Five genes have been found to determine human facial shapes

September 13 2012

Five genes have been found to determine human facial shapes, as reported by researchers from the Netherlands, Germany, Canada, the United Kingdom, and Australia in the open-access journal *PLOS Genetics.*

Monozygotic twins have almost identical faces and siblings usually have more similar faces than unrelated people, implying that genes play a major role in the appearance of the human face. However, almost nothing is known about the genes responsible for facial morphology in humans.

This study, carried out on behalf of the International Visible Trait Genetics (VisiGen) Consortium, used head magnetic resonance images

together with portrait photographs to map facial landmarks, from which facial distances were estimated. The researchers then applied a genome-wide association (GWA) approach, with independent replication, to finding DNA variants involved in facial shapes in almost 10,000 individuals.

Three of the five genes identified have been implicated previously by other approaches in vertebrate craniofacial development and disease; of these three, one was reported to be involved in facial morphology in a GWA study on children published earlier this year. The remaining two genes potentially represent completely new players in the molecular networks governing facial development.

Professor Manfred Kayser from the Erasmus University Medical Center, Rotterdam, The Netherlands, the leading author of the study, said: "These are exciting first results that mark the beginning of the genetic understanding of human facial morphology. Perhaps some time it will be possible to draw a phantom portrait of a person solely from his or her DNA left behind, which provides interesting applications such as in forensics. We already can predict from DNA certain eye and hair colours with quite high accuracies."

More information: Liu F, van der Lijn F, Schurmann C, Zhu G, Chakravarty MM, et al. (2012) A Genome-Wide Association Study Identifies Five Loci Influencing Facial Morphology in Europeans. *PLoS Genetics* 8(9): e1002932.doi:10.1371/journal.pgen.1002932

Provided by Public Library of Science