

# Programme

**Day 1 (Sunday August 27):** participants' arrival

**Day 2 (Monday August 28):** Mini-symposium on biosensors

**9h-10h:** Biosensors, a short history (**Pierre Vincent**, IBPS)

**10h-12h30:** Examples of the use of biosensors in biology

- 10h: **Grégoire Vandecasteele** (Université Paris XI, Orsay) : *Compartmentation of cAMP and PKA signaling in cardiomyocytes*
- 10h40 : **Nicolas Gervasi** (Institut du Fer à Moulin, Paris) : *Integration of cAMP signal in neuron's dendrites*
- 11h20: **Franck Riquet** (Ghent University, Belgique): *Studying the spatio-temporal regulation of unperturbed Life and Death cellular processes: Easier said than done!*
- 12h: **Isabelle Limon** (IBPS, Paris) : *Trans-differentiation of smooth muscle cells*

**12h45 -14h15:** lunch

**14h15-16h:** *Guided visit of the IBPS photonic microscopy platform, and the various instruments which will be used during the week for observation and analyses.*  
(**Susanne Bolte and Jean-François Gilles**, IBPS).

**16h-16h45:** **Oliver Griesbeck** (Max Planck Institute of Neurobiology) *Structure and Biophysics of Fluorescent Biosensors.*

**16h45-17h30:** **Fabienne Mérola** (Laboratoire de Chimie Physique, Orsay): *Principles and practice of fluorescence-based biosensing.*

**17h30-18h15:** **François Waharte (Institut Curie):** On data acquisition and the measurement of the fluorescence signal

**Evening:** Get together event

**Day 3 to 6 (Tuesday August 29 to Friday September 1st ) :** Participants will be divided in **four groups** to rotate on 4 different workshops running simultaneously.

9-11h: experiments

11-12h: data analysis

12h30-14h: lunch

14-16h: experiments

16-17h: data analysis

17h-18h (depending on the day):

- Participants present their thesis or post-doc scientific project
- Preparation of brain slices for next day's experiments

19h (Friday): Social event - Farewell party.

**Day 7 (Saturday Sept. 2d):** participants' departure.

### **Experiments performed in rotation:**

#### **Basic principles of biosensor imaging on cell lines and primary cultures:**

- 1) Wide-field ratiometric imaging, setup #1: comparing various biosensors (Pierre Vincent)
- 2) Wide-field ratiometric imaging, setup #2: application to pharmacology (Liliana Castro, MCU Pierre Vincent's team)
- 3) Different instruments to record the signal: wide-field vs Nipkov's disk (Susanne Bolte, IBPS imaging platform)
- 4) Different instruments to record the signal: confocal microscopy (Susanne Bolte, IBPS imaging platform)

#### **Neurobiological applications with brain slice preparations:**

- 5) Bioluminescent biosensing : monitoring the spontaneous neuronal activity in the cortex (Bertrand Lambolez & Sandrine Picaud)
- 6) Wide-field ratiometric imaging, setup #1: are some neuronal phosphodiesterases a novel therapeutic target ? (Dahdjim Betolngar, Post-doc in Pierre Vincent's team)
- 7) Wide-field ratiometric imaging, setup #2 : the dynamics of dopamine response : stimulation with caged molecules; effects of antipsychotic drugs (Pierre Vincent)
- 8) Two-photon ratiometric imaging : sub-cellular localization of cAMP signals in cortical and striatal neurons (Liliana Castro)