



Press Release
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New Research Suggests Stronger Environmental Link to Autism

SafeMinds applauds the findings of the [study](#)¹ looking at genetic and environmental factors for autism by sixteen California researchers just published in the American Medical Association's journal *Archives of General Psychiatry*. The researchers, including many gene scientists, found that environmental exposures play a significant role in triggering Autism Spectrum Disorder (ASD). By comparing same-aged individuals sharing 100% of their DNA (identical twins) or 50% of their DNA (fraternal twins) exposed to a virtually identical environment, researchers were able to understand the relative significance of genetics and environmental factors in triggering ASD. Their research suggests that environmental factors shared by twins, identical or not, were more significant than genetics in triggering ASD.

Based on a recently conducted comprehensive evaluation of all ASD research, both public and private, the NIH Interagency Autism Coordinating Committee found funding for genetics research far outpaces environmental research. SafeMinds supports these findings as indicative of the need for a major redirection in research and calls on federal and state agencies to immediately redirect funding to further the understanding of ASD's environmental triggers. More specifically in that effort, SafeMinds calls for funding research into maternal, infant and childhood exposures to toxic substances related to autism. SafeMinds feels failing to do so will not only delay research into recognizing ASD's true causes, but make prevention much more difficult to achieve.

Background

SafeMinds reports additional progress in identifying environmental factors which increase autism risk have been made recently reported in multiple investigations. In a study of children of agricultural workers in California Eskenazi (2007) found that for every 10-fold increase in the levels of dialkylphosphate (DAP) metabolites the rates of pervasive developmental disorder (PDD), a form of autism, doubled. Roberts (2007) reported similar findings that ASD risk increased with the poundage of organochlorine pesticides applied and decreased with distance from field sites and Rauh (2006) found that children with high levels of pesticides in their blood were 6 times more likely to have PDD than children with low levels. In Texas, Palmer and colleagues (2006, 2008, 2011) have shown an association with environmental mercury release and overall rates of special education and autism and in

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<http://archpsyc.ama-assn.org/cgi/reprint/archgenpsychiatry.2011.76> last visited 7 July 2011.

California Windham (2006) found an association between autism and metal concentrations (mercury, cadmium, nickel, trichloroethylene) and possibly solvents (vinyl chloride).

Environmental factors may be pertinent not only to brain development but also to chronic systemic features of at least some subgroups of ASD. An Institute of Medicine (IOM) workshop held in 2007 summarized what is known and what is needed in this field (Forum on Neuroscience and Nervous System Disorders, Institute of Medicine, 2008). During the workshop it was pointed out that exposure to various levels of environmental toxicants such as metals, solvents, and pesticides is almost universal. Such exposures are known to induce oxidative stress and deplete glutathione, which is a major intracellular antioxidant that plays an important role in elimination of environmental toxicants. Resistance to injury from environmental exposures depends largely on levels of intracellular glutathione (IOM, 2008). There is a growing body of research documenting that individuals with autism are under chronic oxidative stress and have depleted levels of intracellular glutathione making them more vulnerable to environment toxicants at lower levels of exposure (James, 2009, Sajdel-Sulkowska, 2009, Mostafa, 2010). Such alterations in redox balance can create a self-perpetuating cycle of oxidative stress and cellular damage, but also provides targets for therapeutic interventions.

Quoting the recently published study

"Our study provides evidence that the rate of concordance in dizygotic twins may have been seriously underestimated in previous studies and the influence of genetic factors on the susceptibility to develop autism, overestimated. Because of the reported high heritability of autism, a major focus of research in autism has been on finding the underlying genetic causes, with less emphasis on potential environmental triggers or causes. The finding of significant influence of the shared environment, experiences that are common to both twin individuals, may be important for future research paradigms.

"Increasingly, evidence is accumulating that overt symptoms of autism emerge around the end of the first year of life. Because the prenatal environment and early postnatal environment are shared between twin individuals, we hypothesize that at least some of the environmental factors impacting susceptibility to autism exert their effect during this critical period of life. Future studies that seek to elucidate such factors and their role in enhancing or suppressing genetic susceptibility are likely to enhance our understanding of autism."

About SafeMinds

SafeMinds was founded to raise awareness, support research, change policy and focus national attention on the growing evidence that environmental triggers contribute to neurological disorders such as autism, attention deficit disorder, language delay and learning difficulties. Our mission is to restore health and protect future generations by eradicating the devastation of autism and associated health disorders that are induced by environmental triggers.