

National Research Council of Italy



5-6<sup>th</sup> July 2021

VIRTUAL SYMPOSIUM

# POST-TRANSLATIONAL MODIFICATIONS IN NEURONAL PHYSIOLOGY AND BRAIN DISORDERS

## ORGANIZERS:

**Matteo Fossati** (IN-CNR & Humanitas Research Hospital, Rozzano, Italy)

**Alessandra Folci** (IN-CNR & Humanitas Research Hospital, Rozzano, Italy)

## ABOUT THE SYMPOSIUM

A prominent feature of our brain consists in the ability to dynamically modify its connectivity to sustain specific functions. At the cellular and molecular levels, these changes involve multiple cell types and subcellular compartments and rely on reversible post-translational modifications (PTMs) of specific proteins. In the brain, PTMs virtually control all pathways that are required to ensure the development and function of the nervous system, and alterations of these pathways contribute to the pathogenesis of brain disorders. The “Post-Translational Modifications In Neuronal Physiology And Brain Disorders” symposium will bring together leading scientists and young researchers with a strong interest in PTMs and will provide an up-to-date overview of the field. The meeting will be especially focused on synapses, the elementary functional units of our brain, and on PTM-based mechanisms of synaptic regulation. The main goals of this symposium are to provide a forum for learning, exchanging ideas and establishing new collaborations.

## KEYNOTE SPEAKERS:

**Shernaz X. Bamji** (Vancouver, Canada)

**Mark Dell’Acqua** (Denver, US)

**Johannes W. Hell** (Davis, US)

## INVITED SPEAKERS:

**Andrea Barberis** (Genova, Italy)

**Ana Luisa Carvalho** (Coimbra, Portugal)

**Valentina Di Biase** (Innsbruck, Austria)

**José Esteban** (Madrid, Spain)

**Anna Fejtová** (Nuremberg, Germany)

**Alessandra Folci** (Rozzano, Italy)

**Jonathan Hanley** (Bristol, UK)

**Martin Heine** (Mainz, Germany)

**Sabine Lévi** (Paris, France)

**Shiva K. Tyagarajan** (Zurich, Switzerland)

**Pamela Valnegri** (Chicago, US)

**Kevin A. Wilkinson** (Bristol, UK)

## DEDICATED SESSIONS TO YOUNG RESEARCHERS SELECTED FROM ABSTRACTS

### REGISTRATIONS

Registration is free but mandatory at [www.humanitasedu.it](http://www.humanitasedu.it)

REGISTRATION AND ABSTRACT SUBMISSION  
DEADLINE: June 16<sup>th</sup>, 2021

HUMANITAS EDU





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## POST-TRANSLATIONAL MODIFICATIONS IN NEURONAL PHYSIOLOGY AND BRAIN DISORDERS

### PROGRAM

5<sup>th</sup> July 2021 from 12,30 pm to 7,00 pm CEST

12,30-1,00 pm: welcome and openings

#### 1,00-2,30 pm Session I: Formation and regulation of inhibitory synapses

**Chair: Matteo Fossati** (IN-CNR and Humanitas Research Hospital, Rozzano, Italy)

**1,00-1,30 pm Sabine Lévi** (Institut du Fer a Moulin - IFM, Paris, France) "A2AR signaling regulates synaptogenesis in the developing brain"

**1,30-2,00 pm Andrea Barberis** (IIT, Genova, Italy) "Spatial regulation of coordinated excitatory and inhibitory synaptic plasticity"

**2,00-2,30 pm Shiva K. Tyagarajan** (Institute of Pharmacology and Toxicology, University of Zurich, Switzerland) "Crosstalk between PTM at GABAergic postsynapse and microglia influence brain ischemia"

#### 2,30-3,30 pm Session II: short talks selected from the abstracts

**Chair: Fabrizia Guarnieri** (IN-CNR, Milano, Italy)

**2,30-2,45 pm Victor Anggono** (Queensland Brain Institute, The University of Queensland, Brisbane, Australia) "Regulation of NMDA receptor trafficking and gating by activity-dependent CaMKII $\alpha$  phosphorylation of the GluN2A subunit"

**2,45-3,00 pm Sergio López García** (Centro de Biología Molecular Severo Ochoa, Madrid, Spain) "Role of PI3-kinase regulatory subunit (p85) in the structural plasticity of dendritic spines"

**3,00-3,15 pm Mounia Chami** (IPMC and Université Côte d'Azur, Valbonne, France) "Post-translational mediated ryanodine receptors calcium leak leads to Alzheimer's disease-like pathologies, and cognitive deficits"

**3,15-3,30 pm Martina Biagioni** (Humanitas Research Hospital, Rozzano, Italy) "Impact of *UBE3A* dosage on synapse development: between the Angelman Syndrome and Autism"

3,30-4,00 pm coffee break

#### 4,00-5,00 pm Plenary lecture I:

**Chair: Tommaso Pizzorusso** (University of Florence and IN-CNR, Florence, Italy)

**Mark Dell'Acqua** (University of Colorado, Department of Pharmacology, Denver) "Dynamic interplay between protein palmitoylation and phosphorylation in synaptic plasticity"

