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Chapter 1 : kingdom Plantae - Dictionary Definition : calendrierdelascience.com

The Plant Kingdom (or Plantae Kingdom) is made up of all the plants that you see each day. Most plants are multi-cellular, meaning that they consist of many cells. Different types of plants include trees, grass, flowers, and some types of algae.

Algae Algae comprise several different groups of organisms which produce food by photosynthesis and thus have traditionally been included in the plant kingdom. The seaweeds range from large multicellular algae to single-celled organisms and are classified into three groups, the brown , red and green algae. There is good evidence that the brown algae evolved independently from the others, from non-photosynthetic ancestors that formed endosymbiotic relationships with red algae rather than from cyanobacteria, and they are no longer classified as plants as defined here. With a few exceptions, the green plants have the following features in common; primary chloroplasts derived from cyanobacteria containing chlorophylls a and b, cell walls containing cellulose , and food stores in the form of starch contained within the plastids. They undergo closed mitosis without centrioles , and typically have mitochondria with flat cristae. The chloroplasts of green plants are surrounded by two membranes, suggesting they originated directly from endosymbiotic cyanobacteria. Two additional groups, the Rhodophyta red algae and Glaucophyta glaucophyte algae , also have primary chloroplasts that appear to be derived directly from endosymbiotic cyanobacteria , although they differ from Viridiplantae in the pigments which are used in photosynthesis and so are different in colour. These groups also differ from green plants in that the storage polysaccharide is floridean starch and is stored in the cytoplasm rather than in the plastids. They appear to have had a common origin with Viridiplantae and the three groups form the clade Archaeplastida , whose name implies that their chloroplasts were derived from a single ancient endosymbiotic event. In contrast, most other algae e. They are not close relatives of the Archaeplastida, presumably having acquired chloroplasts separately from ingested or symbiotic green and red algae. They are thus not included in even the broadest modern definition of the plant kingdom, although they were in the past. The green plants or Viridiplantae were traditionally divided into the green algae including the stoneworts and the land plants. However, it is now known that the land plants evolved from within a group of green algae, so that the green algae by themselves are a paraphyletic group, i. Paraphyletic groups are generally avoided in modern classifications, so that in recent treatments the Viridiplantae have been divided into two clades, the Chlorophyta and the Streptophyta including the land plants and Charophyta. There are about 4, species, [26] mainly unicellular or multicellular marine organisms such as the sea lettuce, Ulva. The other group within the Viridiplantae are the mainly freshwater or terrestrial Streptophyta, which consists of the land plants together with the Charophyta, itself consisting of several groups of green algae such as the desmids and stoneworts. Streptophyte algae are either unicellular or form multicellular filaments, branched or unbranched. The freshwater stoneworts strongly resemble land plants and are believed to be their closest relatives. With 19th century developments in microbiology , Ernst Haeckel introduced the new kingdom Protista in addition to Plantae and Animalia, but whether fungi were best placed in the Plantae or should be reclassified as protists remained controversial. In , Robert Whittaker proposed the creation of the kingdom Fungi. Molecular evidence has since shown that the most recent common ancestor concestor , of the Fungi was probably more similar to that of the Animalia than to that of Plantae or any other kingdom. Unlike plants, which generally gain carbon through photosynthesis, and so are called autotrophs , fungi do not possess chloroplasts and generally obtain carbon by breaking down and absorbing surrounding materials, and so are called heterotrophic saprotrophs. In addition, the substructure of multicellular fungi is different from that of plants, taking the form of many chitinous microscopic strands called hyphae , which may be further subdivided into cells or may form a syncytium containing many eukaryotic nuclei. Fruiting bodies, of which mushrooms are the most familiar example, are the reproductive structures of fungi, and are unlike any structures produced by plants. Diversity of living green plant Viridiplantae divisions Informal group.

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Chapter 2 : Plants: 11 StudyJams! Interactive Science Activities | Scholastic

Kingdom plantae is one of six kingdoms of organisms, and it includes every plant you could imagine from the moss growing on the forest floor to the mighty, towering fir trees. The Six Kingdoms.

