

3D Imaging Facility

Overview

The Imaging Facility is equipped with an automated light sheet fluorescence microscope designed to acquire high-resolution 3D images of large and multiple cleared samples. The system combines high speed acquisition with subcellular resolution, enabling comprehensive multiscale imaging, from overview down to subcellular level. Sample size ranges from small organoids to entire organs and whole organisms. This flexibility makes the system suitable for a broad spectrum of biomedical applications.

Equipment

- **UltraMicroscope Blaze (Mitenyi Biotec)**

User manuals are available at the following links [\[see “User support material”\]](#)

Location

The instrument is located at -1° floor, north side, room GEOTEC -1 064.

Opening hours

Monday- Friday, during the following working hours:

- Supervised users: 9:00 - 16:00
- Independent users: 9:00 - 19:00.

The calendar is divided into 3 hours/session, for single experiments. The rate is established by the number of sessions.

Please note that, according to the Safety Guidelines of University of Padua:

“Do NOT work alone outside of working hours. It is always important to check if specific procedures require special attention.

The presence of undergraduate students is conditioned on the presence of at least one structured staff unit.”

Service Coordinator

Prof. Diego De Stefani

Staff

Dr. Michela Menegollo - Dr. Valeria Bertin - Dr. Marco Pistore - Dr. Ivan Marchionni

The Facility's staff are available Monday to Friday during normal working hours (09:00-16:00).

For any information or requests, please contact the facility staff at the following e-mail address:

CN3.biomed@unipd.it

Guidelines

Users must be adequately trained to ensure proper use of the instruments.

First use of the instrument and training

Prior to the first use of the instrument, you have to follow the steps below:

- 1) EXPERIMENTAL DESIGN: contact Dr. Michela Menegollo (CN3.biomed@unipd.it) for a first appointment to discuss the experimental setup and assess the analysis requirements.
- 2) TRAINING: **Training in the use of LASER sources (class 3B and 4) and training in the proper use of the instrument are MANDATORY for all users.** Contact the technical staff to attend the facility training.
- 3) SUPERVISED USE:
 - for INTERNAL USERS: the first use of the microscope must be planned with the technical staff who will supervise it. Independent use of the instrument will **ONLY** be authorized by the technical staff, based on the user's experience and skills.
 - for EXTERNAL USERS: please note that the use of the microscope is allowed ONLY with the supervision of the technical staff.
- 4) INDEPENDENT USE: only internal users authorized by the technical staff are allowed to perform laser alignment and experiments independently.

Booking procedures

Equipment must be reserved before every work session.

Reservations are made through the dedicated page on the DSB Facilities & Services website by selecting the “*book now*” icon associated with the required instrument.

You will be asked to complete a survey form specifying the instrument setup and imaging solution you require. This information will be used by the technical staff to validate and confirm your booking.

Please note:

- Each day will be dedicated to a single imaging solution. It will not be possible to book both water and MACS imaging solutions on the same day.
- The chosen imaging solution must be clearly stated in your booking. Always verify what the previous user employed.
- Only half-day slots (3 hours per session) are available. Shorter bookings are not permitted.
- To minimize cuvette changes, users are strongly encouraged to group as many samples as possible for each acquisition.
- The instrument’s final cleaning time is included in your reservation.
- Time-intensive post-processing should be carried out on a separate computer. Please do not use your booked time for image analysis (a dedicated workstation for image processing and analysis is available).

*If your plans change, reservations may be cancelled up to **24 hours** before the start of the reserved time slot. Please notify the technical staff in case of booking cancellation.*

Rules

Please note: Toxic imaging solutions are strictly prohibited. Samples processed with toxic clearing procedures must **never** be placed in the cuvettes.

Before your session:

- Wear clean gloves. DO NOT wear gloves when handling computer equipment such as keyboard, computer mouse, and PC.
- Wear protective goggles while operating with the microscope.
- Equipment must be checked in all their parts: everything must be clean and without any obvious damage. If this is not the case, please immediately contact the staff.

If you notice that the quality of the imaging solution is decreasing (e.g., particles in suspension), please inform the person in charge. The imaging solution can be filtered and reused.

- Report to the staff the presence of incorrect behavior or waste not properly disposed of.

After your session:

- DO NOT leave anything in the room.
- Since large volumes of data may be generated, storing files on the microscope computer should be avoided. After each session, users are required to transfer their data to a different computer.
- All waste generated through the normal operation of the instruments must be collected and disposed of by the producer. The producer is also responsible for delivering such waste to the competent office.
- After use, it is MANDATORY to clean the instrument, alignment tool, samples holders and surfaces (if you need, see specific operating procedures posted in the room [[see “User support material”](#)]).
- **If you are the last user of the day, switch the instrument and its computer off.**

Costs

Updated fees are available on the DSB Facility website.

Users will receive a biannual report that summarizes your reservations, based on the online booking calendar.

Policy

Protocols depository and user community

The facility promotes the sharing of protocols, fostering networking and communication among researchers. Users are encouraged to contribute their protocols and troubleshooting methods to the facility's database, making them accessible to the entire imaging facility community.

Acknowledgements and Authorship Guidelines:

All publications resulting from the use of the above-mentioned instrument must acknowledge the 3D Imaging Facility and the RNA&Genetherapy National Research Center. The standard acknowledgement is:

“The authors gratefully acknowledge the 3D Imaging Facility of the Department of Biomedical Sciences, UNIPD, and the RNA&Genetherapy National Research Center for their support and assistance in performing the experiments described in this work.”

If a specific member of the 3D Imaging Facility has provided substantial assistance, or if a staff member has personally generated additional data, that individual should be acknowledged by name. For example:

“The authors gratefully acknowledge [Name] of the 3D Imaging Facility, Department of Biomedical Sciences, UNIPD, for their support and assistance in performing the experiments described in this work.”

When 3D Imaging Facility technicians contribute beyond routine techniques—such as developing or adapting protocols, (re)designing experiments, or performing data analysis and interpretation—they should be included as co-authors on any resulting publications.

Once your publication has been accepted, please inform us and provide a copy for our archives. We may also highlight your research on our website.

User support material

- UltraMicroscope Blaze imaging system User manual.pdf
- ImSpector 7.8 user manual.pdf