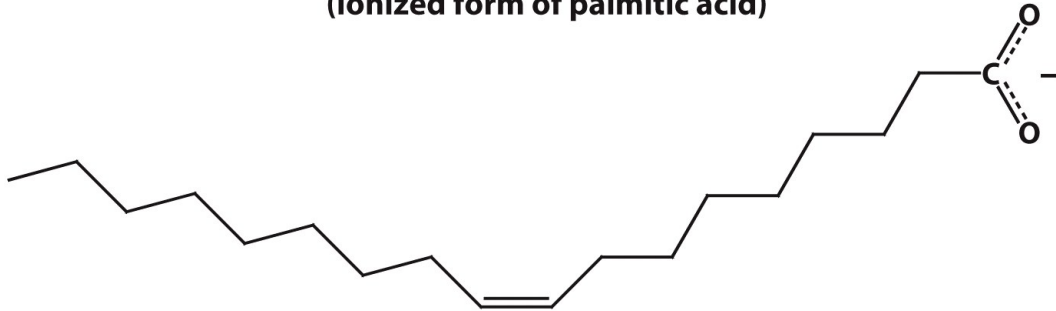


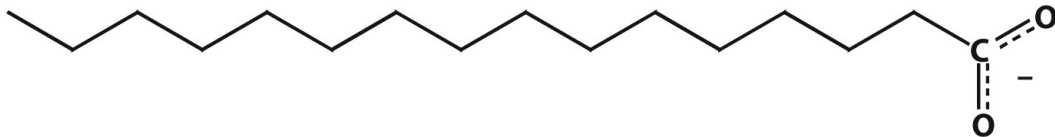
**Palmitate**  
(ionized form of palmitic acid)



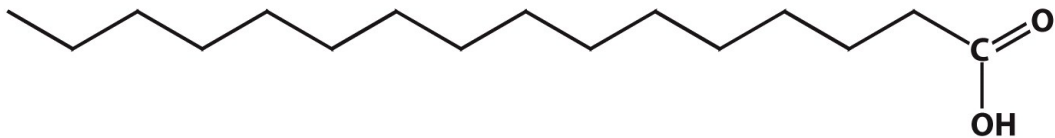
**Oleate**  
(ionized form of oleic acid)

Figure 11.1  
*Biochemistry: A Short Course, Second Edition*  
© 2013 W. H. Freeman and Company

1



**Palmitate**  
(ionized form of palmitic acid)



**Palmitic acid**

Unnumbered 11 p181b  
*Biochemistry: A Short Course, Second Edition*  
© 2013 W. H. Freeman and Company

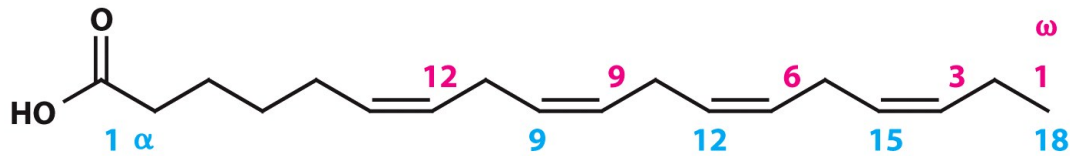
2



# Methylene group

Unnumbered 11 p181c  
Biochemistry: A Short Course, Second Edition  
© 2013 W. H. Freeman and Company

3



Unnumbered 11 p181a  
Biochemistry: A Short Course, Second Edition  
© 2013 W. H. Freeman and Company

