**Schizophrenia linked to memory process**

**Genetic mutations that cause schizophrenia could be linked to systems in the brain responsible for learning and memory.**

University researchers from Edinburgh have identified changes to genes - genetic mutations - in patients with schizophrenia who had not inherited the condition.

The study, which was carried out with Cardiff University, showed that these mutations occurred among a set of proteins that play a key role in memory function.

**Looking at DNA**

By studying such a large sample we have been able to provide the first clear insights into the sorts of basic biological processes that underlie schizophrenia.

**Professor Michael Owen**

***Cardiff University***

Researchers took samples of DNA from more than 650 patients with schizophrenia.

They compared these with DNA from their parents - who did not have the condition - to identify the genetic differences.

It is hoped that identifying genetic mutations will help better understand how schizophrenia arises and ultimately be used to develop treatments.

**Genetic mutations**

Identifying what causes schizophrenia is difficult because the disorder does not occur as a result of a single genetic mutation, but reflects a large number of different risk genes.

The genetic mutations disrupt the production of proteins found at synapses, which are the connections between different brain cells.

The proteins are normally assembled together and process information that is passed from the environment to the memory systems in the brain.

Disrupting the fundamental information processing systems in synapses results in behavioural disorders.

Although it has been known for some time that DNA mutations predispose individuals to the development of schizophrenia, it has remained a puzzle as to how these genes cause behavioural problems.

The surprising finding was that DNA mutations that cause schizophrenia are interfering with the same proteins in the molecular machinery that controls learning and memory.

The findings will help research into new drug therapies and in developing new diagnostic tests.

**Seth Grant**

***Professor of Molecular Neuroscience, University of Edinburgh***

**Study**

The research was published in the journal Molecular Psychiatry

The study was funded by the Medical Research Council, the Wellcome Trust and the European Union.

Rare genetic mutations that occurred either prior to or at fertilisation - do novo mutations - were found to occur among patients with schizophrenia.

Schizophrenia is a severe disorder affecting approximately one per cent of the population.

Signs can be present from childhood, but usually the disorder is diagnosed in early teens and has an impact on adult life.

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