

CISSN Catania International Summer School of Neuroscience

INTERNATIONAL SUMMER SCHOOL OF NEUROSCIENCE

**“SYNAPTIC FUNCTION AND DYSFUNCTION:
NEW TARGETS FOR BRAIN DISEASES PHARMACOLOGY”**

Catania, Italy

16-20 July, 2018

Synapses are the major sites of information processing in the brain. The complexity of the synapse has been described in the past few years in great molecular details and major achievements have been made in the understanding of networks of proteins occurring at the pre-synaptic cytomatrix and the postsynaptic compartment of both excitatory and inhibitory synapses. Synaptic dysfunction is a central aspect of many brain disorders (“synaptopathies”) and synapses are and potentially will be the main target of drugs for brain diseases. Synapses integrate complex signals through temporal and spatial codes and undergo rapid structural and functional changes (synaptic plasticity) that underlie the formation of engrams in the brain. Maladaptation of such processes can lead to aberrant perception, cognitive dysfunction or neurodegeneration. The study of the molecular mechanisms of synaptic function and -plasticity are the key to understanding how the brain works and what goes wrong in brain disease. The International PhD Program of Neuroscience, University of Catania organizes the third Catania International Summer School of Neuroscience, CISSN (July 16-20, 2018), focused on "SYNAPTIC FUNCTION AND DYSFUNCTION: NEW TARGETS FOR BRAIN DISEASES PHARMACOLOGY". The main aim of the CISSN 2018 is to bring together junior European neuroscientists and principal investigators working on synaptic functions and synaptopathies and to provide a forum for new directions and ideas in synapse research. This serves to create a research community with an active role in promoting synaptic research and its funding. The meeting will combine research lectures by leading neuroscientists from Europe and aims to encourage lively discussions and the free exchange of information and ideas.

Program

16th July

Synaptic function and neuronal plasticity (1)

09.00-09.30 Opening

Filippo Drago, Fabrizio Gardoni, Monica di Luca

09.30-11.00 Neuron-glia metabolic coupling : relevance for neuronal plasticity and neuroprotection

*Pierre J. Magistretti, King Abdullah University of Science and Technology (KAUST) –
Saudi Arabia and Brain Mind Institute*

11.00-12.00 Interactive discussion

12.00 Light lunch

15.30-17.00 Molecular dynamics of the postsynaptic density in disease

Michael R. Kreutz, RG Neuroplasticity, Leibniz Institute for Neurobiology, Magdeburg, Germany

17.00-18.00 Interactive discussion

18.00-19.00 General discussion

19.00 Dinner

17th July

Synaptic function and neuronal plasticity (2)

09.00-10.30 Role of the scaffolding molecules Bassoon and Piccolo in presynaptic organization and plasticity in health and disease

Eckart D. Gundelfinger, Department Neurochemistry and Molecular Biology, Leibniz Institute for Neurobiology Magdeburg, Germany

10.30-11.30 Interactive discussion

12.00 Light lunch

15.30-17.00 Role of the signaling molecules in the dynamic organization of synapses: from basic mechanisms to pathophysiological consequences

Nathalie Sans, INSERM, Neurocentre Magendie, Unité U1215, Bordeaux, France

17.00-18.00 Interactive discussion

18.00-19.00 General discussion

19.00 Dinner

18th July

Synaptic dysfunction in neurological disorders (1)

09.00-10.30 Synapse to nucleus signalling in health and disease

Monica di Luca, Department of Pharmacological and Biomolecular Sciences, University of Milan, Milan, Italy:

10.30-11.30 Interactive discussion

12.00 Light lunch

15.30-17.00 Synaptic function: from physiological mechanisms to neurodegenerative disorders

Fabrizio Gardoni, Department of Pharmacological and Biomolecular Sciences, University of Milan, Milan, Italy:

17.00-18.00 Interactive discussion

18.00-19.00 General discussion

19.00 Dinner

19th July

Synaptic function: from physiology to pathology

09.00-10.30 Emotional responses upon blockade of juvenile NMDA receptors

Isabel Perez-Otano, Cellular Neurobiology and Neurophysiology Laboratory, Center for Applied Medical Research (CIMA) and University of Navarra Medical School, Pamplona, Spain

10.30-11.30 Interactive discussion

12.00 Light lunch

15.30-17.00 Synaptic dysfunction in Alzheimer's disease

Christophe Mulle, *University of Bordeaux, Interdisciplinary Institute for Neuroscience, CNRS UMR 5297, Bordeaux, France.*

17.00-18.00 Interactive discussion

18.00-19.00 General discussion

19.00 Dinner

20th July

Synaptic dysfunction in neurological disorders (2)

09.00-10.30 Rescuing epilepsy and cognitive dysfunctions by eEF2K inhibition

Carlo Sala, *CNR Institute of Neuroscience and Department of Biotechnology and Translational Medicine, University of Milan, Milan, Italy*

10.30-12.00 Understanding pathophysiological mechanisms underlying PCDH19

Maria Passafaro, *Institute of Neuroscience, CNR, Milan, Italy*

12.00-13:00 Interactive discussion

13:00 Light lunch

15.30-17.00 Synaptic dysfunction in neurodegenerative diseases: focus on Alzheimer's disease

Tiziana Borsello, *Department of Pharmacological and Biomolecular Sciences, University of Milan, Milan, Italy:*

17.00-18.00 Interactive discussion

18.00-19.00 General discussion

19.00 Closing remarks (Filippo Drago)