Phytogen November 2020

STA ANNOUNCES NEW PRESIDENT-ELECT AND EXECUTIVE

26 November 2020

Dear ASPS members

STA announces new President-elect and Executive

Science & Technology Australia is pleased to announce the election of new members to its Executive Committee at STA's Annual General Meeting today.

Silo-busting innovator and industry-engaged research entrepreneur Professor Mark Hutchinson is STA's new President-elect. He will become President at the end of or next AGM in November 2021.

For seven years, Mark has been Director of the ARC Centre of Excellence for Nanoscale Biophotonics at the University of Adelaide. He will be the first South Australian to serve as STA President.

The centre has produced 15 spin-outs and start-ups and has 30 flourishing industry partnerships. Its silo-busting approach encourages engineers, physicists, chemists and biologists to work across disciplines to build new products and techniques using light at the cellular level.

STA's newly-elected executive members are:

- President-elect – Professor Mark Hutchinson
- Secretary – Jas Chambers
- Policy Committee Chair – Professor Sharath Sriram
- Early Career Representative – Dr Chloe Taylor

STA President Associate Professor Jeremy Brownlie congratulated the newly-elected Executive and said he looked forward to working with them all.

He also thanked outgoing Secretary Associate Professor Darren Saunders and outgoing ECR representative Associate Professor Sumeet Walia for their excellent service to STA.

"We are blessed with a wealth of talented leaders across the STEM sector who want to contribute their energy, ideas and leadership to STA's success," he said.

"Mark will be outstanding as our next President, and the refreshed Executive including Sharath, Jas and Chloe reflects the excellence, diversity and breadth of skills in the sector."

"I thank Darren Saunders for his excellent work as our secretary supporting governance work, and Sumeet Walia for his work for early career researchers and as co-chair of STA's Equity, Diversity and Inclusion Committee."

STA President-elect Professor Mark Hutchinson said he was honoured to have been entrusted by the STA members to lead the organisation as President from the end of 2021.

“I want to work with the STEM sector to help foster even deeper connections between the research community and those who need our research to transform lives, industries and policy,” he said.

“I see an exciting set of possibilities to identify challenges that Government and industry want to solve – and bringing our best research brains to that task.”

“I want to support our STEM workforce, share entrepreneurial skills, foster diversity and equity, and propel even more Australian science and technology from the bookshelf to the boardroom.”

He looks forward to working closely with current President Jeremy Brownlie and CEO Misha Schubert over the next year as President-elect.

“Jeremy has worked tirelessly to strengthen STA’s visibility as a respected policy and advocacy voice for the science, technology, engineering and mathematics sectors,” he said.

“It will be an honour to work with him over the next year and to succeed him as President in November.”

Media contacts:
Science & Technology Australia: 6257 2891

Invitation Plantae Webinar Special event: Creating crops for the future – 11 November, 11 am -1 pm (AEDT) 10 November, 7:00 pm (EST)

05 November 2020

Dear ASPS members,

The ARC Centres of Excellence for Translational Photosynthesis and in Plant Energy Biology

Invite you to a Special Plantae Seminar on:

Creating Crops for the Future: Challenges, Technology and Sustainable Solutions

One of the most urgent scientific challenges of the 21st century lies in ensuring that we have enough food for the growing global population. Join us for this special event where three experts in the field of plant science will speak on how scientists are advancing sustainable crops and biotechnologies to make world food security a reality.

Join Moderator Professor John Evans (ARC Centre of Excellence for Translational Photosynthesis) in a unique forum for discussion about how critical and complex issues can be addressed, including water and land scarcity, climate change, the role of genetic engineering and other modern agricultural technologies and the importance of interdisciplinary approaches.

This event is presented by Plantae, and co-hosted by the ARC Centre of Excellence for Translational Photosynthesis and the ARC Centre of Excellence in Plant Energy Biology.



Speakers: Professor Pamela Ronald (UC Davis), Professor Harvey Millar (ARC Centre of Excellence in Plant Energy Biology) and Professor Robert Furbank (ARC Centre of Excellence for Translational Photosynthesis)

Date: November 11, 11:00 am to 1:00 pm Australia East Coast Daylight Time (AEDT UTC+11)

which is November 10, 7:00-9:00 pm EST, 4:00-6:00 pm PST

Event Moderator: Professor John Evans, ARC Centre of Excellence for Translational Photosynthesis

Organised by: Plantae – more information at https://plantae.org/creating-crops-for-the-future-challenges-technology-and-sustainable-solutions/

Register here

About the talks:



Speaker 1: Professor Pamela Ronald (UC Davis)

Title: Improving Food Security for the World's Poorest Farmers: Rice Genetics and the Future of Food

Summary: How do we feed a growing population and engineer crops that are resilient to climate change? How do we fight crop diseases while reducing chemical sprays? How do we enhance the nutrition of staple food crops? The rapid advance of genetic technologies has provided new

tools to address these questions, and they have already made an impact at a global scale. Professor Pamela Ronald will discuss advances in the genetic basis of plant microbe interactions and will describe development of climate-resilient rice varieties grown by more than six million subsistence farmers in India and Bangladesh.



