Glycolysis

Overview

Reactions

Hexokinase
- Regulated
- Coupled Reaction

Phosphoglucoisomerase
- Readily reversible

Phosphofructokinase
- Major regulator enzyme
- Coupled reaction

Aldolase
- Energetically unfavored
- Must be pulled

Triose Phosphate Isomerase
- Readily reversible
- Perfect enzyme

Glyceraldehyde-3-P Dehydrogenase
- Only oxidation of glycolysis
- Very dependent on NAD^+

Phosphoglycerate Kinase
- Substrate level phosphorylation

Phosphoglycerate Mutase
- Rearrangement / source of some 2,3 BPG

Enolase
- Preparation for Big Bang

Pyruvate Kinase
- The Big Bang
- Third regulated enzyme of cycle
  - Allosteric and covalent modification
  - Regulation important for gluconeogenesis

Pyruvate
- Three fates
  - O2 Present - all aerobes
  - O2 Absent - bacteria / yeast
  - O2 Absent - animals

Fermentation and NAD^+ / NADH Balance
- Yeast/Bacteria
- Animals

Other Sugar Metabolism
- Galactose
- Lactose
- Fructose
  - High fructose corn syrup

Gluconeogenesis

New Reactions
Pyruvate carboxylase
Biotin
PEPCK
F1,6BPase
G6Pase

Regulation
Futile Cycles
Reciprocal Regulation
AMP
ATP
F2,6BP

Regulation of synthesis