Preface

Bipolar disorder (BD) is a multifactorial, multifaceted, treatable, and complex medical condition in which the therapeutic decision in clinical practice still predominantly relies on clinical observation. Available treatment options for BD manage acute episodes, cyclicity, suicide attempts, impulsive behavior, long-term mood stabilization, and relapse prevention, as well as associated comorbid conditions. The potential therapeutic implications of new research in BD are emphasized throughout the book.

Recent advances in biomarker research have brought up new excitement in the field. The perspective of having biomarkers that can inform about diagnosis and guide clinicians through a scientifically based decision-making therapeutic approach has boosted several new initiatives in the last few years. However, scientists in the field will need to overcome specific hurdles to achieve this goal. This book aims to provide a comprehensive overview of state of the art and perspectives on predictive, prognostic, and treatment biomarkers of BD, with contributions by leading international experts.

Advances in understanding the neural circuits and mechanisms of synaptic and neural plasticity and abnormalities in neurotrophic, inflammatory, and oxidative stress markers have been consistently shown in BD. Studies on neuroimaging markers, peripheral biomarkers, and genetic markers using different tools and technologies shed light on the pathophysiological mechanisms and biological underpinnings of BD.

Newer methodologies have improved our understanding of the neural circuits and synaptic and neural plasticity mechanisms in BD. They provide unique insights into the molecular mechanisms of receptors and gene codes for specific functional proteins. In addition, new convergent functional genomics, polygenic exploration, and transcriptomic approaches may support new drug development in the field.

Besides, hypothalamic–pituitary–adrenal, monoaminergic, and glutamate neurotransmission have been associated with structural abnormalities, white matter hyperintensities, and increased ventricular volume. In addition, models for emotional dysregulation suggest the presence of dysfunctions within fronto-limbic-subcortical structures in BD. Moreover, cognitive dysfunction in several domains in BD has been associated with epigenetic changes and neuroprogression, which also directly impact mood, neurovegetative and behavioral regulation. Science in BD has a clear path to track and follow,

and we are moving forward to apply the concept of personalized medicine. Reading this book, you will be provided an overview of how much progress has been made and the exciting perspectives for developing pathophysiological models applied to the therapeutics of BD.

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