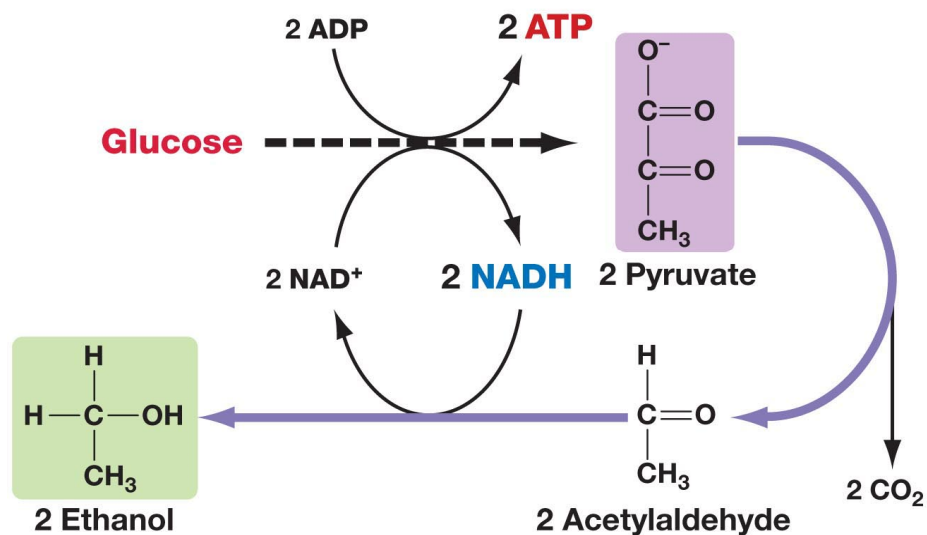
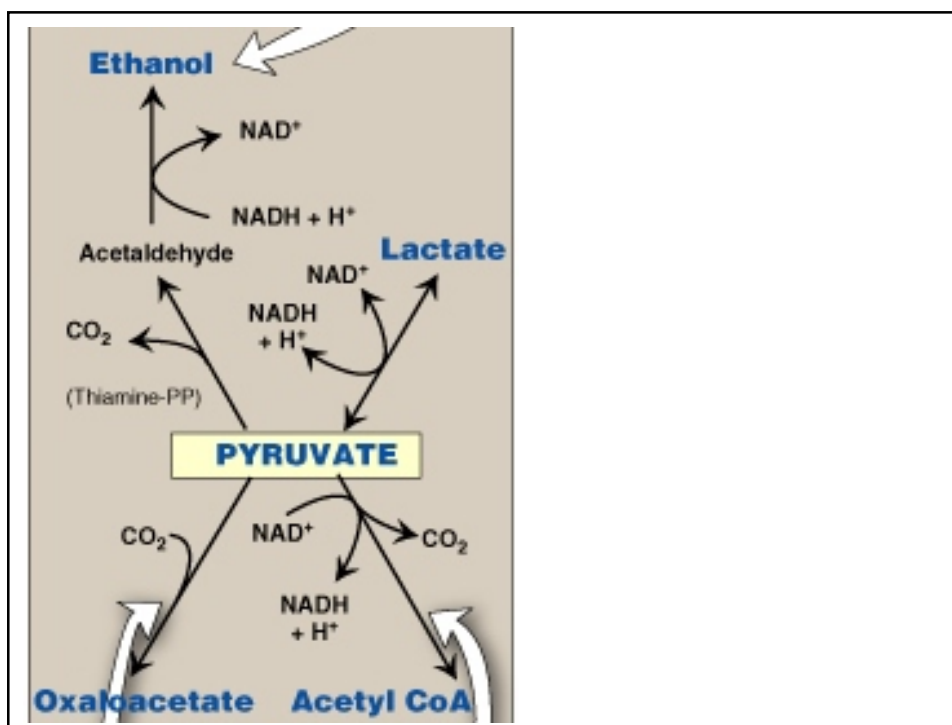


(b) Alcohol fermentation occurs in yeast.



