

Chapter 3 Plants

Lesson 1

How Did Plant Life Begin?

BIBLICAL WORLDVIEW

The Biblical worldview is that plants began on the third day of Creation by God as mature plants complete with fruit and seeds.

EVOLUTIONARY WORLDVIEW

The Evolutionary worldview is that plants evolved from non-living matter. After millions of years, there evolved fruit trees and other plants.



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Vocabulary

photosynthesis—the chemical process that plants use to take the energy of the sun and use it to change water and carbon dioxide into glucose sugar, which is their food

xylem—tubes in vascular plants that carry water and other material

phloem—tubes in vascular plants that carry sugar away from the leaves

pollen—grainy, often yellow, powder made in a tissue at the top of the stamen of a flower

embryo—a new plant inside a seed

cotyledon—seed leaves in the embryo that give nourishment to the young plant

spore—a reproductive body produced by some plants that allow them to reproduce asexually

pollination—when pollen from a stamen lands on a pistil

tropism—the process through which plants change their direction of growth in response to the environment

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Vocabulary Matching Answer Key

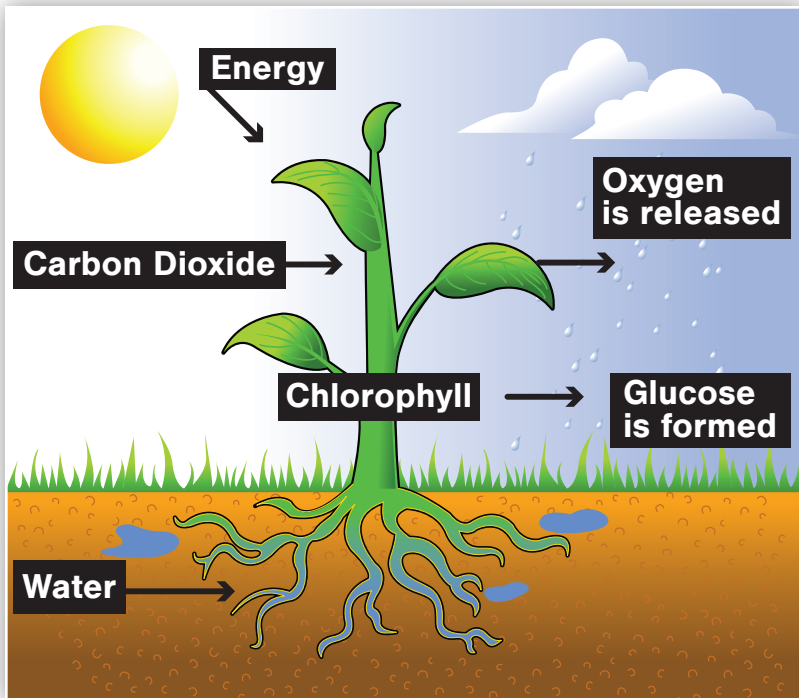
Directions: Match the correct word to the definition by writing the letter of the word in the circle.

Letter	Definition	Word
E	1. the chemical process that plants use to take the energy of the sun and use it to change water and carbon dioxide into glucose sugar, which is their food	A. tropism
G	2. tubes in vascular plants that carry water and other material	B. spore
F	3. tubes in vascular plants that carry sugar away from the leaves	C. pollination
I	4. grainy, often yellow, powder made in a tissue at the top of the stamen of a flower	D. embryo
D	5. a new plant inside a seed	E. photosynthesis
H	6. seed leaves in the embryo that give nourishment to the young plant	F. phloem
B	7. a reproductive body produced by some plants that allow them to reproduce asexually	G. xylem
C	8. when pollen from a stamen lands on a pistil	H. cotyledon
A	9. the process through which plants change their direction of growth in response to the environment	I. pollen

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Could Photosynthesis Have Evolved?



Photosynthesis, the process by which plants transform light energy from the sun into sugar which they use for food, requires complicated machinery right from the start. It could not have slowly and gradually evolved over millions of years because the mechanism would not have been complete to fuel the machinery necessary to start the process.

Photosynthesis could not have evolved because it needs to convert energy to food in order to make energy.