Plants Kingdom When you think of plants, you probably think of flowers, vegetables and trees. But there are many other kinds of plants too. How about mosses and lichens or algae that grows in the water? Ferns have been around for millions of years. Mushrooms, on the other hand, are not plants, but a fungus. Most plants have roots that live in the soil. Some live in the water and a few live in air. Plants need water, sun, minerals and carbon dioxide to grow. Plants get energy from the sun. Their leaves have a substance called chlorophyll which changes energy from the sun into food. Mushrooms are NOT plants, but a fungus. Fun Facts about Plants for Kids Plants reproduce, or make more plants, through flowers. The flowers have pollen. When the pollen spreads to other plants, it produces fruit and seeds. The seeds make new plants. Bees or the wind pollinate most plants. Once seeds form, the wind or animals carry them to new places to grow. Plants might not seem as exciting, as say, a tiger or other animal, but without them, there would be no life on earth. Some plants are carnivorous. They eat insects, frogs, rats etc. A video explaining the structure, benefits and types of land plants. Why do plants smell good? Deep inside a flower are nectaries, which produce nectar. The yummy smell attracts bees, hummingbirds and butterflies , which drink the nectar. As they get the nectar, their bodies become covered with pollen. When they move to another flower for more nectar, they leave behind pollen. The flowers help these animals and the animals help the flowers. This is called a symbiotic relationship.

Chapter 3 : Plant Kingdom Worksheets - Printable Worksheets

Kingdom Plantae Unit Use this page to access enrichment websites, virtual labs, animations, and files of classroom worksheets, study guides, and project guides that can be downloaded and printed at your convenience.

Kingdom Plantae Plants are living organisms belonging to the kingdom Plantae. They include familiar organisms such as trees, herbs, bushes, grasses, vines, ferns, mosses, and green algae. The scientific study of plants, known as botany, has identified about , extant species of plants, defined as seed plants, bryophytes, ferns and fern allies. As of , some , species had been identified, of which , are flowering and 18, bryophytes see table below. Green plants, sometimes called Viridiplantae, obtain most of their energy from sunlight via a process called photosynthesis. Think for a moment about the transition that land plants underwent, from an ancestral state of growing either partially or completely submerged under water to growing on land, surrounded not by water, butâ€¦ air! It was a gamble, because it can be a tough, dry, desiccating world out there, but it paid off and plants thrive in incredibly diverse environments all over Earth. To understand the evolutionary relationships of a group of organisms, biologists construct a phylogeny. Plants are organized onto the phylogenetic tree based on similarities and differences in these data. Land plants had to undergo exciting structural and reproductive changes to adapt from an aquatic to terrestrial lifestyle. Considering their vast diversity, all land plants have at least one very important characteristic in common â€" they undergo a unique life cycle that is referred to as an Alternation of Generations. This means that the life cycle of any land plant has two distinct phases. The amount of time spent in each phase varies depending on the group to which the plant belongs. In this phase, we are referring to a plant multicellular, not just a single cell that has a single set of chromosomes haploid that produces gametes egg and sperm cells that are also haploid. Our gametes are produced through meiosis or the division of a single cell into four cells that have half the genetic information of the original cell. In this phase, we are referring to a plant multicellular, not just a single cell that has two sets of chromosomes diploid , which is the result of the fusion of two gametes sperm and egg. More specifically, the diploid sporophyte produces haploid spores. How do they do it? So the sporophyte undergoes meiosis to produce haploid spores. Vascular tissue is broken up into two types: Some have rhizoids which might look like little roots, but they serve to anchor the plant. Rhizoids are not absorptive. Without a well-defined system to transport water throughout their bodies, where would you guess that these types of plants are found? And if you had never seen a bryophyte before, but you knew it had no vascular system, would you suspect the plant to be tall or have a low stature? Bryophytes and mosses are found in moist environments, and they are typically low to the ground, because they lack stems or a vascular system to transport water. There are several key innovations that our buddies the bryophytes had to undergo to make the evolutionary leap from an aquatic to terrestrial environment. Two structural changes allowed these plants to survive in a dry, terrestrial atmosphere. First, bryophytes developed cuticles, different from the layer of skin at the base of our fingernails and toenails. A plant cuticle is a waxy layer that covers the plant that keeps water in and keeps the plant from drying out. Second, bryophytes developed stomata, which are pores in the cuticle that allow gas exchange. Sure, plants release oxygen, but they also need to take in carbon dioxide for respiration, so pores are critical for gas exchange to take place. The last key innovation for bryophytes is a reproductive adaptation. Remember, that in bryophytes the gametophyte generation is dominant. Being that this plant is a gamete producing plant, they do it with style. Bryophytes developed gametangia or specialized gamete-forming structures. There are two types: Bryophytes, for all the strides they made to adapt to living on land, have a carryover from their aquatic ancestry â€" they still need water for reproduction. Sperm released from the antheridium will swim to the archegonium to fertilize the egg. The developing zygote actually grows up out of the gametophyte into the spore-producing generation sporophyte. The diploid sporophyte is totally dependent upon the gametophyte for survival. Vascular plants have true leaves, stems, and roots. Vascular plants also have a special substance called lignin which is a compound in the cell walls of plants that gives them additional strength and stability. The seedless vascular plants include club mosses, whisk ferns, horsetails, and ferns. Some of the plants in this group still need water for fertilization. Unlike the bryophytes,

