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# Preface

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# PREFACE

The last Royal Society Discussion Meeting on plant development, held in April 1986, focused on the establishment of specific developmental states by differential gene expression. Few plant genes or cDNAs had been sequenced, and the dramatic opportunities offered by transgenesis, use of *Arabidopsis* as a model system and methods such as PCR were still well below the horizon. Nevertheless, the meeting served to highlight many of the unique features of plant development including an alternation between sporophytic and gametophytic generations, the absence of a maintained germ line, an autotrophic lifestyle coupled with a sedentary existence in a constantly changing environment, an indeterminate mode of growth associated with a programme of continuous differentiation throughout the life cycle, and spectacular developmental plasticity exemplified by the ability of single cells to regenerate into whole plants.

As illustrated so exquisitely by a number of contributors to the current meeting, the dramatic progress made in molecular and biochemical methodology over the past nine years has not only transformed our understanding of the basic process of cellular differentiation and local gene regulation, but also resulted in real progress in more complex fields of plant development. Models were thus described which relate patterns of gene expression – both in time and space – to developmental events from embryogenesis, via leaf and flower formation, to senescence.

Our understanding of the major role of environmental factors in regulating and modifying plant growth and development has progressed considerably in recent years. This was illustrated by contributions on the nature of the receptors and transduction pathways that convert environmental signals into morphogenetic messengers which, in turn, lead to changes in gene expression in the target cells and result in specific morphogenetic changes and organogenesis.

The intention of the meeting was to provide a forum for discussion of our current understanding of the control of development in higher plants. We were able to attract contributions from the leading researchers in this field and were rewarded by the attendance of a young and enthusiastic audience of almost 500 people from the U.K. and overseas. The popularity of the meeting reflected the excellence of lectures, the superb organization provided by Mary Manning and colleagues at the Royal Society and, not least, generous financial support from MAFF, BBSRC, the Gatsby Foundation, Unilever, Zeneca and Rhône-Poulenc which allowed us to provide bursaries to support the attendance of a large number of graduate students.

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