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Lactate Production

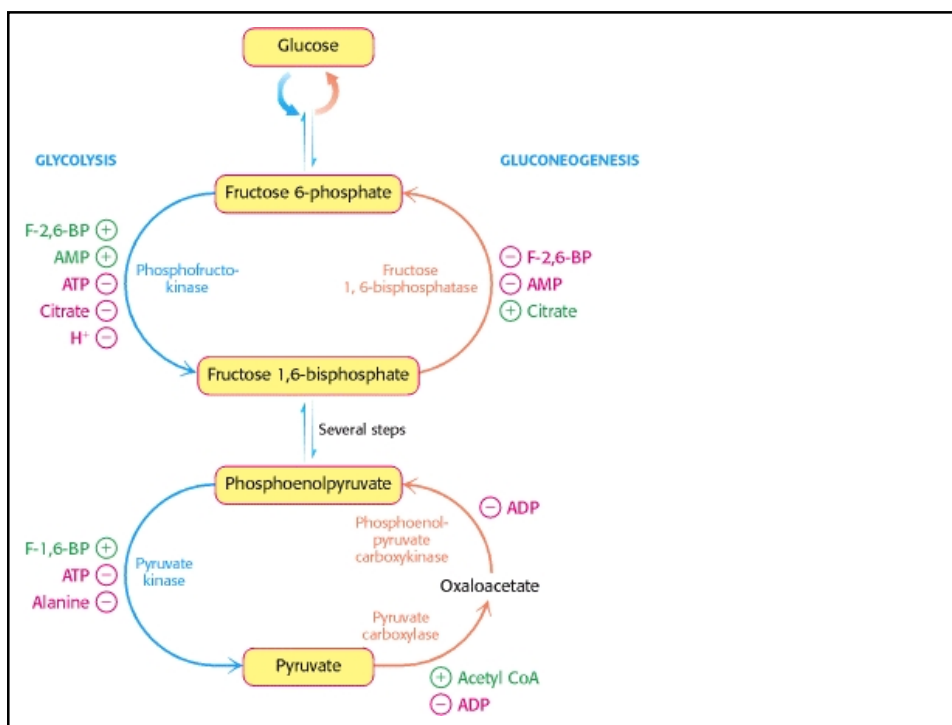
- Cells with low energy demand
- To cope with increased energy demand in rigorously exercising muscle
lactate level is increased 5 to 10 folds
- Hypoxia
to survive brief episodes of hypoxia

