

# 20–5 Funguslike Protists



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# Similarities and differences between funguslike protists and fungi

- Like fungi, funguslike protists are **heterotrophs** that **absorb nutrients from dead or decaying organic matter**. No photosynthesis.
- Unlike most true fungi, funguslike protists contain **centrioles**. They also **lack the chitin cell walls** of true fungi.
- Grow in damp, nutrient rich environments



**Funguslike  
protist**

**Fungus**

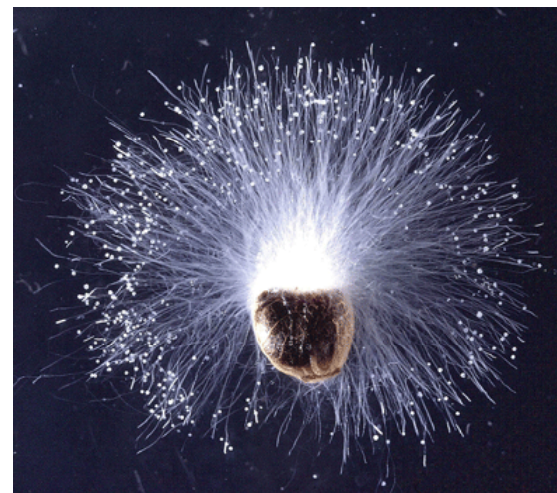


## Two phyla of Funguslike Protists

### Slime Molds



### Water Molds



## Slime molds

### 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.

## Video Mold Time-lapse (3min):

[https://www.youtube.com/watch?v=GY\\_uMH8Xpy0](https://www.youtube.com/watch?v=GY_uMH8Xpy0)

## 20–5 Funguslike Protists → Slime Molds

Two groups of slime molds are recognized:

- **Cellular slime molds**, whose individual cells remain separated by cell membranes, 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.



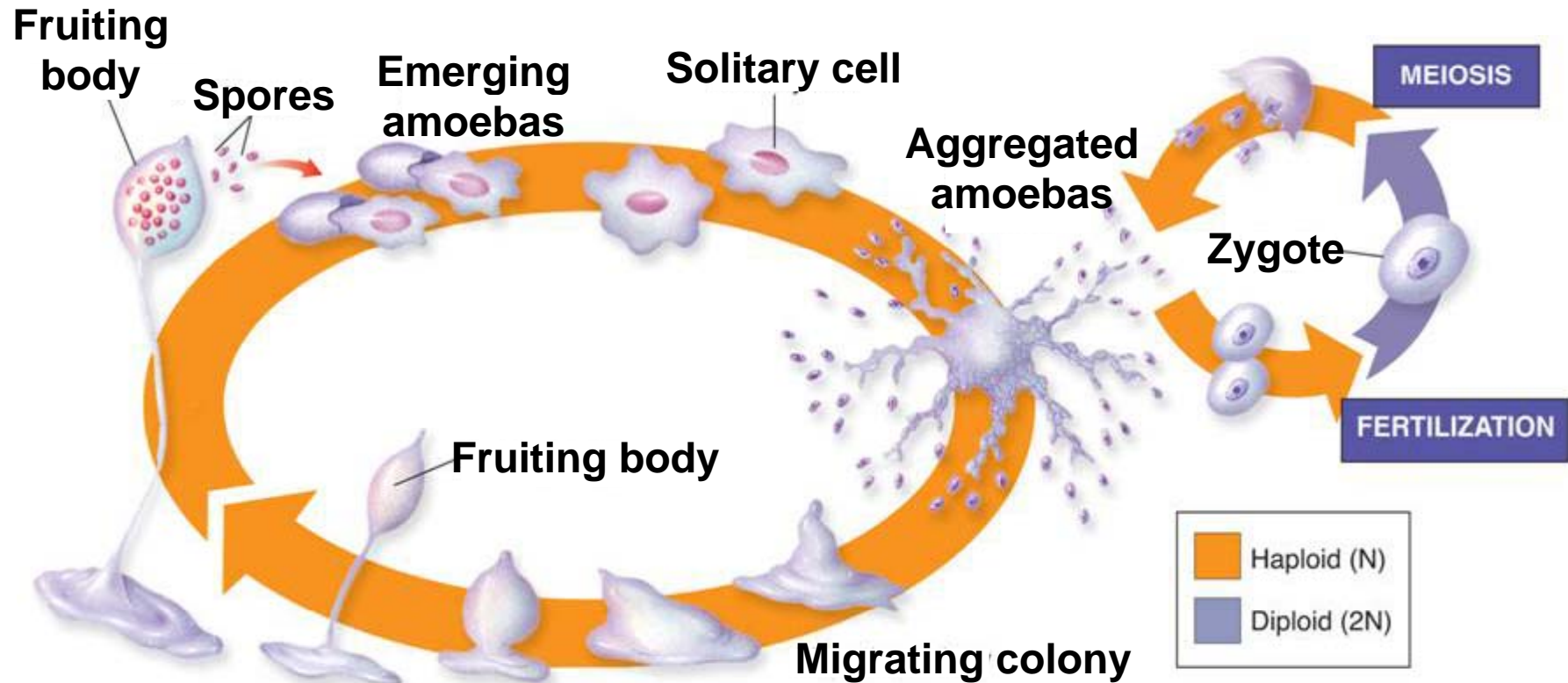
## Cellular Slime Molds

- 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



## 20–5 Funguslike Protists → Slime Molds

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.

## 20–5 Funguslike Protists → Slime Molds

- 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.