the sporophyte generation is dominant. The gamete-producing plant, or gametophyte generation is free-living but very small. This may sound simple, but the development of seeds was a major adaptation in the evolution of plants. Seeds are hearty, and most importantly, they can endure dry conditions. The adaptation of the seed meant that plants were free from their dependency on water for reproduction, and consequently they could colonize drier environments. Basically this means the production of two distinct types of spore producing structures, and therefore two distinct types of spores: The microspores develop into pollen, or the male gametophyte. The megaspore develops into the egg, or the female gametophyte. The egg and sperm fuse to form a zygote that develops into an embryo, which is protected inside several layers and wrapped in a protective coat. The whole package is the seed! We group the seed plants into two major groups: The exciting aspect of these two groups is that the sporophyte is dominant and the gametophyte is so reduced that it is dependent upon the sporophyte for survival. The sperm and egg develop within the sporophyte, and the female gametophyte is retained within the tissues of the sporophyte. There are three main types of gymnosperms: Gymnosperms all rely on wind for pollination. Wind can be a finicky thing, and not always the most reliable, especially when something as important as ensuring viable offspring fertilization and the production of seeds is at stake! Our next group really upped their pollination strategy with a couple fabulous innovations. There are two secrets to angiosperm success: Aside from attracting people floral industry rakes in billions of dollars a year! This is an advantage over gymnosperms that rely upon a gust of wind to transport their pollen! Another key innovation of angiosperms is fruit. Fruits are sweet, delicious, and hidden inside of them is all the genetic material for the next generation of plant â€” the seed! It was very clever marketing to package such precious cargo in an outer covering that is soft, fleshy, sweet, and nearly irresistible to animals. So as you can see, plants had to undergo a bunch of structural and reproductive changes to adapt from an aquatic to terrestrial lifestyle. But keep in mind the overarching trend in plant diversity â€” a shift from gametophyte dominant plants in the byrophytes, to an evolutionary intermediary step where the sporophyte dominant generation is dominant and the gameophyte generation is independent, to seeds plants where the gametophyte generation is so reduced that it is dependent upon the sporophyte for survival. Species listed under Plantae.

Chapter 4 : Plant Kingdom - Classification and Characteristics of Plants

Kingdom Plantae. Showing top 8 worksheets in the category - Kingdom Plantae. Some of the worksheets displayed are Chapter 15 plant evolution and classication work, Table 1 kingdom work, Hour six kingdoms coloring work, Lesson 2 plant classification, Activity 3 six kingdoms brochure, Its so simple kingdom monera bacteria, Kingdoms of classification, Diversity in the plant kingdom introduction.

