

# CONTENTS

Preface . . . . . *v*

## Neuroendocrine Control of Immunity

Hypothalamic Modulation of Delayed-type Hypersensitivity  
and Splenic Natural Killer Cell Activity  
. . . . . *T. Katafuchi, T. Kondo, S. Take, and T. Hori* 3

Neuroendocrine Regulation of Th1/Th2 Balance  
. . . . . *I.J. Elenkov* 13

Sympathetic Modulation of Immunity in Aging  
. . . . . *S. ThyagaRajan, K.S. Madden,  
D.L. Bellinger, S.Y. Felten, and D.L. Felten* 27

Effects of Pituitary Adenylate Cyclase Activating Polypeptide on  
Phagocytosis and Membrane Current of Mouse Peritoneal  
Macrophages and Microglia . . . *M. Ichinose and M. Sawada* 39

## Actions of Cytokines on Neural and Endocrine Functions

- Actions of aFGF in Senescence-accelerated Mice: Protective Effects against Deficits of Learning and Memory, and Effects on Immunological Functions  
 . . . . . *A.-J. Li, Y. Oomura, K. Sasaki, N. Hori, I. Tooyama, Y. Nomura, K. Hanai, H. Kimura, N. Yanaihara, H. Yoshii, Y. Yamazaki, S. Take, and T. Hori* 51
- Cytokines and Acute Brain Injury: Focus on IL-1, IL-10, and TGF $\beta$  . . . . . *S. Toulmond* 63
- Immune and Autoimmune Responses in Transgenic Mice Expressing IL-12 in Astrocytes  
 . . . . . *A. Pagenstecher, A.K. Stalder, and I.L. Campbell* 73
- Neuroendocrine and Immune Dysfunctions in GRFR1-deficient Mice . . . . . *K.-F. Lee, J.-M. Aubry, F. Dellu, L.M. Bilezikjian, A. Turnbull, L. Gold, R. Chen, Y. Marchuk, C. Hauser, P.E. Sawchenko, G. Koob, W. Vale, and G.W. Smith* 83
- How the Immune System Signals the Brain
- Role of Brain Endothelial Cyclooxygenase-2 in the Transmission of Immune Signal to the Central Nervous System  
 . . . . . *K. Matsumura, C. Cao, K. Nakadate, H. Morii, and Y. Watanabe* 99
- CNS Responses to Immune System Challenge: Mechanisms of the Febrile Response  
 . . . . . *J.K. Elmquist, T.E. Scammell, and C.B. Saper* 111
- Brain Cytokine Expression in Response to Peripheral Infection . . . . . *N. Quan* 125

Vagal Afferent Nerve Mediates Immune Signals to the Brain . . . . .	<i>L.R. Watkins and S.F. Maier</i>	143
--	------------------------------------	-----

### Stress and Immunity

Non-inflammatory Stress and Brain-gut-liver-immune Axis . . . . .	<i>A. Takaki, S. Shioda, K. Ito, M. Maeda,        Y. Kanemitsu, S. Yagi, A. Arimura, and T. Hori</i>	155
--	--	-----

Neuroendocrine Regulation of the Immune Response: Contrast- ing Effects of Physical and Social Stress . . . . .	<i>D.A. Padgett, J.L. Stark, and J.F. Sheridan</i>	161
---	--	-----

Stress Induces Neuronal Damage in the Hippocampus and Dopaminergic Dysfunctions in the Prefrontal Cortex in Rats . . . . .	<i>K. Mizoguchi, M. Yuzurihara, A. Ishige,        D.-H. Chui, and T. Tabira</i>	171
--	---	-----

### Neurotrophic and Neurotoxic Functions of Cytokines

Interleukin-3 as a Neurotrophic Factor for Central Cholinergic Neurons: the Function of Interleukin-3 in Perspectives on Neural Immune Interactions . . . . .	<i>Y. Konishi, T. Harano, K. Harano, D.-H. Chui,        F. Gallyas, Jr., T. Shirabe, and T. Tabira</i>	185
--	--	-----

Caspases in Developmental Neuronal Death and Ischemic Brain Injury . . . . .	<i>M. Deshmukh, Y. Cheng, J. Werth, A. D'Costa,        J. Cocabo, S.M. Rothman, D.M. Holtzman,        and E.M. Johnson, Jr.</i>	205
---	---	-----

Pathophysiological Significance of Cytokine Network in the Brain. . . . .	<i>M. Sawada</i>	217
--	------------------	-----

Microglia and Immunity in Relation to Alzheimer's Disease .....	<i>H. Akiyama</i> 229
Subject Index .....	243
Author Index .....	247