Protein Structure Worksheet

Warm-Up Questions:

Read the Khan Academy article on <u>Introduction to Proteins and Amino Acids</u> and answer the following questions:

Name: _ Class:

1) What are the 4 main categories of amino acids according to the article?

2) Define what protein denaturation is.

Question #1:

Build a peptide out of the letters in your name and take a screenshot of your peptide. Note that the letters B, J, O, U, X, and Z are not valid amino acids in this activity. Feel free to use any other letter to replace them.



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Question #2:

In the alpha helix that you are visualizing, how many hydrogen bonds can you see? (Note that hydrogen bonds are represented by dotted yellow lines). What type of change do you think the hydrogen bonds are implementing on the structure? Are the hydrogen bonds there for the stabilization of the peptide?

Question #3:

Electrostatic surface potentials are colored red for negatively charged residues and blue for positively charged residues, while white/gray represents neutral residues. Look at the active site region where the ligand is bound. Can you see the differences in the binding sites? Is it easier to understand why not every molecule can fit into a certain receptor? And why is shape important?



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Question #4:

Using the Sequence Aligner, list the first 5 amino acid residues in chain A (3JQO_A). Zoom into these residues in your workspace and take a screenshot.

Question #5:

Find an alpha helix and a beta sheet in this protein complex and take a screenshot of each.



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