Plant proteins, mostly globulins, have been obtained chiefly from the protein-rich seeds of cereals and legumes. Small amounts of albumins are found in seeds. The best known globulins, insoluble in water, can be extracted from seeds by treatment with 2 to 10 percentâ€¦ Definition of the kingdom The kingdom Plantae includes organisms that range in size from tiny mosses to giant trees. Despite this enormous variation, all plants are multicellular and eukaryotic i. They generally possess pigments chlorophylls a and b and carotenoids , which play a central role in converting the energy of sunlight into chemical energy by means of photosynthesis. Most plants, therefore, are independent in their nutritional needs autotrophic and store their excess food in the form of macromolecules of starch. The relatively few plants that are not autotrophic have lost pigments and are dependent on other organisms for nutrients. Although plants are nonmotile organisms, some produce motile cells gametes propelled by whiplike flagella. Plant cells are surrounded by a more or less rigid cell wall composed of the carbohydrate cellulose, and adjacent cells are interconnected by microscopic strands of cytoplasm called plasmodesmata, which traverse the cell walls. Many plants have the capacity for unlimited growth at localized regions of cell division , called meristems. Plants, unlike animals, can use inorganic forms of the element nitrogen N , such as nitrate and ammonia â€”which are made available to plants through the activities of microorganisms or through the industrial production of fertilizers â€”and the element sulfur S ; thus, they do not require an external source of protein in which nitrogen is a major constituent to survive. Cutaway drawing of a plant cell, showing the cell wall and internal organelles. Diversity Plants have evolved into many diverse forms that define and sustain ecosystems. The life histories of plants include two phases, or generations, one of which is diploid the nuclei of the cells contain two sets of chromosomes , whereas the other is haploid with one set of chromosomes. The diploid generation is known as the sporophyte , which literally means spore -producing plant. The haploid generation, called the gametophyte , produces the sex cells, or gametes. The complete life cycle of a plant thus involves an alternation of generations. The sporophyte and gametophyte generations of plants are structurally quite dissimilar. Life cycle of a typical angiospermThe angiosperm life cycle consists of a sporophyte phase and a gametophyte phase. The cells of a sporophyte body have a full complement of chromosomes i. The gametophyte arises when cells of the sporophyte, in preparation for reproduction, undergo meiotic division and produce reproductive cells that have only half the number of chromosomes i. A two-celled microgametophyte called a pollen grain germinates into a pollen tube and through division produces the haploid sperm. An eight-celled megagametophyte called the embryo sac produces the egg. Fertilization occurs with the fusion of a sperm with an egg to produce a zygote, which eventually develops into an embryo. After fertilization, the ovule develops into a seed, and the ovary develops into a fruit. The concept of what constitutes a plant has undergone significant change over time. For example, at one time the photosynthetic aquatic organisms commonly referred to as algae were considered members of the plant kingdom. The various major algal groups, such as the green algae , brown algae , and red algae , are now placed in the kingdom Protista because they lack one or more of the features that are characteristic of plants. The organisms known as fungi also were once considered to be plants because they reproduce by spores and possess a cell wall. The fungi, however, uniformly lack chlorophyll, and they are heterotrophic and chemically distinct from the plants; thus, they are placed in a separate kingdom, Fungi. No definition of the kingdom completely excludes all nonplant organisms or even includes all plants. There are plants, for example, that do not produce their food by photosynthesis but rather are parasitic on other living plants. Some animals possess plantlike characteristics, such as the lack of mobility e. Despite such differences, plants share the following features common to all living things. Their cells undergo complex metabolic reactions that result in the production of chemical energy, nutrients, and new

