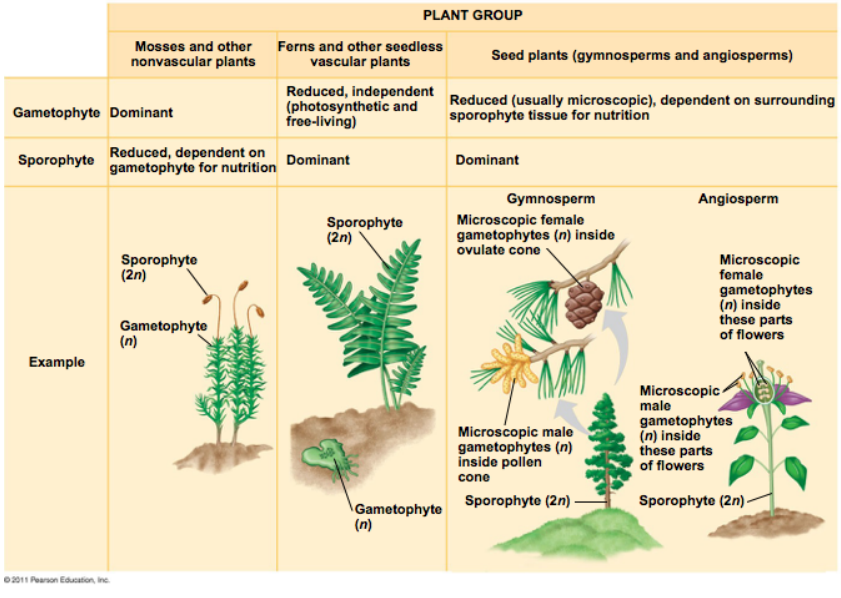
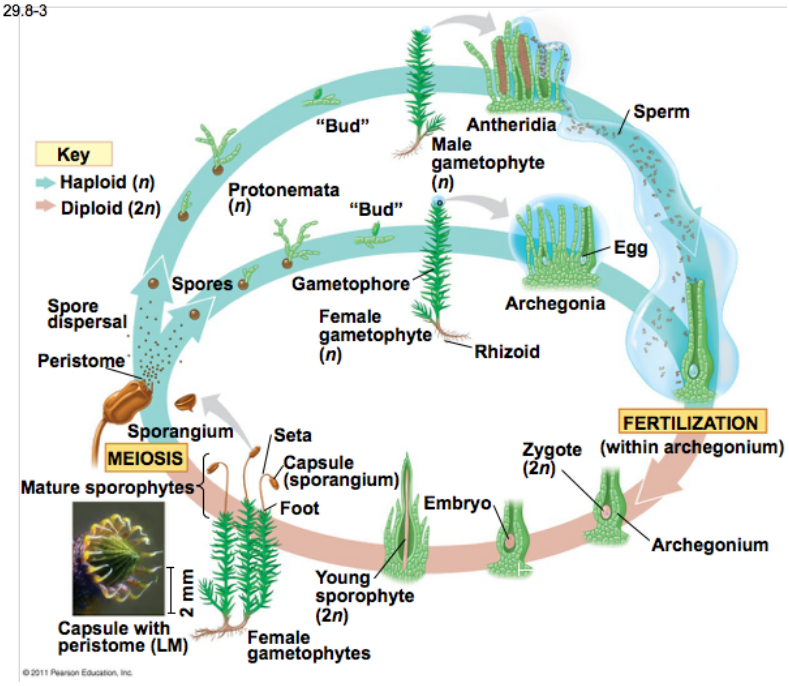
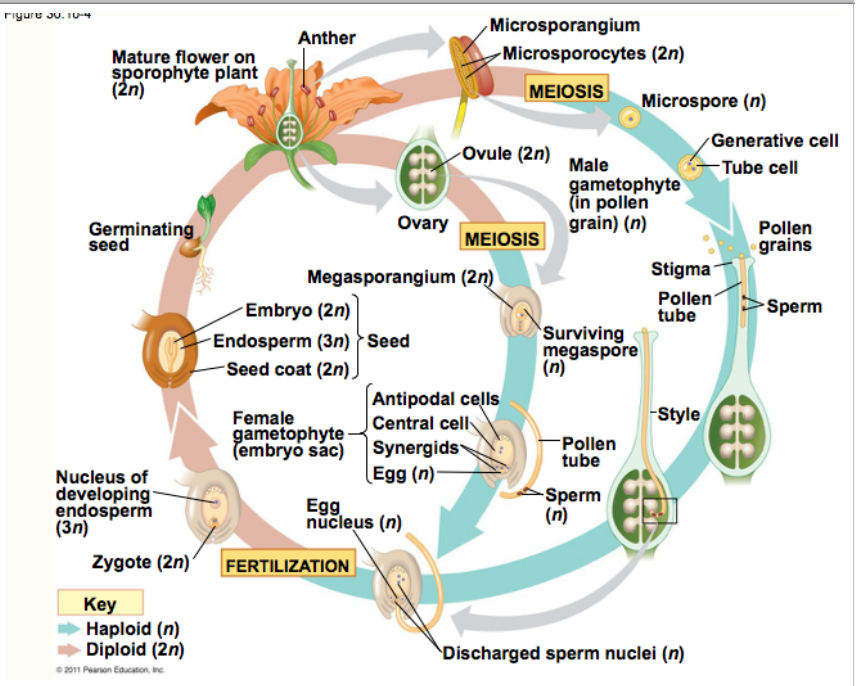
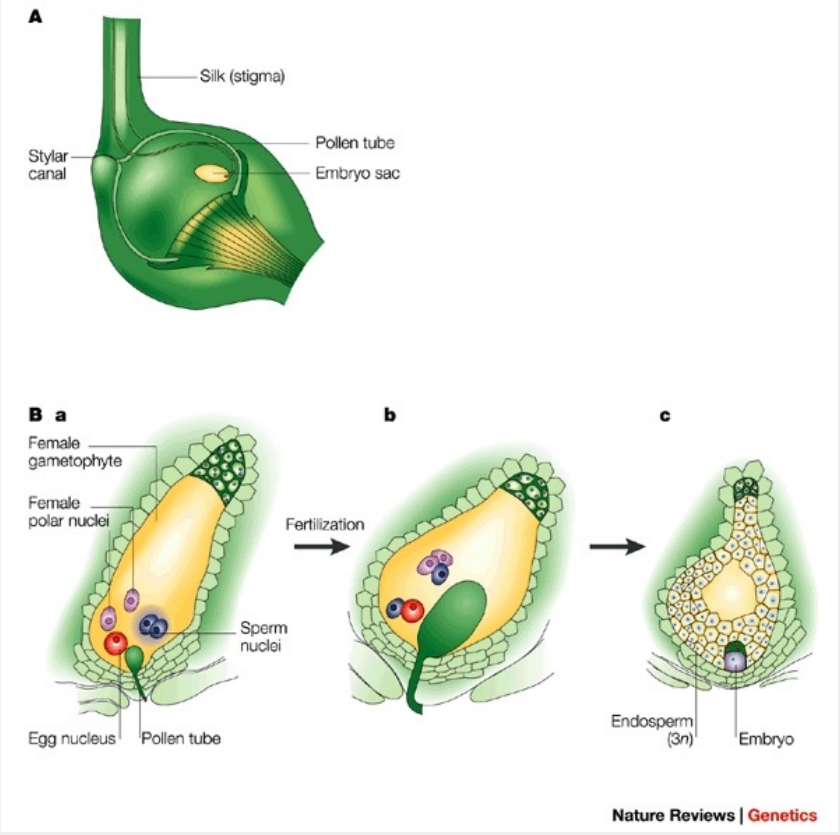
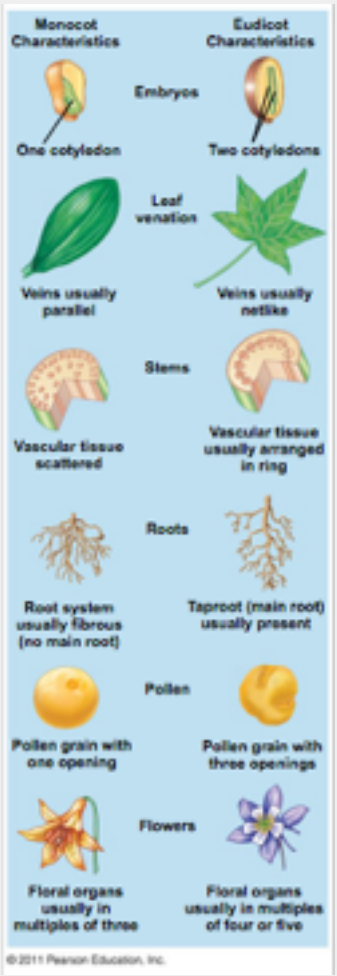
List of terms and concepts for Plants

Types of plants:	**Key characteristics and evolutionary advantages ALL of these live on land. All show alternation of generations.**
Liverwarts, mosses, hornwarts	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
"Club Mosses"	Vascular plant. Around 430 MYA Can grow a stalk and get access to light. Do not produce seeds.
Ferns	Vascular. More recent than club mosses. About 390MYA
Seeded plants Gymnosperms	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
Seeded plants, Angiosperms	The most diverse group of plants…you 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 trees…you 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.
Monocots and Dicots	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	

Term	Definition and other useful info
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.	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 Figure 29.8-3 
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	Definition and other useful info
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.**	

Term	Definition and other useful info
Heterospory and homospory	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 gametophyte and a smaller spore producing the male. **Homosporous spore production** Sporangium on sporophyll → Single type of spore → Typically a bisexual gametophyte → Eggs / Sperm **Heterosporous spore production** Megasporangium on megasporophyll → Megaspore → Female gametophyte → Eggs Microsporangium on microsporophyll → Microspore → Male gametophyte → Sperm
Some traits of mono and dicots.	

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