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 psyche-telomeres axis: how the mind affects the aging process


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Translation by Patrizia Rustichelli-Stirgwolt

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## EDITORIAL



## INTERVIEW


The pioneer work lead by Elissa Epel (health psychologist) and Elisabeth Blackburn (molecular biologist and Nobel laureate) has significantly contributed to explore how psychological factors affect the epigenetic dynamic of the telomeres, chromosomal structures that are the main markers for cellular aging.
Along with similar works, their study has given birth to a new field of psychology named Epigenetic Psychology.
*Massimo Agnoletti*

## HEART, BRAIN AND IMMUNITY


Recent studies have deeply changed the current stance of cardiovascular diseases and have gone beyond the simplistic model of atherosclerosis seen as a progressive build-up of cholesterol in the subintimal space of the arteries wall. Now the focus is on the key-role played by inflammation and the immune system in building up and destabilizing the atherosclerosis plaque. This scientific review analyzes the role of the immune system and the endocrine properties of the heart in the acute ischemic damage and in the post infarct myocardial remodeling. The study includes also specific sections related to stress during acute myocardial ischemia and stress induced cardiomyopathies. This paper describes a complex network of reciprocal interconnections between the heart and the main biological systems providing a new vision on cardiovascular science based on psychoneuroendocrineimmunology.
*Massimo Fioranelli, Anna G. Bottaccioli, Francesco Bottaccioli, Maria Bianchi, Miriam Rovesti, Maria G. Roccia*
Recent stu

## The brain-immunity system



## BOOK REVIEW

# EDITORIAL

## Molecular psychology

Francesco Bottaccioli, Master Director of Pnei, University of Aquila and University of Turin

Since the 1970s psychological sciences have been trying to emulate the biomedical sciences that were proudly reductionist and mechanistic especially during the second half of the last century. This explains the prevalence of theories and clinical experiences based exclusively on the symptoms and the obliviousness of the psychological side of the patients, namely their personality and stable patterns of relating with themselves and the others. We have seen absurd imitations of the biomedical model such as "surgery-like interventions" aiming to eradicate the patients' false beliefs which were considered the root cause of their suffering.

At the turn of this century major changes[1] have occurred in all the main branches of psychology leading to a shift. The most significant factor came also from the core sciences, markedly molecular biology.

This wide field of scientific knowledge well represented by the genic reductionism has been severely affected by the latest discoveries. The rise of epigenetic has not only broken the "monocle" used by the scientists to investigate the single gene or the single genic polymorphism but it has also opened a new route for research. This path investigates the molecular traces in the life of the individuals: their personality, their problems, joys and sufferings resulting from their social relationships and physical environment. This process lead to an entirely new area of great scientific interest. Now psychological sciences have an extraordinary opportunity to contribute to the advancement of scientific knowledge (without feeling inferior) and to clarify the age-old matter about the foundation of psychology as a scientific discipline.

In her interview the psychologist Elissa Epel (page 4) proves that molecular biologists and psychologists can join forces obtaining great results. Elissa Epel and the biologist Elizabeth H. Blackburn have been working together since many years. In 2009 Elizabeth Blackburn was awarded with the Nobel Prize in Medicine for her studies on the telomeres[2], the tips of the chromosomes, nucleoprotein complexes that stabilize the genetic material contained in them.

Aging causes a shortening of the telomeres exposing thus the cells to disturbances that may lead to diseases. Similarly traumas during the first stages of life cause a reduction of the telomeres. This situation can persist until adult age and be epigenetically transmitted to the offspring[3]. We have evidences that this trend can be contrasted[4] by cultivating resilience, namely the ability to face stress and to envision a new stability through the changes (allostasis) with the support of the loved ones.

The era of molecular psychology has begun. A discipline that combines a regard to the individuals as a whole and the investigation of their core biological components.

It is a difficult and at the same time exciting challenge for the psychological sciences, for the University and for the psychologists who are willing to accept it. They will have to start a radical revolution of the reference paradigms based on the mind-

body dichotomy where the mind was assigned to the care of psychology and the body to medicine.

1. We have analyzed these changes several times. See Pnei News n.3-4 2018 and: Bottaccioli F (2018) I cambiamenti strutturali in corso in psicologia e neuroscienze. Un contributo al cambiamento. Pnei Review 2: 83-102
2. Blackburn EH, Epel ES, Lin J (2015) Human telomere biology: Acontributory and interactive factor in aging, disease risks, and protection. Science 350: 1193-1198
3. Mitchell AM, Kowalskya JM, Epel ES et al (2018) Childhood adversity, social support, and telomere length among perinatal women. Psychoneuroendocrinology 87: 43–52
4. Connolly SL et al. (2018) Posttraumatic Stress Disorder Symptoms, Temperament, and the Pathway to Cellular Senescence. J Trauma Stress. Oct;31(5):676-686. doi: 10.1002/jts.22325. Epub 2018 Oct 19