

Researchers identify new genetic risk factor for severe psychiatric illness

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Investigators at The Feinstein Institute for Medical Research have discovered a new genetic risk factor for schizophrenia and bipolar disorder called NDST3. The findings are published online in *Nature Communications*.

The study, by a team lead by Todd Lencz, PhD, associate investigator at the Zucker Hillside Hospital Department of Psychiatry Research and Feinstein Institute, studied more than 25,000 individuals. In collaboration with Ariel Darvasi, PhD, of the Hebrew University of Jerusalem, Dr. Lencz has been working with a set of DNA samples from patients with [schizophrenia](#) and healthy volunteers drawn from the Ashkenazi Jewish population. The Ashkenazi Jewish population represents a unique population for study because of its short (less than 1,000-year) history and limited population. This history results in a more uniform genetic background in which to identify disease-related variants.

"This study again demonstrates the value of our Ashkenazi cohort," said Dr. Lencz. "It is notable that the genetic variant was replicated in samples of various ethnicities from all around the world, but the effects were strongest in the Ashkenazi cohort, presumably due to their unique genetic history."

Dr. Lencz's team reported that the genetic variant, which changes a single "letter" of the DNA code, alters the expression of the gene NDST3. This gene is critical to neurodevelopmental processes such as

axon formation and synaptic function. These findings shed new light on the genetic architecture and potential therapeutic targets for the treatment of psychiatric disease.

Schizophrenia and [bipolar disorder](#) are severe psychiatric disorders that affect 1-4 percent of the global population. Studies have shown that the two disorders are likely to have a large overlap in genetic risk factors, but only a small portion of this [genetic risk](#) has been identified.

This work was supported by a grant from the National Institute of Mental Health (NIMH), funded as part of the American Recovery and Reinvestment Act of 2009 (also known as the economic stimulus plan). More recently, the work by Drs. Lencz and Darvasi with the Ashkenazi schizophrenia cohort has received an additional \$3 million from the NIMH, as well as grants from the Brain & Behavior Foundation and the Binational Science Foundation.

Dr. Lencz is also the co-leader of The Ashkenazi Genomics Consortium, a collaborative effort involving more than a dozen investigators from leading institutions (including Columbia University, Mt. Sinai School of Medicine, Albert Einstein College of Medicine and MIT), using similar strategies to understand the genetic basis of diseases including cancer, diabetes, and Parkinson's.

Provided by North Shore-Long Island Jewish Health System

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