

**Exam 1 Next Tuesday - Oct. 8 -  
8:00 am - 9:15 am**

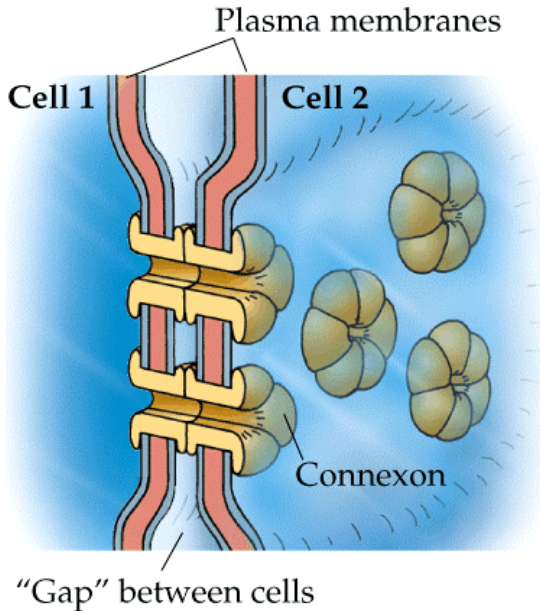
- Bring a #882 Scantron, pencils, and erasers
- Calculators allowed but probably not necessary
- Review Session Friday, Oct. 4 from 3:00-5:00 in HH 130

**Cell Signaling:** A brief discussion to prepare us for a discussion of ...

**Cell Division and Regulation of the Eukaryotic Cell Cycle**

- You **do not need to read Chapter 15** on Cell Signaling.
- You should understand the principles presented in the next 5 figures; these will be discussed in class.

Figure 15.18: **Gap Junctions** Connect Animal Cells



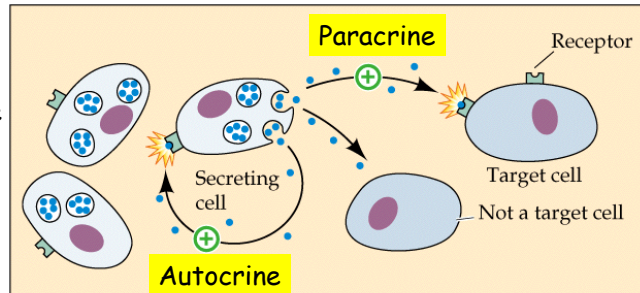
These cells can communicate by this direct connection via diffusion of molecules through the Connexons.

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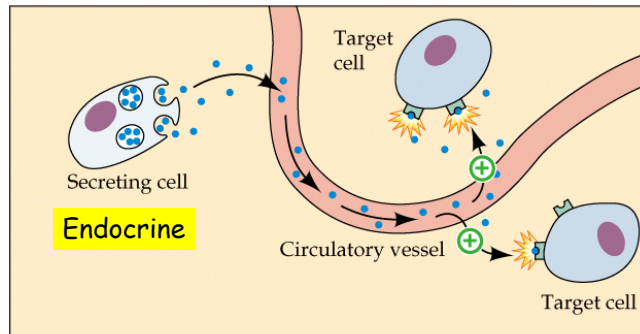
**Figure 15.1**

Local and distant cell communication in animals is affected the by release of signaling molecules.

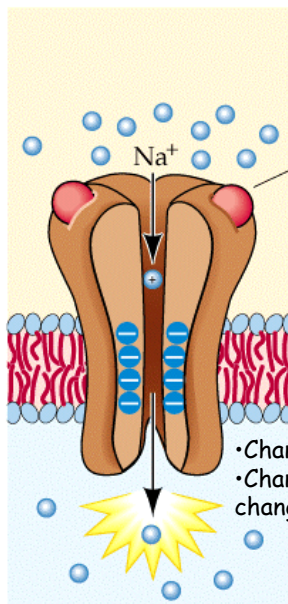
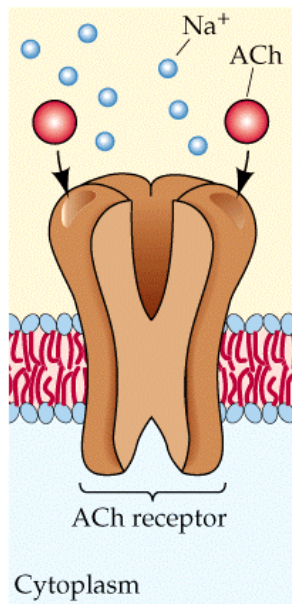
Local signals



Distant signals



How signaling molecules affect cell function: 1.

