

20–5 Funguslike Protists





What are the similarities and differences between funguslike protists and fungi?



Funguslike protists are heterotrophs that absorb nutrients from dead or decaying organic matter.

Unlike most true fungi, funguslike protists contain centrioles. They also lack the chitin cell walls of true fungi.

Slime Molds



What are the defining characteristics of the slime molds?



Slime molds are funguslike protists that play key roles in recycling organic material.

At one stage of their life cycle, slime molds look just like amoebas.

At other stages, they form moldlike clumps that produce spores, almost like fungi.

Two groups of slime molds are recognized:

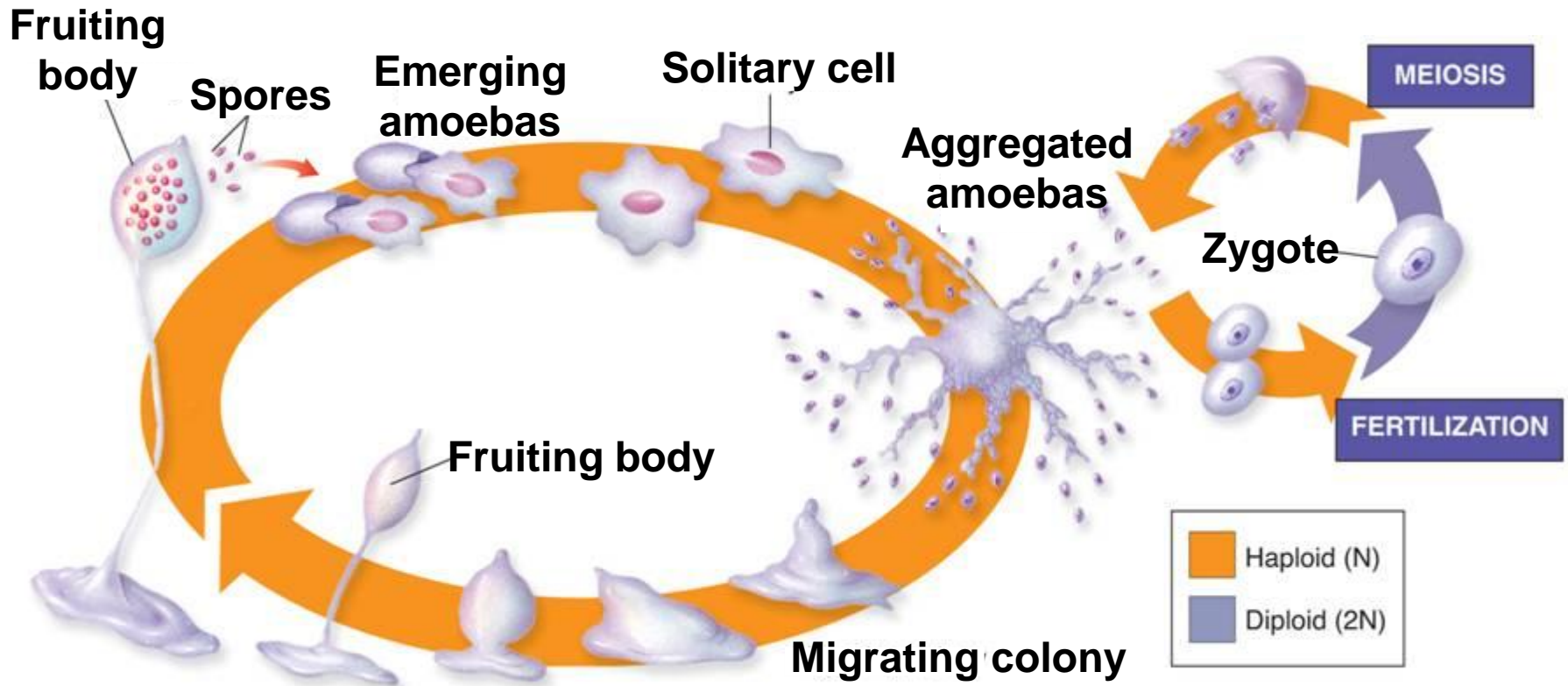
- **Cellular slime molds**, whose individual cells remain separated during every phase of the mold's life cycle.
- **Acellular slime molds**, which pass through a stage in which its cells fuse to form large cells with many nuclei.

Cellular Slime Molds

Most cellular slime molds live as free-living cells that are not easily distinguishable from soil amoebas.

In nutrient-rich soils, these amoeboid cells reproduce sexually and produce diploid zygotes.

Life Cycle of a Cellular Slime Mold



When food is scarce, the cells produce spores.

They emit chemicals to attract cells of the same species.

Cells gather into a colony that functions like one organism.

