

Welcome to Courses facilities in building 301 at Department of Systems Biology

The laboratories consists of Lab 039, Lab 049, Elektroforese/noise room 048 (lab 048), Photo room 052, Seminar room 040 and Seminar room 056 They are situated in DTU Building 301.

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Before a course in building 301 at the Department of Systems Biology

You must:

1. Read the attached safety rules.
2. Date and sign the agreement which can be found at the end of this document and give it to your teacher.

Acquaint yourself with the relevant chemical risk assessment (APV) in the labs. If required it can be made available by the staff.

Info regarding chemical risk assessment can be found on www.kemibrug.dk.

Introduction to the labs

The following pages describe a number of practical and safety routines in the microbiology laboratories. It includes both advices for safety in the lab and procedures to make the daily running of the lab easier for all users.

Lab 039, Lab 049 and Lab 048 are classified for work with genetically modified microorganisms (GMO) of class 1. Also, Lab 039 and Lab 049 are approved for working with class 2 microorganisms. It is possible to work with non-GMOs microorganisms in the laboratories, but the work must be done in accordance to the same rules and principles as GMO class I. You will be working in areas that are classified for work with genetically modified microorganisms (GMO) class1 and other areas that are not. Look for the sign for GMO and behave according to the rules for the designated area. The GMO sign looks like this:



PCR machine, Elektroforeses, SDS and the sorval centrifuge is in room 048.

The Photo equipment for the gels is in room 052.

Autoclaving of tisp e.g. if you bring it up to room 138, before 9 pm it will be autoclaved and ready around noon the same day, remember to write the courses number and team number on the tape.

Common-rooms location

Room nr.	Items
106 (Søs Koefoed office)	Building 301 Safety and Working Environment coordinator
052	Take picture of gels
054	Common consumables e.g. Eppendorf tubes (1.5mL, 2.0mL), cryo tubes, soap and disinfection foam, paper towels, aluminum foil, clinical waste/Bio-waste (brown bag).
138	The Autoclave. Place the tings there have to be autoclaved on the tables: P1 table for the dray tings (tips, Eppendorf tubes) P3 table for the wet tings. (Mediums) Remember to put autoclave tape, name, and date on. Remember to pick up your tings
Basement 906	Ice machine
Basement 953	Cold room for storage of agar plates/bottles, other substrates for the courses. No bacteria cultures/plates please

Code of conduct

All the Labs are working labs as well as instruction labs. Please show courteous behavior towards your fellow colleagues and students. This includes not carrying on a loud conversation for a long period of time while working in the labs. Please keep your voices low/ moderate tone if there are others working in the lab.

And **never ever** use a mobile phone in the lab.

Safety rules for DTU Systems Biology.

- Before starting on a laboratory project or as an employee, you must:
- Read the attached safety rules.
- Date and sign the agreement, which can be found at the end of this document and hand it over to your local working environment representative. A list of people in the working environment group at DTU Systems Biology is found in the safety rules.
- Acquaint yourself with the relevant chemical risk assessment (APV) placed in a folder in the lab. If it does not exist, you must in collaboration with your supervisor prepare a chemical risk assessment- a short written description of the type of experiment you expect to perform. You must specifically write which chemicals will be used, their toxicity, how they should be treated as waste and which precautions you will take in order to perform your work in a responsible way regarding the safety aspect.
- Info regarding chemical risk assessment can be found at www.kemibrug.dk some parts are in English but most in Danish.
- Hand over a copy of the chemical risk assessment to your working environment representative.

Safety rules for DTU Systems Biology.

