

HIE Seminar Series –2025

From molecular to macro-phenotyping to provide new knowledge for plant breeding – Professor Jim Whelan

Tuesday # MM | 12:00 - 1:00pm | *Hawkesbury Campus Building L9 Lecture Theatre – L9.G.21*

Biography: [Professor Jim Whelan](#) is a world-leading expert in mitochondrial biology in plants with his research spanning biogenesis to function, mitochondrial signalling and the role of mitochondria in plant growth, development and stress resistance. He has carried out in-depth studies on seed development and germination in a variety of plant species and the essential role of mitochondria in these essential processes. Prof Whelan's academic excellence is matched by an exceptional ability to develop and lead collaborative partnerships. His engagement across academia, government and industry at national and international levels has enabled long-term mutually beneficial outcomes in scholarship, research training, infrastructure, and



Abstract: The emergence of a variety of omic technologies this century has given the ability to examine plant growth and performance at a variety of scales and levels. The expression of the genome in time and space results in a phenotype. While we now have knowledge of the genome at base-pair resolution, the knowledge of how the genes, the basic organization units of the genome are expressed in time and space (i.e. molecular phenotype) to produce the macro phenotype that we can visibly see or harvest remains incomplete. While every cell has essentially the same genome, the expression of that genome can differ in each cell. Yet, until recently we have essentially discarded the cell as the basic building block of complex organisms and averaged gene expression from whole tissues. Single cell, nuclei and spatial transcriptome approaches allow a cellular view of both plant development and 'stress' responses. This seminar will outline our attempts to understand plant development and stress responses at a cellular level using these approaches. Furthermore, we will jump to the other end of the spectrum and outline our approaches of how we can accurately quantify plant growth development and stress responses, so that we can productively link these different scale of measurements, to identify and target genes for improved plant growth, stress tolerance and yield.

Please welcome our speaker with your in-person attendance, if possible.

Zoom ID: 850 8470 7616 Password: 723195 (availability of Zoom recording to be advised).

HIE Seminar Committee

[Kristine Crous](#), [Rob Sharwood](#), [Juntao Wang](#) and [Eleonora Egidi](#)