# Biomedical/Education Update:

## Thimerosal hastens autoimmune symptoms in susceptible mice

Mice genetically "wired" to develop systemic autoimmune disease showed signs and symptoms of autoimmunity at an earlier age when exposed to thimerosal, according to a new study. Thimerosal is a mercury-laden vaccine preservative implicated in the current epidemic of autism.

S. Havarinasab and P. Hultman say administration of thimerosal to the genetically-vulnerable mice accelerated the development of antinuclear antibodies and renal glomerular and systemic vessel wall IC deposits—all evidence of the form of autoimmunity which these mice develop. (Autoimmunity means that the body, in a case of mistaken identity, attacks its own cells).

The development of vessel wall IC deposits, the researchers say, was induced using a dose that "may theoretically be similar to the dose generated in infant vaccines containing thimerosal using a cautious calculation," although an autoimmune response would most likely require a genetic vulnerability and prolonged exposure. They conclude, "This underlines the necessity to further examine adverse effects of low-dose mercury exposure on vulnerable individuals."

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"Alteration of the spontaneous systemic autoimmune disease in (NZBxNZW)F1 mice by treatment with thimerosal (ethyl mercury)," S. Havarinasab and P. Hultman, *Toxicology and Applied Pharmacology*, in press. Address: P. Hultman, Perhu@imk.liu.se.

## Can reflux, high IQ predict secretin benefit?

Treatment with secretin, a gastrointestinal hormone, benefits only a minority of autistic children. According to a new study, gastroesophageal reflux and high IQs could be characteristics of this subgroup of responders.

Stefano Pallanti and colleagues administered multiple doses of secretin on a monthly basis to two autistic boys, a nine-year-old and a seven-year-old. An evaluator blind to the treatment assessed the children before, during, and after the intervention.

The researchers report, "The administration of secretin in our two young patients only led to some significant and enduring improvement on core symptoms in one case, where we observed significant changes in associated problems such as difficulties in toileting, sleeping and/or eating; laughing, crying or giggling at inappropriate times; response to touch, light, sound, taste or smells; unawareness of pain, heat or cold. In particular, we observed an evident amelioration of eating behavior associated with a stable global behavioral improvement." This child received six monthly injections of secretin, while the researchers discontinued treatment of the second child when no response occurred after two injections.

Pallanti and colleagues note that the child who responded to secretin suffered from gastroesophageal reflux, while the child who did not benefit had chronic diarrhea but no reflux. The responsive child also had a higher IQ (99 vs. 86). The researchers conclude that while reducing the discomfort associated with reflux could lead to behavioral improvement, "it is also possible that autistic children with gastroesophageal reflux and esophagitis and higher IQ constitute a subtype, and probably respond better to secretin administration."

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"Short report: autistic gastrointestinal and eating symptoms treated with secretin: a subtype of autism?" Stefano Pallanti, Stefano Lassi, Giampaolo La Malfa, Marco Campigli, Roberto Di Rubbo, Giulia Paolini, and Valentina Cesarali, *Clinical Practice and Epidemiology in Mental Health*, November 15, 2005 (epub). Address: Stefano Lassi, SIRM (Dipartimento di Scienze Neurologiche e Psichiatriche dell'Universita di Firenze), Via Gordigiani, 58, 50127, Firenze, Italy, stefanolassi@libero.it.

## Research again links mitochondrial gene variant to autism risk

New research from Ireland supports an earlier study reporting an association between autism and a gene encoding for the mitochondrial aspartate/glutamate carrier. (Mitochondria are cellular "factories" providing energy for neurons and other cells.)

Ricardo Segurado and colleagues performed genetic testing on 158 affected trios (autistic children and their parents) and detected a significant association between autism and two particular variants of the SLC25A12 gene. The researchers say their findings are similar to those of Nicolas Ramos and colleagues, who reported strong evidence of a link between autism and the same gene variants.

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"Confirmation of association between autism and the mitochondrial aspartate/glutamate carrier SLC25A12 gene on chromosome 2q31," Ricardo Segurado, Judith Conroy, Eleanor Meally, Michael Fitzgerald, Michael Gill, and Louise Gallagher, *American Journal of Psychiatry*, Vol. 162, No. 11, November 2005, 2182-4. Address: Ricardo Segurado, Department of Genetics, Trinity College, Dublin 2, Ireland, rsegurdo@tcd.ie.

## Oxygen deprivation during delivery implicated in autism

Oxygen deprivation during birth may contribute to the development of autism, according to a recent study.

Fabrizio Strata and colleagues reduced oxygen delivery to rat pups for as long as 12 minutes during birth, and then studied the rats' behavior as they grew. The researchers report that the oxygen-deprived rats exhibited increased acoustic thresholds, were less efficient at an auditory behavioral task, showed abnormalities in auditory brainstem responses, and exhibited additional deficits "consistent with the parallel behavioral and physiological deficits recorded in children and adults with a history of language-learning impairment and autism."

***Editor's note: The authors of this report speculate that oxygen deprivation may be due to a twisted umbilical cord during delivery, or to a complicated labor. However, another likely cause—and one more consistent with rising rates of autism—is the current practice of immediately clamping the umbilical cord after delivery, which can result in a temporary lack of oxygen to the brain (see ARRI 18/1).***

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Perinatal anoxia degrades auditory system function in rats," F. Strata, A. R. Delpolyi, B. H. Bonham, E. F. Chang, R. C. Liu, H. Nakahara, and M. M. Merzenich, *Proceedings of the National Academy of Sciences*, December 19, 2005 (epub in advance of print publication). Address: Fabrizio Strata, fab@phy.ucsf.edu.

**QUOTE:**

"Now is time for the CDC, FDA, the White House, and our congressmen and senators to join the NIMH and admit that autism is an epidemic. It is time for the news media, which have too often under-reported this plague of the twenty-first century, to do the same. Then maybe the frontline defenders of children—pediatricians and child psychologists—can come clean and join in chorus with the parents. That would be an enormous first step in defeating autism.

"Until that day, there will be an epidemic. And it's not going away until those in charge of the American healthcare system admit they have crisis on its hand.

"Its name is autism."

*James Ottar Grundvig,*
*parent of an autistic child,*
*in* Epoch Times*, December 2005*