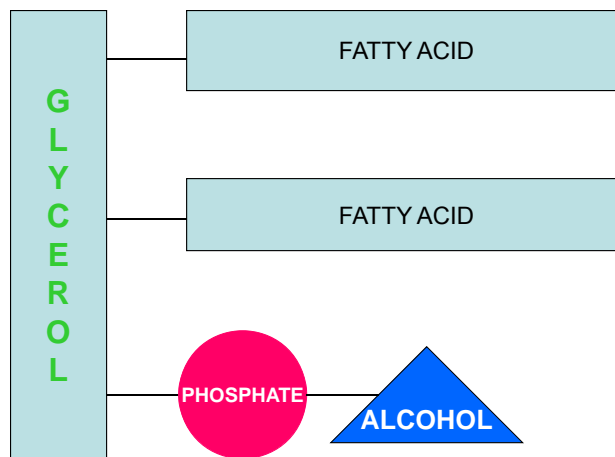
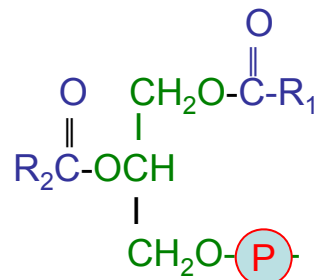


Biosynthesis of Glycerophospholipids

also known as
Phosphoglycerides or
Phosphoacylglycerol
Lippincott's Ch 17



PHOSPHOACYLGLYCEROL

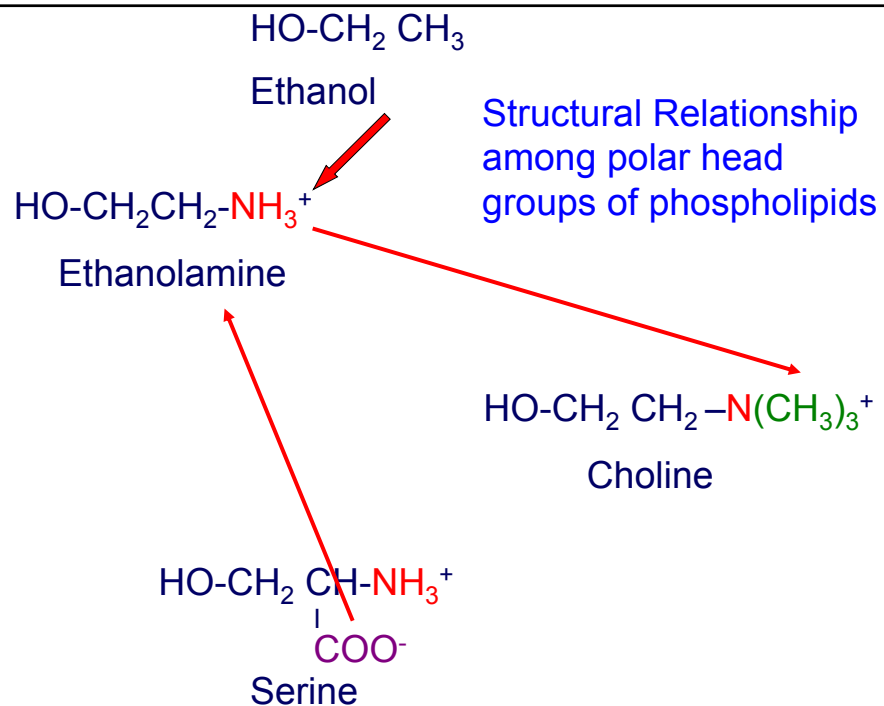


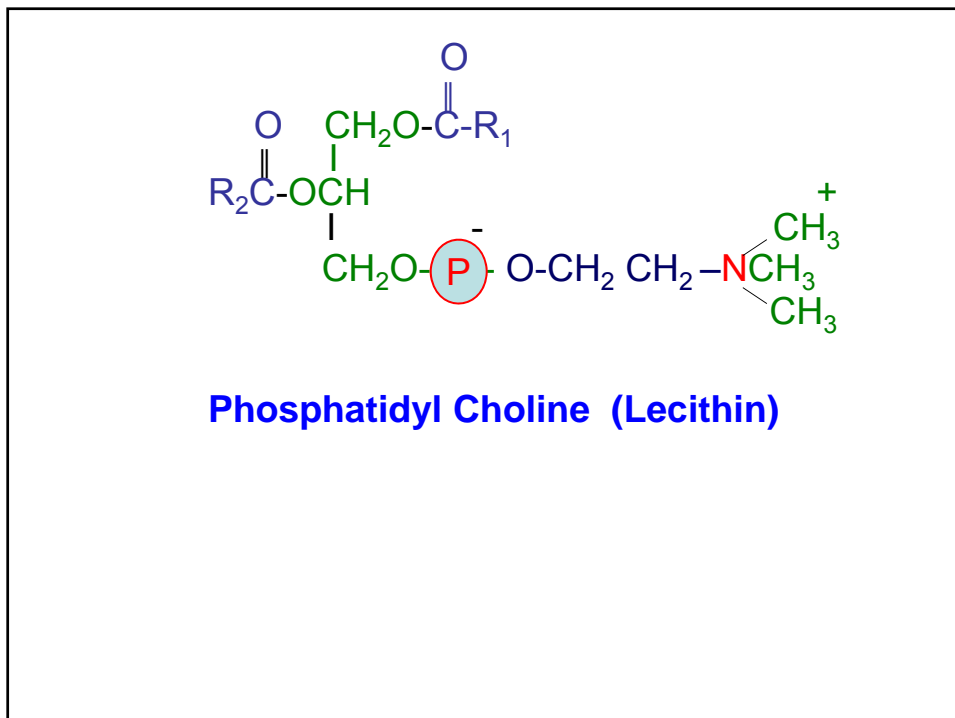
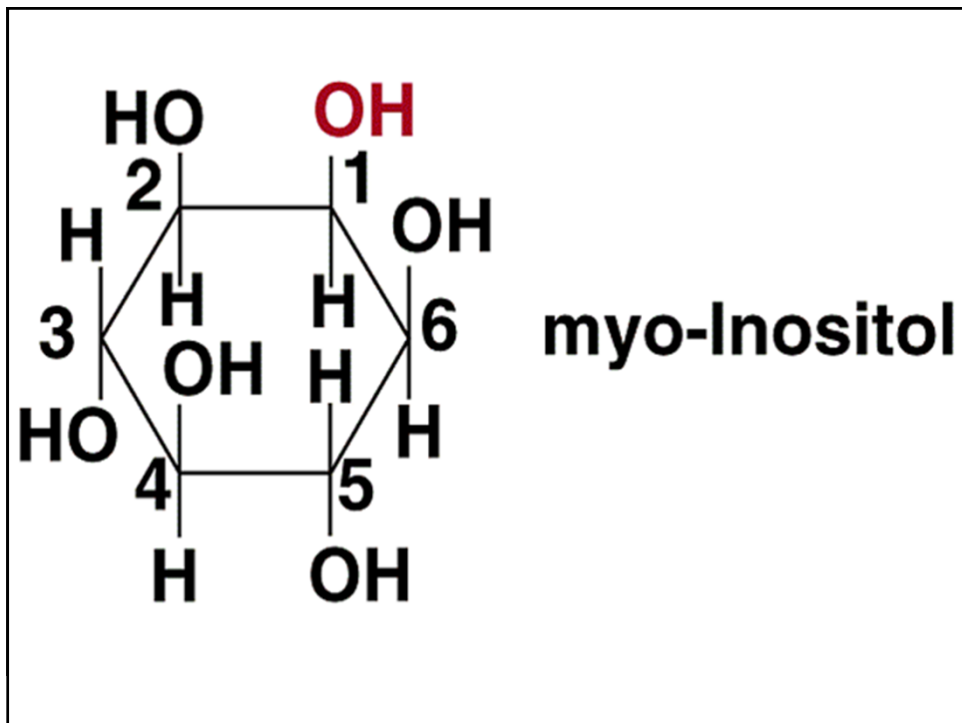
Phosphatidic Acid

