

Seed Plants

Section 22-3



Kinds of Seed Plants

Key Idea: Seed plants are traditionally classified into two groups - **gymnosperms** and **angiosperms**.



A **gymnosperm** is a seed plant whose seeds do not develop within a fruit. Most of these seeds develop in a cone.

An **angiosperm** is a seed plant whose seeds develop enclosed within a fruit. Fruits develop from part of a flower.



Kinds of Seed Plants

- The word gymnosperm comes from the Greek words *gymnos*, meaning “naked,” and *sperma*, meaning “seed.”
- The word angiosperm comes from the Greek words *angeion*, meaning “case,” and *sperma*, meaning “seed.”
- Angiosperms are flowering plants. Most species of seed plants are flowering plants.



Reproduction in Seed Plants

Key Idea: Unlike seedless plants, seed plants do not require **water** to reproduce sexually. Reproduction in seed plants is also characterized by a greatly reduced **gametophyte** and a dominant **sporophyte**.



A **ovule** is where the female gametophyte of a seed plant develops. It is a multicellular structure that is part of the sporophyte.

A **seed** is an ovule and its contents develop which form following fertilization.

The **pollen grain** is where the male gametophyte of seed plants develops.



Pollination is the transfer of pollen grains from the male reproductive structures of a plant to the female reproductive structures.



Pollination and Fertilization

- Fertilization is the fusion of an egg and sperm.
- After fertilization, the ovule is called a *seed* and contains an *embryo*.



Seed Dispersal

- Seeds are dispersed, or scattered, from the parent plant to locations where the embryos in the seeds develop into new sporophytes.
- Dispersal may prevent competition for water, nutrients, light, and living space between parents and offspring.



- Many seeds have structures that help wind, water, or animals carry them away from their parent plant.



Gymnosperms

Key Idea: There are four major groups of gymnosperms:
conifers, cycads, ginkgoes, and gnetophytes.

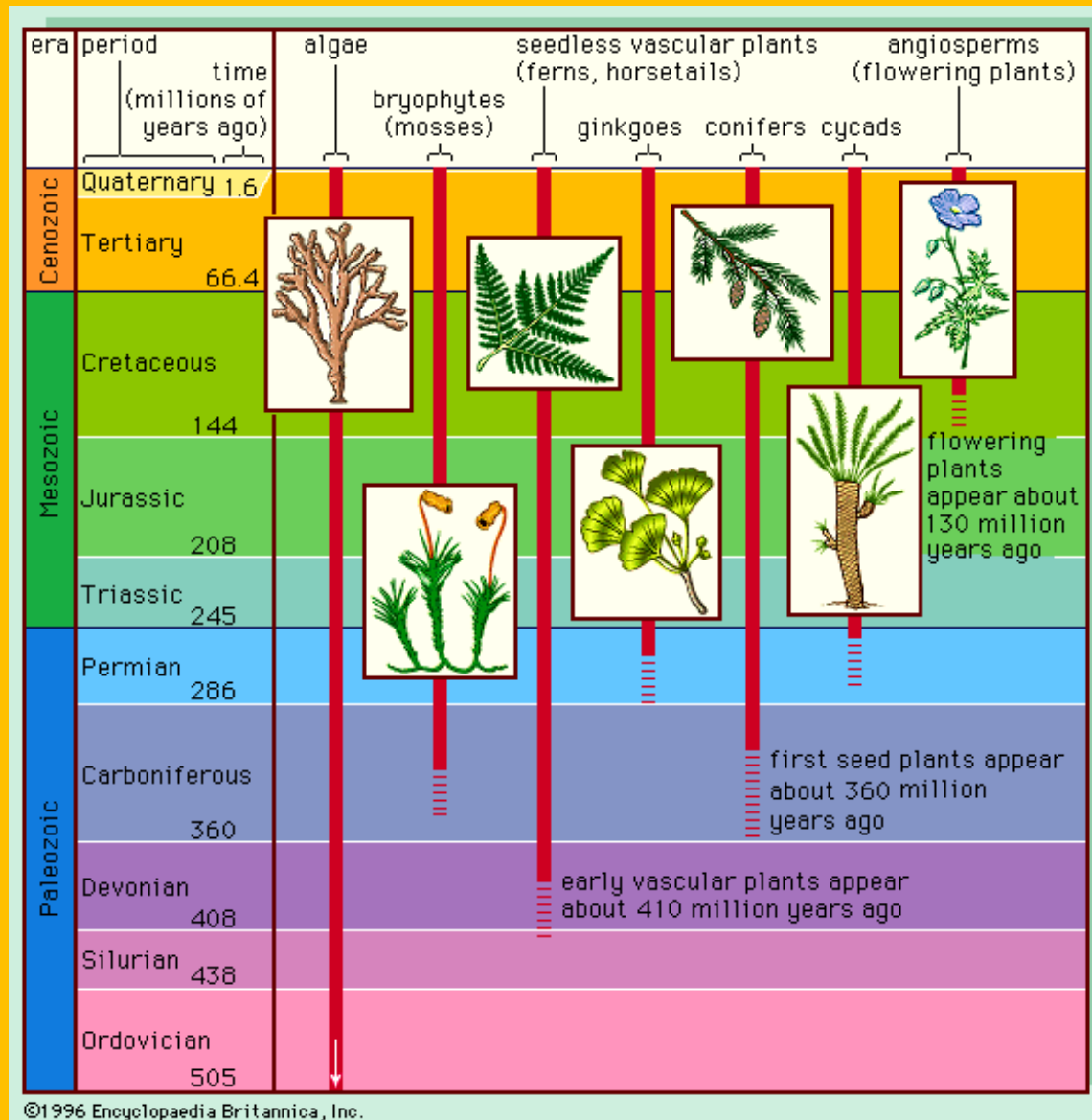


Gymnosperms

- The most successful groups of plants.
- Conifers are the most familiar gymnosperms.
- Conifers have leaves that are needle-like or that are reduced to tiny scales. Some examples of conifers are pine trees and redwoods.



Types of Gymnosperms



Life Cycle of a Conifer

Key Idea: Reproduction in conifers is characterized by a dominant **sporophyte**, **wind pollination**, and the development of **seeds in cones**.



Life Cycle of a Conifer

- The gametophytes of most gymnosperms develop in cones, which consist of circles of modified leaves called *scales*.
- Many gymnosperms produce both female and male cones on the same plant.



Life Cycle of a Conifer

