

P008 ABA perception, nitric oxide and hydrogen peroxide signalling – a proteomics approach

J. Harrison, D. Henson, R. Desikan, J. Bright, J. Williams, M.-K. Cheung, A. Lovegrove*, S. J. Neill and J. T. Hancock
Centre for Research in Plant Science, University of the West of England, Bristol, BS16 1QY.
**ACR Rothamsted, Harpenden, AL5 2JQ*

Abscisic acid (ABA) is an important endogenous regulator of stomatal aperture. Our work is focused on determining the mechanisms of ABA perception and downstream signalling events leading to stomatal movements. Nitric oxide (NO) and hydrogen peroxide (H₂O₂) are key signalling molecules in plants and have been shown to mediate ABA-induced stomatal closure.

We have used monoclonal antibodies generated against guard cells to isolate specific plasma membrane proteins from *Arabidopsis thaliana*. Mass spectrometric analysis indicated that one of these was a receptor-like protein kinase. The encoding gene has been cloned and a T-DNA insertion mutant is being analysed.

To elucidate the molecular events following NO and H₂O₂ release from cells we are using molecular tagging in conjunction with MS to identify targets of H₂O₂. In addition, using 2-D electrophoresis and Maldi-tof MS, the longer-term effects of H₂O₂ and NO on the proteome are being investigated. NO activates guanylyl cyclase with concomitant rises in intracellular cGMP. Targets of cGMP in guard cells are being investigated using pull-down assays. Such work will lead to a greater understanding of NO and H₂O₂ signalling cascades.