



**American College of Neuropsychopharmacology**

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**CONTACT:** Tamara Moore, (202) 745-5114  
[tmoore@gymr.com](mailto:tmoore@gymr.com)

### **Mother's Antibodies May Point to Autoimmune Version of Autism**

*Findings may lead to new screenings and treatments*

WAIKOLOA, HI (December 6, 2011) – Researchers have identified specific antibodies directed at fetal brain development in a subset of mothers whose children have autism, signaling further evidence of an autoimmune version of autism. Antibodies are proteins in the body's immune system that usually help detect and defend against harmful foreign substances, but in autoimmune disorders these antibodies instead attack healthy cells in the body. This research was presented today at the American College of Neuropsychopharmacology annual meeting.

“By identifying these antibodies, we can now consider a screening test for pregnant mothers, and possibly devise a way to neutralize these specific autism antibodies,” said David Amaral, PhD, research director at the M.I.N.D. Institute at the University of California, Davis (UC Davis). “In the future, if we detect and are able to eliminate these antibodies, we can potentially start reducing the number of cases of autism.”

A multi-disciplinary team of researchers at the M.I.N.D. Institute has been investigating a possible autoimmune component of autism for several years. Researchers, led by Amaral's colleague, Judy Van De Water, PhD, a professor of rheumatology, allergy and clinical immunology, began by taking blood samples of women whose children have autism to determine if the mothers had antibodies that were directed at fetal brain tissue. In this study they found that 12 percent of women who have children with autism had unusual antibodies that were not present in the mothers of typically developing children and mothers of children with other intellectual developmental disorders but not autism.

Amaral's laboratory added evidence to this theory by treating pregnant Rhesus monkeys with the antibodies from the mothers that have autistic children. As they developed, the offspring of these monkeys showed distinctive autistic characteristics – “stereotypic” or repetitive behaviors, such as back-flipping in a corner for minutes on end. The ability to reproduce this effect of the antibodies in an animal model was strong evidence that these antibodies may have a disease-causing effect.

These studies are currently being replicated in an MRI study of brain development in the treated monkeys. Amaral's laboratory has demonstrated that a substantial proportion, but not all, of boys with autism have precocious brain growth as toddlers. They are trying to determine

whether there are similar abnormalities in the brain development of their treated Rhesus monkeys.

Autism is thought to be a diverse or heterogeneous disorder generally affecting social interactions, communication and behavior. The Centers for Disease Control and Prevention estimates that 1 in 110 children in the US have an autism spectrum disorder or about 1 percent of all children. This probability increases to 25 percent for mothers who already have a child with autism if the second child is a boy and 9 percent if the child is a girl. If these results are confirmed, testing pregnant mothers who already have a child with autism for antibodies against fetal brain could lead to earlier recognition of the disorder in the second child, and to interventions that prevent or reduce effects of the harmful antibodies. If researchers are successful at segmenting this autoimmune version of autism as a uniform, homogeneous version, they may be able to develop unique preventative measures and treatment options.

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*ACNP, founded in 1961, is a professional organization of more than 900 leading scientists, including four Nobel Laureates. The mission of ACNP is to further research and education in neuropsychopharmacology and related fields in the following ways: promoting the interaction of a broad range of scientific disciplines of brain and behavior in order to advance the understanding of causes, prevention and treatment of diseases of the nervous system including psychiatric, neurological, behavioral and addictive disorders; encouraging scientists to enter research careers in fields related to these disorders and their treatment; and ensuring the dissemination of relevant scientific advances in these disorders.*