

PlantLink Researcher in the spotlight

Olivier Van Aken

September 2017

This spring Olivier Van Aken started as a senior lecturer at Department of Biology at Lund University, where he is currently establishing his group. Olivier has a background at Ghent University and University of Western Australia. His research is focused on the understanding of signal transduction pathways in response to environmental stress in plants. More information on his work and lab can be found [here](#).



-What is currently on top of your research agenda?

My main interests are in understanding how plants respond to environmental and pathogen-induced stresses, and how we can design strategies to make them more stress tolerant. My research is mainly focused on the role of energy-converting organelles mitochondria and chloroplasts, and more recently also on plant responses to physical manipulation or 'touch' responses.

-Tell us about your latest publication?

In my latest publication we proposed that, based on transcript signatures and plant phenotypes, two of the most well-known pathways in organelle-to-nuclear 'retrograde' signalling are convergent on common genes, potentially using overlapping signalling molecules. Part of this common response seems directed to reducing oxidative stress and preventing cell death.

-What led you into your particular field of research?

Of course: chance! I was looking for Undergraduate thesis projects related to oxidative stress and cell death, and started in Prof. Frank Van Breusegem's lab at Ghent University, Belgium. The project was focused on a mitochondrial protein family that was induced by stress in tobacco. It turned out to be quite an interesting subject with a whole lot of unanswered questions, and potential for applications. I managed to get a 4-year PhD fellowship to expand the research, and later a post-doc position at the University of Western Australia. Things evolved from there.

-What are the implications of your research for the society?

Plants are a major direct or indirect source for food, feed, many construction materials, fuels and even pharmaceutical molecules. With an ever-expanding population and decreasing availability of land for farming and forestry, we need to optimise agricultural productivity in an environmentally responsible way. My research has identified several genes that are important for plant resistance to for example drought, salinity and pathogen-attack. If we can use this type of information to produce crop varieties with improved yield and resistance, tailored to the local environment, this should have a positive impact for society. Hopefully, our outreach efforts in explaining research to the wider population will improve understanding and awareness of the many aspects surrounding plant biotechnology.

-Finally, let's say you got unlimited research funds; where would your research be five years from now?

From a basic scientific research point of view, I would be really excited to have resolved several of the stress-related signalling pathways in plants at a molecular level. Ideally, we will be able to apply this gained knowledge to design new strategies to improve agricultural productivity.