



DSF  
DEPARTMENT OF  
PHARMACEUTICAL  
AND  
PHARMACOLOGICAL SCIENCES

1222-2022  
800  
ANNI



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

[Technical Services and Scientific Equipments](#)

## A.M.I.Co

### Advanced Microscopy and Imaging Core Facility

#### Description

The facility houses a wide collection of instruments for imaging of not only biological samples.

It allows users to perform observation on a wide variety of methods, from basic observation with transmitted light to the more advanced fluorescent imaging technique on both living cells or tissues and small animals.

The facility offers highly specialized technical and scientific support throughout all the steps from the experimental design to the data analyses and presentation. A permanent senior technical expert is daily managing the instrument timetable and provides students training, research collaborations, commercial services to industry

#### Applications:

- Transmitted and reflected light stereo microscopy.
- Transmitted light microscopy: bright-field, phase contrast.
- D.I.C. phase contrast for morphological live-imaging experiments
- Fluorescence wide-field microscopy.
- Laser scanning confocal microscopy.
- Time-lapse and *in vivo* imaging: bright-field, phase contrast, fluorescence wide-field, confocal laser scanning microscopy. With an incubation system to control environmental conditions.
- Advanced fluorescent techniques: FRET, FRAP, spectral acquisition, etc.
- Imaging of large samples such as mouse brain histological sections or drosophila larvae: mosaic, tiles and panorama modules.
- Bioluminescence and fluorescence for *in vivo* biodistribution and *in vitro* imaging (whole small animals, tissues, cells culture).
- Histological sample preparation: tissue isolation from animal models for primary cell culture and/or tissue dissectioning with stereo-microscope, microtome and cryostat;
- Molecular imaging, for protein gels or WB membranes: transmitted and reflected light, chemiluminescence, three channel fluorescence.
- Software for Image acquisition and analysis: ZEN Blue (Zeiss), NiS-Element F (Nikon), LAS AF(Leica), ImageJ-Fiji.
- Data analyses: intensity, colocalization, translocation, intensity profile, quantification, etc.

presentation: image presentation, setup of graphical abstract, graphs for video presentation and paper figures.

#### **Location**

DSF - Edificio C

#### **Facility manager**

Andrea Pagetta PhD

#### **Staff**

Andrea Pagetta, PhD; Carla Argentini, PhD, Alessia Forgiarini, PhD; Marika Salvalaio, PhD

#### **Contacts**

Phone, e-mail: 049.8275082/5076, [andrea.pagetta@unipd.it](mailto:andrea.pagetta@unipd.it)

9:00 a.m. - 5:00 p.m. Monday-Friday

Contact the staff before booking, asking about facility rates.

#### **Scientific supervisor: Prof. Stefano Salmaso (Perkin Elmer IVIS Lumina III)**

#### **How to book**

Ask the staff for booking. Time of slot 30 min. Instructions are provided to users on the methodologies and the applications. The maintenance and operation of the equipment and the set-up of methods of analysis are coordinated by the staff in charge. Another task is the supervision of the planning, booking and reporting of devices. The analyses are carried out by the staff, in the presence of the users, while others are directly done by the expert users, after specific training by the staff (Azure 400C, Histoline Cryostate, Histoline Microtome, booking <https://elearning.unipd.it/dsf/mod/folder/view.php?id=12940>). ATTENTION: Access to PerkinElmer IVIS Lumina III imaging equipment requires ministerial authorization for animal experiments and projects; for information, contact the Scientific Supervisor (Prof. Stefano Salmaso, [stefano.salmaso@unipd.it](mailto:stefano.salmaso@unipd.it), telephone 0498271602) and/or the instrument technicians (Dr Marika Salvalaio, [marika.salvalaio@unipd.it](mailto:marika.salvalaio@unipd.it), telephone 0498275359; Dr Andrea Pagetta, [andrea.pagetta@unipd.it](mailto:andrea.pagetta@unipd.it), telephone 0498275082)

The staff provides assistance and support in teaching duties and to external users. The use of the instrument, supported by the staff, is also allowed to some "super-users", experts in some specific fields, who can make their contribution to scientific research in terms of innovation in the development of new methods and new applications (not applicable to PerkinElmer IVIS Lumina III) .

