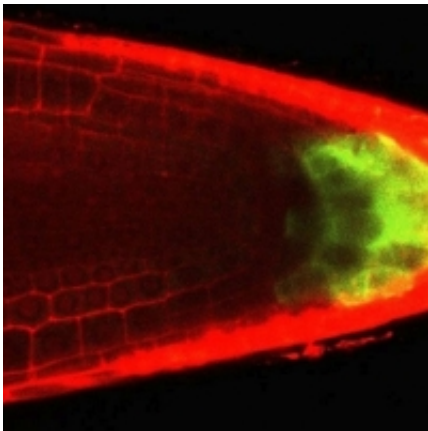


Complex root tips could be the key to helping crops grow

May 27 2016, by David Stacey



A new study into the seemingly simple tip of a plant root may ultimately decrease our dependence on crop fertilisers to help grow food, according to researchers at The University of Western Australia.

Researchers Tim Stuart and Professor Ryan Lister from UWA's ARC Centre of Excellence in Plant Energy Biology worked with scientists from around the world to examine the [cells](#) of plant roots.

Mr Stuart, co-lead author on the study and a PhD student at the Centre, said the ground-breaking research had led to a greater understanding of the way that the underground part of a plant developed

"Plant root tips are made up of many different types of cells; our work helps show what makes these cells different from one another," Mr Stuart said.

"On top of the genetic code within these cells sits another code, known as the epigenome, which can direct which genes are switched on and off.

"While epigenetic patterns across different plant organs and tissues have previously been studied, this is the first finding of differences between individual cell types of the root."

Mr Stuart said that when the root was looked at as a whole, as in previous studies, the intricate differences became invisible.

"Columella cells, located at the very tip of the root, were found to be the most epigenetically affected of the six [cell types](#) studied as part of our research," Mr Stuart said.

"These cells are important in telling the root which direction to grow and for the uptake of nutrients from the soil, knowledge which is incredibly relevant when you're are talking about food security."

Mr Stuart said the findings had allowed scientists to start to understand how columella cells were formed.

"This is the first step in decreasing our dependence on crop fertilisers because by understanding how the cells work we should be able to improve overall nutrient uptake," he said.

The study was published in *Nature Plants*.

More information: Taiji Kawakatsu et al. Unique cell-type-specific patterns of DNA methylation in the root meristem, *Nature Plants* (2016).

[DOI: 10.1038/nplants.2016.58](https://doi.org/10.1038/nplants.2016.58)

Provided by University of Western Australia

Citation: Complex root tips could be the key to helping crops grow (2016, May 27) retrieved 10 April 2024 from <https://phys.org/news/2016-05-complex-root-key-crops.html>

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