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Finding the Missing Puzzle Piece of Autism

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Finding the Missing Puzzle Piece of Autism

By Julie O'Connor

Photo by Donna Terek

Autism, one of the greatest mysteries of medicine – and the most pervasive development disorder that is characterized by the impairment of social interactions and communication, severely restricted interest levels and highly repetitive behavior – is prevalent in one to two per 1,000 people. Autism affects many parts of the brain, but how it happens is not clearly understood. Signs of autism become noticeable in the first three years of a child's life, and early intervention can help children gain important social, communication and self-care skills they would otherwise lack. There is no single known cause of autism and there is no cure for the disease that requires a lifetime of support.

Dr. Diane Chugani, professor of pediatrics and radiology at Wayne State University's School of Medicine and director of the Translational Imaging Laboratory at Children's Hospital of Michigan, is doing research to find the origins and a possible treatment for autism.

Dr. Diane Chugani, professor of pediatrics and radiology

Unlocking the hidden mind

Dr. Chugani received a $5.79 million grant from the National Institute of Neurological Disorders and Stroke of the National Institutes of Health for a study that may open doors to finding a treatment for improving those afflicted with autism. This Autism Center of Excellence Network Grant, *"Early Pharmacotherapy Guided by Biomarkers in Autism,"* will continue earlier research which showed that the brain serotonergic system is abnormal during critical periods of brain development in children with autism.

Dr. Chugani and her team demonstrated that their positron emission tomography (PET) studies on the serotonin synthesis capacity in children younger than six years was significantly altered when compared to non-autistic children. Serotonin, an important factor involved in postnatal synaptogenesis – or specialized junctions through which neurons signal to each other and other non-neuronal cells to form interconnected circuits within the central nervous system that are crucial to the biological processes that underlie perception and thought – is thought to be one potential target to treatment of autism. Through use of the 5HT1A serotonin agonist, buspirone, in children younger than six, Chugani hopes to uncover a new and safe treatment in groups or subgroups of autistic children.

Chugani's research brings new hope to those with autism who have difficulty with social skills, communication and repetitive motor actions. Her previous studies that treated children with a drug similar to serotonin improved many of the participant's social interactions and reduced the repetitive behaviors, and this study will further test this novel treatment.

"Dr. Chugani is one of the leading scientists in the field of autism," commented Dr. Joseph Dunbar, associate vice president for Research at Wayne State University. "Her previous work utilizing PET imaging studies has led to the discovery of potential mechanisms involved in the pathogenesis of autism that may someday lead to new treatments for the growing number of children diagnosed with this complex disability," he added.

About Dr. Diane Chugani: Dr. Chugani is a member of the scientific advisory boards of Autism Speaks and the Tuberous Sclerosis Alliance. She was a founding board member of the International Society for Autism Research. She received her Ph.D.. in pharmacology from the University of California, Los Angeles and her B.A. (Cum Laude) in psychology from the University of Maryland, College Park. She joined Wayne State University in 1993.

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