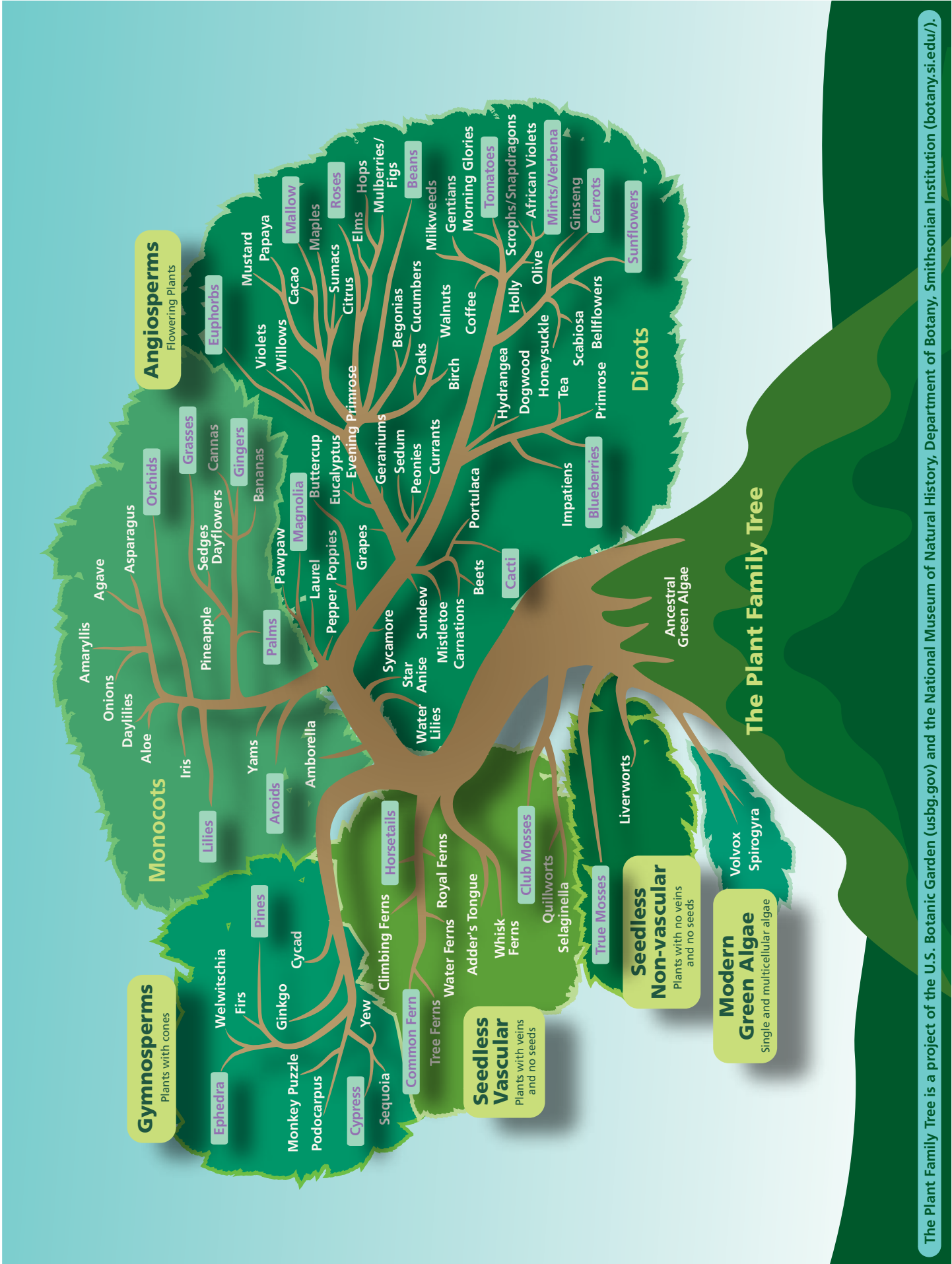


How Plants Work: Plant Multiplication

Student's Journal



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The Plant Family Tree is a project of the U.S. Botanic Garden (usb.gov) and the National Museum of Natural History, Department of Botany, Smithsonian Institution (botany.si.edu/).

