GENETICS OF NUTRITION IN AGEING

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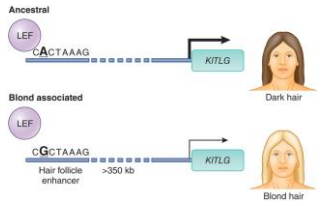
PANINI
Physical Activity and Nutrition INfluences In ageing

Introduction

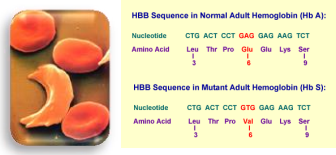
There is a surprising lack of innovative multi-disciplinary research and training examining the influence of nutrition and physical activity on the ageing process. PANINI network will try to address this, in order to develop a standardised tool kit for physical activity and nutrition assessment in elders.
This project will focus on the relationships between genetic background, nutrition and ageing phenotypes, identifying the genetic variants related to ageing conditions and nutritional habits of elders.
The aim of the study will be to identify genetic variants associated to ageing phenotypes and the response to nutritional interventions, with the purpose to predict the risk to develop ageing phenotypes (like sarcopenia or frailty).

Background

Single Nucleotide Variations (SNV) is a variation at the level of a single nucleotide in the genome. Millions of DNA differences are present between individuals.

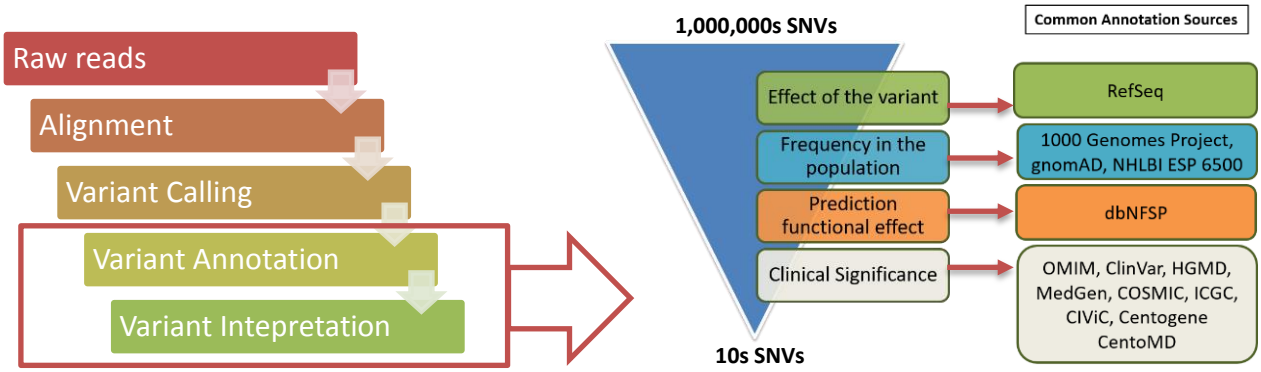


Their presence could be the determinant of:
- → a trait
- → a particular condition or disease



Methods

The identification of SNVs will be performed through the development of a bioinformatics pipeline. The human samples will be sequenced and aligned against the human reference genome. The variations identified for each individual will be reported in a .gVCF file, the starting point for variant annotation and interpretation. Common annotation sources will be exploited to integrate all the information available for a single variant, with the aim of selecting the few ones relevant (associated) to ageing phenotypes.



Take Home Message

Identification of genetic determinants of ageing-related condition is challenging. The integration of literature search and results from genetic analysis can contribute to the achievement of this process, with the aim of being able in the near future to taylor nutritional and physical interventions on the basis of the genetic background of the individual.

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