Chapter 9: Cellular Respiration

Section 1: Chemical Pathways

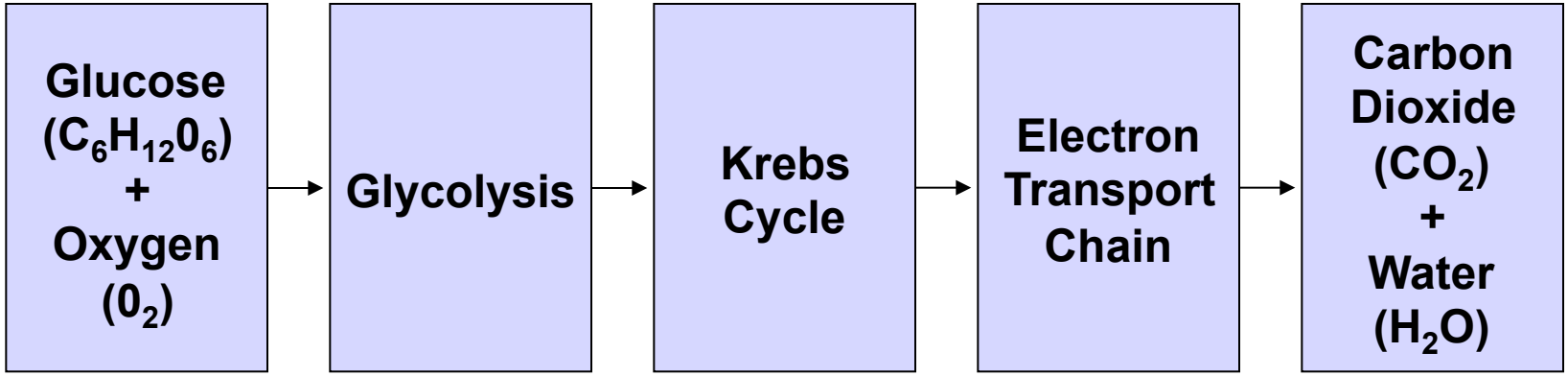
Chemical Energy and Food

- Why do we need food?
- It provides the chemical building blocks to grow and reproduce, raw materials to produce new molecules, and a source of energy.
- Define calorie.
- The amount of energy needed to raise 1 gram of water 1 degree Celsius.
- What is a Calorie (“C”)?
- A kilocalorie, or 1000 calories, used on food labels.*

- What begins the process of getting energy from stored chemical energy?
- Glycolysis.
- Define cellular respiration.
- The process that releases energy by breaking down food molecules in the presence of oxygen.
- What is the formula for cellular respiration?
- $6O_2 + C_6H_{12}O_6 \rightarrow 6CO_2 + 6H_2O + \text{energy}$
- What are the three main stages of cellular respiration?
- Glycolysis, Krebs Cycle, and the Electron Transport Chain.*

Flowchart

Cellular Respiration



Fermentation

- Define fermentation.
- Energy release from food molecules when no oxygen is present.
- What are the two main types of fermentation?
- Alcoholic fermentation and lactic acid fermentation.
- What is alcoholic fermentation?
- The production of energy with ethyl alcohol and carbon dioxide as a waste product.*

- Define lactic acid fermentation.
- Fermentation where by pyruvic acid is converted into lactic acid within cells.
- Why might your cells use lactic acid fermentation?
- During rapid exercise as the body cannot supply enough oxygen to the tissues.
- What can happen as the lactic acid is built up in your muscles?
- A painful, burning sensation.*

Energy and Exercise

- What is the source of quick energy for your body?
- Stored ATP and lactic acid fermentation.
- What rids your body of extra lactic acid?
- Lots of oxygen which is why you breath heavy after strenuous exercise.
- What is the source of long-term energy?
- Cellular respiration.*

Section 9-1 and 9-2 Review

- Describe the process of cellular respiration.
- Name the two main types of fermentation.
- Compare and contrast cellular respiration and photosynthesis.*