

# THE UNIVERSITY OF WARWICK

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## Chemical Biology Research Facility

### Chemistry

## LABORATORY INDUCTION MANUAL



**Welcome to Chemical Biology Facility.** This document will help you familiarise yourself with issues concerning laboratory work in the department. There are links included so that you can access more information from the department's intranet as you settle into your role.

The CBRF laboratories are managed by the Core technicians. If you have any questions or concerns, you can contact us by phone or e-mail. We can help with card access issues, issues with facilities etc. **Please contact [ChemTech@warwick.ac.uk](mailto:ChemTech@warwick.ac.uk) for urgent requests.**

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#### **OTHER USEFUL CONTACTS:**

	<b>Main Campus</b>
<b>EMERGENCY</b>	Call Community Safety on <b>22222</b> on any internal telephone, or <b>024 7652 2222</b>
COMMUNITY SAFETY	02476 522083

HEALTH, SAFETY & WELLBEING	41003
OCCUPATIONAL HEALTH	50082

#### **ACCESS AND SECURITY**

CBRF takes the security of its buildings, information and members very seriously and has taken the following steps to ensure good security within the Department:

- Buildings are on permanent door card access control so only Department members or recognised visitors can enter and circulate within the buildings
- Day visitors must report to the Core technicians, and be given appropriate PPE in order to enter the laboratory
- Access to CBRF is restricted to members working within the groups of Bugg, Challis, Jenner, Lewandowski, and Tosin
- Lab coats & equipment are not to be used outside the facility

### **UNIVERSITY HEALTH AND SAFETY POLICY STATEMENT**

CBRF is guided by the University Health and Safety Policy Statement at all times and this can be found at:

<https://warwick.ac.uk/services/healthsafetywellbeing/guidance/handspolicy>

More specific topic guidance is also available on the Health, Safety and Wellbeing website

<http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/>

### **FIRE SAFETY**

Further information can be found here:

<http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/fire>

**Immediate Fire Assembly Point** for CBRF is in front of Library. In case of imminent danger, the staff and students will be asked to move further from the Chemistry building. There are 2 additional fire exits at the back of the main labs opposite the cold room. Please familiarise yourself with your nearest fire extinguishers & exits.

### **FIRST AID**

A list of current first aiders is provided in each lab and also at (scroll down on the page to Chemistry):

[Qualified First Aid Staff by Building/Department \(warwick.ac.uk\)](#)

In CBRF plaster dispensers, eye wash stations, and emergency showers are situated in main lab areas. First aid boxes are provided at strategic points within the Department.

### **INCIDENT REPORTING**

All accidents, incidents and near misses must be reported using the University Health, Safety and Wellbeing Report Form at:

[UOW Portal\\_b61470bf-91f9-4f38-a1c9-8b2cce40b052 \(sheasure.net\)](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/reporting)

If you discover a major failure of service (e.g.: gas, electric, water, drainage, burst pipes, roof leakage) these should be reported immediately to Security 22222.

### **LONE AND OUT OF HOURS WORKING**

If it is necessary to work alone or out of hours, please discuss the safety implications with your supervisor (PI) and put appropriate procedures in place.

Anyone working in the Chemistry Department outside of normal working hours (0700 to 1900 hrs, Monday to Friday, including official holidays) must sign in and out using the following link;  
[https://warwick.ac.uk/fac/sci/chemistry/chemintra/techservices/sign\\_in](https://warwick.ac.uk/fac/sci/chemistry/chemintra/techservices/sign_in)

This rule applies even if you are only doing office work.

Working hours for Undergraduate students are between 8am to 7pm.

Please remember to sign in and out of the building (enter the time, please on both occasions) when you are working out of normal working hours. In an emergency, it is necessary to know who is in the building.

### **GOOD LABORATORY PRACTICE**

#### **Good laboratory practice is essential if laboratories are to be safe places in which to work:**

- Always follow the laboratory rules.
- Always carry out a pre-work risk assessment - follow instructions and any other guidance available including signs and notices.
- Do not start work if you are at all unsure about your task or if you have any concerns about the safety of the laboratory work. If in doubt – ask
- Lone working must be risk-assessed and communicated.
- Be alert to hazards and your surroundings - consider others working near you.
- Be clear of correct waste management and how to deal with any spills.
- Know the procedure to follow in the event of an emergency.