#### 5,00-6,00 pm Session III: Modulation of presynaptic function

**Chair: Davide Pozzi** (Humanitas University, Pieve Emanuele, Italy)

**5,00-5,30 pm Anna Fejtová** (Universitätsklinikum Erlangen, Norimberga, Germany) "Regulation of synaptic vesicle recycling: from physiology to disease"

**5,30-6,00 pm Martin Heine** (RG Functional Neurobiology Johannes Gutenberg University Mainz, Germany) "Dynamic organization of voltage gated calcium channels in the presynaptic membrane"

#### 6,00-7,00 pm Plenary lecture II:

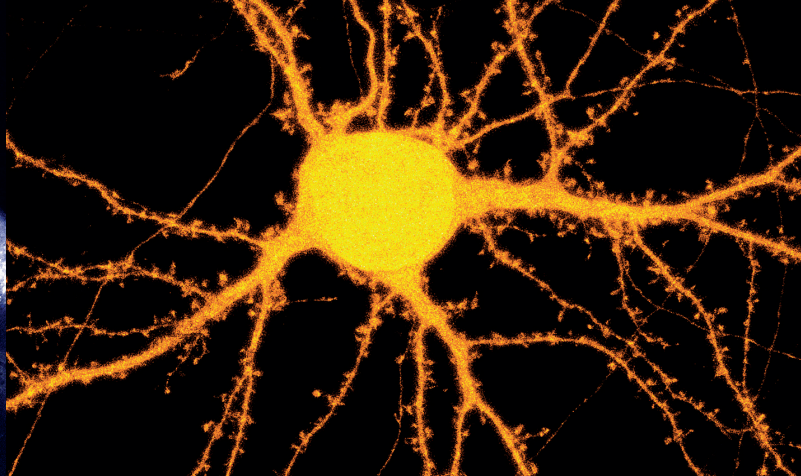
**Chair: Michela Matteoli** (IN-CNR and Humanitas Research Hospital, Rozzano, Italy)

**Shernaz Bamji** (University of British Columbia, Vancouver, Canada) "Palmitoylating Enzymes in Brain Development and Disease"





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### PROGRAM

6<sup>th</sup> July 2021 from 12,30 pm to 7,00 pm CEST

12,30-1,00 pm **Technical corner**

**Jens-Peter Gabriel** (Leica Microsystems) "Nanoscopy meets lifetime"

1,00-3,00 pm **Session IV: Excitatory post-synaptic function**

**Chair: Edoardo Moretto** (IN-CNR, Milano, Italy)

**1,00-1,30 pm Alessandra Folci** (Humanitas Research Hospital & IN-CNR, Italy) "Functional consequences of neuronal sumoylation in neurodevelopmental disorders"

**1,30-2,00 pm Jonathan Hanley** (University of Bristol, UK) "Modulation of microRNA activity by NMDAR-dependent Argonaute 2 phosphorylation"

**2,00-2,30 pm Ana Luisa Carvalho** (Center for Neuroscience and Cell Biology, University of Coimbra, Portugal) "Ligand-independent activity of the ghrelin receptor modulates AMPA receptor trafficking and supports memory formation"

**2,30-3,00 pm José Esteban** (Centro De Biología Molecular Severo Ochoa, Madrid, Spain) "PI3K signaling for synaptic plasticity and cognitive function"

3,00-4,00 pm **Session V: short talks selected from the abstracts**

**Chair: Marta Busnelli** (IN-CNR, Milano, Italy)

**3,00-3,15 pm Marie Pronot** (IPMC, Valbonne, France) "Regulation of the SUMOylation balance at the mammalian synapse"

**3,15-3,30 pm Joana S Ferreira** (University of Bordeaux, IINS, Bordeaux, France) "Distance-dependent regulation of NMDAR nanoscale organization"

**3,30-3,45 pm Ivan Salazar** (CNC, University of Coimbra, Coimbra, Portugal) "Crosstalk between the Ubiquitin-Proteasome System and calpains in neuronal death induced by brain ischemia"

**3,45-4,00 pm Simona Paladino** (University of Naples Federico II, Naples, Italy) "Multiple roles of synaptojanin 1 and its potential impact in brain disorders"

4,00-4,30 pm coffee break

4,30-6,00 pm **Session VI: From intracellular organelles to neuronal circuits**

**Chair: Marianna Leonzino** (IN-CNR and Humanitas Research Hospital, Rozzano, Italy)

**4,30-5,00 pm Kevin A. Wilkinson** (University of Bristol, UK) "Protein SUMOylation in mitochondrial dynamics"

**5,00-5,30 pm Valentina Di Biase** (Medical University of Innsbruck · Institute of Molecular and Cellular Pharmacology, Innsbruck, Austria) "Regulation of L-type voltage gated calcium channels in dendritic complexity"

**5,30-6,00 pm Pamela Valnegri** (Northwestern University, Chicago, IL) "PTM Signaling in Cerebellar Development and Motor Behavior"

6,00-7,00 pm **Plenary lecture III:**

**Chair: Daniela Pietrobon** (University of Padua and IN-CNR, Padua, Italy)

**Johannes W Hell** (UC Davis, College of Biological Sciences, Davis, CA) "Augmentation of L-type Ca<sup>2+</sup> channel Cav1.2 activity and LTP by the 1 adrenergic receptor via PKC - Pyk2 - Src"

7,00-7,15 pm: closing