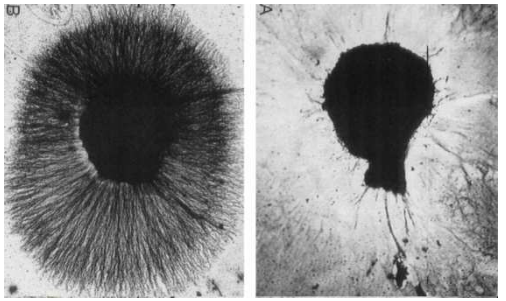
EBRI

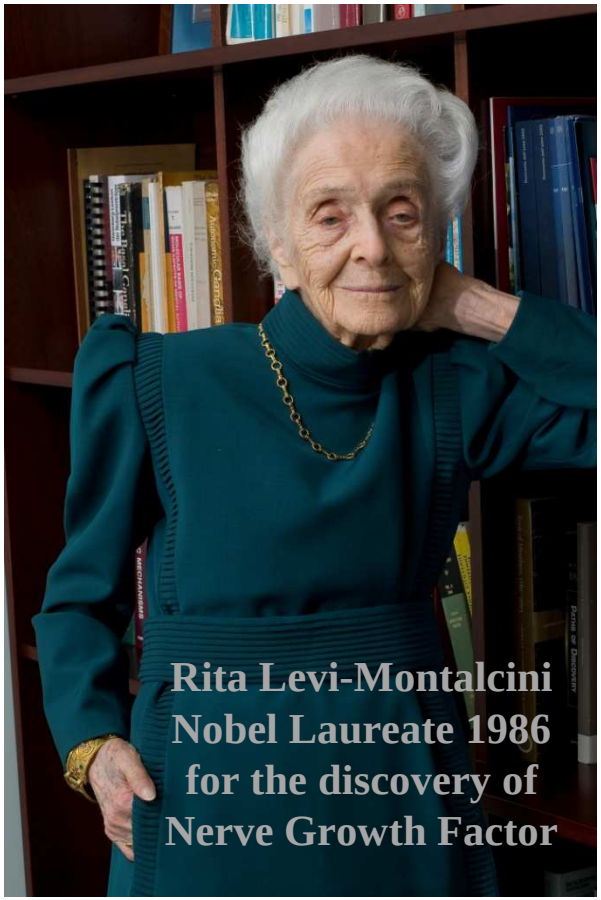
European Brain Research Institute

“Rita Levi-Montalcini”Foundation

Mara D’Onofrio, EBRI GenomicsFacility

EBRI – A BRIEF HISTORY





Rita Levi-Montalcini
Nobel Laureate 1986
for the discovery of
Nerve Growth Factor

The **European Brain Research Institute, a non-profit private Foundation, was founded** by **Rita Levi-Montalcini** in 2002, to create an international research institute fully devoted to the study of **Neurosciences**

The institute was formed in response to the need in Italy for a center that would **promote neurobiological** and **neurophysiologic research** with the aim of finding **new therapies against Alzheimer's disease, Parkinson's disease and other neuropathologies**

EBRI Governance and Management

President
Pietro Calissano

Board of Directors

Pietro Calissano
Giuseppe Nisticò
Ornella Barra
Antonino Cattaneo
Paolo Chiesi
Federico Cozzolino
Giuseppe Martini
Pietro Masi
Ludovico Ortona

General Director
Giuseppe Nistico'

International Scientific Council

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Francesco Clementi, *Vice-Chairman*
Eric Abadie
Fabio Benfenati
Anders Björklund
Graham Collingridge
Richard Green
Lamberto Maffei
Gerry Melino
Maurizio Pocchiari
Solomon H. Snyder

Aims of EBRI Foundation

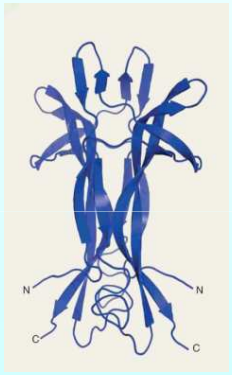
Molecular events involved in synaptic plasticity and learning and memory

Cortical microcircuits

Mitochondria: metabolic and functional deficiency of the brain

Sub-cellular targeting: antibody engineering and protein silencing with intrabodies

NGF



Nerve Growth Factor, NTs and signaling. Neurogenesis and **repair**

NGF in neurodegeneration:

Alzheimer's, Amyotrophic Lateral Sclerosis, **Multiple Sclerosis** and **Epilepsy.**

