

1. Microcentrifuge:
  - Uses: Pelleting DNA/RNA/proteins, separating phases in heterogeneous mixtures, concentrating samples.
  - Precautions: Balance tubes properly, avoid overloading, and ensure proper rotor installation.
2. PCR machine:
  - Uses: DNA amplification for cloning, sequencing, and diagnostics.
  - Precautions: Prevent contamination by using separate work areas, regularly clean surfaces, and use filtered pipette tips.
3. Gel electrophoresis apparatus:
  - Uses: Separating DNA/RNA/proteins based on size, analyzing PCR products, DNA fingerprinting.
  - Precautions: Handle with care to prevent damage, ensure proper buffer levels, and follow safety protocols for handling ethidium bromide.
4. Spectrophotometer:
  - Uses: Quantifying nucleic acids or proteins, measuring enzyme activity, assessing sample purity.
  - Precautions: Clean cuvettes thoroughly to avoid contamination, perform regular wavelength calibration, and handle with care to prevent damage to delicate components.
5. Incubator:
  - Uses: Culturing microorganisms, protein expression, maintaining cell lines.
  - Precautions: Regularly monitor and calibrate temperature settings, avoid overcrowding, and ensure proper ventilation.
6. Pipettes:
  - Uses: Dispensing precise volumes of liquids in molecular biology experiments.
  - Precautions: Use calibrated pipettes, change tips between samples to prevent cross-contamination, and handle with care to avoid damage.
7. Autoclave:
  - Uses: Sterilizing glassware, media, and equipment with steam under pressure.
  - Precautions: Ensure proper loading and sealing of items, follow manufacturer's guidelines for operation, and wear appropriate protective gear.
8. Microscope:
  - Uses: Visualizing cells, tissues, and subcellular structures.
  - Precautions: Handle slides and lenses carefully to avoid damage, clean lenses regularly to maintain clarity, and avoid prolonged exposure to intense light to prevent specimen damage.

9. pH meter:

- Uses: Measuring the acidity or alkalinity of solutions.
- Precautions: Calibrate regularly, handle electrodes gently to prevent damage, and store properly to maintain accuracy.

10. Shaker:

- Uses: Mixing, dissolving, and growing cultures by agitation.
- Precautions: Secure caps tightly to prevent spills, ensure even distribution of samples on the platform, and avoid overloading.

11. Laminar flow hood:

- Uses: Providing a sterile workspace for handling sensitive materials.
- Precautions: Regularly clean and disinfect surfaces, maintain laminar airflow, and wear appropriate protective gear to prevent contamination.

12. Water bath:

- Uses: Maintaining a constant temperature for incubating samples.
- Precautions: Monitor water levels, avoid contact with electrical parts when in use, and handle with care to prevent spills.

13. Hot plate:

- Uses: Providing heat for various laboratory procedures.
- Precautions: Use heat-resistant gloves when handling, avoid spills and splashes, and turn off when not in use to prevent accidents.

14. Refrigerator/Freezer:

- Uses: Storing reagents and samples at low temperatures.
- Precautions: Monitor temperature regularly, ensure proper sealing of containers to prevent contamination, and label items clearly to avoid mix-ups.

15. Desiccator:

- Uses: Dehydrating samples, storing moisture-sensitive materials, preserving hygroscopic substances.
- Precautions: Handle with care to prevent breakage, ensure a proper seal to maintain the desired level of dryness, and avoid sudden temperature changes.

16. Eppendorf tube (microcentrifuge tube):

- Uses: Storing, transporting, and centrifuging small volumes of liquids or samples.
- Precautions: Ensure proper labeling to avoid confusion, securely close lids to prevent spillage, and balance tubes properly during centrifugation.

17. Falcon tube (centrifuge tube):

- Uses: Holding larger volumes of samples for centrifugation, storage, and transport.
- Precautions: Check for cracks or damage before use, use appropriate adapters for different centrifuges, and properly cap tubes to prevent leakage and contamination.