Al-Qadsea University/biotechnology College-medical

Molecular biology-second stage.(17-oct.-2015).

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Second Lap: Equipment Uses in Molecular Biology Laboratory

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1. **Autoclave**

Is a pressure chamber used to sterilize equipment and supplies by subjecting them to high pressure saturated steam at 121 °C (249°F) for around 15–20 minutes depending on the size of the load and the contents.

2. Water Bath

It's a container filled with heated water, used to incubate samples in water at a constant temperature over a long period of time, melting of substrates or incubation of cell cultures and to enable certain chemical reactions to occur at high temperature. Different types of water baths are used depending on application. For all water baths, it can be used up to 99.9 °C.

3. Incubator

The applications in the incubator

1. Growing cell cultures
2. Reproduction of germ colonies
3. Reproduction of micro organisms such as bacteria, fungi, yeast or viruses
4. Breeding of insects and hatching of eggs in zoology
5. Controlled sample storage
6. Growing of crystals/protein crystals

7. **Oven**

An **oven** is a thermally insulated chamber **used** for the heating and drying of a substance.

8. Deep Freeze

Used to storage of the tissue or blood samples and DNA & RNA until application of the experimental.

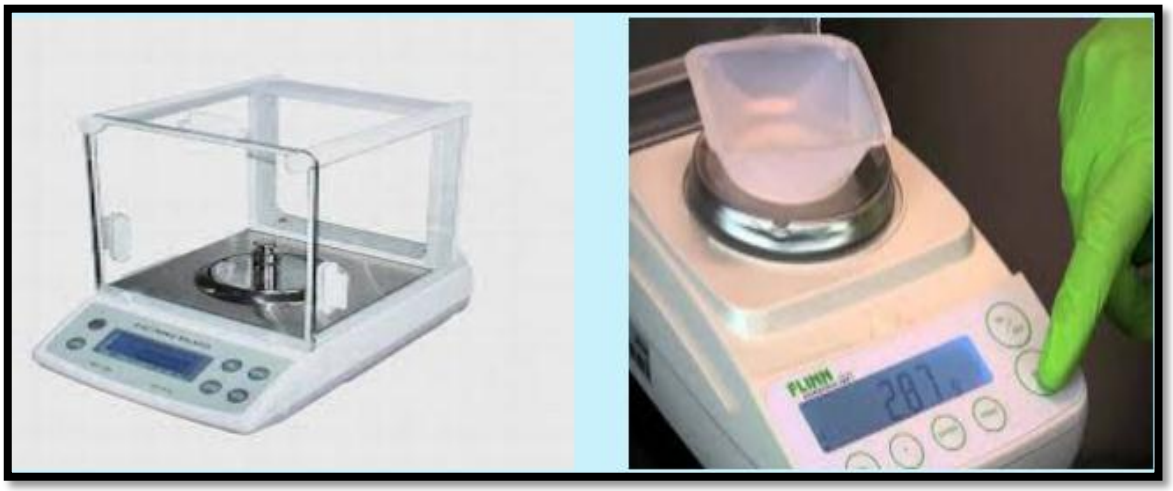
9. Laminar Flow (Hood)

Laminar Flow used for an individual clean air environment is required for smaller items, In the laboratory, commonly used for specialised work, also for general lab work, especially in the medical and pharmaceutical

10. Micropipette (different volumes)

11. Sensitive Balance

The laboratory Sensitive balances are used to measure an object's mass to a very high degree of precision, provide high readability, a broad weighting range, and a high degree of accuracy.



12. laboratory hot plates

laboratory hot plates are generally used to heat glassware or its contents. Some hot plates also contain a magnetic stirrer, allowing the heated.

13. Vortex mixer

The vortex mixer, or vortexer, is a simple device used commonly in laboratories to mix small vials of liquid. Should be the test tube or other appropriate container is pressed into the rubber cup (or touched to its edge).

14. Refrigeration Centrifuge

Refrigerated laboratory centrifuges temperature ranges as wide as -20C – 40C, making them perfect for DNA, RNA, PCR or antibody analysis. A refrigerated laboratory centrifuge can obtain rotational speeds of over 30,000 rpm. These centrifugation systems utilize centrifuge tips and tubes, with capacities reaching 4 x 500 ml.

15. NanoDrop- Spectrophotometer

Applications

- The spectrophotometry is simple for samples as small as 1µ
- Nucleic acid concentration and purity of nucleic acid samples
- Fluorescent dye labeling of nucleic acid samples
- Purified protein analysis
- Assay analysis of protein
- Cell density measurements

16. Conventional PCR instruments

Applications

1. Selective DNA isolation

2. PCR allows isolation of DNA fragments from genomic DNA by selective amplification of a specific region of DNA.

3. Amplification and quantification of DNA

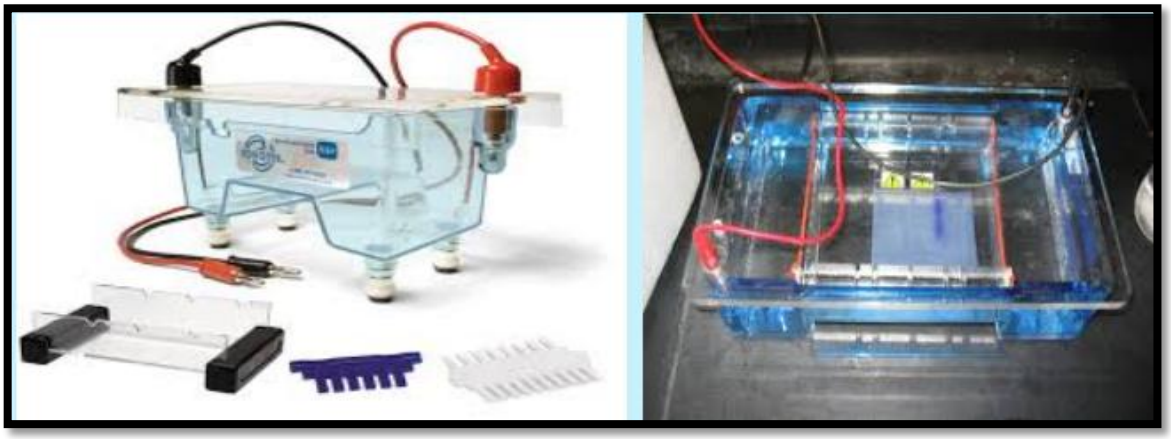
4. PCR can be used to analyze extremely small amounts of sample.

5. Disease diagnosis

6. PCR permits early diagnosis of malignant diseases such as leukemia and lymphomas, which is currently the highest-developed in cancer research and is already being used routinely

17. Gel Electrophoresis

- The gel electrophoresis, commonly used to separate biomolecules by their charge and frictional forces Gel electrophoresis, a technique used by scientists
- The Agarose gel electrophoresis is a method of gel electrophoresis used in biochemistry, molecular biology, and clinical chemistry to separate a mixed population.



18. Digital Gel Documentation with digital Cameras

19. Thermal cycler for Real time PCR

This method which used in many purposes like:

1. Measure of gene expression.

2. Commonly used in studying the genomes of viruses whose genomes are composed of RNA, such as Influenzavirus A and retroviruses.

3. Genetic Disease Diagnosis.

4. Cancer Detection.