

## UA2C Project Report 1995: Travel Grant to Sharon Orford

In March 1995 I attended two Keystone Symposia, "Frontiers of Plant Morphogenesis" and "Signal Transduction in Plants", held concurrently at Hilton Head Island, South Carolina, U.S.A. This was made possible by the Smith-White Travel Grant Award that I received from the Genetics Society of Australia last year, and substantial assistance was obtained from the Cotton Research and Development Corporation.

It was refreshing to attend a meeting devoted to plant morphogenesis research and the presentations were generally excellent. Complex developmental events in plants are being elucidated by the use of appropriate models and surprisingly simple experiments. In the first paper of the conference, Dr Ian Sussex presented elegant work on cell organisation and pattern formation in plant meristems, using the radish lateral root as a model system. More relevant to my work was a discussion given by Dr Philip Benfey on the control of cell expansion in *Arabidopsis* roots and a presentation given by Dr Daniel Cosgrove on the action and involvement of expansins in cell enlargement. Given the dramatic extension of cotton fibre cell walls, proteins such as expansins may have a direct role in the control of cotton fibre development.

Poster sessions combining the two meetings were held on four of the five days of the conference. I had many useful discussions with presenters. Of particular interest was work done by Dr Judith Bradow at USDA on cotton fibre growth, as well as posters on the extracellular matrix and cell elongation mutants. I presented a poster entitled "Specific genes expressed during cotton fibre development" in a session concerned with current perspectives in plant morphogenesis. Interest came from fellow cotton researchers, several researchers interested in cell wall biogenesis, and ex-patriot Australians!

Prior to the conference I made visits to several cotton groups with whom I have been corresponding. I visited the lab of Dr Thea Wilkins at the University of California at Davis. Her group is concerned with the characterisation of cotton fibre H<sup>+</sup>-ATPases. An increase in vacuolar H<sup>+</sup>-ATPase activity parallels the increase in the rate of cell elongation, and it may have a role in the generation of the turgor pressure which drives fibre elongation. I also spent a day in Lubbock, Texas, talking to Dr Norma Trolinder of BioTex and Dr Randy Allen at Texas Technical University. Norma is an acknowledged expert in the field and developed the transformation and regeneration system for *Gossypium hirsutum*. She is currently isolating fibre cell wall proteins using phage display libraries. Randy Allen's lab is mainly concerned with cold resistance in cotton, but a recent differential display experiment has yielded ten fibre-specific cDNA clones. They are different from the five sequences I have obtained and it was valuable to compare our methods and results. I also obtained a general overview of the state of cotton research in the U.S.

In the United Kingdom I spoke with Dr David Jones, from the Sainsbury Laboratory, and Dr Cathie Martin, from the John Innes Institute.