

## WGU C785 Final Exam

What is the basic structure of an amino acid? What do they look like?

(ANS- amino group (NH<sub>2</sub> or NH<sub>3</sub>), carboxyl group (COO or COOH), alpha carbon (C), and variable group)

How do you identify the 3 different types of side chains: non-polar/hydrophobic, polar, and charged?

(ANS- Non-polar/hydrophobic - end with CH or "can't have" water. Polar - end with OH, SH, or NH. Charged - end with a charge)

what kinds of bonds do each of the 3 different types of side chains make?

(ANS- ionic, hydrophobic/non-polar, charged)

What are the 4 levels of protein structure?

(ANS- Primary - linear structure, Secondary - Folded into helix or pleated sheet caused by hydrogen bonding, tertiary - 3D structure caused by side chain interactions, quaternary - 1+ amino acid chains combine = multiple subunits MUST have 1+ subunit)

What environmental change breaks each type of bond?

(ANS- hydrophobic - temperature change, ionic - salt or decreased pH, hydrogen - temperature, change in pH, disulfide - reducing agents)

what type of amino acid side chain leads to protein aggregation?

(ANS- hydrophobic bonds)

how do environmental changes affect protein folding?

(ANS- Extreme temp can cause hydrogen bonds to break apart = malformation of protein folding)

how do mutations affect protein structure?

(ANS- Can cause structure to change. Protein loses form = loses function. May form a different protein.)

What is an electron?

(ANS- Negatively charged atom on outer ring for bonding)

What is energy:

(ANS- Power derived fro chemical interaction)

what are covalent bonds?

(ANS- chemical bond, atoms share 1+ valence electrons)

what is an ionic bond?

(ANS- bond between positive and negative)

what is a hydrogen bond?

(ANS- weak bond between positive and negative)

with an amino?

(ANS- piece of amino acid, NH<sub>2</sub> or NH<sub>3</sub>)

what is a carboxyl?

(ANS- piece of amino acid, COO or COOH)

What is hydrophobic?

(ANS- Doesn't like water, end with CH)

what is hydrophilic?

(ANS- Water Loving, end with OH, NH, or SH)

what is disulfide bond?

(ANS- strongest bond between reduction agents, formed between SH's.)

what are zwitterions?

(ANS- amino with positive and negative charges = overall charge of zero)

what is a polypeptide

(ANS- polymer of amino acids)

What is dehydration synthesis?

(ANS- Process of forming peptide bonds)

what is hydrolysis?

(ANS- adding water to destroy bonds)

what is an alpha helix?

(ANS- twisted secondary structure, formed by hydrogen bonds)

what is a beta sheet?

(ANS- folded second structure shape, formed by hydrogen bonds)

what is denaturation?

(ANS- loss of shape due to interruption of chemical bonds; occurs via extreme salt, temp, pH)

what is aggregation?

(ANS- clumping of inner or outer cellular proteins caused by misfolded proteins leading to diseases such as Alzheimers, ALS, Parkinson's)

how do enzymes catalyze reactions?

(ANS- bind with substrates to decrease activation energy required and decrease reaction rate)

how do enzymes affect reaction rate and activation energy?

(ANS- decrease activation energy and decrease reaction rate)

what are the 4 steps of the enzymatic cycle?

(ANS- enzyme recognizes substrate, substrate attracts the enzyme; enzyme-substrate complex is formed; enzyme-product complex formed; product is released, enzyme recycled)

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