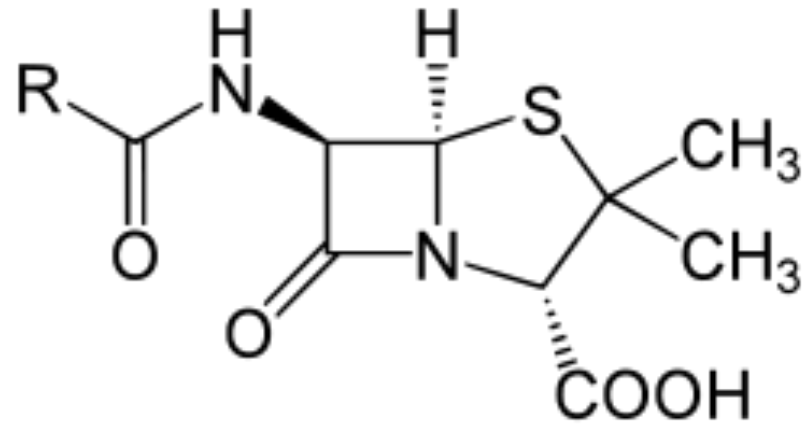
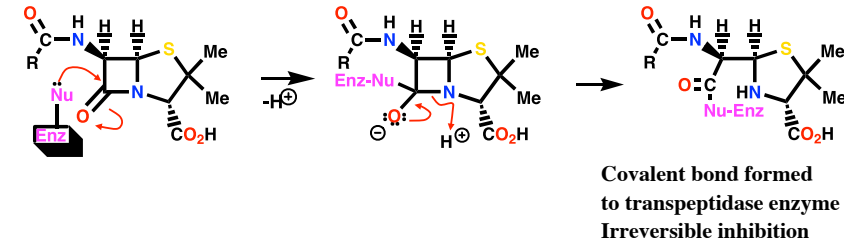


## Bonding

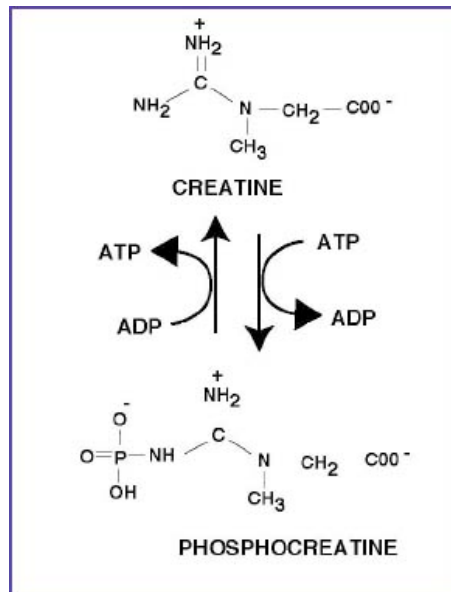


## Mechanism of action

- Penicillins inhibit a bacterial enzyme called the transpeptidase enzyme which is involved in the synthesis of the bacterial cell wall
- The  $\beta$ -lactam ring is involved in the mechanism of inhibition
- Penicillin becomes covalently linked to the enzyme's active site leading to irreversible inhibition



## Creatine



## ATP

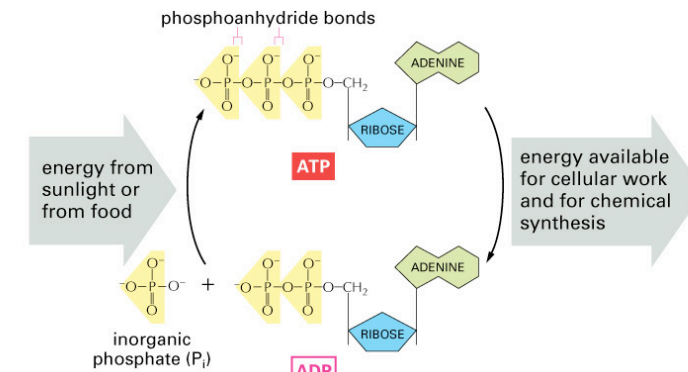


Figure 3-32 Essential Cell Biology, 2/e. (© 2004 Garland Science)

## Ionic bonding, Lewis Dot Diagrams



Gilbert  
Newton  
Lewis  
(surround  
ed by  
pairs of  
electrons)

## Lewis diagrams (Q1, Q2)

- Lewis suggested a means of keeping track of outer (or valence) electrons
- Read handout up to "The Octet Rule". Do Question 1 and Question 2

Q1



Q2



## Ions and the octet rule (Q3)

Read the remainder of the handout. Do Q3.

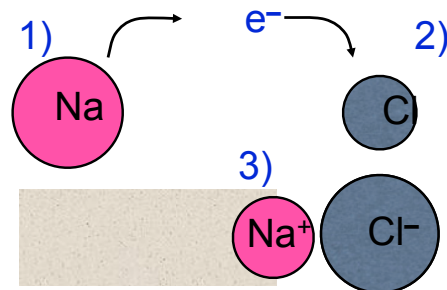
	Br	P	Ne	Al	Ca
Noble gas (spaces)	Kr (1)	Ar (3)	Ne (0)	Ne (3)	Ar (2)
Ion	Br <sup>-</sup>	P <sup>3-</sup>	none	Al <sup>3+</sup>	Ca <sup>2+</sup>

## Overview: Types of Bonds

- There are 2 bond types : ionic and covalent
- In ionic bonding one atom has a stronger attraction for electrons than the other, and "steals" an electron from a second atom
- In covalent bonding the attraction for electrons is similar for two atoms. They share their electrons to obtain an octet.
- Read "types of bonds" on handout. Do Q4.
- MgO (ionic), CaCl<sub>2</sub> (ionic), SO<sub>2</sub> (covalent), PbCl<sub>2</sub> (ionic), CCl<sub>4</sub> (covalent), CH<sub>4</sub> (covalent)

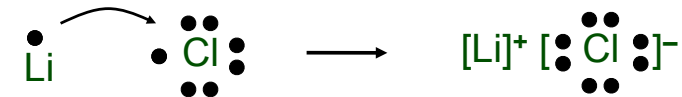
## Ionic bonding

- Ionic bonding involves 3 steps (3 energies)
- 1) loss of an electron(s) by one element, 2) gain of electron(s) by a second element, 3) attraction between positive and negative



## Ionic bonding (Q5 - Li + Cl)

- Ionic bonding (stealing/transfer of electrons) can be represented in three different ways
- Read the remainder of handout. Do Q5.



## Ionic bonding: Mg + O

