

III. Kingdom \_\_\_\_\_- (protists)

A. General characteristics of protists:

1. Most protists are \_\_\_cellular organisms that have a nucleus to organize their hereditary material.
2. Some protists help their host organisms. This is a relationship called \_\_\_\_\_.
3. There are three main types of protists (see B, C, and D below)

B. **Animal-like Protists**- heterotrophic protists that can move, contain a nucleus, and do not have a cell wall. (4 groups)

1. \_\_\_\_\_- animal-like protists that have pseudopods
  - a) \_\_\_\_\_- an extension of the cell membrane used to capture food and to move.
  - b) Many sarcodines have shells
  - c) An \_\_\_\_\_ is a well-known sarcodine
2. \_\_\_\_\_- animal-like protists that have small, hair-like projections called cilia at some time of their life spans.
  - a) \_\_\_\_\_- act as tiny oars to move the protist and sweep food towards themselves.
  - b) One of the most interesting ciliates is the **paramecium**
3. **Zooflagellates**- animal-like protists that move by using \_\_\_\_\_
  - a) Usually have one to eight flagella
  - b) Some are parasites and many are **symbiotes**
4. \_\_\_\_\_- parasitic protists that harm their host organisms
  - a) Many sporozoans have complex life cycles that involve forming spores to be transported within another organism
  - b) The sporozoan **plasmodium** causes the disease \_\_\_\_\_.

**C. Plantlike Protists-** autotrophic protists

1. Many organisms rely on plant-like protists for food and \_\_\_\_\_ supply.

2. Plant-like protists supply about \_\_\_\_\_% of the Earth's breathable oxygen.

3. **Euglena-** There are many different shapes of euglena in Phylum Euglenophyta.

a) Euglena are plant-like protists that have a \_\_\_\_\_ with two flagella, a reddish-colored eyespot, and chloroplasts.

4. \_\_\_\_\_- plant-like protists that make two-part, glassy shells that they leave behind when they die.

a) Diatom shells are used in toothpaste, polishes, and powder cleansers

5. **Dinoflagellates-** have \_\_\_\_\_ flagella and most have cell walls that look like plates of armor

a) Can reproduce quickly, if conditions are favorable, to form "\_\_\_\_\_ tides," which sometimes kill other organisms

b) Some dinoflagellates can produce light.

**D. \_\_\_\_\_like Protists-** heterotrophic protists that are not yet fully understood by scientists, but are classified as protists

1. \_\_\_\_\_- A fungus-like protist that can be seen without a microscope at one point in its life cycle. It appears as a flat, blob-like slime. Uses spores to reproduce.

## IV. Fungi

### A. Characteristics of fungi

1. Different species in a great variety of shapes, sizes, and colors
2. All fungi are \_\_\_\_\_ (do not need sunlight), obtain food by releasing chemicals that digest the substance on which they are growing
3. Some fungi catch tiny animals for food, some are decomposers, and others are symbiotic
4. Most are \_\_\_\_\_ (ex. mildew, mushrooms, mold); some are unicellular (ex. yeast)
5. Fungi structure- multicellular fungi are made up of threadlike tubes called hyphae; although they are multicellular, many of the cells in the hyphae have no cell membranes separating them from each other.
6. Fungi reproduction-
  - a) Many multicellular fungi use spores to reproduce. Spores are tiny reproductive cells enclosed in a cell wall.
  - b) \_\_\_\_\_- a structure made of tightly packed hyphae grown by many fungi to release spores

### B. Forms of fungi

1. Fungi are classified by the way they have evolved.
2. There are three basic groups of fungi.
  - a) \_\_\_\_\_- multicellular fungi shaped like an umbrella
    - 1) Mushrooms' caps produce spores on \_\_\_\_\_ or tubes.
  - b) \_\_\_\_\_- unicellular fungi; used to make bread rise; reproduce using budding
  - c) \_\_\_\_\_- fuzzy, shapeless, flat, multicellular fungi; some are used to produce medicine

### C. Fungi affect other organisms

1. \_\_\_\_\_ can cause disease in plants and animals

a) Dutch \_\_\_\_\_ disease, chestnut blight, ergot, corn smut are some of the diseases caused by fungi in plants.

b) Athlete's \_\_\_\_\_ and ringworm are caused by fungi

c) The toxic chemicals made by fungi attacking food sources can cause sickness in humans if they eat the affected food.

2. Fungus-root associations

a) Some fungi help and protect plants through a kind of symbiosis called \_\_\_\_\_. (The word means "fungus roots")

b) Mycorrhizae usually cover the plant's roots and protect them from harmful fungi, acid rain, and cold temperatures.

3. \_\_\_\_\_- are actually two organisms living in symbiosis together. A \_\_\_\_\_ is made up of fungi and algae living together.

a) The \_\_\_\_\_ provides the algae with water and minerals from the substance on which it is growing

b) The algae uses the water and minerals to make food for itself and the fungi

c) The algae can be blue-green bacteria, certain protists, or certain kinds of simple plants.

d) \_\_\_\_\_ may grow on bare rock, frozen areas, or hot deserts.