Source: [KBBiologyMasterIndex]

1 | Bio-Molecules Quiz Review

#disorganized

1.1 | Paul's Review Sheet

… is here

1.1.1 | Carbohydrates

- Set 1, carbs. See Luke De's video + [KBhBIO101Carbs]
  - *Glucose vs. fructose* — both monosacharrides, one is a 6-carbon ring and one is a 5-carbon ring
  - *Mono vs. di. vs. polysaccharide* — carbohydrates made out of a single, double, and multiple monomer (single-unit) carbohydrates
  - *Starch vs. glycogen vs. cellulose* — lots of alpha glucose in less branches, lots of alpha glucose in more branches, lots of beta glucose in organized lattice respectively.
    - Starch — plant food reserve
    - Glycogen — animal energy reserve
    - Cellulose — cell wall in plants
- Set 2, lipids. See Luke De's video + [KBhBIO101Lipids]
  - *Triglyceride vs. fatty acid vs. phosophilid* see [KBhBIO101StructuresofCarbs]
    - Glycerol => a fatty acid
    - Triglyceride => three of 'em above
    - Phospholipid => two fatty acid + phosphate head
  - *Saturated vs unsaturated fatty acids* see also [KBhBIO101StructuresofCarbs]
    - Saturated Fats => no double bonds in the carbon chain of fatty acids — think! butter
    - Unsaturated Fats => double bonds in the carbon chain of fatty acids — think! olive oil
- Identify functional groups
  - Amino acid groups — see [KBhBIO101AminoAcids]
    - carboxyl — O=C-R-OH
    - carboxylic acid — H-O-C=O (left side of backbone)
    - carbonyl — C=O — part of carboxyl
    - amide — RC(=O)NR′R″ (frequently shown in side chains of amino acids — see Amine)
    - amino/amine — H3N+ (right side of backbone)
    - hydroxyl — OH group. Need I say more?
    - ester — take a carboxylic acid and replace the hydrogen with a R-O group #ASK
    - ether — R-O-R structure. Commonly shown as as an alcohol group (H-O-C) as part of the carboxyl
- Monomers vs Polymers [KBhBIO101StructuresofCarbs]
  - Monomer — single molecule (such as a monosacchride) that could be chained together to make polymers
  - Polymers — complex molecues built from monomers
  - Building polymers — dehydration reaction — taking out water molecules
  - Destructing polymers — hydration reaction — adding in water molecules

1.1.2 | Cell Structures

- Prokaryotic vs. Eukaryotic
    - Prokaryotic cells — often in single-cellular cells, has a cell wall, and contained in capsules
    - Eukaryotic cells — in multicellular cell elements, contains a plasma membranes and nucleus
- Compare and contrast a typical animal cell with a typical plant cell. Be able to label diagrams of each. (See… problem set 1)
    - Animal Cell
        - No cell wall
        - No chloroplast
        - Has Cytoplasm
        - Has Ribosomes
        - Has Mitochondria
        - No plastids — organelle pigments
        - Has Cilla — Hair-like items on the outer surface
    - Plant Cell
        - Has cell wall
        - Has chloroplast — photosynthesis
        - Has cytoplasm
        - Has Ribosomes
        - Has Mitochondria
        - Has plastics — organelle pigments
        - Mostly has no Cilla
- Endosymbiotic theory
    - Endosymbiotic theory states that organelles within our current eukaryotic cells — the mitochondria and chloroplasts — are originally prokaryotic cells in their own right. This is because they divide independently through binary fission, and also contains circular DNA that is independent of the main cell itself.
- Organizing organelles based on membranes #ASK
    - Membranous organelles — possess own plasma => regulates own macromolecure consumption, hormones, etc. Perhaps original prokarotic cells
        - Endoplasmic reticulum => forms the network of transferring proteins and other elements
        - Golgi body/Gioli apparatus => packs, sorts, and modifies proteins and other elements throughout the cell
    - Non-membranous organelles — does not posess own plasma => mostly part of the cytoskeleton of a cell
        - Ribosomes => protein synthesizer in the cell
        - Centrosome => forms flangella, cilla, and handles cells divisions
        - Lysomoes => digesting large nutrients and changing them to what cells could process and work on energy metabolism
        - Mitochrondria => store ATP and extract energy from ATP
        - Vacuoles => storing water, nutrients, waste
        - Plastids => creates colours displayed in the chromoplasts
- Cell Components
- chloroplast and mitochondria cell wall and plasma membrane rough endoplasmic reticulum (ER) and smooth ER cytosol, cytoplasm and cytoskeleton nucleus and nucleolus lysosomes and food vacuoles cytoskeleton and microtubules flagella and cilia