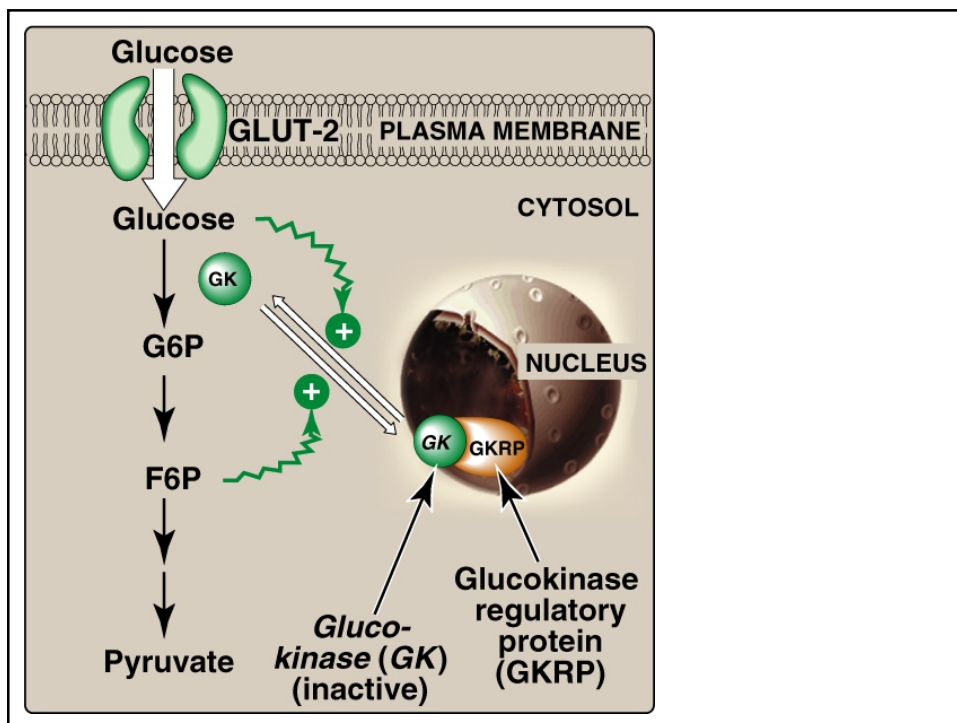
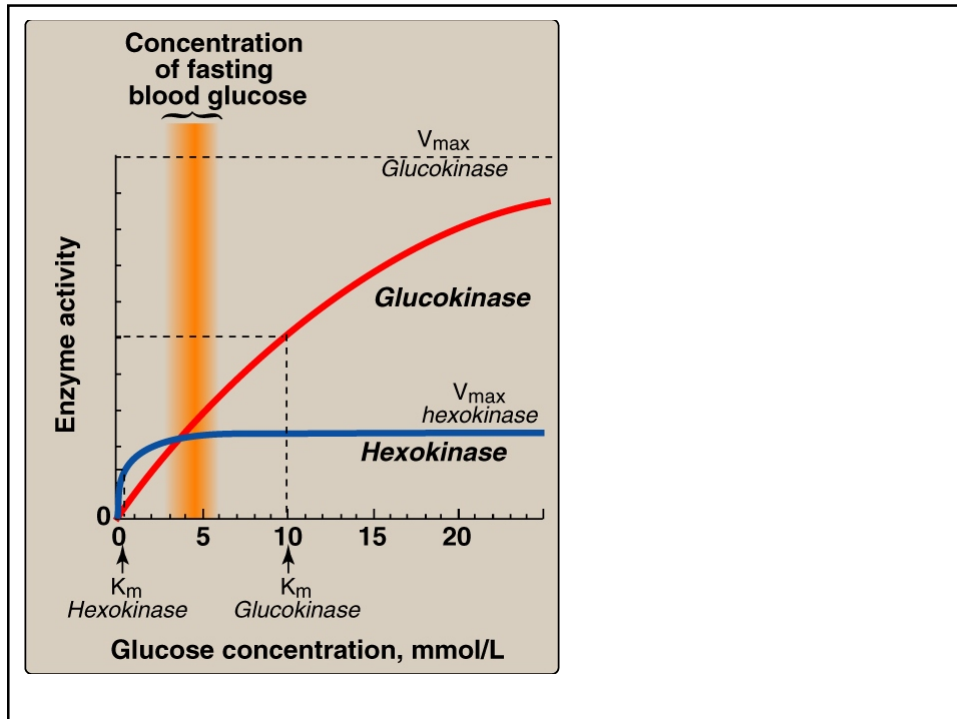
Lactic Acidosis

