

VITAMINS AND HORMONES

ADVANCES IN RESEARCH AND APPLICATIONS

Editor-in-Chief

GERALD LITWACK

*Department of Biochemistry and Molecular Pharmacology
Jefferson Medical College
Thomas Jefferson University
Philadelphia, Pennsylvania*

Volume 59



ACADEMIC PRESS

A Harcourt Science and Technology Company

**San Diego San Francisco New York
Boston London Sydney Tokyo**

Contents

PREFACE	xi
---------------	----

GnRH Receptor and Apoptotic Signaling

ATSUSHI IMAI AND TERUHIKO TAMAYA

I. Introduction	2
II. Growth Arrest by GnRH	3
III. GnRH Receptor Distribution	5
IV. GnRH Receptor Coupled G Protein	7
V. GnRH Receptor Coupled Transmembrane Signaling	9
VI. Fas-Fas Ligand System during GnRH Action	14
VII. Proposed Apoptotic Signaling from GnRH Receptor	18
VIII. Conclusions	22
References	23

Structure and Function of the Growth-Hormone-Releasing Hormone Receptor

STEPHAN PETERSENN AND HEINRICH M. SCHULTE

I. Introduction	36
II. Physiology of Growth-Hormone-Releasing Hormone	37
III. Structure of the Growth-Hormone-Releasing Hormone Receptor Protein	38
IV. The Growth-Hormone-Releasing Hormone Receptor cDNA	40
V. Genomic Structure of the Growth-Hormone-Releasing Hormone Receptor	43
VI. Expression of the Growth-Hormone-Releasing Hormone Receptor	48
VII. Regulation of the Growth-Hormone-Releasing Hormone Receptor	50
VIII. Signal Transduction of the Growth-Hormone-Releasing Hormone Receptor and Control of GH Transcription and Secretion	55
IX. Role of the Growth-Hormone-Releasing Hormone Receptor in Proliferation and Differentiation of the Somatotrophic Pituitary Cell	57
X. Role of the Growth-Hormone-Releasing Hormone Receptor in Disease	58
XI. Summary	60
References	60

Regulators of Growth Hormone Signaling

JOËLLE FINIDORI

I.	Introduction	72
II.	Structure of GHR	72
III.	Mechanism of Action of GHR	75
IV.	Downregulation of GHR Signaling	85
V.	Conclusions and Future Prospects	88
	References	88

The EGF Domain: Requirements for Binding to Receptors of the ErbB Family

EVERARDUS J. J. VAN ZOELLEN, CATELJNE STORTELERS,
ANNE E. G. LENFERINK, AND MONIQUE L. M. VAN DE POLL

I.	Introduction: The EGF-like Domain	100
II.	EGF-like Growth Factors: Members of the Family	102
III.	Receptors for EGF-like Growth Factors: The ErbB Family	105
IV.	ErbB Receptor Specificity of Ligand Binding	108
V.	Structure-Function Relationship of EGF-like Growth Factors	110
VI.	Domain-Exchange Studies of EGF-like Growth Factors	113
VII.	Models for Receptor-Ligand Interaction of EGF-like Growth Factors	119
VIII.	Ligand-Independent Activation of ErbB Receptors	121
IX.	EGF-Related Ligands with Distinct Activities	121
X.	Concluding Remarks	123
	References	123

Enkephalin-Cell Interactions

SHUNSAKU KIMURA AND YUKIO IMANISHI

I.	Introduction	133
II.	Enkephalin Analogs for Multivalent Ligand Systems	135
III.	Bivalent Enkephalins	139
IV.	Multivalent Enkephalins on Polymers	140
V.	Multivalent Ligands on Vesicles	142
VI.	Simultaneous Activation of Two Different Receptor Systems	148
VII.	Cell Interactions of Enkephalin/Polypeptide Conjugates	150
VIII.	Perspectives	155
	References	155

Studies on Structure–Activity Relationships of Retinoic Acid Receptor Ligands by Means of Molecular Modeling

F. BACHMAIR, R. HOFFMANN, G. DAXENBICHLER, AND TH. LANGER

I. Introduction	160
II. Methods	165
III. Practical Section	180
IV. Experimental Section	209
V. Summary and Conclusion	210
References	211

Glucocorticoid-Regulated Gene Expression during Cutaneous Wound Repair

HANS-DIETMAR BEER, REINHARD FÄSSLER, AND SABINE WERNER

I. The Wound Healing Process	218
II. Inhibition of Wound Healing by Glucocorticoids	219
III. Glucocorticoid-Regulated Gene Expression during the Healing Process of Full-Thickness Excisional Wounds in Mice	220
References	234

The Aromatic Hydrocarbon Receptor, Transcription, and Endocrine Aspects of Dioxin Action

STEVEN T. OKINO AND JAMES P. WHITLOCK, JR.

I. Introduction	241
II. Components of the <i>CYP1A1</i> Induction Mechanism	244
III. Induction in Intact Cells	248
IV. Working Model for Dioxin Action	251
V. Ligands for AhR	252
VI. Endocrine Aspects of Dioxin Action	253
VII. Future Issues	257
References	258

Control of Food Intake via Leptin Receptors in the Hypothalamus

BJÖRN MEISTER

I. Hypothalamic Control of Body Weight	266
II. The <i>ob</i> Gene Product: Leptin	267

III. Leptin Receptors	269
IV. Access of Leptin to Hypothalamic Leptin Receptors	278
V. Chemical Identity of Leptin Target Neurons: Mediators of Leptin's Action in the Hypothalamus	279
VI. Leptin-Induced Signaling Pathways	292
VII. Leptin-Leptin Receptors and Human Obesity	293
VIII. Summary	293
References	295

Vitamin E and Immunity

SATORU MORIGUCHI AND MIKAKO MURAGA

I. Introduction	306
II. Vitamin E Deficiency and Immunity	306
III. Vitamin E Supplementation and Immunity	310
IV. Vitamin E and Decreased Cellular Immunity with Aging	313
V. Vitamin E and T-Cell Differentiation in the Thymus	321
VI. Vitamin E and Acquired Immune Deficiency Syndrome (AIDS)	326
VII. Conclusion	329
References	330

Transcobalamin II and Its Cell Surface Receptor

BELLUR SEETHARAM AND NING LI

I. Introduction	338
II. Transcobalamin II	338
III. Transcobalamin II Receptor	349
IV. Transcobalamin II/Transcobalamin II Receptor-Mediated Cellular Uptake of Cobalamin	358
References	360

INDEX	367
-------------	-----