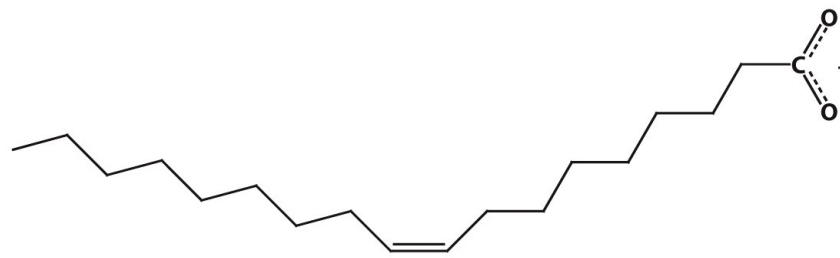
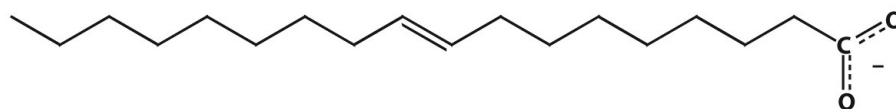
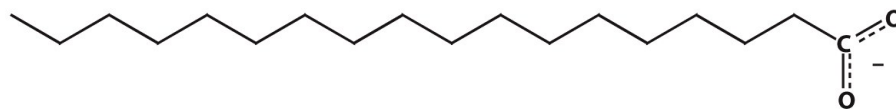
4

**Table 11.1** Some naturally occurring fatty acids in animals

Number of carbon atoms	Number of double bonds	Common name	Systematic name	Formula
12	0	Laurate	<i>n</i> -Dodecanoate	$\text{CH}_3(\text{CH}_2)_{10}\text{COO}^-$
14	0	Myristate	<i>n</i> -Tetradecanoate	$\text{CH}_3(\text{CH}_2)_{12}\text{COO}^-$
16	0	Palmitate	<i>n</i> -Hexadecanoate	$\text{CH}_3(\text{CH}_2)_{14}\text{COO}^-$
18	0	Stearate	<i>n</i> -Octadecanoate	$\text{CH}_3(\text{CH}_2)_{16}\text{COO}^-$
20	0	Arachidate	<i>n</i> -Eicosanoate	$\text{CH}_3(\text{CH}_2)_{18}\text{COO}^-$
22	0	Behenate	<i>n</i> -Docosanoate	$\text{CH}_3(\text{CH}_2)_{20}\text{COO}^-$
24	0	Lignocerate	<i>n</i> -Tetracosanoate	$\text{CH}_3(\text{CH}_2)_{22}\text{COO}^-$
16	1	Palmitoleate	<i>cis</i> - $\Delta^9$ -Hexadecenoate	$\text{CH}_3(\text{CH}_2)_5\text{CH}=\text{CH}(\text{CH}_2)_7\text{COO}^-$
18	1	Oleate	<i>cis</i> - $\Delta^9$ -Octadecenoate	$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COO}^-$
18	2	Linoleate	<i>cis, cis</i> - $\Delta^9, \Delta^{12}$ -Octadecadienoate	$\text{CH}_3(\text{CH}_2)_4(\text{CH}=\text{CHCH}_2)_2(\text{CH}_2)_6\text{COO}^-$
18	3	Linolenate	all- <i>cis</i> - $\Delta^9, \Delta^{12}, \Delta^{15}$ -Octadecatrienoate	$\text{CH}_3\text{CH}_2(\text{CH}=\text{CHCH}_2)_3(\text{CH}_2)_3\text{COO}^-$
20	4	Arachidonate	all- <i>cis</i> $\Delta^5, \Delta^8, \Delta^{11}, \Delta^{14}$ -Eicosatetraenoate	$\text{CH}_3(\text{CH}_2)_4(\text{CH}=\text{CHCH}_2)_4(\text{CH}_2)_2\text{COO}^-$

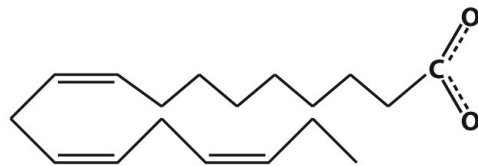
**Table 11.1**  
*Biochemistry: A Short Course*, Second Edition  
 © 2013 W. H. Freeman and Company

