

# Scientists pinpoint gene variations linked to higher risk of bipolar disorder

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(Medical Xpress)—Scientists from the Florida campus of The Scripps Research Institute (TSRI) have identified small variations in a number of genes that are closely linked to an increased risk of bipolar disorder, a mental illness that affects nearly six million Americans, according to the National Institute of Mental Health.

"Using samples from some 3,400 individuals, we identified several new variants in genes closely associated with bipolar disorder," said Scripps Florida Professor Ron Davis, who led the new study, which was published recently by the journal *Translational Psychiatry*.

A strong tendency towards bipolar disorder runs in families; children with a parent or sibling who has bipolar disorder are four to six times more likely to develop the illness, according to the National Institute of Mental Health.

While the [genetic basis](#) for bipolar disorder is complex and involves multiple genes, it appears to be associated with a [biochemical pathway](#) known as cyclic [adenosine monophosphate](#) (cAMP) [signaling system](#). The Davis laboratory and others have previously shown that the cAMP signaling plays a critical role in learning and [memory processes](#). The new study focused on this signaling pathway.

"As far as I know, this has not been done before—to query a single signaling pathway," said Davis. "This is a new approach. The idea is if there are variants in one gene in the pathway that are associated with

bipolar disorder, it makes sense there would be variants in other genes of the same signaling pathway also associated with the disorder."

The new study examined variations in 29 genes found in the two common types of bipolar disorder—bipolar disorder I (the most common form and the most severe) and bipolar disorder II. Genes from a total of 1,172 individuals with bipolar disorder I; 516 individuals with bipolar disorder II; and 1,728 controls were analyzed.

Several statistically significant associations were noted between bipolar disorder I and variants in the PDE10A gene. Associations were also found between bipolar disorder II and variants in the DISC1 and GNAS genes.

Davis noted that the location of PDE10A gene expression in the striatum, the part of the brain associated with [learning and memory](#), decision making and motivation, makes it especially interesting as a therapeutic target.

**More information:** "Genetic Association of Cyclic AMP Signaling Genes with Bipolar Disorder," [www.nature.com/tp/journal/v2/n ... /full/tp201292a.html](http://www.nature.com/tp/journal/v2/n.../full/tp201292a.html)

Provided by Scripps Research Institute

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