Contents

Part I  Evolution of the Brain

1 Overview of Brain Evolution: Lobe-Finned Fish vs. Ray-Finned Fish  ........................................ 3
   Kei Yamamoto and Solal Bloch

2 The Origins of the Bird Brain: Multiple Pulses of Cerebral Expansion in Evolution  ........................................ 35
   Toru Shimizu, Kazutaka Shinozuka, Ahmet K. Uysal, and S. Leilani Kellogg

3 The Evolution of Mammalian Brains from Early Mammals to Present-Day Primates  ........................................ 59
   Jon H. Kaas

4 Developmental Sequences Predict Increased Connectivity in Brain Evolution: A Comparative Analysis of Developmental Timing, Gene Expression, Neuron Numbers, and Diffusion MR Tractography  ........ 81
   Christine J. Charvet, Chet C. Sherwood, and Emi Takahashi

Part II  Evolution of Cognition

5 The Evolution of Cognitive Brains in Non-mammals  ............. 101
   Andrew N. Iwaniuk

6 Evolution of Cognitive Brains: Mammals  .......................... 125
   Gerhard Roth and Ursula Dicke

7 On the Matter of Mind: Neural Complexity and Functional Dynamics of the Human Brain  ........................................ 147
   Michel A. Hofman
8 Behavioural, Cognitive and Neuronal Changes in the Acquisition of Tool Use .......................... 169
Yumiko Yamazaki and Atsushi Iriki

9 Great Ape Social Attention .......................... 187
Fumihiro Kano and Josep Call

10 Evolution of Vocal Communication: From Animal Calls to Human Speech ............................. 207
Kazuo Okanoya

11 Integration Hypothesis: A Parallel Model of Language Development in Evolution .................. 225
Shigeru Miyagawa

Part III Evolution of Emotion

12 Evolution of the Emotional Brain .......................... 251
Edmund T. Rolls

13 Evolutionary Origin of Empathy and Inequality Aversion .......................... 273
Shigeru Watanabe and Yutaka Kosaki
Evolution of the Brain, Cognition, and Emotion in Vertebrates
Watanabe, S.; Hofman, M.A.; Shimizu, T. (Eds.)
2017, X, 299 p. 76 illus., 25 illus. in color., Hardcover
ISBN: 978-4-431-56557-4