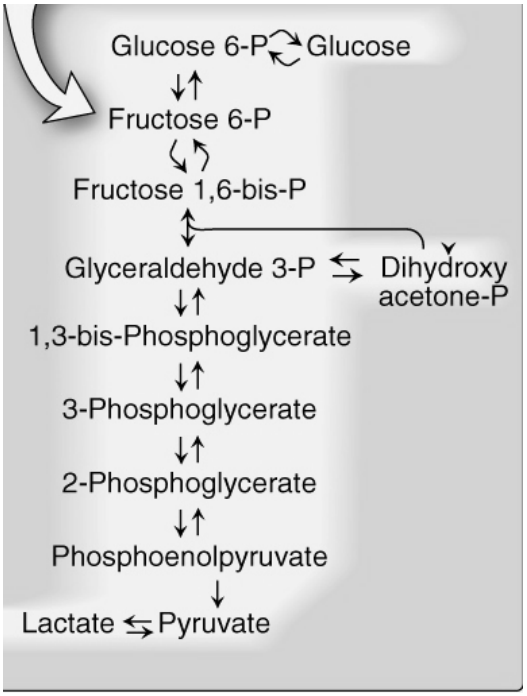
Glycolysis

Introduction to Metabolism
Regulation of Metabolism
Overview of Glycolysis
Reactions of Glycolysis

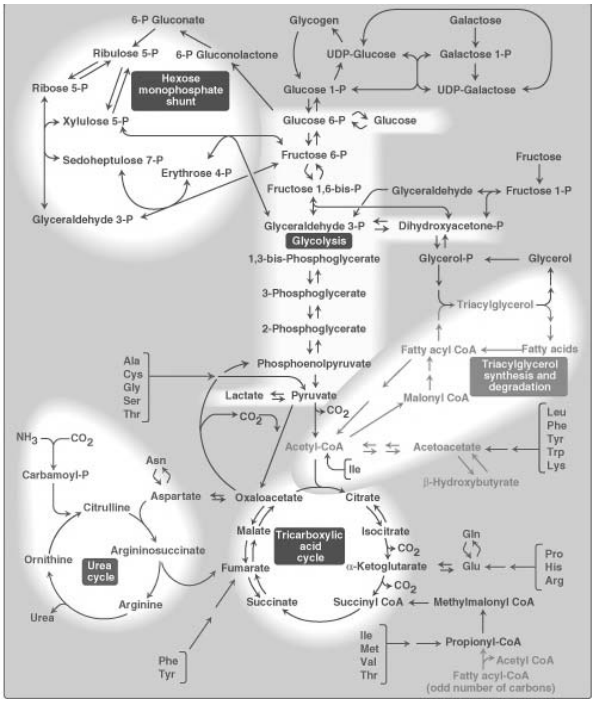
Suggested Reading:

Lippincot's Ilustrated reviews: Biochemistry



Glycolysis, an example of metabolic pathway

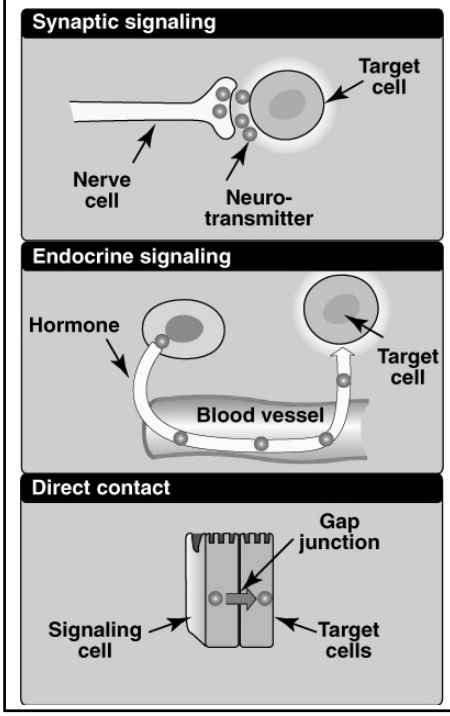
The product of one reaction is the substrate of the next reaction



