



## ***Molecule links Down syndrome to Alzheimer's***

Researchers from the Institute of Psychiatry at King's College London have identified a molecule that could be targeted to treat the cognitive impairment in people with Down syndrome. The study, published in Archives of General Psychiatry found that people with Down syndrome have higher levels of myo- inositol in their brains than people without the condition, and that increased levels of this molecule are associated with reduced intellectual ability. The researchers also suspect that high levels of myo-inositol could play a role in predisposing people with Down syndrome to early-onset Alzheimer's disease. The molecule is known to promote the formation of amyloid plaques - a hallmark of Alzheimer's. Once they reach 40 years old, almost all people with Down syndrome show the characteristic brain formations of Alzheimer's disease, though they don't all go on to get dementia. The combination of pre-existing mental retardation with an increasing overlying dementia is difficult to treat, and expensive to manage. Professor Declan Murphy, who led the research said: 'We have shown in this study that adults with Down syndrome have a significantly higher concentration of myo-inositol in the hippocampal region of their brains, and this increase is associated with a reduced cognitive ability. We are now carrying out more studies to see if we can reduce the concentration of myo- inositol in the brains of people with Down's. We hope that if we can do this, it will be a new way of treating this disorder.'

Down syndrome is the most common genetic cause of mental retardation. It is caused when a child has three copies of chromosome 21, rather than the usual two. One of the genes on chromosome 21 encodes a transporter that pumps the molecule myo-inositol into the brain. The increased levels of myo-inositol in the brains of people with Down syndrome could be explained by the fact that these people have an extra copy of the gene that makes this pump.