Phytogen February 2020

11 Feb International Day of Women and Girls in Science, award applications due this Friday.

09 February 2020

Dear ASPS members,

11 Feb is International Day of Women and Girls in Science.

February Phytogen is now available HERE. See the Plant Nutrition Trust Award reports and up coming conferences.

Applications for numerous prestigious ASPS awards are currently opened with a closing date **14th of February 2020**. Nominate yourself. More details below.

Call for nominations for ASPS president elect

We are currently seeking nominations for the next ASPS president. If you have a passion for Plant Science and an interest in helping to drive and shape research and education in the Australian Plant Science community please consider nominating.

Nominations can be sent to the secretary@asps.org.au by Friday the 28th of February 2020

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Please see full details and eligibility requirements on the ASPS website: https://www.asps.org.au/awards

Kind regards,

Dr Simon Williams

Honorary Secretary, ASPS

Phytogen February 2020

05 February 2020

Welcome to Phytogen for February. 2020 is the International Year of Plant Health. You can read more at the FAO website.

Also occurring this week will be United Nations International Day of Women and Girls in Science.



It is very timely then; to plan conferences and workshops for the year. If you want to advertise an event use this link. Below are some to get you thinking.

1. THE PLANT NUTRITION TRUST is inviting applications for awards to assist in carrying out a study tour or to attend a conference or such other activity related to their stated objectives. The TRUST has been established to encourage and promote research and technology transfer in the areas of plant mineral nutrition, soil fertility, fertiliser and soil amendment technologies and certain abiotic stresses. Related topics in agronomy and plant breeding etc will also be considered.

Awards will be made to promising PhD students, post-doctoral students and early-career scientists working in the areas mentioned above. Applicants must be currently working in Australia and linked with a recognised university or relevant institution. Details and application forms available by clicking on the below links. **Applications close 20th March 2020.**

pdf: PlantNutritionTrust_Intro&Appl_2020

word: PlantNutritionTrust_Intro&Appl_202

2. FOOD AND WATER SECURITY INTERNATIONAL WORKSHOP: ENGINEERING AQUAPORINS TO BOOST CROP YIELDS AND WATER RECYCLING TECHNOLOGIES

12 May 2020 to 15 May 2020. 

What types of new biotechnologies are needed to ensure food and water security in the future?

Join us for a workshop at the **Shine Dome in Canberra (13-15th May 2020; https://www.shinedome.org.au/whats-on)** to explore how we can use and engineer aquaporin proteins to boost crop productivity and advance water filtration technologies.

Student travel support is available thanks to ASPS – please apply, more details below. Discount early bird registration is now open and talks selected from abstracts will receive registration reimbursement – https://www.eventbrite.com.au/e/workshop-on-engineering-ion-channel-aquaporins-and-boosting-food-security-tickets-78557334101

Examples of workshop highlights include:

- Hear from Professor Steve Tyerman (University of Adelaide) and Professor Christophe Maurel (B&PMP, Montpellier) about the latest developments in **controlling water relations, cell signaling and regulation of hydraulics in plants.**
- Learn about the link between **aquaporin function and cancer cell metastasis** and the discovery of aquaporin ion channel features from Professor Andrea Yool's research (University of Adelaide).
- Learn about the roles of **aquaporins in influencing crop plant physiology** from Professor Francois Chaumont's research (UCLouvain, Belgium) on **maize** aquaporins, Professor Maki Katsuhara's research (Okayama University) on **barley** aquaporins and A/Professor Tomoaki Horie's work on **rice** aquaporins (Shinshu University).
- Learn about imaging the **movement of element isotopes** to understand aquaporin function from Professsor Keitaro Tanoi and A/Professor Natsuko Kobayashi (University of Tokyo).
- Discover new directions **in technology development for water filtration** from Aquaporin Asia's Dr Sun Guofei. These technologies are used to purify astronaut waste water in space and can help us sure up our **future water security on Earth**.
- Build your knowledge in understanding how aquaporins help living cells tolerate osmotic stress and how we can use this information to create the **biotechnologies of the future!**

The 2020 International Ion Channel Aquaporin Workshop creates the opportunity to facilitate sharing knowledge, ideas and results in the area of studying the function and applications of ion-channel aquaporins. We have a particular focus on research related to engineering plant

aquaporin function towards boosting future food security, and on research related to the study of ion channel aquaporins in plants and other Kingdoms of life.

We are looking forward to discussing potential avenues to engineer aquaporin function towards supporting future stability in crop productivity, improve water security and determine signaling processes that influence aquaporin function. Topics related to aquaporin permeability, regulation, signaling, physiological roles and evolutionary origins will be covered in the workshop.

There will be talks selected from submitted abstracts and registered speakers selected from abstract submissions will receive registration reimbursement. Courtesy of the Australian Society of Plant Scientists there is support for PhD/ECR student travel, and it would be wonderful if you are happy to encourage PhD/ECR students working on relevant research to contact us about sending in an abstract and applying for PhD student travel support towards participating in the workshop. **The workshop is supported by the Australia-Japan Foundation and the Australian National University.**

Further information related to the workshop can be found at the following webpage: https://biology.anu.edu.au/news-events/events/workshop-engineering-ion-channel-aquaporins-and-boosting-food-security

3. RN Robertson Travelling Fellowship. Applications **opened 3rd February and close 2nd March 2020.** Details here



R. N. Robertson in the 1950's.

4. ComBio2020 and IPMB2021





Here are reports from Kara Levin and Celine Mens, 2019 Plant Nutrition Trust Awardees.