Acute and Chronic pain

Interplay with other systems (**APP and Abeta amyloid - Endocannabinoids)**

Innovative pharmacological approaches: NGF and **modified NGF-based therapies (painless NGF)**

Research at EBRI

Laboratories and Units	**Group Leaders**
Neurotrophic factors and neurodegenerative diseases	Antonino Cattaneo
Nerve Growth Factor	Pietro Calissano
Neural stem cells and neurogenesis	Marco Canossa
Pharmacology of Synaptic Plasticity	Giuseppe Nisticò
Physiopathology of Endocannabinoid System	Silvia Marinelli
Metabolism in Brain Diseases	Michelangelo Campanella
	Young Group Leaders
Mechanisms of neuronal and synaptic plasticity	Cristina Marchetti
Amyloid Beta: Subcellular targeting	Giovanni Meli
mRNA metabolism in the Nervous System	Corinna Giorgi
	Antonio Pazienti

Facilities

Genomics facility**,** Head Mara D'Onofrio

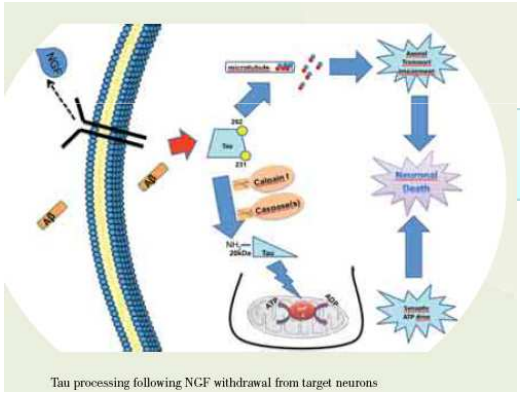
Optical Imaging, Head Fulvio Florenzano

NEUROTROPHIC FACTORS AND NEURODEGENERATIVE DISEASES

Group leader: Antonino Cattaneo

Scientific area: Alzheimer's disease, neurotrophins, proNGF and NGF, pain.

Expertise: cellular and molecular biology, protein biochemistry, transgenic mice, recombinant protein expression, antibody engineering.



Tau processing following NGF withdrawal from target neurons

NERVE GROWTH FACTOR

Group leader: Pietro Calissano

Scientific area: APP, amyloid and tau pathology, neurodegeneration, neurotrophins, apoptosis, neuroinflammation.

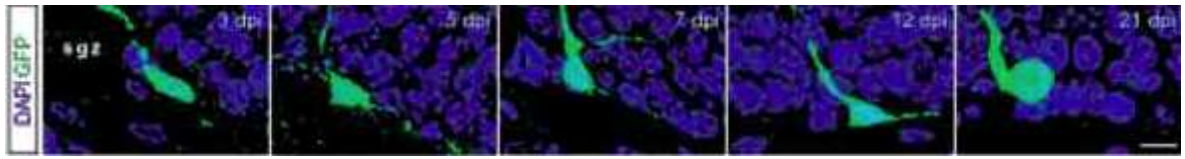
Expertise: primary neuronal cultures, molecular and cellular biology, immunofluorescence, animal models, immunohistochemistry.

NEURAL STEM CELLS AND NEUROGENESIS

Group leader: Marco Canossa

Scientific area: Role of neurotrophins in adult neurogenesis

Expertise: Cellular and Molecular biology, Confocal microscopy and Imaging



METABOLISM IN BRAIN DISEASES

Group leader: Michelangelo Campanella

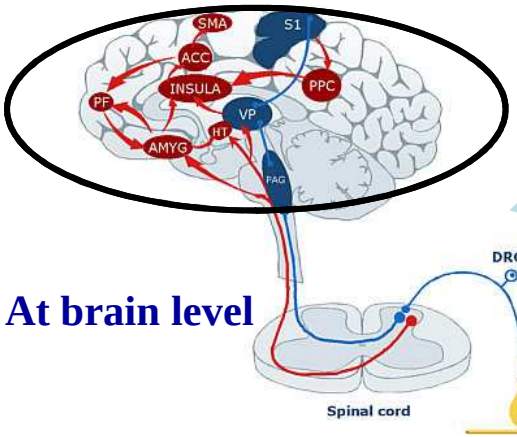
Scientific area: Mitochondrial Biology, Cell Metabolism and Quality Control Regulation, Neuroinflammation, Neurodegeneration