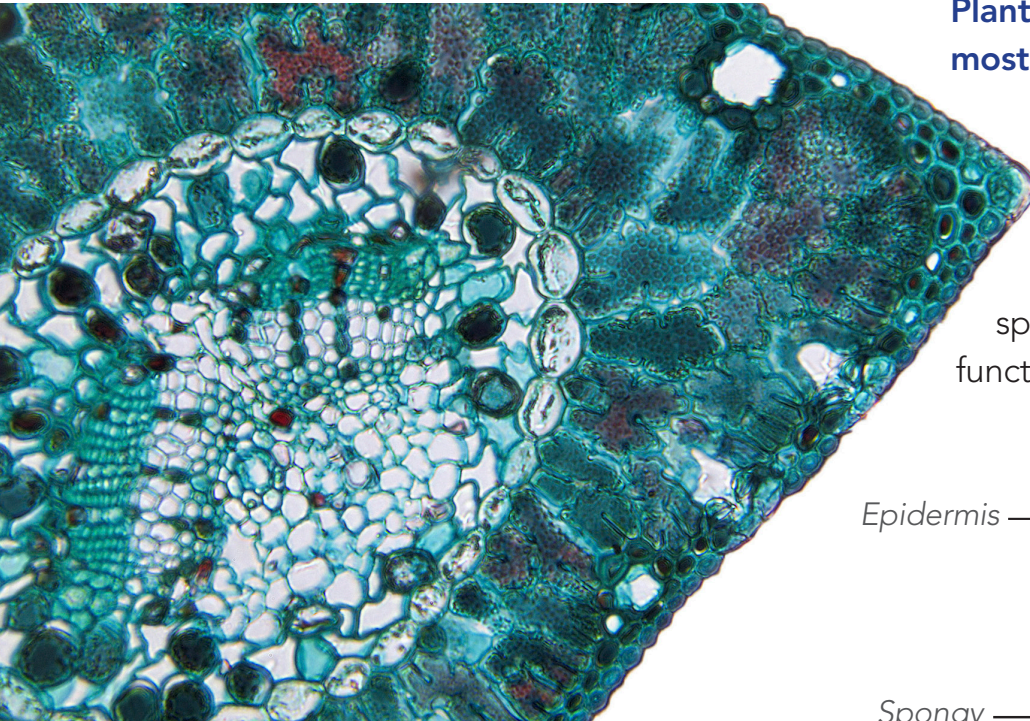
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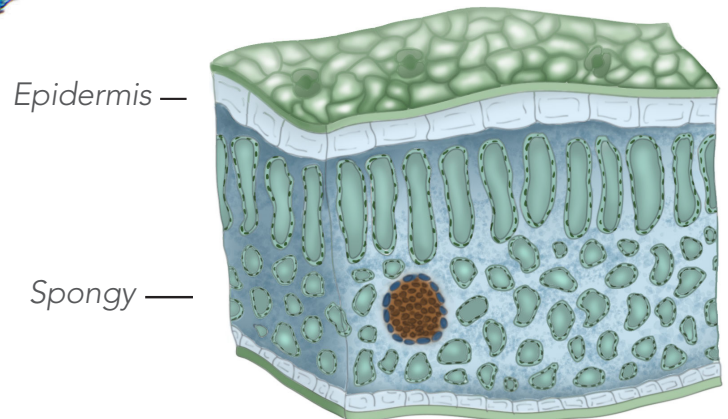
Leaves of a Plant

Plants make their own food mostly in their leaves.

Leaves are organs made of various tissues—like the epidermis, spongy, and vessel tissue. These tissues are made of special cells that perform particular functions in the leaves.