1.2 | **Helpful review items**

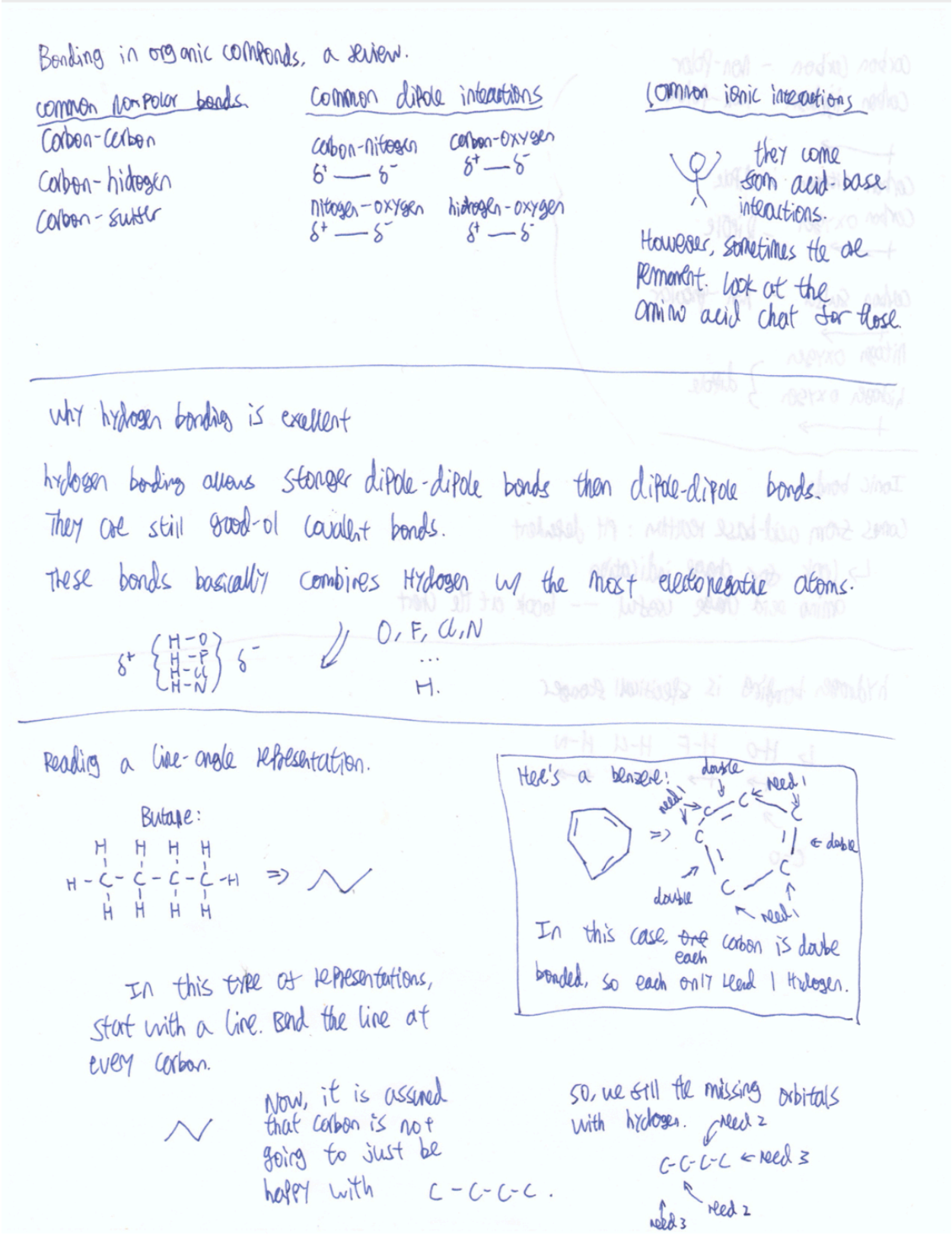

Figure 1: Screen Shot 2020-10-09 at 11.58.55 AM.png