

XVI SCHOOL OF PURE AND APPLIED BIOPHYSICS on

## Multimodal Methods for Cell Imaging and Tracking

Location: Campo Santo Stefano, Venice, Italy

Dates: January 30 Jan-03 Feb, 2012.

Students: 30.

Sponsors:

ENCITE (FP7), SIBPA (Italian Society of Biophysics),  
university of Padua and IVSLA (Venice).



The aim of the school is to provide a wide overview of the possibilities to image pathological states of the tissues with optical and non-optical methods possibly coupled together and combined with smart probes. It is our intention to offer the audience the possibility to deepen the technical details of the methods and analysis through extended lectures from prominent researchers in the field and free informal discussion with the lecturers in the unique framework of Palazzo Cavalli Franchetti, the conference center of the “Istituto Veneto di Scienze, Lettere ed Arti” (IVSLA, Venetian Institute for Sciences, Humanities and Arts, <http://www.istitutoveneto.it/>) that will host the school lectures.

The topic chosen would offer us to cover a wide range of techniques and technical improvements that allow and improve the study and monitoring pathological states (Cancer, immunological response and immuno-therapies) by in vivo imaging and cell tracking. The school is organized in thorough lectures and it will be given a wide space to free discussion within the day by day program, by means of “parallel question sessions”) and in the break times. All the speakers and the attendee will be host in the same guest house (<http://www.donorione-venezia.it/ing/home.htm>) therefore enabling easy informal contacts.

The program is organized in three 60' lectures. Each lecture is followed by a discussion. In the afternoon question sessions will be opened to the students for deepening the technical details with the speakers (additional to or in forms of tutorials or seminars).

Tentative Program.

### 30 January: Tracking the Immunological response.

#### **Morning Lectures**

- 9.00 – 10.00 Intravital two-photon imaging of natural killer cells and dendritic cells in lymph nodes. *Rob J. de Boer, Utrecht university, The Netherlands.*
- 10.15-11.15 Trafficking of Hematopoietic Stem and Progenitor Cells. *Steffen Massberg Univ. Munchen, D*
- 11.30-12.30 Intravital imaging of immune cell interactions: *Luc Fetler, M. Curie Institute, Paris.*

#### **Afternoon Seminars/tutorials/parallel question sessions.**

**15.30-16.15 Tutorial:** Tracking algorithms for optical imaging (M. Caccia, univ. Milano)

**16.15-16.45 Seminar:** to be defined

**17.00-18.30 question sessions with morning lecturers**

January: ENCITE ([www.encite.org](http://www.encite.org)) session: Cell imaging and tracking.

#### **Morning Lectures**

- 9.00-10.0 Mapping protein transport and interactions in cells with image correlation spectroscopy (*P. Wiseman; McGill University, Montreal, Canada*).
- 10.15-11.15 Optical imaging of cancer cell invasion and therapy response in vivo Looking forward to this interesting meeting: *Peter Friedl (Radboud, University Nijmegen, NL)*.
- 11.30-12.30 In vivo imaging of antiviral immune responses; *M. Iannaccone, HSR, Milano*

**Afternoon Seminars/tutorials/parallel question sessions.**

- 15.30-16.15 Tutorial:** Fluorescence Correlation Spectroscopy on cells (*M. Collini, Univ. Milano*)
- 16.15-16.45 Seminar:** Simultaneous chloride and pH imaging in vivo (*D. Arosio*)
- 17.00-18.30 question sessions with morning lecturers**

01 February: Technical improvements for imaging/tracking.

**Morning Lectures**

- 9.00-10.0** Pushing optical nanoscopy and individual molecule localization methods to three-dimensional thick samples; *A. Diaspro; Italian Institute of Technology, Genoa, I.*
- 10.15-11.15** Principles/Applications of CARS microscopy in Life Science (*Andreas Zumbusch, Universität Konstanz*).
- 11.30-12.30** Ultrafast Laser Microscopy for CARS in Life Science (*Cerullo G., Politecnico di Milano, I*).

**Afternoon Seminars/tutorials/parallel question sessions.**

- 15.30-16.15 Tutorial:** Principles of multiphoton spectroscopy and imaging (to be defined)
- 16.15-16.45 Seminar:** Ultrafast Laser Spectroscopy of biomolecules (*Dario Polli, polimi*)
- 17.00-18.30 question sessions with morning lecturers**

02 February: multimodal imaging/tracking I.

**Morning Lectures**

- 9.00-10.0** Nanomedicine strategies for molecular targets with MRI and optical imaging (*G. Lanza, Univ. Washington, USA*).
- 10.15-11.15** Photoacoustic Microscopy (*Vasilis Ntziachristos, Munchen, D*)
- 11.30-12.30** Multimodal molecular imaging of angiogenesis, *Kiessling F. (university of Aachen, Aachen, D)*.

**Afternoon Lecture**

- 14.30-15.30** Frequency-encoded MRI probes, *Silvio Aime, Università di Torino, Torino, I.*

**15.30- Free afternoon**

03 February: multimodal imaging/tracking II.

**Morning Lectures.**

- 9.00-10.0** Cell imaging with optical and opto-acoustic imaging. *Vasilis Ntziachristos (TUM/ Helmholtz Zentrum Muenchen)*.
- 10.15-11.15** Multispot-multiphoton fast in vivo imaging (to be confirmed): *F.S. Pavone, LENS, University of Firenze (I)*.
- 11.30-12.30** Neurophysiology at the multi-photon microscope; *Gimmi Ratto, CNR, university of Pisa, I.*

**Afternoon Seminars/tutorials/parallel question sessions.**

- 15.30-16.15 Tutorial:** to be defined
- 16.15-16.45 Seminar:** to be defined
- 17.00-18.30 question sessions with morning lecturers**

The organizing committee:

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