



## PROJECT

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### 1) Project title

**Nutrigenetic approach in the promotion of health in the workplace**

### 2) Abstract (max 500 words)

Nutritional genomics is an emerging field which has provided many insights into how gene-food interactions affect the development of degenerative diseases. Nutritional genomics is a broad term encompassing nutrigenetics, nutrigenomics, and epigenomics. Significant results emerge from studies in which nutrigenetics, i.e. the formulation of nutritional plans based on the genetic characteristics of individuals, was used to achieve significant weight loss and its maintenance over time only in individuals with a diet matched to the genotype [Frood, 2010]. For example, a study conducted by Arkadianos et al [2007] reports that among obese people, those with a diet plan matched to 24 SNPs of genes involved in the metabolism of nutrients, including carbohydrates, fats and proteins, reduce more not only the weight, but also glucose levels compared to subjects with a non-personalized diet [Arkadianos et al 2007]. Another study [Frood, 2010] reports that the genetic classification of individuals even on only 4 variants (SNPs), defining their sensitivity to dietary fats and carbohydrates, favors a significant weight loss more in individuals with a diet matched to the genotype. Furthermore, a pan-European study reports a particularly positive attitude towards genetic testing and personalized nutrition in 66% of respondents, particularly among individuals with metabolic syndrome and type 2 diabetes (DM2) [Livingstone et al 2015].

Obesity is a growing public health problem also in the workplace. The overweight/obese worker is a fragile subject whose working capacity is proportional to the increase in body mass. Then there are some working conditions that are more at risk for being overweight, such as night work and shift work. However, in the development of chronic degenerative pathologies, including obesity and consequent cardiovascular diseases, tumors and DM2, a complex interaction between environmental factors contributes, where diet represents one of the main modifiable risk factors, and peculiar genetic factors of every single person. The nutrigenetic intervention could therefore represent a new tool to improve the effectiveness of health promotion in the workplace in the nutritional field.

### Purpose of the study

Verify whether the nutrigenetic approach, i.e. the formulation of nutritional plans based on the genetic characteristics of individuals, can improve the effectiveness of health promotion in the workplace in the nutritional field. For this purpose, the participants in the food education project in the workplace launched by the occupational medicine of the hospital-University of Padua will be characterized from a genetic point of view.

Validation of the nutrigenetic approach will be carried out by comparing the weight loss after "NOT matched diet" (recorded at time 1) and that after "diet matched to genotype" (recorded at time 2) individual nutrition.