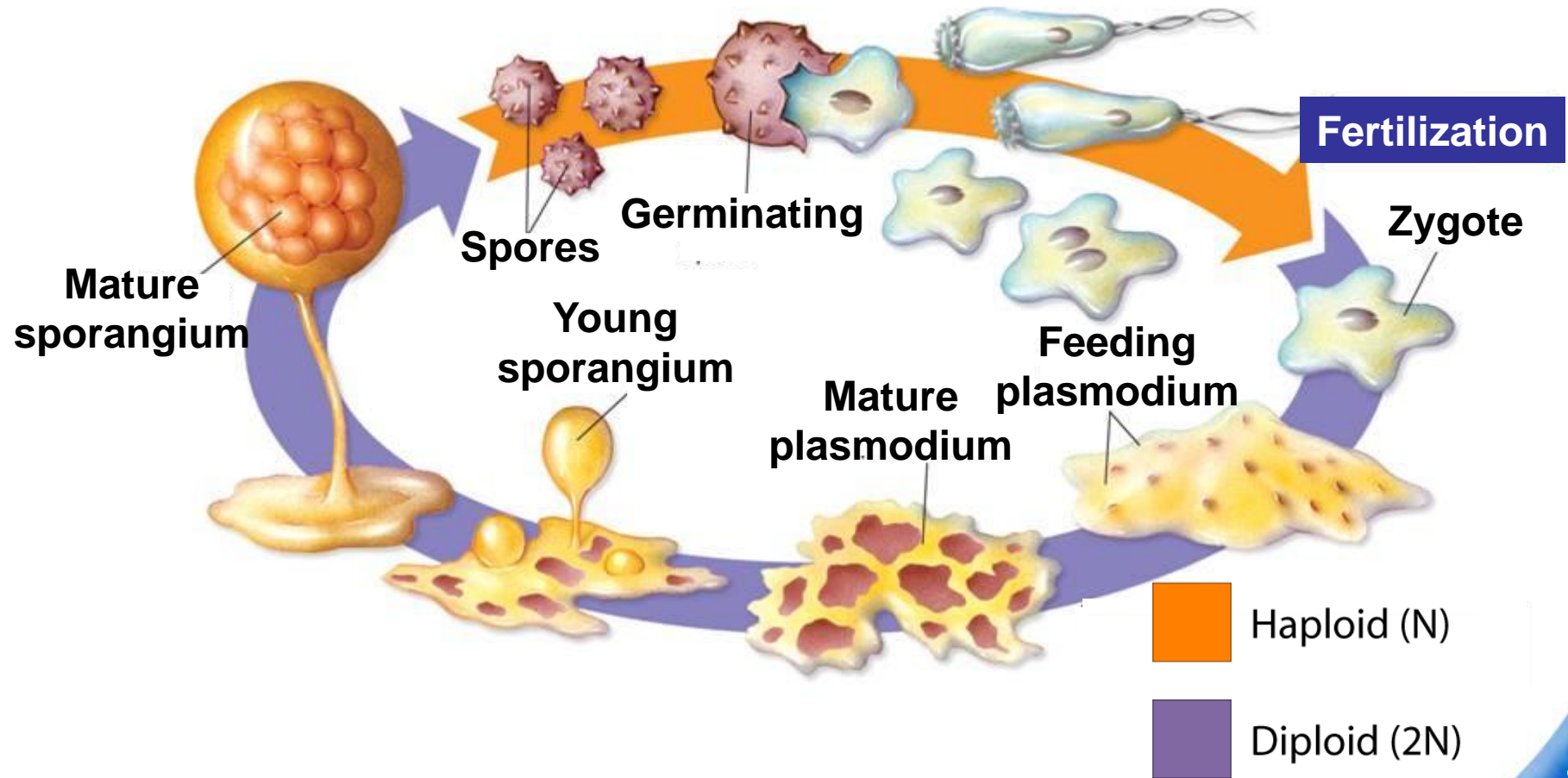
- The colony moves slightly, then stops to produce a **fruiting body**, a slender reproductive structure that produces spores.
- Then the spores are scattered from the fruiting body.
- Each spore produces one cell, starting the cycle again.

Acellular Slime Molds

Acellular slime molds begin as amoeba-like cells.

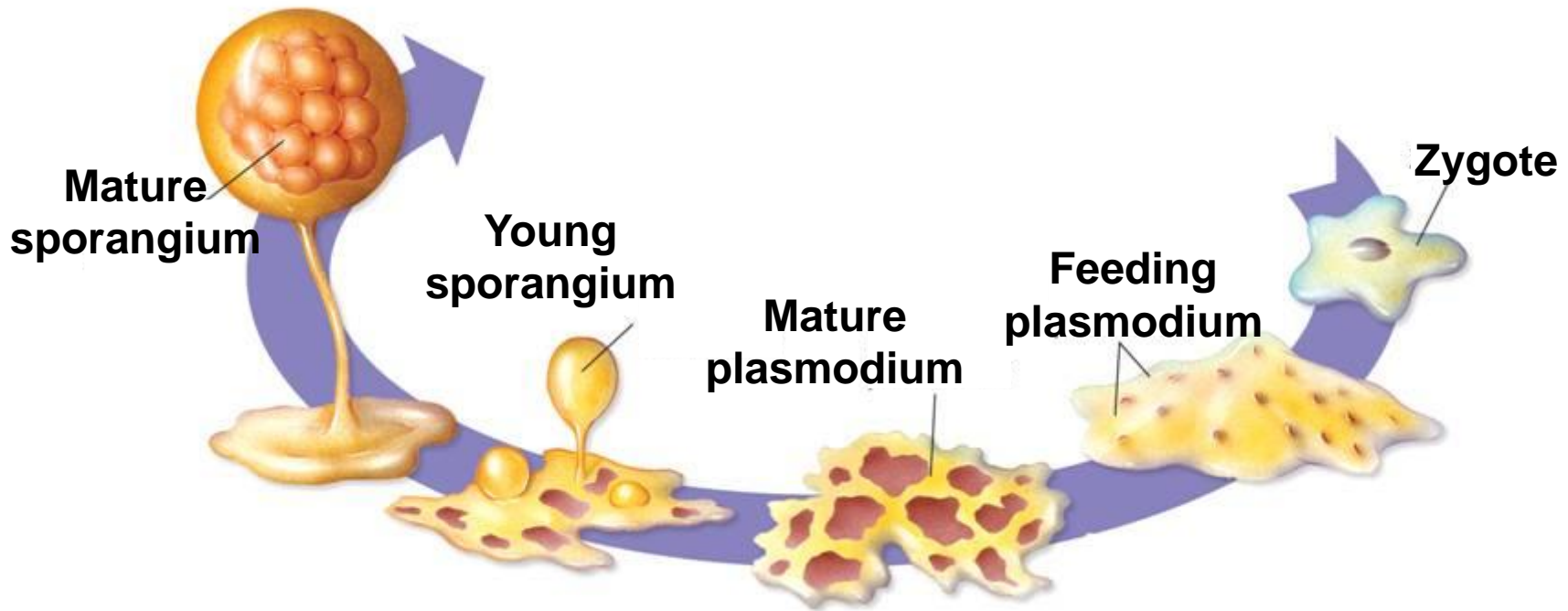
When they aggregate, their cells fuse to produce structures with many nuclei known as **plasmodia**.

