

Plant Phylogeny Line-Up Game

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Objective

Students model **plant evolution** by lining up from **bacteria** → **eudicots** using clues.



Instructions for teachers: Print out the following descriptions and cut them apart. Shuffle the descriptions. (As listed, they are in order, but students should receive them in a random order.)

Hand out one **organism card** to each student.

Without speaking at first, students **line up** in order of evolutionary relatedness.

Allow discussion time — students may rearrange based on **traits and ancestry**.

Reveal the **answer key** and discuss: What patterns of evolution did they notice?

Learning Goals

- Classify plants and plant relatives using evolutionary relationships.
 - Explain **common ancestry** and **phylogenetic branching**.
 - Collaborate to solve a scientific reasoning problem.
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Teacher Notes

Great for **exam review**, **sub days**, or **unit wrap-ups** on **evolution**, **taxonomy**, and **plant diversity**.

Encourage students to justify their placements using key traits (e.g., vascular tissue, seeds, flowers).

Materials



Item

Description

Organism cards One per student (editable template included)

Answer key Printable phylogenetic tree

Space to line up Hallway, lab, or outdoor area

Eudicot

Hint: I have two seed leaves and my flowers often have parts in multiples of 4 or 5. My veins form a net.

Monocot

Hint: I only have one seed leaf. My flower parts come in threes, and my veins run parallel like train tracks.

Magnoliid

Hint: My flowers are fragrant and complex. I have traits that link me to both the simpler and more derived flowering plants.

Basal Angiosperm

Hint: I am one of the first flowering plants. My structures are simple, but I still have seeds and flowers.

Gnetophyte

Hint: I have seeds but no flowers. Some of my features look surprisingly like flowering plants. Am I just convergent—or something more?

Gingko

Hint: My seeds are exposed, and my lineage is ancient. I don't have flowers or fruits.

Pteridophyte

Hint: I have vascular tissue and true leaves, but I still use spores and need water to reproduce.

Bryophyte

Hint: I'm small and low to the ground. No vascular tissue here, and I rely on water to move sperm to eggs.

Green Alga

Hint: I live in water, but I photosynthesize with chlorophyll a & b and store starch—just like land plants.

Red Alga

Hint: I'm aquatic and have phycobilins instead of chlorophyll b. My lineage split off before green algae and plants.

Archaeplastid

Hint: I am an ancestor to green and red algae and land plants. My descendants photosynthesize using chlorophyll a.

Unikont (general)

Hint: I move with a single flagellum (or used to). My lineage includes amoebas, animals, and fungi.

Choanoflagellate

Hint: I'm single-celled but closely resemble animal cells. Some say I'm the animals' closest living relative.

Fungus

Hint: I absorb food, and my cell walls are made of chitin. I'm closer to animals than to plants.

Prokaryote

Hint: I don't have a nucleus. I'm single-celled and have been around since life began.
