

Preface

The publication *Translational Approaches to Autism Spectrum Disorder (ASD)* combines an important synthesis of clinical and experimental views from the molecular to the behavioral, of this disease that constitutes a real challenge to neurology, psychiatry, psychology, and basic neuroscience. During a meeting in Cancun, Mexico (April 21–25, 2013), the main hypotheses of ASD were intensively discussed by experts from several countries covering all the levels of neuroscience (molecular to behavioral) and branches (from genetics, immunology, clinical neurophysiology, and pharmacology to epidemiology). This book is an account of the spirit of the discussion realized over those days.

The promise that translational medicine will improve the lives of children suffering from ASD is greater than ever. Knowledge of the development and behavior of ASD is increasing at a great rate, from the molecular to sociological level. These exciting scientific advances in the description of the ASDs, although incomplete so far, provide hope to effectively address new treatments for the people suffering from the illness.

Unfortunately, ASD has many variants and the presence of a real specific marker is still unknown, preventing the discovery of successful personalized treatment. This book has the potential to help researchers and clinicians to unite to uncover the clues of ASD. To fully understand this idea, it is recommended that the chapters are read in three interconnected parts: Part 1, composed of the first three chapters; Part 2, Chaps. 4–10, and Part 3, corresponding to Chap. 11.

Part 1 synthesizes the history, prevalence, and possible causes of ASD (Chap. 1); the prevalence of ASD since 2000 and the discussion of methodological factors impacting the estimation of prevalence (Chap. 2); and finally in Chap. 3, the presentation of several genetic syndromes of ASD as a multifactor and complex condition with a marked genetic influence, evidenced by a high heritability (80–90%). Both common and rare genetic variants have an influence on the etiology and development of ASD.

Part 2 contains several approaches. At first, reviews of EEG findings with an emphasis on quantitative measurements, epilepsy, sleep disorders (Chap. 4), and dysfunction of auditory, visual, and somatosensory systems that underlie ASD (Chap. 5) are discussed. Then in Chap. 6, an overview of the morphological and functional

brain changes in ASD using MRI and fMRI observations in ASD is provided. Afterwards, evidence derived from animal experiments and clinical data, supporting the role of neuroplasticity on autism physiopathology are discussed (Chap. 7). This part ends with the presentation of immunological data: first, the evidence that certain immune stimuli result in reduced sociability and increased repetitive behavior in animal models (Chap. 8); later, in Chap. 9, how immunological derangements, including cellular immune dysregulations, chronic inflammatory states, and neuro-immune alterations occur in the periphery and in the brain of those suffering from ASD. The same is true for studying antibody responses in the brain and periphery of ASD patients (Chap. 10).

Part 3 is covered entirely in Chap. 11. This section starts with the consideration that although common symptoms are well described in ASD, there is an inadequate understanding of the mechanisms at molecular and cellular levels. Thereafter, the current therapies are described, including physiological interventions, occupational and physical therapy, speech and language therapy, medications and sensory integration, and vision therapy. Other therapies discussed for the future are: intranasal oxytocin, bioactive peptides, and vitamins. It is finally concluded that a definitive pharmacologic treatment for the core symptoms of autism does not exist.

The outstanding value of this book can be attributed to its expert and authoritative contributors. Students of the field of ASD will be indebted to these dedicated authors for their hard work, knowledge, thoughtfulness, and good judgment. My sincere appreciation

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