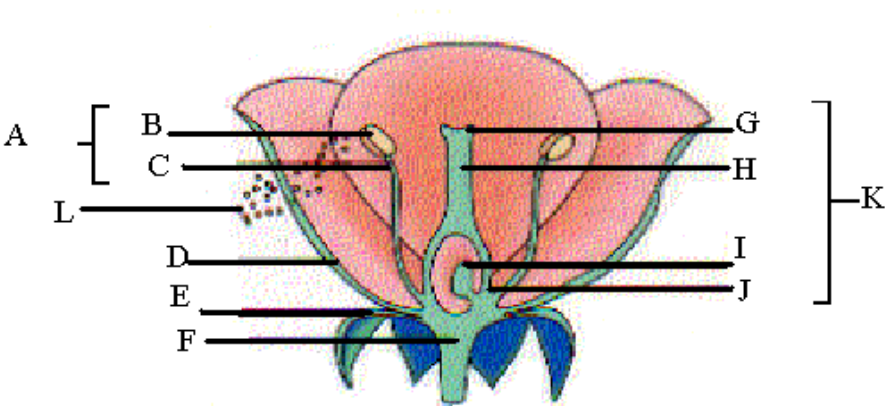
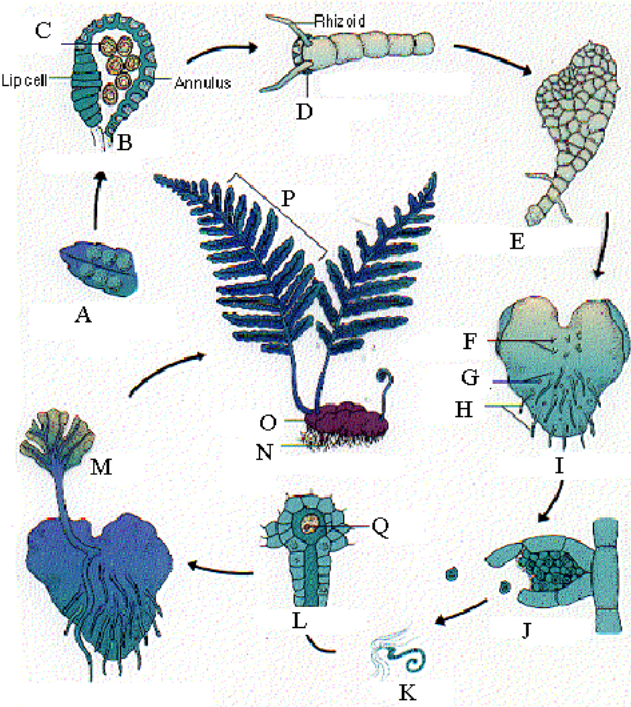
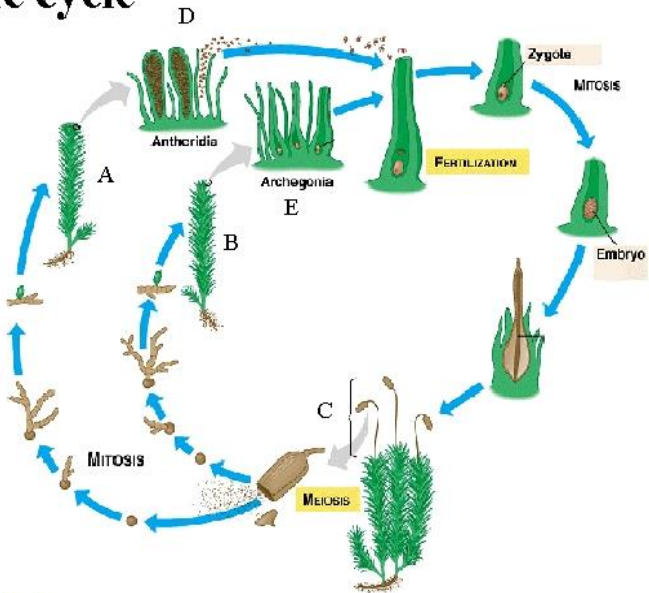


