**How the Body Uses Fat**

Howard Hughes Medical Institute

Access the BioInteractive Module, **How the Body Uses Fat** at: <http://www.hhmi.org/biointeractive/how-body-uses-fat> . Click on the highlighted area that says, “Start Click and Learn.” As you are reviewing the module, answer the following questions:

1. What are the 3 main sources of energy used by the body?
2. Briefly explain why glucose as an energetically important molecule.
3. Glucose is easily transported in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but is not well-suited for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the body.
4. Glycogen is also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is primarily stored in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Fat is the body’s primary source of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Describe the relationship availability of food and metabolic demand.
7. Based on your answer to the previous question (6), explain why sugar and fat are easily converted into each other.
8. During digestion, fat is first subject to mechanical digestion in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
9. In the duodenum, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the gallbladder mix with the fat droplets arriving from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. Chemical digestion of fat also begins in the duodenum when the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins to release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to convert triglcyerides into two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. From the duodenum, these components move to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where they are packaged into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and then absorbed into the bloodstream.
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, move via the bloodstream to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where they activate a second enzyme, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to fat is then either stored or burned as energy.
12. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ also plays a key role in lipid metabolism because it absorbs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
13. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ belong to a class of molecules known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which are used to transport fat.
14. Why are apolipoproteins important to regulating lipoprotein function?
15. List the 5 types of lipoproteins and identify the primary function of each.
16. Which type of lipoprotein is known as
    1. “good cholesterol”:
    2. “bad cholesterol”:
17. Is cholesterol itself good or bad? What is actually important with regard to determining if a person is healthy or not?
18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a blood protein used to transport fat from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to be used as energy, or to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to make molecules such as glucose.
19. Long-chain fatty acids are transported by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which encapsulate them due to their insolubility in blood plasma.
20. Fat that has been absorbed and stored by the body is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fat.
21. The key organ for storing fat is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the essential organ for regulating the amount of fat in circulation.
22. Briefly explain, using a diagram, why the liver is called the “nexus of nutrient pathways.”
23. Briefly explain the relationship between the liver and adipose tissue with regard to lipid metabolism. A diagram may be helpful in your explanation.
24. When and how are ketone bodies formed? What is their main role during this time?