

Microbiology Learning Objectives C5
Microbial Metabolism

1. What is metabolism? Distinguish catabolism from anabolism. How is ATP an intermediate between catabolism and anabolism? What is a metabolic pathway?
2. What is an enzyme? Chemical structure? Coenzyme?
3. Why is enzyme specificity important? Mechanism of action? Competitive and noncompetitive inhibition?
4. What is a ribozyme?
5. What is an oxidation-reduction reaction?
6. Why is glucose such an important molecule for organisms?
7. Describe the chemical reactions of glycolysis?
8. What is the function of the pentose phosphate and Entner-Doudoroff pathways?
9. What is the Krebs cycle? What are the principle products of the Krebs cycle?
10. What is the chemiosmotic model for ATP generation?
11. Compare and contrast aerobic and anaerobic respiration in terms of ATP yields.
12. List four compounds that can be made from pyruvic acid by an organism that uses fermentation.
13. How do lipids and proteins undergo catabolism? End-products?
14. What is the difference between cyclic and noncyclic photophosphorylation?
15. What is the difference between oxidative phosphorylation and photophosphorylation?
16. How does oxidation enables organisms to get energy from glucose, sulfur, or sunlight?
17. What are the four groups based according to carbon source, mechanisms of carbohydrate catabolism, and ATP generation? Which group is most important medically?
18. Define amphibolic pathways.