

Standard Operating Procedure (SOP) for use of Microscopes in The Optical Microscopy and Analysis Laboratory (OMAL)

We are all aware that the microscopes are used more than ever and that extra precautions are required because of SARS-COV-2. Therefore, we have implemented the following standard operating procedure (SOP) to ensure best practices when using the microscopes and other instruments in OMAL.

This SOP is subject to change without notice. Changes will be announced by an email sent to the LIST, "NOTICE" (NOTICE@list.nih.gov).

If you have any questions or concerns please contact Kim Peifley [peifleyka@mail.nih.gov, 301 846 6561] or any other member of OMAL.

Personal Protective Equipment (PPE)

1. PPE must be worn at all times: lab coat (provided by user), gloves (provided by OMAL), safety glasses (provided by user), face mask (provided by user), as well as follow PPE requirements that were in place before the COVID19 pandemic. Please refer to the EHS website for general laboratory PPE requirements.
2. User must bring their own lab coat, which cannot be worn outside lab areas and must be worn in lab areas. Lab coats must be free of infectious agents. OMAL has a limited supply of disposable lab coats for users who do not have one
3. Users without all PPE must not use the microscopes and must reschedule.
4. Additional PPE SOPs apply for special circumstances when two people are concurrently at the same microscope (see below).

Training:

1. Training during the SAR-COV-2 crisis will be considered on a case by case basis by OMAL per request.
2. Training of scientists with some prior microscope experience and who can be trained remotely will likely take place.
3. The need for training that requires both the trainer and trainee to be at the same instrument at the same time, or the need for two trained users to be at the same instrument at the same time must be established in advance in a virtual meeting with OMAL staff. The meeting will investigate how to minimize the duration of the concurrent session, determine the number of concurrent sessions required and to explore alternative arrangements to having two people in the same room concurrently. If the need is determined to be essential, usage of the microscope will be conducted as follows:
 - a. The two people are recommended to have received a negative result from the asymptomatic COVID19 test (<https://ncifrederick.cancer.gov/ehs/ReturnToWorkplace/AsymptomaticTestingProgram.aspx>) that is less than one week old. Proof of a negative test is not needed.

- b. The activity at the microscope will not take place if either of the people are not comfortable with the procedures outlined in this SOP.
 - c. The session at the microscope should be planned in advance in order to maximize physical distancing and minimize duration. It is recommended that the two people are at the microscope for less than one hour.
 - d. No more than two people may be at the same microscope at the same time.
 - e. Prior to use of the microscope, the instrument and surrounding area must be disinfected according to the SOP stated in the Disinfection Procedures section.
 - f. Both people must wash their hands immediately before training.
 - g. Both people must wear a lab coat, face mask (see below), nitrile gloves, safety glasses and face shield, as well as follow PPE requirements that were in place before the COVID19 pandemic. All these items must be worn concurrently.
 - h. When two people are at the same microscope, the face mask will be a disposable, use-once mask supplied by OMAL and originating from the central supply warehouse. (However, when there is only one user of the microscope, the user must supply the face mask.) Gloves and the face shield will be supplied by OMAL. Gloves will be disposed of and shield will be decontaminated at the end of the microscope session.
 - i. Both people should maintain a separation of at least 6 feet as much as possible during the training session and should utilize to the extent possible electronic visual aids (e.g. webex connection to another computer in the room).
 - j. Post microscope use, the instrument and surrounding area must be disinfected according to SOP stated in the Disinfection Procedures section.
4. Each user must have received training from OMAL staff for each specific microscope. Training on one microscope should not be considered as training for another microscope, even if the microscopes are similar in terms of their operation.
 5. Generally, training will cover the needs for your immediate applications and not necessarily cover all capabilities of the microscope. Therefore, additional training may be needed if your application changes. For example, if your immediate application is to image fixed cells, then additional training will be needed if you later want to image live cells.
 6. Certain microscope modalities, particularly those pertaining to super-resolution require optimal sample preparation. Therefore, you should discuss these needs in detail with OMAL staff first.

Scheduling of Microscopes:

Due to very heavy usage of some microscope, we have revised the sign-up SOP. The main change is that actual scheduling on the calendars will be done by OMAL staff.

1. If you have flu-like symptoms or are positive for SARS-Cov-2, do not use the microscopes and contact a member of OMAL to cancel any bookings.
2. Prior to arranging a booking of a microscope, check the microscope calendar to view potentially available times. The calendar is located at <https://ncifshare.cancer.gov/OMAL/> . There is a shortcut to the OMAL calendar on the desktop of each microscope computer. Please make sure you can access this calendar from both on and off site. Contact DMS at 301-846-5115 for assistance.

