

Slime Molds

Chapter 6-10:

Slime Molds

The Kingdom Protista includes a number of fungus-like organisms called slime molds. Slime molds are nonphotosynthesizing organisms that are usually found growing in damp areas or on decaying vegetation.

There are two recognized types of slime molds: acellular slime molds and cellular slime molds. Acellular slime molds consist of masses of cytoplasm, called plasmodium, that may spread thinly over several square meters. Their nuclei are not confined to discrete cells (hence the term acellular). Cellular slime molds live in nature as independent, haploid cells that form a mass called a pseudoplasmodium, as this plate will describe. (A haploid cell contains a single set of chromosomes.) Each cell in the pseudoplasmodium is a separate, individual cell. We will examine the life cycle of a cellular slime mold in this plate.



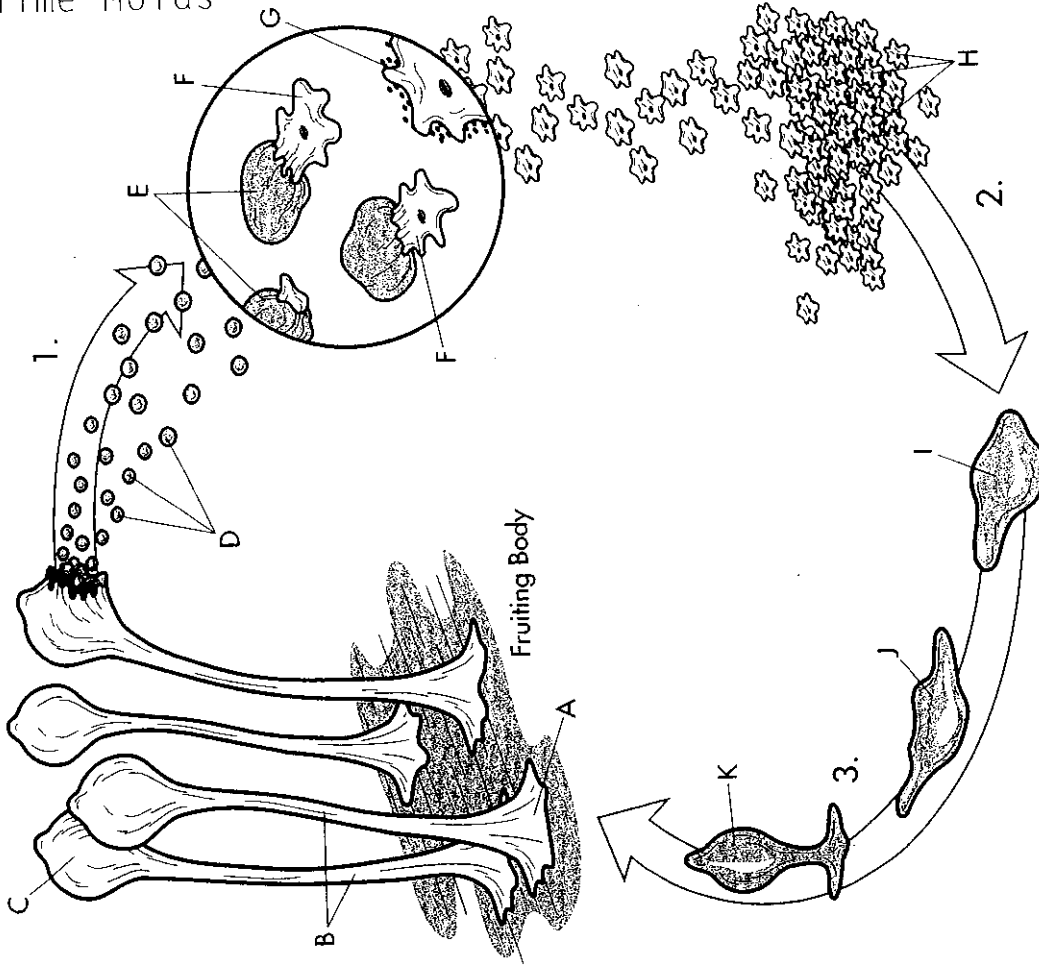
We will begin our study of the life cycle of cellular slime mold with the fruiting body. This structure consists of a base (A), which is attached to a suitable anchoring device, such as a rotting log. Rising from the base is the stalk (B), and at the tip of the stalk is a structure called the spore cap (C). A number of spore caps are shown in the plate. Numerous haploid spores are produced in the spore cap through the process of mitosis.

As the plate shows, the spore cap bursts to release a number of haploid spores (D). The spores now undergo a developmental process called germination (E). In germination, each spore releases a tiny, haploid amoeba (F), which feeds by phagocytosis and undergoes repeated mitotic divisions to produce a large number of haploid offspring. These feeding amoebae (G) are shown in the art.

We now focus on the second process in the life cycle. When the local food supply becomes scarce, the amoebae begin to come together, or aggregate. In the plate, we present an aggregate of amoebae (H), which still consists of individual haploid cells.



The amoebae aggregate in response to a chemical signal that they release when food is scarce, and the result of the aggregation is a mass called a pseudoplasmodium (I). The pseudoplasmodium consists of individual cells, and it behaves like a multicellular organism. As it moves, the migrating pseudoplasmodium resembles a slug (J). The slug-like mold migrates toward light, but eventually becomes stationary, and changes into a differentiating slime mold (K). A base forms at one end, and a stalk soon begins to emerge. At the tip of the stalk, a spore cap develops, and haploid spores develop within it. The life cycle is now complete; the organism has undergone a series of changes that led it back to its original form.



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☐ Base	☐ A	☐ Germination	☐ E	☐ Pseudoplasmodium	☐ I
☐ Stalk	☐ B	☐ Amoeba	☐ F	☐ Pseudoplasmodium	☐ J
☐ Spore Cap	☐ C	☐ Feeding Amoebae	☐ G	☐ Resembling a Slug	☐ K
☐ Spores	☐ D	☐ Aggregate Amoeba	☐ H	☐ Differentiating Slime Mold	☐ M

6.10 Slime Molds

- Can slime molds photosynthesize?
- Where are slime molds found?
- What are the two recognized types of slime molds?
- The mass of cytoplasm of an acellular slime mold is referred to as a:
 - The haploid cell mass of a cellular slime mold is referred to as a:
- The three parts of a fruiting body of a cellular slime mold are:
 - These germinate to form tiny haploid amoebae:
 - When the amoebae come together (when food is scarce) they are said to:
 - This signals aggregation into a pseudoplasmodium:
 - What does a pseudoplasmodium resemble?
 - When the slime mold migrates toward light becomes stationary it changes into a: