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# Plant Essay

**Introduction:** Plant evolution a spectacular idea to discuss. The phylogenetic tree is a diagram that shows a type of organisms origin and their evolution over time. For plants to be on the phylogenetic tree there are three characteristics that are needed. One is chloroplast the second is cell wall and the final is photosynthesis. Chloroplast is a chlorophyll plastid, the cell wall helps hold the cell together and photosynthesis uses the sunlight to get nutrients from carbon dioxide and water.

Charophytes which are green algae evolved around 700 million years ago. They have a huge variety offsprings. Though green algae has all 3 characteristics they are not true plants and that is because they do not have all the plant characteristics needed. Plants that are true are vascular plants, which include seed-bearing plants. Charophytes are ancestral plants so it makes sense for them not to have all plants characteristics because they are older than vascular plants. Green algae live in the water, but without tubes or vessels how do they move. One way they are able to move is because they are long and skinny the reason they are like that is from being a single celled organism. Though there is an algae that does not live in water and that is lichen; lichen is an algae+fungus combined together. How does lichen live and get out of the water is simply because it lives in fungus, which is usually found in the forrest. Spirogyra is a type of green algae and it is a green spiral shape.

Bryophytes commonly known as moss, liverworts and hornworts. Bryophytes live on land in moist like areas like swamps or near lakes. They can not live in water because they do not have vascular tubes. The reason why they are able to live on land is because of their shape they are short and fat. That gives them the advantage to be closer to ground to soak up more water using their hyaline cells. Hyaline cells are dead cells that help hold water are like buckets. The structures of bryophytes is the phylid that is like a leaf to perform photosynthesis.

Then there is a rhizoid which is the root part of the moss, after that there is the seta or the stem

and that helps support the moss finally there is the capsule like seed pod, but they are spores. Spores are smaller, they do not need fertilizing and do not provide many resources for baby plants. Bryophytes need to rely on water for reproduction so males can release their sperm into the water to swim to the female plants.

Plants started out on land, but sucked at it though they gradually got better at it. How they dealt with it by holding in water and moving water. The 2 ways they learned to hold in water is by the cuticle and the stomata. The cuticle is a tough flexible outer covering that protects different organism. The stomata are tiny gaps in the cuticle that lets oxygen and carbon dioxide in and out. The way plants learned to move water is by vascular tissues and transpiration. Vascular tissues are like straws that live inside the plant, there are two types of tissues that help move different things. The first one is xylem and that moves water up the plant. The second is the phloem and that moves food down the plant. Transpiration is bad for the plant because it is the process of water evaporating into the air from the top of the plant. Learning something new from the plants is that they are selfish organisms and they do not want to desecrate.

Pterophytes are commonly know as ferns, horsetails and whisk ferns. Ferns live on land in moist areas, but they can handle dryer places than moss. The reason why they have to live in moist areas is because they have spores. Having spores is the whole reason they need to live in moist areas and that is for reproduction. Why the spores need to be near water is because when the spores grow into female or male ferns. The males need to release their sperm into the water so the sperm could swim to the female ferns. Where the spores are located are in the sori, which is on the underside of the leaf. A question that is asked from time to time is that are mosses and ferns alike and the answer to that is no. Because mosses do not have vascular tissues and you can tell since they are short so they can be close to the ground. Also they have hyaline cells to hold water instead of tubes to do that. The ferns do have vascular tissues and you can tell by their structure since they are tall and skinny. They are able to move water instead of holding it like mosses.

The scientific name for conifers is called gymnosperms. Gymnosperms are land plants and have vascular tissues, which has let their xylem and phloem tubes evolve to let them grow to extreme heights. The way gymnosperms reproduce is by seeds or commonly known as the naked seed. The naked seed is protected by the cone. The vascular tissues help move water to the tippy top of the tree. Their vascular tissues have affected their shape making it unnecessary

for them to have any particular shape. So they do not need to be long/skinny or short/fat. Their is a question that is slightly common and that is if conifers and ferns are alike. The answer to that is yes because they both live on land and both have vascular tissues.

Flowering plants scientific names are angiosperms. They are the 4th plant to make it on land so they are land plants. The reason they are able to live on land is because they have vascular tissues. Vascular tissues help move water through the plant. Their vascular tissues have affected their shape making it unnecessary for them to have any particular shape. So they do not need to be long/skinny or short/fat. . Angiosperms reproduce by using seeds that is also part of why they do not need to be near water all the time. They are fertilized by bees and other species. The flowers use their pretty colors and beautiful fragrance to attract the bees. The reason why the flowers need the bees is to take the pollen which carries the seeds and fly them off to other flowers fertilizing them. How the flowers are able to do this is because they have both male and female bits. Unlike other organisms.

**Evolution** gives us a better understanding of the history of the world. A meaning of evolution is that we are all related by common **ancestral** backgrounds from plants to humans, bees to mammals. The reason why we need to evolve is so we create diversity amongst organisms.

**Natural selection** plays a key part in evolution. It has helped organisms adapt to its environment. Plants especially, over time plants have **derived** into different kinds. Though this process does take a long period of time, but now the world has numerous different plants like flowering plants, angiosperms, gymnosperms, pteridophytes, bryophytes and charophytes. The world has **adapted** to its environment.