Preface *to the special issue of autism*

Autism spectrum disorder (ASD), the fastest-growing complex neurodevelopment disorder, continues to rise in its prevalence, now affecting 1 in 88 children and 1 in 54 boys in the US, averaging 1% globally. More children will be diagnosed with autism this year than with AIDS, diabetes & cancer combined according to the CDC. Autism costs the nation $137 billion a year and is expected to increase in the next decade. Hence autism has become a huge healthcare burden and global threat, categorized by the CDC as a national public health crisis.

Autism is characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behavior, which cause serious disability of those affected. With its etiology still largely unclear, and its patho-physiology poorly understood, autism currently has no universally accepted therapy. Autism is regarded as century myth affecting more and more families that urgently needs to be addressed. Researchers, clinicians, healthcare providers, social works and government need to work together as a solid team to find a cure to autism.

The current issue represents a continuation of our first special issue on autism (NAJMS Vol. 4 Issue 3) published on July 2011. In this issue we are so honored to have another panel of expert researchers and clinicians on the frontlines in autism research and treatment to present their newest research findings and views from different perspectives.

This issue of North American Journal of Medicine and Science (NAJMS) consists of three original research articles, seven comprehensive reviews and one commentary article, covering topics in genetics, pathogenesis, mitochondrial dysfunction, metabolic disorder biomarkers of autism, and autism animal models, that bring into focus our newest understanding and treatment strategies.

This issue opens with an exciting presentation of Dr. Rasmussen's original research investigating point mutation of Cav 1.2 and its causive relation with a complex autistic disorder called Timothy syndrome, and its isoform expression in mice models. This work enhances our understanding the role of aberrant calcium handling in promoting autism, at the genetic and cellular levels. The presentation of Dr. Frye's original research demonstrates the presence of abnormalities of mitochondrial biomarkers and energy metabolism in a subset of children with autism. Following this Dr. Lord article examines over 40 organic acids in urine and demonstrates its reliability and value in detecting metabolic disorders, nutritional deficits, immunologic disturbance of individuals with autism. These three articles represent cutting edge research on the frontier of scientific study of autism. We are glad to witness so many new avenues of study and the encouraging prospects they portend. Equally important, we are privileged by seven comprehensive review articles and one commentary article, which summarized the newest advances and breakthroughs from different aspects: Dr. Mody reviews neuroimaging evidence of an impaired language system in autism providing promising targets for the behavioral and pharmacological interventions. She stresses that the presence of speech before 5 years of age is the strongest predictor for better outcomes. Dr. Garcia summarizes the use of psychotropic medications for autism and discusses the metabolic risk factors. Dr. Hartley-McAndrew reviews neuroimaging advances and characterizes the structural and neuronal phenotype of autism. Dr. William Stone illustrates the growing evidences of social cognition as a significant contributor to functional outcomes of autism. Dr. Mumper's review article emphasizes the importance of recognizing and treating medical problems of children with autism; Dr. Baker's commentary article describes the web-based system called autism 360 as a Fourth Paradigm Data Intensive Science offering us a better understanding of autism from macroscopic multiple dimensional data analysis. The review by Dr. Kong, Chen and Wang previews potential future treatments for autism, calling the special attention to the latest animal-model of ASD, in which the neurotoxic effect of the well known neurotransmitter glutamate (a potential neurotoxin) has been reduced by a newly developed glutamate receptor blocker named GRN-529, and thereby instantly reduces the biological features of ASD: repetitive behavior and lack of sociability. The promise of this compound as a potential medicine for autism is very encouraging, though this phenomenon has so far only been observed in mice model of autism; The last review by Dr. Lee and Kong has systematically introduced the exciting potential of traditional Chinese Medicine, which proposed another promising treatment direction for further exploration.

I would like to thank all the contributing authors for sharing their great expertise in this area, their trust and support; thanks are also due to all the peer reviewers for their valuable critiques, comments and precious time. I would like to thank my editorial colleagues for their dedication and collaborative team work with shared vision and spirit, and Mr. Brian Wilford for his critical English editing. Together, we have made this issue possible.

Finally, I would like to thank my family members, my husband Dr. Xiaochun Wang for his executive editing and technological work and constant great support and my sons Raymond and Bryan Wang, as well as my mom Dr. Shujuan Tan for giving me continuous courage and strength.

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