## 20–5 Funguslike Protists →

**Video of cellular slime mold aggregating and forming fruiting bodies:**

<https://www.youtube.com/watch?v=ShlCwqICA4Y>

## Acellular Slime Molds

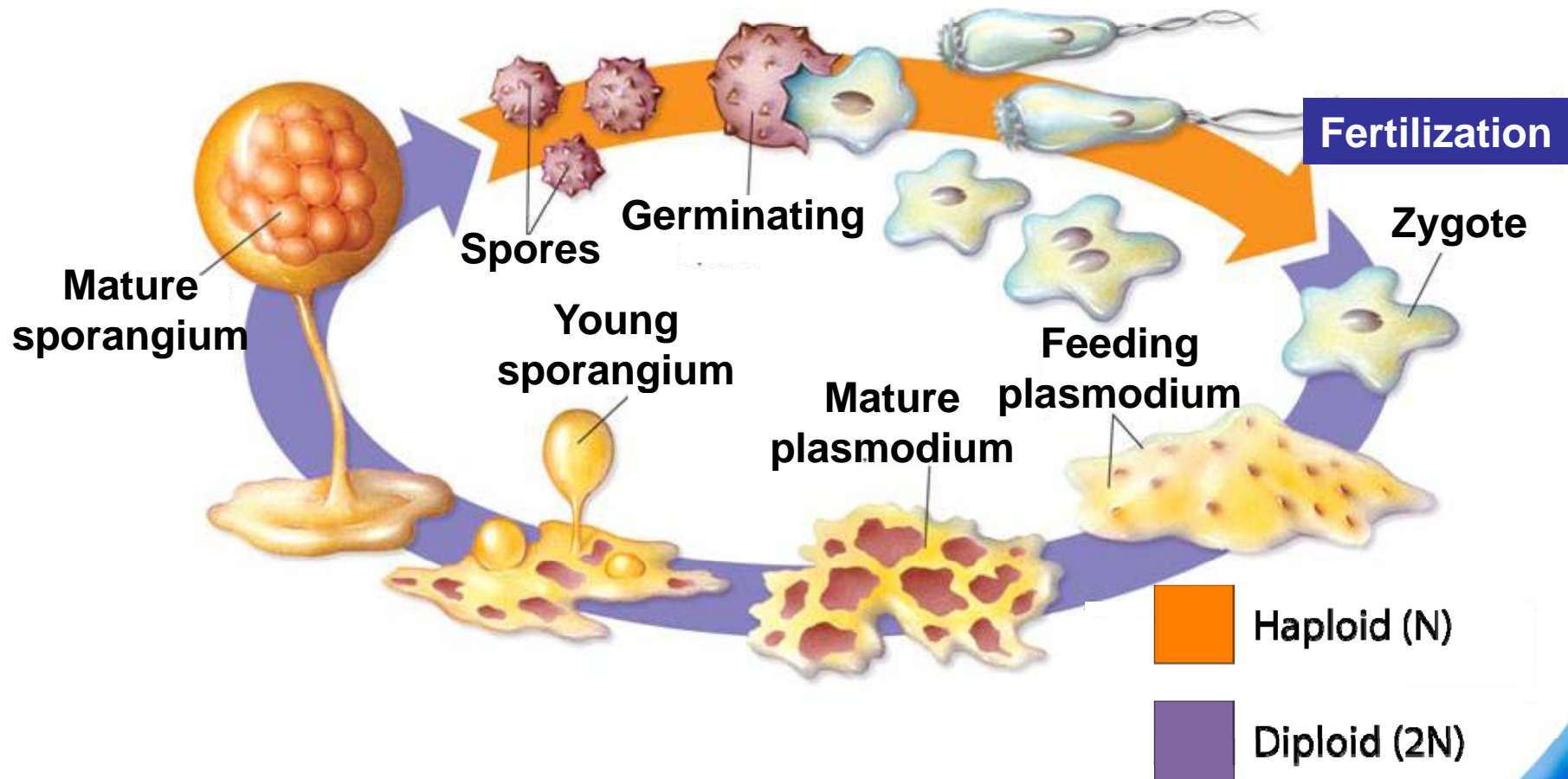
Acellular slime molds begin as amoeba-like cells.

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

Eventually, the fruiting body called **sporangium** grows up from the plasmodium.



