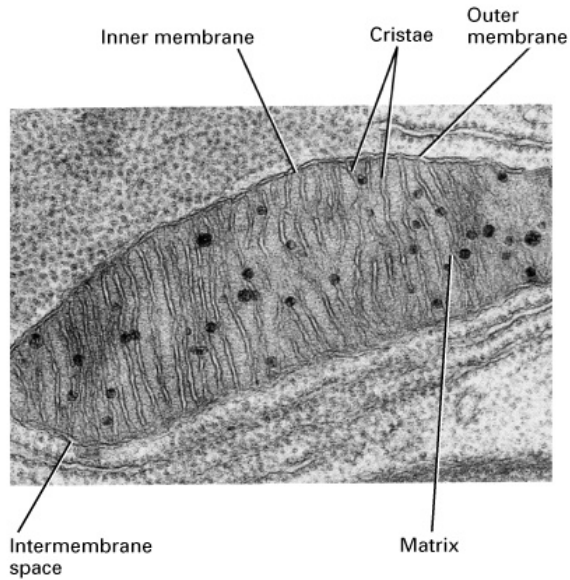


Chapter 7

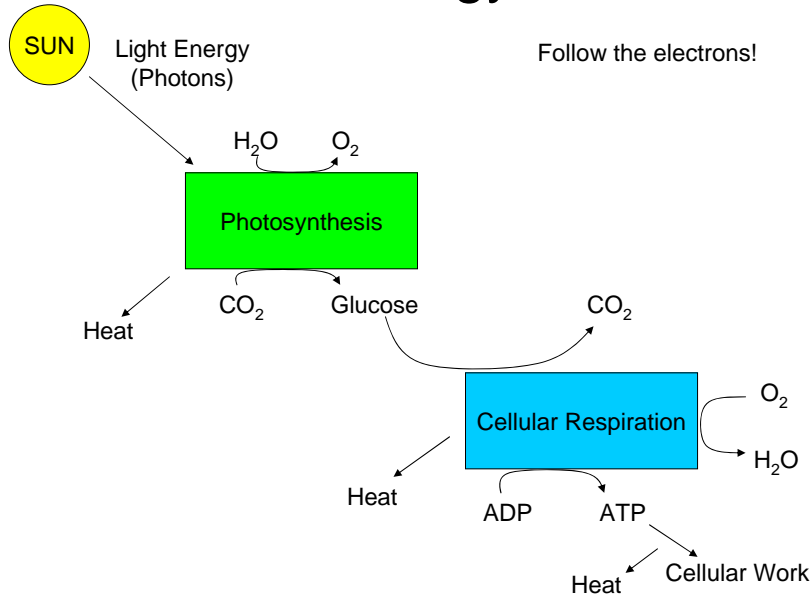
Cellular Respiration



Outline

- Day 1
 - Overview of Energy Metabolism
 - Overview of Anaerobic and Aerobic Metabolism
 - Glycolysis
 - Anaerobic Fermentation
- Day 2
 - Citric Acid Cycle
 - Oxidative Phosphorylation
 - Electron Transport
 - Chemiosmosis
 - Energy Budget