structural components. They respond to internal and external stimuli in a self-preserving manner. They reproduce by passing their genetic information to descendants that resemble them. They have evolved over geological time scales hundreds of millions of years by the process of natural selection into a wide array of forms and life-history strategies. The earliest plants undoubtedly evolved from an aquatic green algal ancestor as evidenced by similarities in pigmentation, cell-wall chemistry, biochemistry, and method of cell division , and different plant groups have become adapted to terrestrial life to varying degrees. Land plants face severe environmental threats or difficulties, such as desiccation, drastic changes in temperature , support, nutrient availability to each of the cells of the plant, regulation of gas exchange between the plant and the atmosphere, and successful reproduction. Thus, many adaptations to land existence have evolved in the plant kingdom and are reflected among the different major plant groups. An example is the development of a waxy covering the cuticle that covers the plant body, preventing excess water loss. Specialized tissues and cells vascular tissue enabled early land plants to absorb and transport water and nutrients to distant parts of the body more effectively and, eventually, to develop a more complex body composed of organs called stems , leaves, and roots. The evolution and incorporation of the substance lignin into the cell walls of plants provided strength and support. Significant events in plant evolution. AdaptationsPlants, ranging from the simple liverwort a bryophyte to the flowering plants angiosperms , have evolved structures enabling them to colonize the land of almost any habitat. Nonvascular plants Definition of the category Informally known as bryophytes , nonvascular plants lack specialized vascular tissue xylem and phloem for internal water and food conduction and support. They also do not possess true roots , stems , or leaves. Some larger mosses , however, contain a central core of elongated thick-walled cells called hydroids that are involved in water conduction and that have been compared to the xylem elements of other plants. Bryophytes are second in diversity only to the flowering plants angiosperms and are generally regarded as composed of three divisions: Bryophtya the mosses , Marchantiophyta the liverworts , and Anthocerotophyta the hornworts. Red carpet moss Bryoerythrophyllum columbianum. BryophytesBryophytes, such as mosses and liverworts, are the most primitive plants. Because bryophytes generally lack conducting cells and a well-developed cuticle that would limit dehydration , they depend on their immediate surroundings for an adequate supply of moisture. As a result, most bryophytes live in moist or wet shady locations, growing on rocks, trees, and soil. Some, however, have become adapted to totally aquatic habitats; others have become adapted to alternately wet and dry environments by growing during wet periods and becoming dormant during dry intervals. Although bryophytes are widely distributed, occurring in practically all parts of the world, none are found in salt water. Ecologically, some mosses are considered pioneer plants because they can invade bare areas. Bryophytes are typically land plants but seldom attain a height of more than a few centimetres. They possess the photosynthetic pigment chlorophyll both a and b forms and carotenoids in cell organelles called chloroplasts. The life histories of these plants show a well-defined alternation of generations , with the independent and free-living gametophyte as the dominant photosynthetic phase in the life cycle. This is in contrast to the vascular plants , in which the dominant photosynthetic phase is the sporophyte. The sporophyte generation develops from, and is almost entirely parasitic on, the gametophyte. The gametophyte produces multicellular sex organs gametangia. Female gametangia are called archegonia ; male gametangia, antheridia. At maturity, archegonia each contain one egg , and antheridia produce many sperm cells. Because the egg is retained and fertilized within the archegonium, the early stages of the developing sporophyte are protected and nourished by the gametophytic tissue. The young undifferentiated sporophyte is called an embryo. Although bryophytes have become adapted to life on land, an apparent vestige of their aquatic ancestry is that the motile flagellated sperm depend on water to allow gamete transport and fertilization. Bryophytes share some traits with green algae, such as motile sperm, similar photosynthetic pigments, and the general absence of vascular tissue. However, bryophytes have multicellular reproductive structures, whereas those of green algae are unicellular, and bryophytes are mostly terrestrial and have complex plant bodies, whereas the green algae are primarily aquatic and have less-complex forms. Representative members Division Bryophyta Moss is a term erroneously applied to many different plants Spanish moss , a flowering plant; Irish moss , a red alga; pond moss, filamentous algae; and reindeer moss , a lichen. True mosses are classified as the division Bryophyta. Peat moss Sphagnum