3. To request time on a microscope, email OMALsignup@nih.gov which will go to OMAL staff (Stephen Lockett, Kimberly Peifley, Valentin Magidson, Will Heinz, David Scheiblin, Abigail Walke). Include a telephone number where you can be reached in your email. Please email at least 24 hours ahead of the desired scheduled time if possible. This is to ensure that remote technical support is available while you are using the microscope during regular working hours (M-F, 9:30 am to 5:30 pm.) and to ensure that the microscope is ready for your use. For weekend usage, please email by 5 pm on Thursday. For Monday usage, please email by 5 pm on Friday.
4. OMAL will respond to requests by mid-morning Monday to Friday and by the end of the day Monday to Friday.
Users may use microscopes overnight or over the weekend, but only 1 user per microscope per overnight or only 1 user per microscope per weekend.
5. When requesting a block of time more than 3 hours, please try as much as possible to avoid requesting a block through the middle part of the day (noon – 1pm). For example: instead of scheduling between 11 am – 2 pm, schedule between 9 am – noon or 2 pm – 5 pm. This will allow someone to work before and/or after your time block.
6. If you will be late please contact OMAL
7. If you finish early, please contact OMAL.
8. If you need to cancel, please contact OMAL as soon as possible.
9. You cannot give unused time to someone else. This is especially important at this time of SARS-COV-2 infection.
10. There MUST be a minimum of 45 minutes between different microscope users.
11. You MUST arrive at the microscope no more than 30 minutes after the commencement of your scheduled time. After 30 minutes you may lose your access to the microscope. This rule applies for both regular and after hours/weekends.

Safe Operation of Microscopes:

1. Only one person in a microscope room at a time, unless there is a compelling need for two people to be in the room concurrently (refer to the Training section above).
2. Occupancy limits apply to the following rooms in B560.

Rooms (all in B560)	Occupancy Limit
Wing 1	
12-80	1
12-74 West	1
12-74 East	1
12-78 West	1
12-78 East	1
12-84	1
12-80, 12-74W, 12-74E, 12-78W, 12-78E, 12-84 combined	6
Wing 2	
22-16	1
22-16A	1
22-16, 22-16A combined	2
Wing 3	
32-27	1

3. Each of these combined limits may increase by 1 person if a trainer and trainee or two trained users are at one of the microscopes in these areas. Only one microscope in each wing of B560 can have a trainer and trainee or two trained users at the same time.
4. Three microscope rooms (32-27/B560, 22-45C/B560, 270/B567) are shared with other labs. Use of the microscopes in these rooms must be additionally coordinated with the members of the other labs.
5. User will clean microscope and surrounding area before and after each session (see Disinfection Procedures below).
6. OMAL staff will disinfect the microscope and surrounding area (including floor) in between each different user. This cleaning does not substitute for the requirement that the user must clean before and after each microscope session. The microscopes in rooms 22-45C/B560 and 270/B567, which have limited access, are exempt from cleaning by OMAL staff, but must still be cleaned before and after use by the user.
7. The door to the microscope room must be closed when a person is in the microscope room.
8. Users must move or copy data from local storage on the microscope computer at the end of each session. Include the time to do this when scheduling the microscope.

Potentially Infectious Samples:

1. No samples requiring greater than BSL-2 safety or radioactive samples are allowed in OMAL.
2. If using live or unfixed cells or tissues (including fixed tissues) you must fill out the "Mandatory OMAL Tissue and Cell Information Form SARS-COV-2 revision 061520" document and obtain prior approval. Contact Kim Peifley at peifleyka@mail.nih.gov to get the document.

Disinfection Procedures:

70% ethanol, paper towels, kimwipes and lens paper are available at each microscope. 70% ethanol should take about 15 seconds to kill the virus. When starting to use the microscope, you should wipe down the following areas with 70% ethanol. The 70% ethanol should be sprayed onto paper towels, kimwipes or lens paper, and not sprayed directly on the instruments. You must perform these cleaning procedures before and after using the microscope.

1. Fill out the cleaning check list before and after using the microscope. There is a supply of check lists at each microscope by the keyboard and monitor.
2. Your hands.
3. Door handles (both sides of the door)
4. Light switches. Use the 70% ethanol sparingly on electrical equipment.
5. Front edge of the optical table. Some optical tables have a support bar, which should be wiped down as well.
6. Top surface of the optical table going back 18 inches
7. Switches for turning on the microscope, lasers etc. Use the 70% ethanol sparingly on electrical equipment.
8. All knobs, joy sticks etc on or associated with the microscope.

