

Haaretz

Scientists Discover Gene That Predisposes Ashkenazi Jews to Schizophrenia

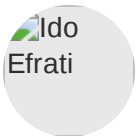
Variations of the DNST3 gene make Ashkenazi Jews 40 percent more likely to develop schizophrenia and similar diseases.



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Israeli and American scientists have discovered a gene among [Ashkenazi Jews](#) that increases their chances of developing the mental disorder schizophrenia, as well schizoaffective disorder and manic depression. According to a study recently published in Nature Communications, the gene in question raises Ashkenazi Jews' chances of experiencing the disorders by roughly 40%, and by 15% in the general population.

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The study was conducted by Professor Ariel Darvasi, assistant dean of the Faculty of Life Sciences at the [Hebrew University of Jerusalem](#), in coordination with Dr. Todd Lencz from The Feinstein Institute for Medical Research in New York. The first portion of the study included

the largest-ever sample group of Ashkenazi Jews ever researched. Of the 2,500 Ashkenazi Jews from Israel who contributed DNA samples for the study, 1,500 were healthy, while 1,000 were affected by mental disorders related to schizophrenia.

The reason for choosing Ashkenazi Jews as the subject for the study, of all groups available, is rooted in the fact that Ashkenazi Jews are considered to be an especially homogenous group, in terms of genetics. The limited genetic variation among Ashkenazi Jews allows for easy identification of differences between healthy and affected individuals. Professor Darvasi has studied Ashkenazi Jews for many years and employed the latest technology available to analyze the DNA samples he received for the study.

“Current technology allows for very comprehensive DNA analysis and the ability to read millions of SNP points – basically, links in the DNA chain - at the same time, which makes for very effective scanning of DNA,” Darvasi told Haaretz. During the first part of the study, the scientists checked for the prevalence of the NDST3 gene, which exists in 99.9% of the population. “But there are two specific variations of it that stand out among those with these disorders,” Darvasi said. The results of the study found that Ashkenazi Jews who have the variations are 40 percent more likely to contract a schizophrenia-related disorder than those without it.

Checking the samples collected from Ashkenazi Jews was only the first part of the experiment. Following the compilation of these results, the scientists began the second stage – a more comprehensive examination of other population groups. “After we saw that the first sample was relevant, we continued to investigate the connection between the gene and the diseases among other populations from

around the world. In the end, samples from over 25,000 people were checked, including people from Europe, Asia and Africa – which basically covers all the primary ethnicities of the human race,” explained Darvasi.

The larger sample group also found a correlation between schizophrenia, schizoaffective disorder and manic depression and the prevalence of the NDST3 gene, although the numbers were lower. “In terms of the larger sample group, the prevalence of that same gene increased the chances of contracting the diseases by 15% on average, in the other populations that were studied,” continued Darvasi.

The study took roughly three years, and was funded by an initial grant of \$2.1 million from the National Health Institute in the United States. Based on their results, the scientists earned another grant of \$3 million to continue their research.

Roughly 1% of the population is affected by schizophrenia. Those with the disease lose interest in their surroundings, develop dark emotions and sometimes imagine hearing voices or seeing figures that do not exist. Many scientists believe that genes have a great deal of influence on the disease, alongside other environmental and hereditary factors. It has proven difficult to identify the genes associated with the disease, as there is clearly more than one gene responsible.

Professor Darvasi himself has been searching for the genetic connection to schizophrenia for years, primarily by researching groups of Ashkenazi Jews. In 2002, a team of scientists he led claimed that a gene called COMT is one of the causes of the disease,

responsible for some 20% of all cases of schizophrenia. "We keep adding more information and discovering more genes, we hope to report in the future on more finds like this, with the help of larger samples. That's what we're working on now," said Darvasi.

 Testing DNA at the Sieff Hospital in Safed.

Testing DNA at the Sieff Hospital in Safed. Credit: Yaron Kaminsky