#### **Good Laboratory Practice:**

- Use protective equipment as required and remove before leaving the laboratory
  - Wear your laboratory coat
  - Wear laboratory safety goggles
  - Wear appropriate gloves and replace if damaged
  - Do not touch your face when wearing gloves
  - Cover any cuts and grazes
  - Use eye protection as required
  - Wear 'sensible' shoes in the laboratory – not open toed sandals
- Never eat, drink, smoke or apply cosmetics in the laboratory
- Wash hands before leaving the laboratory
- Lab coats must not be worn in areas where food and drink is consumed, nor in the toilets, or outside the facility.
- Gloves must be disposed of in the yellow bins not the general waste
- Keep work area clean and tidy – including fume hoods
- Personal items must be kept in lockers or office areas
- Where appropriate, use fume hoods and biological safety cabinets
  - Ensure the reaction is at least 150mm from the sash / front of cabinet
  - Close the sash when not actually working in the hood

- Use yellow cards when necessary (unattended and overnight experiments)

Working with electricity, lasers, ionising radiation, biohazards, gases etc. all pose additional risks. Follow safe operating procedures and only use if you have been trained and assessed as competent.

### Chemistry Laboratory (B133) Rules:

Before commencing your laboratory work you must discuss standard risk assessments (section D of handbook) with your laboratory supervisor.

Assessments 1,2,3,5,6,7,8,12,14,19,20,26,27,31,33,44,48,49,55 and 65 are compulsory reading.

<http://www2.warwick.ac.uk/fac/sci/chemistry/chemintra/safety/handbook/>

- MChem students are not permitted to work in the chemistry laboratory without a supervisor present or outside the standard working hours of 8am-7pm Mon-Fri. Another MChem student does not count.
- Concentrated acids should only be open and measured out in a fume hood wearing correct PPE which is identified in the risk assessment.
- If using High-vac lines, you MUST complete a training session with nominated trainer before first use.
- Follow the rules for use of the rotary evaporators posted with the machines.
- All glassware should be cleaned after use by rinsing with distilled water (NOT tap water) AND acetone.
- Dispose of solvent waste correctly separating flammable, halogenated and metal wastes. Each metal has a specific disposal route.
- All Winchester's of solvent must be kept in a flammable cabinet when not in use.
- You are responsible for disposing of your own Waste solids and Glass waste bins when full.
- Yellow overnight cards must be filled in correctly, including the date, for each reaction being left unattended overnight, highlighting **ALL** safety concerns.
- Your name and contact phone number MUST BE COMPLETELY LEGIBLE.
- The use of earphones/ iPod and phones is strictly prohibited.
- **DO NOT OPEN DOOR HANDLES WHILE WEARING GLOVES EVEN IF THEY ARE CLEAN**

