Practical Biotechnology

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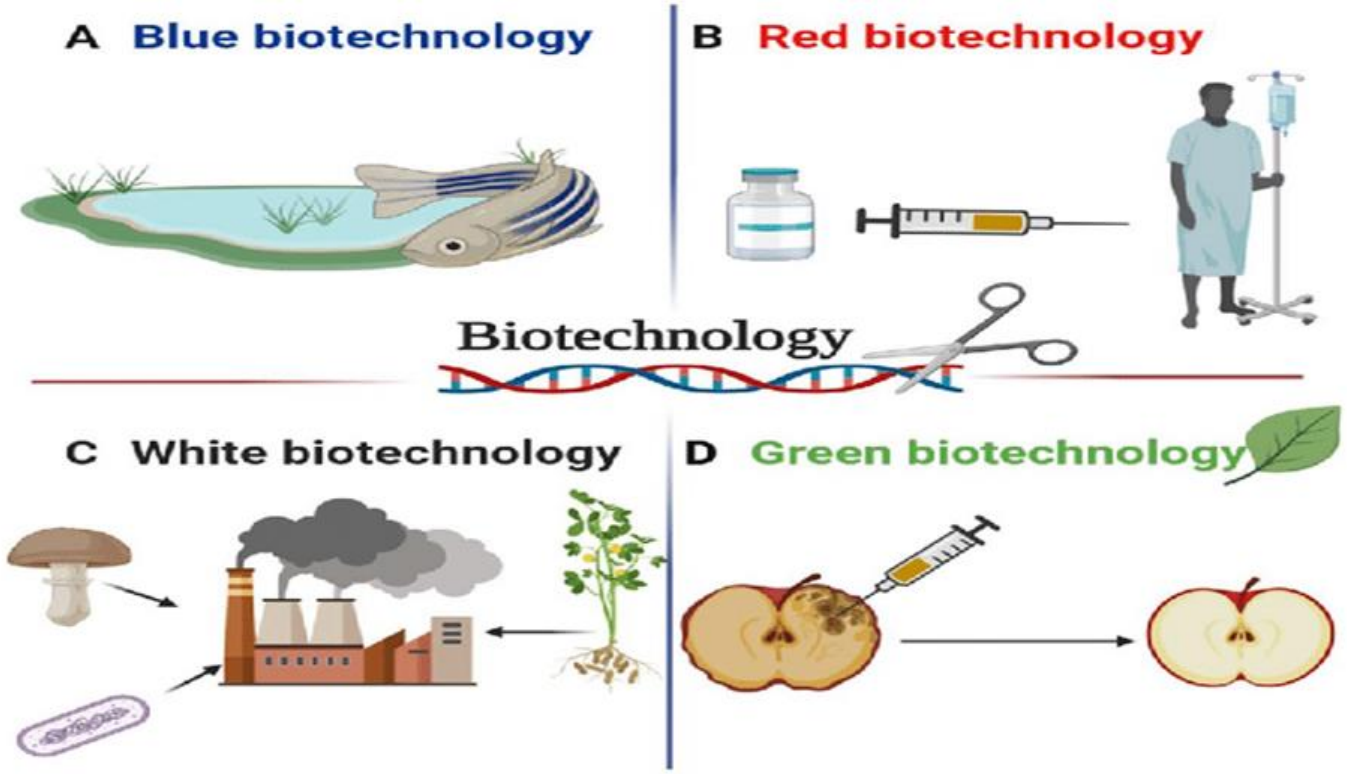
Lab1.General Instruction and Laboratory Biosafety

Biotechnology

any technique or process that uses living organisms, or parts of such organisms, to create or improve products, to modify plants, animals, or microbes for specific uses.

Biotechnology including not only biology,
-Its application ranges from agriculture to industry ,medicine, nutrition, environmental conservation.



