

I. Options to study (sections of the IB test that we studied in class and need to answer on the IB test)

A. **C, D, G, H** (SL doesn't need to study H)

II. Photosynthesis

A. Xylem brings the water up the plant

1. either through evaporation
2. or through pressure

B. Roots

1. Root caps are to protect the root from becoming damaged
  - a) it's a point of protection and a point of growth
2. A Tuber is a growth in the roots (an irregular lump)

C. Xerophytes

1. **VERY IMPORTANT, LOOK UP MORE**
2. The spines are the adaptive replacement of the leaves
3. Their purpose is to reduce the surface area of the leaves

D. Active Transport

1. The materials being carried throughout the vascular system
2. ATP is the thing that regulates active transport
3. It carries minerals, water, and nitrogen based materials
4. It does Active Transport using *water*

E. Pith

1. outside use for humans -> insulation
2. It's usually in a woody plant

F. Flower

1. Anther
  - a) Position has to do with the type of plant it is
    - (1) if it's higher it's self pollinated
    - (2) if it's lower, it's naturally pollinated
2. Filament
  - a) Has to do with the development of the plant
3. Female
  - a) Fruits, nuts, and berries are produced by Female flowers
4. Cotyledons
  - a) One is Monocot
    - (1) Parallel veins
    - (2) vascular bundles arranged in stems randomly
    - (3) Flowering plants with a single cotyledon
    - (4) Floral Parts in multiples of three
    - (5)
  - b) Two is Dicot
    - (1) Net like pattern in leaves
    - (2) lateral branches
    - (3) Flowering Plant with two cotyledons

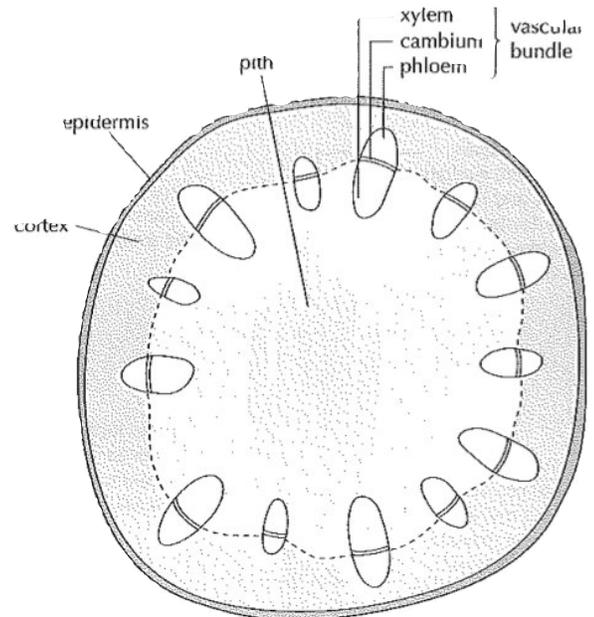
G. Stem

1. **NEED TO KNOW THE DIAGRAM OF THE STEM** (not in the green book)

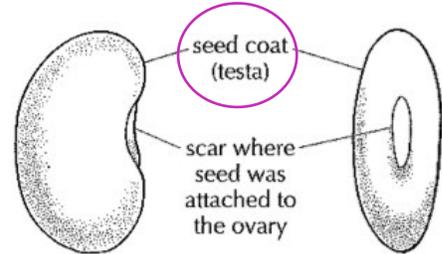
III. DNA – structure and replication

A. DNA

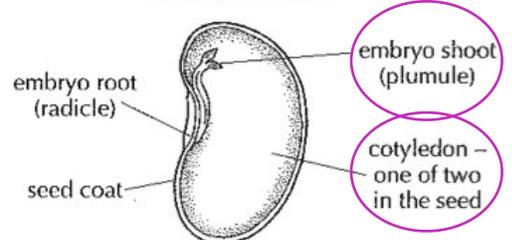
1. DNA is made up of Guanine (with) Cytosine, and Adenine (with) Thymine
2. Purines are Adenine and Guanine
  - a) Purines are double ringed
3. Pyrimidings



