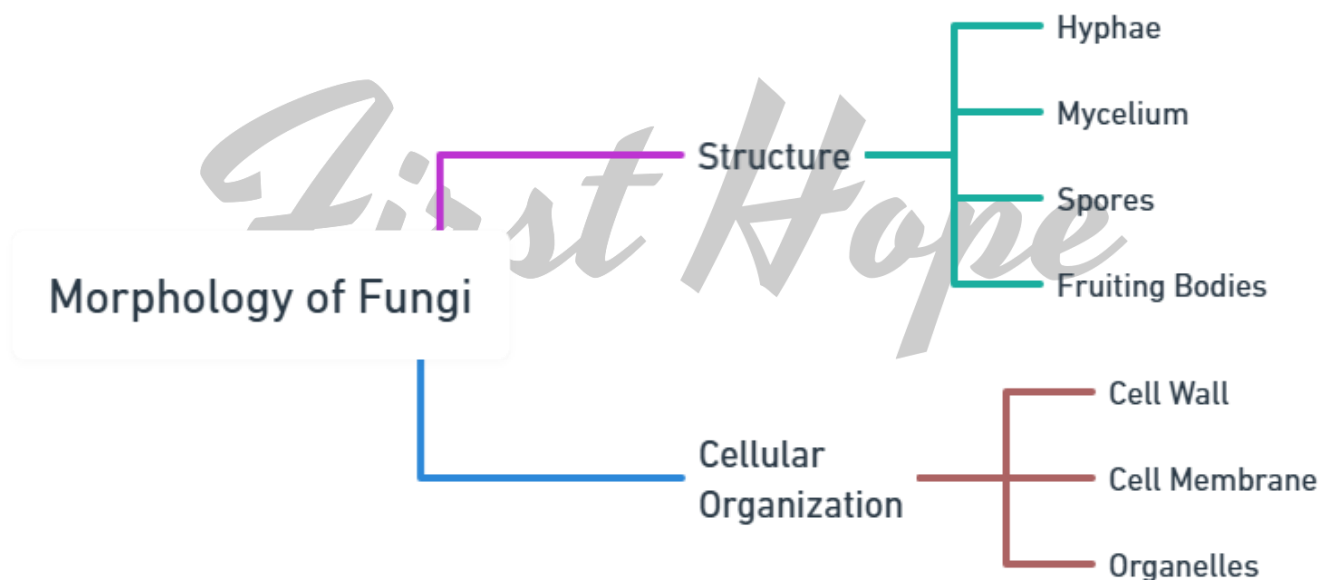


Fungi: morphology, classification, reproduction & cultivation

- The study of fungi encompasses various aspects, including their morphology, classification, reproduction/replication, and cultivation.



Morphology of Fungi



Structure:

- Hyphae:** The basic structural units of fungi, which are long, thread-like filaments. They can be septate (divided by cross walls) or coenocytic (without septa).
- Mycelium:** A network of hyphae that forms the body (thallus) of the fungus. The mycelium is responsible for nutrient absorption.
- Spores:** Reproductive units that can be asexual (conidia, sporangiospores) or sexual (ascospores, basidiospores).
- Fruiting Bodies:** Specialized structures like mushrooms, which produce and release spores.

Cellular Organization:

- Cell Wall:** Composed mainly of chitin, glucans, and sometimes cellulose.

2. **Cell Membrane:** Contains ergosterol, different from cholesterol found in animal cells.
3. **Organelles:** Includes a nucleus, mitochondria, endoplasmic reticulum, Golgi apparatus, and sometimes vacuoles.

Classification

Kingdom Fungi:

- Fungi are classified based on their reproductive structures and methods, molecular data, and other morphological features.

Major Phyla:



1. **Zygomycota (Zygomycetes):** Known for zygospores formed during sexual reproduction. Example: Rhizopus (bread mold).
2. **Ascomycota (Sac Fungi):** Produce spores in sac-like structures called asci. Includes yeasts and molds. Example: Saccharomyces cerevisiae (baker's yeast).
3. **Basidiomycota (Club Fungi):** Produce spores on club-shaped structures called basidia. Includes mushrooms and toadstools. Example: Agaricus bisporus (common mushroom).
4. **Deuteromycota (Imperfect Fungi):** Fungi for which only asexual reproduction is known (e.g., Penicillium).

