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Editorial

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Food, Genomic and Nutrigenomic: Fighting the Obesity Epidemic

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Introduction

A genome is an organism's complete set of DNA, including all of its genes; a copy of the entire genome is contained in all cells that have a nucleus. All of us carry in our cells the genetic code (DNA) which is a kind of huge library that contains all the information needed to make a human being and not just any, but a concrete one. Mine used to do to me, you and yours, although we share the most information, each has its own library. This library is written in the DNA, a long molecule in which the instructions are inserted in four different chemical molecules: adenine, guanine, cytosine and thymine. Are like the four letters of the alphabet, in scientific articles, are represented by the initials A, G, C and T.

Migration, the ability to travel massive, the food industry, which facilitates obtaining food in towns and cities across the world, leads to an increased energy intake and a decrease in physical activity.

Hippocrates preached the importance of nutrition in health was "rediscovered" in the twentieth century. Scientific societies, NGOs, global organizations have been publishing comprehensive recommendations to reduce common diseases that affect public health. But this effort has been limited, since it does not include the genetic individuality of world populations. This may be the answer to why a global recommendation has not been successful in some populations[1].

In 1999, the rapid changes in the prevalence of obesity lead the Centers for Disease Control and Prevention's (CDC's) to recognize the obesity epidemic as a US national problem and in a short term a worldwide problem[2]. The prevalence of obesity has increased during the last decades and varies from 10-20% in most European countries to approximately 32% in the United States[3]. Obesity is a multifactorial disorder that has multiple and serious biological health side effects of those affected[4]. Conditions that are developed from multiple causes[5]: environmental and behavioral factors, underlying diseases and socioeconomic status, including genetic predisoposition[6].

Nutrigenomics examines the association of exogenous nutrients and molecular responses to maintain homeostasis in an individual[7].

Many strategies to promote weight loss are being explored as antiobesity treatments[8], patient dropout can lead to treatment failure, and it is important to identify predictors of treatment adherence to improve the success of these programs[9]. It is necessary to provide all nutrition consultations with global guidelines and novel tools in order to diagnose and to treat in an effective way obesity.

In recent years, the genetic determinants of obesity and metabolic syndrome were largely unknown, with the exception of a few forms of monogenic extreme obesity; since genome-wide association studies (GWAS) became available, large advances have been made[10].

Research on how interactions between candidate genes and environmental factors influence illnesses has generated enthusiasm but not many replicable findings[11]. We had the the concept that our environment has changed, but our genome has re-

mained undeterred for thousands of years. Now we can see that our genome has had small changes for our survival in different climates and places on earth. The completion of the Human Genome Project allows us to decipher our ancestral composition, knowing the messages that have been inherited from generation to generation. In a language of four letters A, G, C and T, it is written the whole history of mankind. The genome of any human being has approximately 3,000 million base pairs or letters arranged one after another.

Nutrigenomic and DNA services could be our future in fighting the obesity and an allied to correct the course of the worldwide epidemic in the upcoming years because it lets understanding of the effects of dietary intake on health.

The knowledge that metabolic pathways may be altered in individuals with genetic variants in the presence of certain dietary exposures offers great potential for personalized nutrition advice[12].

Although considerable resources have gone into improving technology for measurement of the genome and biological systems, dietary intake assessment remains inadequate, but science is in the right direction. It is a matter for further research that need all scientists working in partnership to achieve best results.

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