

Identification and magnitude of early signs in metabolic syndrome

The effects of nutrition on health and disease cannot be fathomed without a profound understanding of how nutrients act at a molecular and genetic level. The mission of the Nutrigenomics Consortium (NGC) is to elucidate the influence of food components, such as fat, on the metabolic syndrome at a genetic level.

Metabolic syndrome is a combination of medical disorders including obesity, insulin resistance, high cholesterol levels and hypertension. Metabolic syndrome may lead to the development of type II diabetes and coronary heart disease. It is known that metabolic syndrome is the result of an imbalance between dietary energy intake and expenditure, strongly modulated by genetic factors. Using modern techniques like genomics, proteomics and metabolomics, NGC measures gene and protein expression and examines the effect of dietary changes on specific metabolites. Eventually, NGC will identify biomarkers for health, metabolic stress and diet-related disease. This will pave the way for better insight in weight management and the development of new food components for the treatment of dietary diseases and the prevention of metabolic stress.

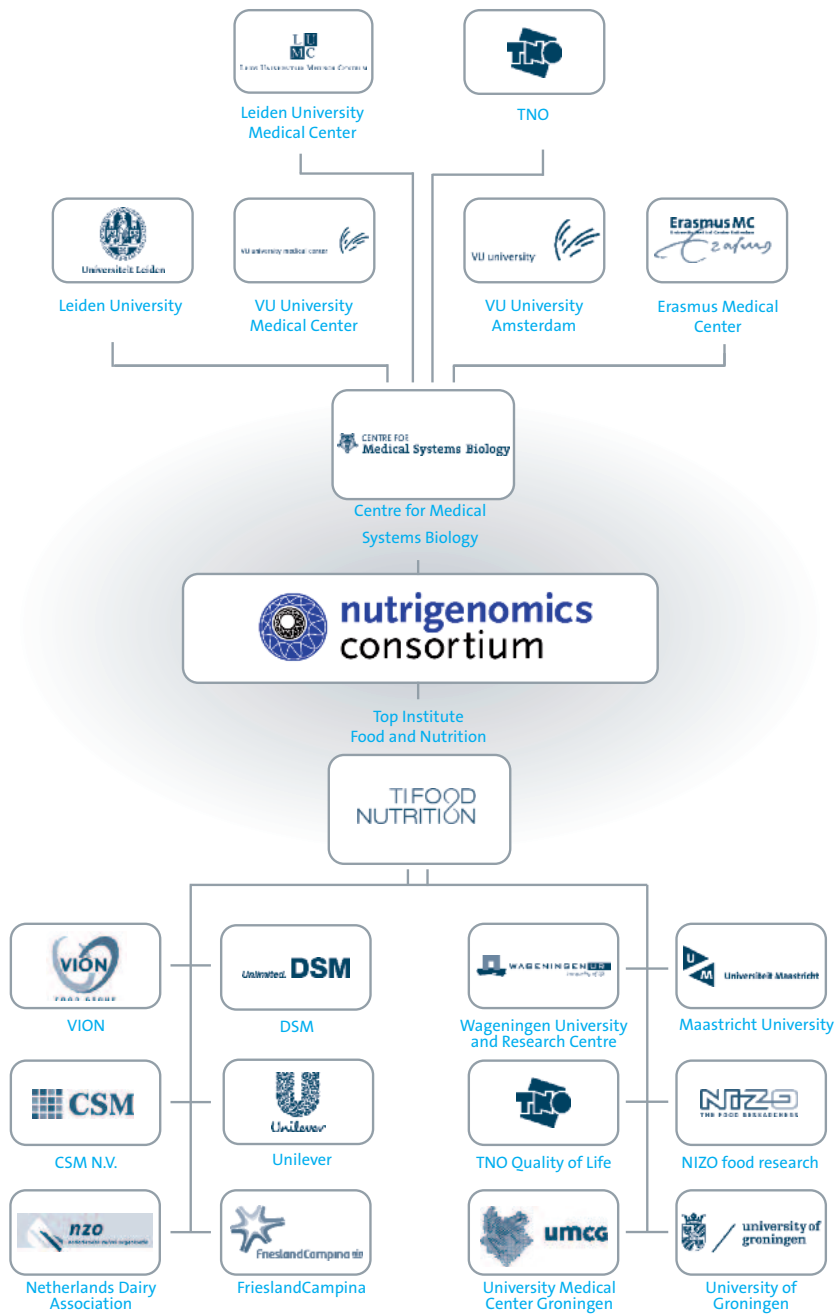
The research of NGC is divided into work packages (WPs), three of which focus on organ-specific identification of dietary signals and nutrient sensor systems in mouse model systems. WP-A addresses the intestines, WP-B looks at the liver and WP-C targets muscle tissue. The goal of WP-D is to identify sensitizing genotypes in mouse and human environments. WP-E focuses on short-term feasibility studies for translating the results obtained in mice into the human situation. WP-F uses the data gathered by other WPs to develop new bioinformatics and biostatistic tools for systems biology. WP-I was created later, to improve coordination and management of standardized animal experiments throughout the consortium. Supervising the use of the established NGC data analysis pipeline is another of its tasks.

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Nutrigenomics Consortium

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