

Lab routines DNA lab, Biodiversity unit

MH 2017-05-11 (add/comm JR, HG, NC)

(1) Before a person starts working in any lab at the Biodiversity unit, it is compulsory to take the lab safety course (in Biodiversity this is given twice a year or as needed by Helene Bracht Jørgensen).

(2) Before a person starts working in the DNA lab, it is also compulsory to read the specific instructions given by Mikael Hedrén, or Nils Cronberg (this document). Anyone working in the lab must also sign the agreement form, confirming that he/she will follow the instructions on lab security and lab routines.

Persons under 18 years are not allowed to work in the lab. Students taking courses may not work alone in the lab, but may carry out experiments under supervision of responsible instructors.

Safety regulations

Eating and drinking

Lab areas are considered as potentially contaminated with harmful chemical substances, even if they are ever so well cleaned. It is therefore prohibited to eat or drink in the labs. You are also not allowed to heat food in microwave ovens in the labs, or to keep food in the lab refrigerators.

Ordering

Each lab group working in the lab is responsible for ordering the consumables and reagents needed for their work. Certain consumables can be shared between groups. If new chemical reagents that are not already present in the lab are ordered, they must be registered in KLARA (presence, amounts, location).

KLARA is the chemical database used by LU. It can be accessed at https://secure.port.se/Alphaquest/app_lu/pcmain.cfm (you login with your Lucat ID) and this is where you can find safety data sheets for various chemicals.

Consumption of shared consumables is tracked and updated by the Lab stock management sheet (created by HG). Consumption should be detailed by lab users, while ordering is done by PIs. The form is found here:

<https://docs.google.com/spreadsheets/d/1rbJxcsTmTGqyVGkEnNiEJD5QDba0iFXCBqsVLT5-YW0/edit?ts=58a70f1c#gid=0>

Chemicals and consumables are preferably ordered through the Lupin system. Ethanol is ordered jointly by the department and is given out by Carl Sjökvist. Tissue paper is provided by LU byggnad.

Handling of hazardous compounds

Generally speaking, be careful when handling hazardous compounds, including solvents, toxic substances, acids etc.

Use gloves.

Work in the hood as much as possible.

Use the lab trolley when transporting hazardous compounds between labs.

Use a lab coat when handling chemicals.

Avoid working with toxic substances or with large volumes of solvents during evenings and weekends when you are alone in the lab.

Chemical spills should be cleaned up at once.

Spills of liquids and solvents can be absorbed by using vermiculite. The vermiculite can then be swept up and deposited as solid chemical waste. Containers with vermiculite are kept in all labs near the sink areas. Vermiculite is also stored in the basement corridor of the ecology building near the western entrance and in the storage room for chemical waste in the backyard.

Cabinets with hazardous compounds need to be locked. The keys must be kept hidden. Do not leave cabinets with the keys in the doors during any time you are not there.

Safety equipment

Make sure that you know where the lab safety equipment is located.

Every lab has a shower at the sink. These showers may look differently; note that some are integrated with the normal tap at the sink.

Bandages and first aid kit are kept in lab E321.

Bandages are also kept in the main lab corridor outside room E312.

Bottles with neutralizing buffer and with sterile neutral water are kept in the main lab corridor outside room E312.

Eye showers and full body showers are located at short intervals in the corridors.

Fire extinguishers are kept in the corridors. They are filled with carbon dioxide and could be used on any fire including electronic equipment – but not on other humans (risk of freeze damages).

Fire blankets are kept in the corridors and may be used on humans.

Risk assessments

Risk assessments should be provided for every procedure implemented in the lab. A web form for writing risk assessments can be found in KLARA. Risk assessments should be printed out and kept in one of the folders in the "office area" in lab E314B.

Inventory lists and registration of compounds in KLARA

All chemicals used in the lab must be registered in KLARA. This register contains information regarding location and amounts. If you order new substances to the lab, you must ask Mikael or alternatively Helena to handle the registration.

Storage of chemical substances

All compounds handled in the lab should be considered as potentially harmful. They must be stored in locked cabinets or else in locked lab areas. This is why the labs must be locked in the evenings when no one is working in the labs. All chemicals are provided with safety data sheets upon deliverance. These sheets are stored in a folder in the "office area" of lab E314B. Safety data sheets can also be accessed in the KLARA system.

Chemical compounds are as much as possible stored in ventilated cabinets. Most compounds are stored in lab E320. Compounds stored in this lab are separated as acids, solvents and other compounds (toxic and non-toxic), and each category is stored in a separate cabinet.

Ethanol may be kept in small quantities on the lab benches (up to 2 litres) and up to ca. 10 litres in total in the lab. Larger volumes must be stored in the cabinet holding solvents, or in ventilated cabinets in the other labs.

Buffers may be stored where they are needed.

Solvent and liquid waste may be stored in the hoods, but then must be kept in trays that would prevent spillage if the storage containers happen to leak.

If solvents have to be stored in refrigerators or in freezers, these must be approved for storage of solvents (ignition-free).

Acrylamide exposure

Anyone working with acrylamide must be registered and the registers sent to LU byggnad. Persons handling acrylamide will be called for health control by the university health unit. Talk to Mikael to become registered if you plan to handle acrylamid.

Waste

Several types of waste are produced in the lab.

Containers for glass waste are kept under the sink in lab E321. Clear glass and coloured glass are sorted into separate containers. When these are full, they should be emptied in the glass waste recycling containers by the western entrance into the building.

Sharp/cutting waste (razor blades, syringe needles, scalpel blades, etc.) are placed in a dedicated plastic box kept at the sink in lab E320.

