

Basic Microscope Training Procedure

ACRF Cancer Biology Imaging Facility

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The following information is only relevant to the training of UQ staff or students with no prior IMB microscopy facility training. Those users with currently active (IMB microscope use within the last 6 months) user rights on a confocal microscope may request intermediate or advanced training on any other microscopy platform within IMB.

Personnel may request training on any basic microscopy platform such as, Fluoro 1,2 or 4, BF/DF, Stereos 1,2 or 3 or the OPT even if they have no previous microscopy experience.

For new users of confocal microscopy the method recommended by the microscopy facility and which provides the most comprehensive training is the following:

STAGE ONE: MICROSCOPY BASICS

The majority of new users do not have the foundation knowledge to be able to understand the theory that would enable them to apply the advanced features of these systems or to adapt/optimize microscopy protocols. Likewise they typically do not have a working knowledge of a basic microscopy platform.

The following training will provide this experience:

1. A user requests basic widefield training via the PPMS booking system.
2. The assigned trainer contacts the user to discuss their requirements and to confirm the appropriate equipment to be trained on. The trainer also sends basic microscope reading material, the relevant training manuals and links to the Risk Assessment website.
3. The user is trained on a basic widefield microscope such as Fluoro 1,2 or 4 in the following topics:
 - Care in use and cleaning
 - Microscope operation
 - Kohler illumination
 - Focussing techniques
 - Software operation
 - IT topics
4. The user gains at least 10hrs of experience practicing basic imaging techniques before requesting a confocal tutorial, or the user may request an assessment of their abilities when they feel competent. During this initial stage of training we would strongly recommend that the trainee is exposed to the confocal systems by watching experienced users.

STAGE TWO: CONFOCAL BASICS

New users are trained in basic imaging techniques with a focus on 2D imaging of multiple fixed samples.

5. The user requests advanced equipment training via PPMS, indicating the confocal platform they wish to use.
6. The assigned trainer contacts the user to discuss their requirements and to confirm the appropriate equipment to be trained on. The trainer also sends the user relevant training manuals and links to the Risk Assessment website.
7. The user is trained in basic imaging techniques with a focus on 2D imaging of multiple facility supplied fixed samples, which takes ~2hrs for a confocal tutorial.
8. The user, if deemed competent at the end of training, is given Novice user rights for peak hour access (8am-6pm Mon-Fri). If the user has difficulty during the tutorial, then a follow up tutorial is booked at a suitable time, to cover any ongoing issues. If after the second tutorial the user is deemed to not have sufficient competency to use the equipment independently, the issue will be raised with their supervisor.

STAGE THREE: CONFOCAL USER – Novice status

During this stage the user is encouraged to gain experience on the microscope by working with other experienced group members on real problems as well as by themselves to gain confidence.

9. The Novice user can use the confocal platform they have been trained on during peak hour access (8am-6pm Mon-Fri).
10. The user may and is strongly encouraged to request further assistance from microscopy staff at any time. For example, they may wish to attempt imaging samples from their lab and require help in working with multiwell plates.
11. Once the user has gained 10hrs of experience they may request Autonomous user rights for offpeak access.

STAGE FOUR : CONFOCAL USER – Advanced Training

User's can define groups of advanced confocal topics to be trained on by facility staff. This second formal engagement with facility will also provide the opportunity for the new user to be evaluated and any concerns with the basic use of the platform will be corrected. Requests to be trained on additional advanced microscopes can be requested at this stage.

12. The user may request one or more intermediate training sessions at this stage to cover up to three topics per tutorial. Users may find a list of topics in PPMS/Documents which includes Z-stacks, timelapse, lightpath optimisation, Transmitted light imaging etc.
13. The user may also request advanced training on specific imaging problems with their samples.

An alternative to the recommended training regime is to fast track advanced equipment training with the user only receiving STAGE TWO of the training outline above. For example, this would be acceptable for an experienced post-doc who has a high level of previous microscopy experience. By nominating this option the lab head will be taking all responsibility to ensure the individual is sufficiently trained to competently use the system appropriately. It will be the responsibility of the group leader to rectify any damage caused, failures experienced or resolve shortcomings of the user.

1. The user's group leader completes and signs the "Fast Track Training Approval" form that is then provided to the facility manager.
2. The user requests and completes the Stage Two - Basic confocal training as outlined above.
3. The user may also request advanced training on specific imaging problems with their samples.