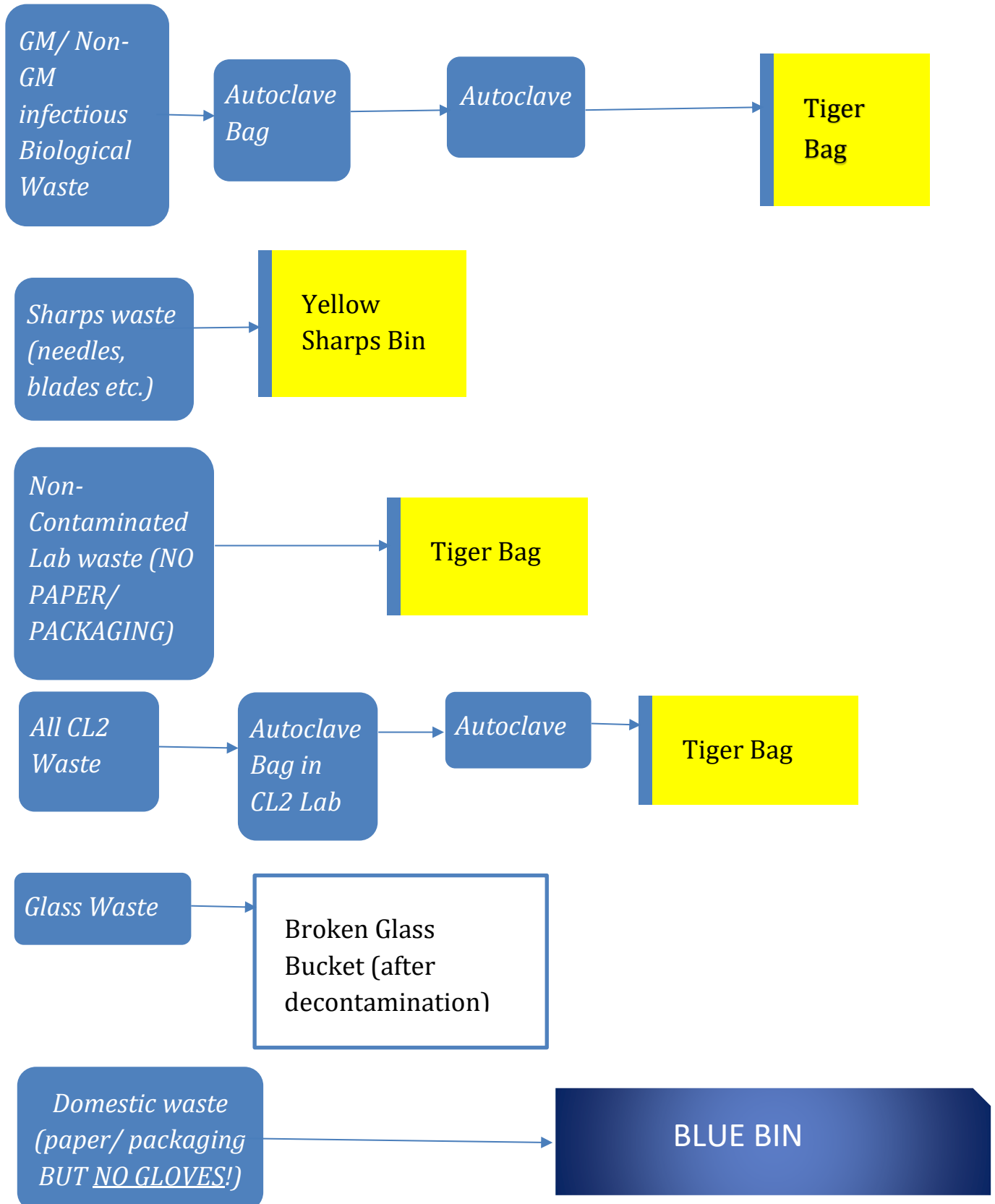
### **PERSONAL PROTECTIVE EQUIPMENT**

Lab coats, disposable gloves and safety glasses are available from stores. All other PPE required by the risk assessment for the activity will be provided by your supervisor. All masks will require fit testing by law. Your technical team will arrange this

## WASTE MANAGEMENT

Disposal of waste from the Department is tightly regulated. Please ensure that you use the correct waste stream, as shown below. More information is provided at:

[http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety/biologicalwaste/disposalroutes/uow\\_-\\_waste\\_streams.pdf](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety/biologicalwaste/disposalroutes/uow_-_waste_streams.pdf)



## **HANDLING CHEMICALS SAFELY**

The risks of handling any chemical must be assessed before purchase or first use in any procedure.

For further information, please see:

[http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/chemical\\_safety/](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/chemical_safety/)

Please ensure you know how to correctly store, handle, dispose, or deal with any spillage of all chemicals handled. We need to ensure chemicals are segregated by compatible group, not *e.g.* alphabetically

- Need to meet DSEAR (2002) regulations
- Complex because many chemicals have more than one associated hazard (toxic, flammable) but usually placed in a chemically compatible storage group. See Handbook [Section C5](#) and specific [guidance](#).

Every cupboard, fridge or freezer is labelled with a number corresponding to its location on the Labcup inventory [LabCup \(warwick.ac.uk\)](#) **The correct process for purchase, storage and disposal must be followed, as set out in Handbook [Section C3](#).** Please speak to your technical team if you require any help with this.

Emergency showers and eyewash facilities are provided throughout the labs. There is a chemical spill kit located in chemistry lab (on the top of the yellow solvent cabinet) to deal with larger spills. Ensure that you know the location of your kit. If you need to use any items, please tell your Core Technician so that the kit can be replenished promptly.

## **HANDLING BIOLOGICAL MATERIALS SAFELY**

Work with biological material must be carried out in line with the guidance on 'Biological Risk Assessment and Working Safely' at:

<https://warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety/policy>

The University Biological Safety web pages provide detailed guidance to assist with risk assessments, risk management, and necessary approval and licensing procedures. See:

<http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety/>

Necessary facilities for the handling of biological materials are provided *e.g.* containment suites for use of Category 2 and 3 organisms. You will receive a detailed induction if you require access to these facilities.