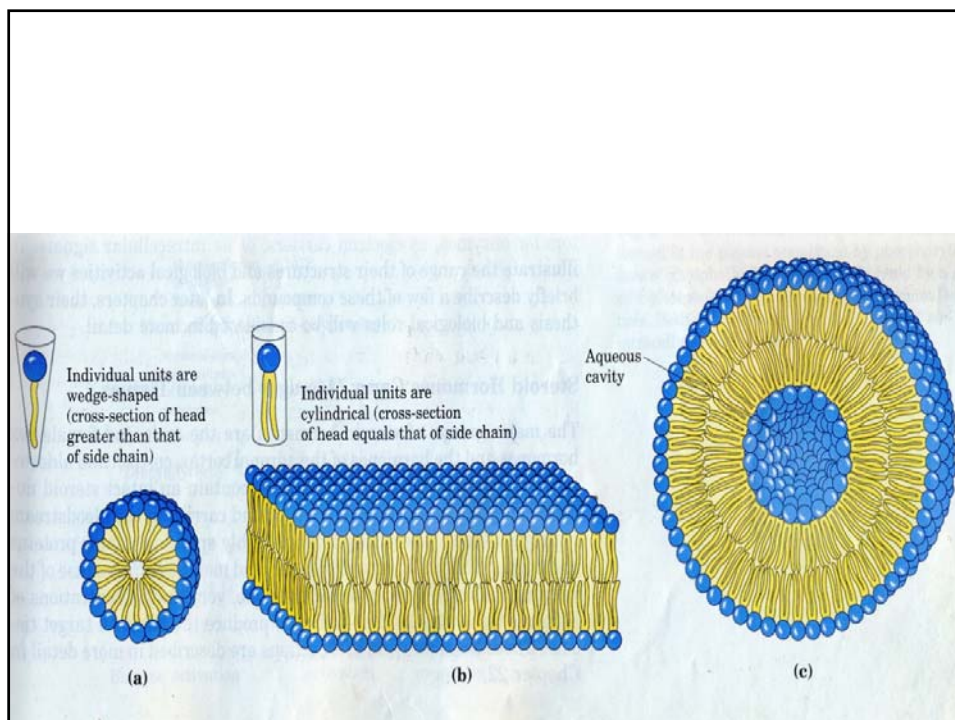
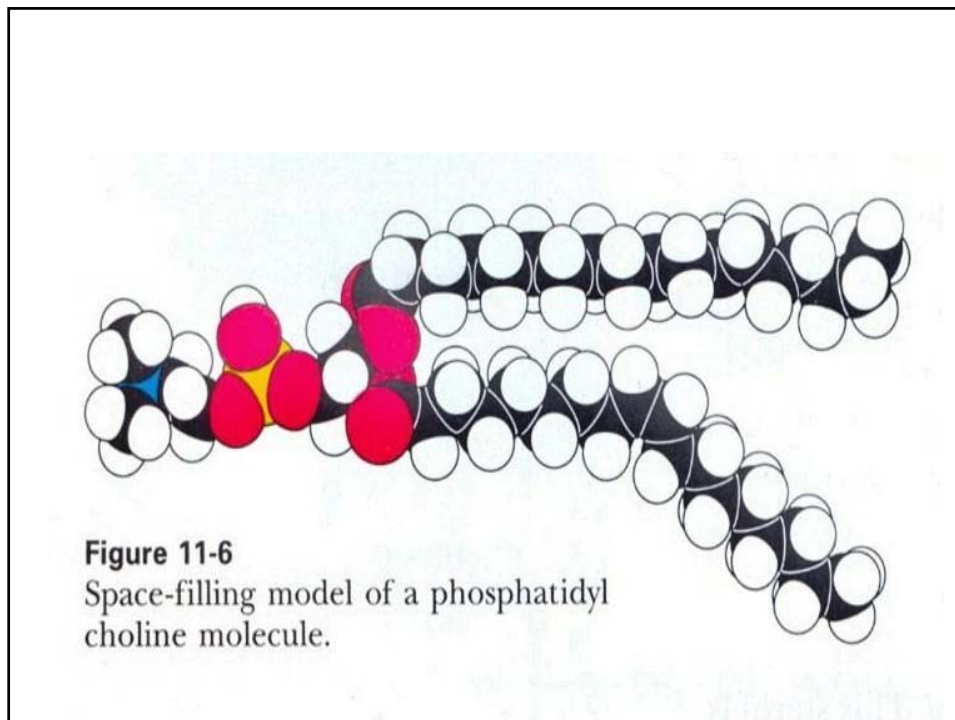
Can Form Ester with Alcohol:

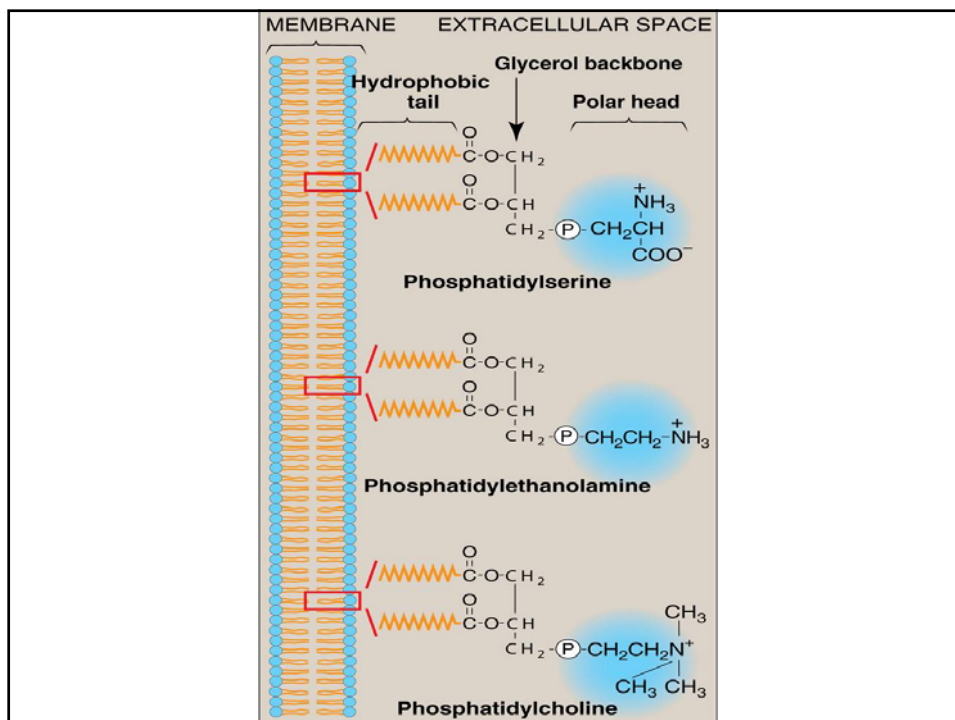
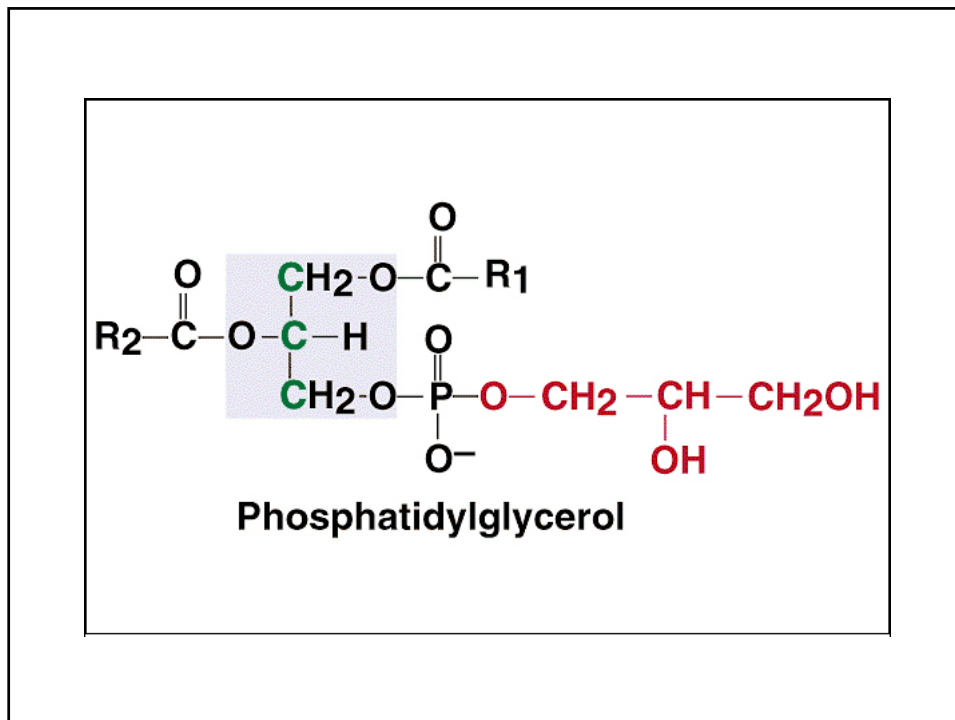
- Serine
- Ethanolamine
- Choline
- Inositol
- Glycerol