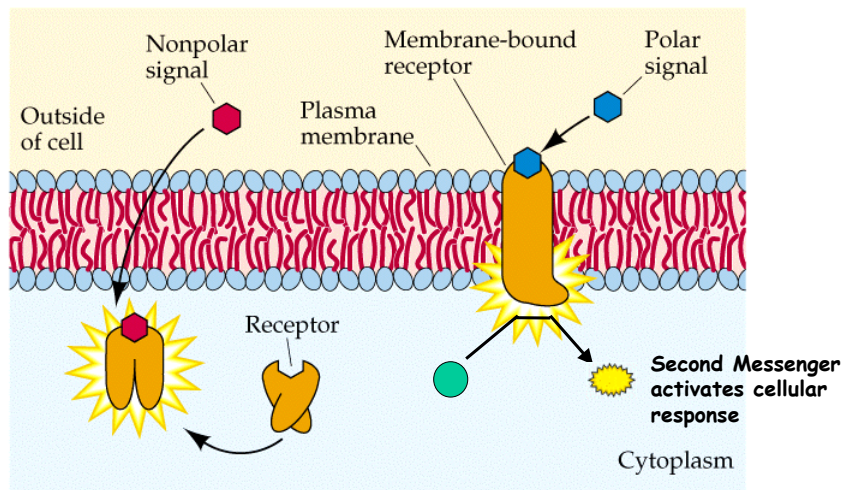


- Channel opens & ions flow through.
- Changes in ion concentrations cause changes in the cell

**Figure 15.6: A Ligand-Gated Ion-Channel Receptor.**

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**Figure 15.5: Two locations for Receptors**



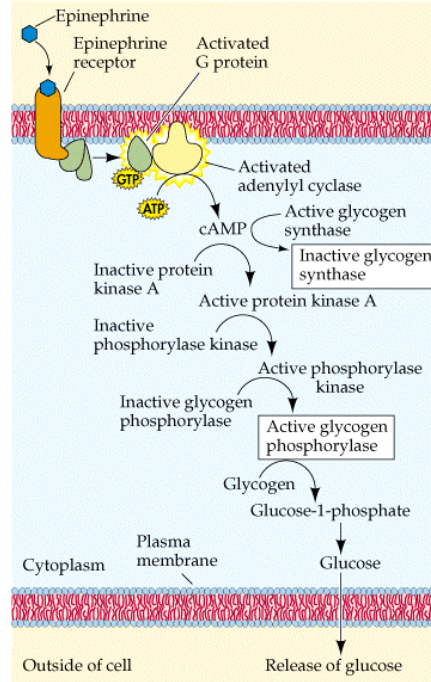
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Figure 15.17: A **Cascade** of Reactions Leads to Altered Enzyme Activity. Successive steps **amplify** the original signal.

- Changes in enzyme activity are often caused by **phosphorylating** or **dephosphorylating** the enzyme.

- **Protein Kinases** are an important class of regulatory proteins that transfer phosphate from ATP to an -OH on an amino acid sidechain (Ser/Thr or Tyr).

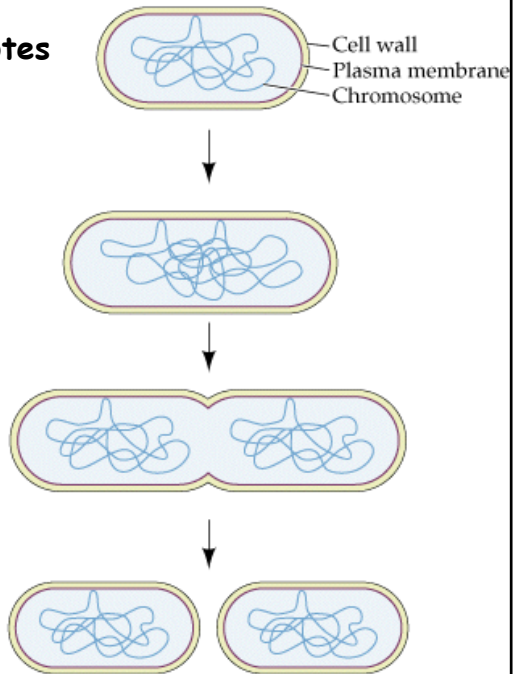
- **Protein Phosphatases** reverse the effect by removing the phosphates.