Overview of Energy Metabolism



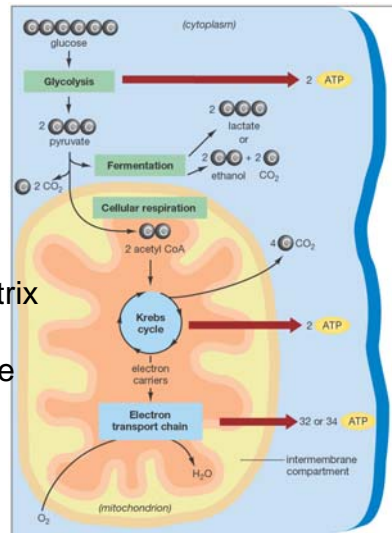
Anaerobic and Aerobic Metabolism

Anaerobic Metabolism

- Glycolysis – cytosol
- Fermentation – cytosol

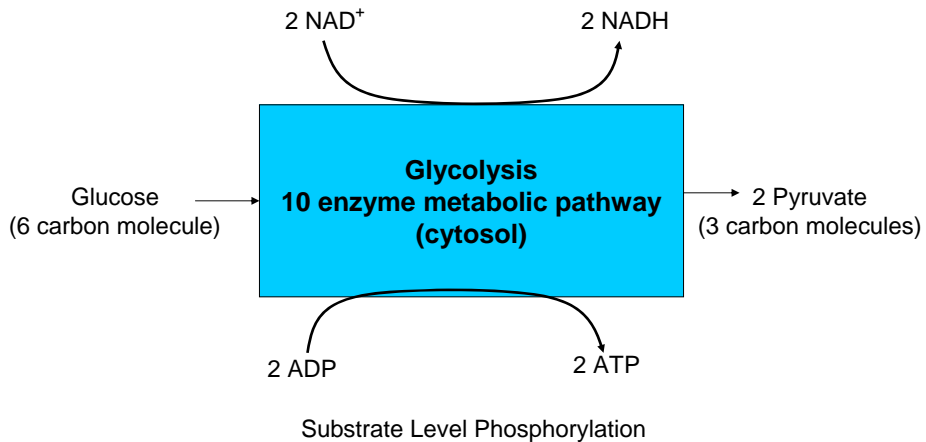
Aerobic Respiration

- Glycolysis – cytosol
- Krebs cycle – Mitochondrial Matrix
- Oxidative Phosphorylation – Inner Mito Membrane

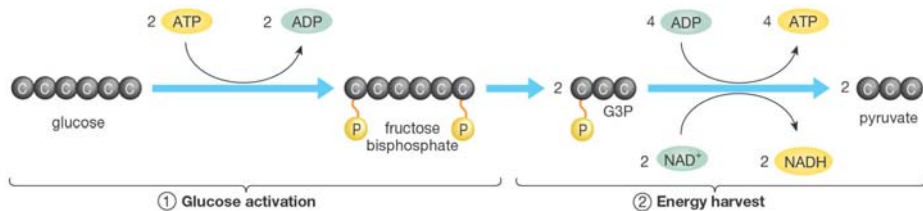


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Overview of Glycolysis



Glycolysis – 11 enzymes



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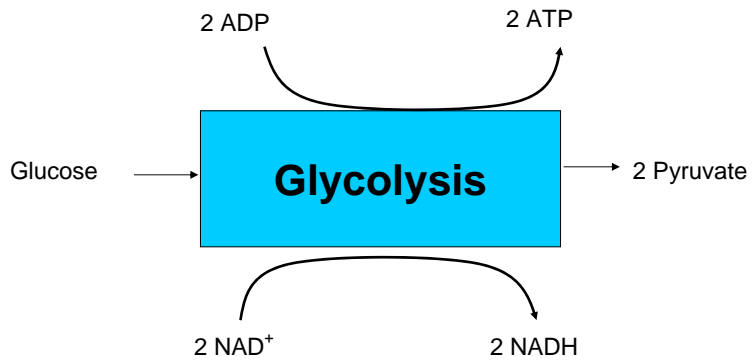
Priming Reaction

Splitting Reaction

Harvesting Reaction

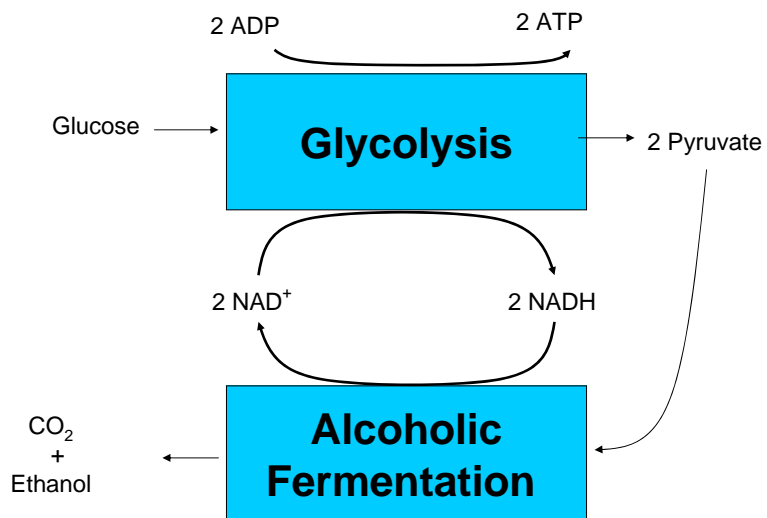
Phosphofructosekinase (PFK) – key regulatory enzyme in priming steps

