

SAFETY MANUAL OF GOOD LABORATORY PRACTICES



THE LABORATORY

The biotechnology laboratory platform is an area where many risks are present. In it we use different products and agents that may be harmful to health. Before any intervention and manipulation in this laboratory, you are requested to follow a safety visit and presentation. This allows you to be informed of risks and precautions to take, while being trained in some basic practices used in the laboratory. A manual is given to all newcomers; it includes all the important instructions in terms of safety and good practices. This document complements the job descriptions, procedure sheets, the registry of accidents, incidents and specifications security data sheets.

BIOSAFETY

The laboratory where you will work is a laboratory for research and teaching. It is Biosafety Level L1. Thus no special equipments are in place to prevent biohazards.

Classification of microorganisms according to the risk level

risk group	features
1	Agent that is not associated with disease in healthy adult humans.
2	Agent that is associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available.
3	Agent that is associated with serious or lethal human disease for which preventative or therapeutic interventions may be available (high individual risk but low community risk)
4	Agent that is likely to cause serious or lethal human disease for which preventative or therapeutic interventions are not usually available (high individual risk and high community risk)

Laboratories safety levels

Risk group	Safety level	Laboratory type	Laboratory practices	Safety equipment
1	L1	research, teaching	good laboratory practice	Fume hood
2	L2	research biomedical laboratory	Biohazard symbol, good laboratory practices, specific protection	Fume hoods and safety cabinets
3	L3	research, biomedical, immunology	Same as 2, restricted area, specific ventilation	biosafety cabinet, and others specific devices if necessary
4	L4	research in immunology	Same as 3, decontamination areas, tight laboratory, specific treatment for waste	Class 3 microbiological post, gloves boxes, double entry autoclave, air filter

It is strictly forbidden to manipulate microorganisms with a risk level higher than 1 in the present laboratory.

GOOD PRACTICES

Here are some rules to follow in all the laboratories of the building.

GENERAL RULES

- Only authorized personal may enter laboratories
 - Laboratory doors shall be kept closed during handling
 - Children are not permitted to enter laboratories except under special notification.
 - Keep the laboratory clean, tidy and free from any unnecessary materials.
- ENSURE THAT THE EQUIPMENT YOU USE WAS CLEANED.

PERSONAL PROTECTIVE EQUIPMENT

- Lab coats have to be worn during manipulations in the laboratory. It is however forbidden to walk with lab coats outside the laboratory. During breaks you are asked to remove it and wear it again after. Moreover, if you use the lab coats provided by the laboratory, make sure to put your personal stuff at a different place to avoid any cross

contaminations and to prevent it from interfering with people's work. Gloves worn during handling

- There are two types of gloves in the laboratory
 - Latex gloves for handling but not for ethidium bromide
 - Nitrile gloves for handling ethidium bromide

Recommendations: it is advised to put nitrile gloves over latex gloves when handling with ethidium bromide.

- Wash hands after removing gloves
- Avoid touching objects or any items with gloves, to avoid spreading microorganisms throughout the laboratory
- At the ethidium bromide workstation, it is compulsory to wear the facial protection. It protects both against projections and against UV radiation.
- The open shoes and high heels are prohibited. In fact shoes are elements which protect your feet when closed. High heels can impede egress in an emergency or could be potentially dangerous during a trip with substances in hands.
- Eating, drinking, smoking, applying cosmetics and handling contact lenses is prohibited, as well as storing food or drink in the laboratory.

FOLLOW PROCEDURES

For each workstation likely to remain active for a long time, a procedure is established. It defines rules and steps to follow. In a more general way, each procedure recalls:

- Mouth pipetting is prohibited
- Nothing should be introduced into the mouth. Labels must not be licked and pens and pencils should not be chewed.
- Follow procedures to minimize the formation of aerosols and gases; the use of syringes and other sharp tools.
- The use of equipments must remain within the framework in which it was designed. Equipments under the ethidium bromide fume hood should remain under it and no other use must be made with it.
- In case of incident or accident, we must inform the laboratory supervisor, or a competent person. In case of serious accident, do not hesitate to contact the FLS. It is also important to record the incident or accident in the registry.
- Do not pour products into the sink if you are not sure whether it is allowed or if another disposal route exists in the laboratory.
- Keep a clean area where all your documents will remain, including the laboratory notebook. In order to avoid contaminating the laboratory notebook and your stuff, focus on working in pairs, with one person handling and another taking notes.