Plant Multiplication

How do plants reproduce?

Exploring the Conservatory...

Make your way to Garden Primeval, a reconstructed Jurassic landscape of ferns and other ancient plant groups that have survived for 150 million years. Your teacher will assign you one of the following recognized plant groups:

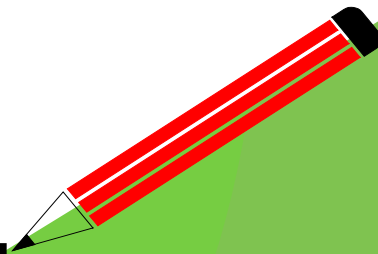
- Mosses (seedless non-vascular – reproduce by spores not seeds)
- Ferns & club mosses (seedless vascular – reproduce by spores, not seeds)
- Gymnosperms (cone-bearing plants with seeds)

Familiarize yourself with your designated plant group (*hint*: see Plant Family Tree).

Find a plant in Garden Primeval that you think represents the plant group you were assigned. Draw and label your plant in the space below.

Plant Name: _____

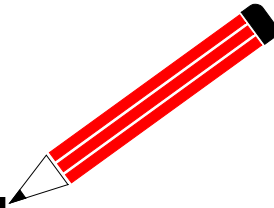
Plant Group: _____



Gently examine the various ferns for sori (brown dots on the underside of the fern leaves). Compare how they look on different kinds of ferns. Draw an example of a fern with sori in the space below:

Plant Name: _____

Sori: Small, circular, rust colored patches on the underside of fern leaves that release spores for reproduction.



Think Tank!


What is the role of sori in the reproductive strategy in ferns?

See if you can find moss in the sporophyte stage (sporophytes are $\frac{1}{4}$ to $\frac{1}{2}$ inch tall (as in the image of moss with sporophytes below).



Sporophyte: Spore-producing phase in the life cycle of a plant.
Gametophyte: A form of the plant that produces egg and sperm to form the sporophytes in the reproductive cycle.





Club mosses, unlike true mosses, are vascular – allowing them to be upright. See if you can find a club moss.

Fun Fact: When the spores of club moss come into contact with fire, they are explosive and were used in early flash photography and fireworks.

Can you find a cone-bearing plant? Observe as many cones as you can, comparing their similarities and differences (size, color, structure, placement, etc.). These cone-bearing plants (cycads, Norfolk Pine) are gymnosperms. Gymnosperm means ‘naked seed’ – plants whose seeds are not enclosed in an ovule (like a pine cone).

If you have not already seen it, can you find the dinosaur?

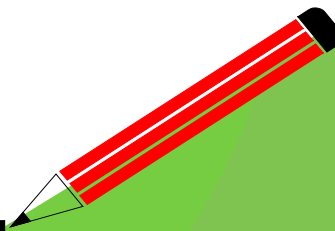
Become a Savvy Plant Sleuth!

Follow your teacher or adult leader into the Garden Court.

Find a flower in the process of turning into a fruit or a plant-bearing fruit. What plant group is present in Garden Court that was not represented in Garden Primeval? If you need to, look back to your Plant Family Tree.

Sketch and label the flowering plant you selected in the space below.

Plant Name: _____





Think Tank!

Talk to your group. Are plants always in flower?

What does a plant look like before and after flowering?

Where does the flower fit into the reproductive cycle of the plant?

Dig Deeper...

Explore the Plant Family Tree that was provided to you. With your group, observe where plants with different reproductive strategies are located on the tree.



Think Tank!

How might your new knowledge about plant multiplication help you figure out why one plant group family is larger than another?

What Did You Learn?

Consider the following statement: Plants, like animals, must reproduce and create offspring to ensure species survival. However, unlike animals, plants cannot travel around to find mates.

Question for Thought:

What is the difference between a fruit and a vegetable?