Life Cycle of an Acellular Slime Mold

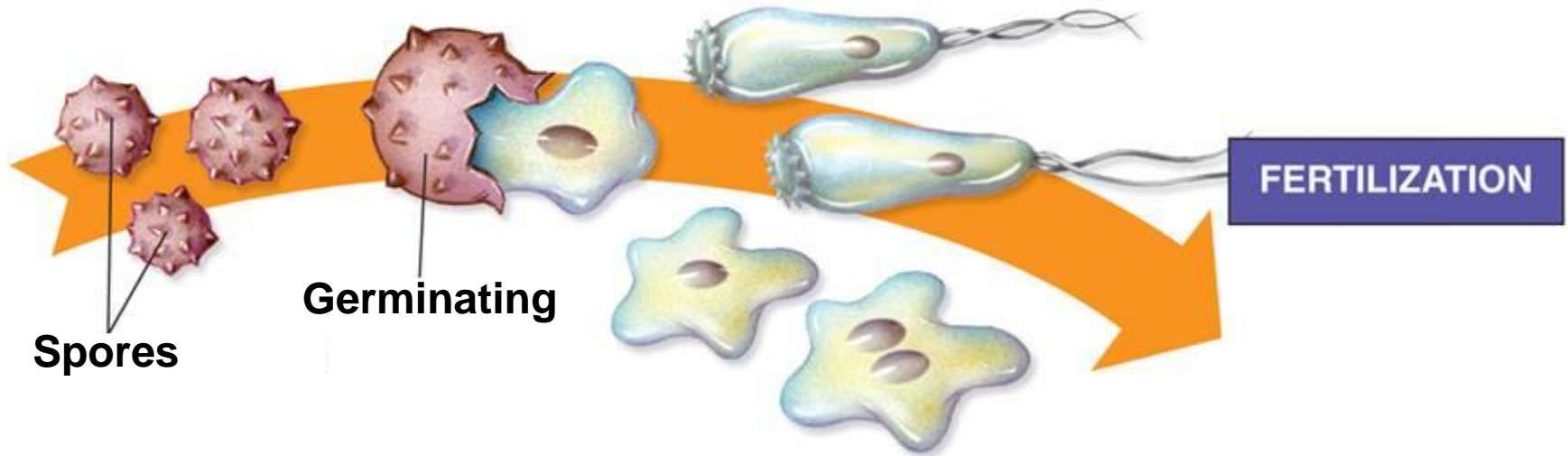


Fruiting bodies, or sporangia, arise from the plasmodium.

The sporangia produce haploid spores by meiosis.



Spores scatter and germinate into flagellated cells.
Cells fuse to produce diploid zygotes.



Water Molds



What are the defining characteristics of the water molds?



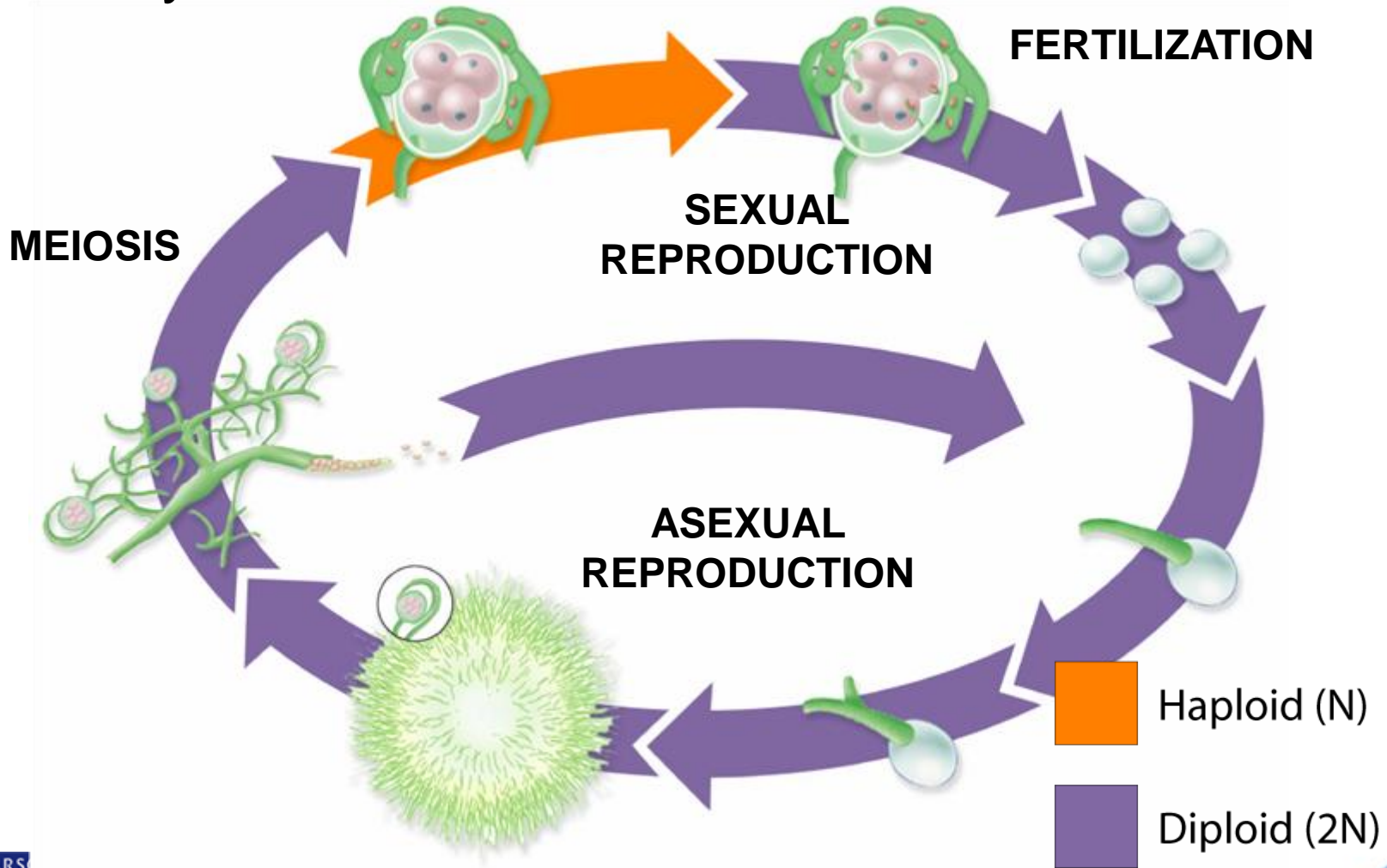
Oomycetes, or water molds thrive on dead or decaying organic matter in water. Some water molds are plant parasites on land.