General rules for all laboratories disregarding classification

- Lab coat must be worn when working in the laboratory. You are allowed to stay in the laboratories for shorter periods without lab coat if you need to speak to people working there.
- Uninstructed persons including students are not allowed in the laboratories without supervision from a competent supervisor.
- Make sure you know how to find safety equipment such as emergency showers, fire extinguishers and fire blankets. Inspect content of first aid boxes regularly.
- A binder with relevant chemical risk assessment (APV) should be in all laboratories. Manuals for all instruments should be in the lab. Information sheets hanging in the laboratories should be laminated.
- Keep the laboratories clean and tidy. Windowsills must be kept clear. Top of cupboards must be kept clear. Keep wires and cables off the floor. No storage on the floor. No cardboards or stacks of papers in the laboratories. Fume hoods are not for storage. Keep the hood closed. Alarms for fume hoods must not be switched off during use of the hood.
- All chemical waste should be collected and disposed correct.
- Mouth pipetting is strictly prohibited. Mechanical pipettes are used. Smoking, eating and drinking is strictly prohibited.
- All solutions should be kept in bottles labeled with content, date and initials of the owner together with the appropriate security symbols.
- Hazardous chemicals should be stored in a cabinet for chemicals. Fridges and freezers must be labeled if they contain hazardous chemical.
- Gas cylinders must be secured consolidated to the wall.
- All transport should be on wheels, e.g. rolling tables and gas cylinder trucks.
- You are required to wash your hands when leaving the laboratory. Lock the doors after work.
- "One glove" rule in the hallways allows you to wear one glove when carrying items from one laboratory to another.
- Fume hoods are not for general storage. They are ATEX type 1 areas and as such not more than 1l of flammable liquid may be handled. Liquid waste has to be collected in labeled containers with safety label, your name and date. Dispose of according to rules for waste.
- Glassware not contaminated with bacteria and in need of washing must be rinsed with water before put on the washing tray next to the sink.

Safety rules for DTU Systems Biology.

GMO Class 1 laboratories

Definition

Biological active material is living organism, cells or virus containing DNA or RNA derived from genetic modification. Isolated DNA, RNA and proteins are not covered by this definition. Working with biological active material requires laboratory facilities GMO classified according to the Danish working environment authority, Arbejdstilsynet (AT). Check if your project has been accepted by the AT – folder in Room 224. A GMO (Genetic modified organism) Class 1 approval allows liquid cell cultures up to 15 L.

Rules of access

- All experiments in the Class 1 laboratories must be done according to the regulations of the laboratories. Keep the laboratories clean and tidy.
- Everyone, including cleaning personnel and craftsmen, must be wearing closed shoes and a special lab coat handed out by the personnel, which must always be kept buttoned. Take of the lab coat when leaving the lab.
- Cleaning personnel and craftsmen from outside need written instructions: *Instructions for cleaning personnel working in Class 1 areas, CAS instructions for aircon cleaning or Instructions for craftsmen and technicians during short term of work in Class 1 areas.*
- Long hair must be fixed in a ponytail or similar.
- Suitable gloves must be used. Vinyl gloves when working with ordinary laboratory work or GMOs. Nitril gloves working with organic solvents and ethidium bromide. Make sure you do not contaminate common area.
- You are required to wash your hands when leaving the laboratory.
- Keep labs tidy and clean at all times.
- Never work alone. If you have to go to the basement storage room or cold room inform others and on your return.

Prohibitions

- Smoking, eating and drinking is strictly prohibited. Mouth pipetting is strictly prohibited.
- Only materials needed in the laboratory is allowed. No bags, jewelry or outdoor coats are allowed in classified areas.
- It is strictly forbidden to let out biological material in the sink. All biological waste products, contaminated disposables plastics, papers and clothes must be discarded as written in the disposal rules in this document.

- Card boxes are not allowed in classified laboratories. Use plastic boxes that can be easily cleaned.
 - **Exceptions** are card boxes for gloves and disposables that may be in minor amounts in the laboratories when disposed as clinical risk waste (**Klinisk risikoaffald**) due to possible contaminations.
- Papers with instructions and other important information may only hang in the laboratories when laminated.
- Cell phones and other electronic equipment may not be used in the classified laboratories unless they are permanently placed in the laboratory. If phones or tablets must be used in GMO labs, it must be placed in a bag, which is discarded when leaving the laboratory. Phones that are carried in the pocket may be used only after you have taken off your gloves, have washed your hands, and left the lab.
- It is prohibited to dust clean in classified laboratories.
- Keep windows closed at all times.

