

Clear-sighted research identifies genes for eye problems

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(Medical Xpress)—More than 45,000 people of European and Asian ancestry have taken part in a big study to gain a better understanding of the genetics behind the world's most common eye disorder.

Researchers from The University of Western Australia's Raine Medical Research Foundation joined the international Consortium for Refractive Error and Myopia (CREAM) to test and survey participants and identify the genes that contribute to poor eyesight.

In a paper published in [Nature Genetics](#) recently, co-author Winthrop Professor David Mackey writes: "Refractive error is a prominent cause of blindness. Myopia, or near-sightedness, affects over 30 per cent of Western populations and up to 80 per cent of Asians.

"CREAM identified 16 new [genetic loci](#) for [refractive error](#) in individuals of [European ancestry](#), of which eight were shared with Asians. Combined analysis identified eight additional associated loci.

"The new loci include [candidate genes](#) with functions in neurotransmission, ion transport, retinoic acid metabolism, extracellular matrix remodelling and [eye development](#)."

People with the biggest number of loci had a tenfold increased risk of myopia, said Professor Mackey, who is Chair of UWA Ophthalmology.

Professor Mackey has been involved in the Twins Eye Studies in

Australia and said simple questions such as "Do you wear glasses for myopia?" and "What age did you start wearing glasses?" were as important as sophisticated science for helping to identify a genetic component in eye problems.

Researchers from 13 countries including Australia took part in the study. Four Australian groups including the Raine Medical Research Foundation contributed.

According to leading author Professor Chris Hammond of King's College London, it was already known that environmental factors, such as reading, lack of outdoor exposure and a higher level of education can increase the risk of myopia. The condition is more common in people living in urban areas.

"How environmental factors affect the newly identified genes and cause myopia remains intriguing and will be further investigated by the consortium," Professor Hammond said.

Corresponding author Professor Caroline Klaver from Erasmus Medical Center Rotterdam said: "Currently, possibilities to reduce progression of myopia are very limited. While one drug, called atropine, may reduce progression, it dilates the pupil and causes problems with light sensitivity and difficulty with reading. New options are necessary. Chances are good that the insights gained from this study will provide openings for development of new strategies."

Provided by University of Western Australia

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