Report on the Plant Biology 2019 conference: Plant Nutrition Trust, Kara Levin, University of Adelaide.

Plant Biology 2019, an event hosted by ASPB (American Society of Plant Biologists), took place in San Jose, California. I had the privilege to attend this conference along with over 1400 attendees. The conference covered a large number of areas within plant biology over the five days and was set-up to include major symposia sessions in the morning, networking events over lunch, and smaller specialised concurrent sessions in the afternoon. The major symposia talks covered some of the most interesting topics, many of them focused on seeing the larger picture within their niche field of research. An important concept presented at the conference was that the plant receptors used for triggering a symbiotic relationship with a pathogen were the same as those used to trigger a plant immune response – which raises the question on how such contrasting outputs are regulated by the same receptors. The data presented indicates that these receptors are influenced by the nutrient status of the plant. A plant experiencing

nutrient deficiency is more likely to trigger a symbiotic response while one that is nutrient-sufficient will activate an immune response. This is an interesting concept for rhizosphere interactions, where a plant that is perhaps nitrogen deficient will induce symbiosis with microorganisms in the soil in order to reach sufficient nitrogen levels. This idea of dynamic plant responses should be considered in plant nutrition research.

Another fascinating talk was during the 'Plant Synthetic Biology' section. A group at the Max Planck Institute for Terrestrial Microbiology have created a more efficient Calvin-Benson-Bassham (CBB) cycle by using synthetic enzymes. Although applying this CO_2-fixing system into agriculture is still in the research phase, it provided insights into the kind of ground-breaking research that is being made possible with new emerging technologies.

I presented a novel discovery from my PhD research on interactions between cereal cyst nematode and wheat during the symposia of 'Plant-Biotic Interactions'. This was an exciting opportunity to discuss my results with a range of international researchers working on similar plant interactions. These discussions helped confirm my research findings as other researchers provided further evidence from their independent studies which reaffirmed of these novel plant-nematode interactions observed in my research. I sincerely thank ASPS for awarding me the Plant Nutrition Trust Travel Scholarship to assist in my conference travels. Attending Plant Biology 2019 was a great experience and perfectly timed as I finish writing a manuscript on my presented research as well as the rest of my PhD thesis.

The Plant Nutrition Trust Awardee 2019 report

Celine Mens, University of Queensland, Australia

ICLGC2019, France and IL13, Poland

Being awarded the Plant Nutrition Trust Travel Award gave me the opportunity to attend the 9th International Conference for Legume Genetics and Genomics (ICLGC2019) in Dijon, France from 13-17 May, 2019 as well as the 9th International Legume Society Conference (IL13) in Poznan, Poland from 21-25 May, 2019.

With over 240 participants, 11 keynote speakers and a scientific program with topics ranging from functional genomics to seed biology and legume diversity, the ICLGC2019 conference was a chance to discover new aspects of legume physiology outside of my own niche area focusing on regulation of nodulation. Harnessing the potential of legumes was this year's theme and was well introduced during the opening talk that focussed on the issues the world is facing in the future regarding agricultural sustainability and food security. I was able to present my work on CLE peptides involved in nitrate-dependent regulation of nodulation during a 5-minute flash talk in the symbiosis session. The hosts for this session were Julia Frugoli and Peter Kalo with Jens Stougaard from Aarhus University in Denmark as a keynote speaker. It was great to be updated on the latest research in our research area. In addition to the scientific program, the organisers arranged for a full social program which provided an excellent opportunity to network with fellow PhD students and group leaders from across the world.

The following week I travelled to Poznan, Poland to attend IL13 which was focused on breeding and agroecology of commercial legume varieties with 183 participants from 38 countries including 30 students. I had the opportunity to present my research paper (Mens et al. 2018, Frontiers in Plant Science) on the role of cytokinin and its IPT biosynthesis genes in soybean nodulation on the fourth day of the conference. All speakers are invited to summarise their presentation as part of a special issue of Legume Perspective (LP18), a journal of the International Legume Society directed to a general audience. This will allow me to further share our group's work and build my academic CV.

In addition to attending these conferences, I visited the Max Planck Institute of Molecular Plant Physiology in Potsdam, Germany on 28 May. Here, I met with various group leaders and one of the institute's directors, prof. Mark Stitt, allowing me to foster important connections for the future. The facilities are high-tech with the latest mass-spectrometers, sequencers, etc. Their approach has inspired me to think differently about project design and research opportunities. Additionally, I was able to present our group's work to a non-legume audience and received valuable feedback on my work and presentation skills from a different research perspective.

Finally, I would like to express my gratitude to the Plant Nutrition Trust for making me one of their 2019 Travel Awardees and giving me the opportunity to develop my research career, gain invaluable experiences and establish important connections for the future.

Lastly, and importantly, there is only **one** week left to apply for our Society awards. Apply Now!



We are also rolling out banners for each of our states to display at conferences, meetings and workshops. See the banner mask below.





If you have some great images, email them to Tam Salter.

Please ensure they are .PNG , .jpg, .TIFF, or .pdf, with greater than **300 dpi**, email: william.salter@sydney.edu.au

If the images have people, they will have to sign a permission form: ASPSbanner2020 Please print the permission form and have them sign then send along with your image to Tam, we look forward to receiving your images.



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