

Neuroepigenetica

Noțiuni generale

Genetică- (Neuro)-Epigenetică

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Teoria generație spontane

Aristotel-Francesco Redi, 1668

Gregory Mandel, 1865

***Walther Flemming, 1879 colora-
ția cu anilină a cromatinei,
mitoza la salamandra.***

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- Walter Sutton, 1902 – teoria cromozomială a eredității

- *W. Bateson, 1902- genetică*

- *Hans Wincler, 1920- genom*

C. Waddington, 1939- epigenotype,

“The total developmental system consisting of interrelated developmental pathways through which the adult form of the an organism is realized.”

Conrad Waddington, 1942-

Epigenetics- to refer to the study of the “causal mechanisms” by which “the genes of the genotype bring about phenotypic effects.”

O. T. Avery, C M MacLeod,

M. McCarty, (1944)- ADN

F. Crik și J. D. Watson, 1953-

modelul acizilor nucleici

The role of epigenetic molecular mechanisms in regulation of CNS function is one of the most exciting areas of contemporary molecular neuroscience. This emerging field, variously referred to be neologisms such as "Behavioral Epigenetics" or "Neuroepigenetics" ...

There is clearly good reason for the excitement associated with studies of epigenetics and mental health. While the inaccessibility of the human brain is indeed a major limitation, it is worth noting that earlier studies of peripheral samples contributed to our understanding of the biochemical basis of psychiatric disease, and revealed the degree to which the underlying biological processes were dynamically regulated by environmental signals.

Thus, perhaps the most important contribution will be the capacity to provide finally the biological basis for the integration of nature and nurture, and reveal the degree to which the study of one enriches our understanding of the other.

I. D Sweatt. ***Epigenetic Regulation in the Nervous System. Elsevier. 2013***

Organisms are defined by the information encoded in their genomes, and since the origin of life this information has been encoded using a two-base-pair genetic alphabet (A–T and G–C). In vitro, the alphabet has been expanded to include several nonnatural base pairs

Denis A. Malyshev A.D. A semi-synthetic organism with an expanded genetic alphabet. N A T U R E, 5 0. 2014.

Mecanisme epigenetice

***-metilarea DNA – scăderea
5-metilcitozina - neoplazie***

**E. Hervouet, P. Hulin, F M Vallette, P. F. Cartron -Proximity ligation in situ assay for monitoring the global DNA methylation in cells.
*BMC Biotechnology 2011, 11:31***

Mecanisme epigenetice

-acetilarea histonei

***- histone deacetylase (HDAC)/
histone acetyltransferase (HAT)***

J.A. Park et al. Differentiation and upregulation of heat shock protein 70 induced by a subset of histone deacetylase inhibitors in mouse and human embryonic stem cells. BMB reports 2010

*Epigenetic and phenotypic changes result from a continuous pre and post natal dietary exposure to phytoestrogens in an experimental population of mice .
Carlos M Guerrero-Bosagna, Pablo Sabat, Fernanda S Valdovinos, Luis E Valladares and Susan J Clark BMC Physiology 2008*

Emerging roles of epigenetic mechanisms in the enduring effects of early-life stress and experience on learning and memory. Shawn McClelland, Aniko Korosi, Jessica Cope, Autumn Ivy, Tallie Z. Baram

*Substance-specific and shared transcription and epigenetic changes in the human hippocampus chronically exposed to cocaine and alcohol
Zhifeng Zhoua, Qiaoping Yuana, Deborah C. Mashb, and David Goldmana,.
Neurobiology of Learning and Memory 2011*

It is in this context that we would like to consider the genomic “darkmatter,” one of the major mysteries of the post-genome era. Perhaps no other topic in contemporary genomics has inspired such diverse viewpoints as the 95+% of the genome, previously known as “junk DNA,” that does not code for proteins.

Transgenerational epigenetic inheritance: Focus on soma to germline information transfer. A. Sharma Progress in Biophysics and Molecular Biology (2012)

***Fenomenele emergente –
comportamentul colectiv al unui
sistem, care transcende oarecum
componentele sale. Din cauza
faptului ca le transcende, el nu
se poate găsi “in” aceste
componente – si atunci unde se
află el?***

...fizica ne spune că energia nu se pierde niciodată, că mintea și creierul nostru- și ca urmare, sentimentul de viață- funcționează pe bază de energie electrică și, ca urmare, această energie, la fel ca toate celelalte, pur și simplu nu pot să dispară...

"Original and exciting" —DEEPAK GHOPRA

BIOCENTRISM

How Life and Consciousness are the
Keys to Understanding the True Nature
of the Universe

ROBERT LANZA, MD
with Bob Berman

