

## New Zealand

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

At the end of March 2020 New Zealand went into lockdown for approximately seven weeks in response to COVID19. During this time most research institutes closed with only essential maintenance work permitted and researchers and students required to work from home. Following this lockdown, community transmission of COVID19 has remained low in New Zealand and research institutes have been open. However, the Auckland region saw two outbreaks requiring a return to lockdown for 1-2 weeks in August 2020 and February 2021, closing research institutes in Auckland, while institutes in the rest of the country remained open, but with some restrictions.

The research community has also been impacted by the cancellation of at least one funding round, restrictions on international travel imposed by many research institutions and restrictions on international researchers entering New Zealand. Additionally, there has been delays on the delivery of consumable items and equipment from international suppliers.

### **Planned events for 2021 and 2022**

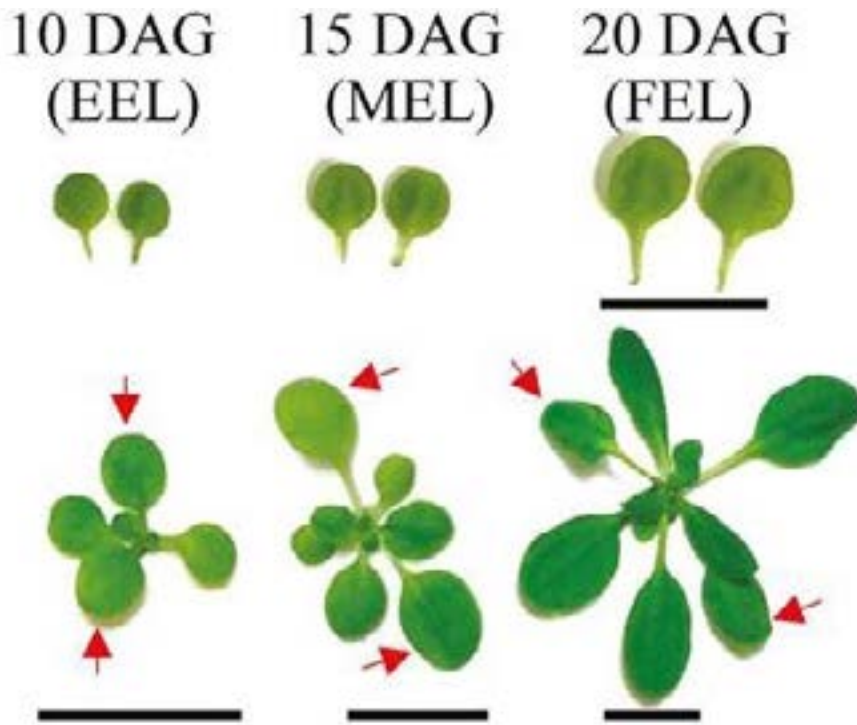
- Plant Science Central Conference, July 6-8 2021, Palmerston North, New Zealand. In-person event planned with some virtual presentations for international speakers.
- Queenstown Research Week including a satellite in Applied Genetics in Breeding Technologies, Aug 30 to Sept 2 2021, Queenstown, New Zealand
- 16th congress of the Federation and Asian and Oceanian Biochemists and Molecular Biologists (partnering with the New Zealand Society of Plant Biologists), November 22-25 2021, Christchurch, New Zealand. In-person event planned with some virtual presentations for international speakers.
- International Congress on Photosynthesis Research; August 6th-12th 2022, Rotorua Energy Events Centre <https://www.photosynthesis-research.org/ispr-news/asia-oceania/2019/international-congress-on-photosynthesis-research-2020/>

### **Selected Publications**

These articles highlight the diverse research using Arabidopsis that occurs in New Zealand.

1. Miebach, M., Schlechter, R.O., Clemens, J., Jameson, P.E. and Remus-Emsermann M.N.P. (2020) Litterbox-A gnotobiotic zeolite-clay system to investigate Arabidopsis-microbe interactions. *Microorganisms* 8, 464. <https://doi.org/10.3390/microorganisms8040464>

This manuscript describes a new soilless medium with improved aeration compared to an agar-based medium and reduced cross-contamination between phyllosphere and rhizosphere to support studies into plant-microbe interactions.



First rosette leaf pair expansion. (A) Arabidopsis WT first rosette leaf pairs detached from plants at 10, 15, and 20 days after germination (DAG). Scale bar=10 mm.

2. Kanojia, A., Gupta, S., Benina, M., Fernie, A.R., Mueller-Roeber, B., Gechev, T. and Dijkwel, P.P. (2020) Developmentally controlled changes during Arabidopsis leaf development indicate causes for loss of stress tolerance with age. *Journal of Experimental Botany*, 71, 6340–6354. <https://doi.org/10.1093/jxb/eraa347>

This collaborative effort between New Zealand and European scientists proposes that age-related changes that lead to senescence in Arabidopsis also result in reduced stress tolerance.

3. Williams, M.A.K., Cornuault, V., Irani, A.H., Symonds V., Malmström, J., An, Y., Sims, I.M., Carnachan, S.M., Sallé, C. and Noth,

H. (2020) Polysaccharide structures in the outer mucilage of Arabidopsis seeds visualized by AFM. *Biomacromolecules* 21, 1450-1459. DOI: 10.1021/acs.biomac.9b01756

This manuscript describes the use of atomic force microscopy to show that rhamnogalacturonan I from the mucilage of Arabidopsis seedlings can form surprisingly long versions that can self assemble into a range of structures.

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- Core funding to Crown Research Institutes
- The Endeavour fund (<http://www.mbie.govt.nz/info-services/science-innovation/investment-funding/current-funding/2018-endeavour-round>)
- The Catalyst Fund (<http://www.mbie.govt.nz/info-services/science-innovation/investment-funding/current-funding/catalyst-fund>)
- The Agricultural and Marketing Research and Development Trust (AGMARDT: <http://agmardt.org.nz/>).