Working with GMO microorganisms

- Work with microorganism must not take place in a laboratory with a classification less than what is required for the particular microorganism. Make sure you know where the permits for lab classifications and GMO projects are placed (Room 224).
- Before starting work in a GMO classified laboratory prepare a chemical risk assessment (APV) including which chemicals will be used, their toxicity, how they should be treated as waste and which precautions you will take in order to perform your work in a responsible way regarding the safety aspect.
- Work must be organized in a way to avoid aerosols. .
- Accidents must be reported to the local working environment representative.
- All manuals, logbooks and other papers should be kept behind glass doors. Instructions hanging in the laboratories should be laminated.
- Laboratory tables should be disinfected every day with 70% ethanol.
- Making notes in logbooks are only allowed in a clean area marked as not working area.
- Used gloves, disposals and other contaminated items are collected as clinical waste in special bags labeled **Klinisk risikoaffald**. Bags are closed when $\frac{3}{4}$ full and placed in the hall. They are removed by the laboratory assistant.
- Hypodermic needles and other sharp items must be used as little as possible and are collected in needle boxes and disposed as **Klinisk risikoaffald**.
- Spillage on tables, floors or equipment must be cleaned up immediately and disinfected with 70 % Ethanol.
- Lab coats are collected for wash in the black basket at the end of the course.

Transport of biological active material

- Transport and storage of biological active material outside the classified area is done in closed containers.
- Equipment and material from a classified area should be disinfected with 70% ethanol on all surfaces before moving it to other areas.

Removal of waste material

- All waste bins in the classified lab are approved for collection of biological active material. The waste bins are labeled **Klinisk risikoaffald** and contains a waterproof bags also labeled **Klinisk risikoaffald**. When $\frac{3}{4}$ full close the bag with a metal strip found in the labs.
- Disposables like gloves, serological pipettes, tips, flask, tubes and other contaminated items are collected as clinical waste in special bags labeled **Klinisk risikoaffald**.
- Needle boxes are disposed as **Klinisk risikoaffald** when full.
- Full bags are carried out and placed in locked containers by the laboratory assistant and transported for destruction by the personal at DTU.
- All liquid waste containing biological active material according to the definition should be inactivated with cetyl like this:
 - Cetyl - Directions when using cetyl*
 - Dilute 25% cetyl → 2.5% cetyl
 - Always use 2.5% cetyl! –both in the basin and in the culture waste
 - Cetyl - Cetyl tub*
 - Use 50 mL 2.5% cetyl solution to 20 L of culture waste.
 - Cetyl and H₂O are mixed in the tub BEFORE any glass articles or the like is put into the tub – Do not put anything in the tub before the water and cetyl have been added!
 - Remember – **No air** must be present inside the glass articles. (No air bubbles)
 - Leave it for 24 hours
 - Cetyl - Culture waste*
 - Use 50 mL 2.5% cetyl solution to 1 L of culture waste.
 - Leave it for 24 hours
 - ALL culture waste must be inactivated with cetyl!
 - Pour the inactivated culture waste into the sink
 - Cetyl - Pipettes*
 - Add 20 mL 2.5% cetyl solution to a bucket, which is used for the purpose of cleaning pipettes, add water.
 - Leave it for 24 hours
- Chemical waste should be collected in glass or plastic containers labeled correctly and placed in the Ether Room. Information's can be found at www.kemibrug.dk. Contact the Lab Manager for help.
- Bottles with chemical residues should be placed in the fume hood for evaporation, rinsed with water and disposed as normal glass waste.
- Ethidiumbromide gels are collected in **Klinisk risikoaffald**. Running buffer is poured down the sink in a max concentration of 0.25µg/ml ethidiumbromide.
- Glass slides must be collected and autoclaved before disposed of in glass waste bins.

Spillage and accidents

- If accidents, near accidents or spillage happens precautions must be taken in agreement with the project manager or other competent persons around.
- Accidents should be reported to the safety organization as soon as possible.
- Spillage of biological active material should be wiped up with paper towels and the contaminated area disinfected with 70 % ethanol. Use gloves as disinfectant can cause allergically reactions.
- Contaminated paper towels and gloves are disposed as **Klinisk risikoaffald**.
- Contaminated textiles and shoes are autoclaved immediately or decontaminated with 70 % ethanol. If strongly contaminated the item should be disposed as **Klinisk risikoaffald**.
- If a person is contaminated the area is washed with 70 % ethanol.
- Use plenty of water on burns, or eye accidents. Eye rinsing faucet is placed by the sink in the laboratories.

Safety rules for DTU Systems Biology.

GMO Class 1 laboratories

The undersigned student/employee has read and understood the safety instructions for DTU Systems Biology.

Your theoretical supervisor/Nearest Manager:

Name

Your practical supervisor in the laboratory:

Name

Date

Name

Signature