Microscopic view of a pine leaf

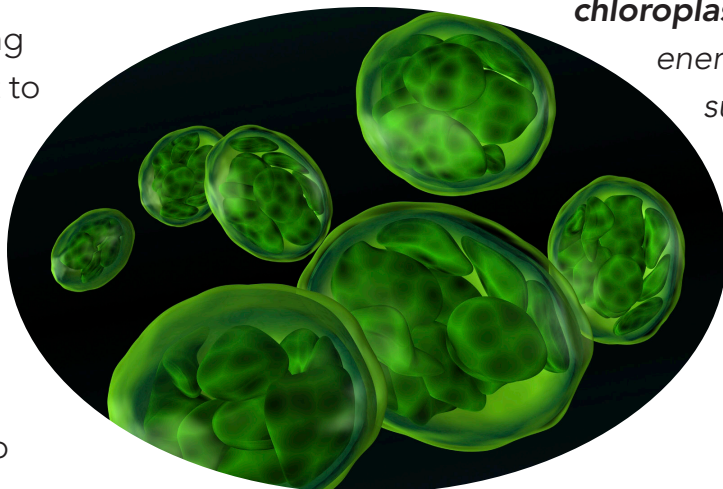


The **chlorophyll** in the **chloroplasts** captures energy from the sunlight.

Photosynthesis happens in the chloroplasts of the plant cells.

Plants perform photosynthesis using carbon dioxide, water and sunlight to make oxygen and sugar for food.

The sugar moves from the leaves to all the cells of the plant to be used or stored for later. Sugar that is stored for long term is called starch. Sugar forms cellulose, a chemical that makes up the strong cell walls.



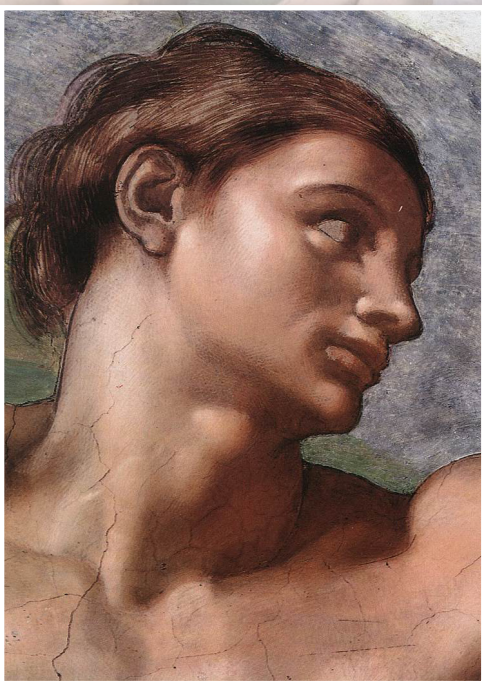
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Adam and the Carrot

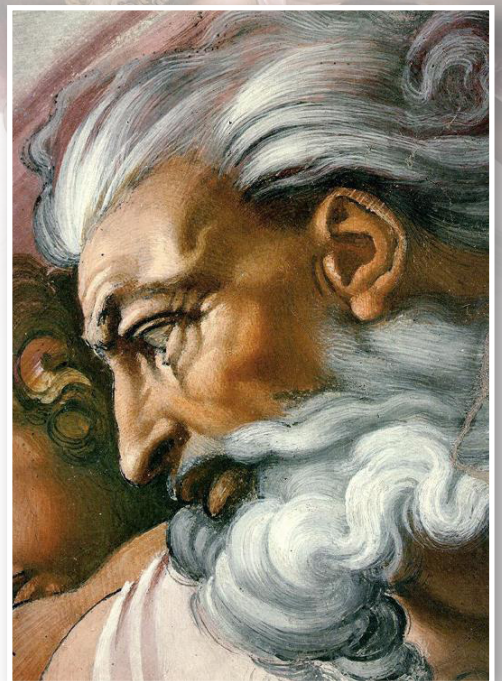
**The word nephesh
is Hebrew for "living"**

In Genesis 1:20-21, 24, God created nephesh chayyah which is translated "living creatures."



In Genesis 2:7, God gave Adam nephesh chayyah which is translated "living soul."

**Nephesh is the idea
of a "breathing
creature."**



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Roots in the Bible

Scripture	Scientific Principle
Job 29:19 (NKJV) My root is spread out to the waters, and the dew lies all night on my branch.	Roots absorb water from the soil.
Jeremiah 12:2a (NKJV) You have planted them, yes; they have taken root; they grow, yes, they bear fruit.	Roots anchor a plant. Plants grow by minerals and water taken from the roots to bear fruit.
Matthew 13:6 (NKJV) But when the sun was up they were scorched, and because they had no root they withered away.	Plants without a strong root system will not live long.