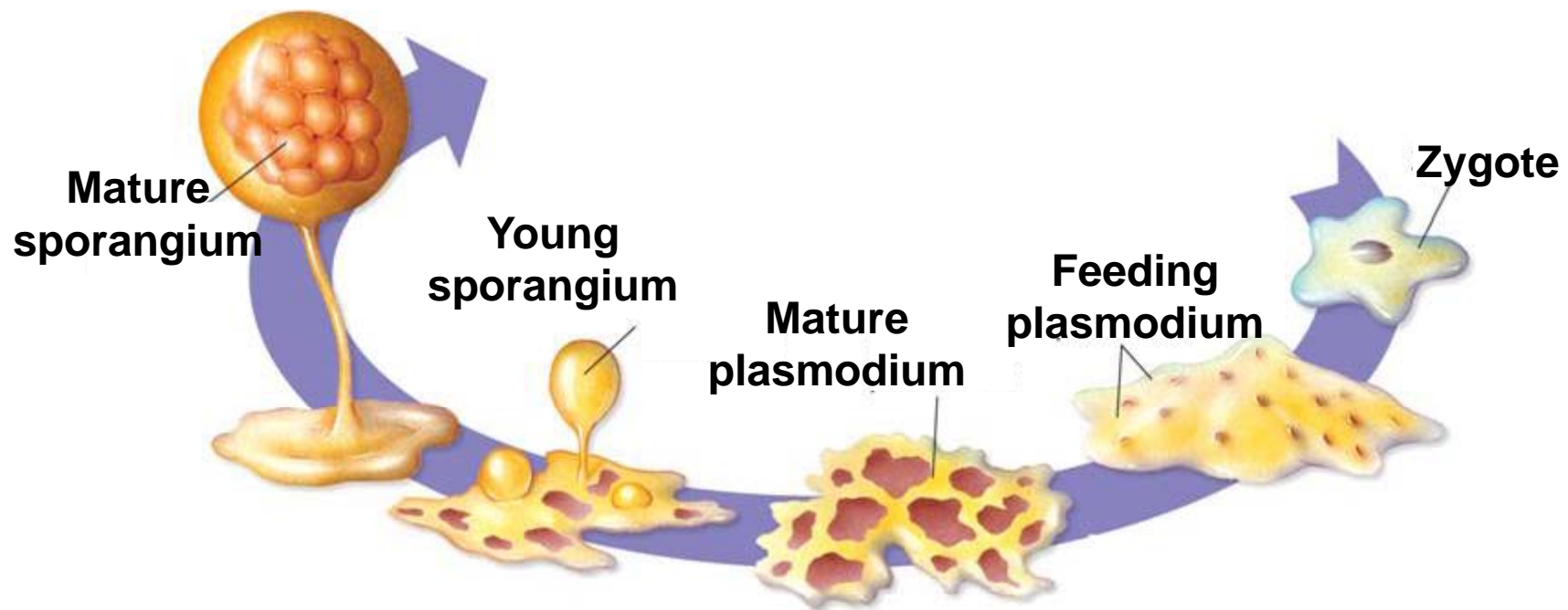
# Life Cycle of an Acellular Slime Mold



20–5 Funguslike Protists → Slime Molds

**Fruiting bodies, or sporangia**, arise from the plasmodium (no link with the malaria!).

The sporangia produce **haploid spores** by meiosis.



## 20–5 Funguslike Protists → Slime Molds

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





## Water Molds (Oomycetes)

### 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.

The name Oomycete means “egg fungi” and refer to the large egg shaped female gamete oogonium



## 20–5 Funguslike Protists → Water Molds

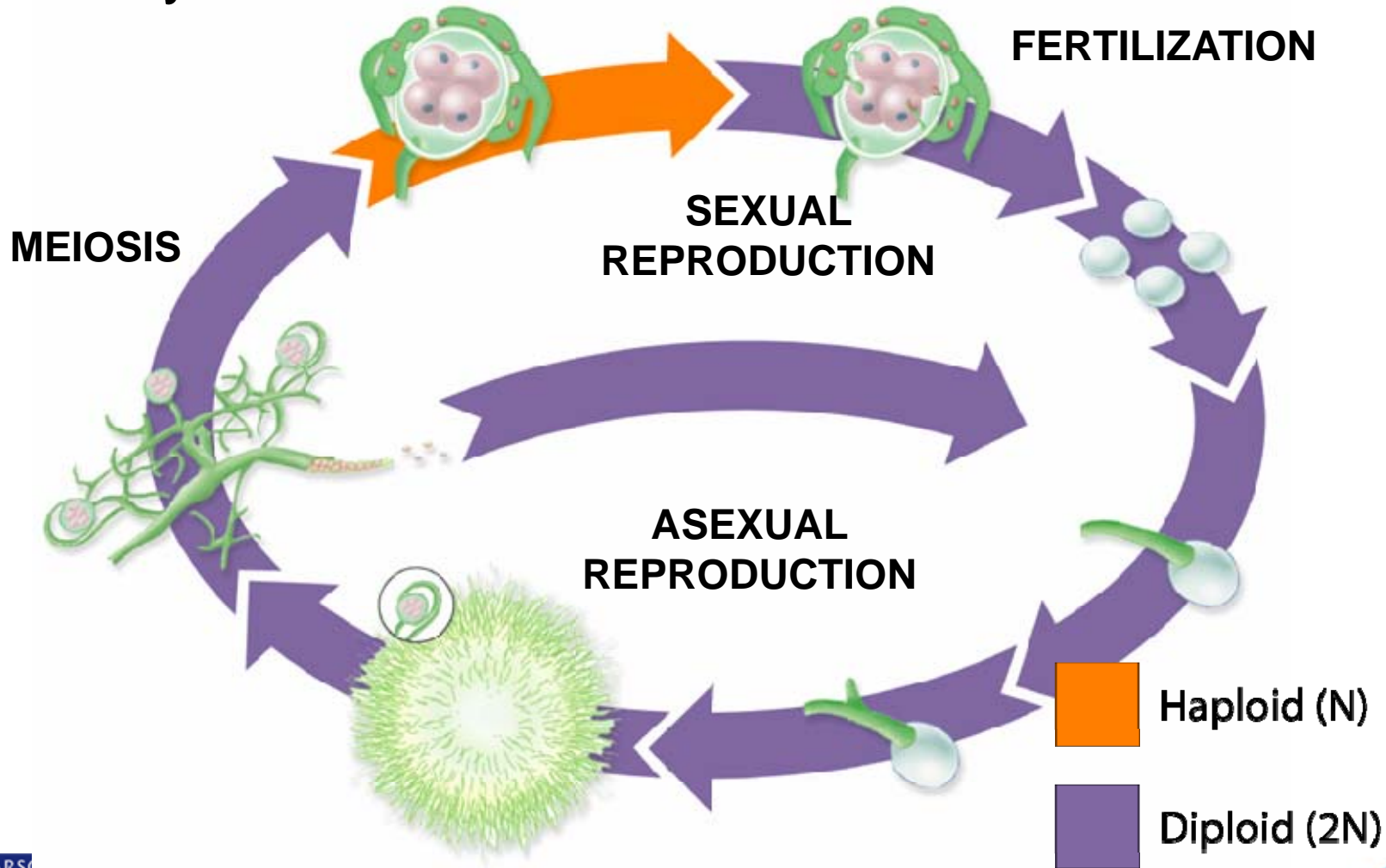
Water molds produce thin filaments known as **hyphae**.