## **HANDLING GENETICALLY MODIFIED MATERIAL SAFELY**

Work with genetically modified material must be carried out in line with the guidance given in the 'Genetic Modification Risk Assessment Guide' at:

<http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety/gmriskassessmentguide/>

The University Genetic Modification web pages provide detailed guidance to assist with risk assessments, risk management, and necessary approval and licensing procedures See:

<http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/biologicalsafety/>

### **HANDLING RADIOACTIVE MATERIAL SAFELY**

To ensure compliance with regulations, work with radioactive isotopes can only be carried out by trained and registered personnel, and only in designated areas. All rooms containing isotopes have warning signs on the entrance door. If you require training please speak to a member of the Technical Team. Further information can be found at:

[http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/ionising\\_radiation/policy/](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/ionising_radiation/policy/)

Any personnel whose work involves use of equipment emitting non-ionising radiations of the following nature: lasers, high intensity light, EMF, UV, IR, noise (low frequency, audible and ultrasonic) is responsible for assessing the risks prior to starting work and should contact the University Radiation Protection Officer for advice.

### **HANDLING GASES SAFELY**

In the laboratories, there are various pieces of equipment which are connected to gas lines or gas cylinders. Consequently, this is associated with hazards from flammability to oxygen deprivation or enrichment. All rooms containing gas supplies have warning notices on the entrance doors.

[http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/gas\\_cylinders](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/gas_cylinders)

[http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/gas\\_cylinders/handlingcylinders/](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/gas_cylinders/handlingcylinders/)

Department complies thoroughly with gas safety regulations, gas lines are serviced and leak-tested annually, regulators are inspected annually and replaced every 5 years, gas cylinders are tagged and audited, monitoring systems are serviced twice a year, and all necessary training is organised by the Technical Team.

### **HEALTH SURVEILLANCE**

Some aspects of your work might require mandatory health surveillance and/or vaccination. If you have concerns about the impact of laboratory work on your health, report it to your supervisor who may refer you to the Occupational Health Service:

<http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/occupationalhealth>

### **EQUIPMENT**

- It's important to plan your experiments well in advance, as the majority of communal equipment needs to be booked before use (only after you have received training)  
<https://warwick.ac.uk/fac/sci/chemistry/chemintra/research/facilities/chembiol/equipment/>
- Before you use a piece of equipment for the first time ensure you must be shown how to use it correctly.



- Report any broken equipment to your technical team who will organise its repair.
- Do not attempt to mend any item yourself.
- Please note that all equipment will need to be accompanied by a completed decontamination certificate before it is sent for repair. Decontamination certificates can be found at <http://www2.warwick.ac.uk/fac/sci/chemistry/chemintra/research/facilities/chembiol/safety/decon>
- If you need to leave a piece of equipment running overnight discuss the safety implications with your supervisor or Technical Team and label it with your name and contact details (using yellow form).
- There is a list of point of contacts for all equipment in the facility on the noticeboard in the corridor.

### **B116 WASHUP AND AUTOCLAVING SERVICE**

All general laboratory waste requiring autoclaving is dealt with through the microbiology lab.

- If you require autoclaving for your media, glassware, tips or tubes, please leave it within the marked drop off/ pick up area of microbiology lab B116 **prior to 10.30am or 1pm.**
- Autoclave tape must be applied to each item & labelled with your name/ initials. Any lids or tops need to be slightly loose to allow for the release of pressure.
- Glassware which consists of an inoculated culture must be left clearly labelled with new autoclave tape as 'WASTE' on the 'waste' designated blue trolley ready for autoclaving. The maximum volume for waste cultures is 1L in any size flask.
- ONLY trained personnel can carry out autoclave runs.
- Please remember to collect your flasks, tip boxes, and any other consumables on regular basis.
- The cabinet next to the sink contains communal stocks of LB, LBA, buffers, sterile water, paper towel, hand soap & hand cream which you are welcome to help yourself to & is regularly restocked.
- Cleaned, empty media bottles can be left on the draining racks next to the sinks in B110.
- The microbiology lab also houses 6 stacked shaking incubators & 2 benchtop shakers which need to be booked in advance using the above link.

### **STORES**

Stores provide a wide variety of consumable items. You will be issued with a Stores Code to enable you to "purchase" items. Please see the current opening times displayed on the lab doors.

Waste solids bins (black bucket, with a clear liner), Broken glass bins, Waste Silica bins, Flammable waste containers (Don't overfill), Halogenated waste containers, Aqueous wastes (acidic, basic, inorganic and organic) may also available opposite stores/ at the back entrance to C block, put your lab number on the containers in case further information is required. "Winchester" bottles may be returned to Solvent Stores for recycling, note that bottles for return must be fully empty and vented. Ensure no harmful substances or flammable materials left inside! Labels for the various waste streams are also available opposite stores. Other chemical wastes – arrange via the Chemtech team.