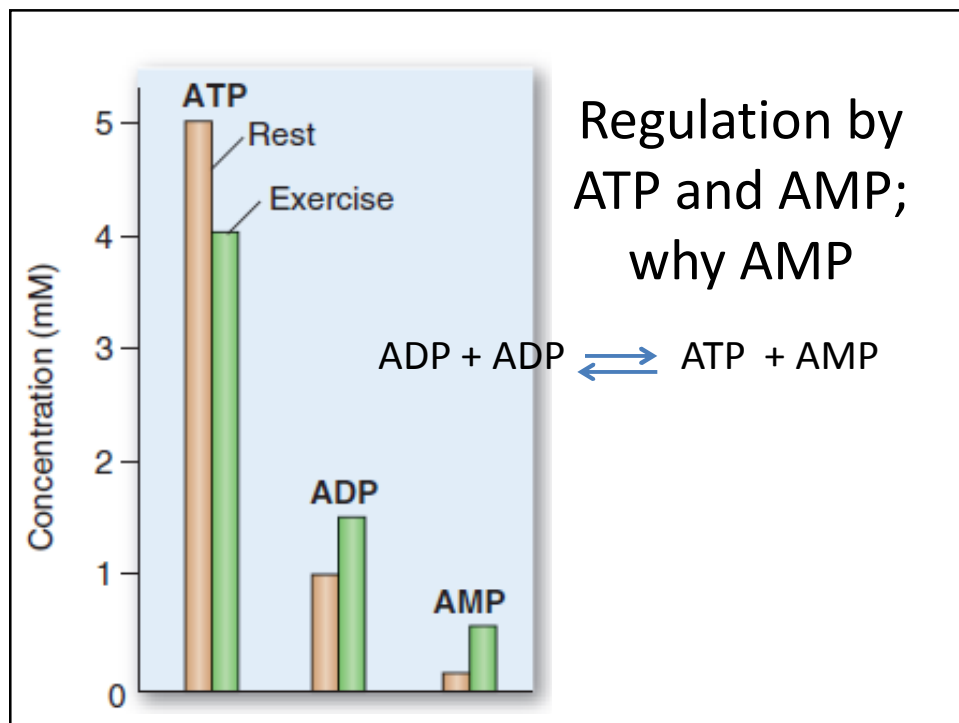
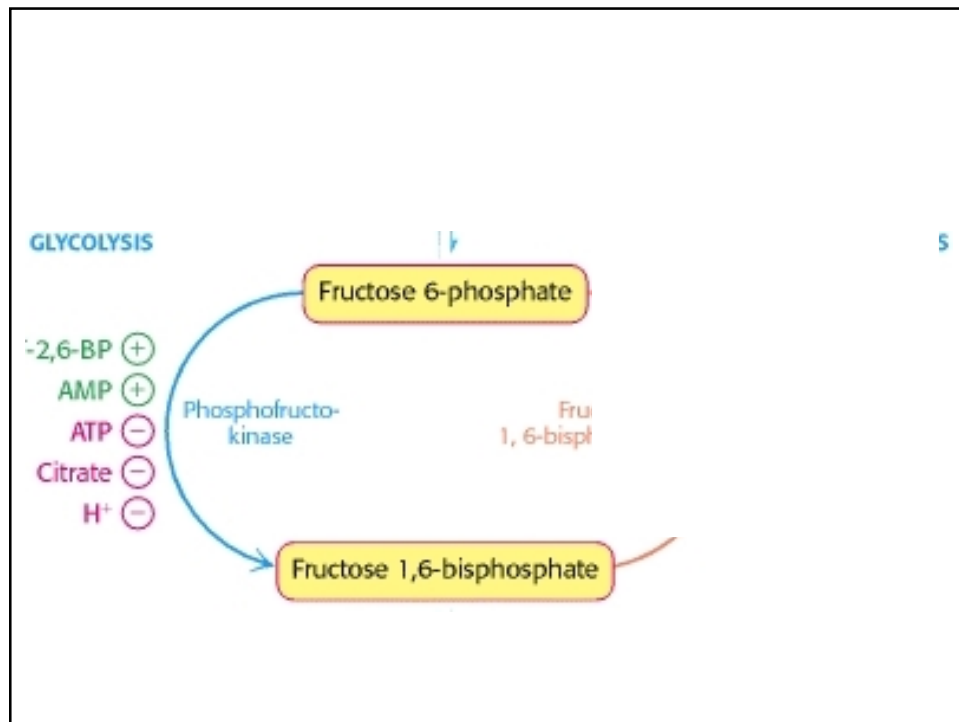
- ↓ pH of the plasma
 - The most common cause of metabolic acidosis
 - ↑ Production of lactic acid
 - ↓ utilization of lactic acid
- $$\text{Pyruvate} + \text{NADH} \rightleftharpoons \text{Lactate} + \text{NAD}^+$$
- Most common cause: Impairment of oxidative metabolism due to collapse of circulatory system.
 - Impaired O₂ transport
 - Respiratory failure
 - Uncontrolled hemorrhage

