# School of Physiology and Biophysics 2015

## Molecular and cellular biophysics of excitable cells

*Società Italiana di Fisiologia*

*Pavia 29/06/2015 - 02/07/2015*

Ex-Istituti di Fisiologia, Via Forlanini 4-6, Pavia

**organizer**

*Prof. Egidio D'Angelo - Dipartimento di Scienze del Sistema Nervoso e del Comportamento*

**co-organizers**

*Prof. Mauro Toselli / Jacopo Magistretti - Dipartimento di Biologia e Biotecnologie*

*Prof. Roberto Bottinelli / Vittorio Ricci - Dipartimento di Medicina Molecolare*

### Day 1 – 29/06/2015

**8.30-9.30      Opening Lecture**

*Frontiers of Physiology: Neurons, circuits and robots* (D'Angelo E)

**10-13   Electrophysiology and imaging : methods**

Patch-clamp and calcium imaging recordings (Masetto S, Moccia F)

Two-photon imaging recordings (Mapelli J, Gandolfi D)

MEA recordings in vivo (Mapelli L)

**14.30-18.30      Laboratory of electrophysiology and imaging**

- *laboratory of sensory physiology* (Perin P, Russo GC, Prigioni I, Spaiardi P, Tavazzani E)

- *Laboratory patch-clamp and calcium imaging* (Prestori F, Moccia F, Locatelli F, Soda T)

- *laboratory of two-photon imaging* (Tognolina M)

- *laboratory of MEA recordings* (De Propris L, Moscato L, Mapelli L)

### Day 2 – 30/06/2015

**8.30-9.30      opening lecture**

*Investigating neurons with light* (TBA)

**10-13   Parameter extraction from physiological experiments**

Analysis of voltage-clamp data (Toselli M)

Analysis of synaptic transmission (Magistretti J)

Analysis of local field potentials and CSD (Biella G)

**14.30-18.30      Laboratory  of voltage-clamp data analysis**  - (Toselli M, Magistretti, Cesana E, Talpo F, Raspanti A)

### Day 3  – 01/07/2015

**8.30-9.30      opening lecture**

*Spiking networks for closed-loop robotic simulations of microcircuit functions* (Pedrocchi  A , Casellato C)

**10-13   Computational modeling of cells and circuits**

Single neuron models (Masoli S)

Synaptic models (Nieus T)

Network models (Casali S)

**14.30-18.30      Laboratory of NEURON programming** (Masoli S, Rizza M, Casali S)

# *Day 4 – 02/07/2015*

*8.30-9.30* **opening lecture**

*Structure and function of the myosin motor in striated muscle (Roberto Bottinelli)*

*10-13* **Molecular tagging :**

Analysis of cytoplasmic protein aggregates in physiology and pathophysiology (Ricci V/Vitali A)

Skeletal muscle plasticity: functional analysis at cellular and molecular level (Monica Canepari)

Skeletal muscle plasticity: proteomic & intracellular signalling pathways analyses (Maria A. Pellegrino)

*14.30-18.30* **Laboratories:**

*- Laboratory of muscle biophysics*: isolated skeletal muscle fibres and in vitro motility assays (Monica Canepari-Valentina Agoni-Eleonora Bardi)

*- Laboratory of proteomics and signalling*: 2D proteome maps, gene expression by RT-PCR, Western-blotting (Maria A. Pellegrino-Lorenza Brocca-Eleonora Bardi-Umberto Laforenza-Cinzia Bottino)