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.

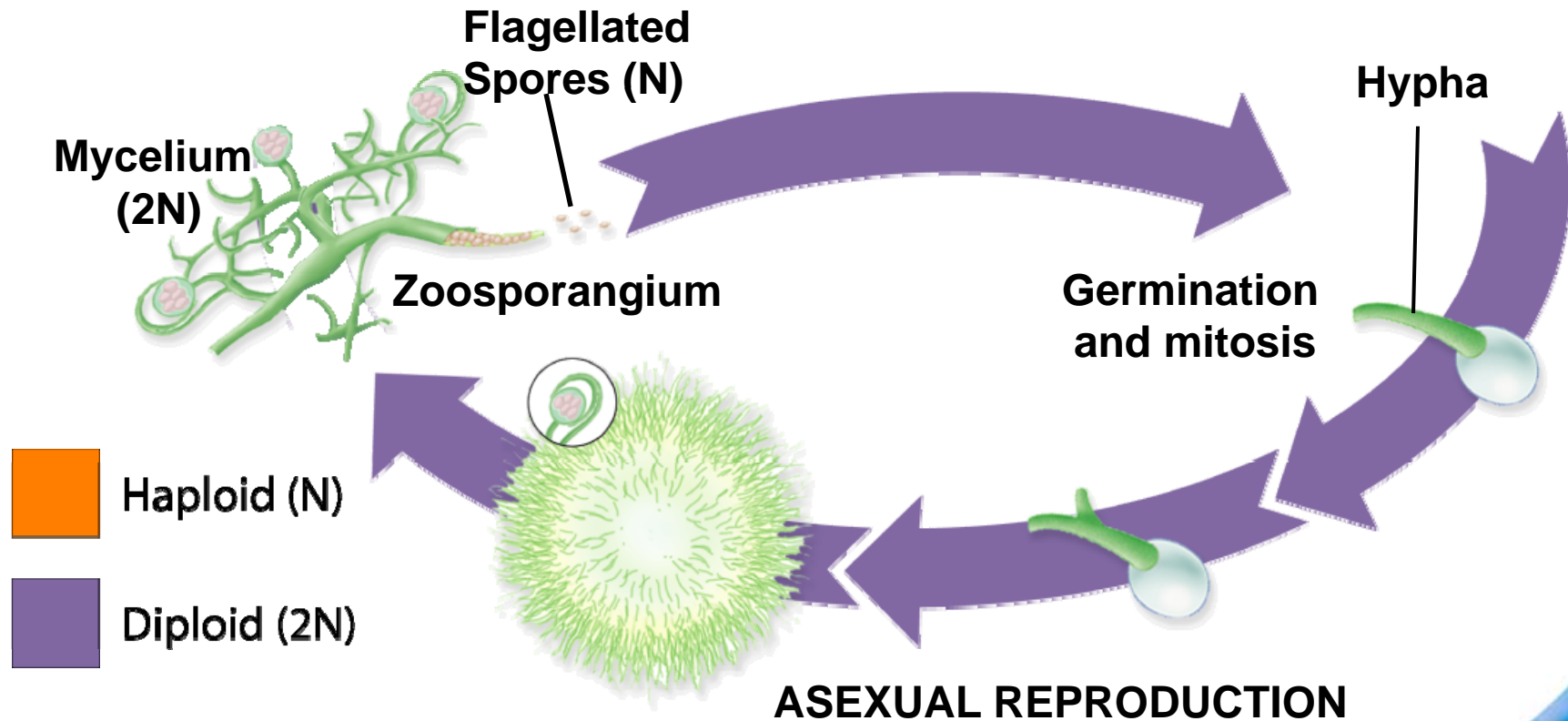
20–5 Funguslike Protists → Water Molds

# Life Cycle of a Water Mold



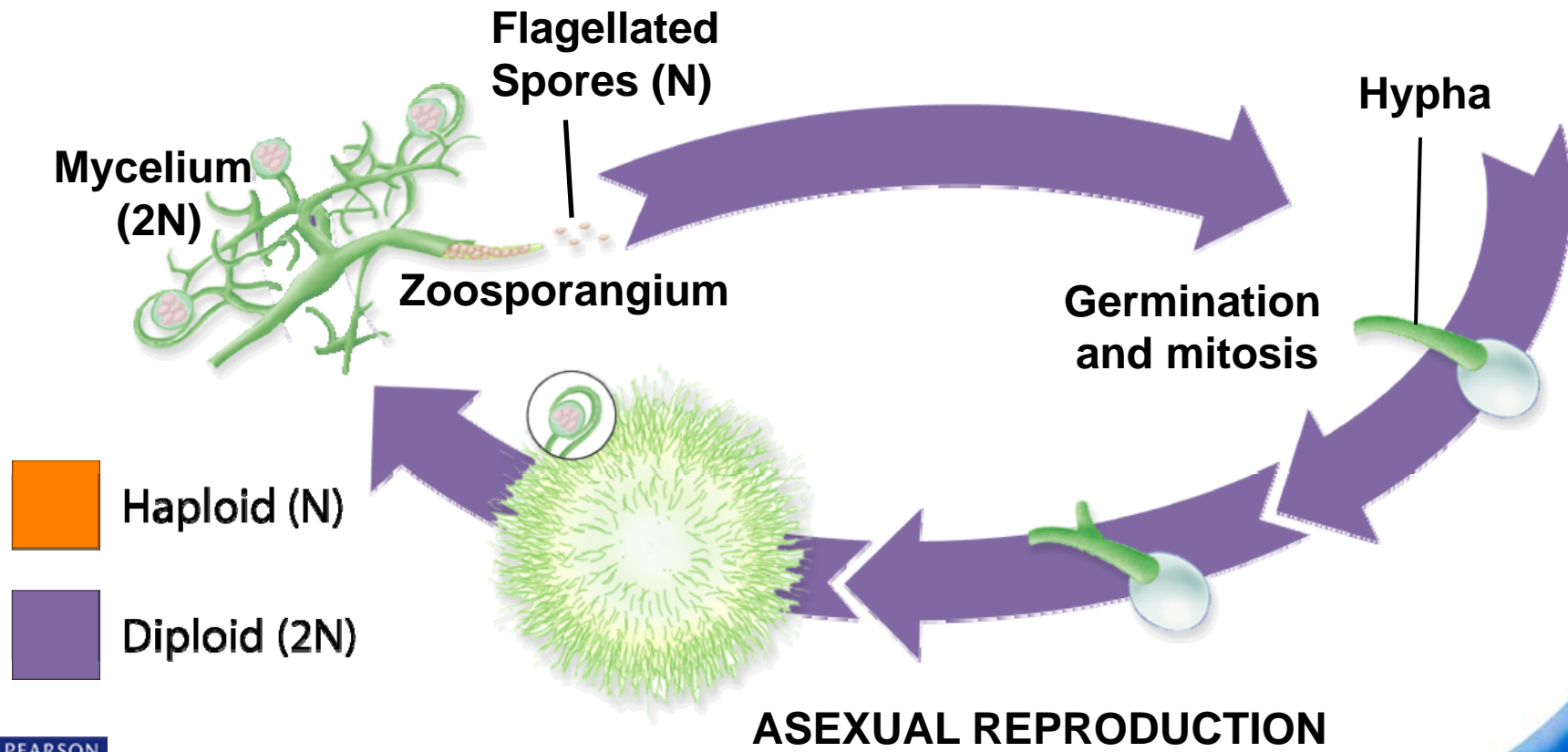
