

18.38(a): List 3 amino acids you would expect to find in the part of a transmembrane protein that lies within the cell membrane

- ① leucine
- ② alanine
- ③ isoleucine

18.41: what kind of biological function would each of the following proteins perform?

- a) Human growth hormone: stimulates production of insulin, controls metabolism and growth
- b) Myosin: binds to actin; hydrolyze ATP; transduce force
- c) protease: hydrolyze peptide bonds of proteins — break long chain proteins into smaller fragments
- d) Myoglobin: serves as an intracellular storage site for oxygen

18.94: what is the difference between protein digestion and protein denaturation?

- protein denaturation is the disruption of secondary, tertiary, or quaternary structure without disrupting peptide bonds

- protein digestion is the hydrolysis of peptide bonds to form amino acids

25.37: large protein based diet; meat, cheese, fish, nuts, tofu, beans, and etc...

15.40: Diet soft drinks that are sweetened with aspartame carry a warning label for phenylketonurics. Why?

- Aspartame is a derivative of phenylketonurics. This is harmful for people with PKU. Patients with PKU cannot digest / metabolize phenylketonurics.

19.25:

- (a) oxidoreductases
- (b) dehydrogenase
- (c) Lactate OR lactic acid
- (d) pyruvate OR pyruvic acid
- (e) lactate dehydrogenase

19.36: (a) catalyzes oxidation-reduction reactions of substrate molecules → dehydrogenase

(b) catalyzes the replacement of a carboxyl group by hydrogen
→ decarboxylase

19.55: What happens to the rate of an enzymatic reaction if the amount of substrate is doubled? Why?

- An increase in substrate concentration leads to an increase in the rate of an enzyme-catalyzed reaction. Enzymes speed up the reaction. However with the substrate increasing, this reaction rate will level off because of the enzyme molecules becoming more saturated.

19.56: (a) rate of enzyme catalyzed reactions increases with temperature up to 37°C . Above this temperature, enzyme activity decreases with temperature because of enzyme denaturation
(b) lowering the pH will cause changes to the amino acid molecules. Enzyme activity is lost due to the big drop. The reaction rate decreases.
(c) Depending on the enzyme, the reaction rate can increase or decrease. Enzymes are less active in organic solvents or it can lead to an increase in activity.

19.75: what is the relationship between vitamin and enzymes?

- Enzymes are catalysts of life that increase the velocity or rate of chemical reaction without undergoing change in overall procedure.
- Vitamins are organic compounds that require in small amount in diet because their degradation is slow.
- These two work together to carry out functions optimal for growth and health of organism

19.84: what is the activation energy for a reaction? Why is activation necessary?

- all reactions need activation energy to get started
- this will allow reactants to move together and start breaking bonds and overcoming forces
- activation energy is the required amount of energy needed for a chemical reaction to get started