Four gene loci predispose people to most common subtype of migraine

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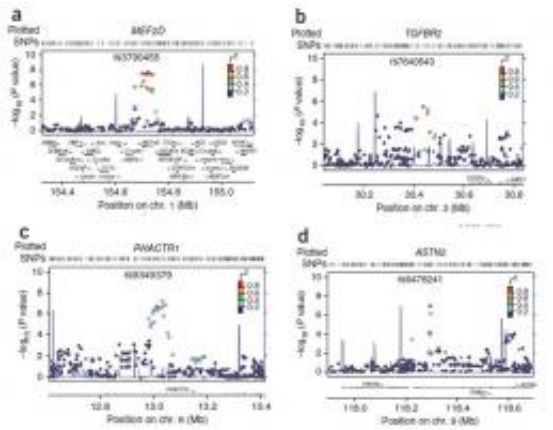

Regional plots for newly identified variants associated with migraine. Each regional plots shows the chromosomal position of SNPs in the specific region. [Nature Genetics doi: 10.1038/ng.2307]

An international research group has identified four new gene loci predisposing people to the most common subtype of migraine, migraine without aura. About two-thirds of migraine sufferers belong to this group. The study will be published in *Nature Genetics* on June 10, 2012.

Researchers studied genetic data of more than 11 000 people and found altogether six genes that predispose to migraine without aura. Four of these genes are new and two of them confirm previous findings.

The new genes identified in this study provide further evidence for the

hypothesis that dysregulation of molecules important in transmitting signals between brain neurons contribute to migraine. Two of the genes support the hypothesis of a possible role of blood vessels and thus disturbances in blood flow.

The researchers carried out what is known as a genome-wide association study (GWAS) to zoom in on genome variants that could increase susceptibility to migraine; they compared genomes of 4800 migraine patients with more than 7000 non-migraine individuals. The project was performed by the International Headache Genetics Consortium consisting of leading migraine researches from Europe and Australia.

This was the third report on genes predisposing people to common forms of migraine, but the first one on the most common migraine subtype. "The study establishes for the first time a specific gene that contributes to this common disease" said Professor Aarno Palotie at FIMM and the Wellcome Trust Sanger Institute, the chair of the International Headache Genetics Consortium.

The carefully studied migraine patients collected from specialized headache clinics were provided a strong basis for the success of this study.

Migraine affects approximately one in six women and one in eight men, making it a leading cause of work absence and short-term incapacity: 25 million school or work days are lost for migraine each year. A US report measures its economic costs as similar to those of diabetes and WHO lists it as one of the top twenty diseases with the causes of years lived with disability (YLDs). In up to one third of migraine patients, the headache phase may be preceded or accompanied by transient neurological disturbances, the so-called aura (i.e. migraine with aura), while the majority of patients suffer from migraine without aura.

"Studies of this kind are possible only through large-scale international collaboration - bringing together the wealth of data with the right expertise and resources. The identified genes open new doors to investigate how this type of migraine comes about," said Dr. Arn van den Maagdenberg, one of the senior authors on the paper.

More information: Genome-wide association analysis identifies susceptibility loci for migraine without aura. Freilinger, T et al. *Nature Genetics* 2012. DOI: 10.1038/ng.2307

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