Notes – Cellular Respiration

Living things *convert* food into energy in a *metabolic process* called cellular respiration

Why do living things need to perform **cell respiration**?

To convert food into usable energy = $ ATP = molecular currency of energy

How do living things perform **cell respiration**? 2 ways:

Requires oxygen?	Type of respiration	ATP Produced	Examples	Organisms
No	Anaerobic (Glycolysis)	2	Lactic acid fermentation	Animals (muscle) Bacteria
			Alcohol fermentation	Yeast, Bacteria
Yes	Aerobic	36-38	Mitochondria (Eu) Cell membrane (pro)	Most eukaryotes Some prokaryotes

Aerobic Cellular Respiration

Needs	Oxygen O_2	Glucose $C_6H_{12}O_6$	ADP + P_i
Makes	Carbon dioxide CO_2	Water H_2O	ATP

- In **eukaryotes**, **aerobic cellular respiration** mainly occurs in the mitochondria

Enzyme = speeds up reactions

Summarize the process of aerobic cellular respiration using a chemical equation.

Oxygen + Glucose + ADP + P_i —(ATP Synthase)→ Carbon dioxide + Water + ATP

$6O_2 + C_6H_{12}O_6 + 36ADP + P_i \xrightarrow{\text{ATP Synthase}} 6CO_2 + 6H_2O + 36ATP$

- **Aerobic cellular respiration** is a *complimentary* metabolic process to PHOTOSYNTHESIS
- Together, photosynthesis and respiration form the basis of the carbon cycle (energy cycle)

Type of organism	Nutrition type	Source of energy	Performs respiration for ATP?
Plant	(Photo) Autotroph Producer	Sunlight (radiant energy)	Yes!!!
Animal	Heterotroph Consumer	Food (Glucose)	Yes