Aerobic Metabolism

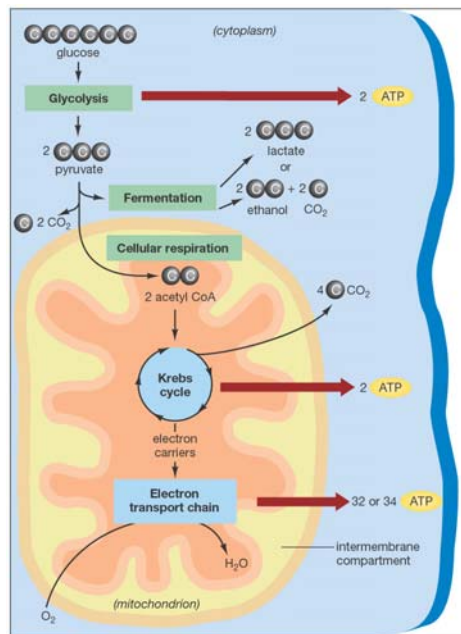
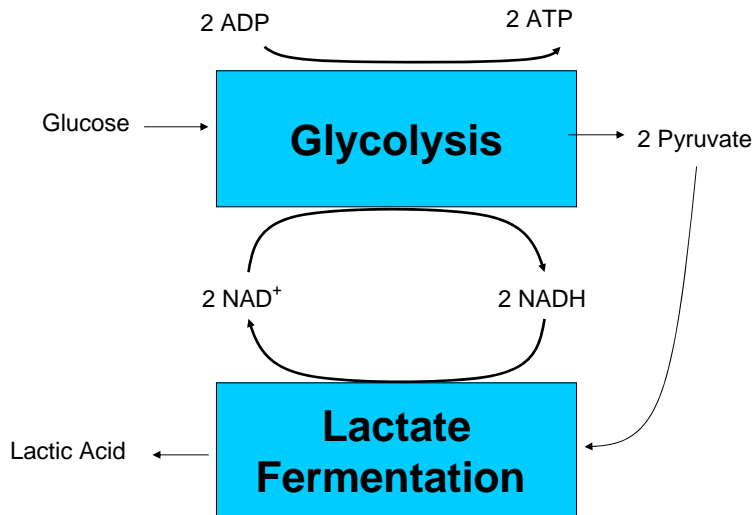


How does ATP and NAD get recycled?

