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Study identifies multiple genetic factors impacting development of nearsightedness

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In the largest ever genome-wide association study on myopia, 23andMe, the leading personal genetics company, identified 20 new genetic associations for myopia, or nearsightedness. The company also replicated two known associations in the study, which was specific to individuals of European ancestry. The study included an analysis of genetic data and survey responses from more than 50,000 23andMe customers and demonstrates that the genetic basis of myopia is complex and affected by multiple genes.

Myopia is the most common eye disorder worldwide. In the United States, an estimated 30 to 40 percent of the adult population is nearsighted. Myopia is a refractive error that results primarily from increased axial length of the eye. The increased physical length of the eye relative to optical length causes images to be focused in front of the retina, resulting in blurred distance vision.

The study, titled "Genome-Wide Analysis Points to Roles for Extracellular Matrix Remodeling, the Visual Cycle, and Neuronal Development in Myopia" was published on February 28, 2013 in *PLOS Genetics*, an open-access, peer-reviewed journal.

Although environmental factors (such as level of education, outdoor exposure, reading, and "near work" or fine detail work that requires close focus of the eyes) are implicated in the development of myopia, it is well established that genetics play a substantial role as well. The identification of these 20 novel genetic associations shows that several

new genetic pathways play a role in the development of human myopia, including extracellular remodeling, the visual cycle, eye and body growth, retinal neuron development and general neuronal development or signaling.

"This study highlights the potential importance of early neuronal development in the progression of myopia and opens the door for additional research into the complex interactions that underlie vision development," said Nicholas Eriksson, Ph.D., author and 23andMe principal scientist.

Based on the findings of this study, 23andMe has launched a new research survey designed to provide insights that may expand understanding of the genetics of eyesight more broadly.

More information: www.plosgenetics.org/article/i … journal.pgen.1003299

Provided by 23andMe Inc.

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