

INSTITUTE
OF PLANT
SCIENCES



Sant'Anna
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

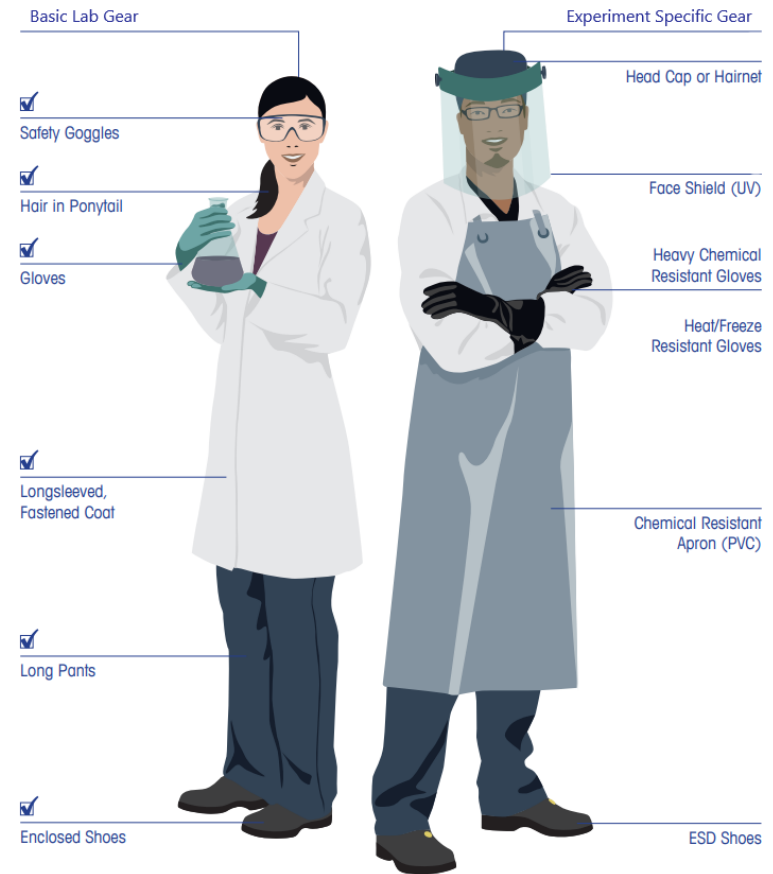


PPE (Personal Protective Equipment):

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



Safety in the Laboratory



1) Wear protective clothing



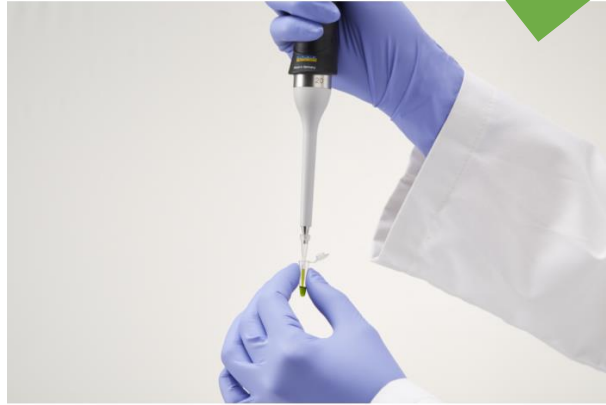
Do NOT wear jewelry!



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



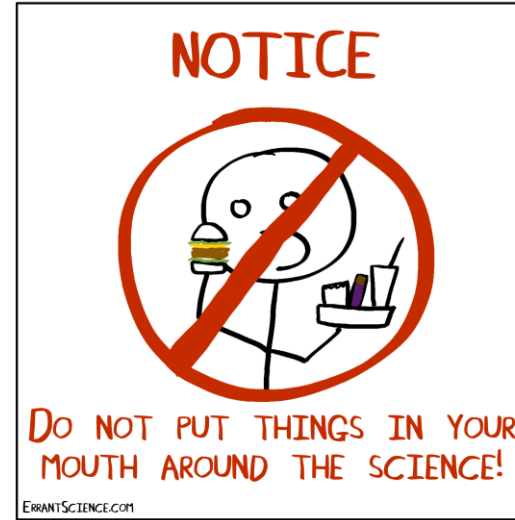
4) Do not bring into the laboratory substances and objects unrelated to the activity



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



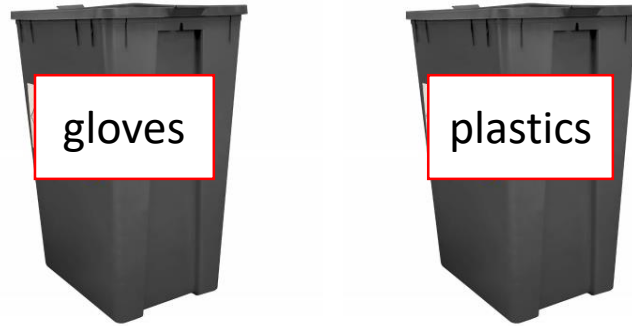
6) Do not bring and/or eat food or drink water in the lab



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!