Plants Review

1. List the 6 general characteristics of plants.
2. What did plants probably evolve from?
3. What are some advantages for life on land for a plant?
4. What are the 3 main groups of plants?
5. List 3 types of aquatic plants.
6. All land plants can be divided into what 2 groups?
7. Describe non vascular plants.
8. Describe the function of the xylem and phloem.
9. List examples of: non vascular plants.
10. Why are bryophytes (non-vascular plants), such as mosses and liverworts, short?
11. What is a rhizoid?
12. Why do non vascular plants require water for reproduction?
13. What is a gamete?
14. What is a gametophyte?
15. What is the name of the male and female gametophyte and what does each produce?
16. What is a sporophyte?
17. Define sporangium.
18. Which stage of the life cycle (gametophyte or sporophyte) is dominant in non vascular plants? By dominant I mean large in size, it's the main part of the plant you see when viewing a moss.
19. Label and explain the moss life cycle on the handout. List whether the chromosome number is "n" (haploid) or "2n" (diploid) at all stages.
20. List examples of: vascular plants.
21. Why are they called vascular plants?
22. During alternation of generation of vascular plants is the gametophyte or sporophyte predominant?
23. Define waxy cuticle and stomate.
24. Vascular plants are divided into which two main groups?
25. List some examples of seedless vascular plants.
26. What are fern leaves called?
27. What is a prothallus?
28. Label and explain the fern life cycle on the back. List whether the chromosome number is "n" (haploid) or "2n" (diploid) at all stages.
29. What is the main criteria for distinguishing the two major seed-bearing groups?
30. What are the 2 groups of seed producing vascular plants? Define each.
31. List examples of gymnosperms.
32. What are Pollen grains?
33. How long does fertilization and seed maturation take?
34. List examples of angiosperms.
35. Define stamen, filament, anther
36. Define pistil (carpel), stigma, style, ovary.
37. Label the flower on the handout.
38. In the evolutionary development of plant reproduction, there has been a trend from a dominant **haploid gametophyte** to a dominant **diploid sporophyte**. Explain.

Label and explain the life cycles below. Know whether the chromosome number is “n” (haploid) or “2n” (diploid) at any given stage.

Moss Life cycle

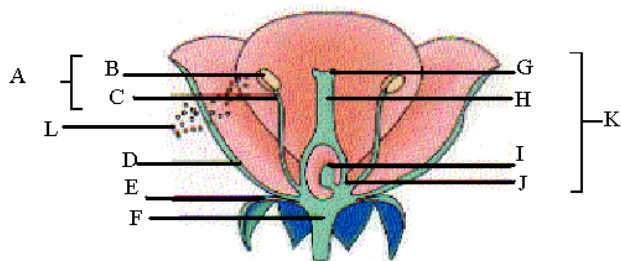


Plants Review

KEY

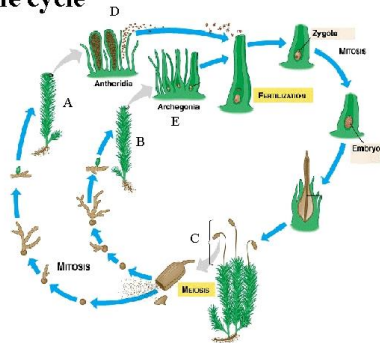
1. List the 6 general characteristics of plants.
eukaryotic (have membrane enclosed nucleus and organelles), multicellular, photosynthetic (are autotrophic and contain chlorophyll), lack mobility, show alternation of generations in their life cycles contain cellulose in cell walls
2. What did plants probably evolve from?
multicellular green algae
3. What are some advantages for life on land for a plant?
More carbon dioxide, light and space
4. What are the 3 main groups of plants?
Aquatic, non-vascular, vascular.
5. List 3 examples of aquatic plants.
Chlorophyta - green algae, Phaeophyta - brown algae, Rhodophyta - red algae
6. All land plants can be divided into what 2 groups?
Vascular and non vascular
7. Describe non vascular plants.
Those which lack vascular tissue (xylem and phloem)
8. Describe the function of the xylem and phloem.
Xylem - transport water from roots to leaves and **Phloem** - transport sugar from leaves to storage areas
9. List examples of: non vascular plants.
True Mosses, Hornworts and Liverworts
10. Why are bryophytes (non-vascular plants), such as mosses and liverworts, short?
No xylem and therefore no way to carry water high up to leaves
11. What is a rhizoid?
Rhizoids are hair like cells that anchor the plant to the substrate, and increase absorptive surface area for water and nutrients.
12. Why do non vascular plants require water for reproduction?
because sperm have flagella and must swim to egg
13. What is a gamete?
sex cells like sperm and eggs
14. What is a gametophyte? the stage of the plant which produces gametes (sex cells like sperm and eggs).
15. What is the name of the male and female gametophyte and what does each produce?
male gametophyte called **antheridia** produces sperm and the female gametophyte called **archegonia** produces the eggs
16. What is a sporophyte?
stage of the plant which produces haploid (n) spores
17. Define sporangium.
Capsule which produces the haploid spores. Meiosis occurs inside.
18. Which stage of the life cycle (gametophyte or sporophyte) is dominant in non vascular plants? By dominant I mean large in size, it's the main part of the plant you see when viewing a moss.
gametophyte
19. Label and explain the moss life cycle on the handout. List whether the chromosome number is "n" (haploid) or "2n" (diploid) at all stages.
20. List examples of: vascular plants.
Ferns, Herbs, Shrubs, Trees, and Flowering plants
21. Why are they called vascular plants?
They have conductive tissue (Xylem and Phloem)