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Stems and Roots

Phloem are tubes that carry sugar to other parts of the plant.

Stems are the plant organs that hold leaves, flowers, and fruit on the plant.

Vascular plants have tubes, **xylem** and **phloem**, that transport materials between the roots to the leaves.

The purpose of the plant's root system is to:

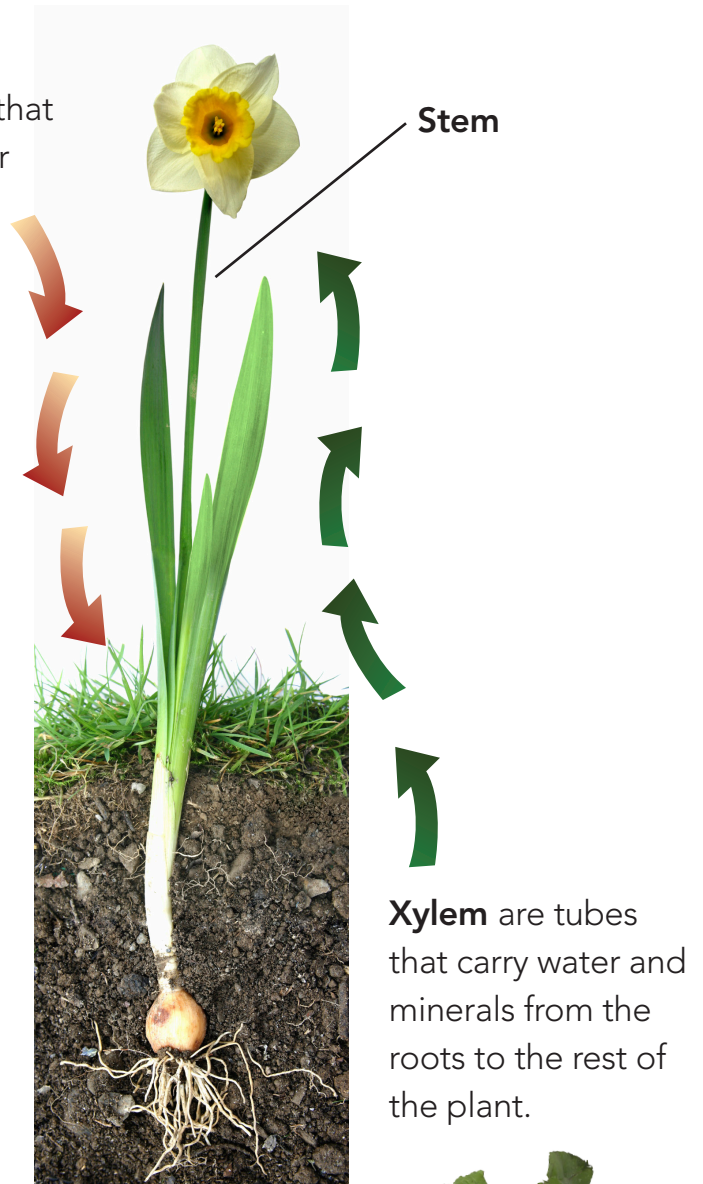
- 1) take in water and minerals
- 2) hold the plant in place
- 3) store extra food



Two types of root systems are taproots and fibrous roots.



Beets



Xylem are tubes that carry water and minerals from the roots to the rest of the plant.

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In This Box is Variation of Color

Genesis 1:12

...according to their kinds...

