

AP Biology

Virtual Plant Diversity Lab

Objective:

To investigate the variety of characteristics that different phyla/divisions of plants possess.

Procedure:

For each section below, visit the indicated websites and answer the following questions about plants in your laboratory notebook. You do not have to write the questions. This lab sheet should be folded and affixed to your laboratory notebook on the first page of the lab and the questions should be completed beginning on the second page of the lab.

I. Plant Phylogeny

1. Complete the plant phylogenetic tree activity at the link below.
 - http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?29&B

II. NonVascular Plants

Division Bryophyta, Hepatophyta and Anthoceroophyta

- <http://www.nhptv.org/natureworks/nwep14c.htm>
1. What anchoring structure do mosses have instead of roots?
 2. Why are mosses usually restricted to moist habitats?
 3. What is the first generation produced in mosses?
 4. What is the second generation produced in mosses?
 5. What structures are absent in liverworts?
 6. Where are hornworts found?
 7. View the Moss life cycle tutorial and complete the activity at the link below.
 - http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?29&C

III. Tracheophytes (Vascular Plants)

A. Division Pterophyta: Ferns

- <http://www.nhptv.org/natureworks/nwep14ferns.htm>
1. Where do ferns grow best?
 2. What are fern leaves called?
 3. What are the horizontal stems of ferns called?
 4. What do ferns have instead of seeds?
 5. What is the gametophyte stage of a fern called?
 6. About how many species of ferns are there?
 7. View the Fern life cycle tutorial and complete the activity at the link below.
 - http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?29&D

B. Division Coniferophyta, Cycadophyta and Ginkgophyta: Gymnosperms

- <http://www.nhptv.org/natureworks/nwep14e.htm>
1. Spruce, cedar, and pine trees are all examples of _____.
 2. How does the cone shape help protect the plants from snow?
 3. About how many species of conifers are there?
 4. What is the cup of a yew tree called?
 5. Why do birds sometimes eat only the cup and leave the seeds of yew trees?
 6. What type of gymnosperm resembles a palm, but is not really a palm?
 7. What group of gymnosperms has only one surviving species?
 8. Where are ginkgo biloba trees originally from?
- <http://faculty.fmcc.suny.edu/mcdarby/Animals&PlantsBook/Plants/04-Gymnosperms.htm>
9. What adaptation allowed plants to make the move to life on land?
 10. List the four groups of gymnosperms and give an example of each.
 11. Gymnosperms were the first widely distributed plant group; what major animal group are gymnosperms linked to?
 12. What is the "main plant" of gymnosperms?
 13. What are cones?
 14. In pine trees which is larger, the male or female cones?
 15. What structure encases the fertilized egg cell?
 16. What is the advantage of a needle over a flat leaf?
 17. What is the function of a cuticle?
 18. View the pine life cycle tutorial and complete the activity at the link below.
 - http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?30&A

C. Division Anthophyta: Angiosperms

- <http://www.nhptv.org/natureworks/nwep14f.htm>
1. Angiosperms are _____ plants.
 2. Where are angiosperm seeds found?
 3. What process must angiosperms go through before they can reproduce?
 4. How many seed leaves do monocots start with?
 5. How many seed leaves do dicots start with?
 6. About how many species of monocots are there?
 7. About how many species of dicots are there?
 8. View the angiosperm life cycle tutorial and complete the activity at the link below.
 - http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?30&B

- <http://faculty.fmcc.suny.edu/mcdarby/Animals&PlantsBook/Plants/05-Angiosperms.htm>

9. Even though most plants are angiosperms, gymnosperms still have an advantage in certain environments. In what type of environments are gymnosperms more successful than angiosperms?
10. Angiosperms get their name because the _____ are produced inside a _____.
 - Besides the sporophyte embryo, what is in a seed?
 - What is the function of the fruit in an angiosperm?
11. Angiosperms have true roots; what are the two functions of roots?
12. Angiosperms have stems; what are the two functions of stems?
13. What are the male and female gametophytes in angiosperms?

- <http://botany.csd.tamu.edu/FLORA/201Manhart/mono.vs.di/monosvsdi.html>

14. Fill in the missing information for the chart below.

Monocots	Dicots
	Two cotyledons
Flower parts in multiples of 3	
Parallel leaf veins	
	Primary and Adventitious roots
Vascular bundles scattered	

D. Plant Diversity and Evolution Connection:

Now that you're finished, write a paragraph comparing and contrasting the bryophytes, ferns, gymnosperms, and angiosperms. Include an explanation as to why angiosperms have been more successful than other plants. Discuss the value of co-evolution as it relates to angiosperm success.