9. Eyepieces of the microscope including the parts of the eye pieces that are in contact with hands. This is particularly important. Do not remove the eye pieces from the microscope.
10. Touch screens, keyboard, mouse.
11. Computer desk.
12. Chairs
13. Bottles of oil and bottles of lens cleaner.
14. Microscope stage
15. Objective lenses you plan to use or did use (do not remove objective lenses from the microscope). Use lens paper, not paper towels or kimwipes. First clean with 70% ethanol, then clean with objective lens cleaner.
16. Your supplies or instruments you bring into the microscope lab.
17. Any other surfaces or objects you plan on touching or did touch.
18. Dispose of all wipes, disposable lab coats in the red garbage bags.
19. Fill out the cleaning check list.
20. Either place the completed cleaning checklist in the slot to the right of the door for room 12-91, B560, or take a picture of the completed cleaning checklist with your mobile phone and email it to: peifleyka@mail.nih.gov

Other Requirements:

1. The tissue culture and chemical fume hood areas of the OMAL lab in room 12-80 (B560) are strictly off limits. This is so that we can avoid contamination and meet safety requirements. Satellite tissue culture incubators are provided for your storage of live samples while you are actively using a microscope for live cell applications. Samples left in these incubators will be decontaminated and discarded.
2. The user may only use supplies and equipment in the microscope room. Contact the designated OMAL person to request an exception for use of specific OMAL instruments or supplies located outside the microscope room. Therefore, the pipettors and consumables (slides, pipet tips, etc.) in the OMAL lab space (B560, 12-80) are for OMAL's staff to use for their research projects. Please bring your own pipettors and other supplies to use when you are using OMAL microscopes. This helps prevent contamination across projects and labs, and also ensures that you have the instruments and supplies you require and are familiar with.
3. Please consult OMAL staff if you want to leave your supplies at the microscope between sessions. This is generally acceptable if you are booked for consecutive sessions.
4. We monitor how each microscope is being used, so we can ensure the most appropriate instrument is being applied to the scientific questions at hand. In order for all scientists to optimally have access to the unique capabilities of the different microscopes, we may ask users to use less busy microscopes if we are certain they can obtain equivalent results on them. This policy will need to be applied during times of heavy usage on the higher-end microscopes.

Additional Policies:

1. OMAL has considerable expertise in sample preparation and analysis of images that we can share with you on a consulting basis.

2. We encourage you to periodically tell OMAL about your current and intended use of the microscopes, as well as your research more generally. With this information we can best guide you to the most appropriate expertise and instrumentation OMAL offers, as well as bringing to your attention capabilities located in other labs or other institutions. We also use this information to determine which new instruments and expertise to acquire.
3. Please acknowledge OMAL in your publications and presentations, either as authors or in the acknowledgements section. For the acknowledgments section, use the following wording, "We gratefully acknowledge The Optical Microscopy and Analysis Laboratory, Frederick National Laboratory for Cancer Research."

One Page Summary of Standard Operating Procedure (SOP) for use of Microscopes in The Optical Microscopy and Analysis Laboratory (OMAL)

This summary lists the main rules for use of microscopes in OMAL. All rules in the full SOP document must be followed.

Symptom Free

1. If you have flu-like symptoms or are positive for SARS-Cov-2, do not use the microscopes and cancel any bookings.

Microscope sign up

1. Check the OMAL calendars (<https://ncifshare.cancer.gov/OMAL/>) for available times.
2. To sign up for a microscope, contact OMAL at OMALsignup@nih.gov at least 24 hours in advance (or by 5 pm on Thursday for a weekend slot or by 5 pm on Friday for a Monday time slot). Include email and a contact phone number.
3. To cancel a booking, contact OMAL at OMALsignup@nih.gov as soon as possible.

Microscope use

1. Only 1 person per microscope room at a time. Contact OMAL at OMALsignup@nih.gov at least 24 hours in advance if you have a compelling need for a second person in the room.
2. User will clean microscope and surrounding area before and after each session.
3. PPE must be worn at all times: lab coat (provided by user), gloves (provided by OMAL), safety glasses (provided by user), face mask (provided by user), as well as follow PPE requirements that were in place before the COVID19 pandemic.
4. Users must move or copy data from local storage at the end of each session.