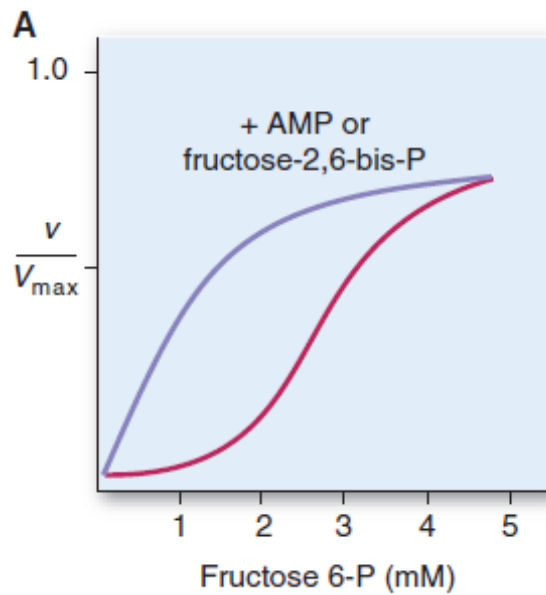
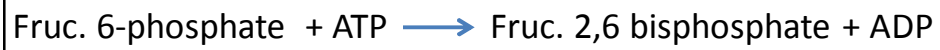
Lactic Acidosis

- Direct inhibition of oxidative phosphorylation
- Hypoxia in any tissue
- Alcohol intoxication (high NADH/ NAD⁺)
- ↓ Gluconeogenesis
- ↓ Pyruvate Dehydrogenase
- ↓ TCA cycle activity
- ↓ Pyruvate carboxylase