5

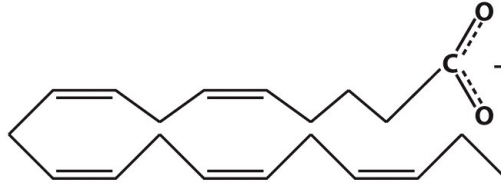


**Unnumbered 11 p182a**  
*Biochemistry: A Short Course*, Second Edition  
 © 2013 W. H. Freeman and Company

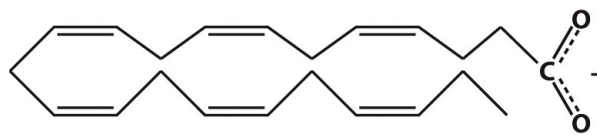
6



**$\alpha$ -Linolenate**



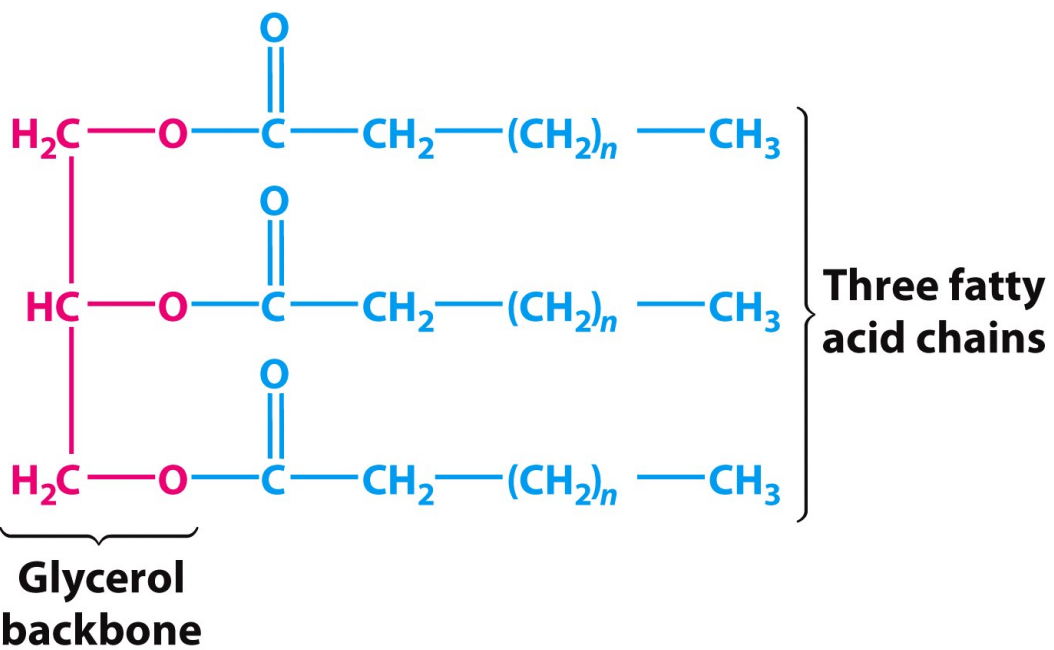
**Eicosapentaenoate (EPA)**



**Docosahexaenoate (DHA)**

Unnumbered 11 p182b  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company