Speaker 2: Professor Harvey Millar (ARC Centre of Excellence in Plant Energy Biology)

Title: Plant Energy Biology: Altering energy use efficiency in plants to enhance crop growth and yield.

Summary: After plants convert light energy into chemical energy, they then need to use it efficiently within cells to maximise growth and yield. To tap into this potential, global efforts to improve photosynthesis are being complemented by strategies to improve energy use within plants by considering the cost of major use processes and how they can be optimised, especially under harsh and changing environmental conditions. Such processes include respiratory function, stress signalling, ion transport and protein turnover. This presentation will review some of these strategies from their inception in model plants to the progress and challenges of their deployment in crops.

**Speaker 3: Professor Robert Furbank (ARC Centre of Excellence for Translational Photosynthesis)**

Title: Photons to Food: boosting photosynthesis to improve food crop yields

Summary: Photosynthetic traits have become a major focus for crop improvement in recent years as progress due to green revolution yield gains becomes exhausted. Global efforts to improve photosynthetic performance span from transgenic targeted approaches using synthetic biology to genome-phenome approaches to sieve out the very best germplasm for more traditional breeding and genome selection. This presentation reviews some progress and challenges from both approaches and attempts to look "over the horizon" to the future of crop breeding.

Phytogen, Global Plant Council e-bulletin and Aquaporin Workshop

01 November 2020

Hello ASPS members,

The latest issue of Phytogen is available HERE.

The last issue of the Global Plant Council e-Bulletin can be accessed HERE.

The Aquaporin Workshop is open to everyone, it's free and online, https://cbrin.com.au/events/aquaporins-solutions-exploring-how-aquaporins-can-solve-food-and-water-challenges/

Session 1 – Monday 2nd November – understanding aquaporin regulation

Session 2 – Tuesday 10th November – characterising plant aquaporins

Session 3 – Monday 16th November – using aquaporins to solve real world problems

Session 4 – Monday 23rd November – pitching ideas for solving aquaporin mysteries

Please note that separate registration links and timing information for each session are included within the above website link.

The proceedings include an outstanding collection of video talks from international and national speakers, and we will have representatives from a number of industry organisations participating.

In addition to the talks there will be interactive workshop challenge activities. Examples of the types of challenge topics are included below:

– How can we determine which endogenous molecules in cells are key in influencing aquaporin regulation? – Which native molecules synthesised by cells have 'secret lives' as aquaporin regulatory agents?

– The function of many aquaporins can be influenced by calcium, cyclic nucleotide, reactive oxygen species, hormone and phosphorylation kinase signalling, among other regulatory factors; how can we confirm the hierarchy in the order of influence of these signals?
– Throughout evolution aquaporins with many different types of functions have been selected for – have we scratched the surface of determining the complement of different roles of different types of aquaporins?

– How do we figure out what the role of aquaporins in organelles might be?

– What is the pathway for water and cation transport through aquaporins, is it via monomeric or tetrameric channels or does it depend on the specific aquaporin?

– How could diversity in aquaporin function be leveraged for medical applications? – How could manipulation of aquaporin function be achieved to reduce fluid pressure related problems associated with living in low gravity environments, and how can we figure out the complement of fluid and pressure related disorders that involve altered aquaporin regulation?
– How could diversity in aquaporin function be leveraged for crop improvement? – How do we test the relative proportion of water that moves through plasmodesmata relative to moving though aquaporins?
– Over-expression of some aquaporins increases tolerance to osmotic stress, whereas overexpression of other aquaporin isoforms reduces tolerance. Why?
– Can we distinguish the influence of ion channel aquaporins on root-to-shoot ion flux given that ion flux could be influenced directly by aquaporin ion transport and indirectly by the influence of aquaporins on transpiration?

– How do aquaporins control tissue-scale hydraulics to regulate plant responses to the environment?
– Is there any evidence that switching of aquaporin water and ion channel functions could have a role in charging membrane potential to power other ion transport processes?

– How many different segments and end applications, that are compatible with a circular green economy, could aquaporins be involved in? – Aquaporins are already used in space for water filtration, what other applications are there for 'designer' aquaporins for enabling successful colonization of space and more sustainable life on Earth?

Please share with any colleagues who may be interested in these topics.

Thank you in advance,

Caitlin Byrt.