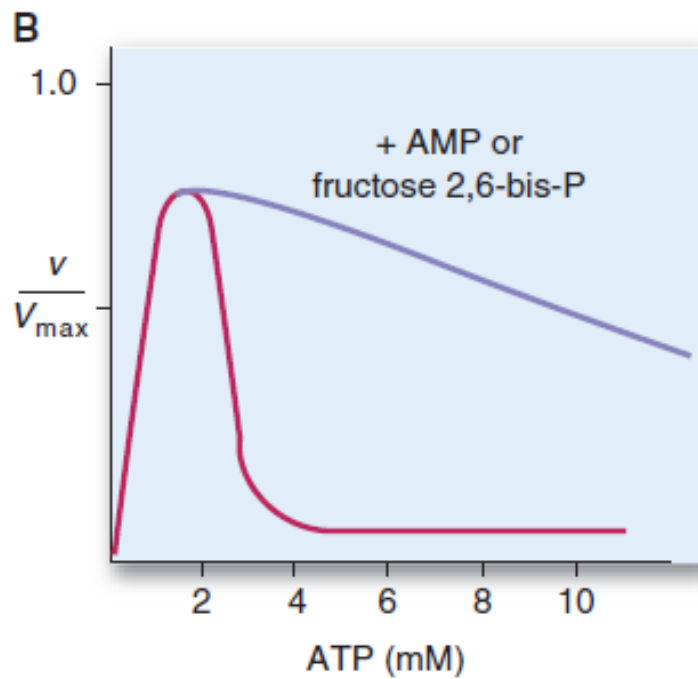


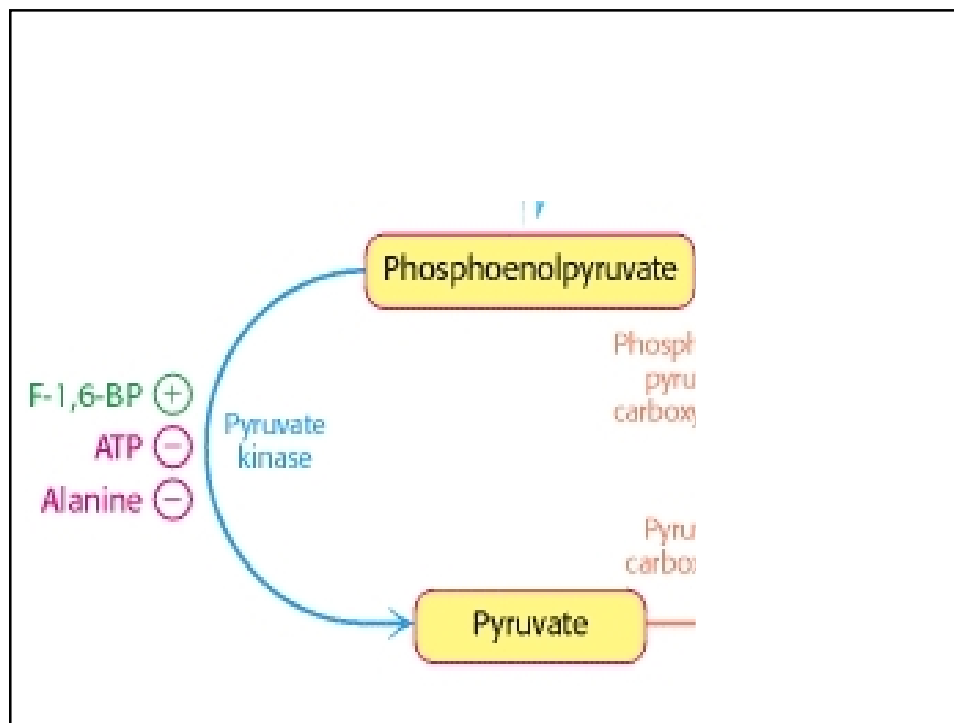
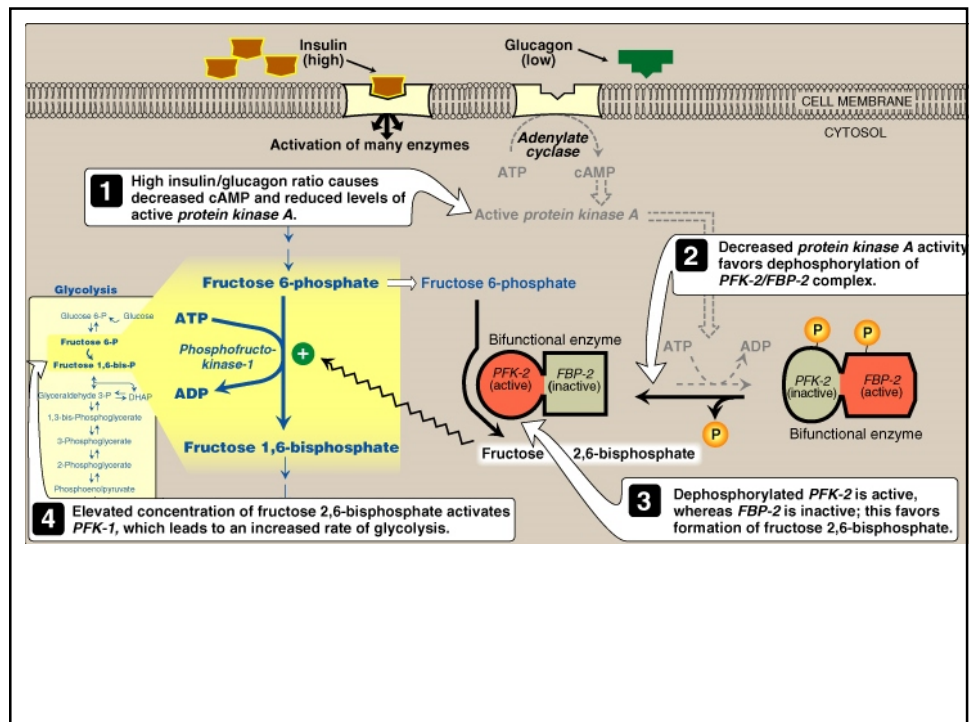