20–5 Funguslike Protists → Water molds

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



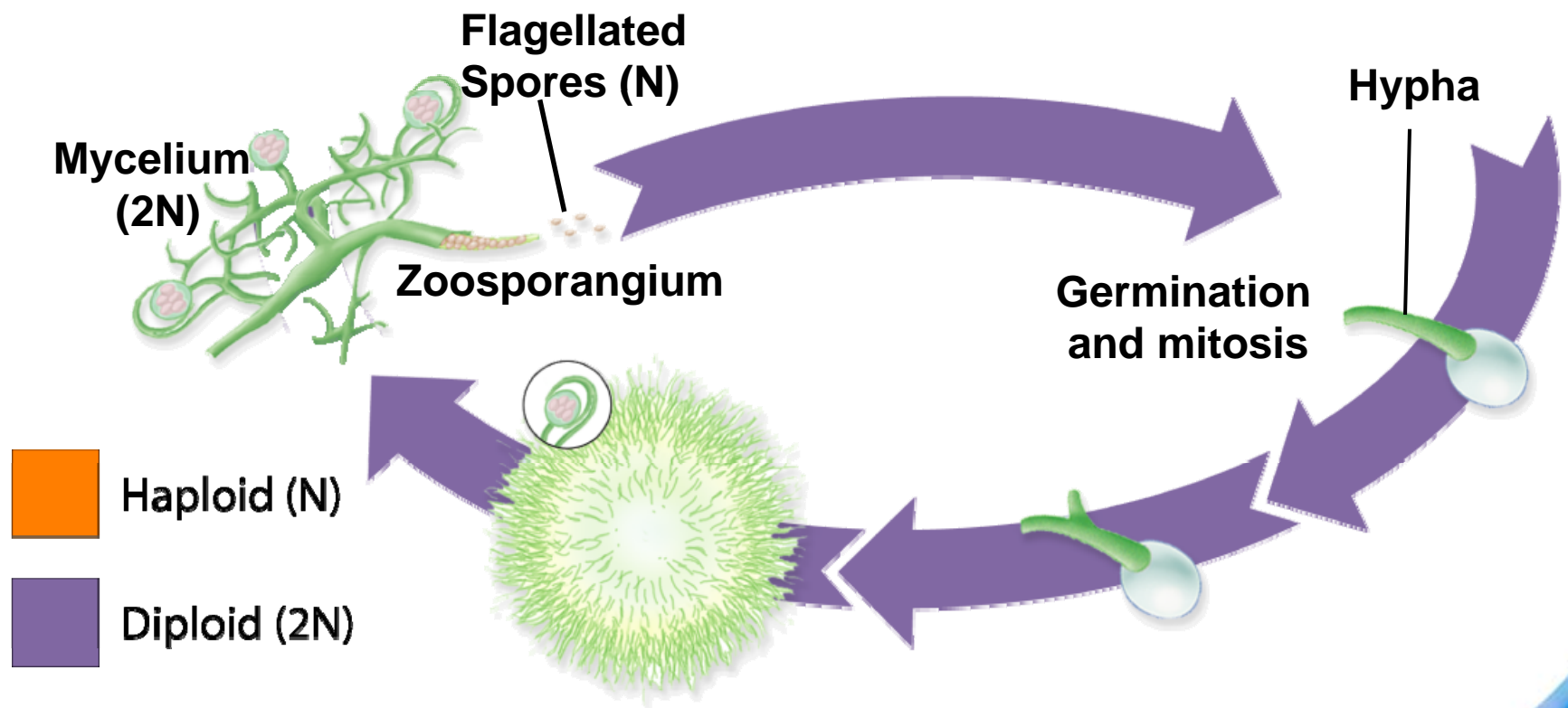
20–5 Funguslike Protists → Water Molds

Each produces **flagellated spores** that swim in search of food.



20–5 Funguslike Protists → Water Molds

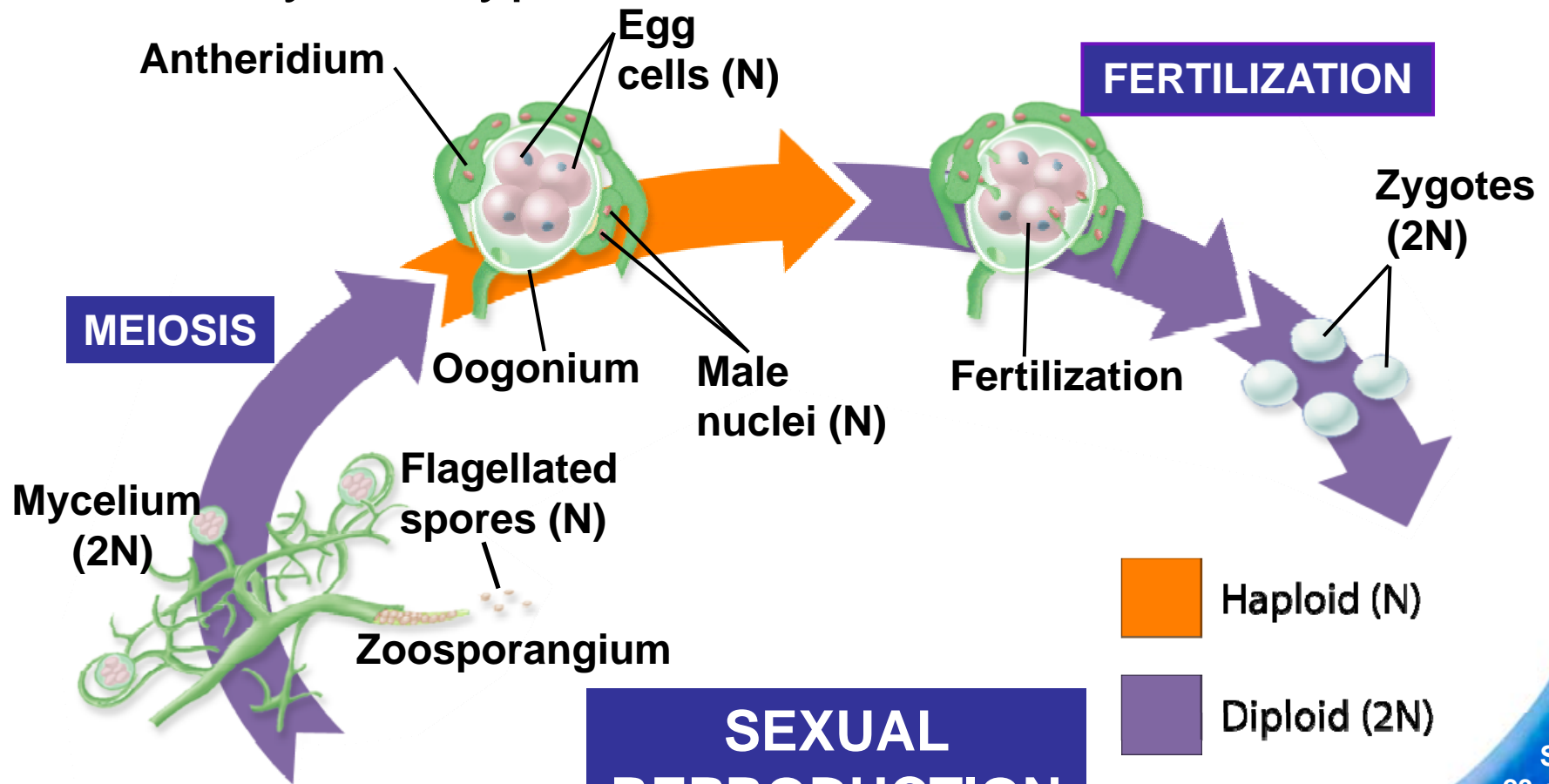
When they find food, the spores develop into hyphae, which then grow into new organisms.



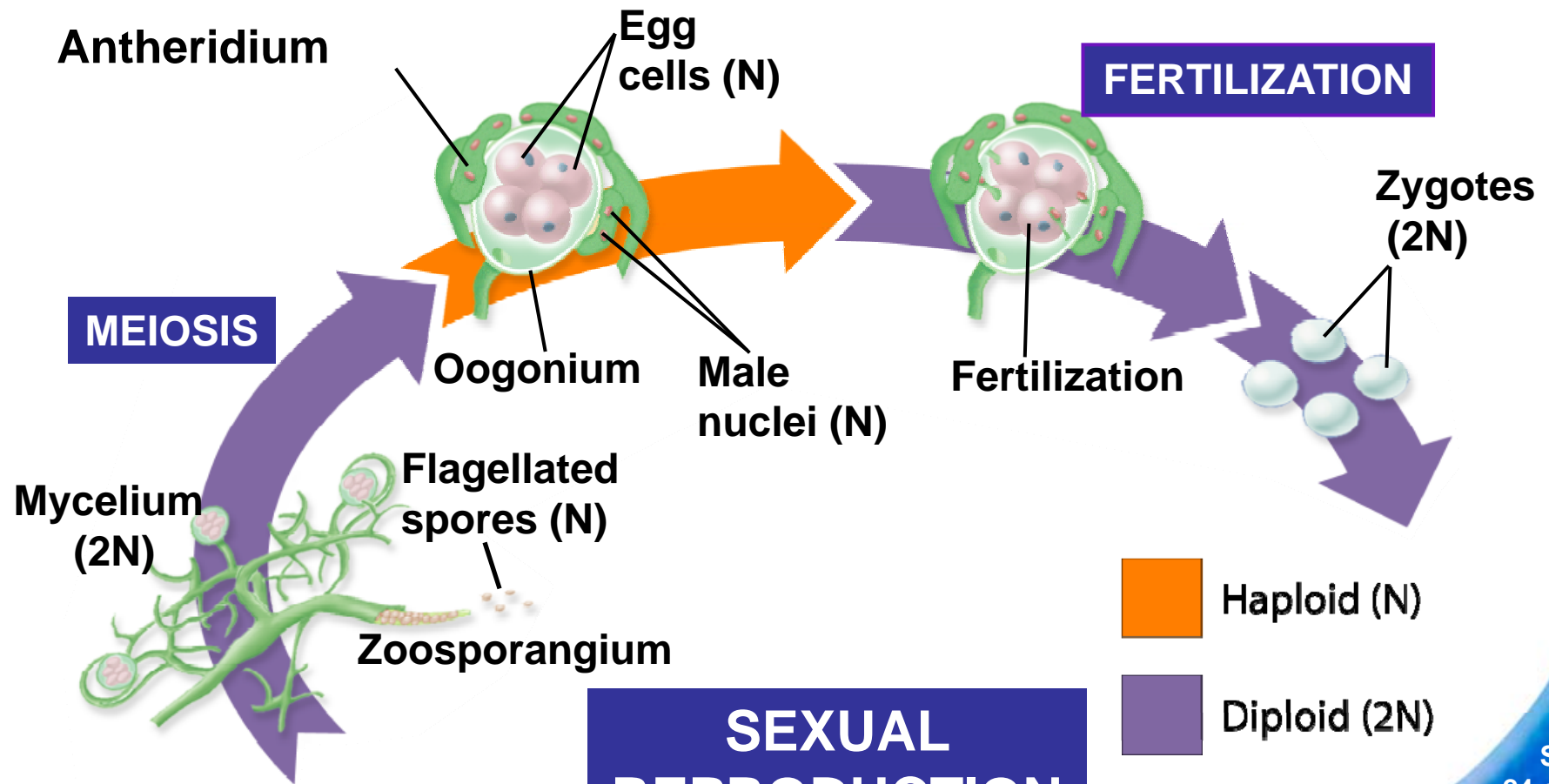
**ASEXUAL REPRODUCTION**

20-5 Funguslike Protists → Water molds

Sexual reproduction occurs in specialized structures formed by the hyphae.

