
Preface to The Molecular basis of signal transduction in plants. A Discussion Meeting held at the Royal Society of London on 18 and 19 February 1998.

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Preface

Plants perceive a variety of environmental and endogenous signals, and respond to these by modifying their growth and development. A long-held objective of plant science research has been to understand the underlying cellular mechanisms responsible for coupling extracellular stimuli to their characteristic responses. Although over the years there has been considerable progress in characterizing the nature of the final response and, in the case of the plant hormones understanding their biosynthetic pathways, the identity of the intracellular signalling pathways have largely remained a mystery. In March 1995, the Royal Society held a Discussion Meeting organized by Chris Leaver, Roger Pennell and Peter Bell on the Control of development in higher plants. One of the areas the meeting addressed was the role of environmental and endogenous factors, such as light and ethylene, in regulating and modifying plant growth and development. It was clear from the meeting, and its proceedings, that at least some signalling events were beginning to be understood at a molecular level.

Since then we have witnessed extraordinary advances in our understanding of the intracellular signalling mechanisms by which higher plants respond to their environment, to endogenous hormones, and to plant pathogens. These advances have resulted from genetic, molecular and physiological studies, and mark a phase of rapid expansion as new technologies and innovative approaches have afforded insight into previously intractable problems. Many, though by no means all, of these advances have been made using the model plant *Arabidopsis*.

In particular the organizers, Nam Chua, Alistair Hetherington, Richard Hooley and Robin Irvine, were aware that a variety of components of signalling pathways have recently been identified in plants and the functional relationships between them have begun to emerge. It was timely, therefore, to hold a meeting specifically to review the nature, diversity and function of signalling components in plants, and to explore the current understanding of the molecular basis of plant signalling pathways. The Meeting brought together a group of researchers who have made important genetic, molecular or physiological advances in these areas. The presentations focused on very different signals, ranging from plant pathogens to light, but had the common theme of attempting to map the cellular network responsible for transducing these stimuli into specific responses.

One way of judging whether a scientific conference has been successful is by the extent and quality of the discussions that follow the formal oral presentations. Using this yardstick, the Meeting was highly successful, as the discussion sessions were marked by the standard of debate and its informed comment. In the longer-term the organizers will consider the meeting to have been a success if it stimulated those attending to go away and do the experiments which will form the focus for future Discussion Meetings at the Royal Society.

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