22. During alternation of generation of vascular plants is the gametophyte or sporophyte predominant?
sporophyte
23. Define waxy cuticle and stomate.
waxy cuticle - layer of wax on the outer surface of leaves to prevent water loss
stomate - tiny slits found in leaves which provide openings for gas exchange. (CO₂ in and O₂ out)
24. Vascular plants are divided into which two main groups?
Those that produce seeds, and seedless plants such as ferns that reproduce with spores.
25. List some examples of seedless vascular plants.
True Ferns, Whisk Ferns, Club Mosses, Horsetails
26. What are fern leaves called?
frond
27. What is a prothallus?
a germinating spore develops into a small haploid gametophyte called a prothallus
28. Label and explain the fern life cycle on the handout. List whether the chromosome number is “n” (haploid) or “2n” (diploid) at all stages.
29. What is the main criteria for distinguishing the two major seed-bearing groups?
seed type (naked seeds vs covered seeds)
30. What are the 2 groups of seed producing vascular plants? Define each.
Gymnosperms (naked seed) and Angiosperms (flowering plants)
31. List examples of gymnosperms.
Pines, Junipers, Firs, Cypress, Spruce, Redwoods
32. What are Pollen grains?
male equivalent to sperm cells
33. How long does fertilization and seed maturation take?
Fertilization 1 year after pollination and the seed maturation requires an additional year
34. List examples of angiosperms.
Rose, Daisy, Elm, Poplar, Banana, Palms, Violets, Bluegrass
35. Define stamen, filament, anther,
Stamen is male part of flower. It consists of thin stalk called a **filament** and an **anther** where the pollen is formed.
36. Define pistil (carpel), stigma, style, ovary.
The **pistil** (sometimes called carpel) is the female part of the flower. It consists of the **stigma** which is the sticky part where pollen grains land and grow, the **style** is the slender stalk by which the pollen grains reach the ovary, and the **ovary** where the ovule containing the egg cell is found.
37. Label the flower on the handout.
38. In the evolutionary development of plant reproduction, there has been a trend from a dominant **haploid gametophyte** to a dominant **diploid sporophyte**. Explain.
With the simple plants (non vascular) such as moss the gametophyte was the large part of the plant and the sporophyte was small and as you move toward the advanced plants (vascular) such as conifers and angiosperms the trend reverses.

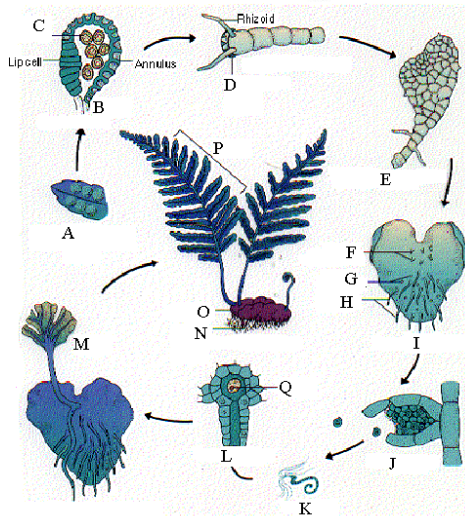


A – Stamen
 B – Anther
 C – Filament
 D – Petal
 E – Sepal
 F – Receptacle
 G – Stigma
 H – Style
 I – Ovule
 J – Ovary
 K – Carpel/Pistil
 L – Pollen grains

Moss Life cycle



A – Male gametophyte (haploid)
 B – Female gametophyte (haploid)
 C – Sporophyte (diploid)
 D – Sperm production (haploid)
 E – Egg production (haploid)



A – Sori on underside of leaf (diploid)
 B – Sporangium (diploid)
 C – Spore (haploid)
 D – Haploid
 E – Prothallus (haploid)
 F – Archegonia (haploid)
 G – Antheridia (haploid)
 H – Rhizoids
 I – Mature prothallus (haploid)
 J – Antheridium (haploid)
 K – Sperm (haploid)
 L – Archegonium (haploid)
 M – Sporophyte (diploid)
 P – Frond (leaf) (diploid)