

**BIOLOGICAL FRAMEWORKS FOR ENGINEERS**

**Session #14 [µm: Cell Signaling]**

General Objectives:

- ✓ Discuss the structure-function relationships in cell signaling.
- ✓ Examine specific cell signaling mechanisms in major signaling pathways.

Central Framework:

- ✓ Signaling is a important system regulated by changes in protein structure

Session Outline:

A. G-Protein Coupled Receptors

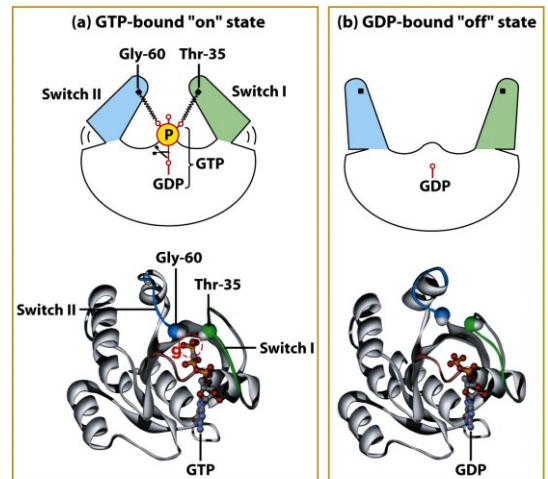


Figure 15-8  
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B. Secondary Messengers

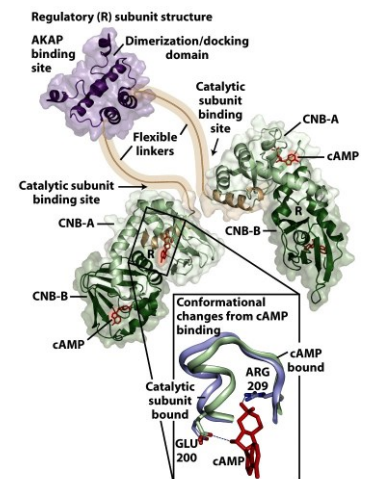


Figure 15-23b  
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C. MAP Kinase Pathway

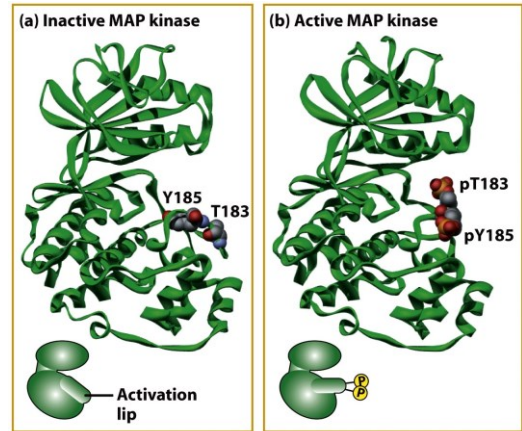


Figure 16-26  
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D. Receptor Tyrosine Kinase

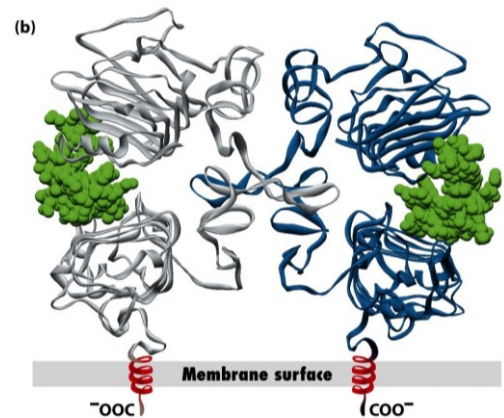


Figure 16-17  
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E. Signal Manipulation

Gene Inactivation –

Dominant Negative –

Constitutively Active –

Transfection –

Infection –

Case Study: Rho GTPases