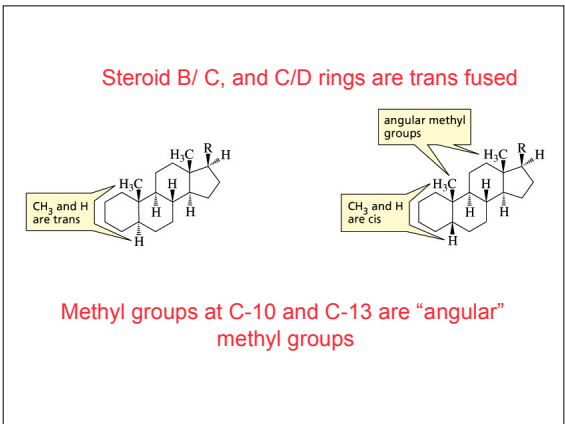
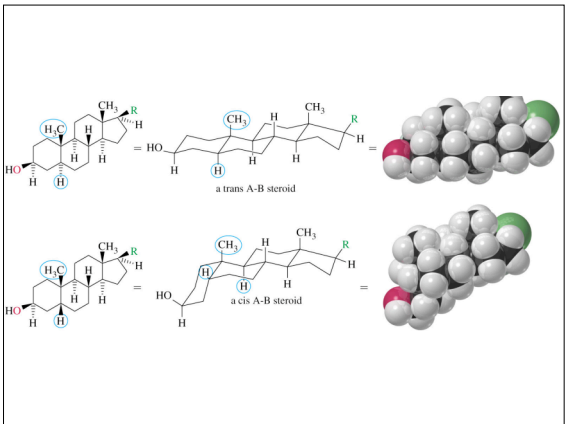
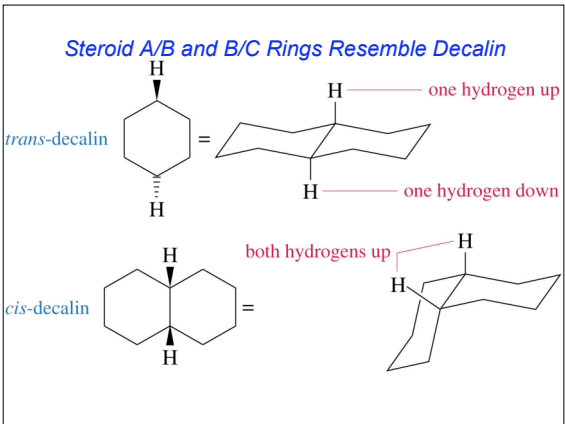
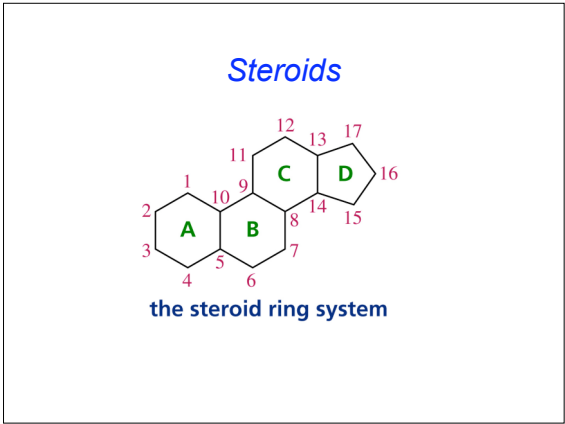


Steroids

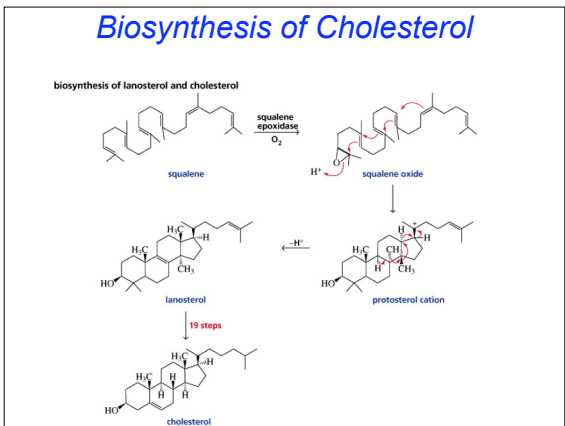
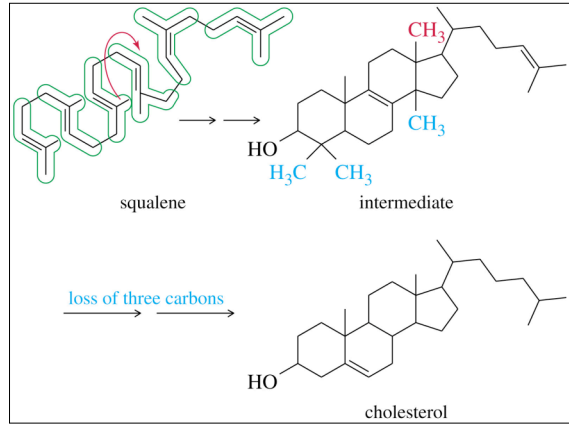


Cholesterol

Structure of Cholesterol

Cholesterol has the fundamental steroid skeleton modified as shown.

Food	Cholesterol (mg)
liver (3 oz)	410
egg (1 large)	213
shrimp (3 oz)	166
pork chop (3 oz)	83
chicken (3 oz)	75
beef steak (3 oz)	70
fish fillet (3 oz)	54
whole milk (1 cup)	33
cheddar cheese (1 oz)	30
Swiss cheese (1 oz)	26
low-fat milk (1 cup)	22



Cholesterol

Diagram illustrating the structure of cholesterol and its role in a cell membrane. The diagram shows cholesterol molecules in a lipid bilayer, with proteins embedded and some extending across the bilayer.

Vitamin D

Cholesterol

Cholesterol is the precursor to vitamin D. Enzymes dehydrogenate cholesterol to introduce a second double bond in conjugation with the existing one. The product of this reaction is called 7-dehydrocholesterol.

7-Dehydrocholesterol



Sunlight converts 7-dehydrocholesterol on the skin's surface to vitamin D₃.

Vitamin D₃



Insufficient sunlight can lead to a deficiency of vitamin D₃, interfering with Ca²⁺ transport and bone development. Rickets can result.

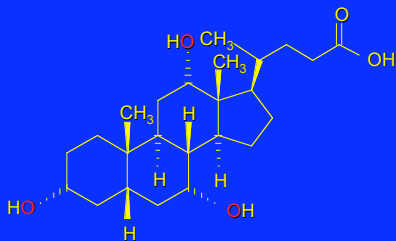
Bile Acids

Cholesterol



Oxidation in the liver degrades the cholesterol side chain. Cholic acid is the most abundant of the bile acids.

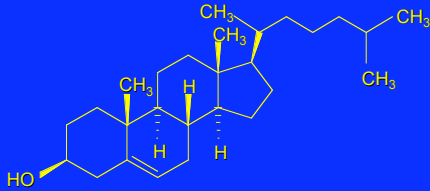
Cholic Acid



Salts of cholic acid amides (*bile salts*) act as emulsifying agents to aid digestion.

Corticosteroids

Cholesterol



Enzymatic degradation of the side chain and oxidation of various positions on the steroid skeleton convert cholesterol to *corticosteroids*.

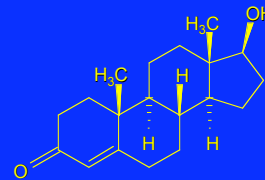
Cortisone



Corticosteroids are involved in maintaining electrolyte levels, in the metabolism of carbohydrates, and in mediating the allergic response.

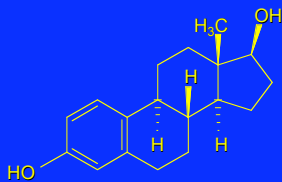
Sex Hormones

Testosterone



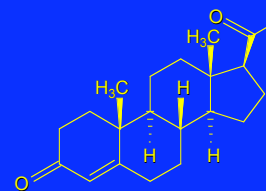
Testosterone is the main male sex hormone.

Estradiol



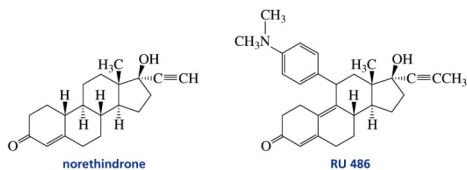
Estradiol is a female sex hormone involved in regulating the menstrual cycle and in reproduction.

Progesterone



Supresses ovulation during pregnancy.

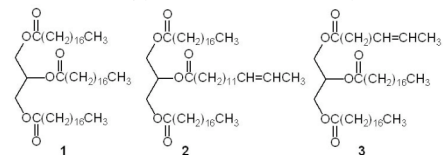
Synthetic Steroids



Recognizing Lipids: Structural Differences

Question

Which of the triglycerides below is optically active?



- A) 1 and 3 B) 2 and 3 E) none
C) 3 only D) 1, 2, and 3

Question

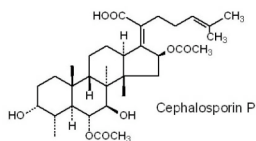
Misoprostol is classified as a



- A) terpene. B) wax.
C) steroid. D) prostaglandin.

Question

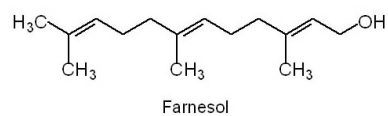
The backbone of cephalosporin P is classified as a



- A) prostaglandin. B) steroid.
C) cholesterol. D) sesterpene.

Question

Farnesol is classified as a



- A) monoterpene.
B) sesquiterpene.
C) diterpene.
D) triterpene.