Water molds produce thin filaments known as **hyphae**.

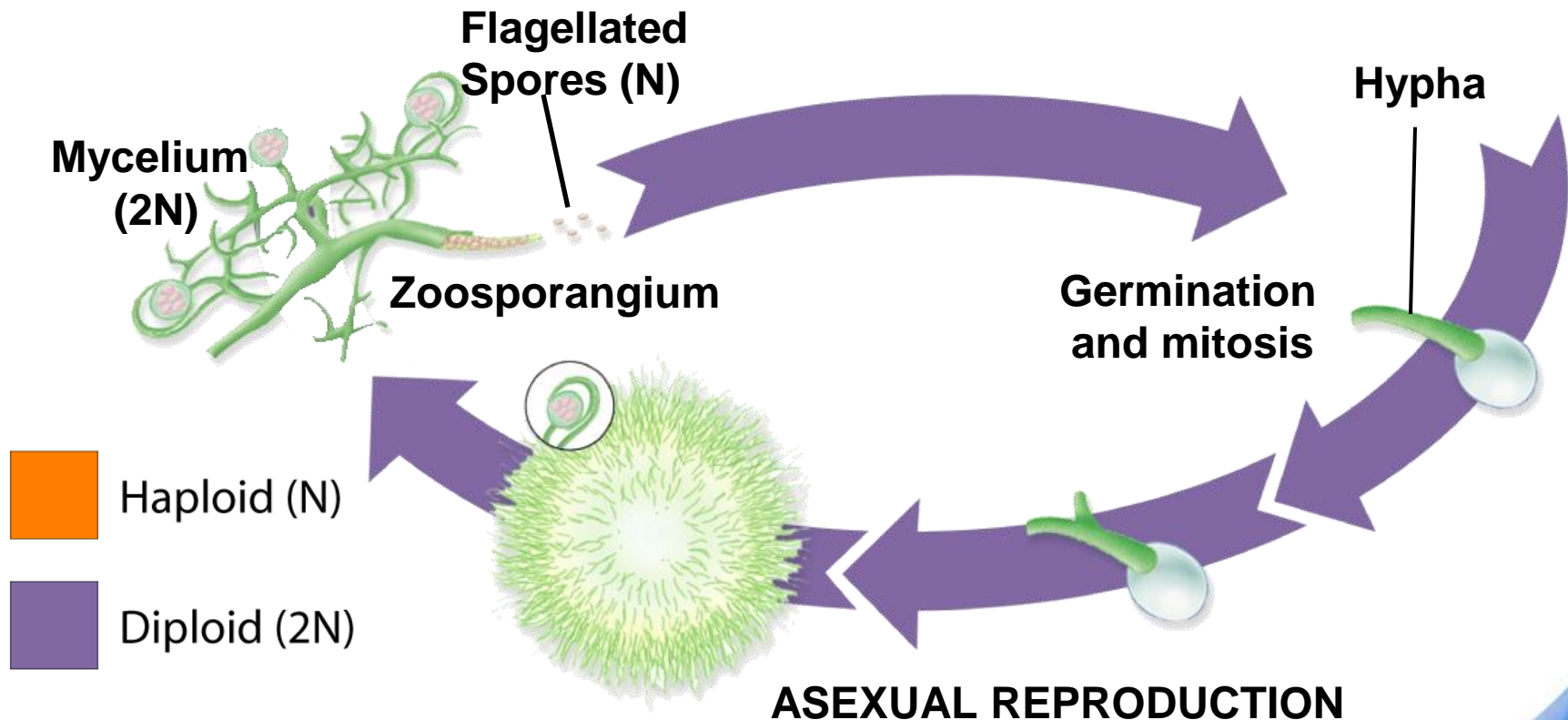
Water molds have cell walls made of cellulose and produce motile spores, two traits that fungi do not have.

Water molds reproduce both sexually and asexually.

