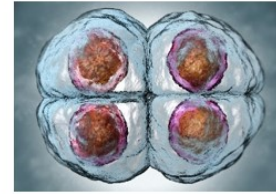




Reproductive Health Australia is a unified voice for Australian researchers in reproduction, advocating directly to the community, opinion leaders and the Government on behalf of the entire sector



Convenor's Corner

It's Time for More Reproductive Research In Australia

by RHA Founder and Convenor, Prof Jock Findlay

Australia has experienced an unprecedented number of devastating events in recent times, including drought and animal feed restrictions, floods and massive bushfires. The bushfires alone have burnt out over 18 million hectares in all the States and the Australian Capital Territory. The ecosystems subjected to these onslaughts have suffered greatly, with immense losses of wildlife and of genetically superior breeding stock on affected farms and stations. One billion wildlife animals are estimated to have died and, as a result, 16 mammalian species are now listed as Critically Endangered, Endangered or Vulnerable. Whether these events impact on human fertility is not known. Now is the time to apply our knowledge and expertise in the reproductive sciences to these situations.

Read the full article [here](#)

Sulfate – an Obligate Nutrient in Reproduction

Associate Professor Paul Dawson, Leader of the Development Disorders Research Group, Mater, Brisbane.

Nutrient sulfate is essential for human and animal reproduction, as well as healthy growth and development throughout pregnancy and after birth. So it's surprising that sulfate is not currently appreciated across the health, wildlife and agricultural sectors.



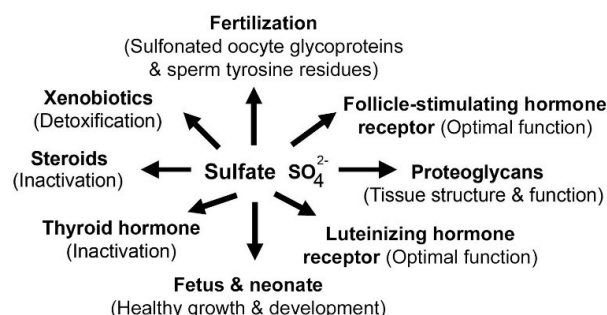
A/Prof Paul Dawson has spent the last 2 decades investigating the genes that regulate sulfate levels in the body, and the consequences of sulfate deficiency. Initially, he focussed on a sulfate transporter gene (*Slc13a1*) that is expressed in the kidneys where it reabsorbs sulfate and maintains healthy levels in circulation.

Targeted disruption of *Slc13a1* in mice led to low circulating sulfate levels and a range of abnormal phenotypes including adverse neurodevelopment and growth retardation. In addition, low sulfate level in pregnant female mice led to increased fetal loss from mid-gestation, suggesting for the first time that sulfate is important for healthy pregnancy.

More recently, Paul and his team investigated a related sulfate transporter gene (*Slc13a4*) that is expressed in the placenta where it mediates sulfate transfer from maternal to fetal circulation. Disruption of that placental gene led to severe and lethal developmental outcomes, highlighting the importance of maintaining a sufficient supply of sulfate to the fetus during pregnancy.

Paul's biomedical research on mouse models of sulfate deficiency has led to human studies, including the development of a world-first validated sulfate test at Mater Pathology in Brisbane. This test has enabled the generation of sulfate reference ranges in healthy pregnant women, showing that levels increase by more than 2-fold in pregnancy, with levels peaking in late gestation. This finding was remarkable because most plasma ion concentrations usually decrease slightly in pregnancy, prompting Paul and his team to further investigate the consequences of sulfate deficiency in human growth and development.

About one third of our sulfate requirements are derived from the diet and the remainder is produced from sulfur-containing amino acids. However, it's important to note that the developing fetus has little capacity to generate sulfate and is therefore reliant on sulfate supplied from maternal circulation. This is relevant to babies born very preterm who rapidly become sulfate-deficient because the enzymatic capacity to generate sulfate from amino acids is negligible in fetal tissues until later in gestation. "Our research has shown that sulphate deficiency is a major issue in preterm babies and we propose that sulfate supplementation directly to the infant after preterm birth could be used to reduce brain injury that's associated with sulfate deficiency". Paul and his team have recapitulated the finding of sulfate deficiency in preterm piglets, with the next phase of the research investigating the neuroprotective benefit of neonatal sulfate supplementation using this clinically relevant animal model.



Paul is a Mater Foundation Principal Research Fellow, collaborating with multiple international biomedical and clinician scientists to investigate the role of sulfate in mammalian physiology. "I'm thrilled when people from around the globe contact me with an interest in sulfate biology." Since the genetics and biology of sulfate is conserved across animal species, there's a wealth of research opportunities for investigating this nutrient in human and animal reproduction.

