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## **The gene-environment interactions and asbestosis**

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It has become increasingly obvious that both environmental and genetic factors may influence the development of many diseases. Genes coding for enzymes that are involved in the metabolism of foreign chemical substances have mostly been primary candidates for gene-environment interactions studies. This study investigated the influence of gene-gene and gene-environment interactions on the risk of developing asbestosis. The study comprised 262 cases with asbestosis and 265 controls with no asbestos-related disease previously studied for MnSOD, ECSOD, CAT, GSTT1, GSTM1, GSTP1, and iNOS polymorphisms. Data on cumulative asbestos exposure and smoking were available for all subjects. PCR-based methods were used to genotype MnSOD Ala -9Val, ECSOD Arg213Gly, CAT -262C>T, iNOS (CCTTT)n, GSTM1-null, GSTT1-null, GSTP1 Ile105Val and Ala114Val polymorphisms. To assess gene-gene and gene-environmental interactions, logistic regression was used. The analysis showed that the associations between MnSOD Ala-9Val polymorphism and the risk of asbestosis as well as between iNOS genotypes and asbestosis were modified by CAT -262 C>T polymorphism ( $p=0.038$ ;  $p=0.031$ ). A strong interaction was found between GSTM1-null polymorphism and smoking ( $p=0.007$ ), iNOS (CCTTT)n polymorphism and smoking ( $p=0.054$ ) as well as between iNOS (CCTTT)n polymorphism and cumulative asbestos exposure ( $p=0.037$ ). The findings of this study suggest that the interactions between different genotypes, genotypes and smoking, as well as between genotypes and asbestos exposure have an important influence on the development of asbestosis and should be considered seriously in future research on occupational/ environmental asbestos-related diseases.

### **Biography**

Alenka Franko, Associate Professor, MD, is a specialist in occupational medicine at the Clinical Institute of Occupational Medicine, University Medical Centre, Ljubljana, Slovenia. Her research and teachings focus on several themes: Occupational and environmental toxicology, molecular epidemiology, genetics and gene-environment interactions, occupational medicine. She carries out work in these areas nationally and internationally. She has been a speaker at many national and international conferences.

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