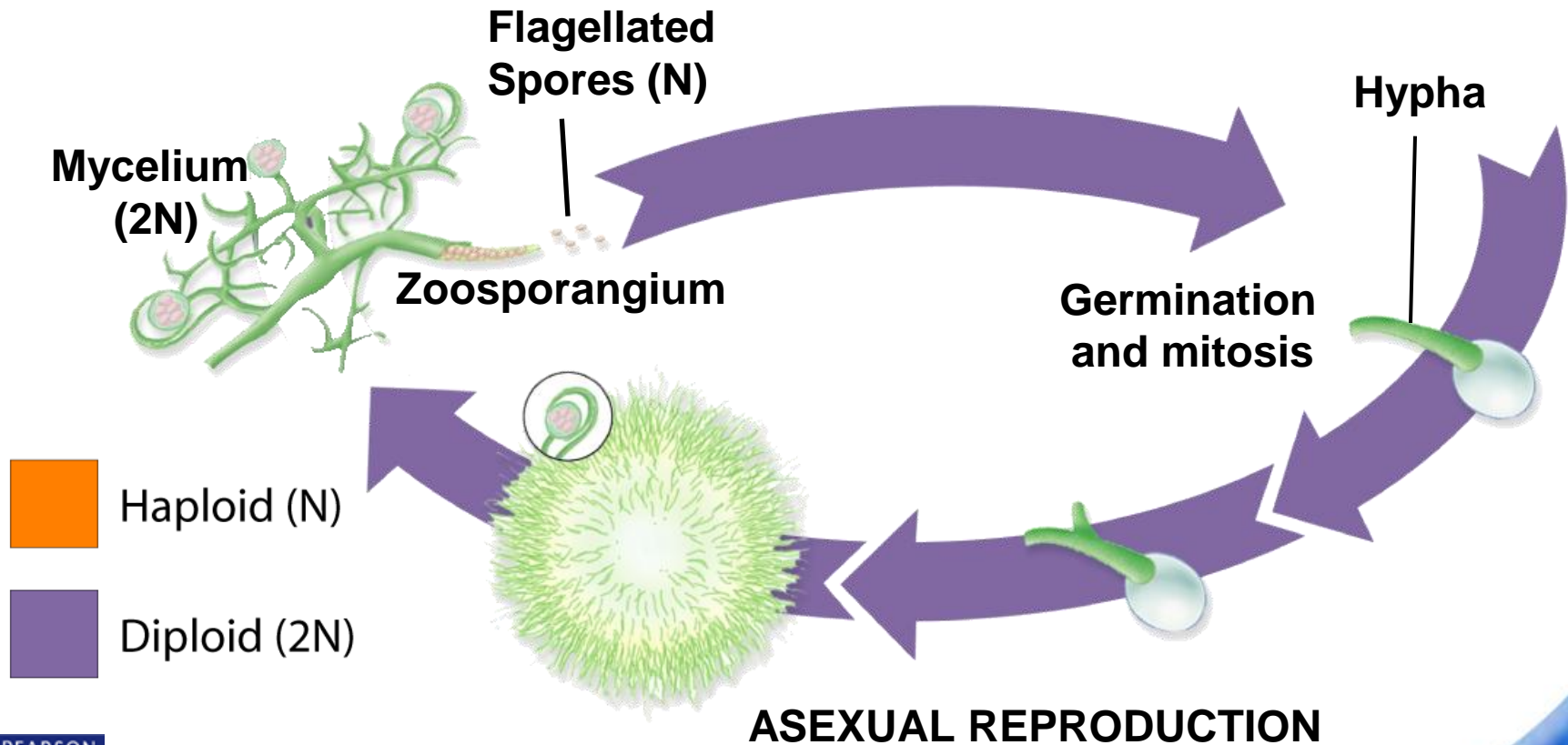
Life Cycle of a Water Mold



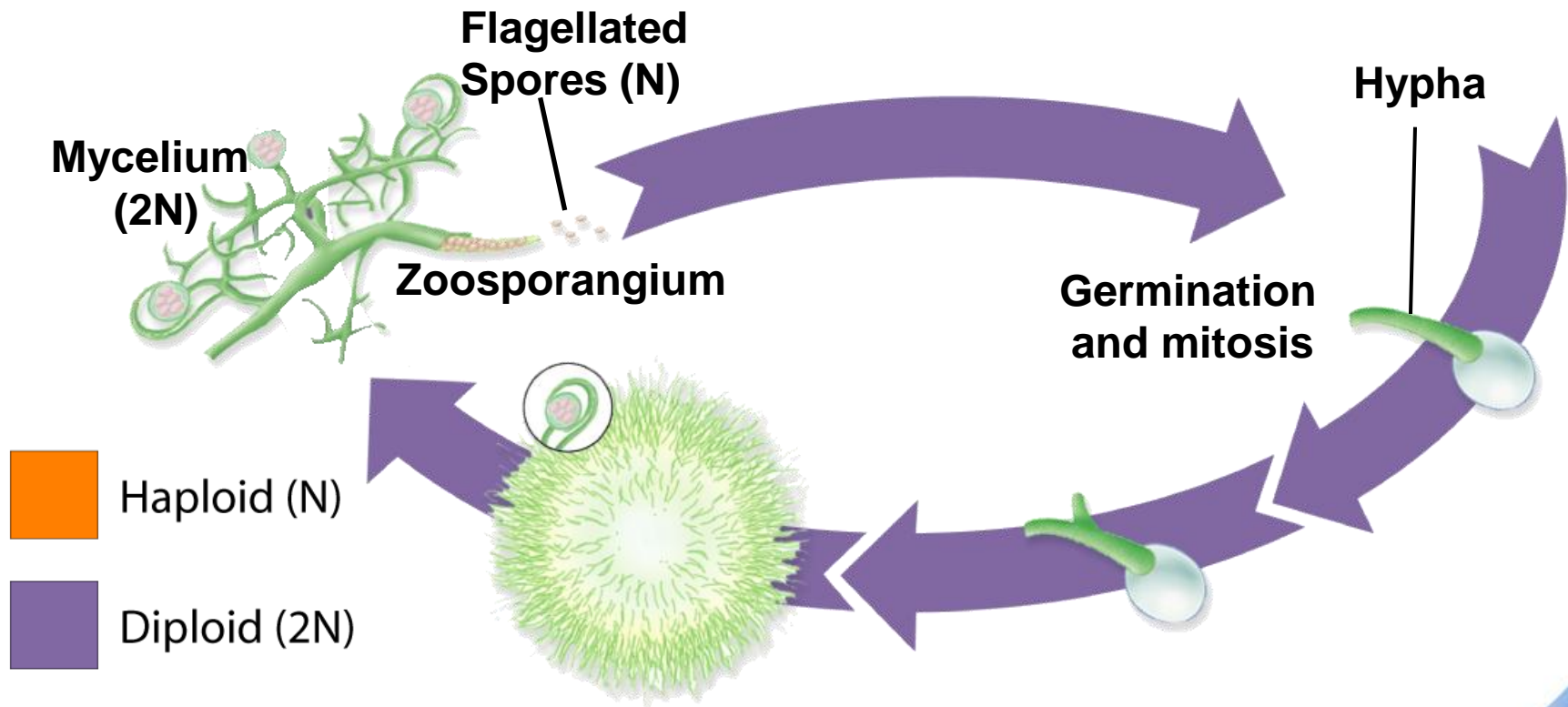
In asexual reproduction, portions of the hyphae develop into **zoosporangia**, which are spore cases.



