter Prize by The Physiological Society

AuPS council member and Education Officer, Associate Professor Julia Choate has been awarded the 2018 Otto Hutter Prize by [The Physiological Society](#). The Otto Hutter Prize recognises Associate Professor Choate's commitment to enhancing and expanding the educational experience for students, by using innovative technologies and teaching practices. The Physiological Society established the Otto Hutter Prize in 2009 to highlight outstanding teachers of undergraduate physiology and to raise the profile of physiology teaching. The prize's namesake, Professor Otto Hutter, emeritus Regius Professor of Physiology at University of Glasgow, is renowned for his research in the fields of neuromuscular and synaptic transmission and cardiac and skeletal muscle physiology, and is a passionate and innovative teacher.

“I create learning environments (interactive guided-inquiry lectures and team-based workshops) that encourage student participation and active engagement with their learning. I mould the physiology concepts so that they are pertinent to students' lives, and incorporate hands-on practical sessions to consolidate knowledge and develop



employability and research skills,” Associate Professor Choate said.

Associate Professor Choate has been invited to present a lecture at The Physiological Society's main scientific meeting in Aberdeen, United Kingdom, in July this year.

The 2019 AuPS PhD Student Training Award, Deakin University

In February, Chris Shaw and Severine Lamon hosted the recipients of the AuPS PhD Research Training award at the School of Exercise and Nutrition Sciences, Deakin University.

The award was established as a continued initiative to support the career development and provide networking opportunities for the society’s student members. The 2019 workshop followed up the first successful event hosted by the Prof Gary Housley at the University of New South Wales in 2018.



Above: PhD Research Training Award winners visiting Deakin University. From left, Amy Pascoe, Kelly Roeszler, Thomas Lea, Haley Dillon, Shanae Landen and Javier Botella, with Dr Chris Shaw.

Six places were awarded on a competitive basis and covered the travel and accommodation expenses of the award winners:

- Javier Botella (Victoria University)
- Haley Dillon (Deakin University)
- Shanae Landen (Victoria University)
- Thomas Lea (University of Western Australia)
- Amy Pascoe (La Trobe University)
- Kelly Roeszler (Murdoch Children’s Research Institute)

The 2 day workshop included a variety of activities, including research talks, facility tours, development activities on grant writing and career progression and a dinner on the Monday night. A big thanks to Giselle Allsop for her fantastic work coordinating the event!

[Hayley Dillon - Deakin University](#)
[Amy Pascoe - La Trobe University](#)

Our visit to Deakin University Waurn Ponds campus began at the School of Exercise and Nutrition Sciences, where we were introduced to our fellow AuPS student members and our hosts for the morning, Dr Chris Shaw and former AuPS student representative, Giselle Allsop. The day began with a focus on exercise physiology/metabolism including a tour of the teaching and research facilities, and a workshop where Javier Botella (pictured below) volunteered to be put through his paces in a test of his maximal capacity for fat oxidation. The impressive 3D gait lab and environmental chamber provided an exciting insight into the capabilities of human physiology research.

After lunch, we were invited to give a short presentation on our PhD projects, which was a great chance to share our work and to get to know each other’s research areas. We were then introduced to Dr Lee Hamilton, who gave us an overview of his research journey and some advice for boosting our public profiles. In particular, Dr Hamilton showed us how we can share our work with a general audience by getting involved with and writing for popular media-based science outlets (e.g. The Conversation). The afternoon concluded with a tour of the School of Medicine anatomy laboratories and pathology museum with AuPS student member, Alex Addinsall. In the evening we enjoyed a fantastic dinner on the

Geelong waterfront with Deakin staff and AuPS members.



Above: Shanae Landen takes a blood lactate measurement from Javier Botella during the workshop assessing maximal fat oxidation rates.

The second day began with a workshop on career progression with Dr Lewan Parker and Dr Séverine Lamou. This was followed up with a valuable session on grant writing with Associate Professor Glenn Wadley and Dr Séverine Lamou. Lunch provided an opportunity for us to compare and discuss real grant examples which helped us better understand how to formulate a grant application and also some ideas on what makes a successful grant. Specifically, the importance of presentation (minimizing large slabs of text), avoiding overly complex terminology, and emphasizing the significance and translatability of the proposed research was apparent for a competitive grant. Furthermore, it was refreshing and encouraging to see an honest presentation on the failure rates of even the most well-established researchers; their tips on being persistent and specific in your applications were great lessons to take home and apply to our own future grants.

For the afternoon’s activities we moved to the Metabolic Research Unit (MRU) within the School of Medicine, with a talk from Dr Sean McGee on his

career progression and a tour of the facilities. Researcher and AuPS student member, Liam Hall, further showed us the capabilities of the MRU with a short presentation on his PhD project in amyloid driven heart disease. The trip concluded with a talk from A/Prof Jeffrey Craig on his vast work on epigenetics in twin cohorts.

This trip provided an excellent introduction to new research areas, facilities and capabilities, valuable advice on how to maximise our PhD experience, and most importantly, the opportunity to meet and network with fellow AuPS student researchers. On behalf of all students granted the AuPS PhD Research Training award, we would like to thank the organisers and researchers at Deakin University involved in hosting this enriching trip, as well as AuPS for investing in the continued development of student physiology researchers.



Dr Lee Hamilton presents on the highlights of his research career so far.

Amy Pascoe

I am currently in the third year of my PhD at La Trobe University where I am investigating the role of cytokine TWEAK, and its receptor Fn14, in the regulation of skeletal muscle wasting and regeneration. My work investigates the actions and outcomes of this pathway in acute injury, ageing, and exercise interventions. I am also interested in

assessing the use of animal injury models to accurately and precisely recapitulate human disease.

