

# Cerebellum plays a major role in schizophrenia

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Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

In a new study, Norwegian researchers have documented that the cerebellum is among the most affected brain regions in schizophrenia. Compared to healthy individuals, cerebellar volume was smaller in patients with schizophrenia. The study, published in *Molecular*

*Psychiatry*, is the largest brain imaging study to date on the cerebellum in schizophrenia, with important implications for our understanding of the disorder.

Although the cerebellum occupies only about 20 percent of the [human brain](#), it actually contains about 70 percent of all its neurons. This [brain structure](#) has traditionally been thought of as responsible for body movement and coordination, and has therefore often been ignored in research on the biological basis of psychological functions and [mental disorders](#).

The current study included brain scans from 2300 participants from 14 international sites. The researchers used sophisticated tools that allowed them to analyze both the volume and shape of the brain.

Surprisingly, the results showed that the cerebellum is among the brain regions with the strongest and most consistent differences in schizophrenia. On a group level, patients had smaller cerebellar volumes compared with healthy individuals. "These findings clearly show that the [cerebellum](#) plays a major role in schizophrenia," says lead author Torgeir Moberget.

Most mental disorders emerge during childhood and adolescence, and a better understanding of the causes may give better patient care. "To develop treatments that could reverse or even prevent the disease we need to understand why some people are at risk of developing these serious illnesses in the first place," says senior author Lars T. Westlye.

The large sets of data allowed the researchers to identify very nuanced differences in brain volume in patients when compared with healthy controls. "It is important to emphasize that the [brain differences](#) we see in [schizophrenia](#) are generally very subtle. This is one reason why large collaborative studies are so important," Moberget says. "When we saw

the same pattern repeated across many groups of patients and controls from different countries, the findings became much more convincing."

**More information:** T Moberget et al. Cerebellar volume and cerebellocerebral structural covariance in schizophrenia: a multisite mega-analysis of 983 patients and 1349 healthy controls, *Molecular Psychiatry* (2017). [DOI: 10.1038/mp.2017.106](https://doi.org/10.1038/mp.2017.106)

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