

Environment, health and epigenetics

Mohamed Benahmed

Institut National de la Santé et de la Recherche Médicale (INSERM) et TEChiNCARE, Nice (France)

Abstract

Over the last two decades, we have witnessed two major conceptual and technological breakthroughs concerning the origin of chronic (non-communicable) diseases and their management.

Chronic diseases represented by cardiovascular, metabolic, (auto) immune, neurodegenerative, and reproductive diseases (infertility, endometriosis), constitute the major part of the causes of death, both in high and middle income countries.

The first major conceptual breakthrough clearly marked the end of the genetic basis of chronic diseases. Following the sequencing of the genome, in particular, it appeared that the origin of chronic diseases is mainly linked to our external world, our way of life: nutritional imbalances, exposure to toxic substances (water, air, food) and psycho-social and psycho-emotional stress. The impact of these lifestyle effectors modify the expression of our genome via epigenetic mechanisms such as DNA methylation, post-transcriptional modifications of histones (euchromatin, heterochromatin) and the expression of non-coding RNAs.

These discoveries have paved the way for a second

technological breakthrough, such as the modeling of chronic diseases, high-throughput sequencing, the birth of a new generation of biomarkers for the study of patient cohorts, which will be optimized by e-learning and AI tools.

All of these breakthroughs are currently opening up a new paradigm of Medicine that will be added to that of Curative Medicine: the 4 P (Predictive, Preventive, Personalized and Participative) and Integrative Medicine. Indeed, the latter integrates in particular the nutritional dimension via Precision Nutrition both upstream of the disease and during the disease, coupled with the classic pharmacological approach.

Biography