7



Unnumbered 11 p183  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company

8

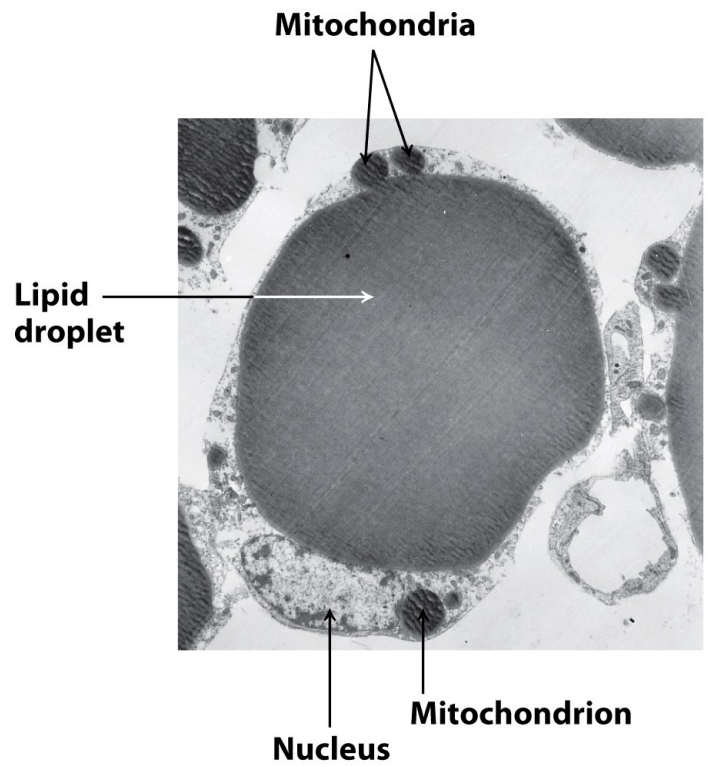


Figure 11.3  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company

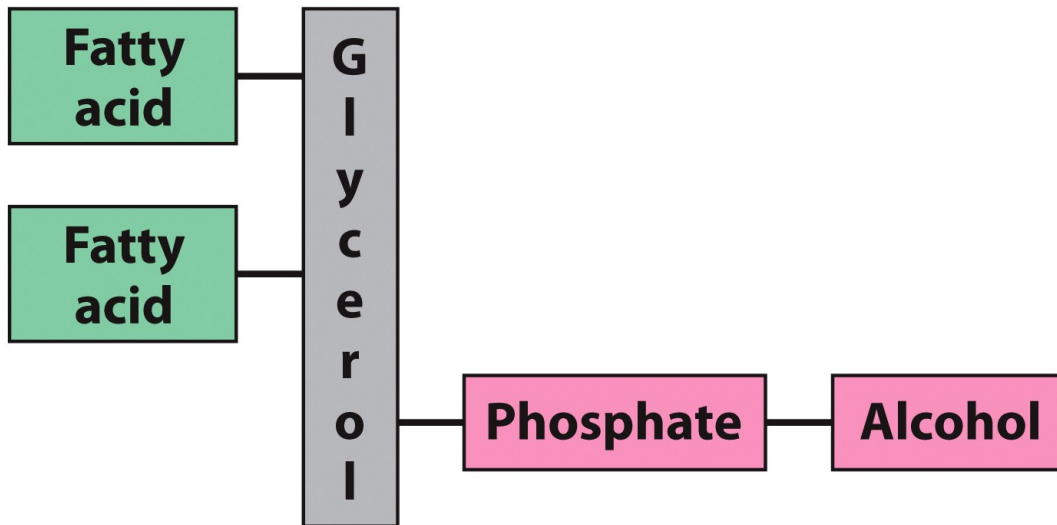
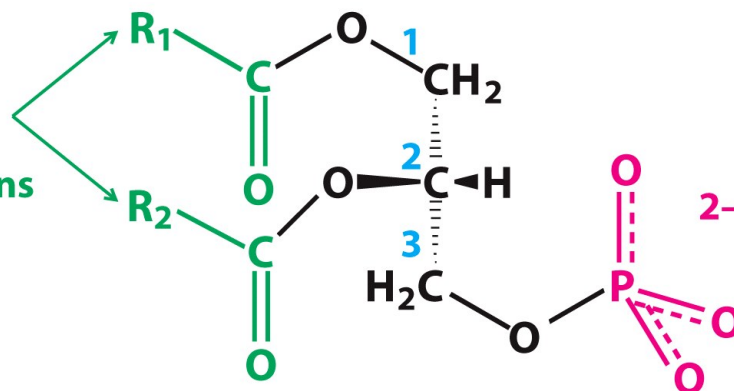


Figure 11.5  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company

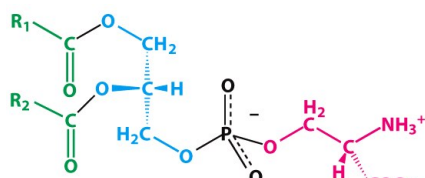
Acyl groups  
with fatty acid  
hydrocarbon chains



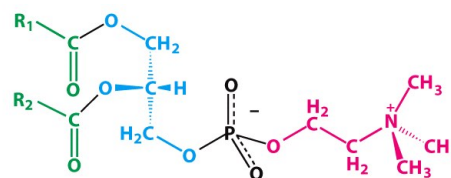
## Phosphatidate (Diacylglycerol 3-phosphate)

