



GSF – Forschungszentrum
für Umwelt und Gesundheit
in der Helmholtz-Gemeinschaft



Press Release

If air gets scarce – new gene causes asthma in children

Usually harmless external stimuli like animal hair, pollen and house dust cause a life-endangering narrowing of the bronchi in asthma patients. An international team of scientists headed by researchers from the Ludwig-Maximilians University (LMU), Munich, and Oxford University, UK, have now been able to identify a gene that clearly increases the risk for asthma in childhood.

Dr. Thomas Illig, head of the working group Molecular Epidemiology at the GSF National Research Centre for Environment and Health in Neuherberg, near Munich, has also been involved in this large-scale study. The team examined over 300,000 genetic markers in thousands of asthmatic children and compared their data with those of healthy controls. The newly found gene, ORMDL3, is a promising object of research: it could help to improve the prevention and diagnosis of asthma, and possibly to develop a new therapy.

In Germany, one child in ten suffers from asthma – without any hope of being cured. At best, until now, only symptoms can be treated. However, the research team has now been able to identify one of the main players in the complex interaction of genetic and environmental factors that lead to asthma. The scientists used the fact that the genetic material of different individuals shows differences. One type of DNA variants is called SNPs, short for “Single Nucleotide Polymorphisms”. They can be compared and statistically analysed.

To a hitherto unprecedented extent, in the present case, more than 300,000 SNPs were analysed in about 2,300 study participants, and briefly half had suffered from asthma since childhood. The comparison of their genetic data with those of their healthier contemporaries showed that several genetic variations clearly raise the risk of asthma in infancy. Above all, the gene expression of the gene ORMDL3 was influenced by them. However, significant associations must be examined in so-called replication studies of further case-control groups. “Thus, in the GAC, the Genome Analysis Centre of GSF, we have analysed an asthma population that was recruited in the LMU by Dr. Michael Kabesch, and, in this way, we could confirm the previous results”, reports Illig.

The asthma study is promoted in Germany by the National Genome Research Network (NGFN) and was carried out within the scope of the EU-financed GABRIEL project to decipher the causes of asthma. Illig is involved as a partner in both projects. Now he and his colleagues have planned follow-up investigations. “This really was an excellent joint effort that we shall continue”, the molecular biologist commented. “GSF is involved in such high-grade projects, not least because the Genome Analysis Centre is one of the few institutions that can carry out genome-wide studies on this scale. In the field of genotyping, we belong to the leading groups in Germany.”

Publication:

Genetic variants regulating ORMDL3 expression contribute to the risk of childhood asthma
Miriam F. Moffatt, Michael Kabesch, Liming Liang, Anna L. Dixon, David Strachan, Simon Heath, Martin Depner, Andrea von Berg, Albrecht Bufe, Ernst Rietschel, Andrea Heinzmann, Burkard Simma, Thomas Frischer, Saffron A.G. Willis-Owen, Kenny C.C. Wong, Thomas

Illig, Christian Vogelberg, Stephan K. Weiland, Erika von Mutius, Goncalo R. Abecasis, Martin, Farrall, Ivo G. Gut, G. Mark Lathrop & William O.C. Cookson
Nature, 4 July 2007, pp. 470-473, doi: 10.1038/nature 06014

Contact with the GSF Press Office:

GSF – National Research Centre for Environment and Health (Forschungszentrum für Umwelt und Gesundheit)
Department of Communication
Tel: 0049 (0)89 3187-2460
Fax: 0049 (0)89 3187-3324
E-mail: oea@gsf.de

Neuherberg, 20 August, 2007