

# A gene implicated in schizophrenia risk is also associated with risk for cannabis dependence

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A paper by Shizhong Han and colleagues in the current issue of *Biological Psychiatry* implicates a new gene in the risk for cannabis dependence. This gene, NRG1, codes for the ErbB4 receptor, a protein implicated in synaptic development and function.

The researchers set out to investigate [susceptibility genes](#) for cannabis dependence, as research has already shown that it has a strong [genetic component](#).

To do this, they employed a multi-stage design using [genetic data](#) from African American and European American families. In the first stage, a linkage analysis, the strongest signal was identified in African Americans on chromosome 8p21. Then using a genome-wide association study dataset, they identified one genetic variant at NRG1 that showed consistent evidence for association in both African Americans and European Americans. Finally, they replicated the association of that same variant in an independent sample of African-Americans.

All together, the findings suggest that NRG1 may be a susceptibility gene for cannabis dependence.

An interesting feature of this paper is that these findings may also suggest a link between the genetics of schizophrenia and the genetics of cannabis dependence. NRG1 emerged into public awareness after a series of genetic studies implicated it in the heritable risk for schizophrenia. Subsequent studies in post-mortem [brain tissue](#) also suggested that the regulation of NRG1 was altered in the brains of individuals diagnosed with schizophrenia.

Thus, the current findings may help to explain the already established link between cannabis use and

the risk for developing schizophrenia. A number of epidemiologic studies have attributed the association of cannabis use and schizophrenia to the effects of cannabis on the brain rather than a common genetic link between these two conditions.

"The current data provide a potentially important insight into the heritable risk for schizophrenia and raise the possibility that there are some common genetic contributions to these two disorders," commented Dr. John Krystal, Editor of [Biological Psychiatry](#).

However, further research will be necessary to further confirm the role that NRG1 plays in cannabis dependence and the potential link between cannabis use and psychosis.

**More information:** The article is "Linkage Analysis Followed by Association Show NRG1 Associated with Cannabis Dependence in African Americans" by Shizhong Han, Bao-Zhu Yang, Henry R. Kranzler, David Oslin, Raymond Anton, Lindsay A. Farrer, and Joel Gelernter ([doi: 10.1016/j.biopsych.2012.02.038](#)). The article appears in *Biological Psychiatry*, Volume 72, Issue 8 (October 15, 2012)

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