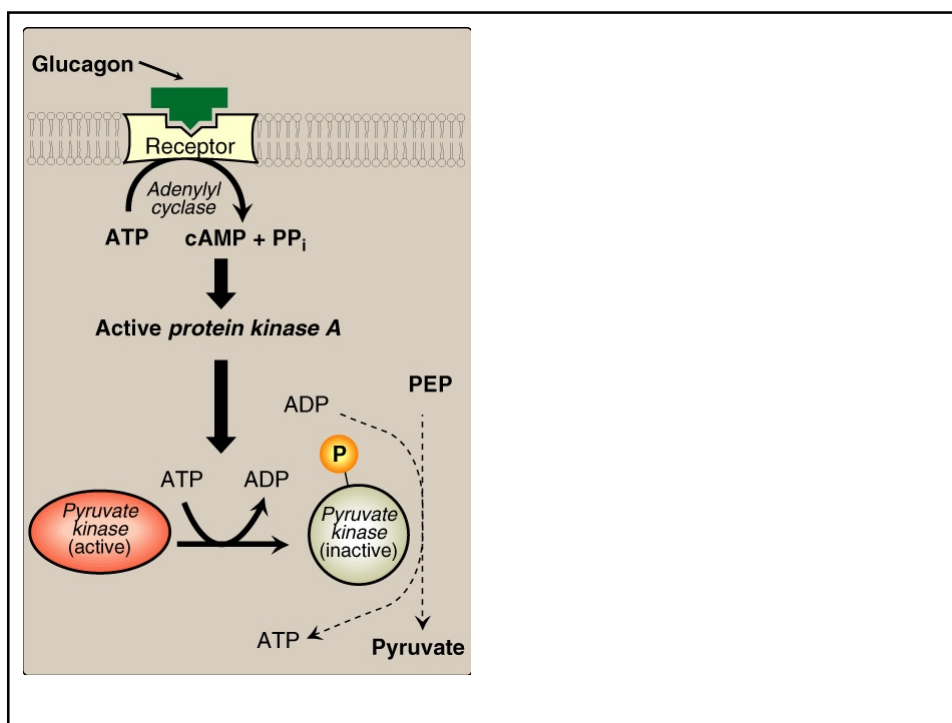




Regulation of
PFK by
Fructose 2,6-
bisphosphate

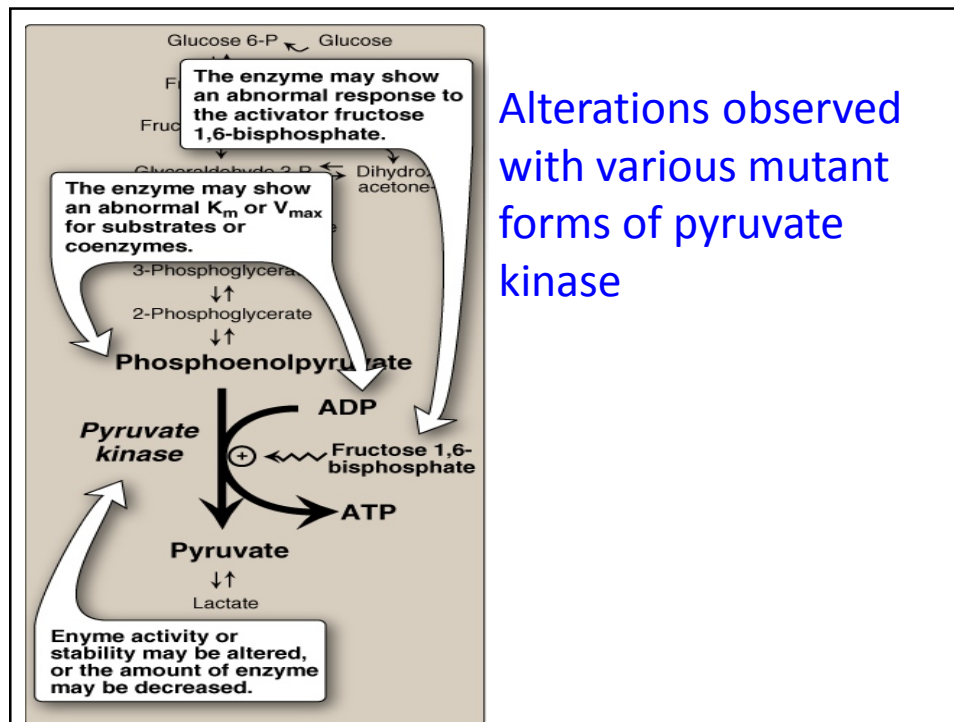






Pyruvate Kinase Deficiency

- The most common among glycolytic enzyme deficiencies
- RBC's are affected
- Mild to severe chronic hemolytic anemia
- ATP is needed for Na^+/K^+ pump → maintain the flexible shape of the cell
- Low ATP → premature death of RBC
- Abnormal enzyme; mostly altered kinetic properties



Alterations observed with various mutant forms of pyruvate kinase