

# NUTRITION AND HEALTH

## An evolutionary perspective

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### INTRODUCTION

The idea of creating a website with this topic came to me after reading the report of The State of Food and Agriculture from FAO (Food and Agriculture Organization of the United Nations) [1]. The report wasn't a new discovery but it made me aware about the real situation: **870 million people are starving**, while **500 million are obese**. This statement made me think: What are the changes that brought us in this situation as specie? Then I thought it would be interesting to disclose this information, as scientific as possible, to most of the population in order to create food behaviour awareness and improve our health.

### GOAL

One of the goals is to see if prehistoric eating patterns have anything to do with today's chronic diseases, i.e. obesity. I'm going to try to focus on the most important changes that had occurred in the history of our specie and how those changes had influenced our actual diet and the corresponding diseases. Lots of research has to be done on that field due to its broadness.

### 1. ROOTS

#### DIET AND FEEDING BEHAVIOUR

Gorillas, Orangutans, Chimpanzees, Bonobos and Humans are all together in Hominidae family. Many of them are omnivorous (frugivorous or folivorous) like our ancestors where and part of our evolutionary roots.

Due to climate change our ancestors needed to adapt to different environments (changing the resources) and that was the starting point of the human diet flexibility [2].

The use of tools -Oldowan and Acheulean industry- was also a tipping point that contributed to the change of the diet and afterwards the use of fire to cook brought important changes making nutrients more available.

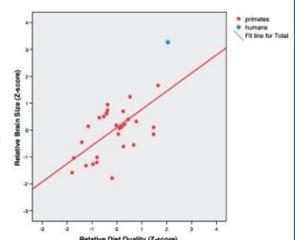
This changes in the feeding behaviour and in the food we eat itself changed our bodies and is still changing.

#### PHYSIOLOGICAL AND MORPHOLOGICAL CHANGES

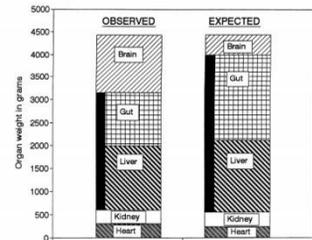


The human digestive system follows the general primate plan in many ways, but the larger small intestine and the smaller large intestine suggest adaptation to a higher quality, or higher energy density, diet. Milton [3] argues strongly for the role of meat-eating as selective pressure for this changes starting around the time of *H. erectus* (1.8 M years ago) but is possible that increasingly processed, including cooked, food was an important contributor [4].

#### Expensive Tissue Hypothesis - The brain



Plot of relative brain size versus relative diet quality for 33 primate species. Humans represent the positive extremes for both measures, having large brain:body size and a substantially higher-quality diet than would be expected for their size. [5]



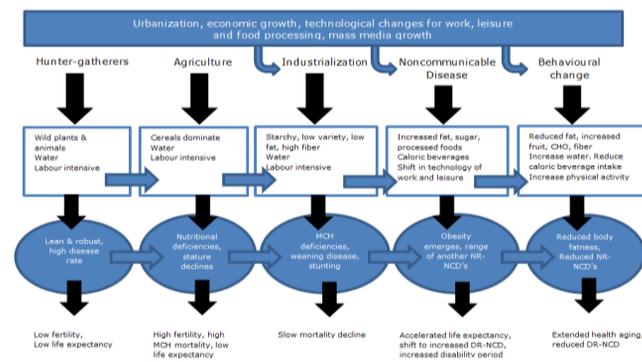
Observed and expected organ mass for a "standard" 65-kg human. (from Aiello and Wheeler [6]).

It is possible that tool use and extractive foraging, particularly of animal carcasses, contributed to brain size increases in Plio-Pleistocene hominins, between 3 and 1 million years ago [7].

Large brains are energetically expensive, and humans expend a larger proportion of their energy budget on brain metabolism than other primates. In addition, humans are relatively "under muscled" and "over fat" compared with other primates, features that help to offset the high energy demands of our brains.

Is not totally right say that dietary change was the driving force behind major brain expansion during human evolution. Rather, the available evidence indicates that a sufficiently high-quality diet was probably a necessary condition for supporting the metabolic demands associated with evolving larger hominin brains [5].

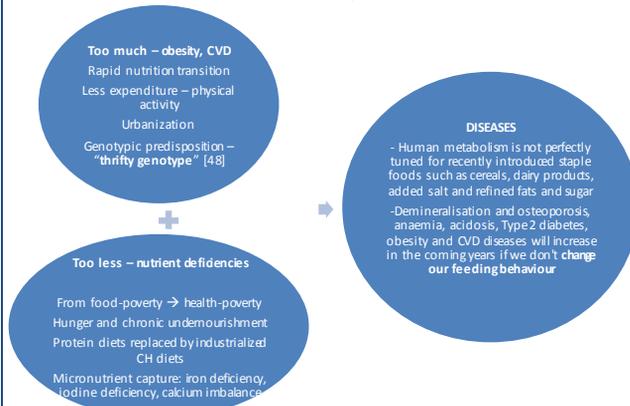
### 2. NUTRITION TRANSITIONS



Adapted from Popkin 2002 [8]

### MALNUTRITION

Sometimes with this word we relate only lack of food, but it can be also an excess, deficiencies in vitamins and other micronutrients, all those related with diseases.



### DISCUSSION

- Dietary change (as an outcome of modernization and globalization) has led to the emergence of epidemics of obesity, CVD and Type 2 diabetes [9].
- Nutrition transition theory places societal changes toward industrialized diets and sedentary ways of life centrally to the emergence and propagation of the chronic disease across the world in recent decades.
- Scientists argues that many of the health problems facing our society relate to discordance between what we eat in the West and what our bodies have evolved to eat.

As Hippocrates said **"Let food be your medicine!"**

### RESULTATS

In addition to the report and the three portfolios due to the informative nature of the research I did a website, to spread the knowledge.

You can visit the content here: <http://nutritionandhealth3.webnode.cat/>

### References

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