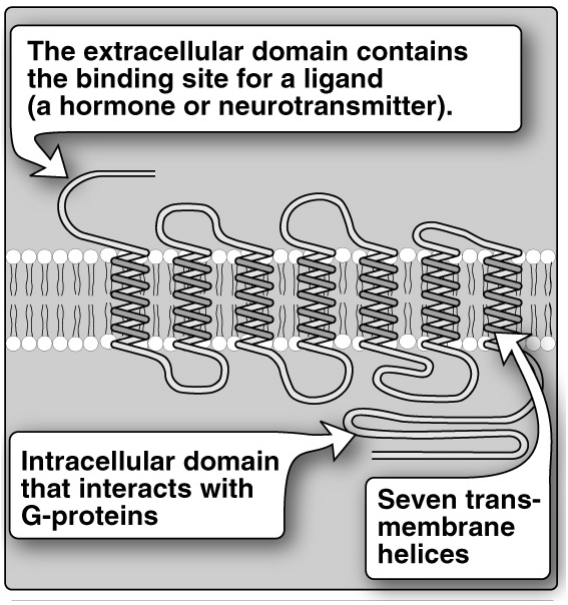
Metabolic pathways intersect to form network of chemical reactions

Regulation of Metabolism

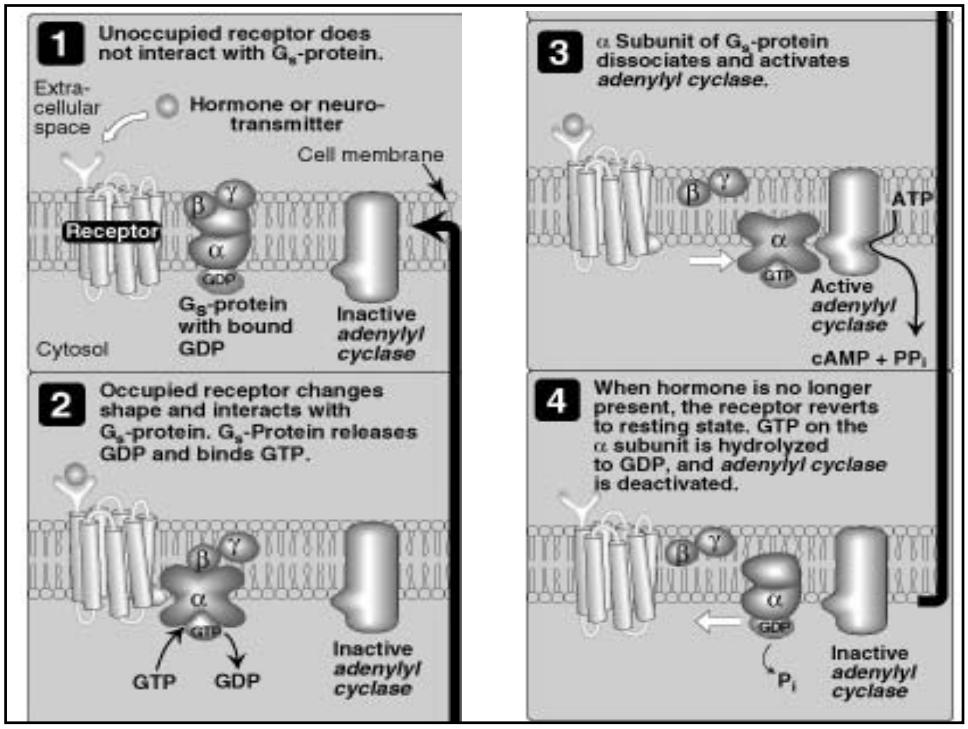
- Signals from within the cell
  - Substrate availability, product inhibition, allosteric
  - Rapid response, moment to moment
- Communication between cells (intercellular)
  - Slower response, longer range integration
- Second messenger
  - Ca^{2+} / phosphatidylinositol system
  - Adenylcyclase system

