Introduction: Nutrition plays an essential role in the development of diseases such as cardiovascular disorders, obesity or cancer. Strong evidence demonstrates that nutrients modulate gene expression determining the balance between health and disease. Targeted studies conducted to promote health by nutrition must consider genetic differences in order to establish diet formulations or administrating nutritional compounds for genetically classified population which will result in a more efficient prevention or mitigation of these diseases.

Objectives: Constitution of the Cantoblanco Platform of Food and Nutritional Genomics(GENYAL) as a new high level tool for the analysis of gene-diet interactions.

Method/Design: Phenotypic stratification is based on anthropometric measurements and diet and lifestyle questionnaires. A bioinformatic application for databasing in accordance with the data protection act and the law in Biomedical Research has been developed. Genotypic stratification is based on the analysis of gene variants within pathways involved in nutrients metabolization and disease. SNPs selection is developed by potential functional effect and genetic mapping. 7900HT Fast Real-Time PCR System and Taqman Openarray Genotyping Platform is used for genetic analysis.

Results: The Cantoblanco Platform of Food and Nutritional Genomics(GENYAL) is mainly constituted by a DNA Biobank, a clinical and genetic database and a technological platform on nutritional genomics. The GENYAL project has been presented in two stages:
-Genotypic and phenotypic characterization of GENYAL population, including population recruitment and observational studies of genotype-phenotype association.
-Dietary intervention studies in population cohorts according to their genetic characteristics. Dietary intervention studies in specific cohorts is offered to research groups and companies, opening the possibility to develop controlled clinical trials with different ingredients or nutrients minimizing clinical differences due to genetic components.

Conclusions: The Cantoblanco Platform of Food and Nutritional Genomics constitutes a new high scientific level tool to further understand the benefit and damage of determined nutrients or ingredients in human health.

Key Words: Nutritional, Genomics, Platform.