Alcoholic Fermentation

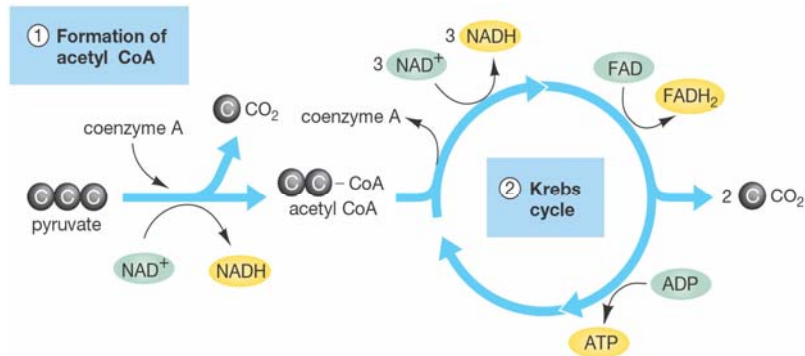
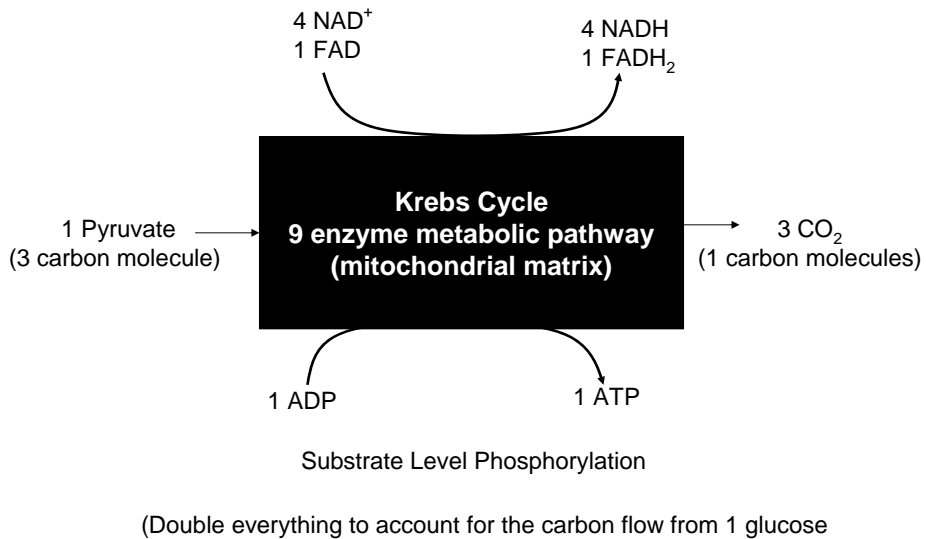


Lactate Fermentation



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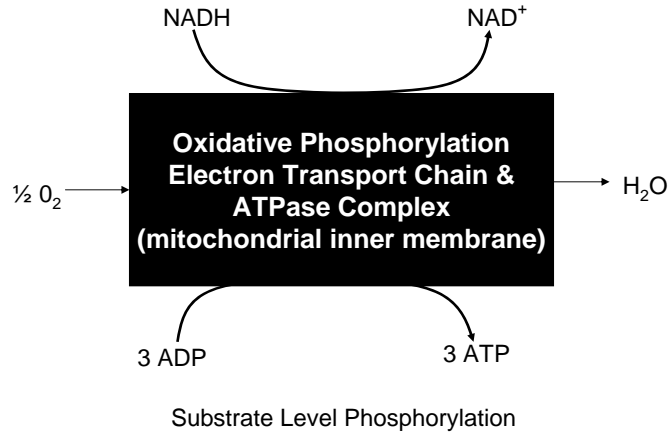
Overview of Krebs Cycle



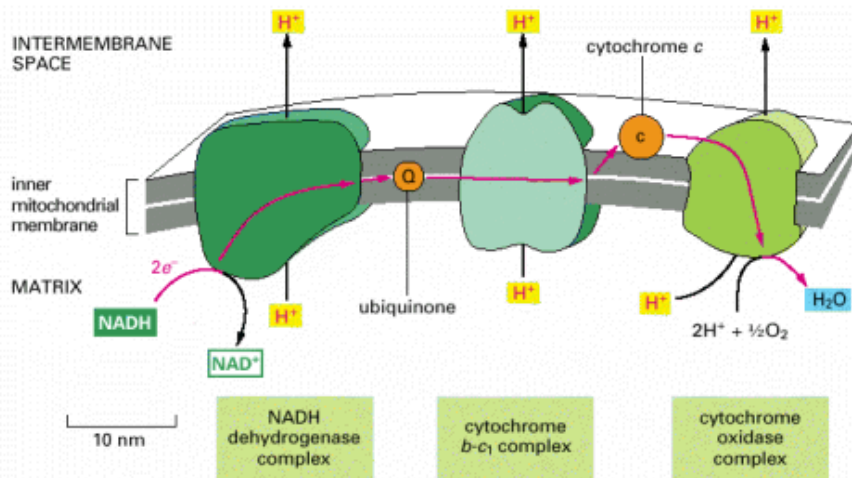
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Key enzyme Pyruvate Dehydrogenase