I have been a student member of AuPS since 2016 and have enjoyed attending and presenting at each annual meeting as a way to share my research and broaden my professional network with researchers at all stages of their careers. This trip was a great opportunity to connect with students with similar and diverse research and career interests to myself, as well as broaden my exposure to new and exciting research capabilities.

Hayley Dillon

I commenced my first year of my PhD in January 2019. This is a joint project between Deakin University and the Baker Heart and Diabetes Institute which will investigate the potential for physical activity to mitigate cardiometabolic dysfunction in haematological cancer survivors (post stem cell transplant) via effects on signalling cascades and cellular processes in 1) cardiomyocytes including excitation contraction, mitochondrial adaptations, cellular stress response, 2) endothelial cells, and 3) extracellular matrix. I am also interested in assessing the effect of physical activity on immune function in this immunosuppressed population.

The student trip provided an invaluable opportunity to network with fellow PhD students, and established

academics alike, with the communal goal of advancing physiological science. These early connections are indispensable for establishing future research collaborations. Additionally, it was great to hear the individual research journeys of established researchers (including mistakes made, lessons learnt and tips for career progression). This type of knowledge will undoubtedly benefit my career progression in the physiological sciences.



Student researchers with Deakin staff and AuPS members at Geelong waterfront for dinner on the Monday night.

Congratulations Emeritus Professor Trefor Owen Morgan for being made an Officer of the Order of Australia (AO)

Prof. Gordon Lynch
University of Melbourne

The Australian Physiological Society was thrilled with the news in January 2019 that Emeritus Professor Trefor Owen Morgan had received the Order of Australia (AO) for distinguished service to medicine and medical research in the physiological sciences, particularly in the field of hypertension.

Professor Morgan is an Honorary Member of the Australian Physiological Society having been a long-term ordinary member and serving with distinction in the role of National Secretary. Professor Morgan's extensive contributions and achievements were highlighted in the December 2006 issue of the AuPS newsletter marking his elevation to Honorary Membership in our Society. In that issue, Professor Stephen Harrap penned a lovely mini biography of Trefor, documenting the breadth and depth of these contributions to physiology and medicine and their recognition internationally. You can read the biography [here](#).

From a personal perspective it was also a thrill to see Professor Morgan receive this honour. He was Head of the Department of Physiology at The University of Melbourne when I started there as a doctoral student in 1988. I learned much from his rigorous teaching of physiology, especially renal physiology and the regulation of fluid balance. He was a formidable



Prof Morgan while Head of Department of Physiology, University of Melbourne.

Department Chair, yet remarkably supportive. He was a very strong advocate of the discipline through the Australia Physiological and Pharmacological Society especially during his tenure as National Secretary. Although officially retired and Emeritus in status, he has maintained an office in the Department of Physiology and still critiques (unsparingly) my weekly segments on ABC Radio.

The AuPS is very proud of Professor Morgan and his most deserving national recognition as an Officer in the Order of Australia. Congratulations Trefor!



2019 SCIENTIFIC MEETING

A JOINT MEETING OF

**THE AUSTRALIAN PHYSIOLOGICAL SOCIETY
&
THE AUSTRALIAN SOCIETY FOR BIOPHYSICS**

Hosted by The Australian National University
Canberra, ACT

1st - 4th DECEMBER 2019

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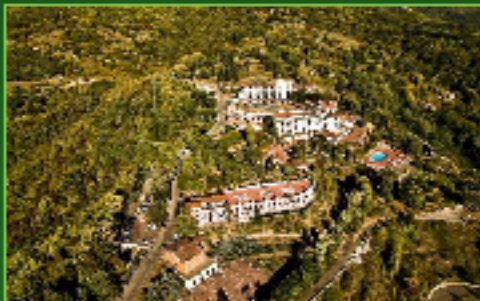
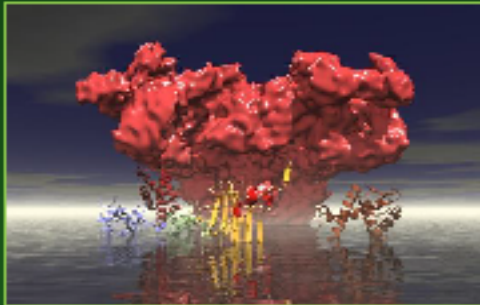


GRS *Gordon Research Seminars*

Announcing the 2019 Gordon Research Seminar on:

Muscle: Excitation-Contraction Coupling

Integrating knowledge on Basic Mechanisms and New Techniques to Advance Treatment of EC Coupling Disease



Date and Location:

May 18 – 19, 2019
Renaissance Tuscany Il Ciocco
Lucca (Barga), Italy

Organizers:

Chairs: Carlo Manno and Amy Hanna

Meeting Description:

The GRS for early career researchers will be held on the two days prior to the associated GRC. The program will encompass a range of topics related to EC coupling including structure/function of ion channels, regulation of compartmental Ca^{2+} handling and mechanisms of pathophysiology in muscle.

Mentorship Component:

“Strategies for Funding Success and Career Opportunities”
Q & A with international panel of established researchers from academia and industry.

Associated Gordon Research Conference (GRC):

This GRS will be held in conjunction with the “Muscle: Excitation-Contraction Coupling” Gordon Research Conference (GRC). Those interested in attending both meetings must submit an application for the GRC in addition to an application for the GRS

More details and online application are available at:

<http://www.grc.org/muscle-excitation-contraction-coupling-grs-conference/2019>

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The next issue of AuPS News will be distributed to members in June 2019.

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

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