

July 5&6<sup>th</sup>, 2010

CRASH COURSE ON:

## CELLS on BIOMATERIALS IMAGING

at the

BIOTech Research Center, University of Trento

Via delle Regole 101, Mattarello-Trento, ITALY

Scientists involved in tissue engineering and regenerative medicine can benefit from learning about microscopy techniques in cell imaging.

The course is aimed at understanding how cells interact with biomaterials through different microscopy techniques.

Participants will be trained in the use of different microscopy techniques (confocal laser microscopy, scanning electron microscopy, light microscopy on ongoing cell cultures), and guided to the interpretation of the acquired images. Participants will learn how to set-up, acquire and analyze samples without incurring in sample preparation mistakes and artifacts induced interpretation.

Particular emphasis will be placed on hands-on training so that participants could become independent in the use of the different techniques and instrumentation.

The course will be organized in theoretical lectures and practical sessions.

### Programme

**Day 1:** Starts at 9.00 a.m.

#### Theory

- Light microscopy: Overview on different type of LM (inverted light microscope, confocal laser scanning microscope). Different imaging characteristics and potentiality. Advantages and disadvantages of different procedures and protocols.
- Confocal Microscopy: Overview, confocal light/epi-fluorescent, fluorescent markers selection and use. Markers for cells and for ECM molecules
- Scanning Electron Microscopy: Overview. Use of different signals, (SE, BSE, or SE/BSE) to optimize an image. Biological samples: how artifacts can be avoided. Applications and potentiality.

**Day 2:** Starts at 9.00 a.m.

#### Hands-on training

- Samples preparation and treatment, different techniques for biological sample preparation (e.g., fixation, de-hydration, freeze-drying, use of fluorescent markers);
- Use of Confocal Microscopy: images of cell adhering on 2-D and 3-D substrates; sample preparation and imaging; scaffold microstructure characterization through 3D imaging;

multimodal imaging of cells on 2D films and 3D scaffolds; imaging of specific ECM molecules (ex. Collagen) on 3D scaffolds after long-term cell culture.

- Use of FE- SEM: Observation of 3D scaffold (sponges, hydrogels, nets) cell adhered on 2D and 3D scaffolds; high resolution image acquisition;
- Light microscopy: acquisition of a computer-controlled video in real time of live cells seeded on different substrates; data acquisition and treatment.

### **Available equipment:**

ZEISS Supra 40 FE Scanning Electron Microscope.

Nikon Confocal Microscope.

Phase contrast ZEISS Light microscopes with mini-incubator.

Cell culture, biological and chemical facilities.

### **Registration**

The maximum number of participants is restricted to 15.

#### REGISTRATION FEE:

The course is free for participants from the Expertissues Partners Institutions.  
For all other participants, registration fee is 200 Euro, to pay cash on site.

#### ACCOMMODATION:

Trento has many hotels, with prices for a single room ranging from 50 to 200 Euro per night.

The list of the suggested hotels will be sent upon request.

#### VENUE:

The course will be held at the BIOtech Research Center in Mattarello-Trento. Mattarello is connected to Trento downtown by a public bus (#8) running every 20 mins, duration of the journey 20 mins., ticket cost 1 Euro.

Small restaurants for lunch are located close by. Light lunches can cost 10-15 Euro.

Trento part of the Italian Railway network, 1 hour by train from Verona. The closest airport is Verona, well connected to the major EU cities.

**To register cut and paste on a word document the following form and send by email as attached file to [Giovanna.carla@ing.unitn.it](mailto:Giovanna.carla@ing.unitn.it)**

**Acceptance of the registration will be confirmed immediately.**

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### **Registration to the Crash Course on Cells on Biomaterials Imaging**

Name and Affiliation: \_\_\_\_\_

Arrival to Trento on:

Departure from Trento on:

Free registration participant ( ) or,

I will pay the registration on site ( )