## List of terms and concepts for Plants

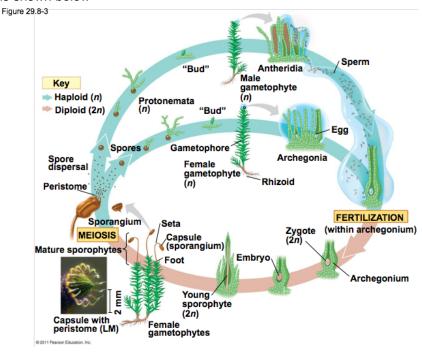
Key characteristics and evolutionary advantages ALL of these live on land. All show alternation of generations.				
Non-vascular and thus cannot conduct water up a stalk to leaves. All are low to the ground and show alternation of generations. Arise 470 MYA (million years ago) to 450 MYA				
Vascular plant. Around 430 MYA Can grow a stalk and get access to light. Do not produce seeds.				
Vascular. More recent than club mosses. About 390MYA				
Produce Seeds!! Can lay dormant and also provide food for the embryo as it grows. About 320 MYA "Naked Seed" mostly conifers (pine trees) but include some other odd things. Also show alternation of generations, thought the gametophyte is microscopic				
The most diverse group of plantsyou know why. Produce Seeds!! Can lay dormant and also provide food for the embryo as it grows. About 320 MYA. Flowering plants. This includes almost anything you can think of outside of pine trees. Grasses (including Bamboo and grains), Palm trees, oak treesyou name it. These all have "fruit," though you wouldn't call everything they produce a "fruit." The fruit aids in distribution of the seed either by being eaten and carried off or by sticking to your dog or some other method.				
Monocot may be a clade, but dicot isn't. That is, it's not one single group of plants. However, it refers to the number of seed-leaves, or cotyledons (one or two). That correlates with the vasculature of the plant. All are seeded plants. See some general traits of monocots and dicots on the last page.				
Overview by major group			PLANT GROUP	
	Mosses and other nonvascular plants	Ferns and other seedless vascular plants	Seed plants (gymnosperms and angiosperms)	
Gametophyte	Dominant	Reduced, independent (photosynthetic and free-living)	Reduced (usually microscopic), dependent on surrounding sporophyte tissue for nutrition	
Sporophyte		Dominant	Dominant	
Example	Sporophyte (2n)  Gametophyte (n)	Sporophyte (2n)  Gametophyte (n)	Gymnosperm Microscopic female gametophytes (n) inside ovulate cone  Microscopic female gametophytes (n) inside these parts of flowers  Microscopic male gametophytes (n) inside these parts of flowers  Microscopic male gametophytes (n) inside these parts of flowers  Sporophyte (2n)  Sporophyte (2n)	
	Non-vasare low to MYA (mily Vascular light. Do Vascular Produce embryo a (pine tree of general The most Can lay of About 32 can think grains), I though y aids in diby stickin Monocott group of cotyledo plant. All dicots or	ALL of these live of generations.  Non-vascular and thus are low to the ground a MYA (million years ago Vascular plant. Around light. Do not produce so Vascular. More recent to Produce Seeds!! Can late embryo as it grows. Ab (pine trees) but include of generations, thought The most diverse group Can lay dormant and a About 320 MYA. Flower can think of outside of grains), Palm trees, oa though you wouldn't cat aids in distribution of the by sticking to your dog Monocot may be a class group of plants. However cotyledons (one or two plant. All are seeded plant. All are seeded plants. All are seeded plants. All are seeded plants. All are seeded plants. Gametophyte Dominant Sporophyte Reduced, dependent on gametophyte for nutrition Gametophyte Gametophyte f	ALL of these live on land. All generations.  Non-vascular and thus cannot conduct are low to the ground and show altern MYA (million years ago) to 450 MYA  Vascular plant. Around 430 MYA Can light. Do not produce seeds.  Vascular. More recent than club moss. Produce Seeds!! Can lay dormant an embryo as it grows. About 320 MYA (pine trees) but include some other or of generations, thought the gametoph. The most diverse group of plantsyo Can lay dormant and also provide food About 320 MYA. Flowering plants. The can think of outside of pine trees. Gragrains), Palm trees, oak treesyou in though you wouldn't call everything the aids in distribution of the seed either by sticking to your dog or some other.  Monocot may be a clade, but dicot is group of plants. However, it refers to a cotyledons (one or two). That correlated plant. All are seeded plants. See som dicots on the last page.  Mosses and other forms and other seedless vascular plants.  Gametophyte Dominant Reduced, independent (in) Dominant  Sporophyte Reduced, dependent on gametophyte for nutrition Dominant  Sporophyte Reduced, dependent on gametophyte for nutrition Dominant	

