GENETICS OF EYE COLOUR

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Human eye colour ranges from black, brown to blue, green, and even red. Eye colour is primarily determined by melanin abundance within the iris pigment epithelium, which is greater in brown than in blue eyes. There are two forms of melanin – eumelanin and pheomelanin – and the ratio of the two within the iris as well as light absorption and scattering by extracellular components are additional factors that give irises their colour. Absolute melanin quantity and the eumelanin–pheomelanin ratio are higher in brown irises, while blue or green irises have very little of both pigments and relatively more pheomelanin.

The researchers from King's College London also found that eye colour in Asians with different shades of brown is genetically similar to eye colour in Europeans ranging from dark brown to light blue. Previously a dozen genes (mainly HERC2 and OCA2) were found to influence eye colour.

The researchers have now identified 50 new genes for eye colour *(Science Advances).* Genetic analysis of nearly 0.2 million people across Europe and Asia helped the researchers to identify the new genes. The findings collectively explain over 53% of eye colour variation using common single-nucleotide polymorphisms. Overall, the study outcomes demonstrate that the genetic complexity of human eye colour considerably exceeds previous knowledge and expectations, highlighting eye colour as a genetically highly complex human trait, says a release.

These findings will help improve our understanding of eye diseases such as pigmentary glaucoma and ocular albinism where pigment levels play a role.

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