



«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE  
TO PAY A PERMANENT TRIBUTE TO ARCHIMEDES AND GALILEO GALILEI, FOUNDERS OF MODERN SCIENCE  
AND TO ENRICO FERMI, THE "ITALIAN NAVIGATOR", FATHER OF THE WEAK FORCES



# INTERNATIONAL SCHOOL OF NEUROSCIENCES «SIR JOHN ECCLES» AND INTERNATIONAL SCHOOL OF ETHOLOGY «DANILO MAINARDI»

9<sup>th</sup> Course and 42<sup>nd</sup> Course: **EPIGENETICS IN COGNITION,  
DEVELOPMENTAL AND EVOLUTIONARY PERSPECTIVES**

**ERICE-SICILY: 25 – 30 SEPTEMBER 2018**

Sponsored by the: • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government

## PROGRAMME AND LECTURERS

### *Epigenetic mechanisms in neuronal plasticity and intellectual disability*

- E. BATTAGLIOLI, University of Milano, Milano, IT

### *Transgenerational Sperm RNAs and RNA modifications in epigenetic inheritance*

- Q. CHEN, University of Nevada, Reno, NV, US

### *Epigenetic reopening of critical period brain plasticity*

- T. HENSCH, Harvard University, Cambridge, MA, US

### *Germline-dependent mechanisms of transgenerational epigenetic inheritance:*

*How acquired behaviors can be transmitted across generations*

- I. MANSUY, University of Zürich, Zürich, CH

### *Dynamics of transcription regulation by non-coding RNAs*

- F. NICASSIO, Italian Institute of Technology, Genova, IT

### *Chromatin mechanism of neurodevelopmental disorders*

- K.-M. NOH, EMBL European Molecular Biology Laboratory, Heidelberg, DE

### *Protein acetylation as a novel regulator of intracellular granules*

- M. PATRICK, Friedrich Miescher Institute for Biomedical Research, Basel, CH

### *Gut Microbiome dynamics responding to biological changes of its eukaryotic host*

- S. PATTERSON, Karolinska Institute, Solna, SE

### *Epigenetic and epitranscript regulation in the nervous system*

- H. SONG, John Hopkins University, Philadelphia, PA, US

### *Effects of differences in early social environments on cognitive, behavioral,*

*biological, and epigenetic development in primates*

- S. SUOMI, NIH National Institutes of Health, Bethesda, MD, US

### *DNA methylation mediating between experience and genome programming in the brain*

- M. SZYF, McGill University, Montreal, QC, CA

### *Frontiers within: Avataring human lineages for neurodevelopmental and transgenerational epigenetics*

- G. TESTA, University of Milano and European Institute of Oncology, Milano, IT

## PURPOSE OF THE COURSE

During the last decades, the interest in epigenetic phenomena has increased, and research on this topic has been expanding exponentially. One of the main reasons for this is the involvement of epigenetic factors in morphological and cognitive development in most social and complex animals. Moreover, particularly interesting are the recent investigations on the role of epigenetics in the development of nervous system and specific cognitive skills in human and nonhuman primates, since the mere analysis of genetic sequences seems not to be fully satisfactory for explaining basic processes related to the formation of brain networks and related cognitive functions. "Epigenetics in cognition" will explore the most recent findings about how genetic and environmental factors give rise to complex cerebral structures and mental functions. Starting from results in molecular biology, the first section of the workshop will consider phenomena of modifications of chromatin structure at the basis of epigenetics, such as (de)methylation, (de)acetylation of histones and non coding RNA. In the second and third sections, the role of these mechanisms in the emergence and shaping of the central nervous system and of behaviour will be considered, with some example of epigenetic dis-regulation in important psychopathologies. Epigenetic mechanisms will be then considered from an evolutionary point of view (fourth section), in order to understand whether they can have a role in the origin of variation that affects evolutionary change.

## APPLICATIONS

Persons wishing to attend the Course should apply writing to the Directors of the Schools:

Professor Stefano Parmigiani  
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## PLEASE NOTE

Participants are expected to arrive in Erice on September 25, no later than 5 p.m.

## POETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (750 metres above sea level) more than three thousand years ago. The founder of modern history — i.e. the recording of events in a methodic and chronological sequence as they really happened without reference to mythical causes — the great Thucydides (~500 B.C.), writing about events connected with the conquest of Troy (1183 B.C.) said: «After the fall of Troy some Trojans on their escape from the Achaei arrived in Sicily by boat and as they settled near the border with the Sicilians all together they were named Elymi: their towns were Segesta and Erice.» This inspired Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchise, by his son Enea, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others have celebrated this magnificent spot in Sicily in their poems. During seven centuries (XIII-XIX) the town of Erice was under the leadership of a local oligarchy, whose wisdom assured a long period of cultural development and economic prosperity which in turn gave rise to the many churches, monasteries and private palaces which you see today. In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighbourhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo.

Splendid beaches are to be found at San Vito Lo Capo, Scopello, and Corfino, and a wild and rocky coast around Monte Cofano: all at less than one hour's drive from Erice.

More information about the other activities of the  
«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE  
can be found on the WWW at the following address:  
<http://www.ccsem.info.it>

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S.J. SUOMI – A. TRAMACERE  
DIRECTORS OF THE COURSE

P.F. FERRARI – G. RIZZOLATTI  
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DIRECTORS OF THE SCHOOLS

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