CHRONIC DISEASES AND CANCER PREVENTION – THE ROLE OF GENETIC DETERMINANTS OF DETOXIFICATION AND ENVIROMENTAL RISK-FAKTORS

Maggi Herbring F.[1], Schollenberger L.[1], Jennrich P.[2]
[1] FraMaGENE, Heidelberg, Germany – fm@framagene.com
[2] PRAXISKLINIK, Wuerzburg, Germany - peter_jennrich@yahoo.de

Individual susceptibility to cancer and chronic diseases results from several exogenous and endogenous factors including inherited differences in metabolic capacity, environmental exposures to genotoxic agents, and nutritional habits.
The cellular systems for detoxification, that work mainly in two phases, are essential to protect cells from damage by the exposure of various forms of environmental toxins and carcinogens. Products of the phase I mostly are more aggressive than the primary substances, so the detoxification in step two is essential.
Genetic polymorphism that may cause lack of functional enzyme or low functioning enzymes, have been detected in a variety of phase I, mainly cytochrome-P450-related enzymes (CYPs), and phase II enzymes as glutathione-S-transferases (GSTs) and N-acetyltransferases (NATs).
In the phase II in particular Glutathione S-transferases are a family of enzymes that exert a critical role in cellular protection against oxidative stress, pollutants, and toxic foreign chemicals as heavy metals.
In our laboratory we detect polymorphisms of the most relevant metabolizing genes by real time PCR with the aim to individuate risk factors of dispositions to diseases before it appears, but also to enable and sustain a specific therapy for known diseases or intolerances. We propose genetic analysis as an invitation to actively play a role at the preservation of the own health.