

The background of the slide is a dense, close-up photograph of green leaves with prominent white veins, creating a textured, organic pattern. A large, white, irregularly shaped cutout is centered on the slide, framing the text.

Plants

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Plants

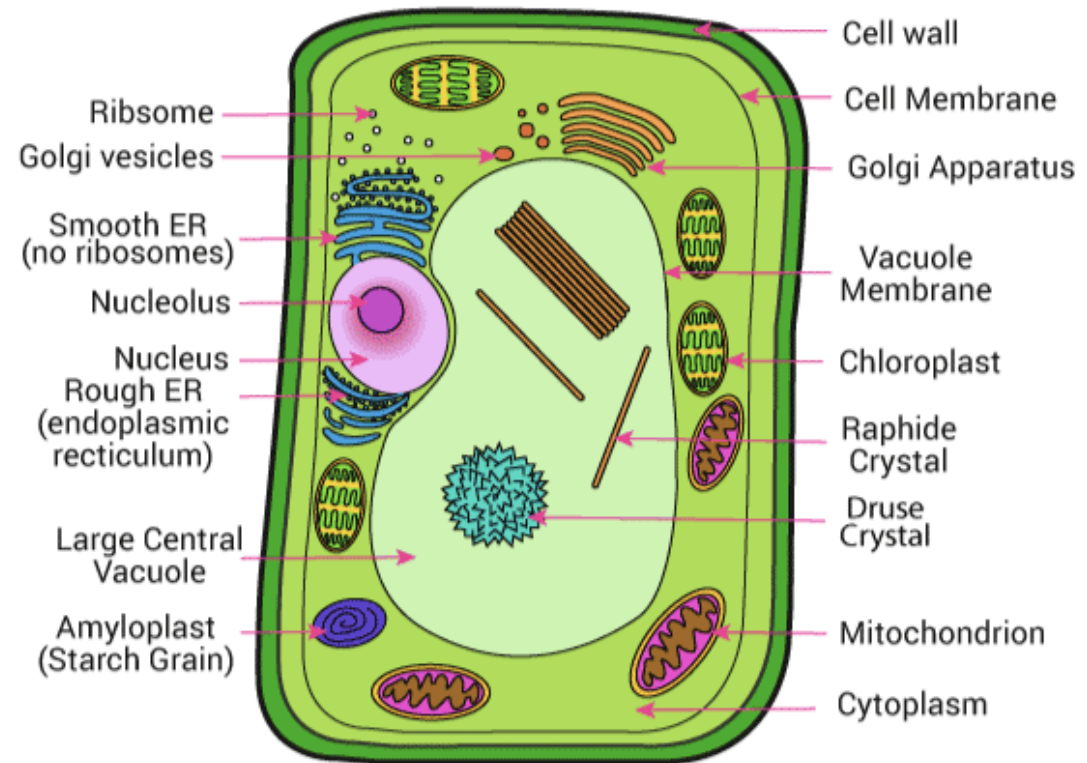
- There are between 260 000 and 300 000 species of plants.
- They show variety from **microscopic water ferns** to **macroscopic sequoia tree** that grow up to 100m.
- They are adapted to nearly every environment on Earth.