CRAYONS

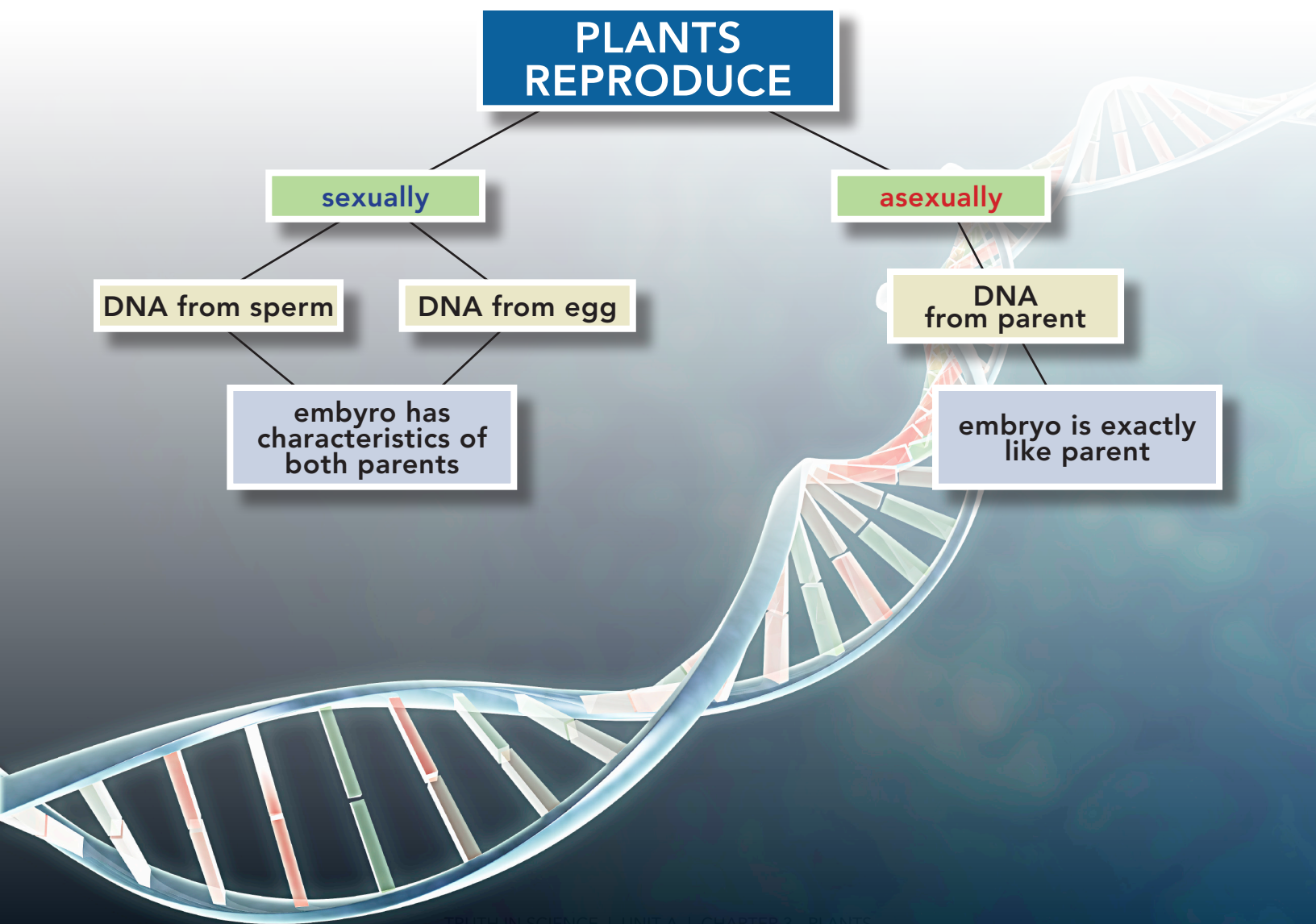
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Plant Reproduction

All plants reproduce. If they did not reproduce they would become extinct. Plants pass information from one generation to the next in an instruction set called DNA.