How did an Australian Reproductive Researcher get Head Hunted to Science Advisor in Policy Research in Canada?

An interview with Jenna Haverfield, PhD. Senior Advisor, Science Initiatives, Institute of Gender and Health, Canadian Institutes of Health Research



Dr Jenna Haverfield started her career with her PhD studies at Monash University (conferred in 2014) in the field of male reproduction at the Hudson Institute for Medical Research (Clayton, Victoria). With a swag of publications, awards and unique experiences in science communication, she stood out from the crowd and her future was bright. She thirsted for a new challenge that took her around the world. Jenna has held postdoc positions in basic and clinical research in women's reproductive health in the UK and USA. She recently took up a new role as a Senior Advisor in the Institute of Gender and Health, Canadian Institutes of Health Research.

Jenna spoke to RHA about her career in reproduction

What excites you about this new role in policy research?

"I am fascinated about understanding how biological sex influences the overall health of men and women. My research career to date focused on studying the sexually dimorphic male and female reproductive systems, but I have recently taken on a new role learning about sex differences in the rest of the body. Why do men have a higher risk of developing somatic cancers than women? Why are women more likely to suffer from autoimmune conditions than men? Why do women have more adverse reactions to drugs than men? These are just some questions that I am excited to find answers to. Uncovering the role of sex outside of the reproductive system will help us move towards a more personalised approach in medicine, ultimately leading to more equitable health outcomes for men and women.

To put it back into an Australian context, my new role is like working at the NHMRC on one of the major health initiatives, improving research outcomes and policy for the good of the Australian public."

Do you miss bench research?

“Yes, I miss being at the bench, observing sperm and eggs at high magnification under a sophisticated microscope. However, this new role is a fantastic opportunity to ‘zoom out’ and marry my love of science communication with my desire to make a difference and have a bigger impact on the entire Canadian research ecosystem.” And its not surprising; Jenna’s CV not only displays academic research excellence but it’s littered with science communication honours and accolades.

What message would you like to get across to Australian decision makers?

“Data is emerging that reproductive health can be a surrogate marker for the overall health of men and women. It’s critical that policy and decision makers understand the far-reaching implications of reproduction research, so they can allocate sufficient funds to give researchers the opportunity to fully explore the complex interrelationships between fertility and the health of Australians.”

Would you like to return to work in Australia?

“After working in various research labs in the UK and Canada, it is clear that Australia is a powerhouse for reproductive biology research. I hope that I have the opportunity to return and contribute to this important field in the future.”

Dr Marissa Parrott: Saving Species in Victoria to an all Female Expedition to Antarctica!

You may remember RHA featured member Dr Marissa Parrott, Zoos Victoria’s Reproductive researcher, in the very first edition of our newsletter. We thought we would update you on her recent adventure.

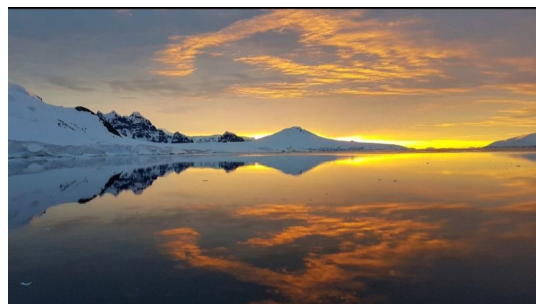


In 2019, Marissa Parrott was chosen through a globally competitive process to be part of the World's largest ever all female expedition to Antarctica. The voyage was the culmination of a year of study and learning with Homeward Bound and brought together 112 women from 33 nationalities and 25 disciplines of STEMM (science, technology, engineering, maths and medicine).

Homeward Bound is a ground-breaking initiative that aims to heighten the influence and impact of 1,000 women with a science background in order to influence policy and decision making as it shapes our planet. It connects a globally supportive network of women in STEMM for collaboration, innovation and impact for environmental protection and recovery, with a focus on world-wide issues, such as climate change, plastics and improving the low representation of women in leadership positions.

During 2019, Marissa was supported by Zoos Victoria to meet her Homeward Bound 4 cohort online and learn new aspects of leadership, visibility, strategy mapping, behavioural analysis, awareness and emotional resilience for long-term environmental outcomes. As exciting as it was to learn these new strategies, the real excitement was at the end of the course. This is when the women met in person and embarked on an intensive learning adventure in Ushuaia, Argentina, and 3 weeks living on a ship visiting ports, research stations and wild areas of the Antarctic Peninsula to learn more about the issues it faces and how the world can help.

