

Contents

VOLUME I

Contributors	ix
Preface to the Fourth Edition	xv
About the Editors	xix

Prologue	
Exploring the Phylogenetic History of Neural-immune System Interactions: An Update. . . .	1
<i>Nicholas Cohen and Kevin S. Kinney</i>	

I. Neural and Endocrine Effects on Immunity

1. Overview.	39
<i>C. J. Heijnen</i>	
1. Glucocorticoids and Immunity: Mechanisms of Regulation.	45
<i>Onard J. L. M. Schoneveld and John A. Cidlowski</i>	
2. Adrenergic Regulation of Immunity.	63
<i>Virginia M. Sanders and Annemieke Kavelaars</i>	
3. Cholinergic Regulation of Inflammation. . . .	85
<i>Christopher J. Czura, Mauricio Rosas-Ballina, and Kevin J. Tracey</i>	
4. Significance of Sensory Neuropeptides and the Immune Response.	97
<i>Hanneke P. M. van der Kleij and John Bienenstock</i>	
5. Vasoactive Intestinal Peptide: An Anti-inflammatory Neuropeptide.	131
<i>Doina Ganea and Mario Delgado</i>	
6. Immune-derived Opioids: Production and Function in Inflammatory Pain.	159
<i>Halina Machelska and Christoph Stein</i>	

7. Crosstalk between Insulin-like Growth Factors and Pro-inflammatory Cytokines.	171
<i>Robert H. M'Cusker, Klemen Strle, Suzanne R. Broussard, Robert Dantzer, Rose Marie Bluthe, and Keith W. Kelleij</i>	
8. The Neuroendocrine System and Rheumatoid Arthritis: Focus on the Hypothalamic-Pituitary-Adrenal Axis.	193
<i>Heather E. Gorby and Esther M. Sternberg</i>	
9. Sex Steroids and Immunity.	207
<i>Maurizio Cutolo and Alessandro Calvia</i>	
10. Emerging Concepts for the Pathogenesis of Chronic Disabling Inflammatory Diseases: Neuroendocrine-immune Interactions and Evolutionary Biology.	217
<i>Rainer H. Straub, Adriana del Rey, and Hugo O. Besedovsky</i>	
11. Neuroendocrine Regulation of Cancer Progression: I. Biological Mechanisms and Clinical Relevance.	233
<i>Anil K. Sood, Susan K. Lutgendorf, and Steve Cole</i>	
12. Neuroendocrine Regulation of Cancer Progression: II. Immunological Mechanisms, Clinical Relevance, and Prophylactic Measures.	251
<i>Roi Avraham and Shamgar Ben-Eliyahu</i>	

II. Immune System Effects on Neural and Endocrine Processes and Behavior

<i>Robert Dantzer</i>	
II. Overview.	267
<i>Robert Dantzer</i>	

13. Expression and Action of Cytokines in the Brain: Mechanisms and Pathophysiological Implications.	271
<i>Robert Dantzer</i>	
14. Cytokines, Sickness Behavior, and Depression.	281
<i>Robert Dantzer, Rose-Marie Bluthé, Nathalie Castanon, Keith W. Kelley, Jan-Pieter Kohnsman, Sophie Laye, Jacques Lestage, and Patricia Parnet</i>	
15. The Differential Role of Prostaglandin E ₂ Receptors in the CNS Response to Systemic Immune Challenge.	319
<i>Michael Lazarus and Clifford B. Saper</i>	
16. The Role of Pro-inflammatory Cytokines in Memory Processes and Neural Plasticity . . .	337
<i>Inbal Goshen and Raz Yirmiya</i>	
17. Aging, Neuroinflammation, and Behavior . . .	379
<i>Rodney W. Johnson and Jonathan P. Godbout</i>	
18. Neuroimmune Interactions and Pain: The Role of Immune and Glial Cells.	393
<i>Linda R. Watkins, Julie Wieseler-Frank, Mark R. Hutchinson, Annemarie Ledeboer, Leah Spataro, Erin D. Milligan, Evan M. Sloane, and Steven F. Maier</i>	
19. Cytokines and Non-immune Brain Injury . . .	415
<i>Barry W. McColl, Chris J. Stock, and Nancy J. Rothzvell</i>	
20. The Interaction between Brain Inflammation and Systemic Infection.	429
<i>Leigh M. Felton and V. Hugh Perry</i>	

III. Behavior and Immunity

Michael R. Irwin

III. Overview.	449
<i>Michael Irwin</i>	
21. Mother-infant Interactions and the Development of Immunity from Conception through Weaning.	455
<i>Christopher L. Coe and Gabriele R. Lubach</i>	
22. Social Dominance and Immunity in Animals.	475
<i>Mark L. Laudenslager and Sarah Kennedy</i>	
23. Social Context as an Individual Difference in Psychoneuroimmunology.	497
<i>Edith Chen and Gregory E. Miller</i>	

