

Contents

Contributors	xi
Preface	
J. Hayashi, G. Sato, and G. Serrero	xvii
INTRODUCTION: TRIBUTE TO JOHANNES HOLTFRETER	
Reflections on Johannes Holtfreter	
Philip L. Townes	3
A Tribute to Professor J.F.K. Holtfreter	
Leroy C. Stevens	7
Section 1. FACTORS IN EMBRYOGENESIS	
Informative Molecules and Induction in Early Embryogenesis	
Jutta Janeczek, Jochen Born, Peter Hoppe, Walter Schwarz, Hildegard Tiedemann, and Heinz Tiedemann	11
Test of Embryonic Inducing Factors: Advantages and Disadvantages of Different Procedures	
Hildegard Tiedemann	25
On the Cellular Communication of Amphibian Embryogenesis	
Tseng Mi-Pai Chuang	35
New Aspects of Early Embryonic Induction in Amphibians	
Horst Grunz	45
Purification of Mesodermal Inducing Substance and Protein Synthesis Using This Material	
M. Asashima, H. Nakano, T. Matsunaga, K. Hashimota and K. Shimada	55
Embryonic Control of Cancer	
G. Barry Pierce, Juan Arechaga, and Robert S. Wells	67
Section 2. FACTORS IN ORGANOGENESIS	
Mechanisms of Cell Adhesion in Epithelial-Mesenchymal Transformations	
Kathryn L. Crossin and Gerald M. Edelman	81
Hormonal and Non-Hormonal Features of Selected Epithelial-Mesenchymal Interactions During Development	
Harold C. Slavkin, Tina F. Jaskoll, Mary MacDougall, and Margarita Zeichner-David	93
Apical Ectodermal Ridge Maintenance <i>In Ovo</i> and <i>In Vitro</i>	
John F. Fallon, Eugenie L. Boutin, and Jill L. Carrington	103
Evidence for the Transmission of Dorsoventral Information to the Ectoderm During the Earliest Stages of Limb Development	
Jane S. Geduspan and Jeffrey A. MacCabe	115

viii / Contents

Interactions of Migrating Neural Crest Cells With Fibronectin	
Jean-Loup Duband, Sylvie Rocher, Kenneth M. Yamada, and Jean Paul Thiery	127
Hormonal/Intercellular Control of Lung Maturation	
Barry T. Smith, Joanna Floros, and Martin Post	141
Growth Factors and the Embryonic Kidney	
Werner Risau and Peter Ekblom	147

Section 3. MODEL SYSTEMS TO STUDY HORMONAL CONTROL OF DIFFERENTIATION: MULTIPOTENT CELLS

Extraembryonic Tissues as Sources and Sinks of Humoral Factors in Development: Teratocarcinoma Model Systems	
Eileen D. Adamson	159
The Mechanism of Chemically-Induced Differentiation of a Mouse Embryonal Carcinoma Cell Line	
Micheal W. McBurney, Jose Campione-Piccardo, Steven C. Smith, and John C. Bell	175
The Regulation of Collagen Type IV (α1) and Other Genes During the Retinoic Acid Induced Differentiation of Wild Type and Mutant Mouse Teratocarcinoma Stem Cells	
Lorraine J. Gudas and Sho-Ya Wang	181
Endocrine and Autocrine Control of Growth and Differentiation of Teratoma-Derived Cell Lines	
Ginette Serrero	191
Retinoid-Binding Proteins and Retinoid-Induced Differentiation of Embryonal Carcinoma Cells	
Uriel Barkai, Mary Lou Gubler, and Michael I. Sherman	205
Induction by Physiological Agents of Differentiation of the Human Leukemia Cell Line HL-60 to Cells With Functional Characteristics	
Theodore R. Breitman, Hiromichi Hemmi, and Masue Imaizumi	215
Two Distinct Events in Lineage Establishment of a Biopotential Hemopoietic Cell Line	
Edward S. Golub and Teresita Pagan	235

Section 4. COMMITMENT AND EXPRESSION OF DIFFERENTIATED FUNCTIONS

The Role of Progenitor Cells in Cellular Differentiation, Cellular Senescence and Neoplastic Transformation	
Sarah A. Bruce, Scott F. Deamond, Shuji Nakano, Toshimitsu Okeda, Ali M. Saboori, Paul O.P. Ts'o, Hiroaki Ueo, and Yasushi Yokogawa	245
Differentiated Bovine Parathyroid Cells Cultured for More Than 140 Population Doublings Show Both Parathyroid Hormone Synthesis and Growth Regulation by Calcium Ion Concentration	
Maria Luisa Brandi, Lorraine A. Fitzpatrick, Susan Fedak, Gerald D. Aurbach, and Hayden G. Coon	265

TSH-EGF Cooperation in the FRTL5 Thyroid Cell Growth Stimulation Bianca M. Veneziani, Donatella Tramontano, and Francesco S. Ambesi-Impiombato	277
Muscle Regeneration Revisited: Growth Factor Regulation of Myogenic Cell Replication Richard C. Strohman and Elissavet Kardami	287
Hormonal Regulation of Glutamine Synthetase in the Retina: Role of Cell Interactions A.A. Moscona	297
Environmental Regulation of Differentiated States of the Pigmented Epithelial Cell: A Unique Culture System for Studying Molecular Mechanisms of Cell Differentiation Goro Eguchi	307
Hormonal and Environmental Regulation of Respiratory Mucus Cell Differentiation Reen Wu and Mike J. Whitcutt	319
Extracellular Matrix Regulation of Cell-Cell Communication and Tissue-Specific Gene Expression in Primary Liver Cultures Mishiyasu Fujita, David C. Spray, Haing Choi, Juan Saez, Douglas M. Jefferson, Elliot Hertzberg, Larry C. Rosenberg, and Lola M. Reid	333
Endothelial Cell Growth Factor Thomas Maciag and Wilson H. Burgess	361
Reflections on the Evolution of the Regulation of Spermatogenesis Irving B. Fritz	371
 Section 5. MECHANISM OF HORMONE ACTION ON CELLULAR DIFFERENTIATION	
DNA Methylation and Drug Resistance in Variants of C3H10T1/2 Cl 8 Cells Lesley A. Michalowsky and Peter A. Jones	391
Role of Cytodifferentiation and Cell-Cell Communication in the Androgen Dependent Expression of α_{2u} Globulin Gene in Rat Liver A.K. Roy, F.H. Sarkar, A.C. Nag, and M.A. Mancini	401
Cytoplasmic Factors Regulating Cellular Differentiation Jerry W. Shay	417
Hormonal Control of Developmentally Regulated Adipose Genes D.M. Knight, A.B. Chapman, F.M. Torti, and G.M. Ringold	433
Regulation of Gene Expression During the Differentiation of 3T3-Adipocytes Bruce M. Spiegelman, Kathleen S. Cook, and Clayton R. Hunt	445
Cloning of Muscle Regulatory Factors Woodring E. Wright	455
Index	467