Expertise: Confocal microscopy, Live Imaging, Chemiluminescence

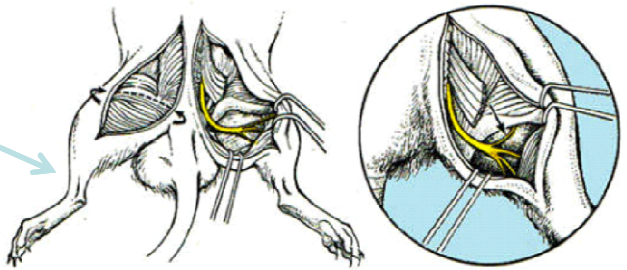
PHYSIOPATHOLOGY OF THE ENDOCANNABINOID SYSTEM

Group leader: Silvia Marinelli

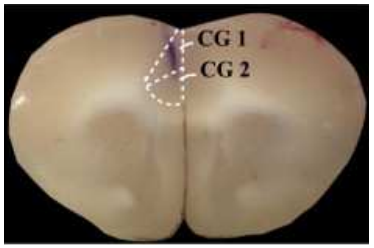
Chronic Pain



At brain level

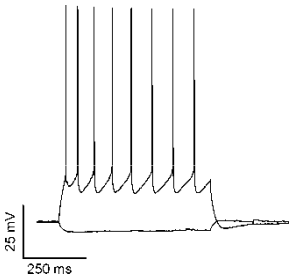


Chronic constriction injury of sciatic nerve in mice

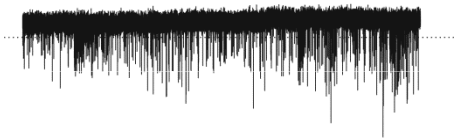


Cortical slices of mice

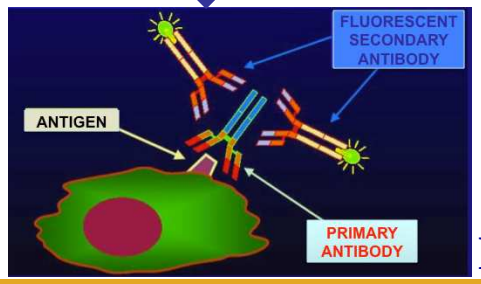
Patch-clamp recordings of cortical neurons



Neuronal firing



Synaptic transmission



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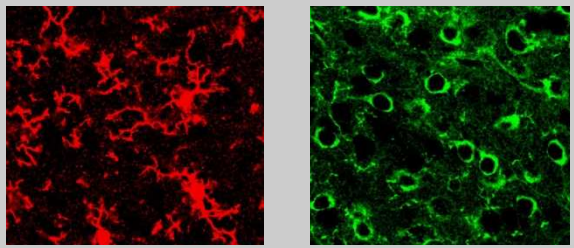


Glia **Neurons**

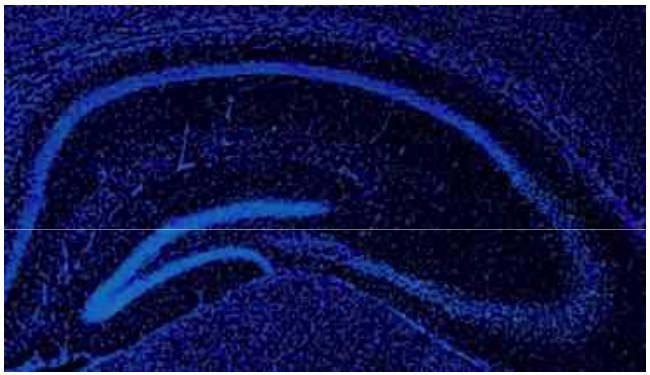
Pharmacology of Endocannabinoids

PHARMACOLOGY OF SYNAPTIC PLASTICITY UNIT

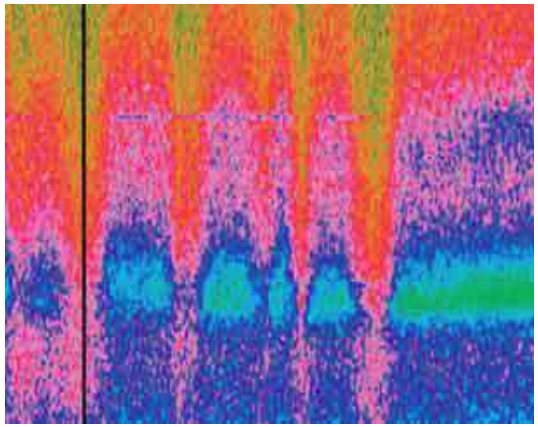
***Group leader**: Giuseppe Nisticò*

Scientific area:

