

Newly mapped genes may hold keys to ADHD

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Millions of American kids with attention-deficit/hyperactivity disorder (ADHD) may have a genetic vulnerability to the disease, a new study suggests.

Researchers analyzed data from more than 55,000 individuals and identified 12 [gene regions](#) linked with ADHD. These regions probably affect the central nervous system, the study authors said. The discovery might help scientists develop new treatments for ADHD, which affects more than 9 percent of American children.

"We all carry genetic risk variants for ADHD," explained researcher Anders Borglum, a professor of biomedicine at Aarhus University in Denmark. "The more we have, the greater our risk for developing ADHD."

Those same genetic areas share a connection with 200 other diseases and traits, he said. The investigators also found that 44 gene variants implicated in ADHD are linked with depression, anorexia and insomnia.

"We now understand better why some individuals develop ADHD, and begin to get insights into the underlying biology, paving the way towards new and better treatment of ADHD," Borglum added.

The genetic areas his team uncovered show that this is primarily a brain disorder, Borglum said.

The researchers also found genes that may be linked with ADHD have a role in how [brain cells](#) interact and also affect speech development, learning and regulation of dopamine (a chemical messenger that carries signals between brain cells).

Still, the vast majority of ADHD genetics is still undiscovered and will require larger studies, Borglum said.

Study author Stephen Faraone noted that the team "found 12 of the very many—we don't know how many—probably thousands of genes related to ADHD." Faraone is a professor of psychiatry and behavioral sciences at SUNY Upstate Medical University in Syracuse, N.Y.

The [researchers](#) don't expect to discover just one, two or even 10 genes that each have a dramatic effect on causing ADHD and can be used to diagnose the disorder or quickly develop a treatment, he said. Most likely, a combination of genes and [environmental factors](#) trigger ADHD,

the study authors said.

Environmental factors may include being born prematurely and underweight or suffering from developmental problems, such as fetal alcohol syndrome, Faraone said.

Interestingly, he added, even though medications work in treating ADHD, they don't target the genes that the investigators found were linked to the condition. None of the genes affected by the drugs showed up in their analysis of genes tied to ADHD, Faraone said.

The report was published online Nov. 26 in the journal *Nature Genetics*.

Ronald Brown, dean of the School of Health Sciences at the University of Nevada in Las Vegas, said, "This is a promising investigation, as it provides further evidence that ADHD is likely an inherited disorder." Brown was not involved with the study, but was familiar with the findings.

It's been clear for years that ADHD runs in families, he said. These findings are also important because they suggest that certain therapies effective for one family member are likely to be effective for other [family members](#) who are diagnosed with ADHD, he added.

This study is also important because it shows that several psychological disorders are likely tied to these [genes](#), though no cause-and-effect relationship was proven in the study. This information could help families with prevention and early intervention efforts, Brown said.

More information: undefined undefined et al. Discovery of the first genome-wide significant risk loci for attention deficit/hyperactivity disorder, *Nature Genetics* (2018). [DOI: 10.1038/s41588-018-0269-7](https://doi.org/10.1038/s41588-018-0269-7)

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