Ordinary waste – waste not contaminated by hazardous compounds or otherwise dangerous (paper towels, pipet tips, plastic PCR tubes, packaging, etc.) may be deposited in regular waste bins (on the floors). Do not put chemical waste of any sort in these waste bins.

Some lab workers prefer to deposit plastic waste themselves in the container for burnable waste (brännbart avfall) at the western entrance. Such waste must be deposited and stored in separate waste bins.

Chemical waste, see below.

Chemical waste

There are three types of chemical waste produced in the lab: solid chemical waste, liquid aqueous chemical waste, and solvent waste. Each type of waste is sent for destruction in separate boxes.

(1) Solid chemical waste. This category may include gel slices, contaminated pipet tips etc.

(2) Liquid aqueous chemical waste. You may use empty plastic ethanol containers. Such containers are stored on the top shelf in the allozyme lab, lab E310.. When placing containers filled with liquid waste into boxes for chemical waste, you must also fill the box with vermiculite to absorb spill from the box in case of leakage.

(3) Solvent waste. Glass flasks must be used. Empty containers for this type of waste are stored on the top shelf in the allozyme lab, lab E310. When placing containers filled with solvents into boxes for chemical waste, you must fill the box with vermiculite to prevent spill from the box in case of leakage.

Do the following:

(1) Chemical waste must be sent in dedicated 38L cardboard boxes, that are allowed to weigh up to 13 kg maximum. The boxes must be lined with a black plastic bag. A few boxes and plastic bags are normally stored in lab E321; additional ones are kept in the chemical waste storage room in the Wind tunnel house, see below.

(2) When chemical waste is sent for destruction, a special form must be completed and attached to each box. This form is found on the website of LU byggnad, see below. Electronic copies of the form must be sent to Sysav Industri and LU Byggnad at: order.kemi@sysav.se and registrator@bygg.lu.se. You will need to print three paper copies of the form. One copy should be attached to the box, one copy should be sent to Carl Sjökvist and one copy should be put in the dedicated folder in the "office area" of lab E314B.

(3) Boxes with liquid waste must be filled with vermiculite. Vermiculite is kept in the basement corridor of the Ecology Building near the western entrance and in the storage room for chemical waste in the Wind tunnel building.

(4) Do not seal the box. Boxes with chemical waste are placed in the storage room in the Wind tunnel building. The key to this storage room is kept in the Plant Ecology lab, lab C340.

Forms and further information is found here:

<http://www.medarbetarwebben.lu.se/stod-och-verktyg/lokaler-och-parkering/avfall-farligt-avfall-och-kallsortering>

Note: If you haven't handled chemical waste before, you should also ask Mikael Hedrén for advice.

Recycling

Empty paper boxes from the lab should be folded together and recycled. Smaller boxes are temporarily stored on top of the fridge in lab E320. Cardboard boxes should be deposited in the corridor or next to the entrance of the western elevator.

Installations

Always use fume hoods when working with toxic or harmful substances. Close the hood when you are not working in the hood.

Sterile benches are found in labs E314B and E342.

Gas is found in some of the labs, including E314B, E310 and E342. Keep the area clear around the gas flame!

Deionized water is found at all sinks (green plastic tap).

Balances are located in lab E320. Please clean if they become contaminated. Balances are checked regularly together with the balances in the plant ecology labs (Sofia Mebrahtu-Wisén knows when).

A pH meter is located in lab E320. (Nils C. is responsible for its maintenance)

Daily lab work and routines

Keep the lab reasonably tidy. No "white powders" should be left behind anywhere!

If pipets get contaminated they need to be cleaned. Instructions on how to clean pipets and equipment for this are found in the drawers by the window in lab E321.

Instructions for other equipment are located at various places in the labs. Please handle all equipment carefully and ask someone experienced if you are at all uncertain.

Some pipet boxes are recycled and filled with new pipet tips when emptied. You are expected to refill boxes approximately at the pace you empty them. Refilled boxes are placed next to the fridge in lab E321 and are autoclaved/sterilized when an appropriate number to fill the autoclave has accumulated.

Sterile refilled boxes with pipet tips are stored on the shelves above the benches in the lab. The autoclave is found in lab E313. Instructions on how to operate the autoclave are found in the lab, but you should also consult any experienced user before you use the autoclave for the first time.

Fridges and freezers need to be defrosted from time to time. Temporary storage for their contents is found in room E322 on third floor (fridge room +2°C) or in room C032 in the basement (freezer room, -20°C).

Wash bottles with deionized water, 95% ethanol, and 70% ethanol may be kept on lab benches. These bottles should be refilled when empty. 95% ethanol is found in the cabinet next to the hood in lab E321, or in the cabinet with solvents. You may need to dilute 70% ethanol from 95% ethanol when needed.

Colour codes unless otherwise indicated:

BLUE: deionized water

RED: 70% ethanol

YELLOW: 95% ethanol

WHITE: absolute ethanol

The labs are separated into pre-PCR and post-PCR labs. Use different sets of micropipets in the different labs. Please minimize the transport of all types of equipment between the different categories of labs.

Dirty glassware and other labware may be cleaned with detergent if necessary, but for most labware no detergent is needed. After cleaning the goods should be rinsed in deionized water and then allowed to air dry. When dry, labware should be put back in the proper cupboards.

When you leave the lab as the last person in the evening, make sure that:

- the windows are closed
- the doors are closed and locked
- the fume hoods are closed
- the cabinets are closed and the keys to the cabinets hidden away
- the water baths are turned off.