Each produces flagellated spores that swim in search of food.

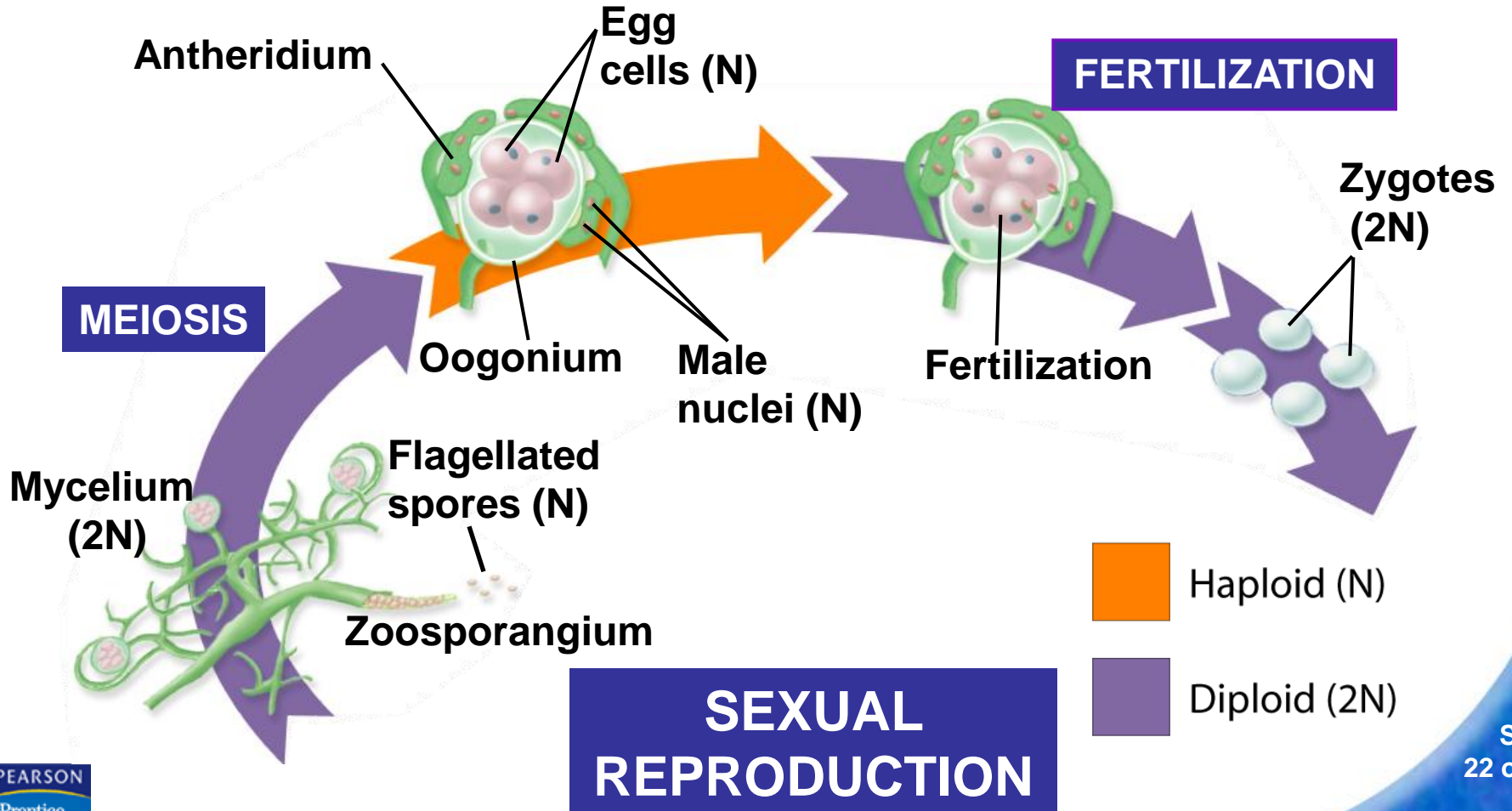


When they find food, the spores develop into hyphae, which then grow into new organisms.

