

Hormones, Receptors and Cellular Interactions in Plants

Edited by C.M. Chadwick and D.R. Garrod (Series Editor: B. Cinader)

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This volume is the first in a series which will cover aspects of intercellular and intracellular communication. A preface by the general editor indicates that the series will emphasise the molecular aspect of cellular interaction phenomena. The first volume takes a broad view of the situation in plants with chapters on auxin receptors, ethylene receptors, gibberellin receptors, the role of cyclic AMP, pollen-stigma interactions, host-pathogen interactions, symbiont interactions and lectins. All chapters are written by experts in their field. Several of the chapters contain good background accounts covering the general biology and the historical development of the subject. The chapter on auxin receptors contains a particularly valuable section on the mathematical criteria for receptor research. Indeed, most of the chapters are excellently written and they make recommended reading for postgraduate students of the subject.

It comes as something of a disappointment, therefore, to be reminded that our knowledge of this area of plant science remains fragmentary and confused compared with the rapid advances that have been made with analogous animal systems.

While high affinity receptors have been studied in the case of auxin, ethylene and gibberellin (cytokinins and abscissin are not covered in this book), little is known about the mechanisms of signal transduction at membrane or cytosolic receptor sites. The chapter on cyclic AMP explains that various pieces of putative second messenger mechanisms have been identified in plants, but they have not been placed into a proven sequence leading from receptor-ligand binding and ending with the modulation of gene expression or some metabolic function. The paucity of information on plants is further emphasised by the editors' inclusion of three chapters on recognition mechanisms in protists (two on slime moulds and one on yeasts) and a chapter on plant protoplasts which hardly addresses the question of cell interactions.

In preparing the volume the editors have highlighted the serious and known deficiencies in this area of plant biochemistry. By eliciting stimulating accounts from several of the authors, they will hopefully encourage greater interest in the subject.

D.L. Laidman

Start by marking "Hormones, Receptors and Cellular Interactions in Plants" as Want to Read: Want to Read savingâ€¦| Want to Read. It starts with a discussion of some hormone receptors (auxins, ethylene and gibberellin) in higher plants, and then considers the role of cyclic AMP and its receptor. The complementary binding of a ligand and receptor is the basic language of intercellular communication and this book takes a broad look at the current status of research on receptors in higher and lower plants. It starts with a discussion of some hormone receptors (auxins, ethylene and gibberellin) in higher plants, and then considers the role of cyclic AMP and its receptors in the slime mould *Dictyostelium*. In plants, hormones travel large throughout the body via the vascular tissue (xylem and phloem) and cell-to-cell via plasmodesmata. Potentially every cell in a plant can produce plant hormones. In contrast, many animal hormones are produced only in specific glands. Plants do not have specialized hormone-producing glands. Hormones regulate a variety of plant behaviors in response to different stimuli or environmental conditions. This page is divided into two parts. Activation of these receptors induces a three-pronged, localized stress response: the plant produces phytoalexins, toxins that help kill the pathogen. the cells infected by the pathogen are physically walled off to prevent pathogen escape.