Impact of Biotechnology

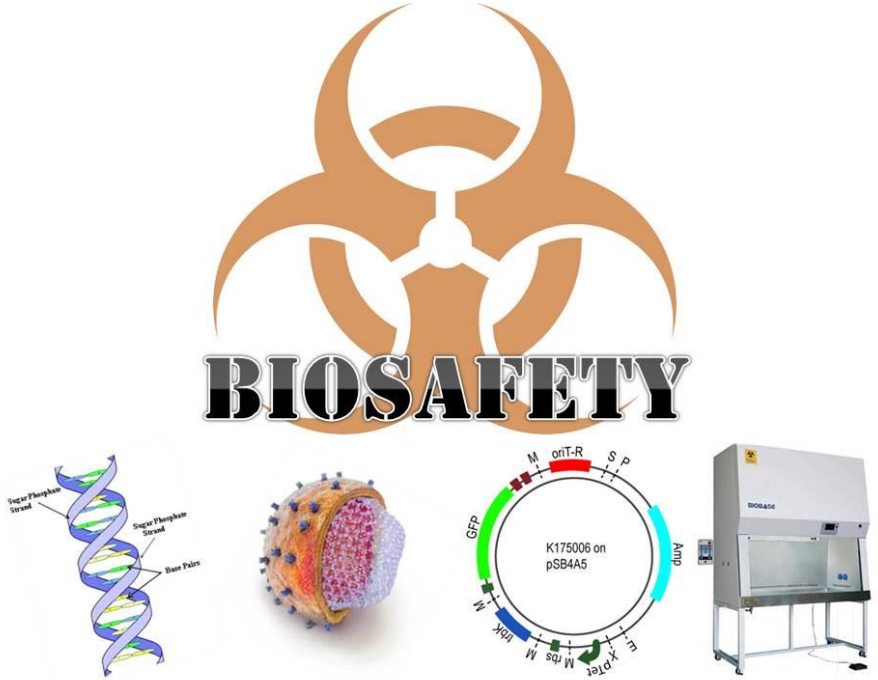
Biotechnology is:

- Reducing rates of infectious disease..
- Reducing use of petrochemicals.
- Using biofuels to cut greenhouse gas emissions .
- Decreasing water usage and waste generation.
- Producing foods free of allergens and toxins .
- Improving food and crop oil content to help improve cardiovascular health.

Laboratory Biosafety

Biosafety

is the measures employed to avoid infecting oneself, others or the environment when handling biohazard materials.



What is a Biohazard?

An agent of biological origin that has the capacity to produce deleterious effects on humans, i.e. microorganisms, toxins and allergens derived from those organisms.

Examples:

✓Micro organisms such as viruses, bacteria, fungi, and parasites.

General Guidelines for Biotechnology Labs

Do not:

- Eat or drink in the lab.
- Use your mouth for pipetting substances.

- Handle broken glass with bare hands.
- Operate lab equipment without permission.
- Perform your own experiments unless given permission

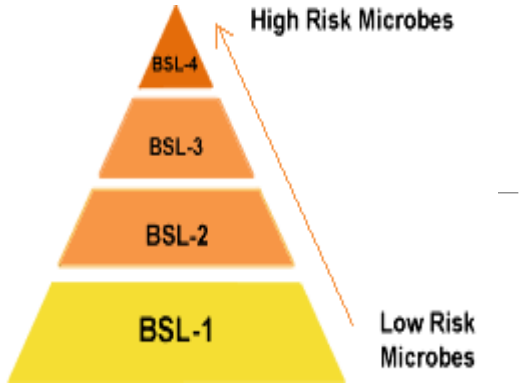
In the safe handling of the chemicals :

1. Wear gloves while handling hazardous chemicals.

4. If any chemical is accidently spilt on the skin, immediately rinse with a lot of water and inform the instructor.

5. Always discard the waste.

Levels of Biosafety



There are 4 levels

Biosafety level 1 (BSL-1)

BSL-1 is the lowest security level for handling biological material. This kind of material poses no or only a low risk to healthy adult humans .

Biosafety level 2 (BSL-2)

All activities in a BSL-2 laboratory require higher security standards than in a BSL-1 laboratory. The biological material used in a BSL-2 laboratory consists of bacteria, viruses, and organisms associated with human diseases.

Biosafety level 3 (BSL-3)

BSL-3 involves handling indigenous or exotic agents that may cause potentially lethal diseases.

Biosafety level 4 (BSL-4)

BSL-4 entails handling very dangerous and exotic biological material that may cause infection inside the laboratory as the result of aerosols.

All Biosafety Levels Need

- A knowledgeable supervisor.
- Personnel aware of potential hazards.
- Personnel proficient in practices/techniques.
- A biosafety manual specific to the lab.

Chemical Safety

1- All chemicals in the lab are to be considered dangerous.

2- Don’t touch, smell or taste any chemicals .

3- When instructed to smell chemical waft the smell toward you, don’t smell chemicals directly.

4-Don’t pour chemicals down the drain without permission

UV-Light Safety

1. Wear protective eyewear and gloves.
2. Cover arms and neck and limit exposure time.
3. Never look directly at the beam.

Thank you for listening