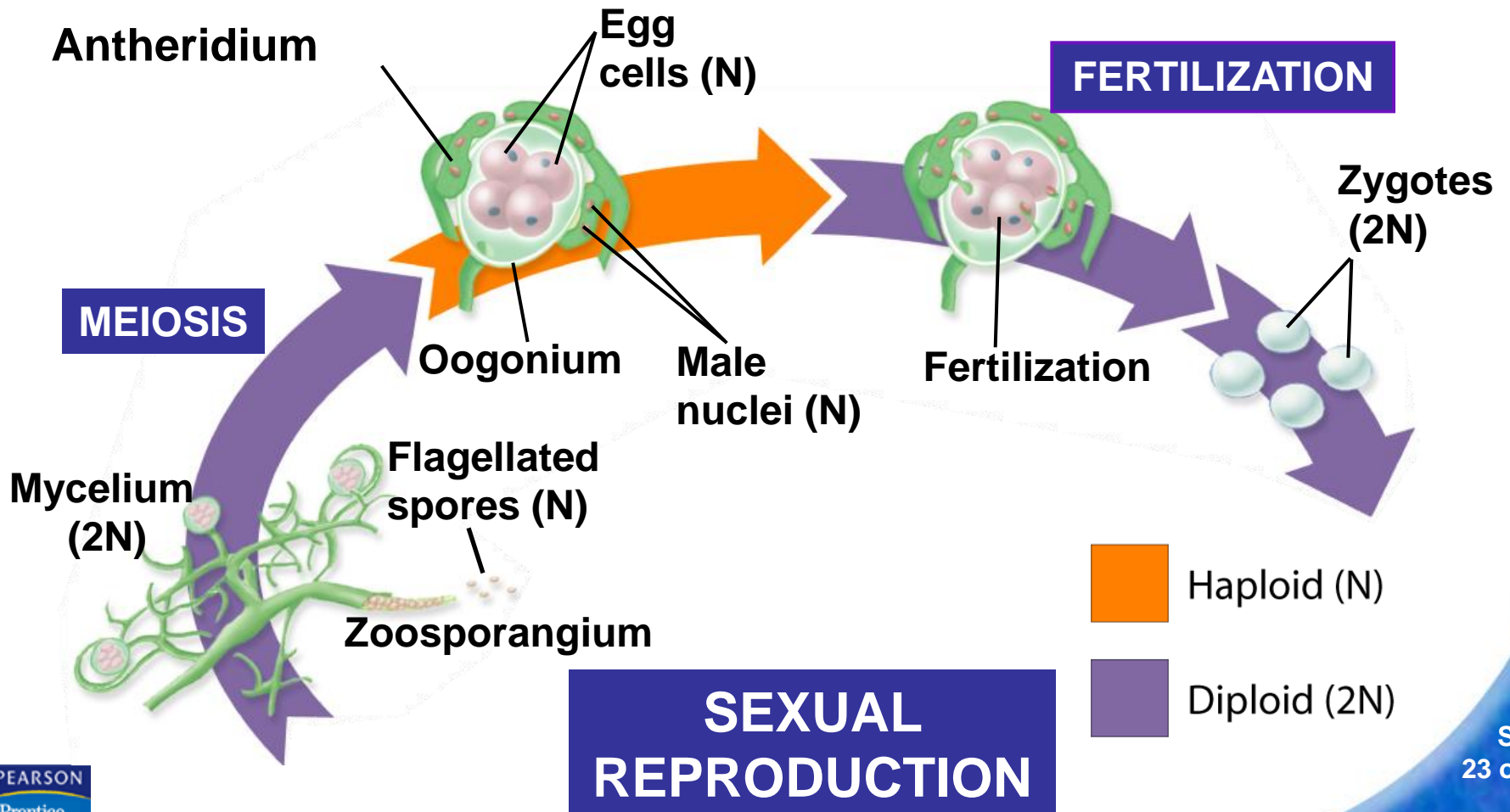


ASEXUAL REPRODUCTION

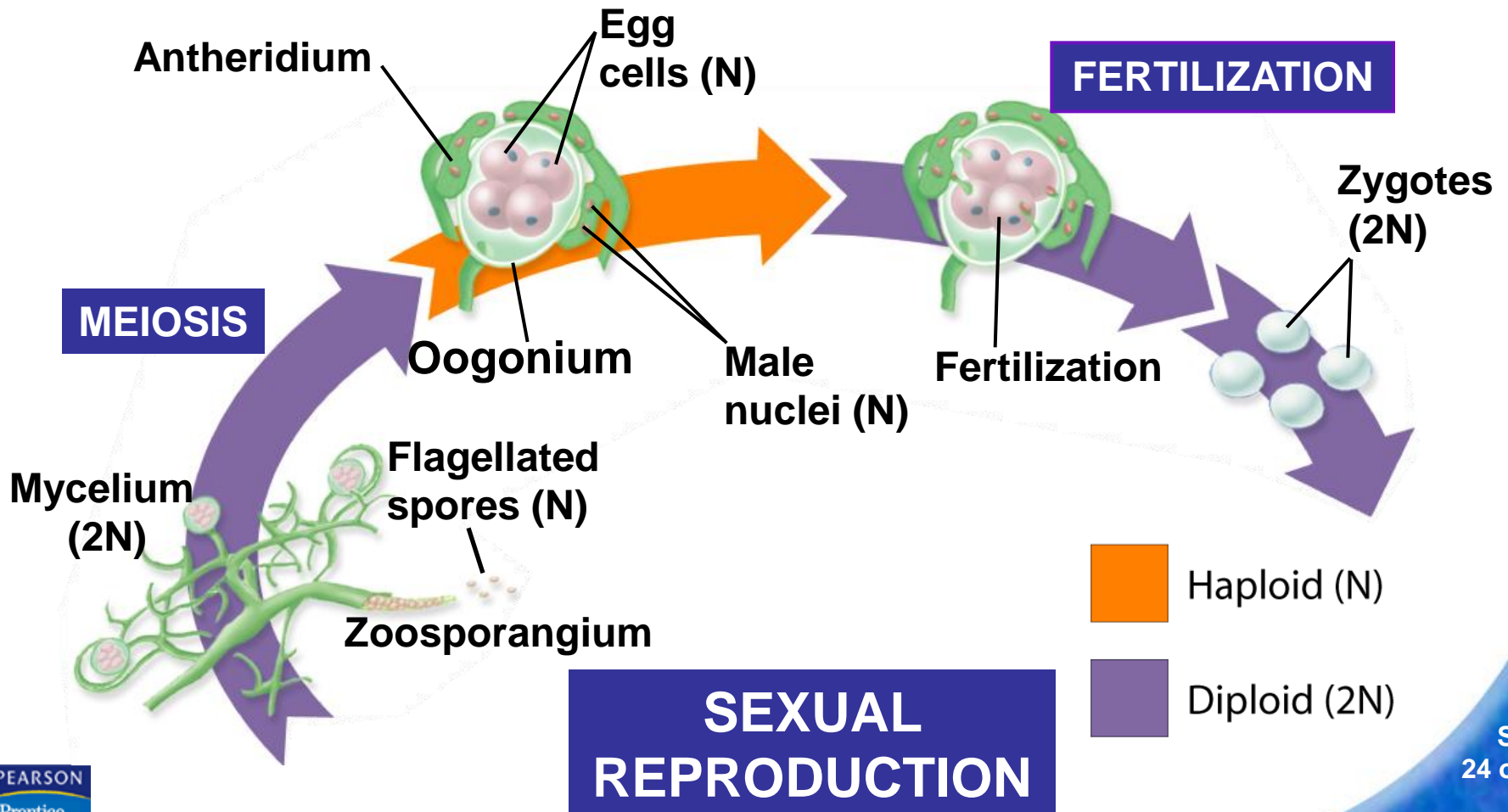
Sexual reproduction occurs in specialized structures formed by the hyphae.



