

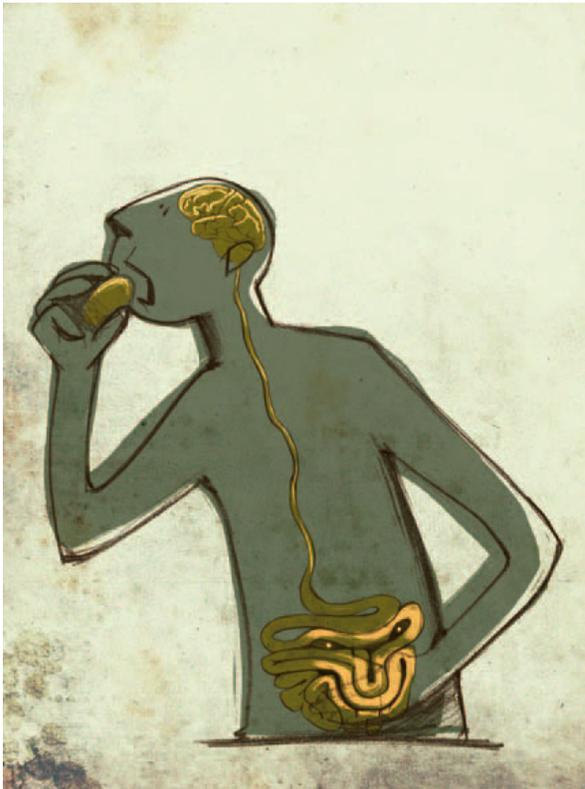
Translation by Patrizia Rustichelli-Stirgwolt

**The review of the Italian association of psycho-neuro-endocrine-immunology**

Edited by Francesco Bottaccioli

# PNEI NEWS

The new knowledge of science and health



## **The microbiota inside us**

And other stories of  
food, brain and health

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# PNEI NEWS nr.6

## EDITORIAL

### **Page 3. At the centre of the human body**

Francesco Bottaccioli

### **INTERVIEW** with David Baucombe

### **Page 4. The epigenetics revolution.**

Great upheavals are affecting genetics and involving botanics as well. This point has been proved by the studies of many scientists such as David Baulcombe who has been recently assigned the Balzan Prize. With his works, the British plant scientist and geneticist has changed radically the way to consider the transmission of genetic information.

**Paola Emilia Cicerone.**

### **DOSSIER**

### **Nutrition and health**

### **Page 6. The regulator of inflammatory responses.**

The microbiota influences the immune system in different ways. Its imbalance can be crucial in causing or participating to many inflammatory pathologies which affect not only the intestinal tract. The probiotics are playing a more important role shifting from being an adjuvant to antibiotic therapy to natural body's regulators.

*Marina Risi*

**Page 9. The master of the intestine**

Growing evidences indicate the key role played by the intestinal ecosystem in the genesis and evolution of the main intestinal pathologies: from gastric reflux to irritable bowel syndrome or intestinal inflammatory diseases. However we are still at an early stage of the microbiota's therapeutic modulation.

*Rosa Sollazzo*

**Page 12. Metabolism has its own programmes**

The regulation of energy metabolism occurs during the embryonic development and the early stages of life. This initial imprinting influences not only the caloric intake but also the plasticity of the body development.

*Anna Giulia Bottaccioli*

**Page 15. Leptin and its “family”**

In the last 15 years the researches on nutrition have lead to a completely different scene which has radically transformed long-established beliefs such as the fact that calculating calories could result in gain or loss of weight.

*Luca Speciani*

**Page 19. Preventing atherosclerosis with a natural product**

At the CNR (National Research Institute) of Pisa, scientists have been investigating Lisosan G both clinically and in laboratories. Lisosan G is a powder of Triticum sativum organic grains with a high antioxidant effect. In this issue, we propose a study on human microvascular endothelial cells exposed to oxidized lipoproteins. Lisosan G protects the cells.

*Vincenzo Longo, Laura Pucci*

**SIPNEI News**

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Summary of the last two years PNEInews publications.

# EDITORIAL

## **Microbiota, epigenetics and the cage of ordinary medicine**

Francesco Bottaccioli – Sipnei Honorary President

There is a countless number of studies in two fields that are tightly connected: microbiota and epigenetics. The network of the vast number of microbial populations inhabiting the mucosal surface and skin epithelium represent the internal centre of epigenetic signals of the biological systems.

There is now clear evidence that the genoma (to say it with an Aristotelian metaphor) is not that immobile motor that moves everything else and it is not moved because it is *causa sui* namely because it bears in itself the dynamic of life. Actually the expression of the information contained in the bases is strongly conditioned and, I would also say, driven by the reciprocal interaction of signals coming from the external and internal. This signal is codified in epigenetic mechanisms which organise the patterns of cellular activation. The microbiota is mainly located in the mucose<sup>1</sup>, its composition is the main driver of epigenetic signature of the immune system. At the same time it influences significantly the nervous system and, particularly, the brain<sup>2</sup>.

From the early stage of life in the maternal womb, the microbiota is affected by stress, medicines and the way we eat.

The epigenetic composition is structured with food and the most important data about it is that it is most likely to be transmitted to the future offsprings as some recent studies show.

Mice which are fed with a high content of fats or supplemented with estrogens increase the risk of breast cancer not only to their daughters but also to their granddaughters<sup>3</sup>.

In the next issues of our review, we will analyze transgenerational epigenetic transmission and its revolutionary implications.

However in this article I would like to bring to your attention a recent study showing how extraordinarily effective can be the science of nutrition when it is applied correctly.

A research group from the University of Lisboa published the results of a long-term study on colorectal cancer patients treated with adjuvant radiotherapy<sup>4</sup>. During the radiotherapy the patients were divided into 3 groups. One group received individualized nutritional counseling involving weekly meetings (6 in all), another group was collectively instructed about a correct diet, the third group was treated as patients are normally treated in these conditions namely by giving them generic information about eating.

After six years of regular follow-ups, the researchers observed that the group who had received individualized counseling had less side-effects from radiotherapy, they had maintained a normal weight and their quality of life was clearly better than the members belonging to the other two groups. The most

surprising data was however that for the group with individualized nutritional counseling the mortality rate was 8%, for the second group was 22% and 30% for the third group with generic eating instructions.

This is the striking evidence of the narrow-mindedness of our standard specialistic medicine enclosing in a tight uncomfortable cage both citizens and health operators....however the cage is full of fissures.

1) Bottaccioli F. *Il sistema immunitario la bilancia della vita*, II ed. Tecniche Nuove, Milano 2008; Garagnani P, Pirazzini C, Franceschi C, Colorectal Cancer Microenvironment: among Nutrition, Gut microbiota, Inflammation and Epigenetics. *Curr Pharm Des.* 2012 Sep 26. [Epub ahead of print]

2) Dinan TG, Cryan JF Regulation of the stress response by the gut microbiota: implications for Psychoneuroendocrinology, *Psychoneuroendocrinology* 2012; 37: 1369-1378

3) De Assis S. et al., High fat or ethinyl-oestradiol intake during pregnancy increases mammary cancer risk in several generations of offsprings, *Nature Communications* 2012;3:1053 DOI 10.1038

4) Ravasco P. et al. Individualized nutrition intervention is of major benefit to colorectal cancer patients, *American Journal of Clinical Nutrition* 2012; 96: 1346-53