

Nutrigenomics: Just another “Omic”

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Since the times of the renowned Greek physician Hippocrates, nutrition has clearly had a predominant and recognizable role in health management. The Greek suffix ‘omic’, meaning “complete”, describing the global analysis of genes (genomics), mRNA (transcriptomics), proteins (proteomics), and metabolites (metabolomics). Although more than fifty ‘omic’ terms have been described in the literature, but these are the aforementioned terms that are widely established and accepted. Post genomic era had given birth to a new ‘omic’ that is ‘Nutrigenomics’. This combining all available information about food and phenotypes is allowing us to assess in deep and in wide how food interacts with our genes, proteins and metabolism. Nutrigenomics hence defined as the study of food and gene interaction and the consequences of this two-way interaction. Modifying the consumption of certain dietary compounds can prevent some monogenic diseases. For example in case

of galactosemia and phenylketonuria, galactose-free and phenylalanine-restricted tyrosine-supplemented diets are a means to nutritionally treat these monogenic diseases, respectively. But for polygenic diseases, dietary intervention requires not only knowledge of how a single nutrient may affect a biological system, but also how a complex mixture of nutrients will interact to modulate biological functions.

Current knowledge of gene-diet interactions opens the window to credible, feasible advice that can be given to an individual at the present time to reduce elements of risk associated with food factors. Nutrigenomics will contribute in designing optimized dietary intervention strategies to restore and improve metabolic homeostasis, improve health and wellbeing and prevent diet-related diseases.