## The Stages of Cellular respiration (Simplified)

#### Glycolysis

- Starts at the Cytoplasm of the cell
- Breaking down of Glucose using 2 ATP's to produce 2 Pyruvate molecules
- 4 ATP's gained through the process (2 net ATP's because 2 were used)
- 2 Electrons are produced and collected by NAD+ (Nicotinamide Adenine Dinucleotide)

#### Pyruvate Oxidation

- Starts at the Mitochondria
- Uses the Pyruvates from Glycolysis
- Oxidizes Pyruvates to produce Acetyl CoA (Pyruvate + 02 = Acetyl CoA)
- Acetyl CoA is further degraded by Pyruvate dehydrogenase complex (which is an enzyme)
- This stage makes the 3-carbon Pyruvates into 2-carbon polecies the other carbons bond with 02 to produce C02)
- Stage produces 2x 2-carbon molecules and electrons
- Electrons are collected by NAD
- ATP's may be produced at this stage depending on the cell

# Krebs



- Still within the Mitochondria
- Starts with the 2-carbon molecules form previous stage
- The 2-carbon molecules bond with oxaloacetate to produce 2 ATP's, electrons and 4 C02
- Electrons are collected by NADH AND FADH (Flavine Adenine Dinucleotide)

### Electron Transport Chain

- Happens in the outer membranes of the Mitochondria
- NADH and FADH deliver the electrons to the outer membranes
- Electrons pass through "pumps" filled with Hydrogen
- The movement of the Hydrogen atoms power production of ATP
- The final products of this stage are 34 ATP's, electrons and H20