flexuosum K. Multicellular rhizoids anchor the gametophyte to the substrate. The sporophyte plant develops from the tip of the fertile leafy shoot. After repeated cell divisions, the young sporophyte embryo transforms into a mature sporophyte consisting of foot, elongate seta, and capsule. The capsule is often covered by a calyptra, which is the enlarged remains of the archegonium. The capsule is capped by an operculum lid , which falls off, exposing a ring of teeth the peristome that regulates the dispersal of spores. Division Marchantiophyta Liverworts , the second major division of nonvascular plants, are found in the same types of habitat as mosses, and species of the two classes are often intermingled on the same site. There are two types of liverworts also called hepatics based on reproductive features and thallus structure. Thalloid thallose liverworts have a ribbonlike, or strap-shaped, body that grows flat on the ground. They have a high degree of internal structural differentiation into photosynthetic and storage zones. Liverwort gametophytes have unicellular rhizoids. Liverworts have an alternation of generations similar to that of mosses, and, as with mosses, the gametophyte generation is dominant. The sporophytes, however, are not microscopic and are often borne on specialized structures. They sometimes resemble small umbrellas and are called antheridiophores and archegoniophores. Division Anthocerotophyta The third division of bryophytes comprises the hornworts , a minor group numbering fewer than species. The gametophyte is a small ribbonlike thallus that resembles a thallose liverwort. The name hornwort is derived from the unique slender, upright sporophytes, which are about 3â€”4 cm 1. Vascular plants Definition of the category Vascular plants tracheophytes differ from the nonvascular bryophytes in that they possess specialized supporting and water-conducting tissue, called xylem , and food-conducting tissue, called phloem. The xylem is composed of nonliving cells tracheids and vessel elements that are stiffened by the presence of lignin , a hardening substance that reinforces the cellulose cell wall. The living sieve elements that comprise the phloem are not lignified. Xylem and phloem are collectively called vascular tissue and form a central column stele through the plant axis. The ferns , gymnosperms , and flowering plants are all vascular plants. Because they possess vascular tissues, these plants have true stems, leaves, and roots. Before the development of vascular tissues, the only plants of considerable size existed in aquatic environments where support and water conduction were not necessary. A second major difference between the vascular plants and bryophytes is that the larger, more conspicuous generation among vascular plants is the sporophytic phase of the life cycle. Tree fern Cyathea medullaris.

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Chapter 5 : Natural Perspective: Plant Kingdom

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Most plants are multi-cellular, meaning that they consist of many cells. Different types of plants include trees, grass, flowers, and some types of algae. Plants use the light from the Sun to produce their own food. This allows them to grow almost anywhere, as long as there is enough water. Since animals are not able to make their own food, they must eat plants to give them energy. Therefore, the entire animal kingdom depends on the plant kingdom. The plant kingdom plantar kingdom is made up of the plants you see everyday. Plants within the Plant Kingdom are multicellular photoautotrophs. Photoautotrophs use photosynthesis to convert sunlight and carbon dioxide into starches for energy. Distinct Features of Plants In order to be a plant, an organism has to have three defining features. The first feature is that the cells that make a the organism must have a cell wall. The only other kingdom that has organisms with cell walls is the the Fungi Kingdom. For instance, algae has no cell wall, thus it is not a plant. Secondly, a plant must have a waxy layer on the outside skin. This waxy outer layer is known as the cuticle. The cuticle is what causes water to ball up and roll off of the plant. The purpose of this waxy outer-layer is to prevent the plant from losing too much moisture. Next time you touch a leaf, feel the texture. Does it feel waxy? Thirdly, plants must make their own food or energy. For this reason, plants are referred to as photoautotrophs. Plants contain a pigment called chlorophyll that helps with absorbing sunlight. They get their green color from the chlorophyll which is found inside of their cells. Plants use chlorophyll to collect energy from the light of the Sun. They then use this energy to create food. In this process, they create the food we eat and the oxygen we need to breathe. Plants grow all over the Earth, even in ponds like these water lilies. Types of Plants in Plant Kingdom Plants, like other organisms, have evolved over time. The first adaptation plants developed was a vascular system. This system allows water and sugar to move throughout the plant. Some of the first plants with vascular systems were ferns. Plants that exist with out a vascular system are bryophytes. Mosses, liverworts, and hornworts are all bryophytes. The next two adaptations plants developed were seeds and pollen. There are two types of plants with these adaptations. They are either gymnosperms or angiosperms. Gymnosperm plants are cone-bearing, where as angiosperms plants are flower-bearing. Moss that grows on trees or in ponds are also in the plant kingdom. How Plants Contribute to Our Life Other than providing us with a constant supply of oxygen and being a huge part of our diets, plants serve multiple purposes. Our environment benefits from them in more than one way. Plants reduce the level of pollutants in our air, but they also help on a much deeper level literally. The roots of plants help prevent mudslides when ground soil starts to loosen. Plants are also used for medical purposes as well, like aloe vera. Have you ever had a painful sunburn and rubbed some cool green goop onto it. The goop is aloe vera and comes from an aloe vera plant. Many of the medicinal properties are found in the oils of the plant. Plants in the plant kingdom are an important part of the human diet. They give us energy for us to live.

