



Cellular Respiration

Section 8.2

Overview of Cellular Respiration

- **Main goal:** get e- from glucose and use them to make ATP
- Reminder: ATP is the main energy molecule for cells

- Overall equation:



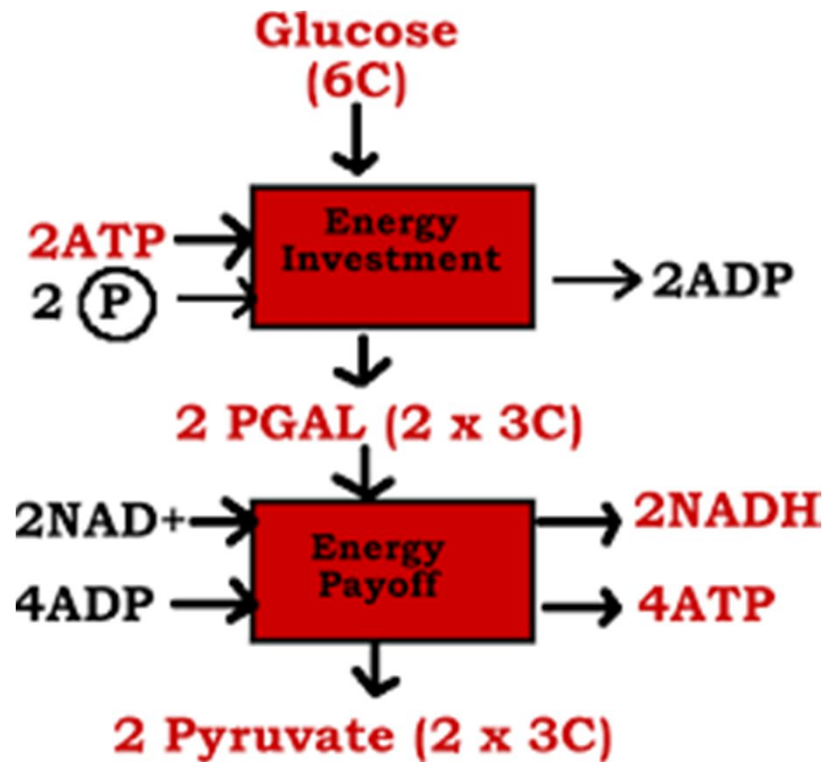
IT IS THE REVERSE OF PHOTOSYNTHESIS!

Overview of Cellular Respiration

- Occurs in two main parts:
 - Glycolysis
 - Anaerobic process – does not require oxygen
 - Aerobic respiration
 - Requires oxygen
 - Also known as Krebs cycle
- Occurs in the mitochondria (“energy powerhouse”)

