

Australia

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Please provide a paragraph describing the general impact of the COVID19 pandemic on the scientific community in your country

Whilst Australia has had relatively low numbers of infection, the pandemic has affected most academic, industry and government based research facilities at varying degrees. States such as Victoria underwent lock-down for up to 6 months, delaying many research projects, whilst Western Australia, with almost no community transmission did not experience any significant lock-downs. Nevertheless, we have all felt the downstream consequences ranging from minor shipment delays, increased teaching and carers loads from online teaching/learning, to major university restructures due to economic losses from the lack of international students. Strict travel bans has generally prevented travel across states (and internationally) resulting in almost all conferences and symposiums cancelled and/or rescheduled.

Planned events for 2021 and 2022

- 13th International Congress on Plant Molecular Biology (IPMB), Cairns Convention Centre, Queensland, 23-27 Oct 2022. <https://ipmb2022.org/> ASPS 2021.
- The annual Australian Society of Plant Biologists meeting for 2021 will be a hybrid conference spread across multiple locations Australia wide (www.asps.org.au).
- 25th November 2021. COMBIO 2022 Melbourne Convention and Exhibition Centre. Annual national conference that includes several symposia dedicated to plant research. This conference incorporated the annual Australian Society of Plant Biologists meeting for 2022. 27-30th September 2022. <http://www.combio.org.au>

Selected Publications

1. Roman, A., *et al.*, Superoxide is promoted by sucrose and affects amplitude of circadian rhythms in the evening. *Proc Natl Acad Sci U S A*, 2021. 118(10).

Here researchers have identified that reactive oxygen species (ROS) act as a metabolic signal associated with sugar levels, which acts on the circadian oscillator in the evening in *Arabidopsis*.

2. Sun, Y.K., *et al.*, Divergent receptor proteins confer responses to different karrikins in two ephemeral weeds. *Nat Commun*, 2020. 11(1): p. 1264.

Researchers have identified the residues near the karrikin receptor, KAI2 active site that are required for ligand selectivity, highlighting the diversification of KAI2 and the differential responses to fire smoke.



Seedling and rosette phenotypes of two independent transgenic lines of *Arabidopsis* homozygous for KAI2pro:GFP-BtKAI2 transgenes. Seedlings were 7 days old and rosettes 22 days old. Scale bars: 5 mm

3.Xu, B., *et al.*, GABA signalling modulates stomatal opening to enhance plant water use efficiency and drought resilience. *Nat Commun*, 2021. 12(1): p. 1952.

Researchers have identified that the non-protein amino acid γ -aminobutyric acid (GABA) can act as a signaling molecule to reduce stomatal opening, improving water use efficiency and drought tolerance

Major Funding Sources

- Fundamental and translational research can be funded by the Australian Research Council (www.arc.gov.au)
- Translational research is funded by the Grains Research Development Corporation (<http://grdc.com.au>)
- Industry collaborations can be funded by the Australian Research Council Linkage Programs (www.arc.gov.au)