## **ORDERING (OPeRA)**

For items not available in Stores the electronic ordering system (OPeRA) should be used;

[OPeRA \(warwick.ac.uk\)](http://warwick.ac.uk)

## **CHEMGENE:**

The disinfectant in use in B117 is Chemgene.

**Chemgene-** Sprays are intended for surface disinfection only; care should be taken to avoid inhalation.

### **In use dilutions**

General, intermediate risk 1:100 5ml in 500ml of water for spray bottle

Heavy soilage, high risk 1: 50 10ml in 500ml of water

Blood and body spills and for use with tissue culture and discard jars 1:20

Wipe down all surfaces with disinfectant at the correct concentration and allow to dry.

Contact time varies according to cleanliness of surface.

1- 5 min contact for relatively clean surfaces.

Leave longer if high organic load.

### **Stability**

The manufacturer states a shelf life of 3 yrs for unopened concentrate.

For product diluted on site shelf life of up to 6 months once mixed.

Chemgene is widely used as a surface disinfectant, whereas Virkon is most likely used for soaking. Soaking of small instruments, containers and other minor consumables should be carried out on the bench or inside the sink. The exposure time should be kept as described on the next page:

<b>Large spillages</b>	Cover with absorbent material from spill kit, once contained add to autoclave waste & autoclave	Follow spill kit instructions
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## **-80C FREEZERS**

B110 has labelled -80C freezers for both short-term & long-term storage. Each group has assigned shelf space. Please ensure all contents are in boxes labelled with your name & group so they can be promptly located even if covered in ice. Avoid leaving the doors open for extended periods & make sure to scrape any formation of ice around the door seals before closing.

## **PACKAGING AND TRANSPORT**

Certain laboratory materials (including dry ice) are classified as dangerous goods and must not be sent in the post via Royal Mail. Dangerous goods must be packaged and sent by a person trained and certified in the relevant transport regulations. Ask Core Technician for more information if required. The packaging required to courier any material is available from Stores.

## **MANUAL HANDLING**

If you are required to do any lifting or carrying of bulky or heavy items as part of your role you should obtain guidance from:

[http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/lifting\\_handling/](http://www2.warwick.ac.uk/services/healthsafetywellbeing/guidance/lifting_handling/)

## **EXTRA TRAINING**

Additional training and/or induction is required for use of the following facilities:

- B117 Cat 2 lab
- Containment Suites
- Radiation Suites

And for the use and handling of the following:

- Pathogens
- Liquid Nitrogen
- Compressed Gases
- High speed Centrifuges
- Cell disruptor
- Autoclaves

Please print and complete the training matrix at the end of the manual.

## **USEFUL INFORMATION**

The following websites may be of interest:

Warwick Ventures [www.warwickventures.com](http://www.warwickventures.com)

Warwick Ventures commercialises innovations produced from world-leading research at the University of Warwick. 'We offer advice and services to the University's innovators. Our role is to support them throughout the process of generating impact and a commercial return from their research, whilst they maintain their academic focus.'

Things to do next:

- Read the booklet and ask for assistance if anything is not clear
- Attend the Departmental Induction
- Familiarise yourself with CBRF intranet:
- <http://www2.warwick.ac.uk/fac/sci/chemistry/chemintra/research/facilities/chembiol/>

The following training matrix is to be inserted into the front of your lab book for you to be formally signed off on both being trained in a particular piece of equipment and demonstrating competency.

<b>Equipment</b>	<b>Who can provide training</b>	<b>Trained by</b>	<b>Date</b>	<b>Demonstrated competency date/ name of trainer</b>
Cell disruptor	see lab responsibilities list			
General centrifuge use	appropriate person within your group			
High speed centrifuge (Hitachi)	Louise Busk			
High speed centrifuge (Lynx)	Louise Busk			
Akta Pure FPLC Challis	see lab responsibilities list			
FPLC Bugg Group	see lab responsibilities list			
Challis cold room Akta	see lab responsibilities list			
CL2	Louise Busk			
HPLC Challis	see lab responsibilities list			
HPLC Bugg	see lab responsibilities list			
HPLC Tosin	see lab responsibilities list			
Freeze dryer	see lab responsibilities list			
Challis UV/Vis	see lab responsibilities list			
Bugg UV/Vis	see lab responsibilities list			
Plate reader	see lab responsibilities list			
Mosquito	see lab responsibilities list			
Sonicator	see lab responsibilities list			
pH meter	see lab responsibilities list			
Rota vaps	appropriate person within your group			
High vac line use	appropriate person within your group			