#### **Term**

#### Alternation of generations Don't memorize. But, get to know some "landmarks" in the diagram. What is haploid? which is diploid? The goal is that if you are presented with a diagram like this, it won't take you 5 minutes to figure out what it is.

#### Definition and other useful info

All land plants show a 1n and 2n (haploid and diploid) multicellular stage. The earlier ones on the list above have clear sections of the individual plant, or separate individuals altogether. The seeded plants all hide the 1n form completely within the flower or cone. A simple form is shown below



#### **Sporophyte**

the 2n form. Named because it gives rise to the spore via meiosis. In "primitive" plants, this form is the smaller of the two. In ferns and such, it is the larger. In seeded plants, it is the only one you can readily see (much larger).

#### Gametophyte

the 1n form, gives rise to the gamete via mitosis (remember, the gametophyte is already 1n)

#### Antheridia and archegonia

the male and female gametophyte, respectively. The one producing the larger gamete is called the female.

## Plant Tissues: Root, Stem and leaf

specializations of tissues for a task. All can derive from the **apical meristem**.

# Fruit (unique to angiosperms...flowering plants).

It's not what you think.

A **fruit** typically consists of a mature ovary but can also include other flower parts

Fruits protect seeds and aid in their dispersal Mature fruits can be either fleshy or dry

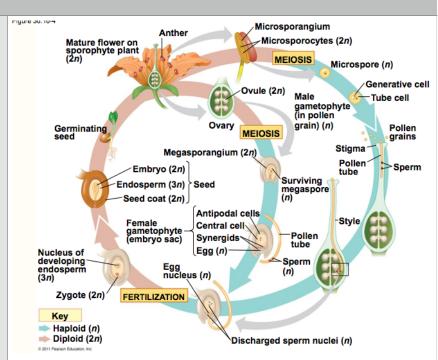
#### **Term**

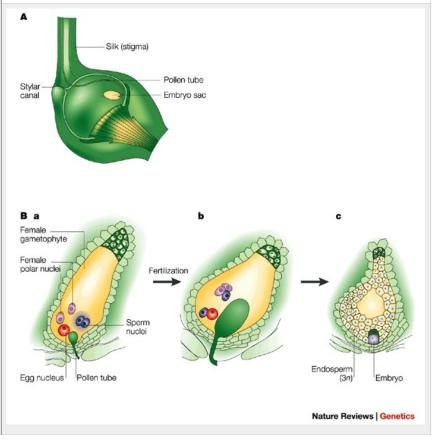
**Alternation of generations** in flowering plants. No... don't memorize. Notice where the diploid and haploid portions are. Notice that meiosis does not directly produce sperm or ovule...it produces the spore, which grows as a haploid into the gametophyte-i.e. the pollen grain IS a multicellular, haploid "organism," the gametophyte that will produce the sperm. **Notice "Double** fertilization." More on that below.

Double Fertilization. Found in angiosperms only (one reported case in gymnosperms)
I have heard this might be important.

The female gametophyte has several cell types. The pollen grain produces two sperm. One fertilizes the egg and the other combines with two other nuclei from the female gametophyte. The resulting 3n (triploid) cell produces the "endosperm" of the seed, containing much of the nutrients for the developing embryo. See diagram above as well.

#### Definition and other useful info





### Definition and other useful info **Term Heterospory and** Whether a plant shows two different types of spores or only one. Most seeded plants produce a larger spore that will go on to be the female homospory gametophyte and a smaller spore producing the male. Homosporous spore production Typically a Eggs Sporangium Single bisexual on sporophyll type of spore gametophyte Sperm **Heterosporous spore production** Megasporangium **Female** Megaspore -**Eggs** on megasporophyll gametophyte Microsporangium Male Microspore -Sperm on microsporophyll gametophyte Eudicot Some traits of mono and dicots.