

Fermentation & Respiration

A Computer Program

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MENUS

- **GLYCOLYSIS** (a form of anaerobic fermentation) & **ALCOHOLIC FERMENTATION** (begins with the same reactions as glycolysis)
 - Hexokinase or Glucokinase Reaction
 - Glucose Phosphate Isomerase Reaction
 - 6-Phosphofruktokinase Reaction
 - Fructose Diphosphate Aldolase Reaction
 - Triosephosphate Isomerase Reaction
 - Glyceraldehydephosphate Dehydrogenase Reaction
 - Phosphoglycerate Kinase Reaction
 - Phosphoglyceromutase Reaction
 - Enolase Reaction
 - Pyruvate Kinase Reaction
 - Selection of Next Reaction(s)
 - Final Reaction in Glycolysis
 - Lactate Dehydrogenase Reaction
 - Next Reactions in Alcoholic Fermentation
 - Pyruvate Decarboxylase Reaction
 - Alcohol Dehydrogenase Reaction
 - Preparatory Reaction for the TCA Cycle
 - Pyruvate Dehydrogenase
- **Complex Reaction**
 - **THE TRICARBOXYLIC ACID [TCA] CYCLE** (with inputs from glycolysis)
 - Citrate Synthase Reaction
 - Aconitase Reaction (in two steps, with enzyme-bound intermediate)
 - Isocitrate Dehydrogenase Reaction (in two steps, with enzyme-bound intermediate)
 - Alpha-Ketoglutarate Dehydrogenase Complex Reaction
 - Succinyl-CoA Synthetase Reaction (with Nucleoside Diphosphate Kinase side-reaction)
 - Succinate Dehydrogenase Reaction
 - Fumarase Reaction
 - Malate Dehydrogenase Reaction
 - Selection of Next Reaction(s)
 - Citrate Synthase Reaction (Another Repetition of the TCA Cycle)
 - First Reaction in Respiratory-Chain Phosphorylation
 - **RESPIRATORY-CHAIN PHOSPHORYLATION** (with inputs from glycolysis and TCA Cycle): Coupled to Mitochondrial Electron Transport
 - Net Reactants
 - 1 Glucose

- 6 Oxygen (gas)
- 36 ADP
- 36 Phosphate
- Net Products
 - 6 Carbon Dioxide
 - 42 Water
 - 36 ATP