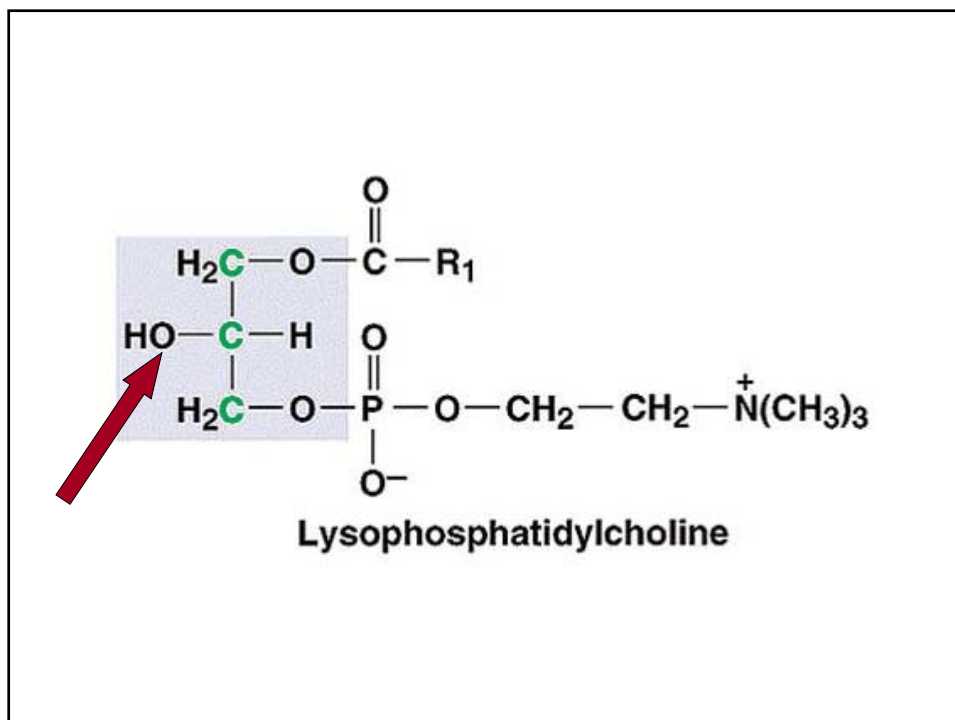
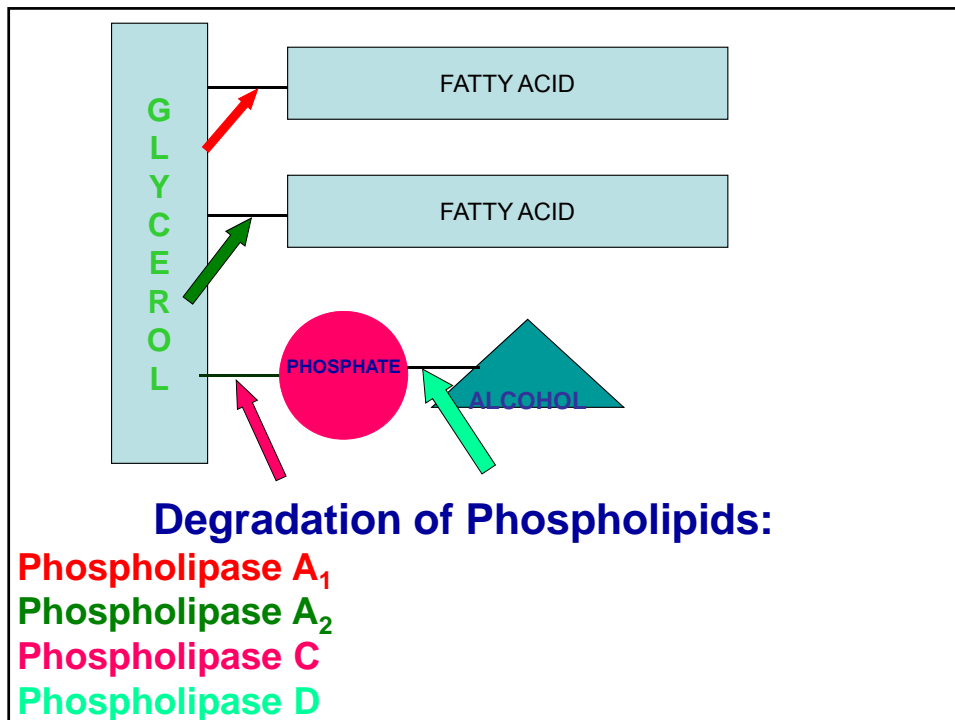
Phosphatidyl -

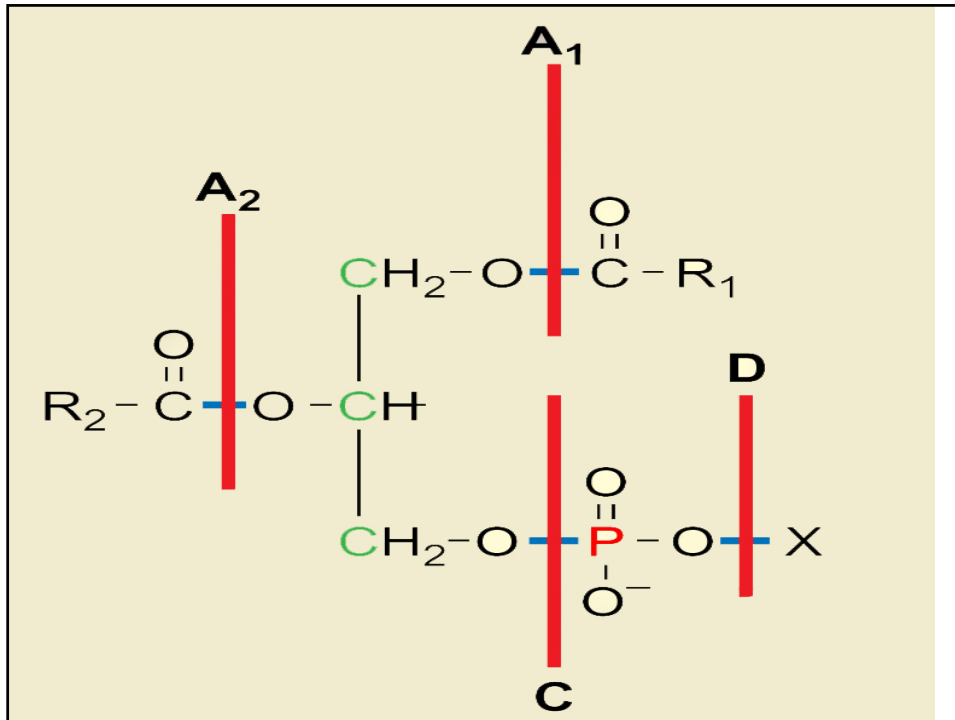












PHOSPHOLIPASE A₂

- Phospholipase A₂ is present in many mammalian tissues and pancreatic juice. It is also present in snake and bee venoms.
- Phospholipase A₂, acting on phosphatidylinositol, releases arachidonic acid (the precursor of the prostaglandins).
- Pancreatic secretions are especially rich in the phospholipase A₂ proenzyme, which is activated by trypsin and requires bile salts for activity.
- Phospholipase A₂ is inhibited by glucocorticoids (for example, cortisol).

PHOSPHOLIPASE A₁

- Phospholipase A₁ is present in many mammalian tissues.

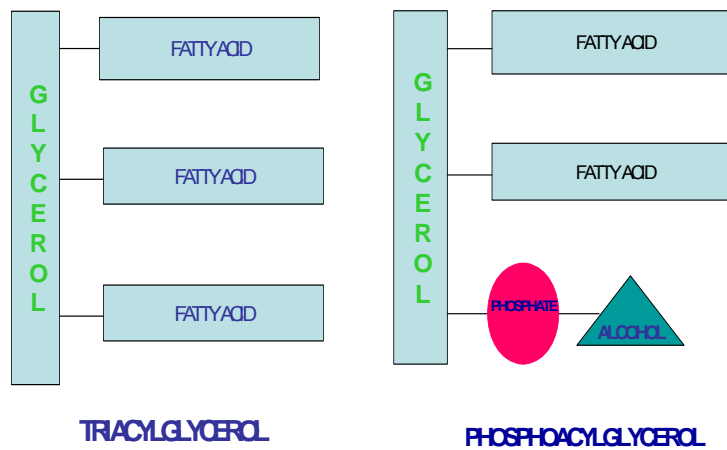
PHOSPHOLIPASE D

- Phospholipase D is found primarily in plant tissue.

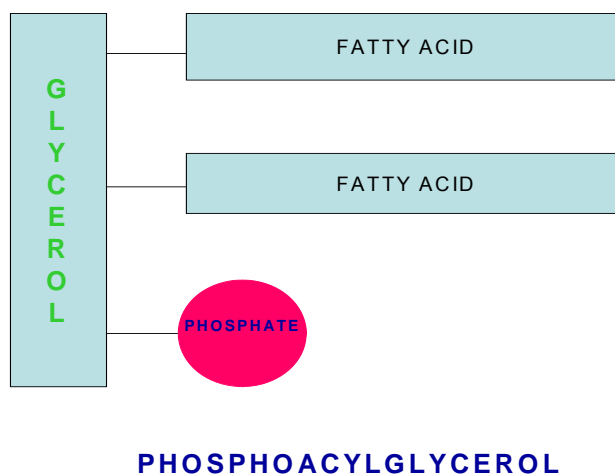
PHOSPHOLIPASE C

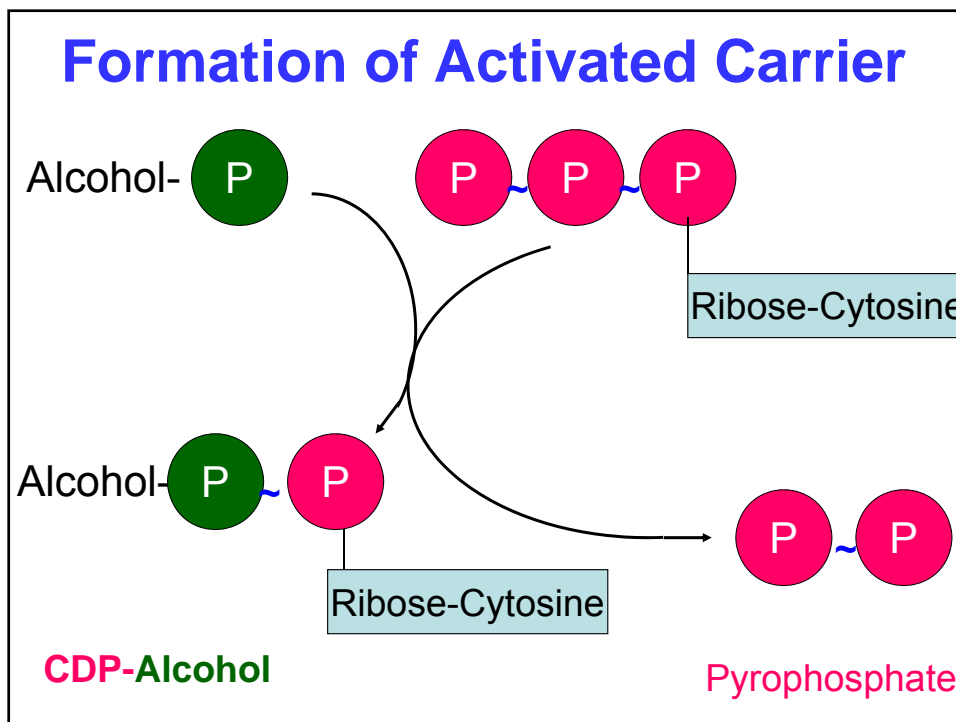
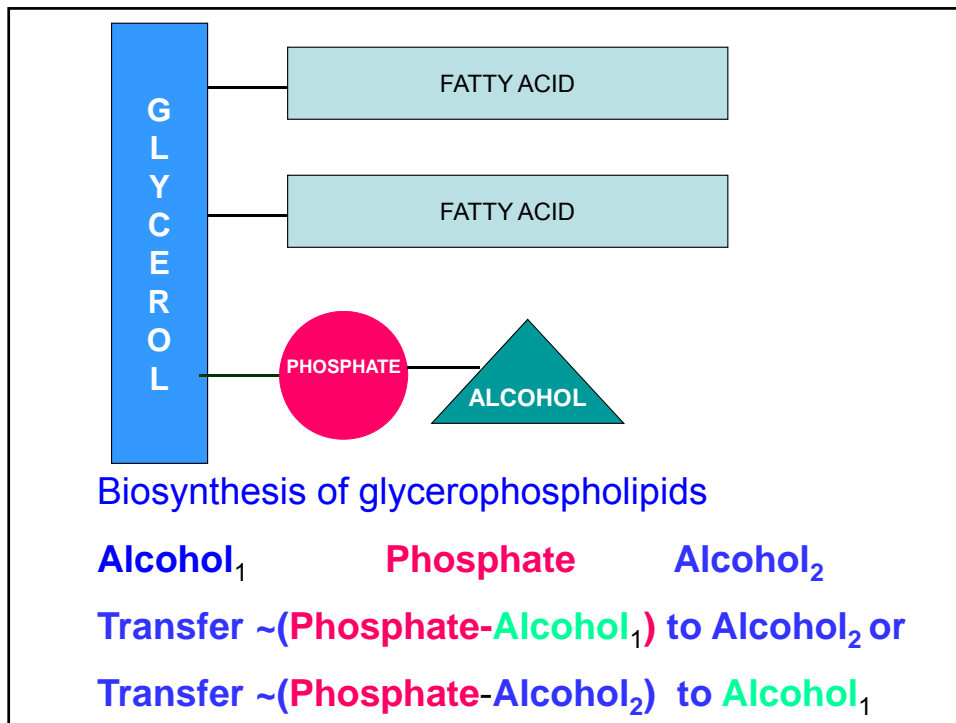
- Phospholipase C is found in liver lysosomes and the α-toxin of clostridia and other bacilli.
- Membrane-bound phospholipase C is activated by the PIP₂ system and, thus, plays a role in producing second messengers.

Biosynthesis of Triacylglycerol & Phosphoacylglycerol



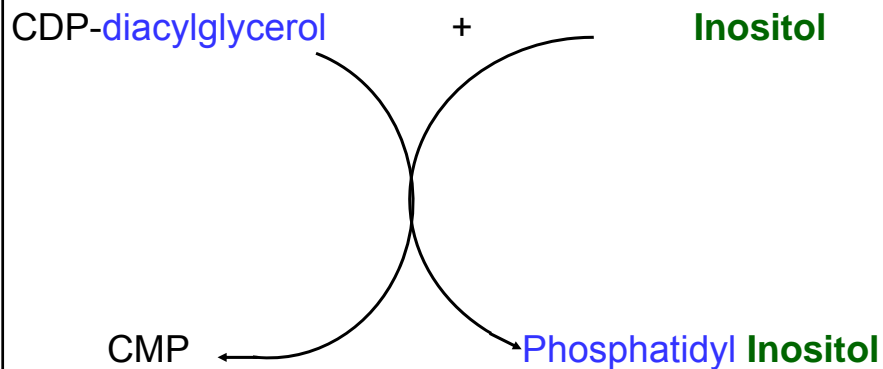
Phosphotadic Acid is Common Intermediate





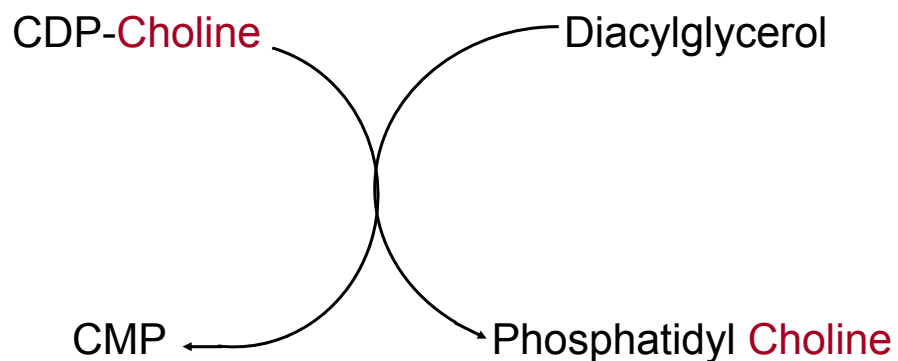
Synthesis of Phosphatidyl Inositol

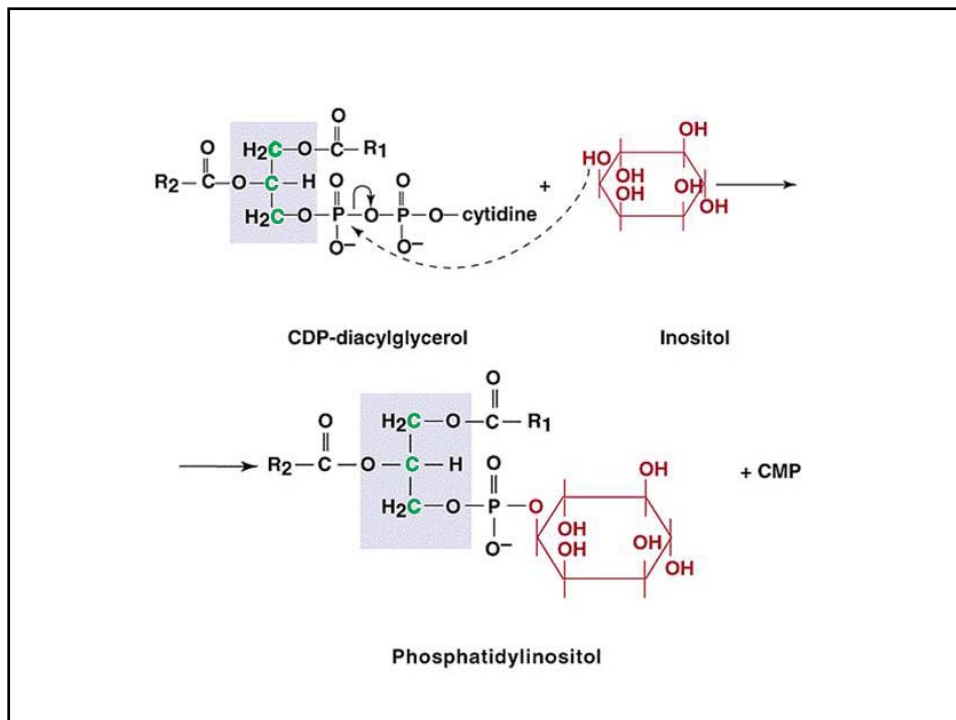
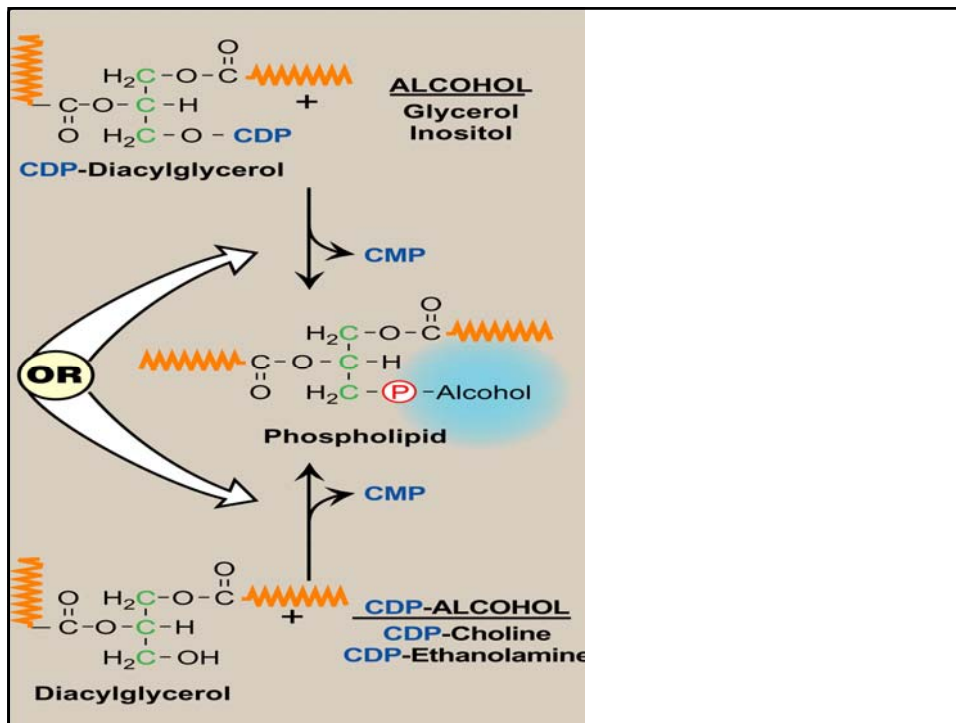
Transfer of Phosphatidic acid to Inositol



Synthesis of Phosphatidyl Choline

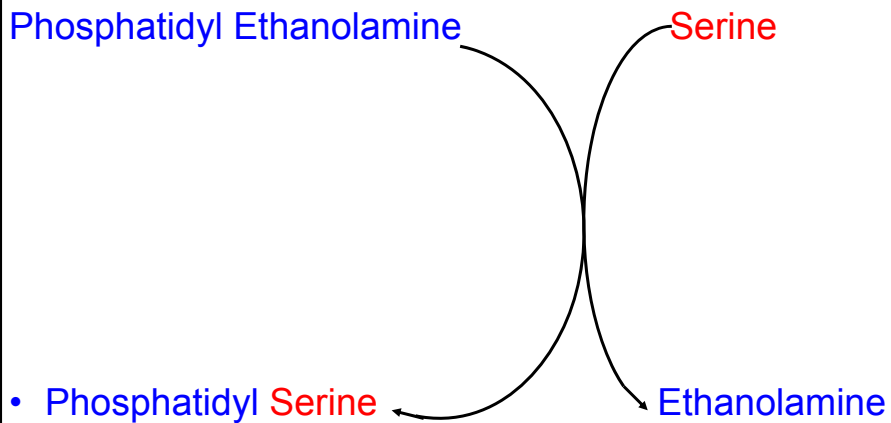
Transfer of Phosphocholine (Ethanolamine) to Diacylglycerol





