

Chapter 8 Introduction To Plants

Why do I have to learn about plants? Plants are stupid!



What a baby! Nice hair by the way!

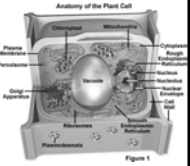
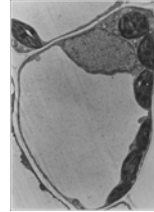
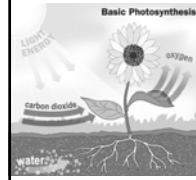
Some day you won't think that, Robert. Some day plants will seem very important. My psychic told me.

Section 1: The Plant Kingdom

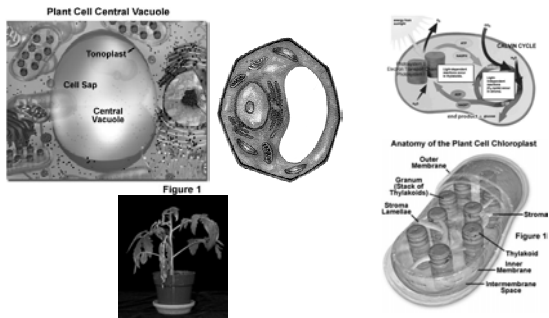
What is a Plant?

-are autotrophs by photosynthesis – use carbon dioxide, water, and sunlight to create more plant and food

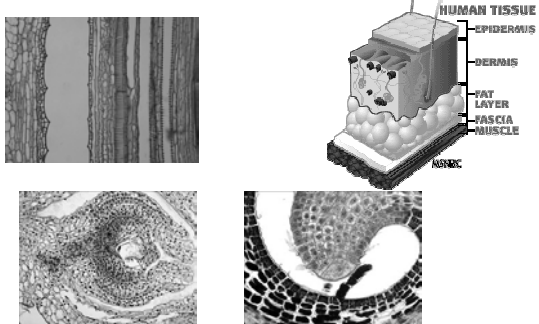
-are eukarotes that contain many cells – unique eukarote because cells are surrounded by a ridged cell wall made up of cellulose



-contain chloroplasts where the food is made
 -contain a vacuole where water, waste and food is stored (expands and shrinks like a balloon) – results in wilting and vigor



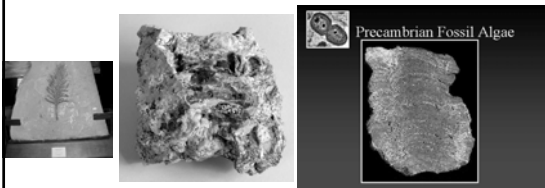
-plants are multicellular and made of different tissues – each tissue has a specific function (like animal tissue)



Origin of Plants

-earliest plant fossil is about 400 million years old and resembles modern day algae

-by studying chlorophyll (green stuff in the chloroplast) scientists infer that today's green plants evolved from ancient green algae (a protist)



Living on Land

-need to obtain water from their environment depending on where they are found – can be in soil, on living surfaces, or in water

-need to conserve water from being evaporated – water will move from areas of high concentration to low – one adaptation is a waxy waterproof layer called the cuticle that covers plants – others take in carbon dioxide and release oxygen at night when they will lose less water



-to transport water, food, and minerals through vascular tissue = tubelike structures – these are taller plants – these vascular tissues also give support

Play the two Mpegs about plant growth and water movement.

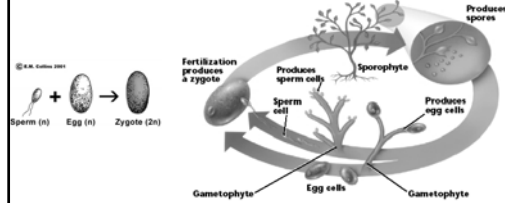


-plants undergo sexual reproduction – fertilization occurs when the sperm unites with an egg cell to form a zygote

-2 stages in life cycle

-SPOROPHYTE = plants produce spores that can grow into new organisms

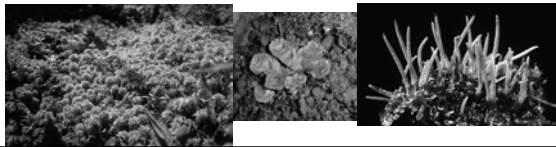
-GAMETOPHYTE = plant produces both egg and sperm



