

Core Facility Cellular Imaging (CFCI) – Light Microscopy

Rules and instructions, to be signed by every user:

1. **Laser safety** instructions (LSMs, Spinning Disk)
2. **Mercury lamps safety** instruction for (HBO, HXP)
3. **S1-safety** instructions
4. Working at night or during the weekend
5. Bookings, modifications and cancellations
6. Data storage and automated deletion procedure
7. Acknowledgements in publications

1. **Laser safety** instructions (LSMs, as well for all rooms)

When using microscopes equipped with lasers, special care has to be taken to avoid laser radiation getting into your eyes or onto your skin. Especially, laser radiation can irreversibly harm your eyes. This relates to all microscopes that are equipped with laser illumination: laser scanning microscopes (LSMs), Spinning Disk.

Generally, all commercially available microscope systems are typically equipped with electronic shutters that block the lasers if the user is in risk of getting exposed to laser radiation (as for example if the transmitted light arm is pushed back). Still, the microscopes are categorized as class 3 laser devices (Leica SP5, Zeiss LSM510, Olympus SpinningDisk: 405nm – 640 nm lasers), the multiphoton laser is even laser class 4 (Leica Sp8 MP: MP with 680nm -1040 nm; MP-OPO with 1030nm - 1280nm), and by that they are classified as potential harmful. If not operated properly, the risk of getting exposed to laser light (visible, and invisible; direct, and diffuse reflexes) is still there (e.g. if reflecting samples are tilted while image acquisition, or if objective lenses are removed and laser light can come out of the microscope stand collimated).

Therefore, all users (and people in the imaging room) need to be very careful during using microscopes equipped with lasers, as well already when working in CFCI-LM rooms containing microscopes with lasers:

- **Every new user needs an introduction by CFCI-LM staff! Users are not allowed to introduce among themselves!**
- Users are not allowed to remove objective lenses or other parts from the microscope system!
- The microscopes of CFCI-LM are all intended to be used for biological samples! Any other type of samples (i.e. reflective samples in material sciences) are not allowed to be used without prior consultation of the CFCI-LM staff!

- The sample should not be touched during image acquisition! Image acquisition needs to be stopped before the sample can be touched, removed or exchanged to another sample.
- Avoid looking into the microscope from a direction towards the objective lens, where the laser could emerge from!
- Alcohol and drugs can retard the blink reflex; don't work with laser devices in this case!
- Users are not allowed to bring colleagues/students etc. to the CFCI-LM rooms unless they signed these rules!
- Don't enter CFCI-LM microscope rooms when laser service is in progress (a warning sign will be at the door and it will be written in the booking database).

2. Mercury lamps safety instruction for (HBO, HXP)

Some of the microscope systems are equipped with mercury lamps for wide field epi-fluorescence detection ("fluorescence lamps", called HBO, HXP, X-cite or similar). Depending on the specific lamp type, there can be a danger of a lamp breakage, as mercury would be released into the air. A lamp burst can occur in very rare cases. These rare cases have been mainly reported for HBO-lamps, which we have at some systems. Breakage has not been reported any more for the generation of "HXP"- or "X-cite"-lamps. However, the potential risk of mercury evaporation is still present, for which the following safety instruction is given:

In very rare cases, a mercury lamp can burst and the contained mercury is released into the air. It is recommended that all persons should immediately leave the area (the room) **at once**, so that no mercury vapor is inhaled.

This means that you should enforce all people to leave the room, and report the problem to CFCI-LM staff immediately. If this happens off-time (in the evenings or on the weekend), clearly mark the door from the outside "Mercury lamp burst – do not enter this room!", and put a tape around the door and door frame, so that nobody can enter the room, and report the issue to lichtmikroskopie.mtz@tu-dresden.de. The room should be ventilated thoroughly (at least 20 to 30 minutes). After the lamp housing has cooled, any mercury residue should be picked up with a special adsorbent (will be done by CFCI-LM staff).

3. S1-safety instruction

All our microscope rooms are at least S1. That means:

- **Users are not allowed to eat, drink or smoke in the rooms.**

If you are working with GVOs:

- **You are not allowed to discard S1-material in CFCI-LM rooms (no cells in the dustbins!!!)**
- You and your group are responsible by yourselves for the documentation, the transport and the disposal of the GVOs!
- You have to sign the CFCI-LM S1- documentary list.
- If you change to another GVO → It needs to be communicated to CFCI-LM.
- All instructions can be read again at the door in the microscope rooms.

4. Working at night or during the weekend

After introduction by CFCI-LM the microscopes can be used for 24 h per day.

The same safety regulations are hold as you were taught in your group. At night and during the weekends CFCI-LM staff is not available. Everybody needs to care on his own behalf. Someone has to know that you are working here and in which time period you are working in MTZ.

5. Bookings, modifications and cancellations

Users can make new bookings or extend their booking any time (unless start time has not elapsed).

The user will be charged for the slot and stays responsible for the system especially if it is the last slot of the day.

Everyone has to check the scheduling database after his session. If you are the last user at the day or next slot is more than 4 hours (2 hours at ApoTome) later, you need to switch of the system!

Cancellations

Users can delete or shorten their booking before the slot starts. Don't delete your slot late to give others the chance to use that time!!!!!!

Booking is binding and will be used for charging.

Charges:

Introduction (two appointments): 50 €

Microscopes/workstations:

<i>ApoTome I</i>	5,50 €/h
<i>ApoTome II</i>	5 €/h
<i>LSM(Zeiss, Leica)</i>	21 €/h
<i>Spinning Disk</i>	18 €/h
<i>3D Workstation</i>	5 €/h
<i>Anja/Silke</i>	15 €/h
<i>Confocal over night</i>	10 €/h
<i>Confocal 24 h</i>	10 €/h

6. Data storage and automated deletion procedure

During data acquisition at the CFCI-LM systems, data need to be saved on the local hard disk. Directly storing on a remote path like the fileserver or on USB-devices is not allowed.

To avoid shortage of local disk space on the systems, data has to be deleted from time to time.

- **Zeiss LSM 510 and 3D-Workstation:** CFCI-LM deletes the data upon email notice every three months (Mar/June/Sept/Dec).
- **Leica SP5** automatic deletion of data 100 days after saving
- **ApoTome** automatic deletion of data 100 days after saving
- **Spinning Disc** automatic deletion of data 30 days after saving.

Users need to copy their data to a safe storage medium. Users are free to choose this medium, e.g. the user's fileserver-space, or a personal USB-device. The CFCI-LM advises the users to make the copy as soon as possible after the data acquisition, as sudden data losses at the systems can happen.

Every user is responsible for his/her data. We do not back up the data!

You can use CFCI-LM fileserver for data transport. Every file which is copied on the server will be deleted automatically after 14 days.

6. Acknowledgements in publications

To support the future funding of the Core Facility Cellular Imaging (CFCI), users are kindly asked to acknowledge the usage of our instruments in their publications.

It would be nice if you inform us when a new paper is published that we can update our list of publications where the CFCI is mentioned.