

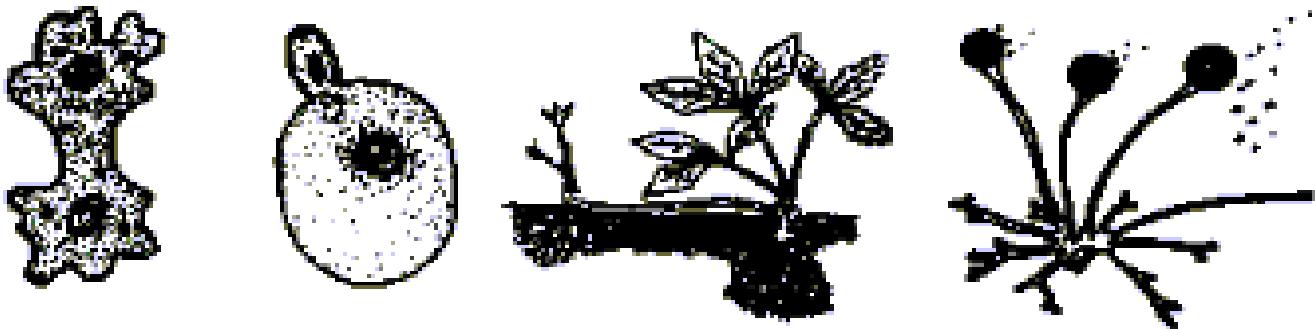
Name _____

Class _____

ASEXUAL REPRODUCTION

ASEXUAL REPRODUCTION. Asexual reproduction results from mitotic cell division (mitosis). During asexual reproduction, one cell, called the parent cell, divides into two identical daughter cells. The new organisms, called offspring, are genetically identical to the parent cell. There is no fusing (joining) of cells in this type of reproduction.

Asexual reproduction is more common in invertebrate animals (without a backbone) than vertebrate animals (with a backbone). Unicellular and multicellular plants can reproduce sexually and asexually. Common types of asexual reproduction include binary fission, budding, sporulation, regeneration, and vegetative propagation.



Review Questions

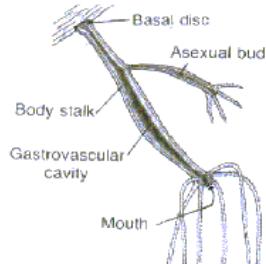
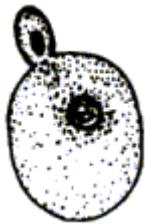
1. What is asexual reproduction?

2. Asexual reproduction is more common in _____ than in _____ animals.

3. Name three types of asexual reproduction.

BUDDING.

A type of asexual reproduction in which a new organism develops as an outgrowth of the parent is called **budding**. The new organism, called a **bud**, is a tiny duplicate of the parent organism. In budding, the nucleus divides equally and the cytoplasm divides unequally. The bud and the parent may separate from each other or may remain together and form a colony. Budding occurs in unicellular organisms, such as yeast, and in multicellular organisms, such as hydra.



Review Questions

1. Budding results in equal division of the _____ and unequal division of the _____.
2. A one-celled organism that reproduces by budding is _____.
3. _____ is a multicellular organism that reproduces by budding.

SPORULATION.

Spores are specialized asexual reproductive cells that contain a nucleus and a small amount of cytoplasm. Spores are surrounded by tough protective coats that enable them to survive unfavorable conditions, such as extreme heat or cold, for long periods of time. When environmental conditions are favorable, each spore can develop into a new organism. The new organism has the same genetic makeup as its parent. Sporulation, the formation of spores, occurs in bread mold, mushrooms, mosses, and ferns.