Figure 11.6  
*Biochemistry: A Short Course, Second Edition*  
© 2013 W. H. Freeman and Company

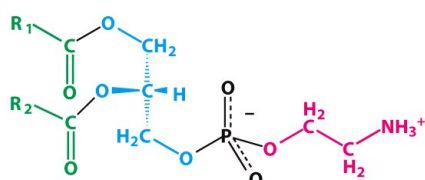
11



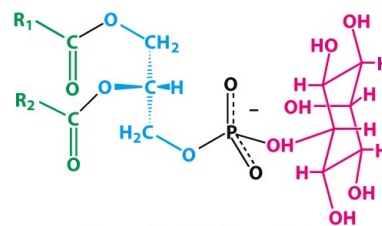
Phosphatidylserine



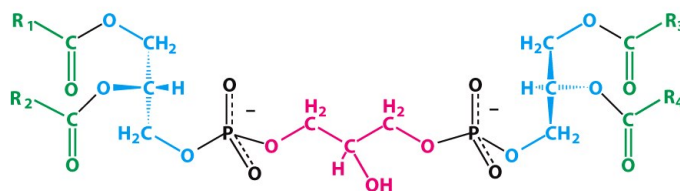
Phosphatidylcholine



Phosphatidylethanolamine



Phosphatidylinositol



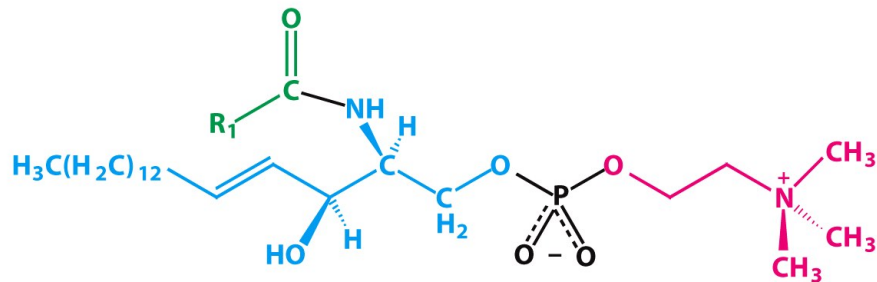
Diphosphatidylglycerol (cardiolipin)

Figure 11.7  
*Biochemistry: A Short Course, Second Edition*  
© 2013 W. H. Freeman and Company