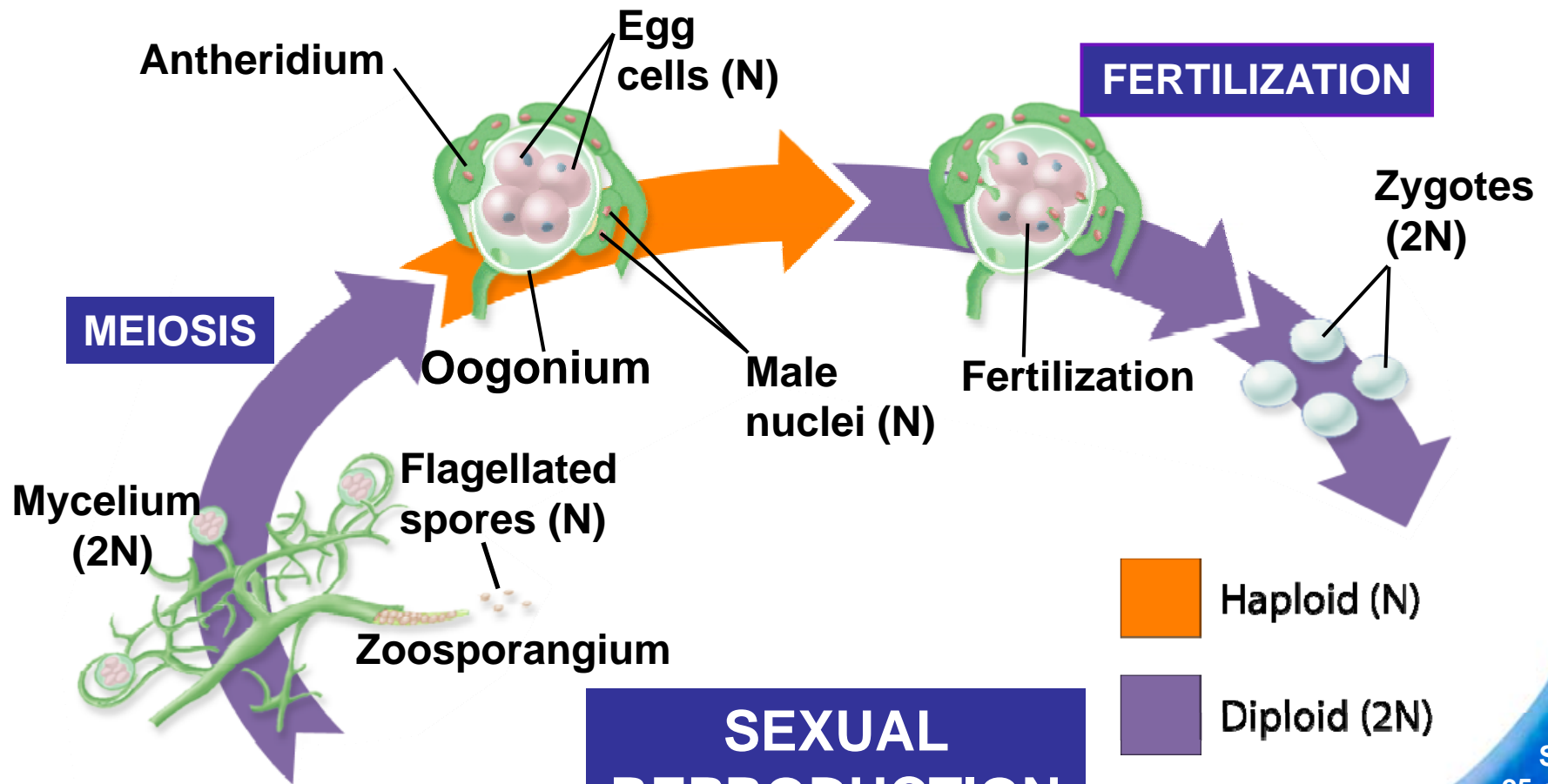


The **antheridium** produces male nuclei.





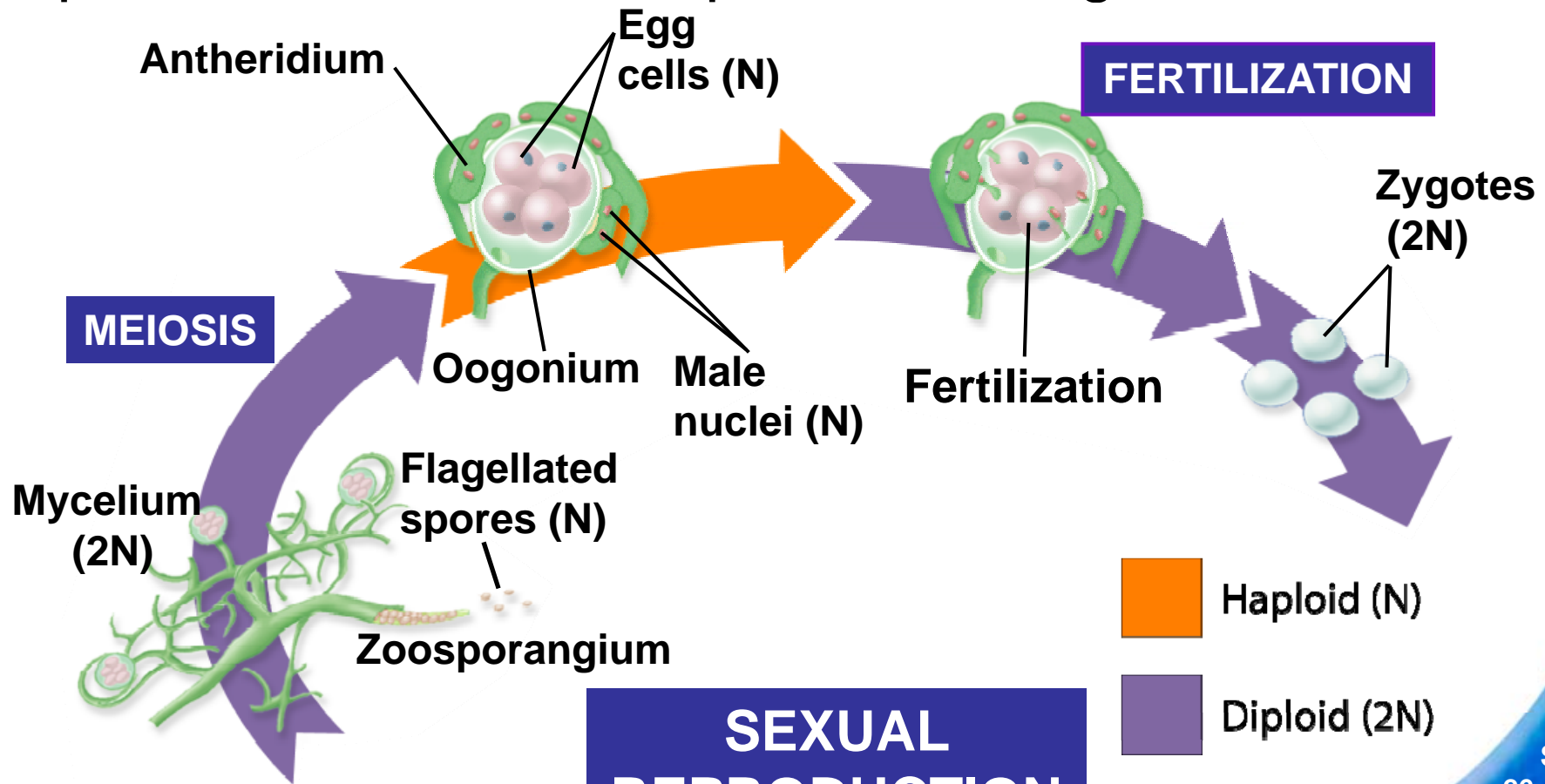
The **oogonium** produces female nuclei.



**SEXUAL REPRODUCTION**

20–5 Funguslike Protists → Water molds

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



**SEXUAL REPRODUCTION**

## Video Discharge of water mold zoospores (36sec)

[https://www.youtube.com/watch?v=gDT5Pg3\\_nsM](https://www.youtube.com/watch?v=gDT5Pg3_nsM)

## 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, causing the potato blight

