

PROGRAM : "Optical control of brain functioning with optogenetics and wave front shaping"

Monday 8th October 2018

- 9:00 h-10:00 h** *Welcome and opening remarks*
Valentina Emiliani & Eirini Papagiakoumou
- 10:00 h-12:00 h** **Lecture:** *Introduction to optogenetics and uncaging*
Guillaume Dugué, David di Gregorio
- 12:00 h-13:00 h** **Lecture:** *Opsin photo-cycle modeling (Peter Heigemann)* *Welcome and opening remarks*
Peter Hegemann

13:00 h-14:00 h Lunch

- 14:00 h-15:00 h** **Lecture:** *Wave front shaping and liquid crystal matrix*
Emiliano Ronzitti
- 15:00 h-16:00 h** **Lecture:** *Computer generated holography*
Valentina Emiliani
- 16:00 h-17:00 h** **Lecture:** *Generalized phase contrast method*
Eirini Papagiakoumou
- 17:00 h-18:00 h** **Lecture:** *Temporal focussing*
Dan Oron

Tuesday 9th October 2018

- 9:00 h-10:00 h** **Lecture:** *Three dimensional light patterning and temporal focusing*
Nicolo Accanto
- 10:00 h-12:00 h** **Lecture:** *2P optogenetics: scanning, spiral scanning, parallel illumination: examples and comparison among the different approaches*
Valentina Emiliani
- 12:00 h-13:00 h** **Lecture:** *How to build up a holographic set up*
Emiliano Ronzitti

13:00 h-14:00 h Lunch

- 14:00 h-18:00 h** **Practical 1:** *Building up an holographic microscope (E. Ronzitti, V. De Sars)*
- Practical 2:** *In vitro 2P patterned photostimulation (V. Zampini)*
- Practical 3:** *In vitro 2P functional imaging and patterned photostimulation (D.Tanese, C. Wyart)*

Wednesday 11th October 2018

- 9:00 h-11:00 h** **Lecture:** *All optical interrogation of brain*
Claire Wyart & Eirini Papagiakoumou
- 11:00 h-12:00 h** **Lecture:** *Patterned voltage and Calcium imaging*
Dimitri Tanese

12:00 h-13:00 h **Lecture:** *Viral vector design*
Deniz Dalkara

13:00 h-14:00 h **Lunch**

14:00 h-18:00 h **Practical 1:** *Building up an holographic microscope* (E. Ronzitti, V. De Sars)

Practical 2: *In vitro 2P patterned photostimulation* (V. Zampini)

Practical 3: *In vitro 2P functional imaging and patterned photostimulation* (D.Tanese, C. Wyart)

Thursday 12th October 2018

9:00 h-11:00 h **Lecture:** *Optogenetics and vision*
Serge Picaud

11:00 h-13:00 h **Lecture:** *Optogenetics and audition*
Tobias Moser

13:00 h-14:00 h **Lunch**

14:00 h-18:00 h **Practical 1:** *Building up an holographic microscope* (E. Ronzitti, V. De Sars)

Practical 2: *In vitro 2P patterned photostimulation* (V. Zampini)

Practical 3: *In vitro 2P functional imaging and patterned photostimulation* (D.Tanese, C. Wyart)

Friday 13th October 2018

9:00 h-13:00 h **Presentation of results from practical courses**

13:00 h-14:00 h **Lunch**

14:00 h-18:00 h **Presentation of participants projects**