1) Neural basis of learning and memory
2) Synaptic dysfunction in neuroinflammatory/neurodegenerative disease models
3) Neurotrophin-based synaptic repair as a disease-modifying strategy for Alzheimer's disease



Expertise:
Electrophysiology: extracellular recordings, patch-clamp recordings on brain slices.
Cellular and molecular biology,
Behavioural models



CORTICAL MICROCIRCUITS

Antonio Pazienti

Scientific area: Cortical microcircuits. Computational Neuroscience**,** electrophysiology

Amyloid Beta: conformational studies and subcellular targeting

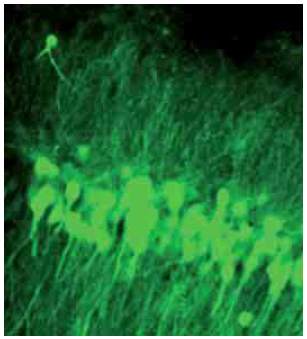
Young Group leader: Giovanni Meli

Scientific area: antibody engineering, protein silencing with intrabodies, local translational control in neurons, amyloid oligomers

mRNA metabolism in the nervous system

Young Group leader: Corinna Giorgi

Scientific area: molecular machinery of dendritic mRNAs localization, and regulation of RNA metabolism in neuronal function and plasticity



Mechanisms of neuronal and synaptic plasticity

Young Group Leader: Cristina Marchetti

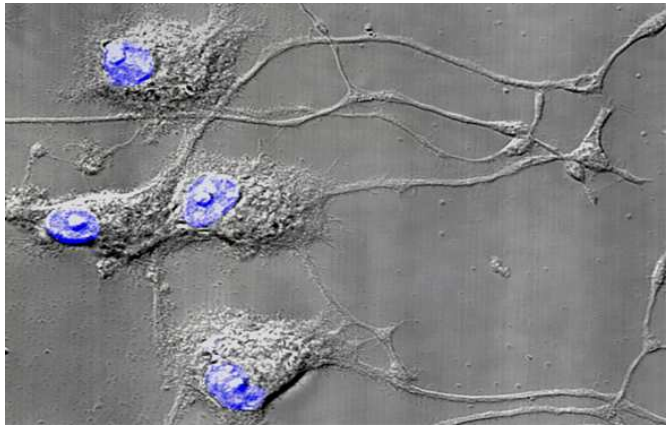
Scientific area: Role of microRNA function in synaptic plasticity and neuronal excitability properties. Dysfunction of synaptic and neuronal plasticity

GENOMICS FACILITY

Head: Mara D'Onofrio

Scientific area: genetic and epigenetic molecular mechanisms in neurodegenerative diseases such as **Alzheimer's** and in neurotrophin signalling.

Expertise: Genomic and Epigenomic profiling by microarray in human and animal samples: transcriptomics, microRNA, DNA aberrations. Bioinformatics and data Mining



OPTICAL IMAGING FACILITY

Head: Fulvio Florenzano

Expertise: Optical Imaging, Neuromorphology, Histology.
Confocal microscopy, image analysis**,** biophysical analytical techniques

To promote the **development of new techniques and experimental strategies** applied to neurosciences

Technology Platform

- Transgenic mice
- Behavioural animal models
- Isolation of pure neuronal cell lines
- Neuronal stem cells cultures
- Recombinant protein production
- Protein silencing with intrabodies
- Electrophysiology
- Optical imaging
- Genomics, mRNA, microRNA and DNA profiling
- Computational Neuroscience

SCIENTIFIC COLLABORATIONS

- University of Rome “La Sapienza”
- CEINGE Advanced Biotechnologies
- Italian National Research Council (CNR), Rome
- University of Rome “Tor Vergata”
- IRCCS Santa Lucia Foundation, Rome
- University of Parma
- Istituto Superiore di Sanità (Rome)
- IRCCS Fatebenefratelli (Brescia)
- Scuola Normale Superiore of Pisa
- International School for Advanced Studies of Trieste (SISSA)
- San Raffaele Institute in Rome, Italy
- University of Milan-Bicocca, Italy
- Institute of Neurological Sciences (CNR) Catania, Italy
- The Hebrew University of Jerusalem, Israel
- Harvard University (USA)
- McGill University (Canada
- Baylor College of Medicine (USA)
- University College London (UK)
- University of Geneva (CH)
- University of Bristol (Bristol, UK)
- The Wolfson Institute – University
- College London (UCL), UK
- Xiamen Bioway Biotech, China
- Cambridge MRC-LMB; Oxford
- MRC; Max Delbruk Institute (Berlin)
- LMU(Germany)