Section 2: Mosses, Liverworts, and Hornworts

Characteristics of Nonvascular Plants

-ex. = peat moss, liverworts, and hornworts – all are low growing plants that lack vascular tissue (tubes that transport water) – instead these plants pass materials from one cell to another = materials can not move far or quickly – only support comes from cell walls – grow close to the ground – lack roots but absorb water directly from their surroundings – usually live where water is abundant – also need water to reproduce (sperm and egg must travel through water)



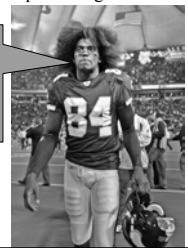
Mosses

-rootlike structures called rhizoids (anchor and absorb water from soil) – capsule contains the spores

-Known as pioneer plants because after forest fire or volcano they are one of the first organisms to grow – will trap wind-blown soil – overtime enough soil builds up to allow other plants to grow



I'm all about Moss. That is why the Raiders can't win.

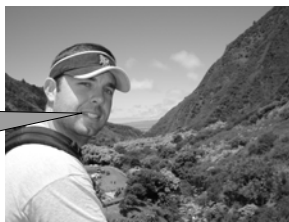


Liverworts and Hornworts

-called “liver” because same shape as a human liver and “wort” is an english word for plant – liverworts grow flat along the ground

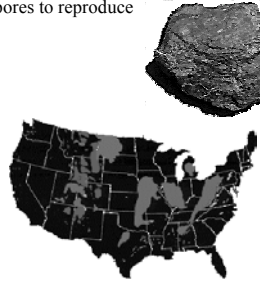
-Hornworts look a lot like liverworts but have hornlike structures growing out of the gametophyte – these horns are the sporophytes – grow in moist soil mixed in with grass plants

It's time for another Mpeg. This one is about moss, liverworts, and hornworts. Yeah!



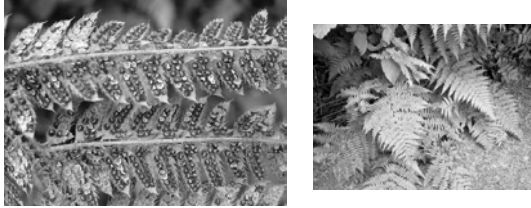
Section 3: Ferns and Their Relatives

-during the time of the dinosaurs ferns were as tall as trees – part of what make up coal deposits – these are the relatives of modern day ferns, club mosses, and horsetails – have vascular tissue and use spores to reproduce



-Vascular plants were better suited for earth because they can transport water and, food, minerals over longer distances and strengthens plants' bodies –

-Still need moisture for reproduction because they release spores which grow into gametophytes – gametophytes produce sperm and eggs and need enough water to make fertilization possible

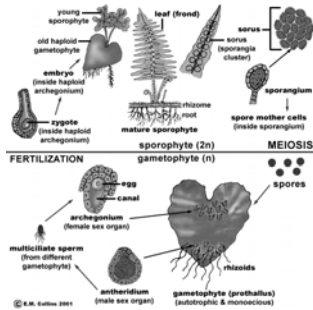


Ferns

- first ferns on earth 400,000 years ago – vascular – have stems, roots, and leaves - the stems of most are underground - leaves grow upward from the top side of the stem and roots grow down – leaves are called fronds – tops of leaves are covered by cuticle to stop from losing moisture – in many types of ferns leaves start coiled – called fiddleheads – as mature they uncurl



- On underside of frond spores develop in spore cases – when spores are released wind and water will carry away – if lands in moist, shaded soil it will develop into a gametophyte



- Ferns are popular houseplants - used to help other plants grow (orchids) – some are edible – some are poisonous -



Club Mosses and Horsetails

Club mosses - seedless – small – have vascular tissue (unlike moss) – one species sometimes called “ground pine” – grows in moist woodlands or near streams

Horsetail – long, coarse needlelike branches grow in a circle around each joint – contain silica (also found in sand) – used for washing dishes in colonial times



Section 4 Feeding The World

- Earth's population is growing very fast – labs are working to make plants that are resistant to insects, disease, drought, more food per plant, grow in different environmental conditions, etc. – scientists use genetic engineering = alter the organisms genetic material to produce the qualities people find useful – scientists use GPS to fertilize and spread soil to keep proper nutrients in the soil and prevent algal blooms – hydroponics = growing plants in solutions of water and nutrients (no soil) with roots anchoring in gravel or sand – problem is this is not cost effective

