

# BCH 462 Biotechnology & Genetic engineering [Practical]

## **Lab (0) Introduction**



# Marks distribution

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Tasks	Marks
<b>Lab assignment</b>	6 Marks
<b>Quiz</b>	5 Marks
<b>Homework</b>	3 Marks
<b>Practical</b>	1 Mark
<b>Final</b>	15 Marks
<b>Total</b>	<b>30 Marks</b>

**Final exam ...**

# Writing a scientific report

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➤ The scientific reports (**Lab assignment**) should contain the following:

1. **Materials and method (Experimental):** Written as methodology.
2. **Results:** This section states what you found. Tables, graphs or calculation should be included.
3. **Discussion:**
  - In this section you are required to describe of **what happened** in the experiment [Principle].
  - Explain your results (reasons for **why** you get your results).
  - Make conclusions by comparing your results to **expected values**.
  - In case of unexpected results, justify or **explain** the reasons why you have obtained such results.

“The Discussion must answer the question "What do the results mean?" It is an argument based on the results.”

➤ When writing an assignment, consider the following:

- Write **references**.
- Write table/figure **legend** and **title**.
- **Justify** the text.
- **Font:** Times New Roman.
- **Size:** title: 16 pt., subtitle: 14 pt. and body: 12 pt.

# Biotechnology

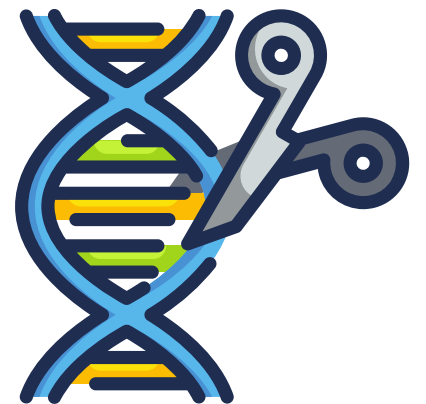
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- **Biotechnology** is a technology that utilizes biological systems, living organisms or parts of this to develop or create different products.

💡 **Pause and Think** is biotechnology considered as a modern field?

- **Applications:**

- Medicine
- Industry
- Agriculture
- Forensic
- Environment



# Genetic engineering

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- **Genetic engineering** is the process by which scientists modify the genome of an organism.

This modification of genetic material will produce:

- Organisms with desired heritable traits or characteristics.
- Could have some potential risks, for example, the inserted genes may have unexpected harmful effects.

# General lab safety

- **Keep a safe distance.**
- **Never leave the lab without informing the instructor.**
- You must know all lab exits, eye washer, fire extinguisher, and first aid kit provided in the lab.
- Never eat, drink or chew gum in the lab. Do not taste, smell or touch any chemical.
- Tie your hair before doing an experiment.
- Closed-toed shoes should be worn at all times.
- Wash your hands with disinfectant soap after an experiment.

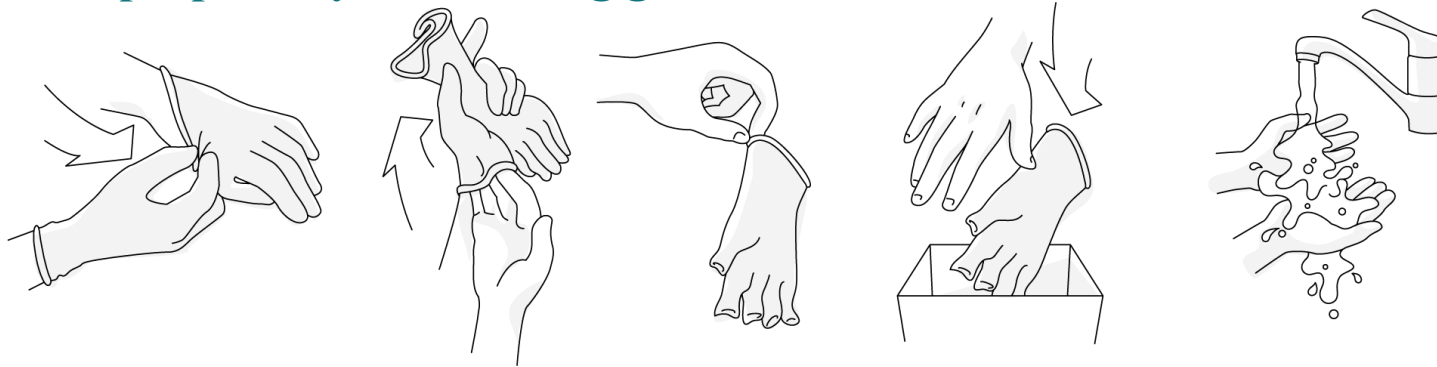


## Protective personal equipment:

- Place your bag in the correct area.
- Protective gloves and glasses should be worn when handling hazardous materials.
- Lab coat and masks should be worn at all time in the lab.