Chapter 6 : Classification | USDA PLANTS

Plantae is the plant kingdom which includes all plants on the earth. They are multicellular eukaryotes. Typically, they consist of a rigid structure that surrounds the cell membrane called the cell wall.

Please update your bookmarks! The Plant Kingdom Plantae Last modified: With the help of protists and fungi , plants provide the oxygen we breathe and the food that sustains us -- either directly or indirectly, by feeding other animals. Plants provide shade over our heads and cool carpets under our feet while surrounding us with beautiful colors and marking the change of seasons. Prominent plants give us a handle on ecological communities. Descriptions such as "Redwood-Tanoak Forest" or "Oak Grassland" indicate not only the plants we may find there but the animals, fungi, and climate as well. Classification of the plant kingdom can be especially confusing to the amateur naturalist. For example, according to modern botany: A palm tree has more in common with a blade of grass than with other trees. A strawberry plant is more closely related to an apple or apricot tree than to a clover or geranium. A Ginko Maidenhair tree is so different from other plants that it is in a phylum by itself. But if you have to group it with other plants, it belongs with conifers such as Pine trees. At least four classification systems are in common use: Plants are classified into 12 phyla or divisions based largely on reproductive characteristics; they are classified by tissue structure into non-vascular mosses and vascular plants all others ; by "seed" structure into those that reproduce through naked seeds, covered seeds, or spores; or by stature divided into mosses, ferns, shrubs and vines, trees, and herbs. All of these higher-level groupings are decidedly lopsided: The categories listed below provide slightly better balance: Mosses and Allies Bryophyta and allies Mosses are non-vascular plants -- they cannot transport fluids through their bodies. Instead, they must rely on surrounding moisture to do this job for them. Though small in stature, mosses are very important members of our ecosystem. They lay the foundations for other plant growth, prevent erosion, and contribute to the lush green appearance of many forested areas. The 24, bryophyte species, sometimes grouped into a single phylum are now grouped in three phyla: They reproduce by spores, never have flowers, and can be found growing on the ground, on rocks, and on other plants. Ferns and Allies Pteridophyta and allies Ferns and allies have a vascular system to transport fluids through their bodies but like the mosses, they reproduce from spores rather than seeds. Three other phyla are included as fern allies: The seeds, however, are "naked" Greek: Usually, the seed is produced inside a cone-like structure such as a pine cone hence the name "conifer. Conifers are fairly easy to identify: In addition to the aforementioned cones, these trees and shrubs typically have needle-like, scale-like or awl-like leaves. And they never have flowers. Approximately species are counted as conifers including the pines, firs, spruces, cedars, junipers, and yew. Conifer allies include three small phyla containing fewer than species all together: Ginko Ginkophyta with a single species: Flowering Dicot Plants Angiospermophyta, Class Dicotyledoneae Angiosperms add the final improvement to plant reproduction: After it is fertilized, the flower falls away and the ovary swells to become a fruit. Angiosperms in the class Dicotyledoneae grow two seed-leaves cotyledons. In addition, foliage leaves typically have a single, branching, main vein originating at the base of the leaf blade, or three or more main veins that diverge from the base. The vast majority of plants are Dicots. Most trees, shrubs, vines, and flowers belong to this group of around , species. Most fruits, vegetables and legumes come from this class. The main veins of their foliage leaves are usually unbranched and nearly parallel to each other. Around 30, plants are classified as monocots including many of the prettiest members of kingdom Plantae: The grasses which carpet our lawns and meadows are also monocots. Monocots provide us with our primary sources of nutrition, supplying us and the animals we eat with grains such as wheat, oats, and corn, as well as fruits such as dates and bananas. Annotated Bibliography Kozloff, Eugene N. The authors provide comprehensive keys organized both by structural and botanical classification. Discussion of individual species, however, is limited to short essays on each family. Names, however, are constantly changing in the field of Taxonomy, and no doubt many of these names are disputed or have changed since Margulis, Lynn, Diversity of Life: Margulis strikes an excellent balance between detail and brevity in this fact-filled book. A Catalog of Living Things illustrates the phyla as well as many classes and families within the five kingdoms.

