MST AP Biology: Chemistry of Life

Chemistry of Life Project



The Chemistry of Life Unit focuses on the shape/charge of molecules and how specific molecular structures influence function (since we all know *structure* determines *function*). Use Chapter 2 and 4 in your textbook, Topic 1 in your Holtzclaw book, the internet, and your guided reading questions to help you with the following technical concepts. This project will be due to Google Classroom **Tuesday**, **September 3rd by 11:00 PM** and you will present this project to your team in class on **Wednesday**, **September 4th** (our first full day of school). It should take you 4-6 minutes to present this out loud to your teammates. A rubric will be available to you via Google Classroom over the summer.

For this project, you will do the following:

- Choose a medication, drug, or hormone that is interesting to you and show a visual representation of its molecular structure.
- Identify every covalent bond of the molecule as being either polar or nonpolar. (To do this, you must remember the difference between polar and nonpolar bonds. You may need to use an electronegativity table to help you identify the different bonds. If a covalent bond is polar, add in the partial charge signs for the element.)
 - Identify the names of each functional group in the molecule (Chapter 4 will help here).
- Choose 3 elements and do the following with them: list the element's number of protons, neutrons, and electrons; sketch a model of the element and the location of its protons, neutrons, and electrons (put the electrons in energy shells).
- Identify the specific type of protein receptor this medication/drug/hormone binds to and where this protein receptor can be located. Be as specific as possible with the shape/charge of the protein receptor and how it matches up to the shape/charge of your medication/drug/hormone.
- Explain (be specific; this is by far the most important part of this project) the mechanism that occurs once this medication/drug/hormone attaches to the proper protein receptor and the physiological response.
 - Explain what would happen to the physiological response if the shape/charge of the medication/drug/hormone OR the protein receptor got changed.
- Answer the following question to conclude your presentation: How does the structure of your molecule determine its function?!