MONASH University

# Monash Micro Imaging (MMI)

# Handbook

## Contents

# INTRODUCTION

This Manual is a convenient reference giving information about **Monash Micro Imaging (MMI)**, its staff and facilities, operating procedures and occupational health and safety matters.

If you have any questions or comments regarding the Manual or MMI, please contact the Manager, Mr Stephen Firth (see contact details below).

# ABOUT MMI

MMI is a central university research Platform. Monash University has a strong, integrated network of world-class technology research platforms. These are made up of core facilities and capabilities that provide high-quality specialist research services (see http://www.monash.edu/research/infrastructure/platforms).

Our core technology research platforms are coordinated through the Office of the Pro Vice-Chancellor (Research Infrastructure).

## MMI Platform Vision

*Monash Micro Imaging strives to provide a fully integrated optical microscopy imaging research environment for the biomedical and life sciences. Our aim is to empower cutting-edge microscopy-based research by providing access to state-of-the-art microscopy technology and ensure excellence in imaging through our expertise in experimental design, method development, and data analysis.*

## MMI Platform Mission

*To provide world class quality microscopy instrumentation for your research needs, both now and in future*

*To provide substantive, expert support for cellular and subcellular microscopy, associated techniques and data analysis, through dedicated expertise and application development*

*To provide excellence in research training in microscopy*

*To collaborate in ground breaking biomedical/life science research and innovate new imaging approaches*

To learn more about MMI please visit our website:

https://platforms.monash.edu/mmi/

# STAFF CONTACT DETAILS AND ROLES

## *General Office*

Mrs Margaret Rzeszutek

Administrative Assistant
Tel.: 990 20878
Office: 15 Innovation Walk, Building 75, Room G53
Margaret.Rzeszutek@monash.edu

## *Manager, MMI*

Mr Stephen Firth

Manager
Tel.: 990 55635 Mobile: 0400 695 425
Office: 15 Innovation Walk, Building 75, Room G49
Stephen.Firth@monash.edu

## *MMI Web Page*

https://platforms.monash.edu/mmi/

## *Email*

mmi-clayton.arininquiries@monash.edu

## *Microscopists*

Microscopists work closely with the MMI Manager to support the efficient operation of the laboratory. They assist with the development of training and operating procedures and with development of new microscope capabilities and techniques. Microscopists provide training and assistance to microscope Users, and may collaborate with Users on projects of mutual interest.

### Deputy Manager

Dr Alex Fulcher

Tel.: 990 55612
Office: 15 Innovation Walk, Building 75, Room G50
Alex.Fulcher@monash.edu

### Senior Microscopist

Dr Oleksandr Chernyavskiy

Tel.: 990 55612
Office: 15 Innovation Walk, Building 75, Room G50
Oleksandr.Chernyavskiy@monash.edu

### Senior Microscopist and Image Analyst

Dr Jihane Homman-Ludiye

Tel.: 990 55612
Office: 15 Innovation Walk, Building 75, Room G50
Jihane.Homman-Ludiye@monash.edu

# LOCATION

Monash Micro Imaging is located at 15 Innovation Walk on the Monash University Clayton campus, (see Figure 1). MMI is in the south east corner of the ground floor.

For instructions on travelling to the Clayton campus see:

http://www.monash.edu/campuses/clayton.html.

Information on Parking at Monash can be found at the following link:

http://www.monash.edu/people/transport-parking.

