

INSTITUTE  
OF PLANT  
SCIENCES



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School of Advanced Studies – Pisa

# Safety in the Laboratory

**BREEDTECH Student Training Workshop on 5th and 9th May 2025, Pisa, Italy**

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**DANGER:** ability to cause a harm of some kind

**RISK:** probability of having an injury due to exposure to a hazard

**SAFETY:** reduction of the risk to the minimum feasible –  
There is no zero risk!!





## Tomorrow's activities in the laboratory:

- DNA extraction
- PCR
- Electrophoresis gel

### Risks:

- chemical risk
- biological risk
- physical risk



- **Chemical risk:**  
toxic and combustible substances
- **Biological risk:**  
mutagens and cross-contamination
- **Physical risk:**  
thermal, mechanical, electrical



**Reduction of the risk:**

- ✓ Safety signage
- ✓ CPE and PPE
- ✓ Safety rules



# Pay attention to signage!!



prohibition signs



danger or alarm signs



warning signs



prescription signs



rescue and relief signs



Laboratory Safety Symbols and Meanings



# CPE (Collective Protective Equipment): systems that act directly on the source pollutant



Biosafety cabinets



Hoods



Fire extinguisher



Safety waste bins



Safety shower  
with eye wash

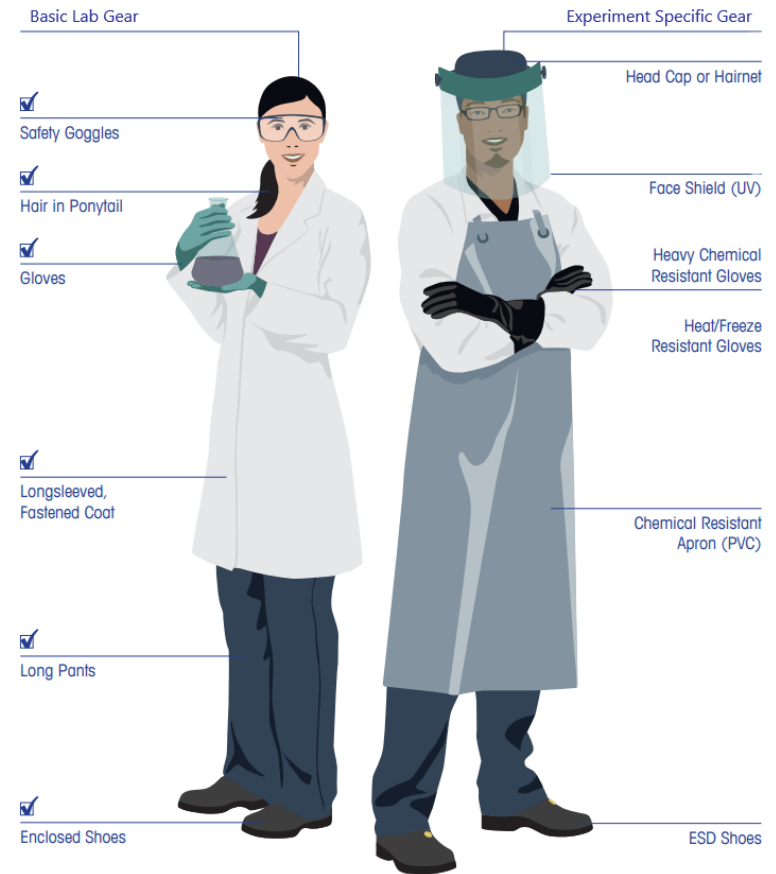


# PPE (Personal Protective Equipment):

systems of safety equipment in accordance with the law (CE mark!) worn by the worker to protect the body, hands, face and respiratory tract



← Wrist!



# Lab Safety Rules

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# 1) Wear protective clothing



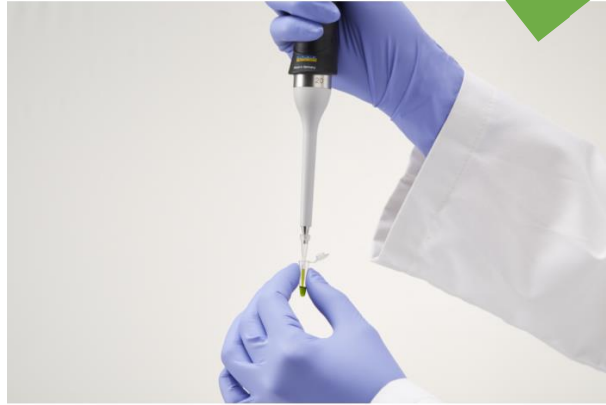
Do NOT wear jewelry!



2) Long hair must be tied back or covered to minimize fire hazard or contamination of experiments



3) Avoid touching objects (e.g., pencils, cell phones, door handles) while wearing gloves



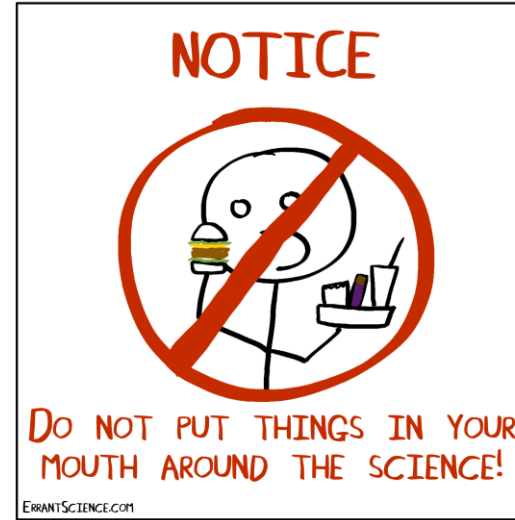
4) Do not bring into the laboratory substances and objects unrelated to the activity



## 5) Do not obstruct access to firefighting equipment or rescue equipment and emergency exits



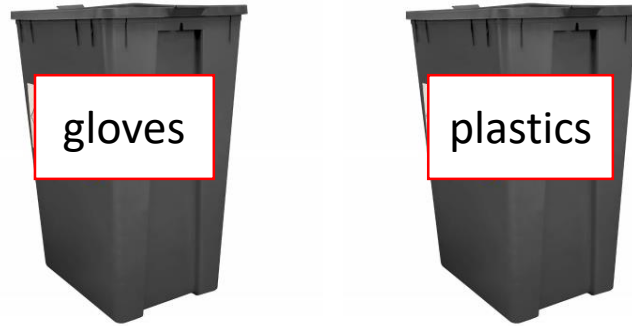
## 6) Do not bring and/or eat food or drink water in the lab



7) Wipe the bench tops down with disinfectant both before you begin your work and after you have completed your work



## 8) Dispose of waste products according to instructions





## 9) Electrical safety:

keep all electrical cords and wires away from water

## 10) Chemical safety:

- never touch, taste or smell a chemical unless instructed to do so
- never mix chemicals unless instructed to do so



11) After every lab session, remove the PPE and wash your hands



DNA extraction kit



Thermal  
cycler



Nanodrop



## Instrumentation for tomorrow's experiment

Micropipettes



Electrophoresis



# Have a Lab Safety Plan.



Don't get  
caught  
unprepared.



Thank you!