## The proper way of removing gloves:



# Sterile technique for bacterial cultures

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## Aims:

1. Preventing contaminant organisms from getting into your cultures.
  - ▶ Contamination sources e.g. the air and unsterile equipment.
2. Preventing any organisms or accidental contaminants from getting out or Escape from cultures

## Procedure:

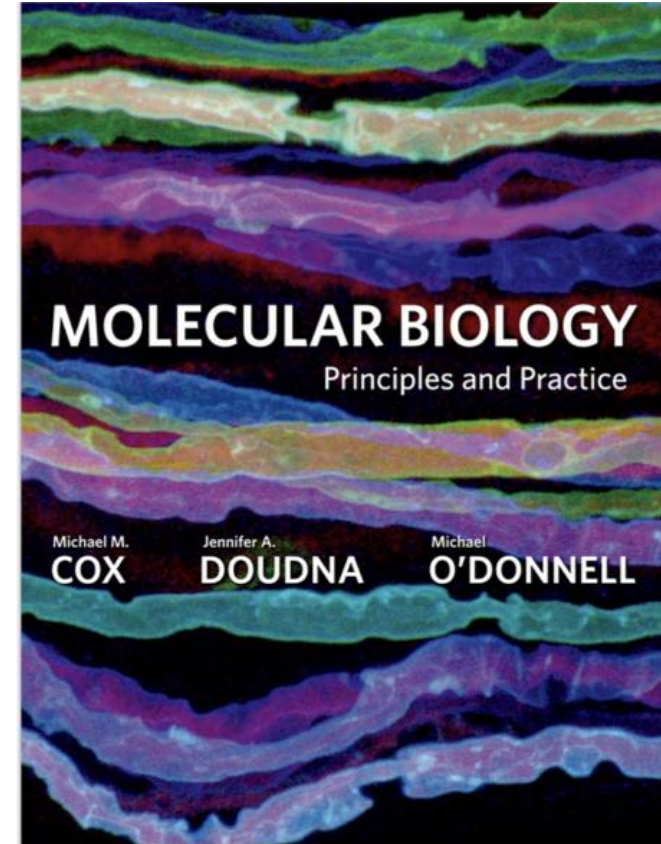
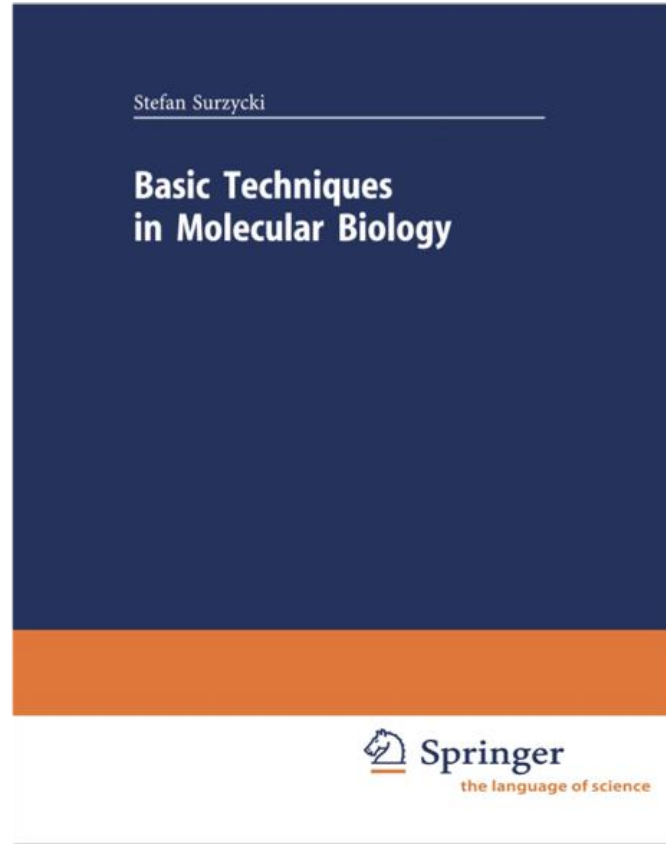
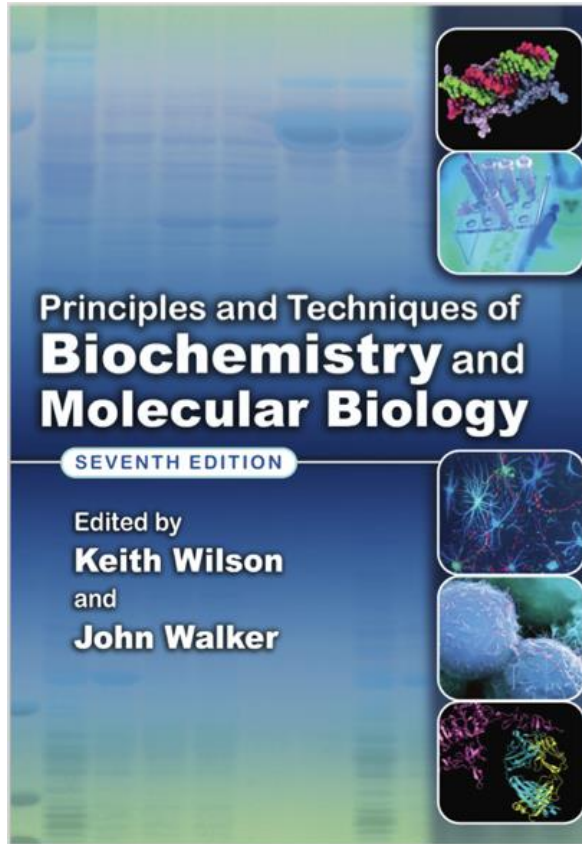
### Ahead of experiment:

- The media and glassware must be **autoclaved** in steam at 121°C for 20 min.
- Mouths of culture tubes, inoculating hoops and spreaders must be **flamed** using a Bunsen burner.

### Afterwards:

- Used pipettes and discarded tubes must be disposed of into **disinfectant**.
- ❖ Always wash your hands and spray with **70% ethanol** or wear gloves.

# Sources of information



<https://www.dropbox.com/sh/lxl4iex153oq7m1/AACF8fuS-PCOZYceQVhRdO1ia?dl=0>