PREFACE

Autism spectrum disorders (ASD) are developmental disorders. While intellectual and sometimes physical disabilities can be features of ASD, first and foremost, having a developmental disorder simply means that individuals with ASD develop differently. These differences are mainly present in social interaction, communication, and sensory processing and become visible through a wide variety of behavioral responses that differ from individuals without ASD. However, the term "spectrum" implies that individuals with ASD are affected to varying degrees. They can also display a range of features and possible comorbidities associated with ASD.

Dr. Leo Kanner published the first formal description of the behavioral differences in 1943. He described 11 children, mostly boys, and depicted the essential features of autism, all of which are still present in current diagnostic tools. At the same time, Hans Asperger, an Austrian pediatrician, was working with children displaying similar but milder features. Initially termed "autism" or "Asperger's syndrome" after Hans Asperger, the name autism spectrum disorder was adopted in 2013.

Although the defining features of ASD remain essentially the same since their clinical description in 1943, we still do not fully know what causes ASD. However, researchers have gained extensive insights into possible pathomechanisms (genetic and non-genetic) even at the molecular level of cells. The diagnostic criteria have been adapted, improved, and our understanding of ASD is ever advancing. Along with this, many clinical research programs and clinical trials aiming at improving the lives of individuals with ASD are underway. Today, a growing database of the etiopathological features, risk factors, and biological mechanisms of ASD indicates a heterogeneous, multifactorial, and complex condition.

This book highlights the current state of the art in many areas of ASD. Chapter 1 provides an overview of the epidemiology of ASD and the current knowledge of the underlying pathogenic mechanisms of ASD. Chapter 2 summarizes the diagnostic criteria and procedures and highlights present and upcoming therapeutic strategies for ASD. Chapter 3 reviews the contribution of trauma to ASD clinical phenotypes, while Chapters 4 and 5 focus on atypical sensory processing frequently found in individuals with ASD. Chapter 6 discusses the genetic overlap that can be found between ASD and other neuropsychiatric disorders such as attention deficit hyperactivity disorder (ADHD), depression, and schizophrenia. Chapters 7 and 8 examine possible pathomechanisms in more detail. While chapter 7 focuses on the contribution of abnormalities in mitochondria, chapter 8 discusses gut-brain interactions and a potential role for microbiota changes in ASD, both as disease modifier and therapeutic target.

I am grateful for all the authors' intellectual contributions and diligence toward the fruition of this book. The eight chapters cover diverse aspects of ASD, from diagnosis, clinical features, pathology, and possible causes to novel treatment strategies. Thus, the book provides a comprehensive overview of the topic. By no

means will it reflect the dynamic and challenging field of ASD entirely as new causes, such as candidate genes and environmental factors, and new results from drug discovery research are constantly emerging. I hope this book will encourage interested readers to dive into this field and appreciate both the challenges and recent achievements in the area of ASD.

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