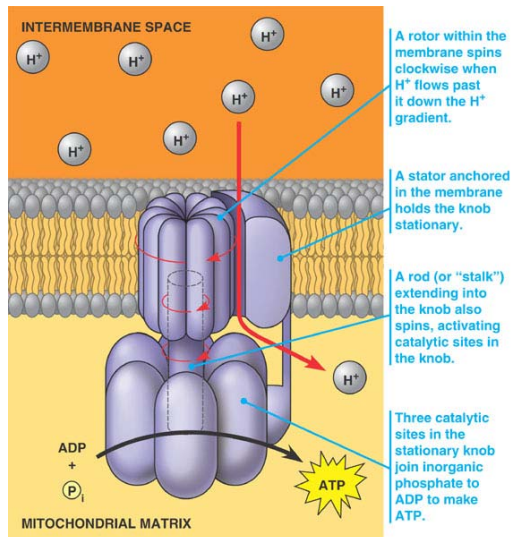
Overview of Oxidative Phosphorylation



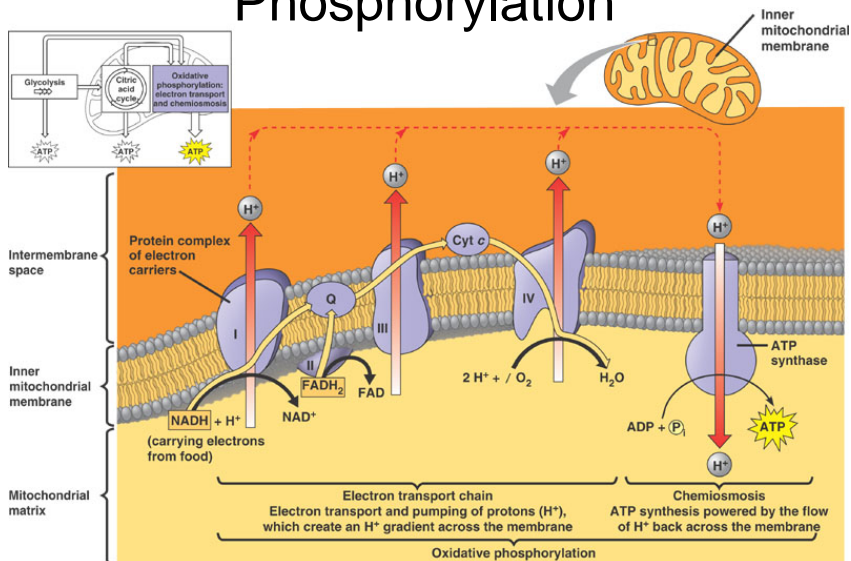
Electron Transport Chain

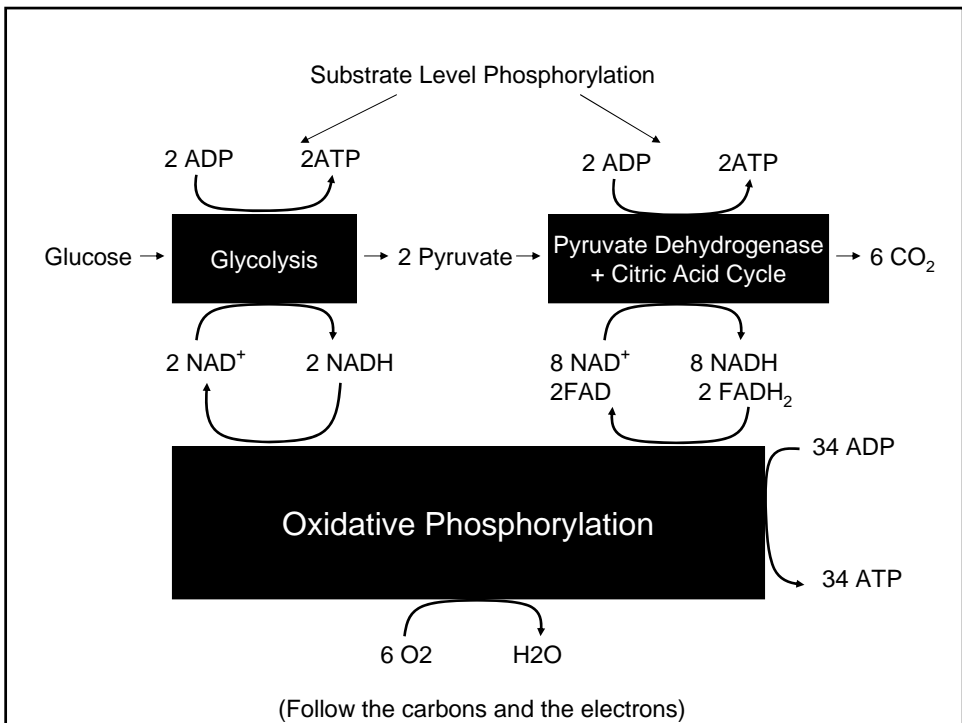
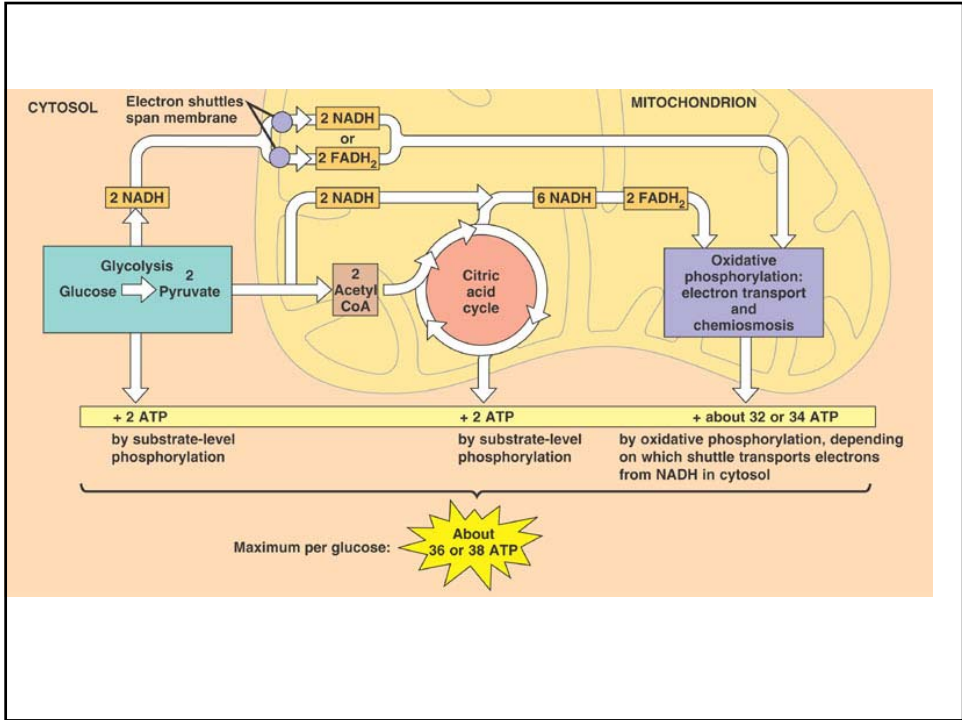


ATP Synthetase Complex



Overview of Oxidative Phosphorylation





Energy Budget

Glycolysis	2NADH	2ATP
Pyruvate dehydrogenase	2NADH	
Citric Acid Cycle	6NADH 2FADH ₂	2ATP
Oxidative Phosphorylation	from 10 NADH from 2 FADH ₂	~30ATP ~4ATP
	Total	38ATP

