

## Activity 49: Carbohydrate Metabolism in the Body

### *Learning Objectives*

*Distinguish glucose catabolism and glucose anabolism*

*Discern relationships between the metabolism of carbohydrates and other metabolic pathways in the body*

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**Estimated Completion Time**      30–45 Minutes

### **Instructor Information**

Provides an overview of carbohydrate metabolism.

### **ANSWERS TO QUESTIONS**

1. Carbohydrate catabolism overview (top)
2. Carbohydrate anabolism overview (bottom)
3. Glycolysis
4. Glycogen
5. All six carbons are converted to CO<sub>2</sub>.
6. Total 32 ATP
7. Galactose can be converted to glucose; fructose enters glycolysis later in the pathway.
8. An excess buildup of acetyl CoA not needed for energy production is anabolized to dietary fats (triglycerides).
9. Gluconeogenesis

10. Pyruvate, glycerol
11. Polysaccharides. One bond can be broken (one reaction) to provide glucose.
12. When glucose is synthesized from protein, amine waste is produced and must be eliminated from the body (via kidneys). When glucose is synthesized from fats, fatty acids can build up, forming ketone bodies.

#### **Activity 49: Skill Development**

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1. The excess glucose from the starch first replenishes glycogen stores, and then more excess glucose will form acetyl CoA and will ultimately be stored as triglycerides (fats).
2. The third carbon is removed as CO<sub>2</sub>.
3. NADH and FADH<sub>2</sub>
4. Glycogen. The first thing that happens is the glycogen stores (which were starved and caused the initial weight loss) get replenished.