12

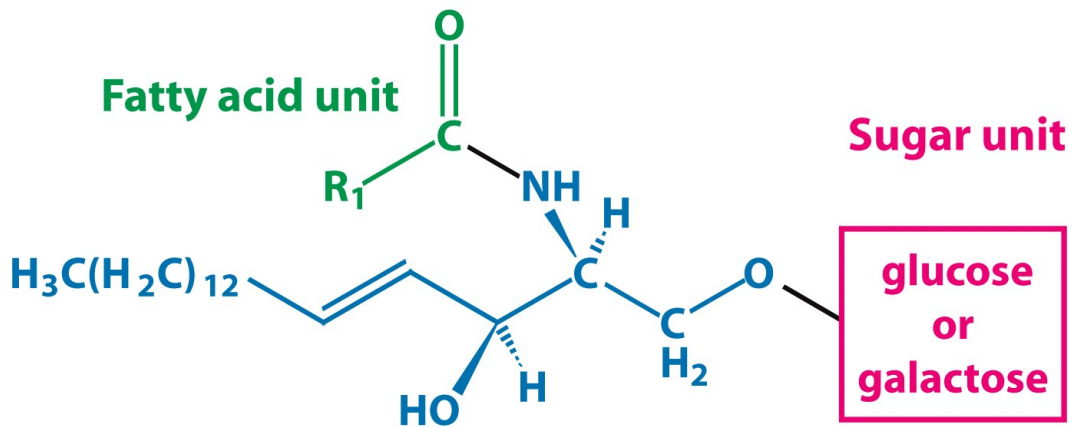


**Sphingosine**



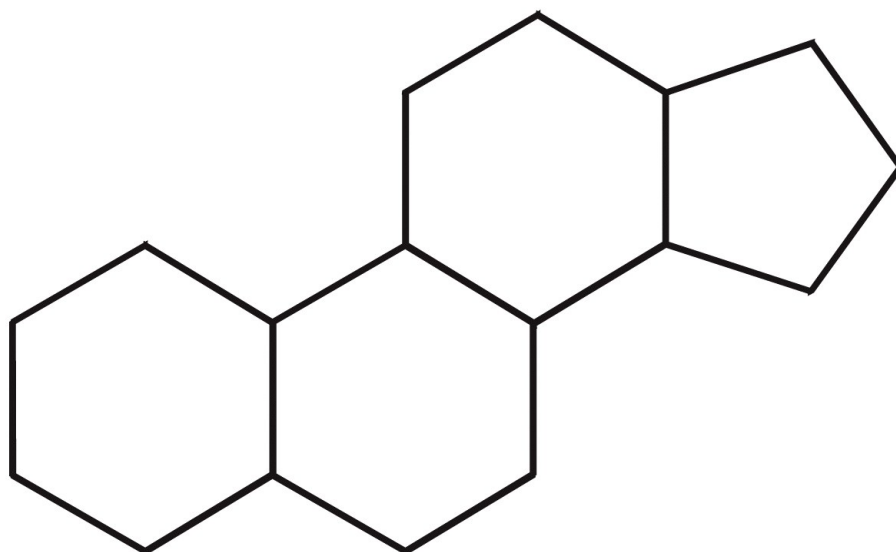
**Sphingomyelin**

Figure 11.8  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company



**Cerebroside  
 (a glycolipid)**

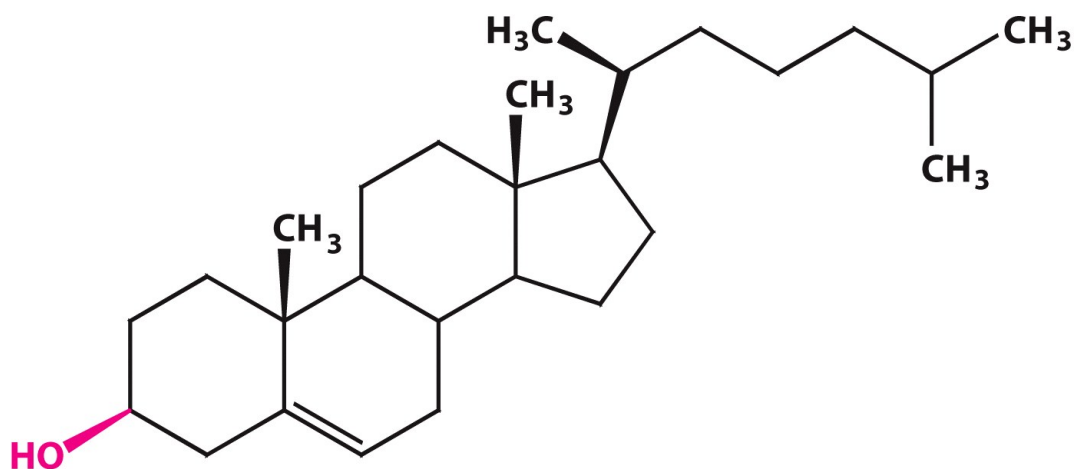
Unnumbered 11 p186a  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company



## Steroid nucleus

Unnumbered 11 p186b  
*Biochemistry: A Short Course, Second Edition*  
© 2013 W. H. Freeman and Company

15

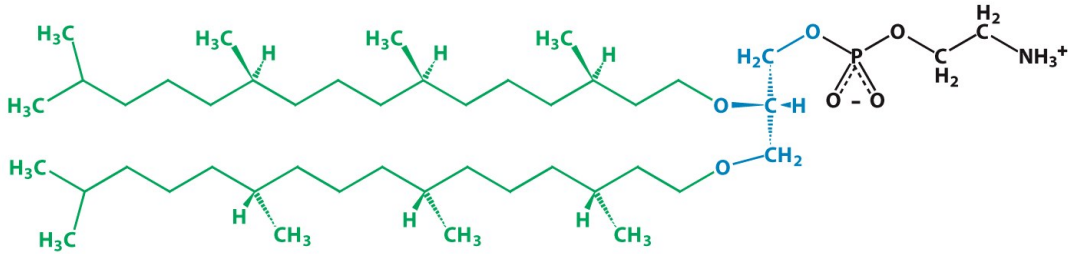


## Cholesterol

Unnumbered 11 p187a  
*Biochemistry: A Short Course, Second Edition*  
© 2013 W. H. Freeman and Company