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Chapter 7 : Plants Kingdom Worksheet - Download FREE Word Search Puzzle for Science -

Taking a look at what moss and a fir tree has in common, this quiz and corresponding worksheet will help you gauge your knowledge of the characteristics of the Kingdom Plantae.

Angiosperms Thallophyta All the plants that lack a well-differentiated body structure belong to the subgroup Thallophyta. Thallophytes are commonly known as algae. The majority of them are aquatic. Some examples are Spirogyra, Chara, Ulothrix, etc. Thallophytes Bryophyta Bryophytes Bryophytes have differentiated plant body like stem, leaf structures. But they lack a vascular system for the transportation of substances across the plant body. Bryophytes are found in both land and aquatic habitats, hence are known as amphibians of the plant kingdom. Mosses and Marchantia belong to this subgroup. Pteridophyta Pteridophytes have well-differentiated structures such as stem, root, leaves as well as a vascular system. Ferns, horsetails, Marsilea are some common examples of Pteridophytes. A Gymnosperm Gymnosperms are plants that have well-differentiated plant body, vascular system and they bear seeds. The term is derived from Greek words, gymno: The seeds of gymnosperms are naked which means they are not enclosed within a fruit. The perennial, evergreen woody trees belong to this group. Pines, deodar, redwood, etc. Angiosperms Mango Tree â€" Angiosperms Angiosperms are also seed-bearing plants with well-differentiated plant body. The word is derived from Greek words: Unlike gymnosperms, seeds of angiosperms are enclosed inside the fruits. Angiosperms are commonly known as flowering plants. Examples include the Mango tree, pomegranate plant, etc. Seeds germinate from embryonic leaves called cotyledons. Depending on the number of cotyledons present in seeds, angiosperms are divided into two: Cryptogams are plants that do not have well-developed or conspicuous reproductive organs. Reproduction in all the three groups occurs through spore formation. Gymnosperms and Angiosperms belong to the group phanerogams.

Chapter 8 : Kingdom Plantae - Windows to the Universe

In this plant kingdom worksheet, learners will review the characteristics of the 12 divisions of the plant kingdom, comparing and contrasting their structures and life cycles. This worksheet has 17 matching, 5 short answer, and 5 fill in.

Chapter 9 : Plantae - Untamed Science

Interactive Science Activities These 11 science activities help students understand roots and stems, photosynthesis, gymnosperms, angiosperms, plants with seeds, plants without seeds, plant cells, plant adaptations, and more.