

BIOLOGICAL FRAMEWORKS FOR ENGINEERS

Session #13 [µm: Cell Signaling]

General Objectives:

- ✓ Discuss cell signaling strategies and general communication.
- ✓ Examine specific local cell signaling pathways as examples of signal transduction and control.

Central Framework:

- ✓ Cell signaling is a complex control system regulated by numerous factors.

Session Outline:

A. Cell Communication

Contact Dependent

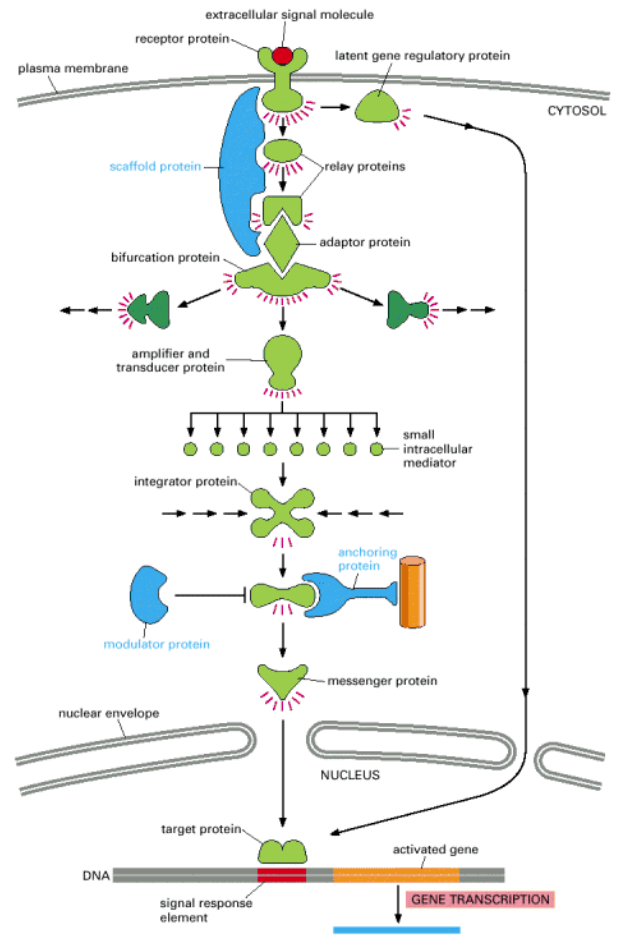
Paracrine

Autocrine

Endocrine

B. Basics of Signal Transduction [Reception – Transduction – Response]

C. Components of Signal Transduction



D. Cell-Surface Receptors

G-Protein Linked receptors

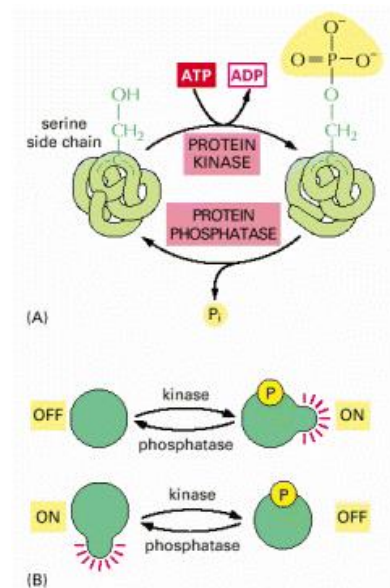
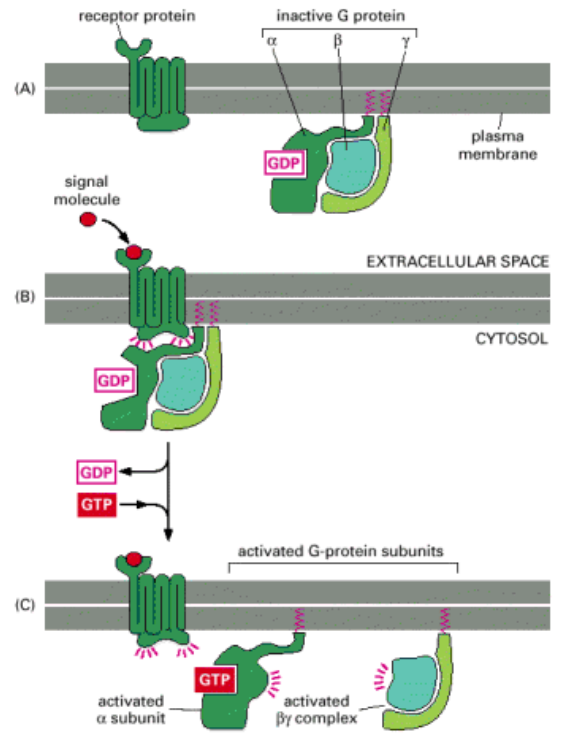
FUNCTION:

STRUCTURAL:

MECHANISM:

(Secondary Messengers)

(Protein Phosphorylation)

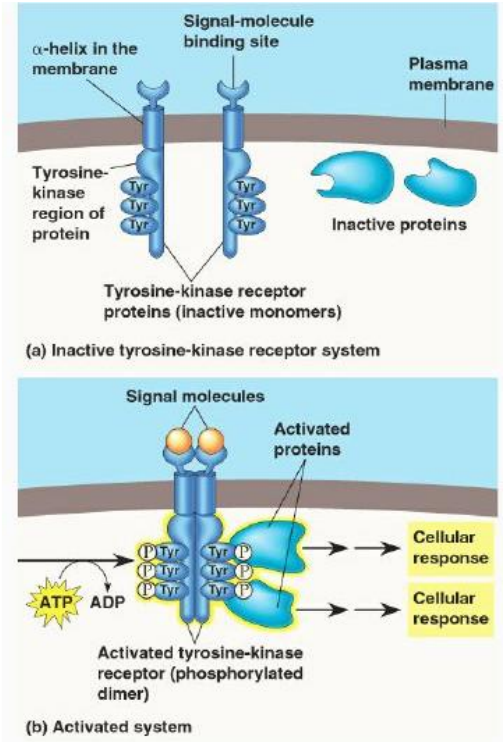


Receptor Tyrosine Kinases

FUNCTION:

STRUCTURE:

MECHANISM:



(Signaling Pathways – MAP Kinase)