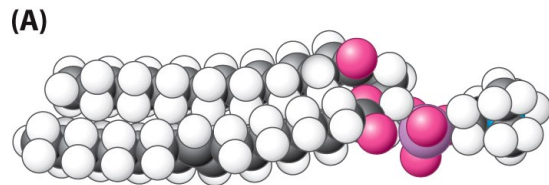
16



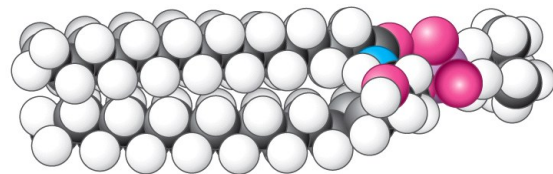


**Membrane lipid from the archaeon *Methanococcus jannaschii***

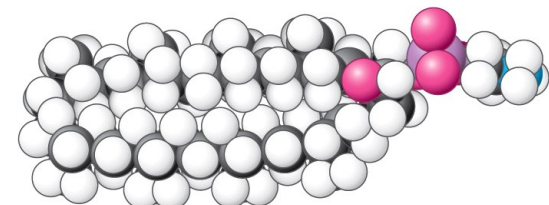
Unnumbered 11 p187b  
 Biochemistry: A Short Course, Second Edition  
 © 2013 W. H. Freeman and Company



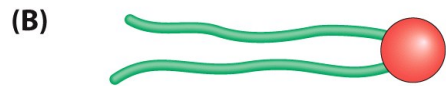
**Phosphoglyceride**



**Sphingomyelin**

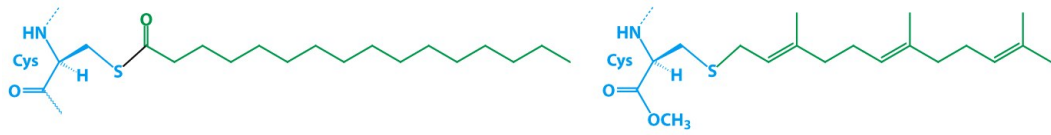


**Archaeal lipid**



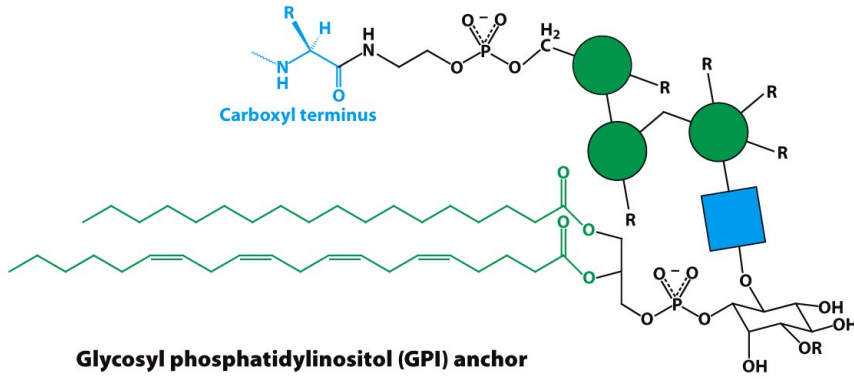
**Shorthand depiction**

Figure 11.9  
 Biochemistry: A Short Course, Second Edition  
 © 2013 W. H. Freeman and Company



**S-Palmitoylcysteine**

**C-terminal S-farnesylcysteine methyl ester**



**Glycosyl phosphatidylinositol (GPI) anchor**

**Figure 11.10**  
*Biochemistry: A Short Course, Second Edition*  
 © 2013 W. H. Freeman and Company