

# PLANT HORMONES AND THEIR ROLE IN PLANT GROWTH AND DEVELOPMENT

## Contents

### A. INTRODUCTION

1	The plant hormones: Their nature, occurrence, and functions <i>P.J. Davies</i>	1
2	The plant hormone concept: Transport, concentration, and sensitivity— <i>P.J. Davies</i>	12

### B. HORMONE SYNTHESIS AND METABOLISM

1	Auxin biosynthesis and metabolism <i>D.M. Reinecke and R.S. Bandurski</i>	24
2	Gibberellin biosynthesis and metabolism— <i>V.M. Sponsel</i>	43
3	Cytokinin biosynthesis and metabolism— <i>B.A. McGaw</i>	76
4	Biosynthesis and metabolism of ethylene <i>T.A. McKeon and S.F. Yang</i>	94
5	Abscisic acid biosynthesis and metabolism— <i>D.C. Walton</i>	113

### C. HOW HORMONES WORK

1	Auxin and cell elongation— <i>R.E. Cleland</i>	132
2	The control of gene expression by auxin— <i>G. Hagen</i>	149
3	Gibberellin and abscisic acid in germinating cereals <i>J.V. Jacobsen and P.M. Chandler</i>	164
4	Hormone binding and its role in hormone action <i>K.R. Libbenga and A.M. Mennes</i>	194

### D. HORMONE ANALYSIS

1	Instrumental methods of plant hormone analysis— <i>R. Horgan</i>	222
2	Immunoassay methods of plant hormone analysis <i>V.C. Pence and J.L. Caruso</i>	240

## E. THE FUNCTIONING OF HORMONES IN PLANT GROWTH AND DEVELOPMENT

1	Ethylene in plant growth, development, and senescence— <i>M.S. Reid</i>	25
2	Polyamines as endogenous growth regulators <i>A.W. Galston and R. Kaur-Sawhney</i>	28
3	Gibberellins and plant cell elongation— <i>J.-P. Métraux</i>	29
4	The genetic control of growth via hormones— <i>J.B. Reid</i>	31
5	Auxin transport— <i>P.H. Rubery</i>	34
6	The induction of vascular tissues by auxin— <i>R. Aloni</i>	36
7	Hormones and the orientation of growth <i>P.B. Kaufman and I. Song</i>	37
8	Hormonal regulation of apical dominance— <i>I.A. Tamas</i>	39
9	Hormones as regulators of water balance— <i>T.A. Mansfield</i>	41
10	Hormones and reproductive development— <i>J.D. Metzger</i>	43
11	Hormones and heterosis in plants <i>S.B. Rood and R.P. Pharis</i>	46
12	The role of hormones in photosynthate partitioning and seed filling— <i>M.L. Brenner</i>	47
13	The role of hormones during seed development <i>R.S. Quatrano</i>	49
14	The role of hormones in potato ( <i>Solanum tuberosum</i> L.) tuberization— <i>E.E. Ewing</i>	51
15	The hormonal control of bud and seed dormancy in woody plants— <i>L.E. Powell</i>	53
16	Hormones in plant senescence— <i>J.J. Goldthwaite</i>	55
17	Postharvest hormone changes in vegetables and fruit <i>P.M. Ludford</i>	57
18	Hormones in tissue culture and micropropagation <i>A.D. Krikorian, K. Kelly and D.L. Smith</i>	59
19	Natural and synthetic growth regulators and their use in horticultural and agronomic crops— <i>T.J. Gianfagna</i>	61
20	Genes specifying auxin and cytokinin biosynthesis in prokaryotes— <i>R.O. Morris</i>	63

## INDEX