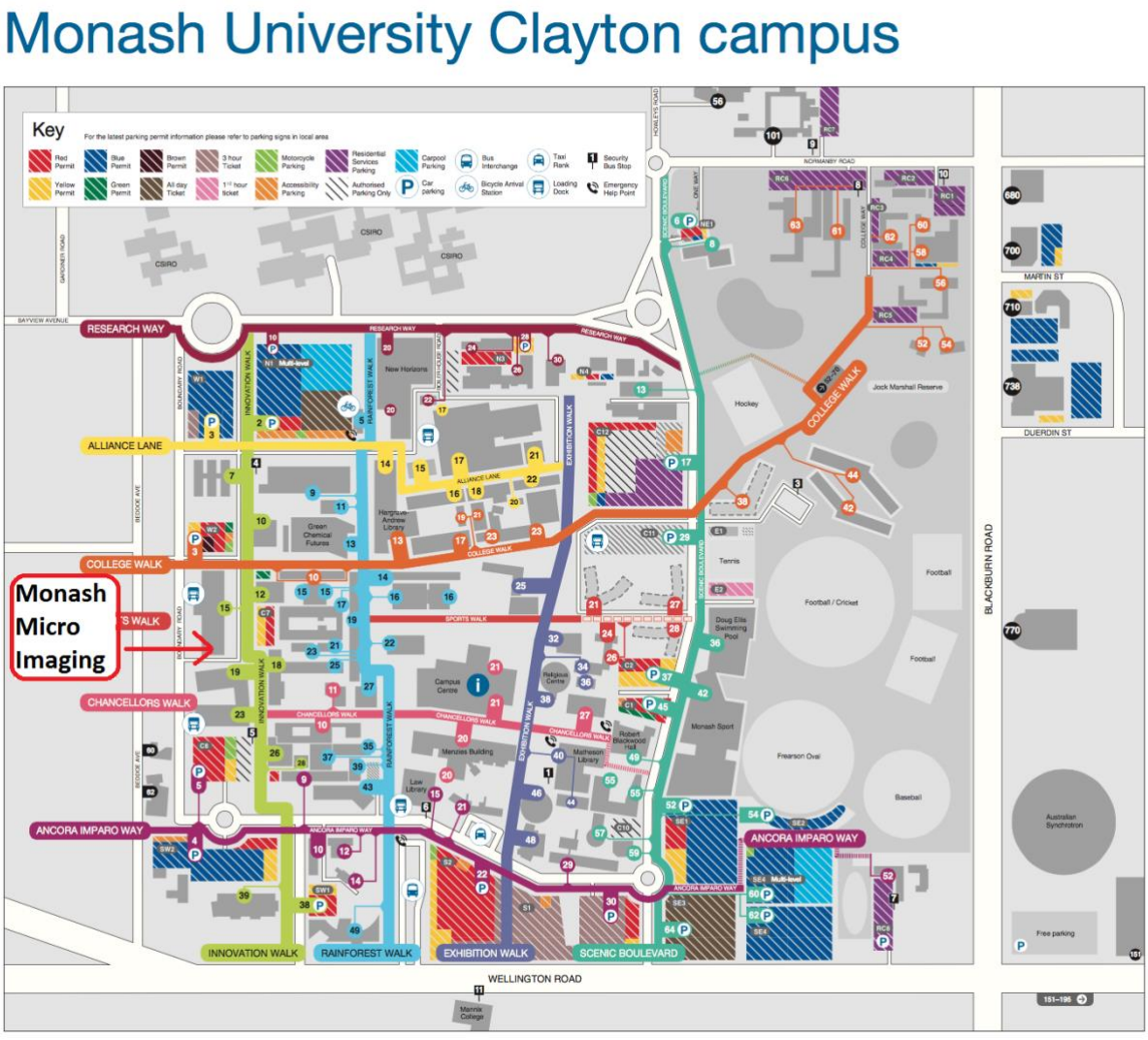


**Figure 1. Location of the Monash Micro Imaging on the Monash University Clayton campus.**

# BUILDING DIRECTORY

Plans of the ground floor Figure 2. The Facility's room directory and telephone list is given in Table 1.

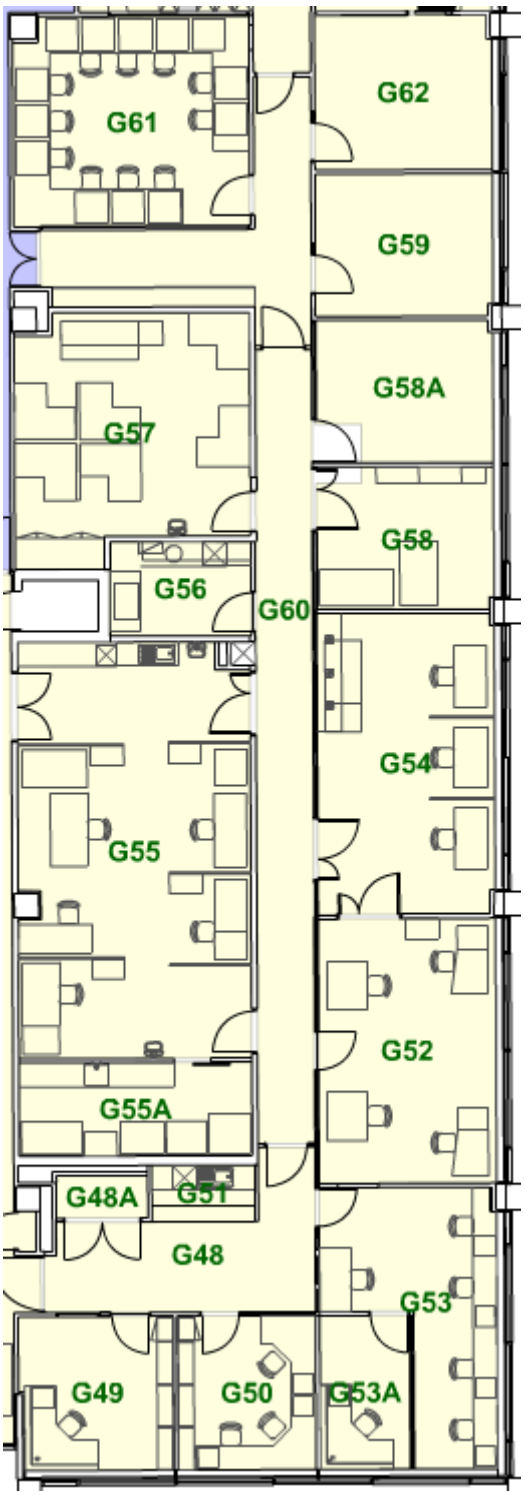


**Figure 2. MMI, 15 Innovation Walk ground level.**

## *Toilets*

Male, Disabled and Female toilets are located on the Western side of the building foyer, near the lifts.

## *Smoke-free Campus*

With effect from 1 January 2016, Monash is a smoke-free University.

**Table 1. MMI Room Directory and Telephone List.**

| Room Number | Description | Telephone | Comments |
|---|---|---|---|
| G48 | Monash Micro Imaging | | Main entrance |
| G49 | Mr Stephen Firth<br>MMI Manager | 990 55635 | Office |
| G50 | Dr Alex Fulcher<br>Dr Oleksandr Chernyavskiy<br>Dr Jihane Homman-Ludiye<br>MMI Microscopists | 990 55612 | Office |
| G52 | Nikon Confocal Laboratory | 990 20866 | Nikon Upright<br>Nikon AXR NSPARC<br>Nikon Invert #2<br>Abberior STED |
| G53 | MMI General Office<br>Mrs Margaret Rzeszutek<br>Administrative Assistant | 990 20878 | MMI Staff Only |
| G53A | Equipment storage | 990 20877 | Office |
| G54 | Zeiss Laboratory | 990 20890 | Olympus FV1000<br>Zeiss LSM780<br>Zeiss LSM980<br>Zeiss Lattice Light Sheet 7 |

| Room Number | Description | Telephone | Comments |
|---|---|---|---|
| G55 | Leica Laboratory | 990 5998 | Leica SP5 5channel<br>Leica SP8 Invert<br>Leica SP8 Upright<br>Leica Stellaris5<br>Leica Thunder<br>Perkin Elmer Phenix+ |
| G55A | Cell Culture Laboratory | 990 20897 | |
| G56 | Histology Laboratory | | |
| G57 | Olympus Laboratory | 990 20826 | Olympus MVX10<br>Olympus SVX16<br>Olympus BX51 (PhoenIX)<br>Leica LX (G57)<br>Leica DMi8 (Dexter)<br>Leica DMi8 (Sinister)<br>LaVision Ultramicroscope II<br>CSHL PolScope<br>ABRIO Polscope |
| G58 | 3i Laboratory | | 3i Spinning Disk Confocal |
| G58A | Demonstration and Training Laboratory | | Nikon C1 Invert #1 |
| G61 | Computer Laboratory | 990 20827 | Licensed users only |

# BUILDING ACCESS

The main MMI entrance is restricted via swipe card security door, if you do not have access there is a doorbell to attract staff attention. This gives access to the General Office, Director's Office, Microscopist's Office and the Kitchen.

Access to the main laboratory area is restricted by Australian Federal Law as Physical Containment Level 2 (PC2), Authorised access only. Authorised Facility Users can open the door to the laboratory area using their Monash ID card. Please contact the General Office if you change your ID card so that we can contact Security to activate your new card to allow access to the building. Visitors should go to the General Office to ask for the door to be. Visitors will require local OHS induction and/or be supervised by an MMI staff member within the PC2 facility.

Business Hours bookings on microscopes can be made between 9:00am and 5:00pm on normal university working days.

Monash staff and students must display their Monash ID card while in the Laboratory. All Visitors must sign in using the QR code at Reception.

## *After-Hours Access*

An After-Hours licence may be granted once a microscope user has achieved a sufficient level of skill to be able to operate the microscope independently. Additional training is provided to allow the User to correctly rectify minor issues should these arise after hours when MMI staff are not available. After-Hours access is only available to Monash staff and students and affiliates.

Users with an After-Hours licence have 24-hour/7-day access to the laboratories via the main entrance.

For further information on After-Hours access please see page 27.

## *Use of Monash ID cards*

Monash Staff and students **must not** allow any other person to use their Monash University ID card. To do so is an extremely serious matter which could amount to conduct capable of disciplinary action. Staff and students who become aware of such misuse must immediately report the matter.

An MMI User is **not permitted** to let anyone else into the laboratory area except for visitors under their direct supervision. This includes another MMI User who didn’t bring their ID card or someone who sneaks in behind while the door is open. Anyone without an ID card must contact an MMI staff member who will check that they are a current User before letting them enter the laboratory area. In some special cases such as when a card is lost or damaged a fob may be provided for temporary use.

The following advice on the use of Monash ID cards has been provided by the Monash Office of the General Counsel.

## Staff

Staff **must not** allow any other person to use their Monash University ID card. To do so is an extremely serious matter which would be in breach of:

- the staff's employment contract. All staff employment contracts include a term requiring staff to comply with any obligations imposed by University policies and procedures. It is each staff member's responsibility to keep themselves informed of University policies and procedures at all times;
- the Access to Controlled Areas Policy (see http://www.policy.monash.edu/policy-bank/management/facilities-services/access-to-controlled-areas-policy.html). This policy applies to all staff and students of Monash. All persons to whom an access control card has been issued must only use the card to enter areas of campus for which they are currently authorised. Access cards must be used only by the person to whom they have been issued. They must not be lent, given to, or used by any other person to enter a controlled area for which they have no authorised right of entry. Anyone possessing or using an access control card to enter University premises without authorisation will be subject to disciplinary actions from the University or criminal charges where appropriate; and
- the terms upon which access was issued. MMI licensees are required to sign the Safety Inductions Checklist and User Agreement attached to the MMI User Manual, where licensees agree (amongst other things) that they have read and understood the Manual, to follow the MMI rules and procedures at all times and that only authorised personnel (Licensed Users) may enter a laboratory unsupervised.

The above mentioned breaches are extremely serious matters and could amount to conduct capable of disciplinary action or dismissal under the Monash University Enterprise Agreement.

## Students

Students **must not** allow any other person to use their Monash University ID card. To do so is an extremely serious matter which would be in breach of:

- the *Monash University (Council) Regulations.* Students are bound by University statute as a matter of law. When students enrol on the Web Enrolment System they also acknowledge and agree that they are bound by the statutes, regulations, policies and procedures of the University as amended from time to time. Regulation 30(2) states that a student who commits, or attempts to commit, or assists or encourages another student to commit, an act of general misconduct, academic misconduct or research misconduct commits a misconduct offence. General misconduct is conduct that is contrary to accepted standards of behaviour and includes conduct by which a student knowingly or recklessly breaches a University statute or a University regulation or a published policy or procedure of the University. A member of staff of the University who has reasonable grounds to believe that a student has committed an act of misconduct must report the matter to the responsible officer. General misconduct by a student is a serious matter which can result in disciplinary action and penalties, including exclusion from the University.
- the Access to Controlled Areas Policy (see http://www.policy.monash.edu/policy-bank/management/facilities-services/access-to-controlled-areas-policy.html). This policy applies to all staff and students of Monash. All persons to whom an access control card has been issued must only use the card to enter areas of campus for which they are currently authorised. Access cards must be used only by the person to whom they have been issued. They must not be lent, given to, or used by any other person to enter a

controlled area for which they have no authorised right of entry. Anyone possessing or using an access control card to enter University premises without authorisation will be subject to disciplinary actions from the University or criminal charges where appropriate; and

- the terms upon which access was issued. MMI licensees are required to sign the Safety Inductions Checklist and User Agreement attached to the MMI User Manual, where licensees agree (amongst other things) that they have read and understood the Manual, to follow the MMI rules and procedures at all times and that only authorised personnel (Licensed Users) may enter a laboratory unsupervised.

The above mentioned breaches are extremely serious matters and could amount to conduct capable of disciplinary action or exclusion from the University under the *Monash University (Council) Regulations*.

## *Guest wireless*

Monash has three wireless networks available.

- Eduroam – for Monash staff and students and visitors from other eduroam institutions.
- Guest-wireless – for registered Monash visitors who have a temporary Monash account.
- Monash Free WiFi – open access for the general public on all Australian campuses. This network is not encrypted.

For further information see http://www.monash.edu/wireless.

# INSTRUMENTATION AND SUPPORT FACILITIES

MMI relocated into the new building, Building 75, in 2008.

MMI maintains:

PC2 (OGTR) approved facility.

Ten confocal microscopes:

Nikon AXR NSPARC invert Confocal – Seven lasers (405, 488, 561, 640, 730 nm), Four detectors, incl multi-alkali, GaAsP, and Ex Red GaAsP.

- Inverted Ti2-E microscope
- 8K Galvo and 2K Resonant scanner
- Wide field of view
- Live cell capabilities in Q3 2025.
-

**Nikon C1 confocals** – four solid state excitation lasers (405, 488, 561, 638 nm), three detection channels, automated stages.

- Nikon Upright – Range of Objectives including water dipping.
- Nikon Invert #1 and #2 – Environmental chambers with heating and $CO_2$, water immersion objectives for live cell microscopy.
-

**Leica SP5 and SP8 Confocals** – 405 nm diode laser, Multiline Ar laser (458, 476, 488, 496, 514 nm lines), 543 nm HeNe or 561 nm diode laser, 633 nm HeNe or 638 nm Diode laser, automated stages.

- Leica SP5 Invert – 5 fluorescent channels + transmitted light, AOBS (fast channel switching), resonant scanner (8000 Hz), environment chamber (temperature and $CO_2$).
- Leica SP8 Invert – 2 PMT, 1 HyD channels, environment chamber (temperature and $CO_2$).
- Leica SP8 Upright Multiphoton - 2 PMT, 1 HyD internal channels (descanned detectors), 2 PMT, 2 HyD external channels (Non-descanned detectors), resonant scanner (8000 Hz), large configurable Scientifica stage, MaiTai DeepSee multiphoton laser, specialist 20 x 0.95 N.A. 2 mm W.D. BABB dipping objective.
-

**Olympus FV1000 Inverted confocal** – 405 and 488 nm diode lasers, 543 and 633 nm HeNe lasers, three channels (two Spectral), environment chamber (temperature and $CO_2$).

**Zeiss LSM780 Inverted confocal** – 405 nm diode, single-line 488 nm Ar, 561 nm and 638 nm diode lasers, three PMT channels, BiG (APD) detectors, environmental chamber (heating and $CO_2$).

**Abberior inverted confocal/STED** – 405, 488, 561, 638 nm solid state lasers, 595 nm and 775 nm STED lasers, three channel (APD), on-stage incubator with heating and $CO_2$.

Four dedicated Live-Cell fluorescent microscopes:

**Leica Live Cell microscopes** – Four microscopes, filter cubes for all standard fluorophores, monochrome camera, automated stage and software, supports mark and find, tiling, environmental chamber (heating, $CO_2$, humidity), supports multiwall plates as well as slides.

**AF6000 LX (formerly known as G55 LX)**

**DMi6000 –** updated with GFC9000 GT sCMOS camera, 4MP, capable of 50fps

**DMi8 (Sinister) and DMi8 (Dexter) –** matched pair of microscopes, fitted with GFC9000 GTC sCMOS camera, 4MP, capable of 100fps

**Olympus Cell^R** – filter cubes for all standard fluorophores, automated stage and software, supports mark and find, tiling, environmental chamber (heating, $CO_2$, humidity), supports multiwall plates as well as slides.

**LaVision Ultramicroscope II** – Light Sheet microscope, samples are completely immersed in refractive index-matched solution. Five laser excitation. Compatible with multiple objectives.

Specialist Systems:

**Abberior STED super resolution microscope** – live cell compatible super resolution with Abberior ResCUE capability and on-stage live-cell chamber with heating, $CO_2$ and humidity control.

**PicoQuant FLIM** – mounted on the FV1000 confocal system. Time-resolved Single Photon Counting Fluorescence Lifetime Imaging.

**Zeiss Confocor 3 Fluorescence Correlation Spectroscopy (FCS)** – mounted on the LSM780.

Fluorescent microscopes:

**Olympus MVX10 and SZX16 Fluorescent dissecting microscopes** – Fluorescence, transmission and external light sources (ringlight and octopus), digital cameras.

**ABRIO polarising microscope** – ABRIO polarising filter for semi-quantitative polarising microscopy.

**Cell Culture Laboratory** – small laboratory with $CO_2$ incubator, Laminar Flow cabinet for preparation of media and additives, Biohazard class II cabinet for preparation of cell lines/culture material (not for bacterial, fungal, viral work), fluorescent cell culture microscope.

**Histological Laboratory** – small laboratory for any process requiring solvents, also Animal Ethics Committee (AEC) approved area for preparation of animal specimen for microscopy, Fume hood and solvent storage.

**Computer Laboratory** – MMI supports and has licenses for ImageJ (FIJI), IMARIS, Metamorph, SIMFCS, Huygen's deconvolution, a range of computers.

**Table 2. MMI software and computers (Room G61).**

| Computer | Software |
|---|---|
| Terminator | Imaris, Metamorph, FIJI |
| Venom | Imaris, FIJI |
| Overkill | Imaris, FIJI |
| Titan | Imaris, FIJI |
| 64-bit XP | Imaris, FIJI, CellSens, Ziess Zen |
| OW1 | Leica LAS AF, Metamorph |
| OW2 | Metamorph |
| OW3 | Olympus Analysis |
| OW4 | Nikon NIS elements |
| Drishti | Drishti |

# USING MMI

Enquiries regarding use of MMI facilities can be directed to the Manager, Mr Stephen Firth.

### Registration

Prospective users can register with MMI via the Platform Booking System (PBS), the PBS, also known as iLabs, is available from the MMI website.

First users must Request Access to iLabs, MMI will accept the request allowing the applicant to then Request Services – Register with MMI.

Once Registered users can use the iLabs system to request training on specific items of equipment.

# CHARGES

Users are charged a Yearly Registration for access and training, and then an hourly rate dependent upon their host department. High-end systems may require collaboration with MMI for use.

The MMI facility and staff are supported by Monash University, the Faculty of Medicine, Nursing and Health Sciences, the Biomedicine Discovery Institute, the Australian Regenerative Medicine Institute, and the School of Biological Science. Cost for microscope use in MMI differs depending upon the users' department.

Charges are displayed on the iLab Platform Booking Software when booking instruments.

## *External charges: commercial entities*

Monash University must charge full commercial rates for work done by or on behalf of **commercial entities** under the Trade Practices Act administered by the Australian Competition and Consumer Commission (ACCC) (see the Australian Consumer Law Compliance Guide, http://intranet.monash.edu/legal/aclcguide.html). External commercial work will require costing, a contract and a separate Project Number. External industry Users should contact the Manager to discuss their microscopy needs.

Please note that negotiations for external work can be very involved and time consuming, particularly when intellectual property rights are involved. Undertaking external work at the internal charge rates may be both a breach of University policy and illegal under Trade Practices Act administered by the ACCC. Monash Users who need to undertake microscopy on behalf of an external client **must** discuss this with the Manager well in advance of when they plan to start the work.

### Safety Induction

You must complete the theory training and safety induction before you can work unsupervised in the building.

Prior to attending the Induction you must download and read the MMI User Manual (this document). The Manual (PDF file) can be downloaded from the MMI web site (https://platforms.monash.edu/mmi/).

After completing the Induction you must complete the iLab form for our records

Note: The *User* is the person who has the microscope training/access. The *Supervisor* is responsible for authorising the work and for payment of any costs incurred such as for training, consumables, equipment use or the cost of repairing equipment damaged as a result of incorrect operation by the *User*. The *User* and *Supervisor* can be the same person.

## *Supervisor's Responsibility*

The Supervisor of a Project is responsible for authorising the work and for payment of any costs incurred such as for training, consumables, equipment use or the cost of repairing equipment damaged as a result of incorrect operation by a User on this Project.

# TRAINING

Your training needs will be identified during your initial meeting. MMI instruments can only be used by trained Users.

Training sessions will use standard samples and are not intended to yield scientific results.

On completion of training you will attain a standard of skill necessary to undertake basic microscope operations safely and effectively during normal business hours when assistance is available from MMI staff. After you have been using the microscope for some time, typically three months, you may request training for an After Hours licence.

## *Theory of Microscopy Training*

To use systems at MMI researchers must attend the Theory training session, this two-hour lecture encompasses the basic optics of the microscope, mechanism of fluorescence, confocal optical sections, digital imaging and the Local OHS Induction.

## *Practical Microscopy Training*

MMI has a wide range of equipment, please discuss your requirements with MMI staff who will determine the best microscope to train the user to achieve the desired outcomes of the project. Practical training on the microscope can take from 30 minutes for a simple fluorescence microscope, up to 2 x 2 hours for a confocal microscope.

Confocal training consists of two 2-hour sessions. In the first session our training samples will be used to demonstrate the hardware and software of the instrument. In the second session the user will be required to bring their own samples, demonstrate that they can produce an image as shown in the previous training, then with the help of the MMI trainer optimise the microscope set-up for their particular sample.

## *Additional Training*

After you have completed your initial training and as your work progresses, you may require additional training. This could be in the application of more advanced techniques or in the operation of other microscopes. To arrange additional training, please contact the relevant Instrument Manager (see **Error! Reference source not found.**) and request training via the P latform Booking System (iLabs).

## *Refresher Training*

If you do not make regular use of equipment you may require refresher training. The purpose of the refresher training is both to ensure that you know how to correctly operate the equipment and also to inform you of any recent changes in operating procedures.

## *Training Charges*

All training charges are covered under the Yearly Registration and hourly use charges.

## *Responsibilities*

In order for microscope training to be as effective as possible, the following outlines the responsibilities of the Trainer and the Trainee.

### Trainer's Responsibilities

To teach the Trainee how to operate the microscope safely, effectively and without damage.

To instruct the Trainee in the basic principles of operation of the microscope and to teach the Trainee how to perform basic adjustment of the microscope and accessories in order to achieve reasonable performance.

To teach the basic microscope techniques relevant to the Trainee.

To provide advice to the Trainee on optimisation of the microscope's performance.

Trainers will provide advice and assistance with imaging experiments however MMI takes no responsibility for the outcome of the experiment.

## Trainee's Responsibilities

To comply with MMI and University OHS policies and procedures.

To always seek help if you are unsure of the correct operating procedure or if the equipment is not working properly.

To always follow the Trainer's instructions on the operation of the microscope.

To take detailed notes.

To learn the theory of microscopy and related techniques by consulting books and the scientific literature. Facility staff can suggest suitable references.

To become proficient in operating the microscope.

If you are conducting live cell imaging experiments – it is the users responsibility to check before conducting their imaging that environmental conditions are as required. This includes $CO_2$ levels and incubator temperature. There are devices available on request to monitor these conditions.

# BOOKING INFORMATION AND RULES

Microscopes can be booked through the Platform Booking System (iLabs), see https://monash.ilab.agilent.com/account/login.

Bookings can only be made a limited time in advance, typically two weeks, and there will be a limit on the number of sessions or hours that can be booked within this period. Booking limits will vary from time to time depending on instrument load. Please contact the Instrument Manager if extra sessions are required urgently. Last moment bookings are available and are subject of instruments' availability.

Activities such as repairs and maintenance, undergraduate classes and training of new users are usually undertaken during normal business hours and occasionally this will significantly limit the time available for regular bookings.

*From time to time you must check your details in the PBS (iLabs) to ensure that your user details are correct. In particular, it is essential that your email address is correct. If email sent to you bounces then it will be assumed that you have left Monash University and your licences, projects and access will be cancelled.*

## *Booking Rules*

The equipment in the Facility is in heavy demand. Please observe these simple rules so that we can optimize access for everyone.

You must attend, ON TIME, every session you are booked for, unless there are exceptional circumstances beyond your control (such as illness).

If you are unavoidably delayed in starting a session, you MUST contact the Instrument Manager or one of the Microscopists. Users who fail to notify the Facility of a delay within 30 minutes of their scheduled start time may have their session reassigned to another User. Persistent lateness may result in a reduction or suspension of booking entitlements.

A microscope can only be used by the person who booked it. Bookings are NOT transferable.

You must finish your session on time so that the next user is not inconvenienced.

If instrument time is available you can extend your microscope session outside the booked time (subject to your access time).

# PUBLICATIONS AND ACKNOWLEDGEMENTS

Your use of Facility facilities is heavily subsidised by the University and by grants from external funding agencies. In order to comply with current funding obligations and to apply for new funding, the Facility must report on the number and type of publications produced by Users of the Facility. It is **essential** that you, the User, acknowledge the Facility in every publication that uses the Facilities microscopes, computers and expertise, and where appropriate, include Facility staff as authors.

It is a **condition of use** of the Facility that:

1. You acknowledge the Facility and any assistance provided by Facility staff in the publication or report;
2. Facility staff members who have acquired and/or interpreted data on your behalf should be invited to be co-authors on the publication, as is usual practice.

Please acknowledge the contributions of the Facility in your publications simply by including:

**Where Facility staff provided assistance (but not enough to justify co-authorship):**

“The authors acknowledge use of the facilities and the assistance of NAME OF MMI STAFF MEMBER(S) at the Monash Micro Imaging.”

**OR**

**Where you carried out all the work or one or more MMI staff members are co-authors:**

“The authors acknowledge use of facilities within the Monash Micro Imaging.”

**In addition, specific instruments funded by the ARC (as listed in Table 3) must be acknowledged as follows:**

“This research used equipment funded by Australian Research Council grant(s) (*select from table below*)."

OR

"This research was supported under the Australian Research Council's *Facilitys of Excellence* funding scheme (COE for Design in Light Metals)."

**Table 3. MMI instruments funded by the ARC**

| | |
|---|---|
| Abberior STED super resolution microscope | ARC LIEF Funding (LE150100110) |
| Zeiss Lattice Light Sheet 7 | ARC LIEF Funding (LE220100138) |

# STORAGE OF MATERIALS AND DATA, COMPUTING

Facility Users are not permitted to store materials in the building. The Facility operates on a "Carry-in/Carry-out" basis. It is assumed that anything left behind is not needed and after a short grace period, these materials will be disposed of.

Samples and sample preparation materials labelled with the User's name, telephone number and date can be left in designated areas within the laboratories for short periods.

## Computing

You **MUST NOT** install any software or updates on Facility computers. If you need to use a program that is not currently installed please contact the Facility Manager to discuss this. It may be possible to have the software installed.

Computer Room computers are provided to allow Users to process their data. They are not general use computers.

Access to some special-purpose Computer Room computers is restricted.

You are not permitted to use TeamViewer or any similar software running on a Facility computer to remotely access an external computer.

If required TeamViewer can be used to remotely access a Computer Room computer to monitor long term calculations. Please contact the Facility Manager if you need to do this.

Laboratory computers are only to be used for instrument control, data acquisition, processing and transfer. Web browsing, Authcate login and use of TeamViewer or similar programs is not permitted.

### *USB Devices*

Use of USB memory sticks, external USB drives or similar devices is **NOT** permitted on MMI computers as these are a source of virus infection. A number of computers are not protected by virus checkers as the manufacturer will not guarantee equipment performance if any additional software is installed.

### *Data storage and transfer*

**Storage and security of your data is your responsibility.**

**Storage and security of your data is your responsibility.** Data can be lost at any time due to hardware failure, software upgrade or fault or user error.

In general, you should not leave your data on Facility computers for prolonged periods of time (>1 month). The exception is images used to extract settings for future experiments, for this purpose there is a folder on every instrument computer called "User Settings", where you can have a folder of settings that you might need to recall in future experiments; ask an MMI staff member if you are unsure where this folder is. In the "User Settings" folder do not save large tiles, multi-position, z-stacks, or time experiments as this information is not required for future experiments and will make the file stored larger than is needed.

Every instrument PC has a "MyData" folder in which users must make a sub-folder using their Monash Authcate. Under the Authcate folder another sub-folder level must be created (it is recommended that a new folder, for example date is created every session) and the data

collected for the session placed in that folder, which is then uploaded via the MyData application. For further information about this process go to the MMI website https://platforms.monash.edu/mmi/ and look under the “Resource” tab, then under “Data Handling & Storage”, where you will find a quick start guide. It is recommended to save your image data to local storage, not directly to network storage during/after an experiment. Saving directly to network space can lead to file corruption. However, if you have network storage space (i.e. S:\ “\\ad.monash.edu\shared”) you may wish to send a copy of your data to this space for quick access/analysis. This would be in addition to using the MyData setup, not instead of, and you must remember to disconnect from your network drive after transfer of your data is complete. To access any Monash network space you must go to the Map network drive tab, type in the address (i.e. \\ad.monash.edu\shared), select “connect using different credentials”, then enter in the user name “Monash\”your authcate” then your authcate password. For clarification of any of the above please see MMI staff.

# SAFETY RULES AND LABORATORY PROCEDURES

The Safety Rules and Laboratory Procedures comprise part of the MMI Safety Induction that all Users are required to complete. Note that these are the general rules and procedures applying to all people using the Facility. You will be instructed in any additional rules and procedures that apply for specific items of equipment as part of your training.

For information regarding OHS Risk management at Monash University, see the Monash OHS Web Page: http://www.monash.edu/ohs/index.html

Where any hazard was identified with either your samples or the sample preparation methods to be used, a Risk Assessment must be prepared by the User in the S.A.R.A.H. on-line Risk Assessment Database and all interested parties must be informed of the Risk Assessment number.

If a hazard has been assessed, and, after taking into account all normal methods of risk minimization, the risk is still medium or high, then a Safe Work Instruction (SWI) must be prepared by the User if a suitable SWI has not already been prepared (Note: an SWI may also be called a Safe Working Procedure).

All Risk Assessments and SWIs with risks that remain as medium or high must be checked and counter-signed by the Safety Officer or Deputy Safety Officer.

Materials Safety Data Sheets (MSDS) are downloadable using Chemwatch.

Failure to comply with MMI Rules and Procedures may result in a penalty being imposed. Penalties include warnings, reduction in licence level, temporary loss of licence, permanent loss of licence and permanent loss of access to MMI.

## *OHS Induction*

Monash staff, students and long term visitors who need to carry out unsupervised work in laboratory areas (you will have a Monash ID card)

You must have already completed

1) **Online OHS induction** https://my.monash.edu/services/training/ohs)

2) Your Department's or School's **Local Area OHS induction.**

**3) Monash University Biohazard training 1 and 2**

In order to work in MMI laboratory areas without immediate supervision you must complete the MMI Safety Induction Checklist and User Agreement (last page of this manual).

In order to work in MMI computer room without supervision you must complete the following MMI Safety Induction Checklist and User Agreement (last page of this manual).

You are not permitted to use any equipment in MMI other than computers in the computer room and you must be under supervision while in laboratory areas.

## Visitors under supervision at all times

Visitors are allowed within the Facility.

Visitors MUST sign in using the iPad and Envoy software at Reception.

Visitors are the responsibility of the supervisor named at Sign-in.

You are not permitted to operate any MMI equipment and you must be under supervision while in laboratory areas.

## Contractors working under supervision at all times

1. Short MMI Induction.

## Buildings and Properties staff and contractors

Buildings and Properties will arrange inductions for Buildings and Properties staff and contractors.

**Contractors who need to carry out unsupervised work in laboratory areas (you will not have a Monash ID card)**

Contractors must first complete the Monash Contractor Induction Program provided by the Buildings and Property Division (formerly Facilities & Services), see http://www.monash.edu/contractors/contractor-induction.

## Computer room only users

In order to work in MMI computer room without supervision you must complete the following MMI Safety Induction Checklist and User Agreement (last page of this manual).

You are not permitted to use any equipment in MMI other than computers in the computer room and you must be under supervision while in laboratory areas.

Induction checklists and further information can be found at http://www.monash.edu/ohs/ohs-training-and-induction/ohs-induction/local-area-ohs-induction.

## *General Rules*

If in doubt, always seek help!

You must comply with any temporary notices or tags that may be used from time to time in the Facility. For example, Do Not Operate notices and warnings of changed operating conditions due to equipment faults.

You may only operate equipment for which you have been trained.

Doors and emergency exits must be kept clear.

Do not tamper with fire extinguishers, first aid kits and other emergency equipment.

Children are not permitted in any laboratory. No running in the building.

The Facility is equipped with very sensitive smoke and fire detectors. Any work that may generate smoke or dust must be carried out in a fume cupboard.

With effect from 1 January 2016, Monash is a smoke-free University.

## *After-Hours Operation*

Facility business hours are 8:45 am to 5:00 pm Monday to Friday on normal University working days.

After-hours usage of equipment requires after-hours access. Apply for after-hours access via iLab.

In the event of a fire alarm after hours, make the equipment safe and evacuate the building on the first fire alarm (Orange light, Beep-Beep alarm). Do not re-enter the building until you are advised that it is safe to do so by a University security staff member or Facility staff member.

## *Personal Protective Clothing and Equipment*

Closed footwear must be worn in all laboratories.

Additional Personal Protective Equipment (e.g. laboratory coats, long trousers, protective aprons, safety glasses, full-face safety visor, gloves…) must be worn wherever indicated.

Personal protective clothing and equipment must not be worn in office areas or meals areas.

Personal protective equipment (PPE)

Lab coats must be worn within the two glass doors that enclose the PC2 facility.

Gloves and safety glasses must be worn when handling wet samples until they are placed on/in microscopes.

Spills must be cleaned up with 80% ethanol, not bleach as this will damage the microscope optics.

Laboratory Use

No food or drink may be stored or ingested in any laboratory.

You must follow the Operating Procedures provided with each piece of equipment and you must comply with all Laboratory Operating procedures.

Never attempt to repair any equipment. Any problems, faults, or unusual behaviour must be reported to a Facility staff member. Names of Facility staff members responsible for equipment can be found in Operating Procedures and in **Error! Reference source not found.**.

No items of equipment, tools or consumables can be removed from the room in which they belong without the permission of a Facility staff member.

Clear and clean your work area when finished. Glassware must be cleaned by the User immediately after use and must not be removed from the Facility.

Samples and sample preparation materials labelled with the User's name, telephone number, date and composition (where necessary) can be left in refrigerators for short periods.

It is assumed that anything left behind is not needed and after a short grace period, these materials will be disposed of.

Keep benches, sinks, and fume hoods clean and clear of clutter.

If equipment is not functioning as you expect, seek help!

## *Fume Cupboards*

Work with the sash only open far enough to perform the procedure comfortably.

Do not leave any unnecessary glassware, chemicals, equipment in the fume cupboard.

Never use a fume cupboard if the extraction fan or backwash are not working. Report any faults immediately to a Facility staff member.

For further information on use of fume cupboards see http://www.monash.edu/ohs/information-and-documents/all-information-sheets/use-of-local-exhaust-ventilation-systems-fume-cupboards.

## *Samples and Chemicals*

Materials Safety Data Sheets (MSDS) for each chemical stored or used in a laboratory are kept in the master MSDS folder located in room G55 or can be assessed online using Chemwatch. Ensure that you read the MSDS for all chemicals used by you and prepare Risk Control Worksheets and Safe Work Instructions as required. A glossary of terms used in the MSDS forms is located in each folder.

Only those chemicals listed for each laboratory in the front of the master MSDS folder may be stored or used in the Facility.

You must have carried out a Risk Assessment for your work (see www.monash.edu/ohs/forms/risk-management-program.pdf) and you must inform MMI of all Risk Phrases and/or Safety Phrases associated with each material that you intend to bring into MMI, whether the material is a sample or is used for sample preparation. Users MUST NOT bring any chemicals into the laboratory without permission. Permission must be sought from the Safety Officer, Mr Stephen Firth, before any new chemical may be introduced into a laboratory.

Store all chemicals in the appropriate cabinet.

Segregate different classes of chemicals (refer to MSDS for class).

Label all chemicals, reagents, samples and wash bottles. Labels on working solutions and preparations must include the chemical composition and product name, the preparation date, expiry date (if appropriate) and the owner's name and telephone number.

The following chemicals are strictly BANNED from the Facility.

- Hydrofluoric Acid
- Perchloric Acid/Acetic Anhydride mixes
- Nitric Acid/Ethanol mixes

## *UPS power*

Red general power outlets (GPOs) in microscope rooms and in the General Office are connected to an uninterruptible power supply (UPS).

## *Compressed Gases*

The following compressed gases are used in the Facility:

$CO_2$

All microscope rooms and most laboratories have reticulated $CO_2$. There is an asphyxiation hazard if there is a major $CO_2$ leak and the air conditioning is not operating, for example, during a power failure.

YOU MUST NOT ENTER OR REMAIN IN A LABORATORY WHILE THE AIRCONDITIONING IS INOPERATIVE.

## *Hazards and Incidents/Chemical Spills/Breakages*

Any occurrence that leads to or *potentially* leads to injury or danger to health must be reported to the Safety Officer, Dr Jihane Homman-Ludiye. A Hazard and Incident Report must be

submitted online to the Safety Analysis and Risk Analysis Hub (SARAH), see http://www.monash.edu/ohs.

Chemical spill kits are located in Corridor G60.

Chemical spills requiring clean-up are classified as Incidents and must be reported immediately to the Safety Officer.

Broken glass must be disposed of in the broken glass containers.

# EMERGENCY EVACUATION

## *Normal Business Hours Evacuation*

On hearing the ALERT tone (Beep Beep …) or seeing the flashing orange ALERT light:

Open office or laboratory door and listen to instructions over the Public Address System;

Prepare to evacuate (put equipment into a safe standby state, save files, secure personal items).

On hearing the EVACUATION tone (Whoop Whoop ….) or seeing the flashing red EVACUATION light:

Close but do not lock office/laboratory doors;

Follow instructions given by Floor Wardens (Yellow Hats);

Leave the building by the nearest safe exit;

Proceed to the ASSEMBLY AREA. For Building 15 Innovation Walk this is the grassed area to the east of 15 Innovation Walk and adjacent to 18 Innovation Walk.

Remain at the ASSEMBLY AREA until a Warden or their delegate gives the ALL CLEAR.

## *After Hours Evacuation*

Evacuate on either of the ALERT or EVACUATION warnings;

Proceed to ASSEMBLY AREA until ALL CLEAR is given.

## *Power Failure*

Microscopes are powered by Uninterruptible Power Supplies (UPS) backed up by a generator and will continue to operate in the event of a power failure. However, all other services such as general power outlets, lighting and air conditioning will fail. Emergency lighting is provided in microscope rooms.

In the event of a power failure lasting more than a minute or so you should put the equipment into a safe standby state (see microscope Operating Procedures) and leave the laboratory area. You must remain outside the laboratory area until the situation is resolved. If the power failure lasts more than 30 minutes then you must not re-enter the laboratory area until a Facility staff member advises you that it is safe to do so.

YOU MUST NOT ENTER OR REMAIN IN A LABORATORY WHILE THE AIRCONDITIONING IS INOPERATIVE (see Compressed Gases).

# IN AN EMERGENCY

## *Contacting emergency services*

If emergency services (Ambulance, Police, Fire Brigade) need to be contacted:

**Immediately dial 000 from your mobile telephone or dial 0000 from a university telephone with access to an outside line (Foyer and Specimen preparation Laboratory G35).**

The decision of calling emergency services is at the discretion of the person confronted with the situation. State:

- Nature of Emergency
- Address 15 Innovation Walk, Building Number 75
- Nearest room number
- Your name

Once the required emergency service has been notified, Monash Security must be contacted on **333** for notification in order that the emergency services can be escorted to the scene by security staff in a timely manner.

Further information can be obtained from the Emergency Procedures booklets that have detailed information on emergency response procedures including injury protocols. You should make yourself aware of the processes in these booklets which are next to every internal phone. The Monash Security website http://www.fsd.monash.edu/security also is an excellent source of information

For less urgent matters you can ring the Gate House on **53059**.

## *Fire Extinguisher Locations*

Room G60 (Corridor)

Room G55 (Leica Room)

Room G57 (Olympus Room)

## *Emergency Eye Wash And Showers*

There are Eye Wash Stations in Rooms G55, G57, emergency eye wash bottle in G52, G54, G56, G58, and an emergency shower in the main corridor G60.

## *First Aid and Spill Kits*

The first Aid kit and Spill Kit are located in the corridor (G60).

## *Safety Officers*

Figure 3. Safety Officer Dr Jihane Homman-Ludiye

**Building 75, Room G50**
**Tel.: 990 55612.**

Figure 4. Deputy Safety Officer Dr Alex Fulcher

**Building 75, Room G50**
**Tel.: 990 55612**

## *Health and Safety Representative*

Mr Stephen Firth

## *Fire Wardens*

Alex Fulcher

Stephen Firth

First Aid Officers

First Aid kit is located in Corridor G60.

The following MMI staff member is qualified as Monash Level 2 First Aiders:

**Figure 5. Dr Alex Fulcher**
**Building 75, Room G50**
**Tel.: 990 55612**

## *Nearest Medical Health service*

The Monash University Medical Health Service clinic is located on the Clayton campus at 21 Chancellors Walk, Ground floor (see Campus Map Figure 1), tel. 990 53175.