Plant cells

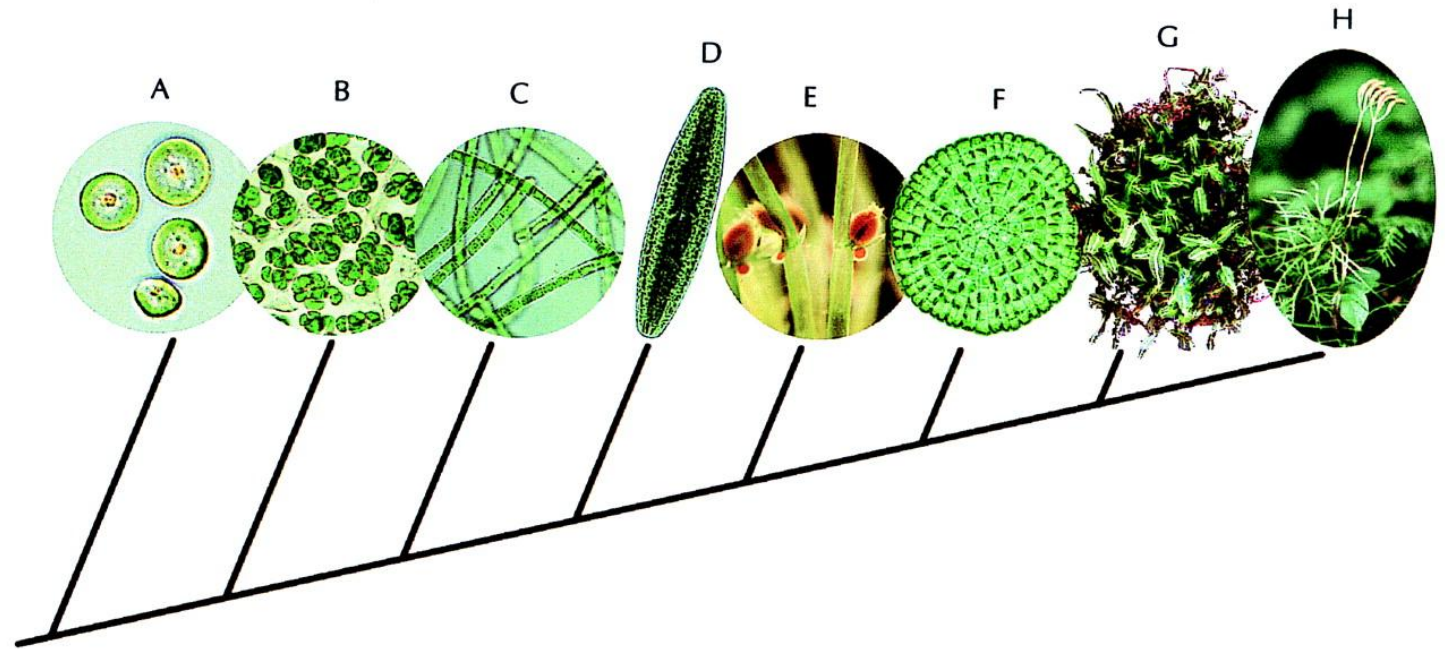
- They contain **cell wall**.
- They contain **chloroplast**, which contains **chlorophyll**. They can do photosynthesis.
- They contain also **large** or **central vacuole**.

PLANT CELL



Origin of plants

- The first plants that lived on land probably could survive only in damp areas.
- Their **ancestors were probably ancient green algae** that lived in the sea.
- Green algae are one-celled or many-celled organisms that use photosynthesis to make food.
- Today, plants and green algae have the same types of chlorophyll and carotenoids (kuh RAH tun oydz) in their cells.



Fossil record

- The fossil record for plants is not like that for animals. Most animals have bones or other hard parts that can fossilize. Plants usually decay before they become fossilized. **The oldest fossil plants are about 420 million years old.**
- **Cooksonia**, is a fossil of one of these plants.



