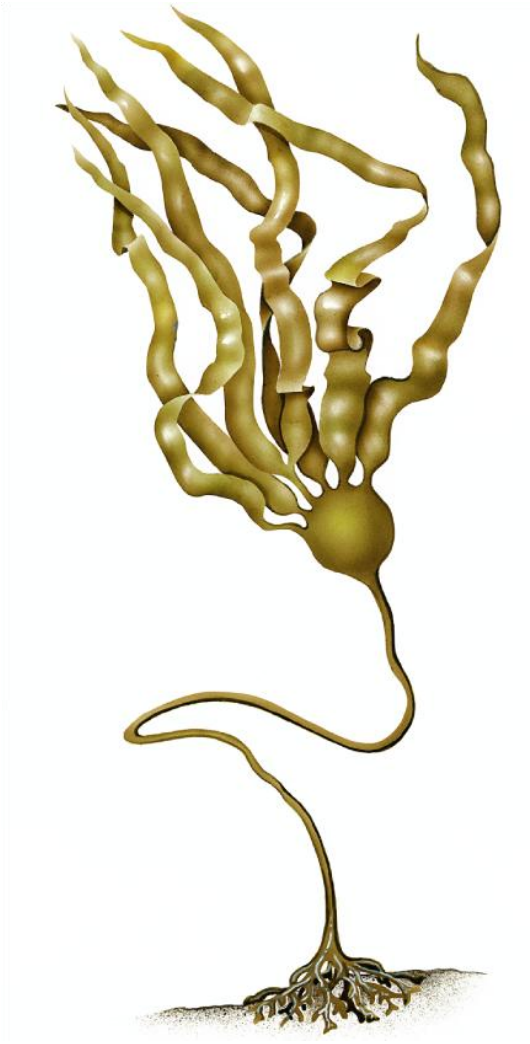
20-4 Plantlike Protists: Red, Brown, and Green Algae



The three phyla of algae that are largely multicellular are:

- red algae
- brown algae
- green algae

Red algae are able to live at great depths due to their efficiency in harvesting light energy.

Red algae contain chlorophyll *a* and reddish accessory pigments called phycobilins.

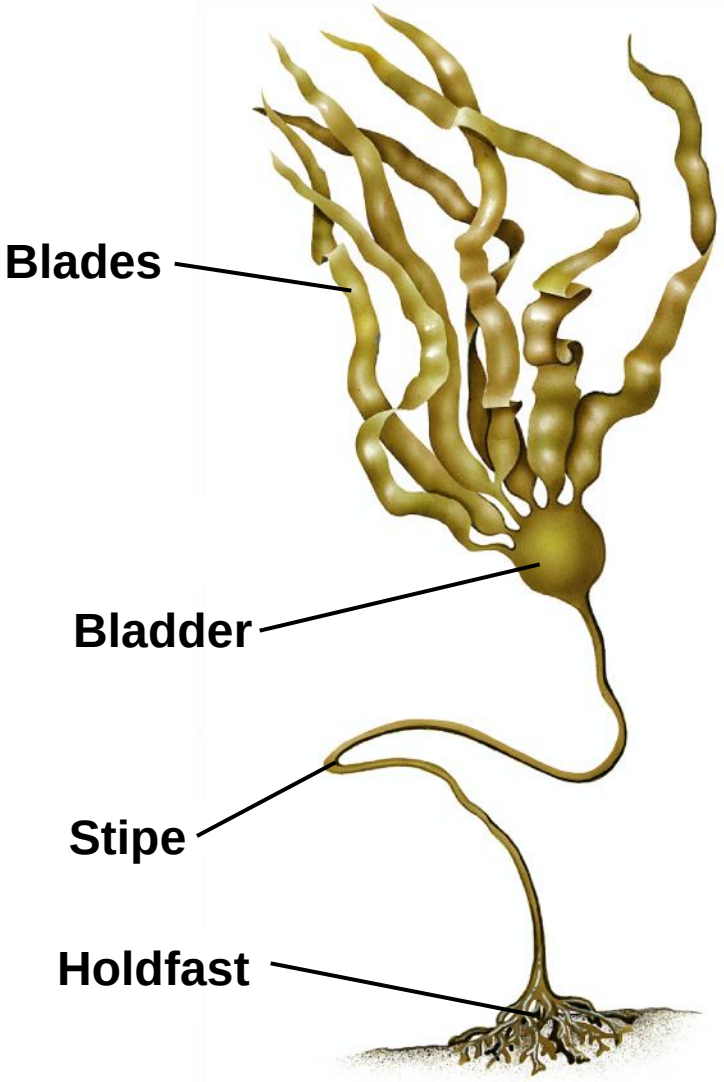
Phycobilins absorb blue light, enabling red algae to live deep in the ocean.

Brown algae contain chlorophyll *a* and *c*, as well as a brown accessory pigment, fucoxanthin.

Brown algae are the largest and most complex of the algae.

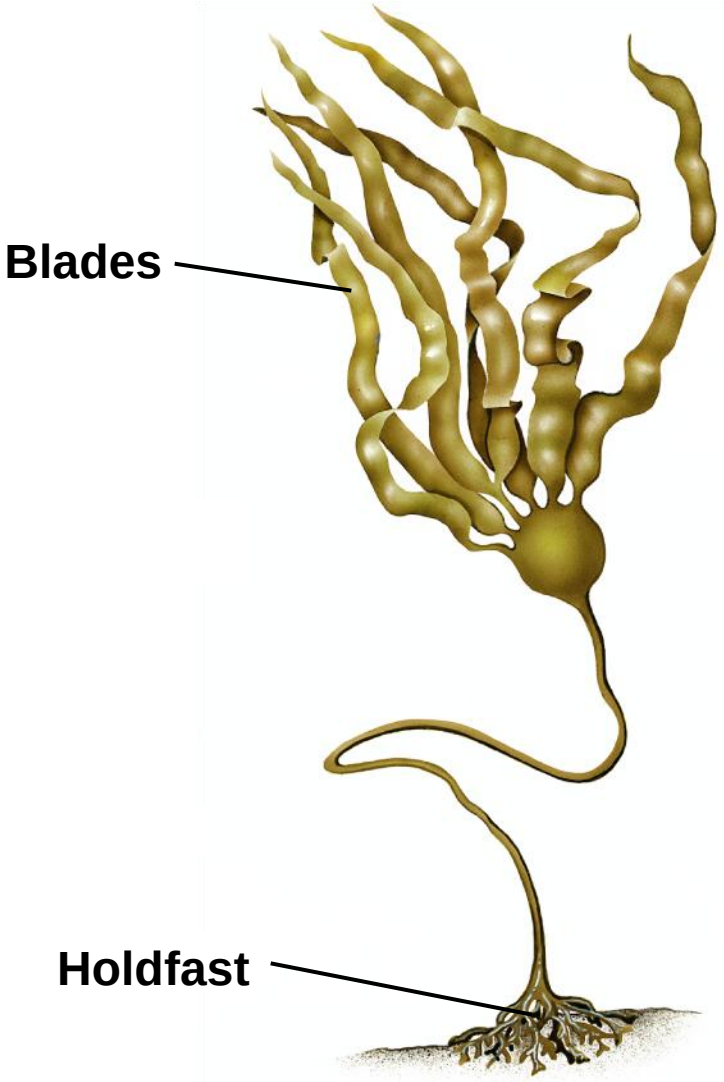
All are multicellular and most are marine, commonly found in cool, shallow coastal waters of temperate or arctic areas.

Brown Alga Structure



Fucus, a common brown alga, is made up of a holdfast, stipes, bladders, and blades.

The holdfast attaches the alga to rocks.

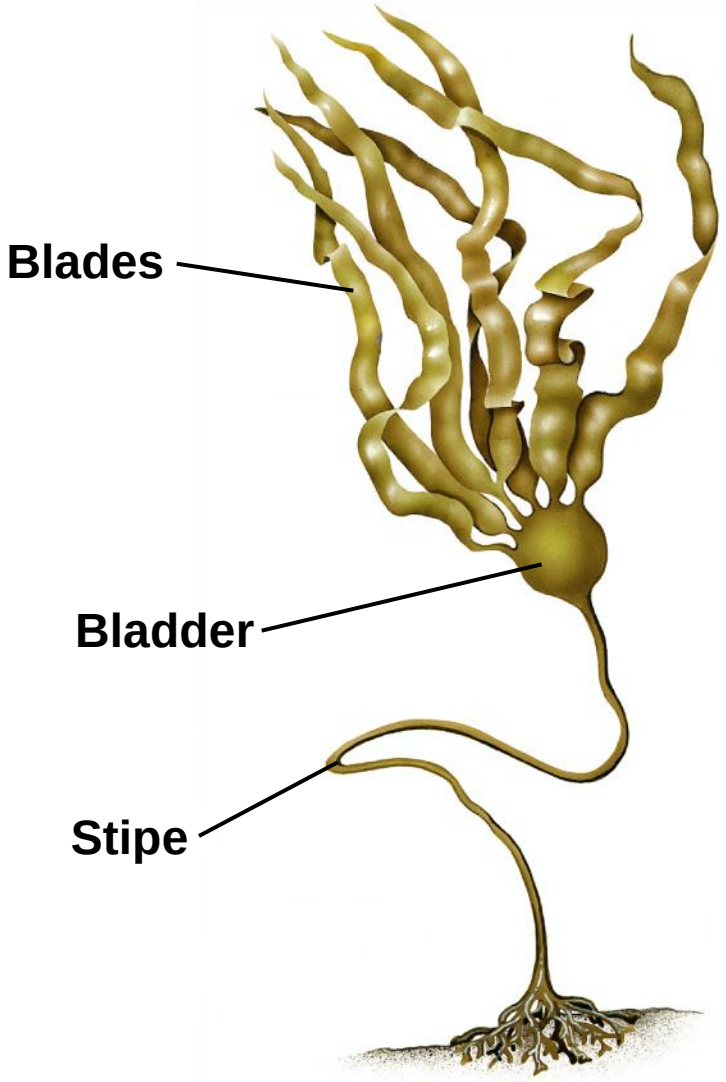


The body of *Fucus* contains:

a flattened stemlike structure called a stipe,

leaflike structures called blades, and

gas-filled bladders that keep the alga afloat and upright.



Green algae share many characteristics with plants, including their photosynthetic pigments and cell wall composition.

Scientists hypothesize that the ancestors of modern land plants looked like certain species of living green algae.

Green algae live in fresh and salt water, and moist land areas.

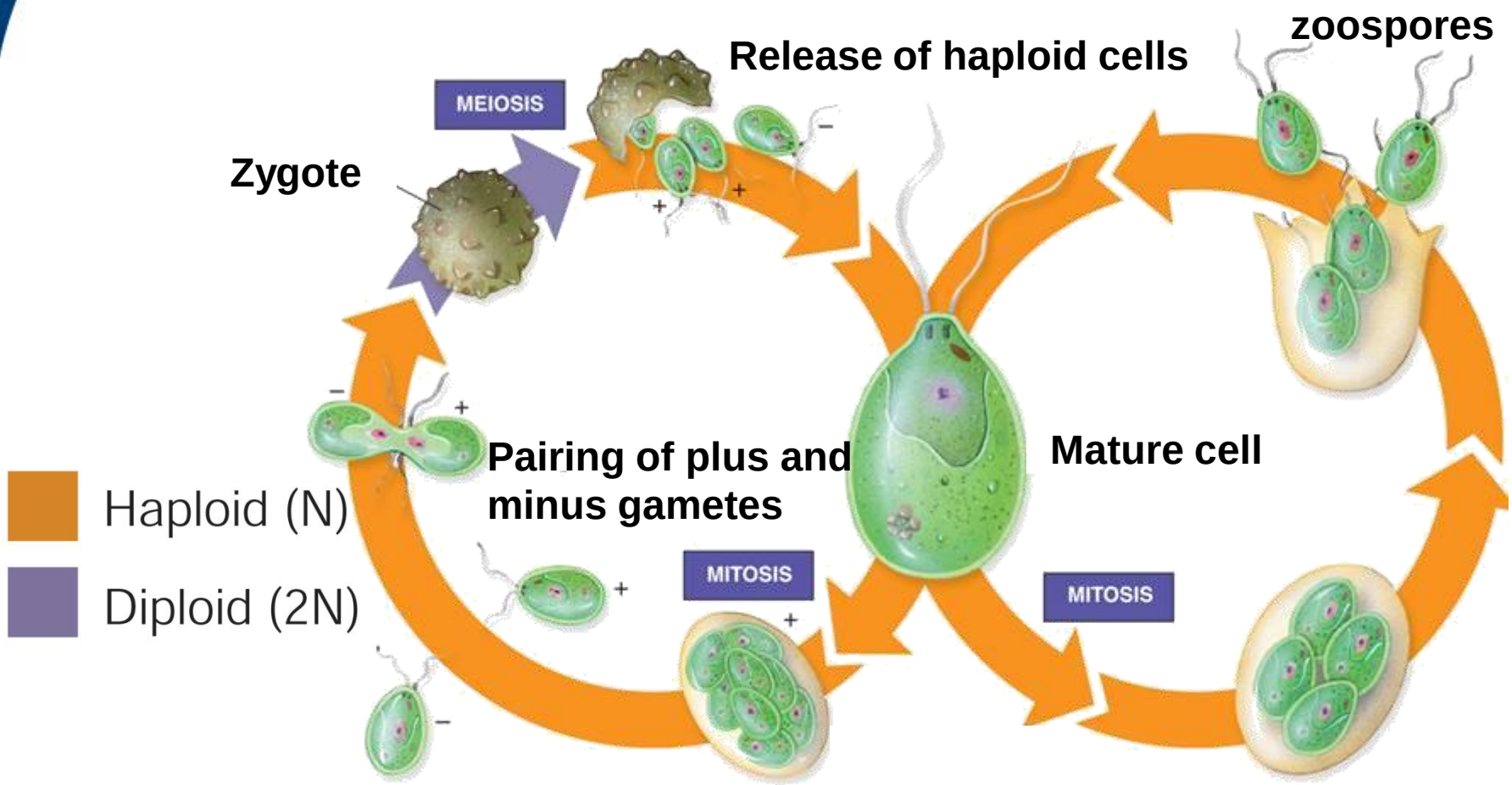
Many species live most of their lives as single cells.

Others form colonies, groups of similar cells that are joined together but show few specialized structures.

A few are multicellular and have specialized structures.

The life cycles of many algae include both a diploid and a haploid generation.

Reproduction in *Chlamydomonas*

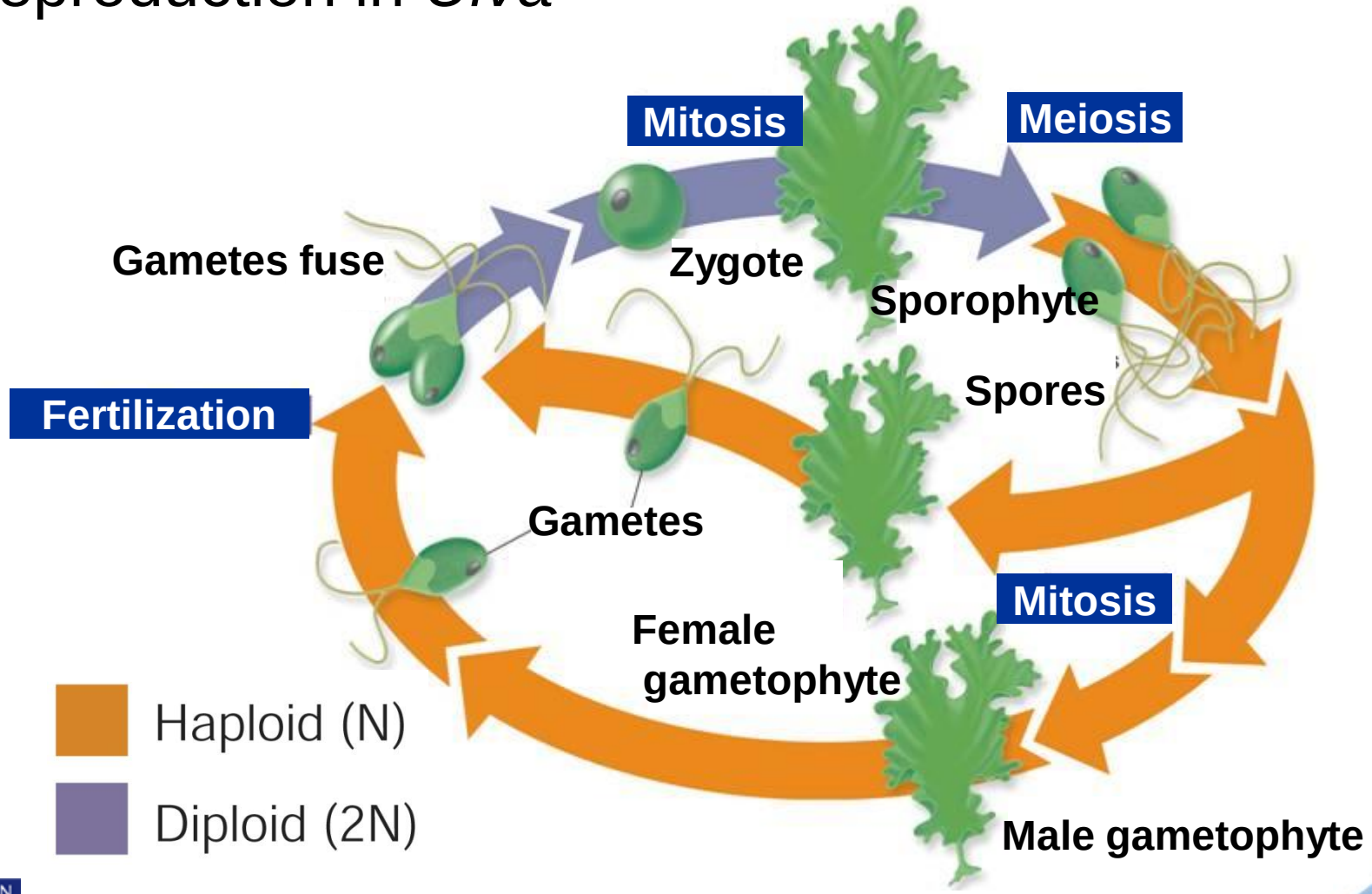


Reproduction in *Ulva*

The life cycle of the green alga *Ulva* involves alternation of generations.

Ulva are **gametophytes**, or gamete-producing plants.

Reproduction in *Ulva*



Ecology of Algae

Algae produce half of Earth's oxygen through photosynthesis.

Algae is found in sushi, ice cream, and other foods.

Chemicals from algae are used to make plastics, waxes, transistors, deodorants, paints, lubricants, and artificial wood.

Agar thickens nutrient mixtures in scientific labs.

END OF SECTION