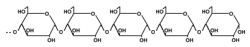
Biochemistry Study Guide KEY

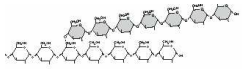
1. life depends on a series of chemical reactions
2. water is required for chemical reactions
3. synthesis; removed; forms polymers
4. decomposition; added; breaks apart polymers
5. carbohydrates; glucose (monosaccharides); starch, glycogen, cellulose
6. lipids; glycerol & fatty acids; saturated fat, unsaturated fat, phospholipid, steroid
7. protein; amino acids; polypeptide chain(s)
8. nucleic acids; nucleotides; DNA, RNA

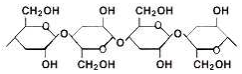
#5-8 in any order

9. glucose; immediate energy & for cell to make ATP; plant
10. starch; short-term energy storage; plant
11. glycogen; short-term energy storage; animal
12. cellulose; cell wall of plants; plant

glucose 

starch 

glycogen 

cellulose 

13.

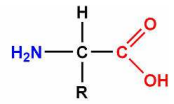
eat starch —digest→ glucose —liver→ glycogen —blood→ glucose —cells→ ATP

glucose —cells→ ATP

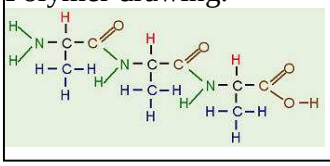
Proteins

14. polypeptide chain
15. amino acid
16. shape; amino acid
17. denature
18. organisms
    a. structures
    b. enzymes
    c. immunity
    d. chemical messengers
    e. stores nutrients in cells
19. It's important to eat a balanced diet so you get the amino acids your body doesn't make.

Monomer drawing:

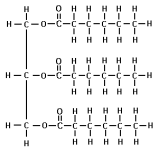


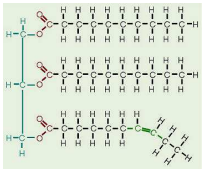
Polymer drawing:

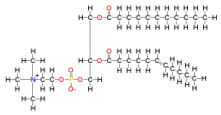


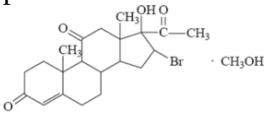
20. Lipids do not dissolve in water.
21. saturated fat; long-term energy storage; animal
22. unsaturated fat; long-term energy storage; plant
23. phospholipid; forms cell membrane; both
24. steroid; chemical signals; both

#21-24 in any order

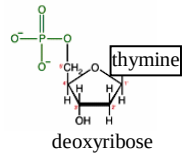
saturated fat 

unsaturated fat 

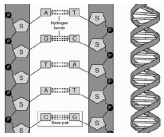
phospholipid 

steroid 

DNA monomer

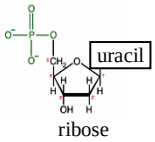


DNA polymer



25. Information flows from DNA to RNA to protein to trait.
26. DNA; instructions for traits; deoxyribose; adenine, guanine, cytosine, thymine
27. RNA; instructions for amino acid sequence of proteins; ribose; adenine, guanine, cytosine, uracil

RNA monomer



RNA polymer

28. catalyst; speeds up chemical reactions by lowering activation energy
a. substrate, b. active site, c. product
29. a. substrate(s) join(s) enzyme at the active site; b. reaction continues until substrate completely reactions; c. product(s) release(s) from enzyme
30. amount of energy needed to start a chemical reaction
31. a. heat; b. abnormal pH
32. Heat & abnormal pH denature enzymes so chemical reactions stop because the active site is changed.
33. levels of H+ ions in solutions (low pH is acidic & high pH is basic)
34. 7; living things are made of water and water's pH is 7
35. substrate(s) $\xrightarrow{\text{enzyme}}$ product(s)