#### **FOTO e location**

#### **Lab Equipment**

**Zeiss LSM800** Room 00200 01 008 – Inverted confocal laser scanning microscope equipped for bright-field, phase contrast, DIC, epi- and confocal laser fluorescence from 400 to 750 nm emission light. Fully automated with autofocus. Objectives: 5x, 20x for brightfield and phase contrast; 20x, 40x (n.a 0,95,



DIC)

and oil immersion 63x (n.a. 1,4) for fluorescence. Light sources: White LED, HBO 100W lamp, 4 lasers covering from 408 to 640 nm excitation light.

Detectors: B/W cooled 8 Mpx CCD camera, 3 PMT

with 2 variable dichroic filters. Stage incubator from +4 to +40° C, humidity and CO<sub>2</sub>.

**Leica SP5** – Inverted confocal laser scanning microscope equipped for bright-field, with a broad range of scan speeds suited for high-resolution morphological imaging, as well as multispectral imaging. 350-900 nm spectral detection range with 5 nm spectral resolution and sub-micron spatial resolution. Suitable for most fluorophores from DAPI to Cy5. Measuring up to five dimensions, including x, y, z, time and spectrum. Capable of multi-dimensional fluorescence qualitative and quantitative measurement, FRET, FRAP, FLIP, FLAP and other photobleaching-related applications. Suitable for imaging fixed specimen (No environmental chamber). Spectral detection channels: PMT1, PMT2, PMT3. Brightfield transmission channel: PMT Trans.

**Nikon Ti-S** – Inverted microscope equipped for bright field, phase contrast and epi-fluorescence. Objectives, long distance: 4x, bright-field; 10x, 20x and 40x, phase contrast; 40x and 60x, epifluorescence. Light source: Halogen lamp, HBO lamp. Detector: RGB, 5 Mpx CCD camera.

**Optika IM-3** – Inverted trinocular microscope equipped for bright field, phase contrast. Objectives: 4x, 10x, 20x and 40x, bright field and phase contrast. Light source: white LED camera. RGB



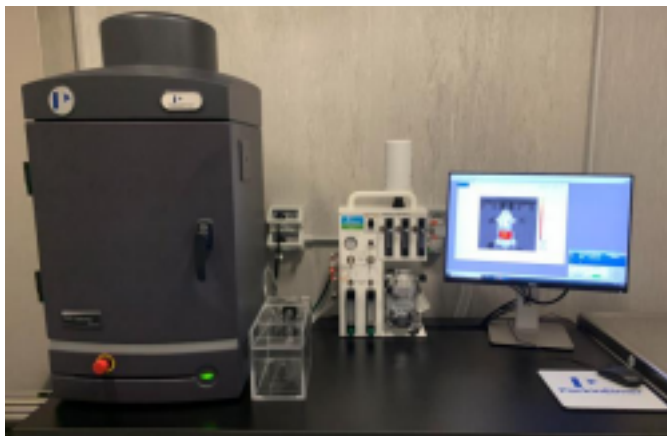
**Optika SZ stereo microscope** - Stereo microscope for dissection, biology, entomology, anatomy, chemistry and material science among the others. Professional stereozoom heads with 6.72:1 or 8.46:1 zoom ratio, FN 22 or 23, high eyepoint eyepieces to be combined through a coaxial coarse and fine focusing mechanism or a simple coarse one to a variety of stands, some of them equipped with the latest technology of X-LED illumination.

**Azure C400** – Molecular imager. For the acquisition of protein samples in gels (ex. electrophoresis) or on membranes (ex. Western blotting) with transmitted UV and visible light, full RGB fluorescence emission. Detector: B/W 6Mpx cooled CCD camera.

**Ocular camera** – stand-alone RGB 3Mpx camera that can be installed on the eyepiece head and connected directly to a PC or video projector.

**IVIS® Lumina Series III – PerkinElmer** (room 00.570-00.025) - Sensitive imaging system for both fluorescent and bioluminescent *in vivo* imaging. 26 filter sets that can be used to image reporters that

emit from green to near-infrared, spectral un-mixing, highly sensitive ultra cooled CCD camera (-90 °C). Adjustable field of view from 5 – 12.5 cm. Up to 5 mice or petri dishes or micro-titer plates for *in vitro* imaging. Integrated gas anesthesia apparatus (induction chamber and during imaging sessions).



Manual rotary microtome for paraffin embedded tissues and disposable microtome blades



**Histoline cryostat** – manual rotary microtome for frozen OCT-embedded tissues. Standard disposable microtome blades

