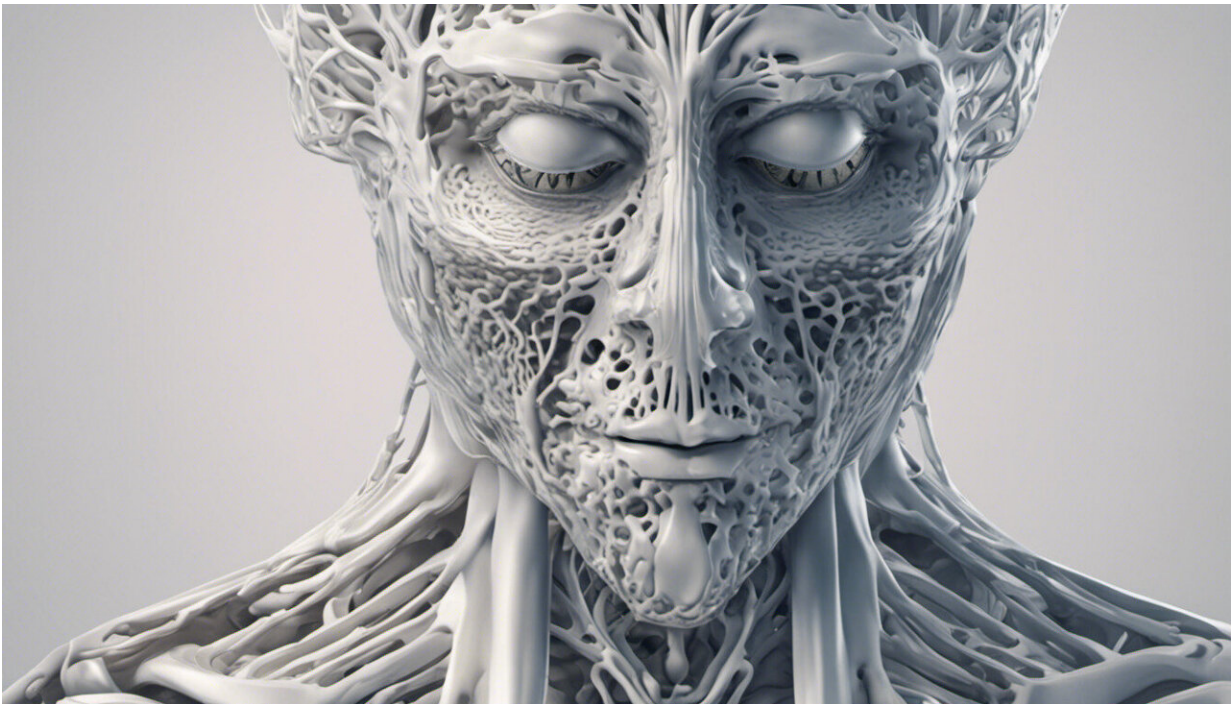


Researchers identify differences in the brains of people at high risk of bipolar disorder

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Young people with bipolar disorder and those at high genetic risk of developing the illness have weak connections in the emotional areas of their brains, a world-first Australian study has found.

It is hoped the findings will lead to new tools to identify and manage

those at risk before the onset of the disorder and help reduce its impact once it develops.

The study, published today in the prestigious Nature journal *Molecular Psychiatry*, was a collaboration between researchers from QIMR Berghofer Medical Research Institute in Brisbane and UNSW in Sydney.

Researchers conducted MRI scans on the brains of three groups: people who had been diagnosed with [bipolar disorder](#); people who had a first-degree relative (parent, sibling or child) with bipolar and who were at high [genetic risk](#) themselves; and people unaffected by bipolar disorder.

They found networks of weaker connections between different brain regions in both the bipolar and high-risk subjects and disturbances in the connections responsible for regulating emotional and cognitive processes.

"We know that changes in these brain wiring patterns will impact upon a person's capacity to perform key emotional and cognitive functions," said study author Scientia Professor Philip Mitchell from UNSW's School of Psychiatry.

"Each year we will be following up with participants from this study who are at high genetic risk of developing bipolar disorder, to see if the brain changes identified in MRI scans reveal who will develop episodes of mania," Professor Mitchell said.

Bipolar disorder is a debilitating illness affecting about one in 70 Australians. It typically involves unstable mood swings between manic 'highs' and depressive 'lows'. The age of onset is usually between 18 and 30 years.

Professor Michael Breakspear, from QIMR Berghofer and Brisbane's

Metro North Hospital and Health Service, said the research team hoped to use the findings to develop a way of identifying those at risk of bipolar before the onset of the disorder.

"At the moment we don't have any markers or tests for predicting who is at risk of developing bipolar disorder, as we do for heart disease," Professor Breakspear said.

"If we can develop a tool to identify and confirm those who are at the very highest risk, then we can advise them on how to minimise their risk of developing bipolar, for example, by avoiding illicit drugs and minimising stress. These discoveries may open the door to starting people on medication before the illness, to reduce the risk of manic episodes before the first one occurs.

"Our long-term goal is to develop imaging-based diagnostic tests for bipolar. At the moment, diagnosis relies on the opinion of a doctor. Recent UNSW-led research found an average delay of six years between when a person with bipolar experiences their first manic episode and when they receive a correct diagnosis," Professor Breakspear said.

"Many people are incorrectly diagnosed with depression or other disorders. This delays the start of proper treatment with medications that are specific to bipolar disorder. Bipolar has the highest suicide rate of any mental illness, so it's crucial that we diagnose people correctly straight away so they can start receiving the right treatment."

The study was funded by the National Health and Medical Research Council and the Landsdowne Foundation.

More information: G Roberts et al. Structural dysconnectivity of key cognitive and emotional hubs in young people at high genetic risk for bipolar disorder, *Molecular Psychiatry* (2016). [DOI:](#)

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