

CONTENTS

Contributors	ix
--------------------	----

Cell Biology of the Harderian Gland

Giovanni Chieffi, Gabriella Chieffi Baccari, Loredana Di Matteo, Michela d'Istria,
Sergio Minucci, and Bruno Varriale

I. Introduction	1
II. Comparative Anatomy and Development	2
III. General Structure	8
IV. Ultrastructure	13
V. The Secretory Process	30
VI. Molecular Biology and Receptors	40
VII. Control of the Harderian Gland Activity	45
VIII. Known and Putative Functions of the Harderian Gland	56
IX. Pathology (Tumors)	61
X. Conclusions and Perspectives	62
References	63

Signal Transduction in Cell-Matrix Interactions

Jun-Lin Guan and Hong-Chen Chen

I. Introduction	81
II. Role of Focal Adhesion Kinase in Signal Transduction by Integrins	84
III. Activation of Second Messenger Systems of Integrins	95
IV. Crosstalk of Integrin Signaling with Other Intracellular Signaling Pathways	99
V. Cellular Functions Regulated by Integrin Signaling	102

VI. Concluding Remarks	107
References	108

Calcium and Graviperception in Plants: Inhibitor Analysis

Ninel A. Belyavskaya

I. Introduction	123
II. Universal Role of Calcium in Cellular Regulation	124
III. Calcium and Gravitropic Competence	130
IV. Calcium and Agravitropism at the Cellular Level	136
V. Possible Models of Gravitropic Sensing	170
VI. Concluding Remarks	172
References	172

Glucagon and Glucagon-like Peptides in Fishes

Erika M. Plisetskaya and Thomas P. Mommsen

I. Introduction	188
II. Glucagon Family Peptides	190
III. Systemic Levels and Their Regulation in Fish	214
IV. Physiological Effects	222
V. Signal Transduction	234
VI. Epilogue	240
References	243

Gametic Differentiation of *Chlamydomonas*

Christoph F. Beck and Michel A. Haring

I. Introduction	259
II. Changes at the Morphological Level during Gametogenesis	263
III. Model for Gametogenesis	264
IV. Induction of Gametogenesis by Nitrogen Starvation	265
V. Changes at the Molecular Level That Accompany Gametic Differentiation Induced by Nitrogen Starvation	269
VI. Role of Light in Gametogenesis	271
VII. Role of the Cell Cycle in Gametic Differentiation	277
VIII. Mutants in Gametogenesis	282

IX. Molecular, Genetic, and Biochemical Approaches toward an Understanding of the Gametogenic Program	286
X. <i>Chlamydomonas eugametos</i> Gametogenesis	293
XI. Concluding Remarks	296
References	297

Systemic Acquired Resistance in Plants

M. Schneider, P. Schweizer, P. Meuwly, and J. P. Métraux

I. Introduction	303
II. Mechanisms of Systemic Acquired Resistance	305
III. Signals for Systemic Acquired Resistance	313
IV. Chemical Induction of SAR	323
V. Conclusions	328
References	329
Index	341