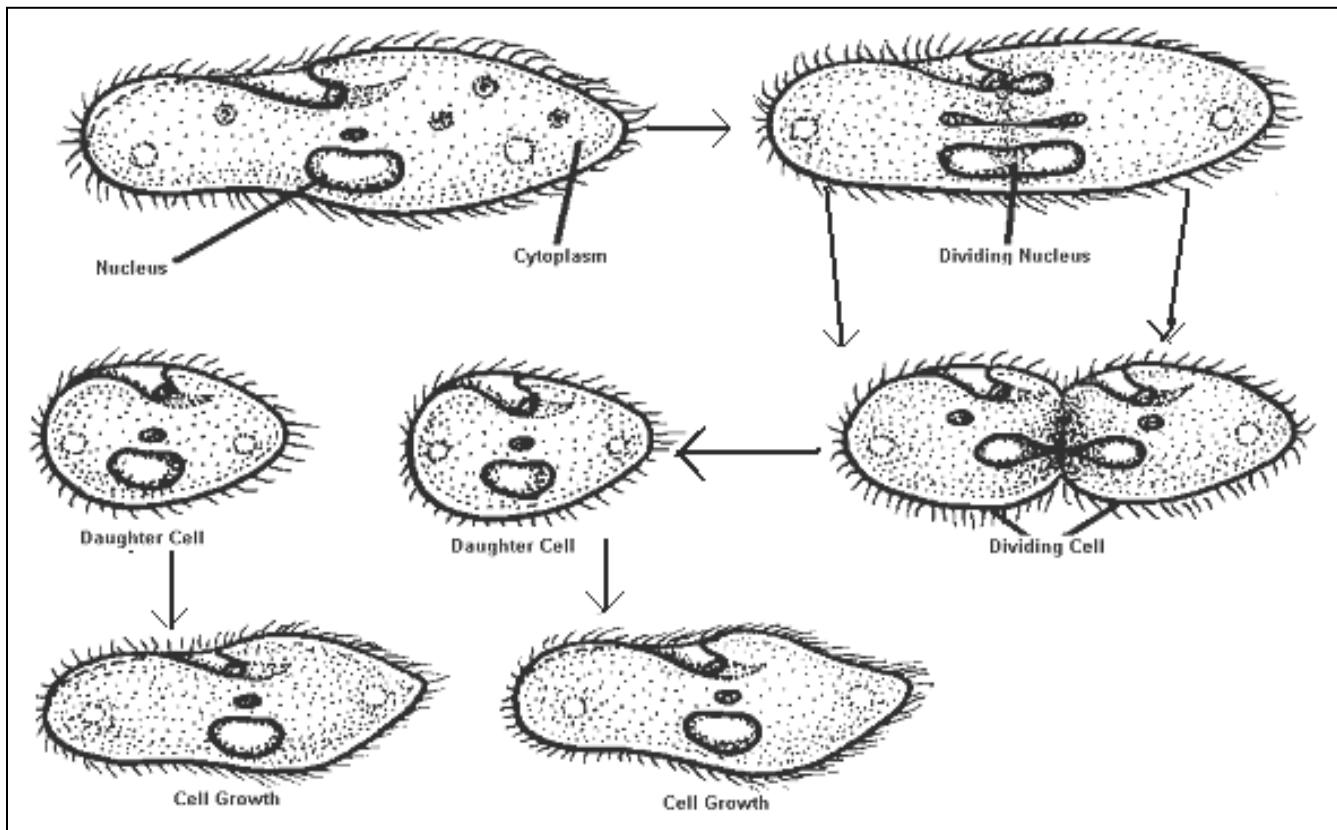
Review Questions

What is a spore?

State one advantage to spore formation.

BINARY FISSION.

Binary fission is the simplest type of asexual reproduction. During binary fission, a one-celled organism divides by mitosis to form two daughter cells of equal size. Both the nucleus and the cytoplasm divide equally. The chromosomes of the offspring are identical to the parent. Amebas, paramecium, and bacteria reproduce by binary fission.



Review Questions

1. Describe binary fission.
2. Name two organisms that divide by binary fission

REGENERATION.

Regeneration is the development of a new organism from a part of the parent organism. For example, in starfish, a single arm can develop into a new starfish. Starfish eat oysters and oyster fisherman once tried to kill starfish by cutting them into pieces. Instead of dying, each starfish piece grew into a new starfish.

Regeneration can also mean the replacement of lost body parts. For example, lobsters are able to grow a new claw to replace one that has been lost. Regeneration of lost body parts occurs mostly in invertebrates. Other animals that can regenerate are planaria and sponges.



Review Questions

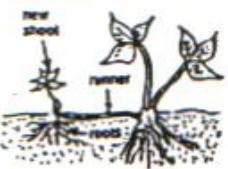
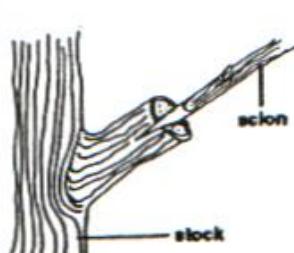
1. What is regeneration?
2. Name two animals that reproduce by regeneration.

VEGETATIVE PROPAGATION.

Vegetative propagation is a form of asexual plant reproduction. In vegetative propagation, a part of a plant—a root, stem, or leaf, grows into a new plant. The new plant is exactly the same as the parent plant. Commercial growers use vegetative propagation rather than seeds when they want to grow an offspring that is identical to the parent. Seedless fruits and vegetables have to be reproduced by this method. In addition, growers use this type of reproduction because it is fast, easy to use, and is usually successful.

Vegetative propagation can occur naturally or artificially. **Natural vegetative propagation** occurs naturally without human interference. Types of natural vegetative propagation include **tubers**, **runners**, **rhizomes**, and **bulbs**. **Artificial vegetative propagation** occurs as a result of human activities. Two common methods of artificial vegetative propagation are **cuttings** and **grafting**.

VEGETATIVE PROPAGATION.

TYPE OF PROPAGATION	DESCRIPTION AND EXAMPLES
Runners 	Stems that grow out over the surface of the soil from the existing stem. At points along the runner, new plants grow. Runners occur in strawberries and some grasses.
Bulbs 	Underground stems specialized for food storage. The food is stored in the thick leaves of the bulb. Each bulb can develop into a new plant. Onions are bulbs.
Tubers 	Underground stems that contain stored food. White potatoes are tubers. The "eyes" of the potato are buds, which can develop into new plants
Rhizomes 	Long, modified stems that grow horizontally under the soil. New plants are produced at nodes along the stem. Lawn grasses, ferns, and irises reproduce by rhizomes.
Cuttings 	Pieces of roots, stems, or leaves develop into new plants under proper conditions. Roses, sugar cane, and bananas are propagated this way.
Grafting 	A cutting from one plant, called the scion , is attached to the main body of a rooted plant, the stock . The scion keeps its own identity. Seedless oranges and grapes are propagated by grafting.

Review Questions

1. What is vegetative propagation?
2. Name three plants that reproduce by vegetative propagation.