

- 1 **Metabolic Diversity: Catabolism of Organic Compounds**
Chapter 21
- 2 **21.1 Fermentations: Energetic and Redox Considerations**
 - catabolism of organic compounds
 - Respiration
 - electron acceptors are present to accept electrons generated from the oxidation of electron donors
 - Fermentation
 - Electron donor and acceptor are the same compound
 - Relatively little energy yield
- 3 **21.1 Fermentations: Energetic and Redox Considerations**
 - In the absence of external electron acceptors, compounds can be catabolized anaerobically by fermentation
 - ATP is usually synthesized by substrate-level phosphorylation
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- 5 **21.5 Syntrophy**
 - Syntrophy
 - two or more microbes cooperate to degrade a substance neither can degrade alone
 - Most syntrophic reactions are secondary fermentations
 - Most reactions are based on interspecies hydrogen transfer
 - H₂ production by one partner is linked to H₂ consumption by the other
- 6 **21.10 Methanogenesis**
 - Methanogenesis
 - complex series of biochemical reactions using novel coenzymes
 - autofluorescence of coenzyme F420 can be used to identify methanogens microscopically
- 7 **21.17 Hexose, Pentose, and Polysaccharide Metabolism**
 - Starch is fairly soluble and readily degraded by many fungi and bacteria employing amylases
- 8 **21.17 Hexose, Pentose, and Polysaccharide Metabolism**
 - Cellulose degradation is restricted to a few bacteria groups, *Sporocytophaga* and *Cytophaga*