How a risk gene for schizophrenia affects the brain

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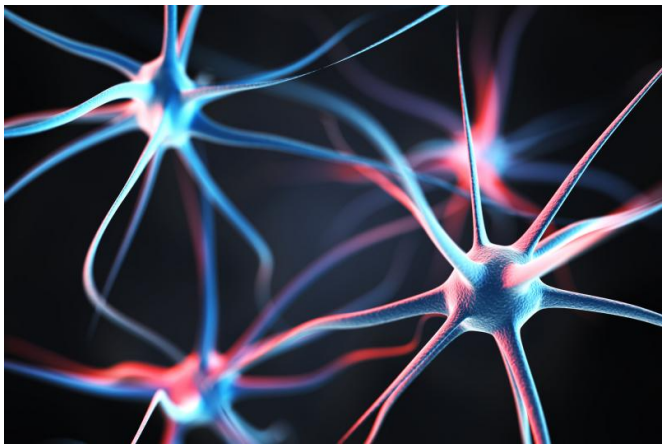

Scientists have for the first time shown how the disruption of a key gene involved in mental illness impacts on the brain.

The discovery could be used in the future to help develop psychiatric drugs.

The DISC1 gene is a risk factor for a number of major mental illnesses, including schizophrenia, depression and bipolar disorder.

Brain imaging studies have already revealed that these illnesses involve alterations in both the structure and connectivity of the brain.

Genetic studies of several generations of one Scottish family affected by these psychiatric illnesses have revealed these are connected to the disruption of the DISC1 gene, though it is not clear how.

For the first time, neuroscientists have shown that the disruption of this key risk gene significantly modifies the organisation of functional brain networks.

Lead researcher Dr Neil Dawson from Lancaster University said: "Our data strongly suggest that disruption of DISC1 is a key molecular event that can contribute to the emergence of disease-relevant alterations in brain function".

"Through these studies we have been able to define deficits in brain function and functional connectivity that result from the disruption of DISC1 and are relevant to a range of psychiatric disorders."

He said these included schizophrenia-related alterations in brain function, functional brain network connectivity and the functioning of the glutamate neurotransmitter system.

These findings parallel alterations seen in the brains of schizophrenia patients and could pave the way towards the development of new drug treatments.

The research is published in *Nature*'s *Translational Psychiatry*.

More information: "Altered functional brain network connectivity and glutamate system function in transgenic mice expressing truncated Disrupted-in-Schizophrenia 1." *Translational Psychiatry* (2015) 5, e569; DOI: 10.1038/tp.2015.60

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