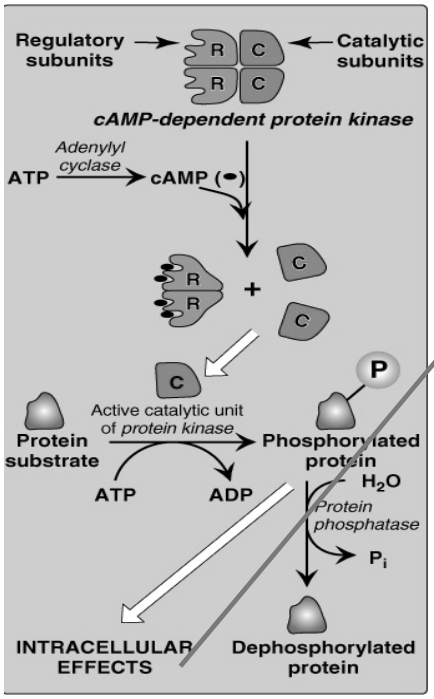


Communication between cells; Commonly used mechanisms



G protein-coupled receptor of plasma membrane





cAMP-dependent protein kinase

INTRACELLULAR EFEECTS
- Activated enzymes
- Inhibited Enzymes
- cell's ion channels
- bind to promoter

GLYCOLYSIS

Universal Pathway: In all cell types

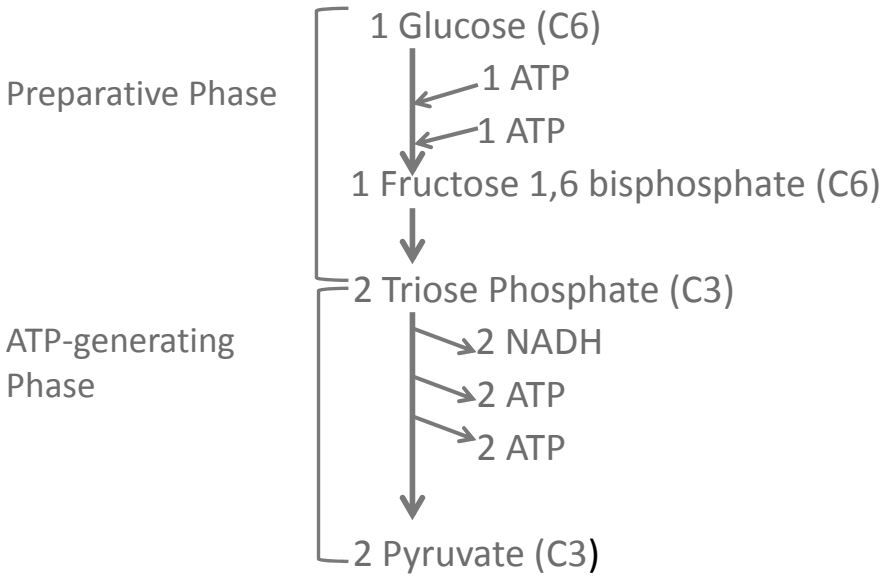
Generation of ATP

With or without O_2

Anabolics Pathway:

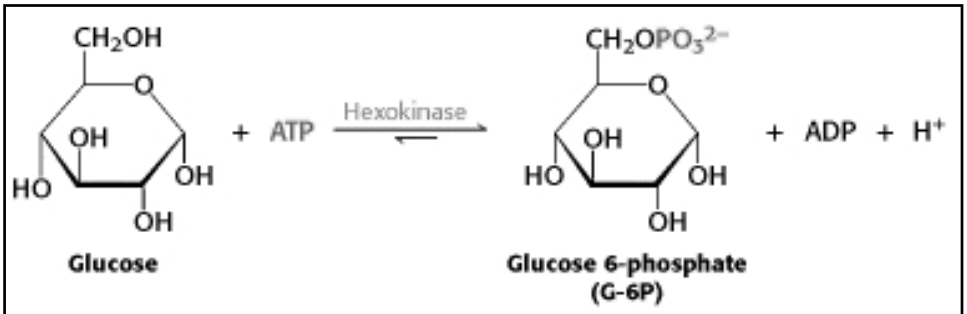
→ biosynthetic precursors

The Two Phases of the glycolytic Pathway



Types of Glycolytic Reactions

- Phosphoryl transfer
- Isomerization
- Cleavage
- Oxidation reduction
- Phosphoryl shift
- Dehydration



	Hexokinase	Glucokinase
Occurance	In all tissues	In liver
Km	< 0.02 mM	10-20 mM
Specificity	Glc., Fruc, Man, Gal	Glc.
induction	Not induced	↑ insulin, Glc
Function	At any glucose level	Only > 100 mg/dl