



**Mount  
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## **Scientists May Need to Rethink How Genomics Impacts Risk for OCD**

*Results of Mount Sinai-led study highlights the contribution of rare differences in an individual's DNA sequences to disease risk*

**New York, NY (November 18, 2021)** – Both rare and commonly observed differences in the DNA letters strung along a person's chromosomes can explain about a third of the risk for being diagnosed with obsessive-compulsive disorder (OCD), according to a new study led by scientists at the Icahn School of Medicine at Mount Sinai.

The researchers analyzed the genomic data of more than 2,000 Swedish-born individuals diagnosed with OCD. Their results, published in the *American Journal of Psychiatry*, may alter not only how scientists view the role that genomics plays in OCD but also how new treatments might be developed.

The study was led by scientists in the laboratory of Dorothy Grice, MD, Professor of Psychiatry at Icahn Mount Sinai.

Affecting about two percent of Americans, OCD describes a set of potentially life-long and debilitating symptoms, most notably intense and distressing recurring thoughts and actions. Although scientists have yet to find the exact causes of OCD, several studies indicate that multiple genomic and environmental factors may play a role in the disease. For instance, it has been estimated that anywhere between 25 to 50 percent of the risk for OCD behaviors may be attributable to genomic differences between individuals in a population.

Led by Behrang Mahjani, PhD, a researcher in Dr. Grice's lab, the researchers compared the single nucleotide polymorphisms (SNPs)—the minor DNA spelling differences normally found in a person's chromosomes—of 2,090 Swedish-born OCD patients with that of 4,567 controls, making it the largest study of its kind to date. Initial results supported previous studies. About 29 percent of the risk for OCD was attributed to differences in SNPs between patients and control subjects and about 90 percent of these differences are commonly observed throughout the general population. However, the researchers also found that about 10 percent of the risk could be linked to rare genomic differences, which were not seen in previous studies. Further analysis

showed that the OCD-related SNPs were distributed across patients' chromosomes, suggesting that multiple genomic differences combine to influence risk. Overall the results support the idea that OCD risk may, in part, be driven by randomly occurring changes to the entire genome rather than a few naturally selected "hot spots." The researchers concluded that this new view of OCD highlights the important role of rare genomic differences in the risk of OCD, and may alter how scientists study the disorder to develop new treatments for patients.

**Who:** Behrang Mahjani, PhD, instructor, Department of Psychiatry at Icahn Mount Sinai; Dorothy Grice, MD, Professor of Psychiatry at Icahn Mount Sinai.

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### **Article**

Behrang, M., Klei, L., Mattheison, M. et al., The genetic architecture of obsessive-compulsive disorder: alleles across the frequency spectrum contribute liability to OCD. *American Journal of Psychiatry*, November 18, 2021, DOI:10.1176/appi.ajp.2021.21010101.

### **About the Mount Sinai Health System**

The Mount Sinai Health System is New York City's largest academic medical system, encompassing eight hospitals, a leading medical school, and a vast network of ambulatory practices throughout the greater New York region. Mount Sinai advances medicine and health through unrivaled education and translational research and discovery to deliver care that is the safest, highest-quality, most accessible and equitable, and the best value of any health system in the nation. The Health System includes approximately 7,300 primary and specialty care physicians; 13 joint-venture ambulatory surgery centers; more than 415 ambulatory practices throughout the five boroughs of New York City, Westchester, Long Island, and Florida; and more than 30 affiliated community health centers. The Mount Sinai Hospital is ranked on U.S. News & World Report's "Honor Roll" of the top 20 U.S. hospitals and is top in the nation by specialty: No. 1 in Geriatrics and top 20 in Cardiology/Heart Surgery, Diabetes/Endocrinology, Gastroenterology/GI Surgery, Neurology/Neurosurgery, Orthopedics, Pulmonology/Lung Surgery, Rehabilitation, and Urology. New York Eye and Ear Infirmary of Mount Sinai is ranked No. 12 in Ophthalmology. Mount Sinai Kravis Children's Hospital is ranked in U.S. News & World Report's "Best Children's Hospitals" among the country's best in four out of 10 pediatric specialties. The Icahn School of Medicine is one of three medical schools that have earned distinction by multiple indicators: ranked in the top 20 by U.S. News & World Report's "Best Medical Schools," aligned with a U.S. News & World Report "Honor Roll" Hospital, and No. 14 in the nation for National Institutes of Health funding. Newsweek's "The World's Best Smart Hospitals" ranks The Mount Sinai Hospital as No. 1 in New York and in the top five globally, and Mount Sinai Morningside in the top 20 globally.

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