Marissa had always dreamed of visiting Antarctica, but to do so with 112 new 'sisters', to learn of their backgrounds, discuss world issues and come back empowered to make a larger global difference for equality, sustainability and biodiversity was more than she could have ever hoped for.



t was a voyage of firsts – Marissa’s first ever night at sea was spent on the notorious Drake Passage, one of the world’s most dangerous ocean crossings. It was expertly traversed by the team from Polar Latitudes on their ship, the Hebridean Sky. She met whales, seals, orcas and 5 species of penguins, as well as watching albatrosses soar overhead. She chose courage over comfort – taking the polar plunge to swim amongst icebergs – twice - despite a distinct dislike of swimming in cold water!

Each day involved wildlife surveys, classes on strategy, visibility, goals, resilience and science, zodiac cruises or landings to see the landscape and wildlife, and learning the stories and backgrounds of Antarctic researchers and the Homeward Bound group. Discussions and presentations often ran well into the night, though it was easy to lose track of time with 24 hour sunlight.

Marissa now has a network of Homeward Bound sisters across the world and new strategies to protect our planet, raise the profile of women and girls in STEMM, and share her learnings with others. They are continuing to work together on everything from the protection of the Antarctic Peninsula and government policy, to raising awareness of the little things everyone can do to be more sustainable in our everyday lives. It was a life-changing adventure which shows we are all stronger together.



Photo credit: Will Rogan



Photo credit: Homeward Bound

Australian Reproduction Research Highlights

Getting an abortion just got harder, thanks to COVID-19. [The Conversation](#). May 12, 2020

Research in sheep suggests treatments given to babies who have experienced fetal growth restriction during pregnancy need to be carefully considered. [Frontiers in Endocrinology](#). May 21, 2020.

The wallaby that's permanently pregnant. [PNAS](#). Mar 17, 2020

Improving sperm motility in sheep by adding a more fertile ejaculate to a less fertile ejaculate. [MDPI](#). Feb 18, 2020

For more updates see RHA's [Latest Articles](#)

Membership

Ask your family, friends and colleagues to become a RHA member – it's free until June 2021!

Visit www.reproductivehealthaustralia.org.au and click on "Become a member"

What's On In 2020

- *Due to COVID-19, major adjustments have occurred. See updates below.*
- *Virtual meeting. ESHRE 36th Annual meeting, 5-8 July 2020.*
Cancelled until further notice. ESA-SRB-APEG Annual Scientific Meeting, 1-4 November, Christchurch, New Zealand
- *Virtual meeting. National Scientific Conference, Australian Society for Medical Research 18-19 November 2020*
- *Postponed. ASMR Medical Research Week® until November 2020*
Currently proceeding. Andrology 2020 12 International, 11th European and 32nd German Congress of Andrology 9-12 December, Munster, Germany
- *Moved. International Congress on Animal Reproduction (ICAR) 27th June – 1st July 2021*
- *Moved. Fertility Society of Australia conference 11-15 September 2021, Sydney*
Moved. International Federation of Placenta Associations, Dates pending, 2022, Amsterdam, Netherlands
- *Moved. Society for Environmental Toxicology and Chemistry World Congress, Dates pending, 2021 or 2022, Singapore.*
Moved. International Society for Behavioural Ecology Congress, 11-16 September, 2022, Melbourne, Australia

Congratulations to

Professor Shaun Patrick BRENNECKE,
Order of Australia
Royal Woman's Hospital, Melbourne.

*For distinguished service to medical education and research in the fields of obstetrics
and gynaecology, and to professional societies.*

RHA Executive Champions

[Professor Eva Dimitriadis](#), The University of Melbourne (Human Health)

[Professor Michael Holland](#), University of Queensland (Agricultural Productivity)

[Professor Bob Wong](#), Monash University (Environmental Sustainability)

Steering Group

Professor John Carroll

Professor Eva Dimitriadis

Professor Jock Findlay AO FAHMS

Professor Michael Holland

Professor Kate Loveland

Professor Robert McLachlan AM

Dr Sarah Meachem

Professor Sarah Robertson FAA

Professor Rebecca Robker

Professor Ray Rogers

Professor Lois Salamonsen FAA

Professor Helena Teede, FAHMS

Professor Bob Wong

RHA Office

Professor Jock Findlay AO FAHMS (Convenor)

Professor Ray Rogers (Assistant Convenor)

Dr Sarah Meachem (Executive Officer)

Dr Liza O'Donnell (Manager)

Ms Nicola Rivers (Early career representative)

RHA Supporting Organisations

Centre for Reproductive Health, Hudson Institute of Medical Research

Hudson Institute of Medical Research

School of Biological Sciences, Monash University

Monash Biomedicine Discovery Institute, Monash University
Robinson Research Institute, University of Adelaide
Healthy Male Andrology Australia
Department of Obstetrics & Gynaecology, University of Melbourne

RHA Affiliate Organisations

Society for Reproductive Biology

Fertility Society of Australia



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