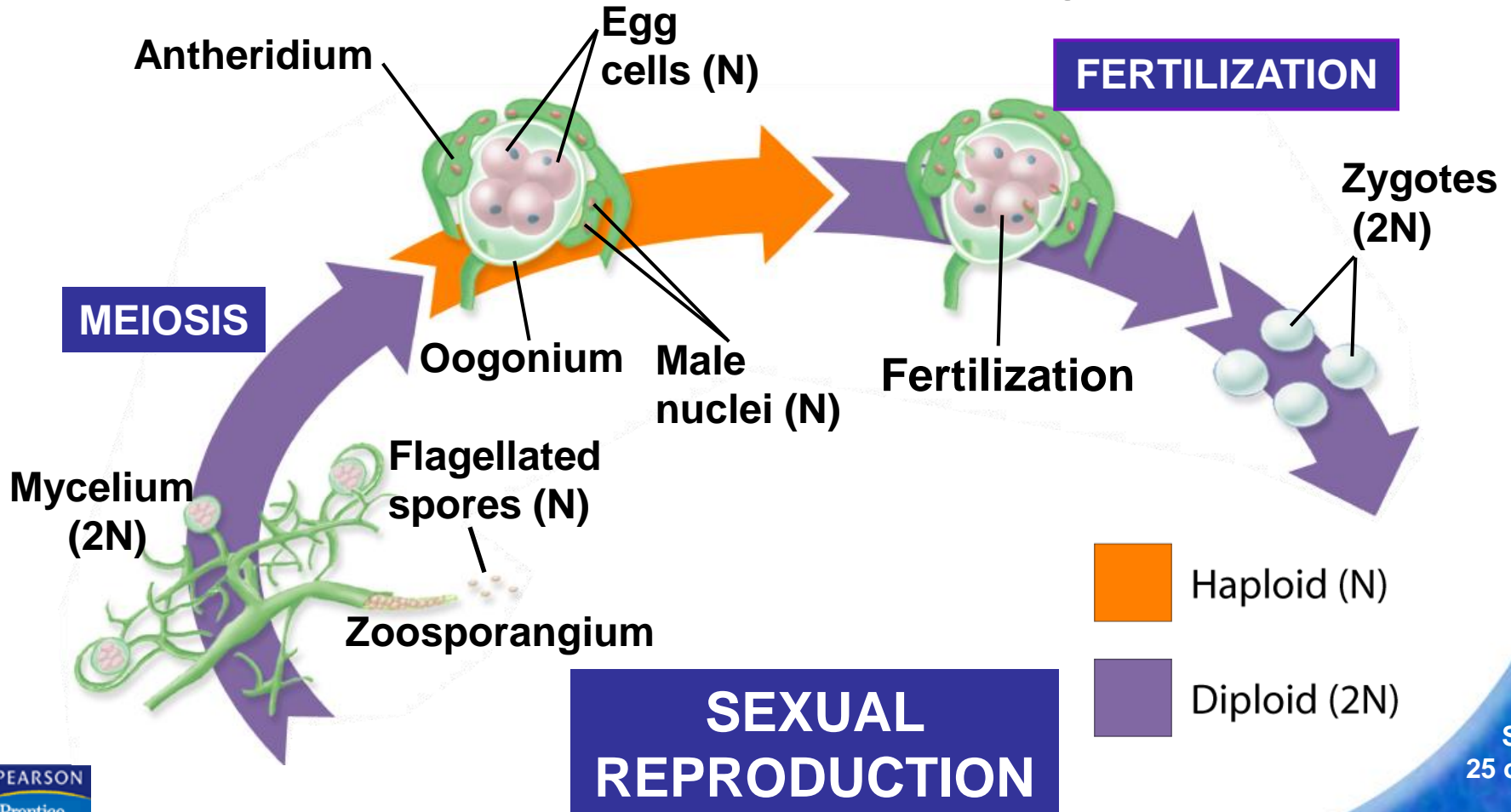
The **antheridium** produces male nuclei.



The **oogonium** produces female nuclei.



Fertilization occurs within the oogonium, and the spores that form develop into new organisms.



Ecology of Funguslike Protists

Slime molds and water molds recycle organic material.

After organisms die, their tissues are broken down by slime molds, water molds, and other decomposers.

Some funguslike protists can harm living things.

Land-dwelling water molds cause a number of plant diseases, including mildews and blights.

A water mold was responsible for the Great Potato Famine in the 1800s.

20–5 Section QUIZ

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Section QUIZ

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1

Unlike the true fungi, funguslike protists

- a. do not have centrioles or cell walls made of chitin.
- b. do not have centrioles but have cell walls made of chitin.

A

c. have centrioles but lack cell walls made of chitin.

- d. have both centrioles and cell walls made of chitin.

2 The spore cases formed by water molds are called

A a. zoosporangia.

b. plasmodia.

c. antheridia.

d. sporophytes.

3 The acellular slime molds got their name because

- a. they are the only organisms that do not have cells.
- b. they do not have true nuclei.
- c. they have multinucleate hyphae.

A d. their cells sometimes fuse to form structures with many nuclei.

4 Organisms that spend part of their life cycle as independent, unicellular amoeba-like forms and then join together as a visible, sluglike colony are

- A**
- a. cellular slime molds.
 - b. water molds.
 - c. acellular slime molds.
 - d. plasmodia.

- 5** The Great Potato Famine was caused by a(an)
- a. cellular slime mold.
 - b. acellular slime mold.
 - A** c. water mold.
 - d. plasmodia.

END OF SECTION