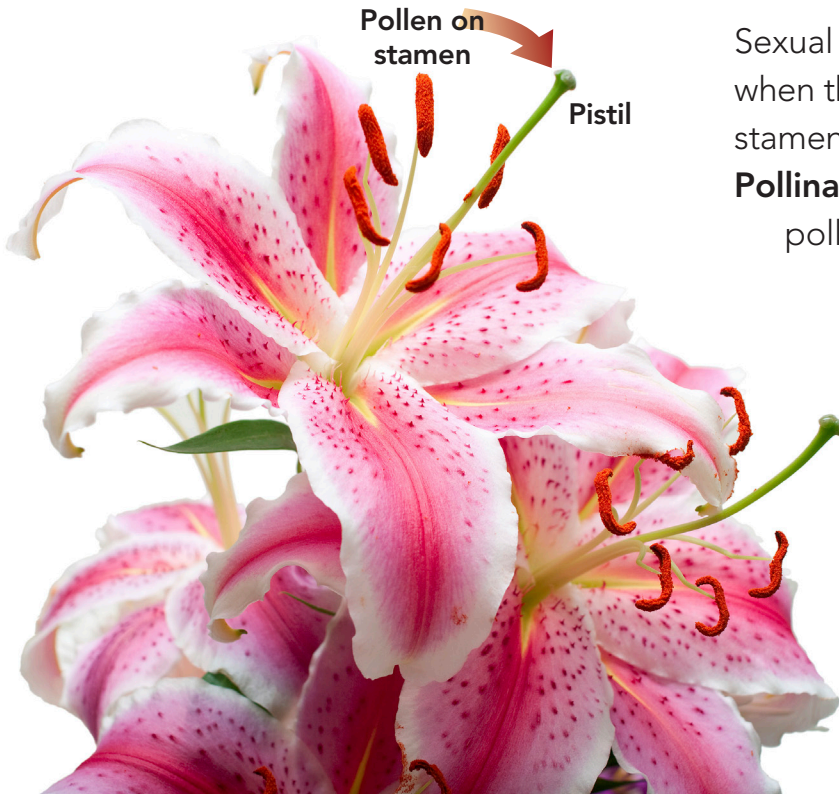
Plants reproduce sexually or asexually. In sexual reproduction, DNA is passed from two parents. The offspring has characteristics of both parent plants. In asexual reproduction, DNA is from one parent. The offspring is exactly like the parent.



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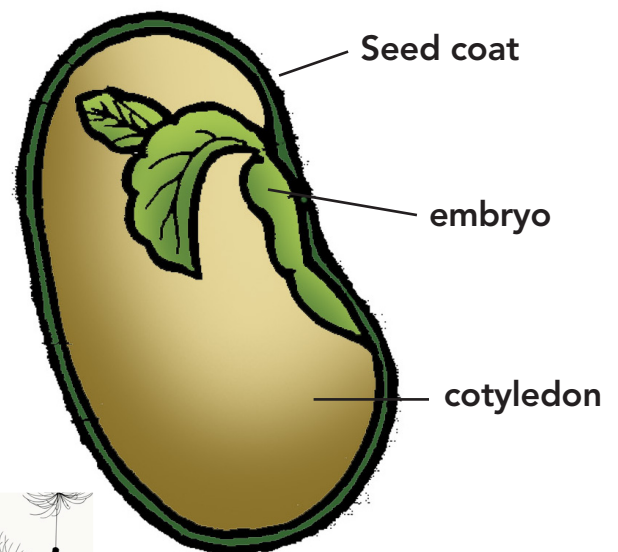
Plant Sexual Reproduction



Sexual plant reproduction occurs in flowers when the sperm cell in the pollen from the stamen joins the egg in the pistil's ovary.

Pollination is the process of moving the pollen from the **stamen** to the **pistil**. Wind, water and animals assist in pollination.

Fertilization occurs when the egg becomes fertilized with the sperm cells in the pollen.



Bean Seed

A fertilized egg cell grows into a **seed**. There are three main parts of seeds—the **seed coat**, the **embryo**, and the **cotyledon**. The seed coat protects the embryo and cotyledon. The embryo is the tiny new plant. The cotyledon is the seed leaves or the food for the new plant. Seeds with one cotyledon is called a monocot. Seeds with two cotyledons are called dicots.



Seeds are scattered by wind, water and animals. Some seeds have adaptations that help them travel in the wind.