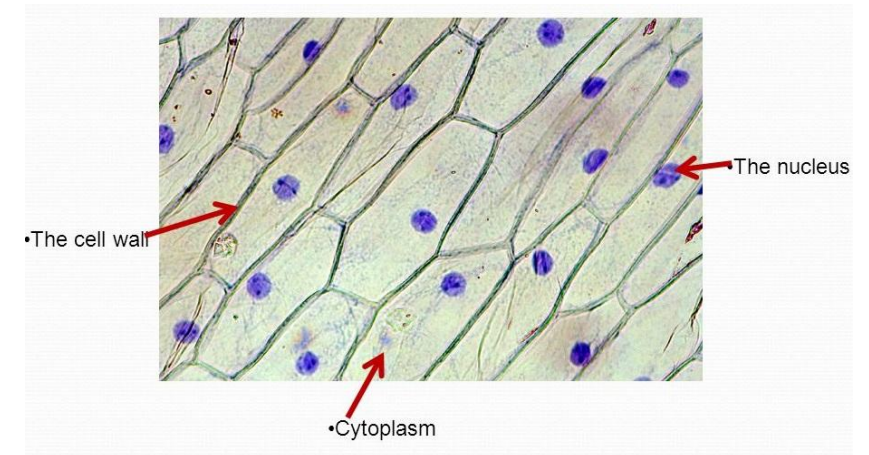
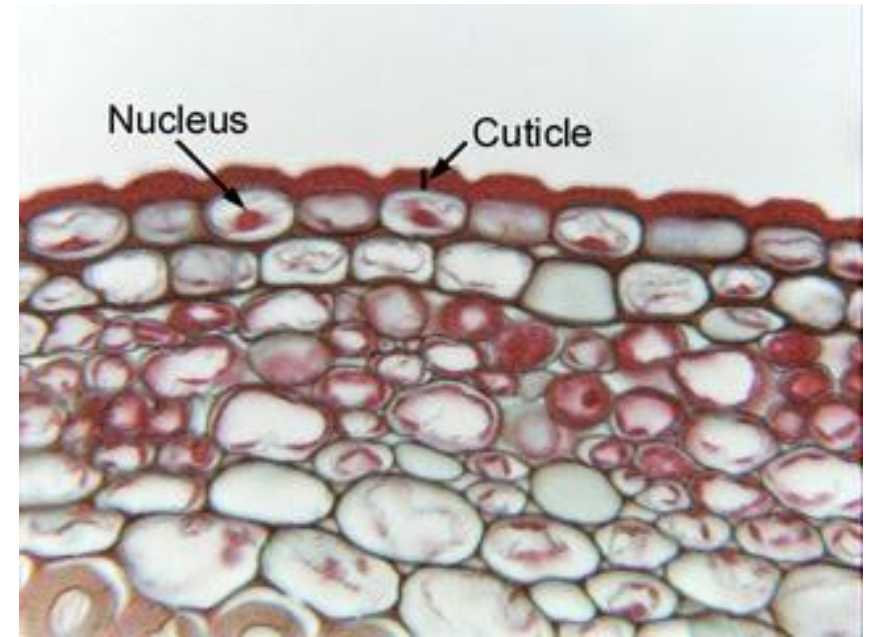
Adaptation on Land

- We have said that plants have evolved from green algae.
- Green algae live in shallow pools, where water surrounds them and helps them make food through photosynthesis.
- They rely on their cell membranes and walls to let in what they need and get rid of what they don't.
- If the pool dries up, algae are left on damp mud, losing water and eventually dying.
- **Land plants have special ways to save water, helping them survive on dry land.**



Land Plants Characteristic

- Land plants have **cuticle** on their surfaces. This is a waterproof layer that prevents them to lose water. It is a waxy, protective layer.
- Plants cell also have **cell wall** which is composed of cellulose. Long chains of cellulose molecules form tangled fibers in plant cell wall.
- Cells of some plants secrete other substances into the cellulose that make the cell wall even stronger. Trees, such as **oaks and pines**, could not grow without these **strong cell walls**. Wood from trees can be used for construction mostly because of strong cell walls.
- Land cells must absorb water and nutrients from the ground. For this they have special features and adaptations.



Classification of plants

Non-vascular plants

- Do not have these tubelike structures and use other ways to move water and substances.

Vascular Plants

- Have tubelike structures that carry water, nutrients, and other substances throughout the plant.
 - **Seed Vascular**
 - **Seedless Vascular**

VASCULAR AND NON VASCULAR PLANTS



Naming plants

- Although these two plants are both called daisies, they are not the same species of plant. Using their binomial names helps eliminate the confusion that might come from using their common names.
- In the third century B.C., most plants were grouped as trees, shrubs, or herbs and placed into smaller groups by leaf characteristics. This simple system survived until late in the eighteenth century when a Swedish botanist, Carolus Linnaeus, developed a new system.
- This system is known as Binomial Nomenclature.



Figure 5

Scientists group plants as either vascular—those with water- and food-conducting cells in their stems—or nonvascular. Vascular plants are further divided into those that produce spores and those that make seeds.



Joint fir: David J. Nisbet; Sunflower: David J. Nisbet; Cycad: David J. Nisbet; Douglas fir: David J. Nisbet; Ginkgo: David J. Nisbet; Moss: David J. Nisbet; Liverwort: David J. Nisbet; Hornwort: David J. Nisbet; Horsetail: David J. Nisbet; Club moss: David J. Nisbet; Fern: David J. Nisbet.