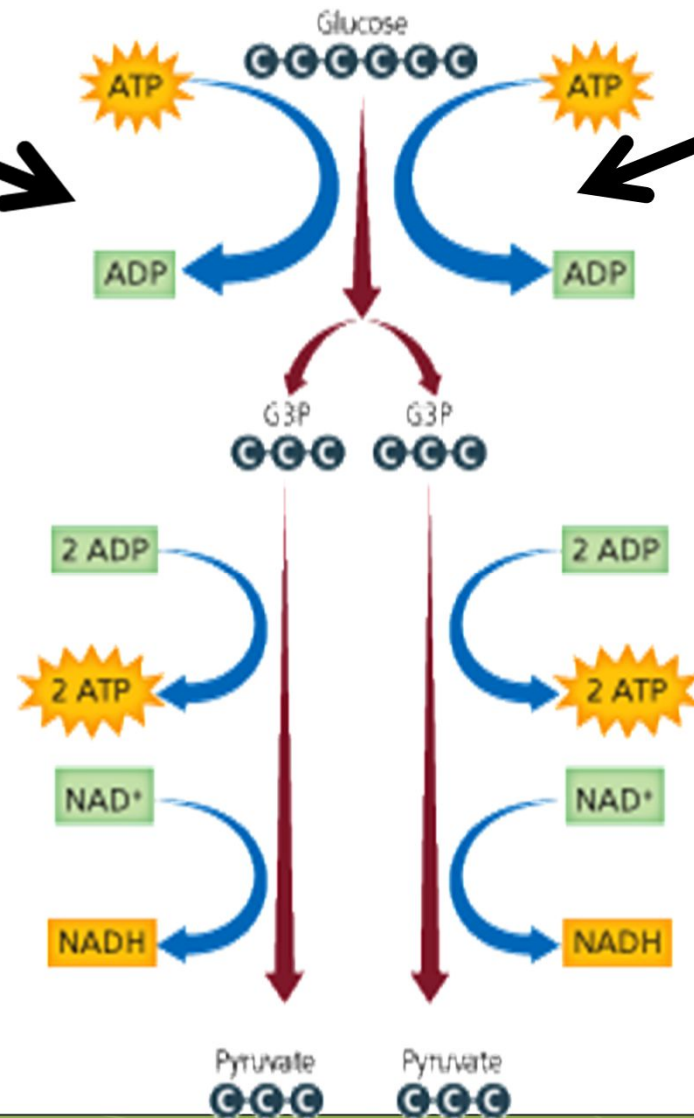
Glycolysis

- Glucose ($C_6H_{12}O_6$) is broken down through this process
- Two molecules of ATP and 2 molecules of NADH are formed for each glucose broken down
 - Remember – these are BOTH energy storage molecules



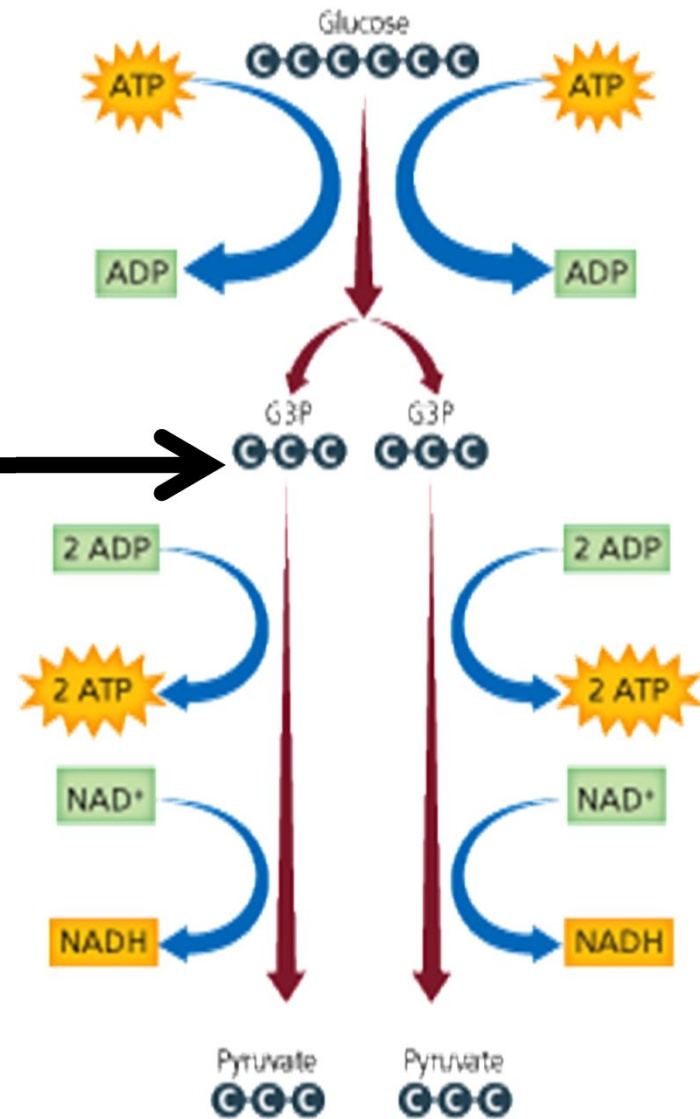
Glycolysis

- Two P groups from ATP connect to glucose
- This means a small amount of energy is required to start the process!