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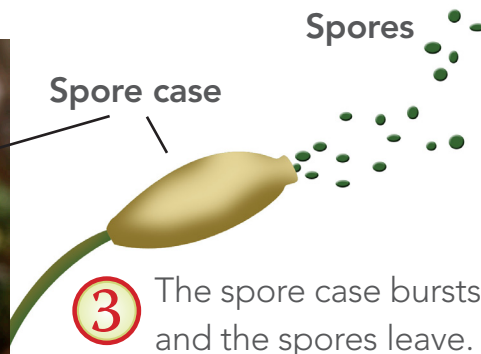
Plant Asexual Reproduction



2 **Fertilization** produces a new plant called a spore stalk. This grows out of the parent plant

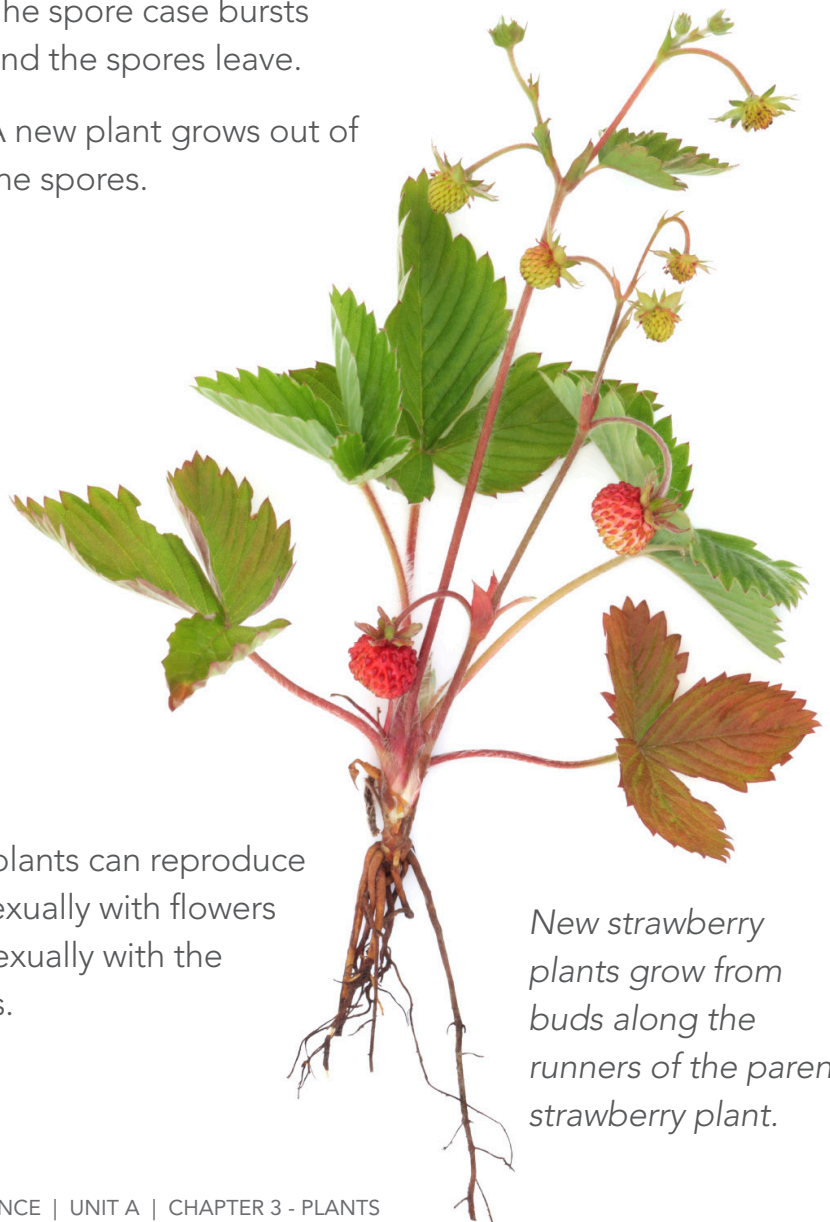


1 Moss plants make egg and sperm cells.



3 The spore case bursts and the spores leave.
A new plant grows out of the spores.

Asexual plant reproduction occurs in plants with **spores** (single plant cells) or from stems and roots with runners.



Some plants can reproduce both sexually with flowers and asexually with the runners.

New strawberry plants grow from buds along the runners of the parent strawberry plant.

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How Plants Grow



Gravitropism is the response to the pull of gravity.



Phototropism is the response to a source of light.



Thigmotropism is the response to touching an object.



Other factors that affect how fast a plant will grow is the amount of water and the presence of chemicals called growth hormones.

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Concept Map

