

## AuPS News – March 2022

### A.K. McIntyre Award Winner 2021

### Dr. Sarah Voisin from Victoria University

Dr Voisin was awarded the AuPS AK McIntyre Award at the Gold Coast 2021 Scientific Meeting.



#### **Congratulations on winning the AK McIntyre Award. What does this award mean to you?**

It is an honour to see all the hard work I have been doing passionately for the past 5 years recognized as impactful in the field of physiology. I pour so much of myself into my work that the burn out is never far away. One of the most gratifying things is to know I have made a significant contribution to science, and this award keeps me motivated to pursue my research with redoubled efforts!

#### **Could you tell us about your position at Victoria University and what research you are currently working on?**

I am a senior postdoctoral fellow working within the Genetics & Epigenetics of Exercise research group, at the Institute for Health and Sport. My research

focuses on epigenetic ageing and exercise training in humans. Specifically, I am currently investigating whether exercise training can mitigate the ageing process by slowing down (or even reversing!) epigenetic changes, which are one of the primary hallmarks of ageing. More generally, I want to understand whether different organs age differently and whether men and women differ in their ageing trajectories. I have the ambition of creating a sex-specific atlas of epigenetic ageing in every single human tissue to accelerate the development of targeted longevity-promoting drugs and lifestyle interventions. These questions can only be tackled with large amounts of data, as small sample size is the main factor responsible for irreproducible research. Therefore, I use advanced bioinformatics, statistics and data mining to gather big data and identify patterns that are consistent across multiple human cohorts, and therefore robust and reproducible. In what has been a painstaking but extremely rewarding effort, my research team has gathered more than 60,000 human epigenetic profiles from 14 tissues, getting us closer this goal. I am supervising a team of brilliant and hardworking PhD students and deliver regular bioinformatics tutorials to pass on my knowledge to the next generation of scientists.



**What is your research background? How did you begin your career in Physiology? What got you interested in the first place?**

I studied general biology in my Bachelor and Master program in France, ranging from molecular biology, biophysics, population genetics, epigenetics, microbiology and of course, physiology. I was not particularly invested in Physiology at first, and I did a PhD in epigenetics in the context of obesity and its complications in humans. I quickly realised that I was just generally interested in how to keep the human body healthy and well-functioning through lifestyle interventions such as diet and exercise, and Physiology naturally became a core component of my research as it gives a holistic approach to how organ systems interact to support human health.

**Which part of research makes it most enjoyable for you?**

I am addicted to the feeling of investigating, analysing data, and coming up with clever and elegant study designs and experimental approaches to answer a complex problem. I often picture myself as an investigator trying to find clues in the data to solve a problem that turns out to be much larger than my own life. That feeling alone is enough to keep me going on and on. I see the generation of knowledge for its own sake as a valuable pursuit.

**What are the biggest challenges of being an ECR? How have you adapted to the challenges of the COVID pandemic with your research?**

The hardest thing about being an ECR (at least for me!) is to come to terms with the sore issue of funding and to navigate the power play in the world of science. I wasn't prepared for the constant need to ask for money to do research: I was trained to design studies, conduct experiments and perform analyses to solve biology-related questions, I wasn't trained to be a spin doctor. The constant need to publish is also extremely disheartening. Good science takes time, so any paper worth publishing involves years of careful design, robust replication, and convincing follow-up experiments, which is completely unfeasible in the time frame we are asked to publish. This incompatibility between my values as a scientist and what is required for me to keep my job is the main cognitive dissonance I must deal with on a daily basis (but I suppose it doesn't only apply to ECRs!). The nature of my work (bioinformatics/data mining/data analysis) means that I wasn't relying as much on data gathering, so I was relatively little impacted by COVID, and I feel very grateful for it. However, the pandemic brought mental health challenges that often killed my motivation and made me wonder more than once why I was still getting up in the morning.

**Where do you see your research and/or career going in the next 3-5 years?**

I want to remain in the field of ageing research and expand my network of collaborators to surround myself with experts who will help me solve human ageing. I want to start my own research group to pursue my research vision, and I have applied for funding in Europe and Australia. Regardless of my success in those grants and whatever career progression I have, I will relentlessly keep trying to make us live healthier for longer. Wouldn't it be nice to feel like a 20-year-old past the age of 100?

## Postdoctoral publication award winners:

In 2021 there were *two* joint winners of the Postdoctoral publication prize, Dr. Enyuan Cao and Dr. Choon Boon Sim

### Dr. Enyuan Cao

Monash University

Joint winner of the 2021 AuPS Post-doctoral publication prize

**Publication:** Mesenteric lymphatic dysfunction promotes insulin resistance and represents a potential treatment target in obesity (2021). *Nature Metabolism*, Vol. 3, pages 1175–1188.



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

This paper has shown that mesenteric lymphatic dysfunction promotes obesity and insulin resistance.

While lymphatic dysfunction has been implicated in obesity, the underlying mechanisms were unknown. This paper revealed a ‘lymphatic-centred pathophysiological mechanism’ as a potential therapeutic target for metabolic disease. This work has changed the traditional views of the roles of lymphatics in the gut from a passive draining conduit, to a network that regulates lipid metabolism and immune activation.

**What is your current position/role?**

I am a research fellow in Chris Porter’s lab at Monash Institute of Pharmaceutical Sciences. I have completed my PhD in 2019. My current research investigates how mesenteric lymphatic dysfunction and its associated underlying mechanisms promote metabolic disease and inflammatory bowel disease. In addition, I also develop potential therapeutic strategies to treat type 2 diabetes mellitus through the lymphatics and my work also has translational interest in the licensing of therapeutic technologies.

