Today's Study Tip

Meet your neighbors.
Exchange contact information.
Make a study date.

Lecture 1

Chapter 1
Plants in our Lives

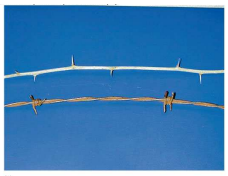
Where did you see a plant today?

- In the house
- Front yard
- Street
- College
- Food and drink
- Clothing
- Paper and pencil
- Fuel
- Bedroom door

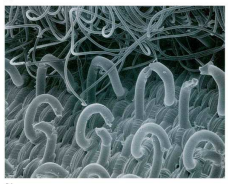
Inspiration from plants

- Two stories in the book
- Velcro from the cockleburs of a hiker
- Hedges from the osage orange

Prickles on a cocklebur



Osage orange & barbed wire



Microscopic view of Velcro

What do you want to learn about plants?

- How to take care of them?
- Which are helpful to humans?
- Which are poisonous?
- Why colors and smells?
- How do they grow?
- What are GMO plants?

New Terms

- This class is like taking a foreign language course
- You will learn many new words
- How will you learn them?

Basics of Plants

- All plants perform photosynthesis
- Solar energy converts carbon dioxide and water into sugars. Oxygen is the waste product.
- This makes them the producers of the food chain
- Eating them makes us primary consumers
- Eating meat makes us secondary consumers

Flowering Plants

- Technical term: Angiosperms
  Angio = enclosed Sperm = seed
- 250,000 species
- Cloth, hardwood, herbs and spices, drugs, perfumes, vegetable oils, gums and rubber
- Two groups of angiosperms: Monocots and Dicots
  Mono = 1 Di = 2
  Cot = Cotyledon which is the little leaf in the seed

Monocot

Dicot

Non-flowering Plants

- A hike in Santa Cruz Mountains: Mosses, ferns and redwood trees
- Term: Gymnosperms
- Gymno = naked Sperm = seed
- For humans most commonly used for construction, fuel and paper

Algae

- Found in water
- Example is the kelp or seaweed of Monterey Bay
- Extracts are used in ice cream, toothpaste and paint

Fungi

- Fungus (singular) Fungi (plural)
- Molds, mildews, yeast and mushrooms
- Edible mushrooms, beer, wine, cheese and bread
- Not considered plants: no photosynthesis
- Instead, they are decomposers

Composition of plants

- Dry and calculate the percentage of atoms in the plant
- 45% carbon (C)
- 45% oxygen (O)
- 6% hydrogen (H)
- 1.5% nitrogen (N)
- 1% potassium (K)

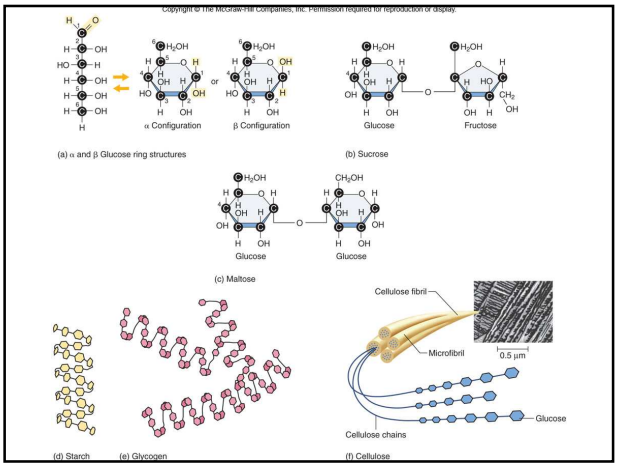
Chemistry

- The big 4 elements for life: carbon, nitrogen, hydrogen, oxygen
- Others to know: potassium, magnesium, calcium, phosphorus and sulfur
- Put them together with bonds and make molecules

Carbohydrates

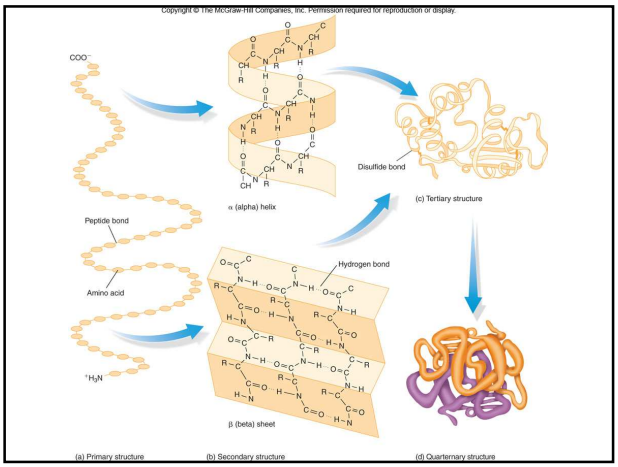
- What do we eat with carbs?
- Monosaccharide = 1 sugar
  Ex: Glucose
- Disaccharide = 2 sugar
  Ex: Maltose
- Polysaccharide = many sugar
  Ex: Starch, glycogen and cellulose

LOTS of cellulose in the plant cells



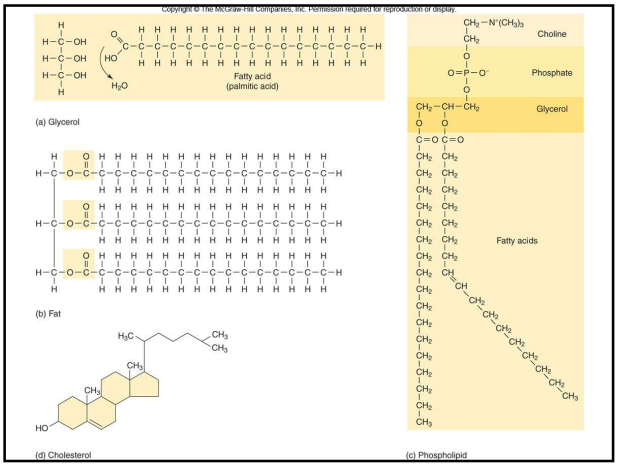
Proteins

- What do we eat with proteins?
- Amino acids connected with peptide bonds
- This makes a polypeptide chain



Lipids

- What do we eat with lipids?
- Made of glycerol and fatty acids



Nucleic acids

- These 4 nucleic acids make up DNA
- Thymine, Adenine, Cytosine and Guanine
- Together they wrap into the shape of a double helix - strong