CHAPTER 9
CELLULAR RESPIRATION

- Occurs in pro and eukaryotic cells
- Aerobic, requires oxygen and mitochondria/Prokaryotic cells use membrane system.
- Anaerobic requires no oxygen and cytoplasm
- Both produce ATP as energy source

Figure 9.0  Orangutans eating

Figure 9.1  Energy flow and chemical recycling in ecosystems
Figure 9.1  ATP

Figure 9.2  A review of how ATP drives cellular work

Figure 9.3  Methane combustion as an energy-yielding redox reaction
Figure 9.4 NAD$^+$ as an electron shuttle

![NAD+ diagram]

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Figure 9.5 An introduction to electron transport chains

![ETC diagram]

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Figure 9.6 An overview of cellular respiration (Layer 1)

![Cellular respiration diagram]

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Figure 9.6: An overview of cellular respiration (Layer 2)

Figure 9.6: An overview of cellular respiration (Layer 3)

Figure 9.7: Substrate-level phosphorylation
GLYCOLYSIS

- OCCURS WITH OR WITHOUT O2
- THE SPLITTING OF GLUCOSE/C6
- REQUIRES 9 /10 STEPS
- REQUIRES 2 ATP
- YIELDS 4 ATP/NET GAIN OF 2 ATP
- YIELDS PYRUVATE, A C3 MOLECULE
- SUBSTRATE PHOSPHORYLATION