

Basic safety in room 00/070

Please also read our 'Glove (live cell) Policy'
'Microscopy Room 00/070 Risk Assessment' and
'Mercury Lamp COSSH Assessment'

The main hazards in the microscope room are:

1. Always place microscope covers up on the designated shelf away from the floor and electrical equipment. **NEVER cover electrical equipment with the discarded microscope cover** or you will seal off heat ventilation holes damaging very expensive equipment and possibly causing a fire risk. Microscope covers on the floor will get dirty and create a tripping hazard. Dust is the enemy of the microscopist and the covers are needed, but remove them with some thought – and don't leave them on the dusty floor. If the mercury lamp has been in use avoid placing the rear of the cover over the very hot mercury lamp housing (and ensure all the microscope illumination lamps are OFF).
2. Live cell work. Living cells in culture flasks, LabTek slides and dishes are used regularly on the inverted microscopes. The detailed rules for those using cell cultures are attached below under '**Glove policy in the microscope room**'.
3. Zeiss and Cargille immersion oil: The immersion oil is only used with high magnification oil objectives. Immersion oil is a mineral oil with anti-fluorescence additives. **Immersion oil is classified as an irritant** and it particularly stings if you accidentally transfer it from your hand to your eyes. Generally washing your hands and eyes with soap & water is adequate for minor contamination, otherwise seek first aid attention. **It is harmful if swallowed in any quantity**, and you should then seek medical advice immediately.
4. **Laser light on the Zeiss confocal microscope**: the laser light is operated with a full safety inter-lock and so the microscope is safe to use with the laser light on. Just to be extra safe, only look down the eye-pieces when the system is in microscope mode and the confocal laser light is off (LSM Mode off]. Never remove the objectives in any circumstances as the laser light will then no longer be focussed onto the specimen. The confocal lasers are all fairly weak but it is advisable not to stare at the laser light as it scans for minutes on end – just briefly check the laser light is on when scanning. Pushing the microscope condenser stand backwards activates a safety relay that prevents the laser from scanning the specimen.

5. The mercury bulb fluorescence light source. There is a mercury lamp fitted onto all three microscopes in room 00/070. **Mercury lamps give off intense ultra-violet (uV) radiation** and the bulb must only be changed by Cytogenetics staff. Once it has been through a dichroic filter set however the uV component of the light is removed and image is safe to view down the microscope. The emission light glare from the specimen can still be quite intense however, so avoid staring at it, particularly if you are prone to migraines. There are neutral density filters that can reduce this glare fitted to all of the microscopes – and usefully these will reduce the bleaching rate of your specimen's fluorochromes as well.

6. **Ensure that the mercury lamps stay on for 30 minutes before switching them off, and allow the lamps to cool for 30 minutes before switching them on again** [a book is provided to record the exact time when the lamp was last switched off – please use it]. Note: **Always switch the mercury lamp on before, and off after, all other equipment** on the microscope system (the high voltage surge can create an electro-magnetic pulse in the arc lamp supply leads that may damage live sensitive equipment).

7. **On very rare occasions the fluorescence microscope mercury lamp bulb can explode.** This normally only occurs when the lamp is used beyond the recommended maximum of 300 hours [and cytogenetics staff will change the bulb before then]. However on rare occasions if the lamp bulb is faulty, switched on/off too quickly or has been incorrectly fitted, it can explode before 300+ hours use. If you hear the lamp explode in the housing vacate the room immediately as it will release hot mercury vapour into the room. After a few hours this vapour will be cleared by the air conditioning system and cytogenetics staff can re-enter the room to replace the mercury lamp and assess the damage. Note that if the lamp simply seems to be not working anymore it may have exploded while you were outside the room - so vacate the room just in case, and ask a cytogenetics staff member to investigate. Be aware of the other microscope's mercury lamps in the room, as well as the one on the microscope you are using. Our COSSH assessment form for the mercury bulb is attached.

8. The transmission halogen lamp on the microscopes can 'hurt' your eyes if the brightness is turned up too far when you look down the eyepieces. It is advisable to glance at the eyepiece from a short distance away to check the brightness before peering down at your specimen. Also ensure that the operators chair is at the correct height to use the microscope comfortably. A short 3-5 minute break from the microscope every hour is recommended – and during that time, try and focus on a distance object.

9. Other hazards in the room are mainly the standard ones relating to electrical appliances and slipping on hazards left on the floor (e.g. sliding on discarded plastic bags / paper sheets etc..). A bin is provided for waste paper, gloves etc.

If you experience any problems at all please ask a member of the Cellular Imaging Microscopy Core staff for assistance (cellular-imaging@well.ox.ac.uk).