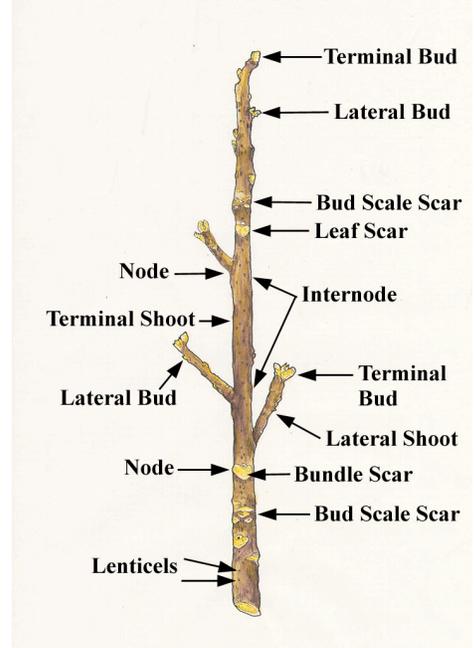
External structure



Internal structure



3 Year Old Shoot



- a) Cytosine and Thymine
      - b) They're one ring
    - 4. Transcription is from DNA to mRNA
    - 5. Translation is from mRNA to tRNA
  - B. Lock and Key Identification**
  - C. They're joined at a Hydrogen bond, at the protein bases
  - D. They're 3' - 5 and 5' - 3
    - 1. Always producing 5' - 3
  - E. In the production, Helicase is the zipper
  - F. Eukaryotic Cell
    - 1. Produce RNA from DNA, reproduce outside of the nucleus, and then create a new cell
      - a) DNA replication takes place in the Nucleus, and creates a replication of the DNA to make another cell
      - b) Transcription is the reading of RNA to produce the proteins
  - G. Prokaryotic Cell
    - 1. Naked DNA, not enclosed in a nucleus
  - H. 22-26 Amino acids to produce an infinite amount of proteins
  - I. To go from DNA to tRNA is to go from DNA, to mRNA, to tRNA
    - 1. Thymine transcribes to Uracil (it's a chemically reduced chemical) for mRNA
    - 2. tRNA uses the same chemicals as mRNA, just the opposite
  - J. Ribosomes
    - 1. synthesizes protein
- IV. Mitosis & Meiosis
  - A. Mitosis
    - 1. The duplication of a single cell into two identical daughter cells
    - 2. diploid to diploid
    - 3. Mutation takes place during Anaphase
  - B. Meiosis
    - 1. taking a diploid cell and producing four haploid cell
    - 2. Mutation takes place during Anaphase II
  - C. Mutations
    - 1. Environmental
      - a) Air pollution
      - b) drugs
    - 2. Genetic
      - a) Age of the parent
      - b) coding of the parent
      - c) accidents in cell division
    - 3. Psychological
      - a) Psychological distress during pregnancy causes a lack of dopamine
- V. Carbohydrates
  - A. Carbohydrates and Lipids store energy
    - 1. Carbohydrates are more efficient because there are more of them for quick energy, while lipids are long term storage units, and carbohydrates are daily storage units
  - B. Monosaccharides
    - 1. One sugar
      - a) Glucose
      - b) Galactose
      - c) Fructose
  - C. Disaccharides
    - 1. two sugars
      - a) Maltose
        - (1) made of Glucose and Fructose
      - b) Lactose
      - c) Sucrose

(1) Made of fructose and glucose

D. Polysaccharides

1. many sugars
  - a) Starch
  - b) Glycogen
  - c) Cellulose

E. Functions

1. Lipids and Carbohydrates are used for
  - a) heat insulation
    - (1) a layer of fat under the skin reduces heat loss
  - b) Buoyancy
    - (1) lipids are less dense than water so help animals to float

VI. Enzymes

A. Substrate

1. Increased concentration of substrate increases the Enzyme reaction rate
2. it increases progressively
3. As temperature increases, the enzyme activity increases as well

VII. Evolution

A. Adaptive Radiology

1. They avoid competition, so they diverge into different characteristics

B.