24. Psychoneuroimmunology of Depressive Disorder: Mechanisms and Clinical Implications.	509
<i>Lucile Capuron, Andrew Miller, and Michael R. Irwin</i>	
25. Immune and Neuroendocrine Alterations in Post-traumatic Stress Disorder.	531
<i>Gail Ironson, Dean Cruess, and Mahendra Kumar</i>	
26. Psychoneuroimmunologic Aspects of Alcohol and Substance Abuse.	549
<i>Steven J. Schleifer</i>	
27. Schizophrenia and Immunity.	563
<i>Matthias Rothermundt and Volker Arolt</i>	
28. Sleep and the Immune System.	579
<i>Mark R. Opp, Jan Born, and Michael R. Irwin</i>	
29. Emotions and the Immune System.	619
<i>Margaret E. Kemeny</i>	
30. Behaviorally Conditioned Enhancement of Immune Responses.	631
<i>Gustavo Pacheco-Lopez, Maj-Britt Niemi, Harald Engler, and Manfred Schedlowski</i>	
31. Exercise and Immunity: Clinical Studies . . .	661
<i>David C. Nieman</i>	
32. Behavioral Interventions: Immunologic Mediators and Disease Outcomes.	675
<i>Michael H. Antoni, Neil Schneiderman, and Frank Penedo</i>	

VOLUME II

Contributors ix

Preface to the Fourth Edition . . . xv

About the Editors. xix

IV. Stress and Immunity

Ronald Glaser

IV. Overview.	705
<i>Ronald Glaser</i>	
33. Stress: A System of the Whole.	709
<i>Bruce Rabin</i>	
34. Bi-directional Effects of Stress on Immune Function: Possible Explanations for Salubrious as Well as Harmful Effects.	723
<i>Firdaus S. Dhabhar and Bruce S. McEwen</i>	

35. <i>Positive Affect and Immune Function</i>	761	44. Psychosocial Factors and Coronary Heart Disease: The Role of Psychoneuroimmunological Processes.	945
<i>Anna L. Marsland, Sarah Pressman, and Sheldon Cohen</i>		<i>Andrew Steptoe and Lena Brydon</i>	
36. <i>Close Relationships and Immunity</i>	781	45. <i>Endocrine and Immune Responses to Stress in Chronic Inflammatory Skin Disorder (Atopic Dermatitis)</i>	975
<i>Jennifer E. Graham, Lisa M. Christian, and Janice K. Kiecolt-Glaser</i>		<i>A. Buske-Kirschbaum</i>	
37. <i>Stress and Allergic Diseases</i>	799	46. <i>Obesity and Immunity</i>	993
<i>Gailen D. Marshall and Sitesh R. Roy</i>		<i>Christopher B. Guest, Yan Gao, Jason C. O'Connor, and Gregory G. Freund</i>	
38. <i>Stress, Neuroendocrine Hormones, and Wound Healing: Human Models</i>	825	47. <i>Endogenous Extracellular Hsp72 Release Is an Adaptive Feature of the Acute Stress Response</i>	1013
<i>Phillip T. Marucha and Christopher G. Engeland</i>		<i>Monika Fleshler, Craig M. Sharkey, Molly Nickerson, and John D. Johnson</i>	
39. <i>Stress and Wound Healing: Animal Models</i>	837	48. <i>Cold-Restraint-induced Immune and Biochemical Changes Inhibit Host Resistance to <i>Listeria</i></i>	1035
<i>David A. Padgett, Phillip T. Marucha, and John F. Sheridan</i>		<i>Rebecca T. Emeny and David A. Lawrence</i>	
40. <i>Reactivation of Latent Herpes Viruses in Astronauts</i>	851	49. <i>Psychobiology of HIV Infection</i>	1053
<i>Duane L. Pierson, Satish K. Mehta, and Raymond P. Stowe</i>		<i>Erica Sloan, Alicia Collado-Hidalgo, and Steve Cole</i>	
41. <i>Psychosocial Influences in Oncology: An Expanded Model of Biobehavioral Mechanisms</i>	869	50. <i>Stress-induced Modulation of the Immune Response to Herpes Simplex Virus Infections</i>	1077
<i>Susan K. Lutgendorf, Erin S. Costanzo, and Scott D. Siegel</i>		<i>Robert H. Bonneau and John T. Hunzeker</i>	
42. <i>Stress-associated Immune Dysregulation Can Affect Antibody and T-cell Responses to Vaccines</i>	897	51. <i>Stress-induced Modulation of Innate Resistance and Adaptive Immunity to Influenza Viral Infection</i>	1097
<i>Mark A. Wetherell and Kavita Vedhara</i>		<i>Michael T. Bailey, David A. Padgett, and John F. Sheridan</i>	
V. Psychoneuroimmunology and Pathophysiology		52. <i>Social Stress Alters the Severity of a Virally Initiated Model of Multiple Sclerosis</i>	1107
<i>John Sheridan and David Padgett</i>		<i>Mary W. Meagher, Robin Johnson, Elisabeth Good, and C. Jane Welsh</i>	
V. Overview.	917		
<i>John Sheridan and David Padgett</i>			
43. <i>Psychoneuroimmunological Pathways Involved in Acute Coronary Syndromes</i>	921	Author Index	1125
<i>Willem J. Kop and Nicholas Cohen</i>		Subject Index	1249