CLEANING PROCEDURE

This cleaning procedure has to be done at the end of manipulations, at the end of the day and in case of significant soil.

BEFORE YOU BEGIN CLEANING

- Wear your lab coat and gloves
- Have ethanol, bleach, paper towels and a trash can

WHEN CLEANING

- Make a first rough cleaning of the area. Start with the periphery and clean toward the inside and clean inwardly.
- Spray bleach on the area and let it react. When cleaning the ethidium bromide, the bleach must be replaced with soapy water.
- Clean with paper towel to dry the area.
- Then disinfect the area by spraying with 70% ethanol
- Let the product react and clean it with paper towels until the area is dry.
- Put all waste in the corresponding trash can depending on the kind of work which was done.
 - Microbiological works in trash cans where this symbol is printed. 
 - Works with ethidium bromide and/or other in trash cans where these symbols are printed



- Works without any chemical or biological compounds: normal trash can without any icons.
- Rinse surface with water and dry.

AFTER CLEANING

- Throw leftover waste and gloves by removing them carefully; in the right trash can. The goal is to have no contact between the skin and the gloves' outside.
- Wash your hands

RECOMMENDED

- Make the cleaning from top to bottom
- Clean equipments and utensils before the workbench
- Properly store cleaned utensils before cleaning the workbench.

BIOHAZARD WASTE TREATMENT



Waste with biohazard have to go in the trash bag with this symbol.

Once the trash bag is half full or at worst is full a 80% of its capacity, stop filling. Then you must close it carefully with special autoclave tape. Finally it must be placed next to the autoclave and a person authorized to handle the autoclave must be called.

Make sure the bag you take to replace the old one is designed to pass in an autoclave.

ETHIDIUM BROMIDE WORKSTATION

During handling some chemicals are used. All of these are referenced in the safety data sheets binder. For each of them a job description is written. Nevertheless, the ethidium bromide and acrylamide remain the main products resulting in significant risk because they are mutagenic, reproductive toxins and carcinogenic.

A fume hood is assigned exclusively to the use of these kinds of products. They must remain under the fume hood with the container closed and stored at the place designated for this purpose. An area is delimited where the additional protective equipment must be kept. The best is to work in pairs on the workstation: one person handling and another working on the computer.

Caution, ethidium bromide and acrylamide are carcinogenic, mutagenic and reproductive toxins. Gloves and products must not leave the marked area.

BEFORE HANDLING

Check that you have all the necessary equipment. Generally all equipment is already under the hood. To reduce risks associated with ethidium bromide, use only the utensils in the fume hood. Observe the following rules:

Before wanting to work with ethidium bromide be sure to wear pants and closed shoes

- 1) Put the lab coat devoted to ethidium bromide handling.
- 2) Put latex gloves
- 3) Put nitrile gloves
- 4) Be sure that the sleeves cover the gloves properly (no exposed skin)
- 5) Put the full facial protection

DURING HANDLING

- 6) Handle the product under the fume hood, vents on and window put as low as possible.
- 7) Avoid direct contact with gloves because the current gloves do not fully protect.
- 8) One person handles after another
- 9) Stay in the ethidium bromide area.

AFTER HANDLING

- 10) Clean the area without using bleach
- 11) At the end of the experiment remove nitrile gloves and discard them in the ethidium bromide trash can.
- 12) Remove the full facial protection
- 13) Remove the lab coat and put it back where it was taken
- 14) removed the latex gloves and discard in normal trash unless they are soiled with the product
- 15) wash your hands