**What made you want to follow a career in research, and where do you see yourself heading professionally?**

It is always fascinating to discover the unknown and also make contributions to translational science at the same time. My work put me in the position to bridge fundamental science to translational drug discovery.

I am working to establish and expand my research in the field of lymphatic centred pathophysiology in inflammatory disease over the next 3-5 years.

**Outside of work/research, what do you do to relax?**

When I am not in the lab, I enjoy cooking, painting and most recently looking after baby plants.

**Dr. Choon Boon Sim**  
**Murdoch Children’s Research Institute**

**Joint winner of the 2021 AuPS Post-doctoral publication prize**

**Publication:** Sex-Specific Control of Human Heart Maturation by the Progesterone Receptor (2021). *Circulation*, Vol. 143, No. 16, pages 1614–1628.

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

Thank you to AuPS for the award and the opportunity to be in the newsletter.

This publication uncovers a novel role for the sex steroid progesterone during postnatal maturation of the human heart, thus revealing a completely new biological function of progesterone beyond its traditional functions associated with reproductive biology. In addition, the key resource data sets outlined in this study provide a blueprint for understanding sex differences in human heart development and a framework for understanding mechanisms underpinning the acquisition of adult cardiac cell identity. It is super exciting that the data sets have now been curated for inclusion in the Human Cell Atlas.

**What is your current position/role?**

I am currently a 3rd year full-time medical student in the University of Western Australia at Perth and a casual research officer with Dr Enzo



Porrello’s lab in the Murdoch Children’s Research Institute in Melbourne. This is the advantage of being a wet lab scientist who learnt to program over the years. When I was in the lab, I could do the molecular, cellular and stem cell experiments, as well as next generation sequencing preparation and bioinformatic analysis of my project. Now I can work remotely by tapping into the high-performance computer in the MCRI for any bioinformatics analysis if required. This is all possible because Enzo has been super supportive over the years from me going to medical school to being continuously happy to involve me in the project, so I do not lose touch in science. Honestly, I miss pipetting a 96 well plate qPCR sometimes.

**What made you want to follow a career in research, and where do you see yourself heading professionally?**

To be honest, scientists are as rare as astronauts from where I came from at the time, so I never thought about being one. I was very lucky to tumble across research nearly 20 years ago when I gave up medicine due to financial reasons after high school. Before I knew it, I finished my bioengineering degree and decided to take on a

master's degree in genetics in order to be qualified for PhD enrolment. The 3 years postdoc in Melbourne is when I fell so much in love with scientific research. The honour of being able to wake up every day and work on some novel cutting-edge scientific questions is a very humbling feeling. I also realized at the time how much I would like to be able to translate my research into clinical applications. That is when I decided to go back to medical school so that I can hopefully have a career as a clinician-scientist.

**Outside of work/research, what do you do to relax?**

When possible, I try to run as it makes me feel relaxed. I also do target shooting but it is kind of limited by the cost. One thing I really enjoy is a movie marathon if I have time.

A banner for the Australian Physiological Society Scientific Meeting. The banner is white with a blue and yellow diagonal design on the right side. On the left, there is the AuPS logo and the text 'Australian Physiological Society Scientific Meeting'. On the right, there is the text 'Hobart 2022 20-23 November' and 'Hosted by UNIVERSITY of TASMANIA' with the University of Tasmania logo. The background on the right shows a modern building at night with many lit windows.

 Australian Physiological Society

**Australian Physiological Society  
Scientific Meeting**

**Hobart 2022  
20-23 November**

Hosted by  
**UNIVERSITY of  
TASMANIA** 

# AuPS Council

**President**

Prof Robyn Murphy  
La Trobe University  
[president@auaps.org.au](mailto:president@auaps.org.au)

**National Secretary**

Prof Glenn Wadley  
Deakin University  
[secretary@auaps.org.au](mailto:secretary@auaps.org.au)

**Treasurer**

A/Prof Séverine Lamon  
Deakin University  
[treasurer@auaps.org.au](mailto:treasurer@auaps.org.au)

**Production Editor**

Prof Nir Eynon  
Victoria University  
[editor@auaps.org.au](mailto:editor@auaps.org.au)

**IT Manager**

Dr Danielle Hiam  
Deakin University  
[ITmanager@auaps.org.au](mailto:ITmanager@auaps.org.au)

**Associate Editor**

Dr Ben Perry  
Western Sydney University  
[associateeditor@auaps.org.au](mailto:associateeditor@auaps.org.au)

**Membership Officer**

Dr. Dino Premilovac  
University of Tasmania  
[membershipofficer@auaps.org.au](mailto:membershipofficer@auaps.org.au)

**Education Officer**

A/Prof Andrew Moorhouse  
University of New South Wales  
[educationofficer@auaps.org.au](mailto:educationofficer@auaps.org.au)

**Sponsorship Officer**

Dr Kevin Watt  
The University of Melbourne  
[Adam.rose@monash.edu.au](mailto:Adam.rose@monash.edu.au)

**Social Media Coordinator**

Dr Adam Rose  
Monash University

**Councillors**

Dr. Magsue Jacques  
Victoria University

A/Prof Bradley Launikonis  
University of Queensland

**Student Representative**

Charlotte Phelps  
Bond University

This issue of AuPS News was compiled by Ben Perry with many thanks to the generous contributors. The next issue of AuPS News will be distributed to members in June 2022. All contributions for AuPS News should be sent to: [associateeditor@auaps.org.au](mailto:associateeditor@auaps.org.au) before the end of May.

## Thank you to the supporters of AuPS:

