



Laboratory induction

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Introduction

Laboratories are inherently dangerous places that may have risks that are not immediately apparent, even to those that have worked in them for a long time.

Safety in laboratories in Australia is governed by laws and standards. We have a set of rules that take both into account and create a framework for every person in the lab to abide by. These are non-negotiable and anyone breaking them may not only face termination of their membership but may be subject to action from local or federal police (depending on the nature of the violation). These are not intended to restrict freedoms, but are in most cases a legal requirement. If you are unsure if something you are about to attempt is legal, make sure to speak to a lab-manager.

All safety procedures and protocols are constantly reviewed if new information becomes available. If you have any questions or concerns regarding this document please contact a lab-manager or send a message to contact@foundry.bio.

A safety induction must be completed with new members by a lab-manager before the new member is permitted to work within the lab.

Abbreviations

GMO - Genetically Modified Organism

MSDS - Material Safety Data Sheet

PPE – Personal Protection Equipment

SWP - Safe Work Procedure

Access to Biofoundry

- Children (under 14) are not permitted in Biofoundry unless supervised by their guardian.
- Only Biofoundry members are allowed in the lab. Only Lab managers can bring/authorise visitors (Breaking this law is a federal offence).
- All personnel entering the laboratory for the first time are required undertake a safety induction by a Lab manager at Biofoundry.
 - Additional safety inductions may be required to operate certain laboratory equipment (e.g. autoclave, centrifuges, etc.), or to carry out certain tasks. This will be determined by the Laboratory Manager or a member of the Biofoundry Team.
- We do require that all work in the lab:
 - Is legal and follows all relevant local, state and federal laws
 - Follows the Biofoundry safety rules and work procedures.

General

- Do not run or engage in reckless behaviour in or near Biofoundry.
- No smoking is allowed in the laboratory.
- It is prohibited to eat and drink in Biofoundry. No food and drink can be stored in Biofoundry.
- Do not use any machines, equipment or laboratory apparatus without prior instruction/training by the supervisor or technical staff on safe work procedures and practices. Whilst using any equipment you must adhere to the standard operating procedure.
- Observe safety signs at all times.
- Document your work in the lab-book or the wiki.
- Always ask a lab manager when you are unsure about a procedure.

Personal protection

- Appropriate personal protective clothing must be worn at all times.
- No Laboratory coats should be worn outside the laboratory. If you suspect your lab-coat is contaminated with a GMO speak to the lab manager.
- Approved eye protection must be worn in all areas where tools or substances such as chemicals, liquids, UV light, lasers or radiation that may cause eye injury are handled.
- Wear gloves while performing experiments and handling substances. Ensure the correct gloves are used for chemicals.
- Gloves are not protection against all chemicals and microorganisms. Most substances will leak through them over time. Replace your gloves when you spilled any substance on them.
- Don't touch any equipment besides your lab work to avoid contamination. This includes personal computers, lab-books, and anything other people may touch with bare hands.
- Avoid touching your face, clothes, personal items, and anything that other people may touch without gloves (e.g. door handle).
- Closed footwear must be worn at all time.
- Appropriate protective clothing (for example gowns, overalls, closed laboratory coats, flame resistant clothing) shall be worn where required. Safety footwear is required if performing tasks that could result in injury to the feet.
- Hearing protection must be worn if noise can damage or impair hearing.
- Fasten loose clothing, tie back long hair, remove items of clothing/jewellery that may cause injury when using equipment. This is especially important when using spinning equipment.

- Cover all open wounds when handling chemicals and biological material.
- Avoid lifting heavy objects. Where lifting is unavoidable, seek assistance if required.

Housekeeping

- Keep floors tidy and dry. Place your bags, backpacks, etc. into the container next to the entry door.
- Keep benches clean and free from chemicals and apparatus that are not being used.
- Clean working area and equipment thoroughly after use.
- Keep aisles and exits free from obstructions.
- Ensure clear access to emergency equipment.
- When leaving the laboratory, turn off all equipment in use (if appropriate), extinguish flames. All non-members entering Biofoundry must be inducted into any hazards and controls which may exist in your area, such as flammable liquids and biological materials. It may be necessary to supervise them.
- Electronic devices that are able to be removed from the lab are to be protected against contamination. This may be as simple as moving computers away from areas where experiments are performed, or typing up notes outside of the laboratory. Never touch your computer or labbook with gloves.
- Any contaminated material should not be removed from the Biofoundry lab.

Labelling

- All containers and plates have to be labelled with:
 - Your name
 - The date of preparation
 - Substance/sample name
 - Biofoundry (If you store something in the shared facilities of Cicada innovations)
- All liquids and containers must be labelled AT ALL TIMES. Even if you just fill up a beaker for immediate use, it needs to be labelled.
- Anything without the name of a member will be considered publicly usable.
- Containers without a label will be discarded by a lab manager.

Working with GMOs

All members who desire to work with GMO (genetically modified organisms) are required to undertake a GMO safety and work procedures induction by a trained lab-manager at Biofoundry.

Before performing GMO procedures, a safety office must be notified, and the lab-manager must place a "DO NOT ENTER GMO IN PROGRESS" Sign on the outside of the door. Only people that had a safety induction (PC1 behavioural guidelines) are permitted to enter during this times,

I have not been advised by the OGTR (the regulator) that I am not to enter PC1 facilities.

While working with GMOs I will:

- Create and follow procedures that will prevent cross-contamination with non-GM work. This could involve physical separation or working at alternate times.
- Document these procedures and reference them
- Ensure that all containers (primary and secondary) are decontaminated. This is to be carried out using bleach according to the Biofoundry GMO safe work procedure.
- GMOs are not to be removed from Biofoundry. They may only leave after being decontaminated chemically, as waste. If this is not possible, a lab-manager will organise to transport them for decontamination.
- If it is suspected that a GMO has escaped, I will call the Labmanager in charge of GMO's immediately (see Labmanager contacts list in the lab or on the Google Drive) immediately. This includes spills containing GMOs or suspected to contain GMOs.
- While working with GMOs, all precautions must be taken to minimize aerosol production. Please take note of this when producing GMOs.
- All cultures that are GMO must be clearly listed as "GMO".
- The cultures must be sealed when being stored, and every care must be taken to keep them as sealed as possible during work.
- If a spill somehow happens outside the facility, the surface must be decontaminated with bleach immediately according to the Biofoundry GMO safe work procedure.
- When working with a GMO, appropriate PPE must be worn. This would include at minimum a lab coat, but safety glasses and gloves may also be necessary.
- Protective clothing that is suspected to be contaminated must be decontaminated in the space by a lab-manager. If this occurs to a piece of PPE, notify a lab-manager. If you decide to wear gloves whilst working with a GMO, these must be decontaminated before being placed in the rubbish.
- Benches must be decontaminated after use with bleach.

- Any equipment that may have come into contact with a GMO must be decontaminated prior to its removal from the facility. This may include laptops or phones, so please do not use them when working with GMOs.
- I will only work with exempt organisms (classified by the OGTR) and will do so under a SWP that has been certified by a lab-manager.

Safety rules while working

- Before starting to work make sure that you are aware of all the work and safety procedures and that all equipment for these procedures (e.g. biohazardous waste bags, bleach, etc.) is in the laboratory.
- Before working with any substances consult the MSDS
- Don't leave flames unattended and don't use open flames near flammable solvents. Keep fire escape routes clear at all times.
- Do not pipette by mouth. Use mechanical pipetting devices instead.
- Display a "LEAVE ON" sign on intermittently used equipment when it is required to be left on for an extended period. When it needs to be left running overnight it should be labelled with name and telephone number of the after-hours person to be contacted.
- Individuals using electrical equipment should be aware of spillways, and arrange cords appropriately. Individuals should plug into outlets with sufficient power to run both their equipment and any others on the same line. Power outages or overloads must be reported to staff that will pass on an incident report.

Chemicals and hazardous substances

- Label all containers that hold any liquid or powder, including water. Write your name, preparation date, and substance name on it.
- Obtain the relevant Material Data Safety Sheets (MSDS) of any substance and conduct a risk assessment before commencing a new process involving chemicals. Regard all substances as hazardous unless there is definite information to the contrary.
- Email a copy of your MSDS to msds@foundry.bio. We will print it out and keep a hardcopy in both the lab and Cicada offices.
- Ensure that the chemicals are stored in the correct conditions.
- When working with chemicals ensure the correct gloves are used for chemicals. Most substances will leak through them over time. Replace your gloves when you spill any substance on them.
- Keep only the minimal required quantities of chemicals in the laboratory work area.

- Check with lab-managers before disposing of or working with hazardous substances.
- Chemical waste should not be disposed of via sinks, drains or stormwater channels unless using processes approved by local legislation. Biofoundry will organise appropriate disposal of chemicals upon negotiation (talk to a Lab manager before bringing any chemicals to the Biofoundry lab).

Waste

Liquid waste

- Aqueous non bio-hazardous waste should be poured into the aqueous waste container in the Biofoundry lab. No bio-hazardous or halogenated waste should be poured into this container.
- Bleach should be poured into the bleach waste container in the Biofoundry lab.
- If the liquid has been contaminated with any biological material it should be diluted 1:10 with bleach and left to sit for at least 20 minutes. After 20 minutes, the solution may be put into the liquid waste container. If the container is full please inform the Lab manager.

Biological waste

- Liquid waste that has been contaminated with any biological material it should be diluted 1:10 with bleach and left to sit for at least 20 minutes. After 20 minutes, the solution may be put into the liquid waste container. If the container is full please inform the Lab manager. Refer to MSDS to make sure that it is safe to mix the liquid with bleach.
- Any biological samples and all material (plates, tubes, pipette tips, gloves, etc.) in contact with it has to be decontaminated before leaving Biofoundry. If during the risk assessment of your experiment you realise that you might produce this type of waste contact a lab-manager.
- Contaminated sharps should be placed into a biohazardous sharps container.

Glass and sharps waste

- Sharps include broken glassware, needles, razor blades, glass pipettes (such as glass Pasteur pipettes), pointy wooden skewers, etc.
- If contaminated with biohazardous or chemical waste, such sharps should be placed into a biohazardous sharps container.
- All needles and small non-glass sharps should be placed into the biohazardous sharps container, even if not contaminated.
- Broken glassware which is not contaminated may be placed into the broken glass box for recycling.

Working in the lab alone

- You must work in the lab with another person present. There is no safety policy that Biofoundry can provide that will confer any real level of safety if you are working alone.

Before leaving the lab (even for a short break)

- Ensure you covered all the points in “Housekeeping”.
- Place your lab coat on hooks on the wall or in a plastic bag. If you worked with GMO or the lab coat is suspected to be contaminated with GMO, contact a lab-manager.
- Remove your gloves.
- Disinfect hands using hand sanitizer before leaving the laboratory.

Emergency procedures

- All incidents (no matter how small) must be reported to the lab-manager, and the online incident report form must be filled out.
- All members are to become familiar and be inducted with the fire procedures and location and use of fire-fighting equipment within the space.
- All members have to be aware of emergency procedures, location of hand-basins and emergency evacuation assembly locations.
- If skin gets in contact with a chemical react according to the MSDS. If this is not possible remove contaminated clothing and wash skin immediately with plenty of water if contaminated with acids and alkalis (if required seek medical attention).
- Eyes splashed with any chemical must be washed with water for 15 mins and medical advice obtained immediately.

Biohazardous Waste Spill

All members should be aware of the location of biohazardous waste and disinfectant protocol.

1. Evacuate area if necessary and call a lab-manager.
2. Assemble clean-up materials (bleach, paper towels, biohazard bags and forceps)
3. Put on appropriate PPE, including lab coat, gloves and eye protection.
4. Initiate cleanup with bleach as follows:
 - 1) Place paper towels or other absorbent material over spill area

- 2) Carefully pour disinfectant around the edges of the spill and then onto the paper towels. Avoid splashing or generating aerosol droplets.
- 3) Allow disinfectant to remain in contact with spill for at least 20 minutes
- 4) Apply more paper towels to wipe up spill
- 5) Clean spill area with fresh towels soaked in disinfectant
- 6) Dispose of all towels or absorbent materials using appropriate biohazardous waste disposal procedures. If any sharp objects are present, use forceps and discard in a sharps container.
- 7) Remove protective clothing and segregate for disposal or cleaning.
- 8) Wash hands with soap prior to leaving area.
- 9) Fill out the incident form

Chemical Hazardous Waste Spill

All members should be aware of the location of chemical waste and decontamination protocol.

- 1) Clear the area - check that others working close by are informed.
- 2) Inform lab-manager
- 3) Use the proper personal protective equipment (PPE) and clothing
- 4) Ensure fire protection is available for flammable spills.
- 5) Contain free liquids by creating a dam or boom around the spill, absorbing if appropriate.
- 6) Follow decontamination procedure as indicated in MSDS.
- 7) Assess the area to ensure proper decontamination of affected areas and equipment has taken place.
- 8) Report the spill using the incident form

Fire alarm, Earthquake, Power Outage

Before working in the lab become familiar with the fire exits of the building and the location of fire extinguishers.

- In case of a general alarm:
 - Evacuate entire facility. If safe to do so extinguish any open flames before leaving the building.
 - Leave the Cicada building and meet at the General assembly point at the Watertower (green building next to the entry of the Redfern train station).

- In case of fire occurring in the Biofoundry lab:
 - If fire is smaller than you, attempt to extinguish with fire extinguisher.
 - If fire is larger than you, or extinguishing with a fire extinguisher is not immediately successful: Leave the Cicada building and meet at the General assembly point at the Watertower (green building next to the entry of the Redfern train station).

Contacts

A list with the phone numbers and email addresses of Biofoundry Lab-managers is in the Biofoundry laboratory and on the Google Drive (Contacts-Biofoundry).

Biofoundry induction agreement

I understand and agree to follow the rules listed in the Biofoundry Laboratory induction above. If I am unsure about any of the rules I will speak with a lab-manager before continuing work.

Name: _____

Signature: _____ Date: _____

INDUCTED BY: _____

Signature: _____ Date: _____

Induction checklist for person inducting:

- Emergency exits, location of fire extinguishers and Emergency Assembly Point
- Location of hand-basins for eye-washing
- How to report an incident
- What to do in case of a spill, accident and emergency
- Explain activities before stating to work (submit a risk assessment, obtain and read MSDS)
- Explain that they need to submit a risk assessment before activities.
- Explain safe working procedures and how these are made and why we need to follow them
- Explain what to do before leaving the lab
- Explain what experiments they are allowed to do
- Explain that they will need to document their work in a lab book or online equivalent
- Explain GMO rules and the OGTR guidelines

Person inducted: _____

Inductor: _____

DATE: _____

SIGNED: _____