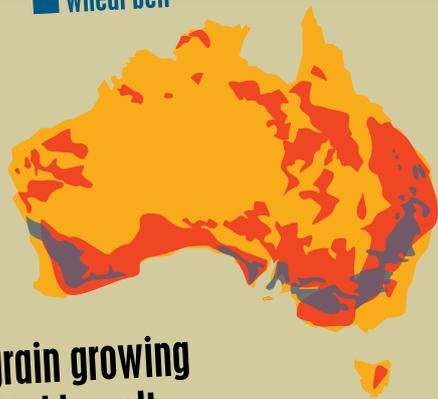


SALINITY RESEARCH

■ salt affected area ■ wheat belt



67% of the grain growing area is affected by salt



TESTING *HKT* FUNCTION IN ARABIDOPSIS

DID YOU KNOW?

There are three main ways plants tolerate salt:

- Preventing salt (or specifically sodium ions) from entering the root
- If sodium ions enter the root, it is stopped from moving into the shoot
- Or if sodium ions get into the shoot, they are locked away in storage compartments called vacuoles

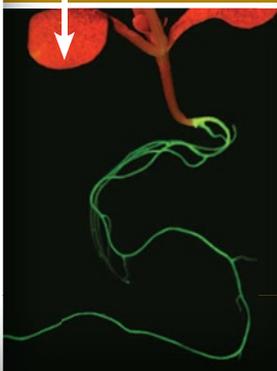
ACPF research is investigating the genetic control of these three strategies.

ACPF IS WORKING with *HKT*, a gene known TO CONTRIBUTE TO SALT TOLERANCE

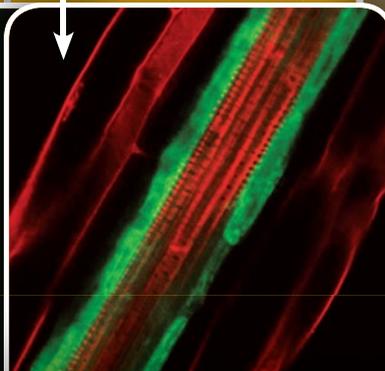
HKT prevents toxic levels of salt (sodium ion) accumulation by regulating its transport from the root to shoot.

***HKT*'S FUNCTION** was identified by growing experimental plants with the *HKT* gene switched off. These plants performed poorly when grown under a high sodium treatment, indicating that they had lost their ability to manage sodium accumulation. This supported *HKT*'s role in salt tolerance.

A plant with green fluorescent protein in the roots.



A longitudinal section of the root with green fluorescent protein in the pericycle cells.



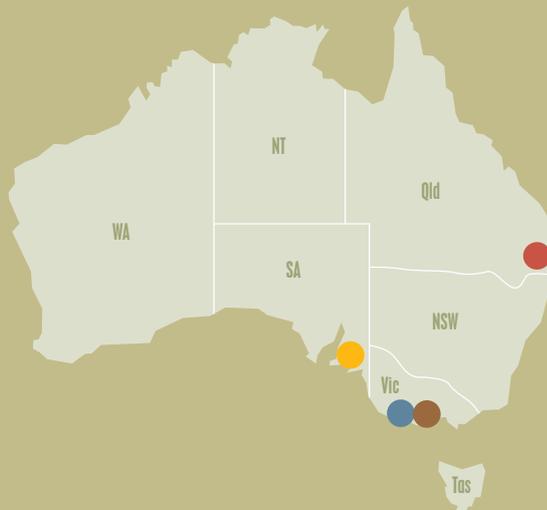
RESEARCHERS AT ACPF have expressed *HKT* in specific cell-types of Arabidopsis roots. Resulting plants had reduced levels of sodium accumulation and increased salinity tolerance. This technology is now being trialled in cereals to develop varieties better equipped to manage salt.

ACPFG Research



The Australian Centre for Plant Functional Genomics (ACPFG) uses functional genomics to improve the resistance of wheat and barley to hostile environmental conditions such as drought, salinity, frost and mineral deficiencies or toxicities. These stresses, known as abiotic stresses, are a major cause of cereal crop yield and quality loss throughout the world.

To meet our mandate of delivering research outcomes nationally, ACPFG has four nodes throughout Australia. The headquarters is at the University of Adelaide's Waite Campus, with other major research nodes at the University of Melbourne, the University of Queensland and the Department of Primary Industries (DPI) at La Trobe University.



Australian Government
Australian Research Council



For further information or media enquiries contact:

The Australian Centre for Plant Functional Genomics Pty Ltd, Plant Genomics Centre, Hartley Grove, Urrbrae SA 5064

Postal: PMB1, Glen Osmond SA 5064 P: +61 8 83037155 F: +61 8 8303 7102 E: enquiries@acpfg.com.au W: www.acpfg.com.au