Fungal Forms:

1. **Yeasts:** Unicellular fungi that reproduce by budding or fission.
2. **Molds:** Multicellular fungi with filamentous hyphae.

Reproduction/Replication of Fungi

A. Asexual Reproduction:

1. **Budding:** Common in yeasts, where a new cell grows out of the body of a parent.
2. **Fission:** Simple cell division in unicellular fungi.
3. **Spore Formation:** Asexual spores (conidia, sporangiospores) are produced by mitosis and dispersed to form new individuals.

B. Sexual Reproduction:

1. **Plasmogamy:** Fusion of cytoplasm from two parent mycelia.
2. **Karyogamy:** Fusion of nuclei from two parent mycelia.
3. **Meiosis:** Reductional division to produce sexual spores (ascospores, basidiospores).
4. **Spore Dispersal:** Spores are released into the environment to germinate into new mycelia.

Cultivation of Fungi

A. Environmental Conditions:

1. **Temperature:** Most fungi grow well at 20-30°C, though some can tolerate extremes.
2. **pH:** Optimal pH for most fungi is slightly acidic (pH 4-6).
3. **Moisture:** High humidity is generally favorable for fungal growth.
4. **Nutrients:** Fungi require organic matter, nitrogen, vitamins, and minerals.

B. Culture Media:

1. **Potato Dextrose Agar (PDA):** Common medium for general cultivation.
2. **Sabouraud Dextrose Agar (SDA):** Used for fungi with acidic tolerance.
3. **Malt Extract Agar (MEA):** Rich in nutrients for fastidious fungi.

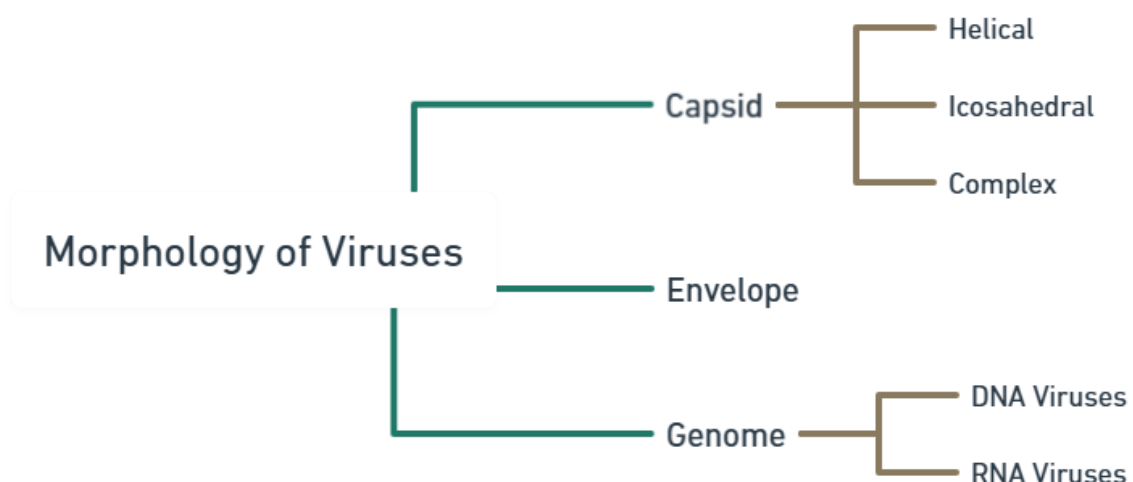
C. Techniques:

1. **Inoculation:** Introducing fungal spores or mycelium to the culture medium.
2. **Incubation:** Maintaining the culture under suitable environmental conditions.
3. **Isolation:** Obtaining pure cultures by subculturing from a mixed population.

Viruses: morphology, classification, reproduction & cultivation

- The study of viruses encompasses various aspects including their morphology, classification, reproduction/replication, and cultivation.

Morphology of Viruses



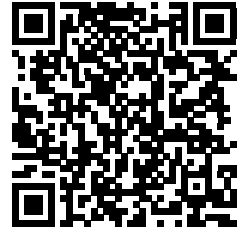


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