

## Study to investigate DNA damage and autism

South Australian research is currently underway in a collaboration between the CSIRO Food and Nutritional Sciences, University of South Australia and Flinders University to examine whether DNA damage is greater in children with autism compared to children without autism and the role played by selected vitamins and other nutrients that maybe associated with this condition

The research came about following the publication of a study by United States researcher Professor Jill James who showed that the folate/methionine/glutathione metabolic pathway, which involves key chemical reactions in the body, is significantly different in many children with autism compared to non-autistic children. These pathways are involved in many key biochemical functions, especially maintenance of healthy DNA.

Professor Michael Fenech of the CSIRO is overseeing the research which is being carried out by Ms Penelope Main, a doctoral research student at the University of South Australia. Professor Fenech says "the study aims to establish whether Australian children with autism have a different folate-methionine-glutathione profile by looking at levels of certain chemicals in their blood and determining if there is a relationship with autism behaviour.

"Specific combinations of vitamins and other nutrients can potentially reverse DNA damage associated with normal ageing and neurological disorders such as Alzheimer's disease, Parkinson's disease and Down syndrome.

"We want to see whether DNA damage is elevated in autism because, if it is, it may be possible to design a supplement to treat some aspects of autism, leading to better outcomes for individuals with autism."

"Preliminary analysis of published work to date has shown that glutathione metabolism is likely to have an important role in autism, although more large scale studies are needed," Penelope Main says. "Our study is in two parts.

"The first uses cell lines obtained from families with more than one child with autism to model possible mechanisms of DNA damage in autism; and the second compares DNA damage biomarkers and relevant metabolites from local children with autistic disorder, their non-autistic siblings and community controls. A better understanding of the way that vitamins and other nutrients affect DNA damage in children with autism has the potential to help identify a subset of children who may be most likely to benefit from supplementation."

Data collection and analysis are currently in their final stages with the findings expected to be published before the end of 2012