

THE MANY FACES OF STRESS

SATELLITE MEETING OF THE 9TH FENS FORUM OF NEUROSCIENCE 2014

Milano, Via Sant'Antonio 12, Sala Napoleonica
July 10th 2014

Short description, topic and purpose

Stressful life events impact on brain and body function and represent risk factors for many stress-related diseases. A stressor is an event or experience that threatens the ability of an individual to adapt and cope. The impact of different behavioral stressors on cognitive, systemic and metabolic functions may greatly change depending on type, quality and timing of stress and on genetic background of the individual. The outcome of stress may range from plasticity enhancing effects and improved cognition, when stress response is efficiently turned on and shut off, to noxious effects, when the response is overused or dysregulated. A maladaptive stress response can be associated with impaired function and with the triggering of brain, systemic and metabolic disorders.

This Satellite Event to the FENS Forum 2014 will have a morning session with senior investigators and an afternoon session dedicated to younger investigators. After introductory remarks from chairpersons, in the morning session different approaches to the study of the stress topic will be addressed:

- 1) The effect of chronic stress on GLT1 in glutamate synapses and its possible role in neuropsychiatric pathophysiology;
- 2) The role of oxytocin in emotional behavior and in the outcome of chronic psychosocial stress, with implications for its use as psychotherapeutic option
- 3) The effect of prenatal stress on postnatal synaptic plasticity in different areas of the hippocampus
- 4) The effect of discrete environmental threats on circadian rhythms;
- 5) The effect of circadian disruption on brain-body changes that modulate resilience to immune, metabolic, and psychological stressors.

In the afternoon session the following themes will be addressed:

- 1) The effect of prenatal stress on glutamate release and behavior in adulthood;
- 2) The effect of acute stress on presynaptic mechanisms regulating glutamate release, with implications for psychopathology
- 3) The modulation of aversive memory by stress and endocannabinoids, with implications for psychopathology
- 4) The effect of acute stress on the remodeling of synapses and dendrites in prefrontal cortex
- 5) The complementary effects of stress and voluntary physical exercise on epigenetic changes regulating BDNF expression.

The study of stress and the stress response, addressed under different points of view as done here, is of great interest for a wide audience and has translational value for human pathophysiology.

Maurizio Popoli & Gerard Sanacora

Morning Session (Senior scientists)

Chair: Maurizio Popoli (University of Milano), Gerard Sanacora (Yale University)

Speakers:

9.00 Maurizio Popoli, Gerard Sanacora

STRESS GLUCOCORTICIDS AND NEUROPSYCHIATRIC DISORDERS: INTRODUCTORY REMARKS

9.15 Gerard Sanacora (Yale University, USA)

GLT1 MODULATION OF CHRONIC STRESS RESPONSE IN RODENT MODELS

10.00 Inga Neumann (University of Regensburg, Germany)

OXYTOCIN IN SOCIAL STRESS AND SOCIAL FEAR

10.45 *COFFEE BREAK*

11.15 Menahem Segal (Weizmann Institute of Science, Israel)

PRENATAL STRESS AFFECTS POSTNATAL HIPPOCAMPAL PLASTICITY

12.00 Jeansok Kim (University of Washington, USA)

TIME-LIMITED ENVIRONMENTAL THREATS CAN SHIFT CIRCADIAN RHYTHMS IN RATS

12.45 Ilia Karatsoreos (Washington State University, USA)

DISRUPTED CIRCADIAN CLOCKS AS MODULATORS OF RESILIENCE TO STRESS

13.30-14.30 *BUFFET LUNCH*

Afternoon Session (Junior scientists)

Chair: Patrizia Campolongo (University of Rome), Laura Musazzi (University of Milano)

Speakers:

14.30 Jordan Marrocco (University of Lille, France)

THE GLUTAMATERGIC BASIS OF EMOTIONAL BEHAVIOR IN PRENATALLY STRESSED RATS

15.00 Laura Musazzi (University of Milano, Italy)

ACUTE STRESS INCREASES THE GLUTAMATE READILY RELEASABLE POOL IN PREFRONTAL AND FRONTAL CORTEX THROUGH A RAPID NON-GENOMIC ACTION OF CORTICOSTERONE

15.30 Patrizia Campolongo (University of Rome, Italy)

STRESS AND ENDOCANNABINOID MODULATION OF AVERSIVE MEMORY

16.00 *COFFEE BREAK*

16.30 Nicoletta Nava (Aarhus University, Denmark)

TIME-DEPENDENT EFFECTS OF STRESS ON SYNAPSE AND DENDRITE REMODELING IN PREFRONTAL CORTEX

17.00 Alessandro Ieraci (University of Milano, Italy)

PHYSICAL EXERCISE PREVENTS STRESS-INDUCED REDUCTIONS OF BDNF TRANSCRIPTS BY EPIGENETIC MODIFICATIONS IN HIPPOCAMPUS OF MICE

17.30 *Discussion and Final Remarks*