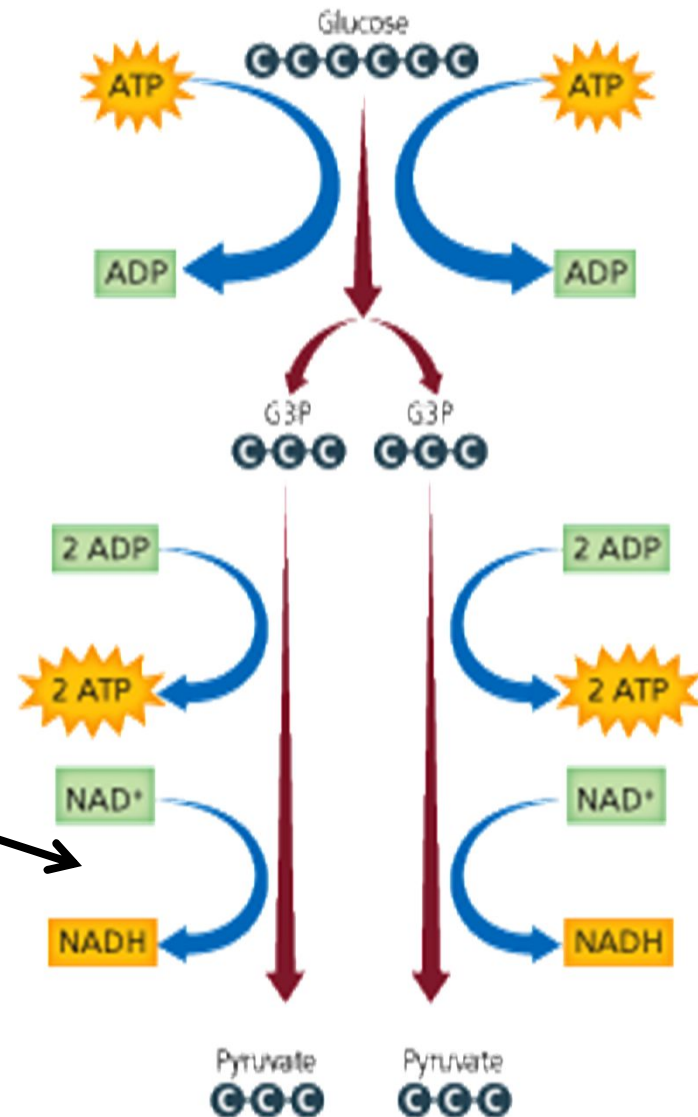
Glycolysis

- The 6-C molecule is broken down into two 3-C compounds



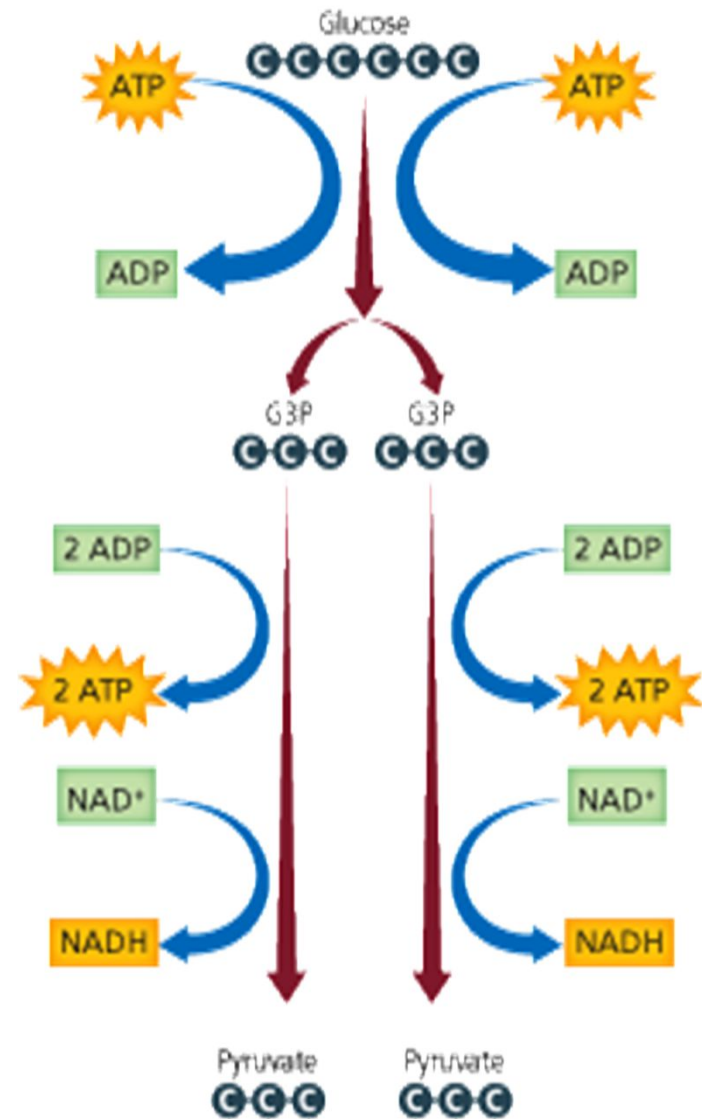
Glycolysis

- Two P groups are added to the 3-C compounds
- NADH (energy storage) is formed



Glycolysis

- The two 3-C compounds are changed into pyruvate
- Four molecules of ATP (energy storage) are made



Glycolysis

- Overall yield:
 - 2 pyruvate molecules (3-C each)
 - 2 ATP
 - Not 4! Remember that 2 ATP were used to start the reaction
 - Subtract the 2 that started the reaction from the 4 produced