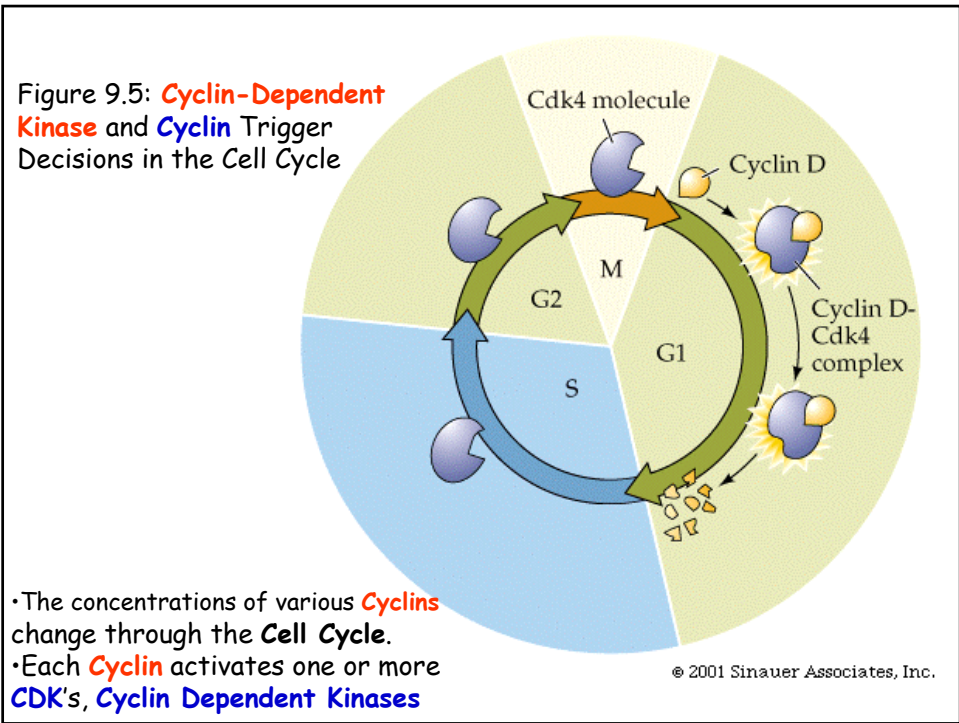
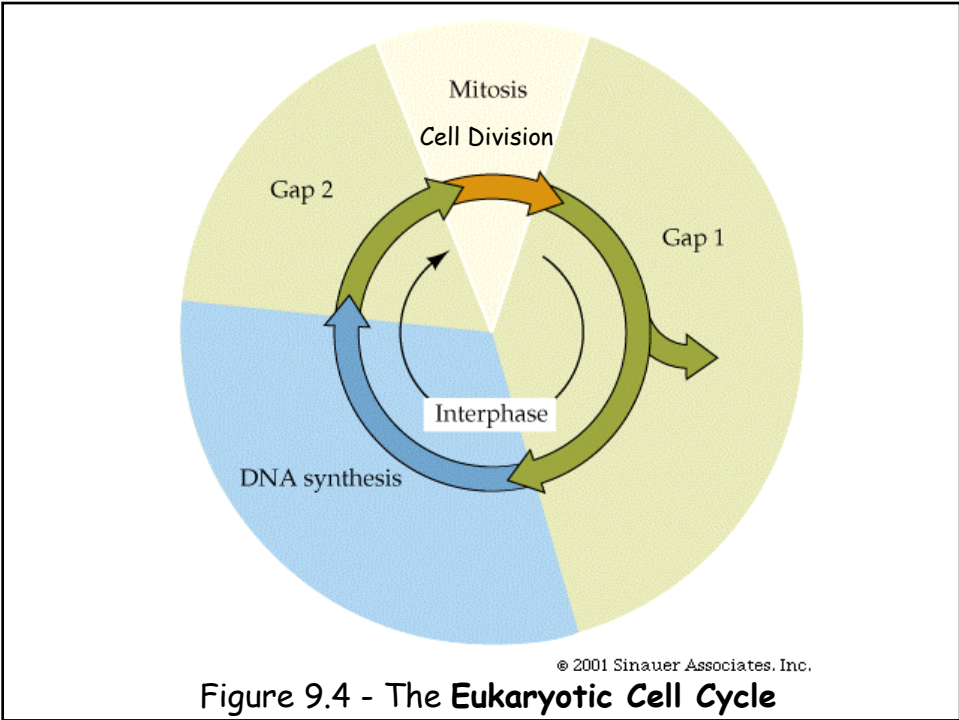
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## The Cell Cycle - Prokaryotes

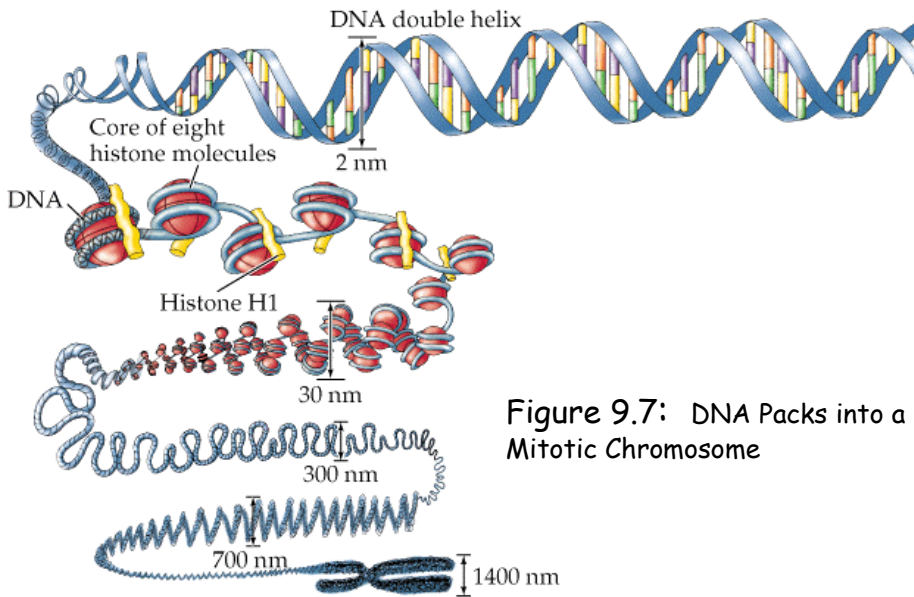
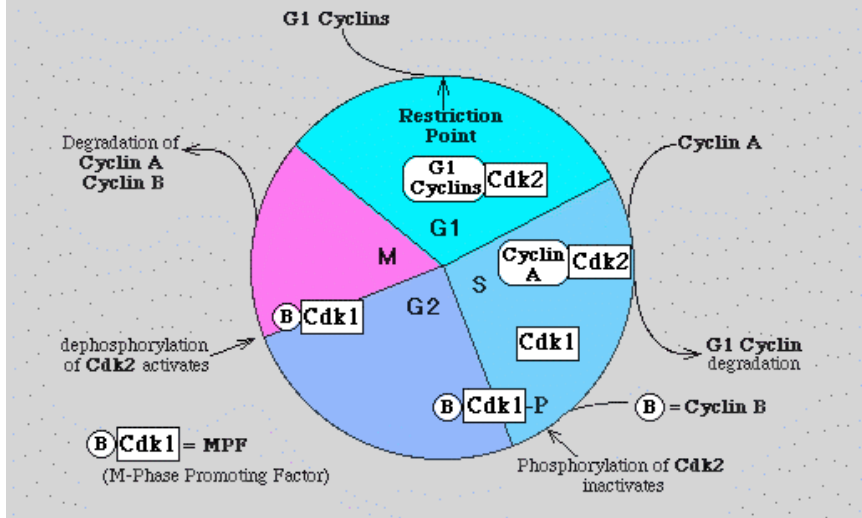
Figure 9.3 - Prokaryotic cell division (binary fission).



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## Regulation of the Cell Cycle by Cyclins and Cyclin Dependent Protein Kinases (Cdk's)



**Figure 9.7: DNA Packs into a Mitotic Chromosome**

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