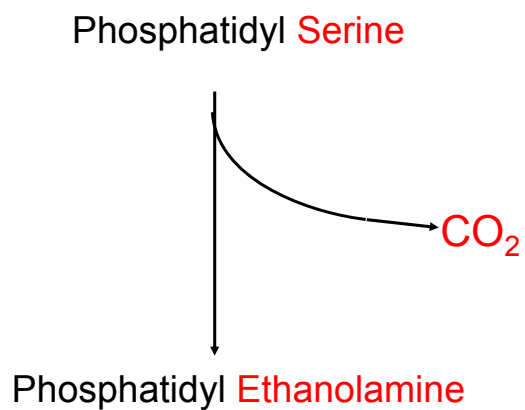
Alteration of Polar Head Group

- Exchange of the Polar Head Group



Alteration of Polar Head Group

- Decarboxylation of Phosphatidyl Serine

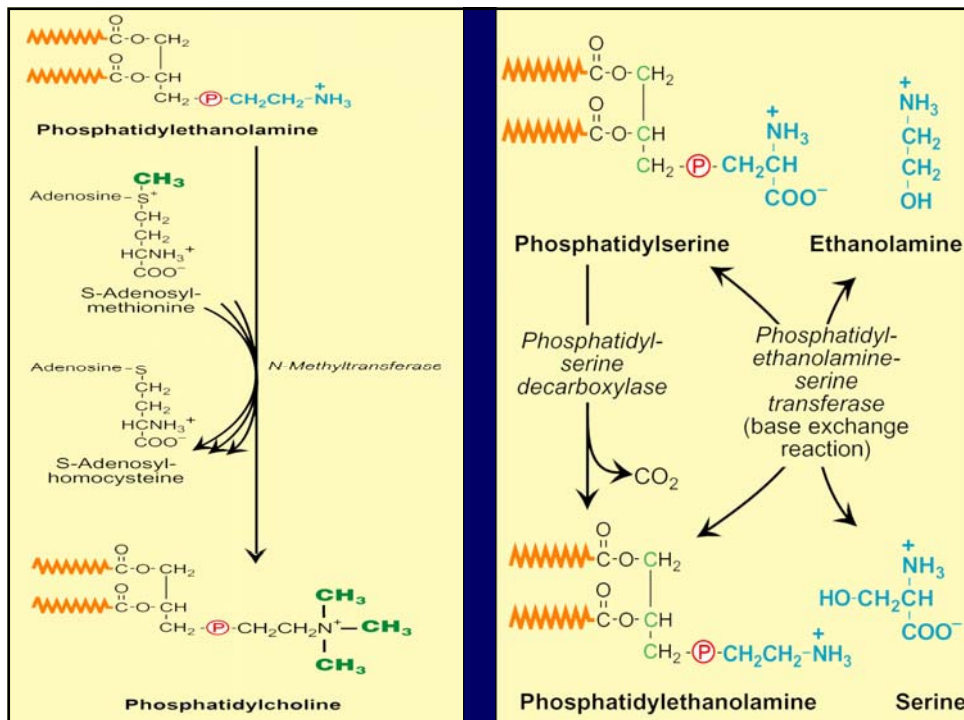
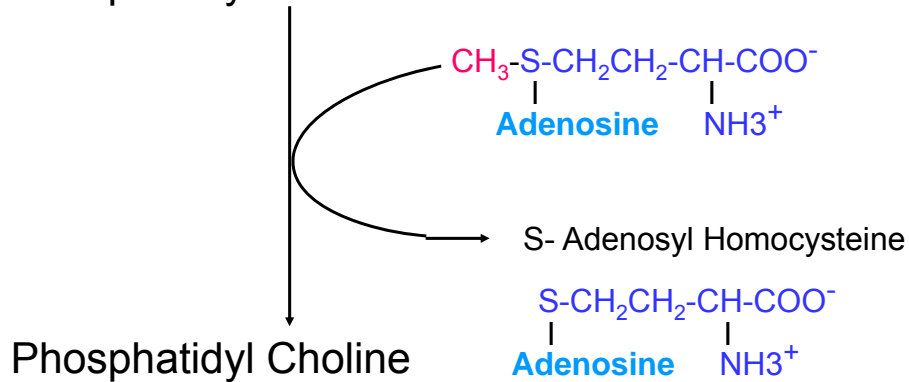


Alteration of Polar Head Group

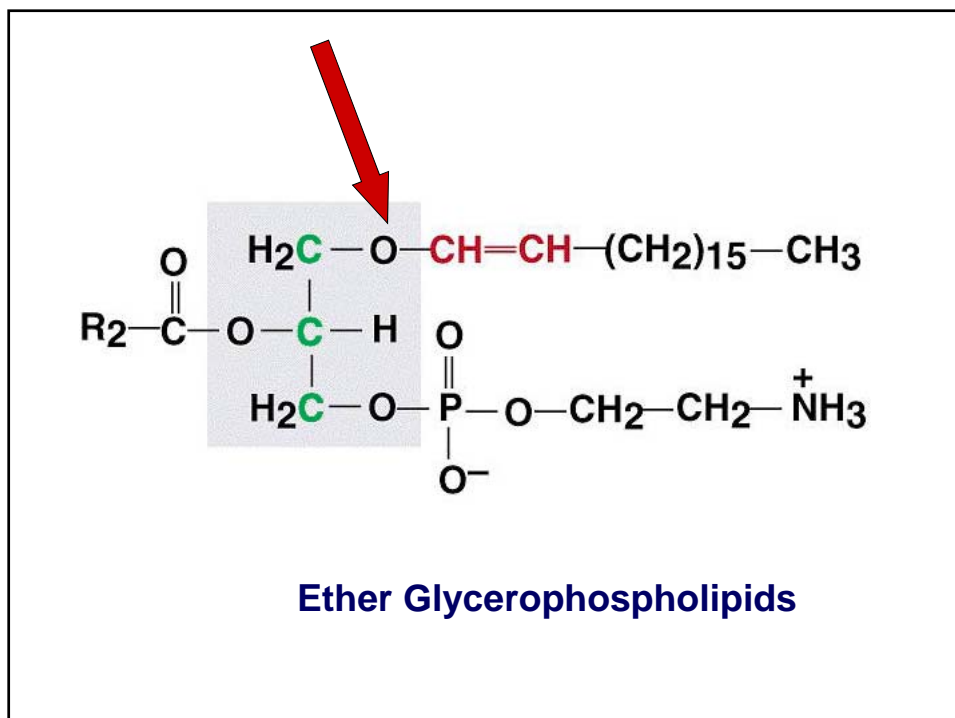
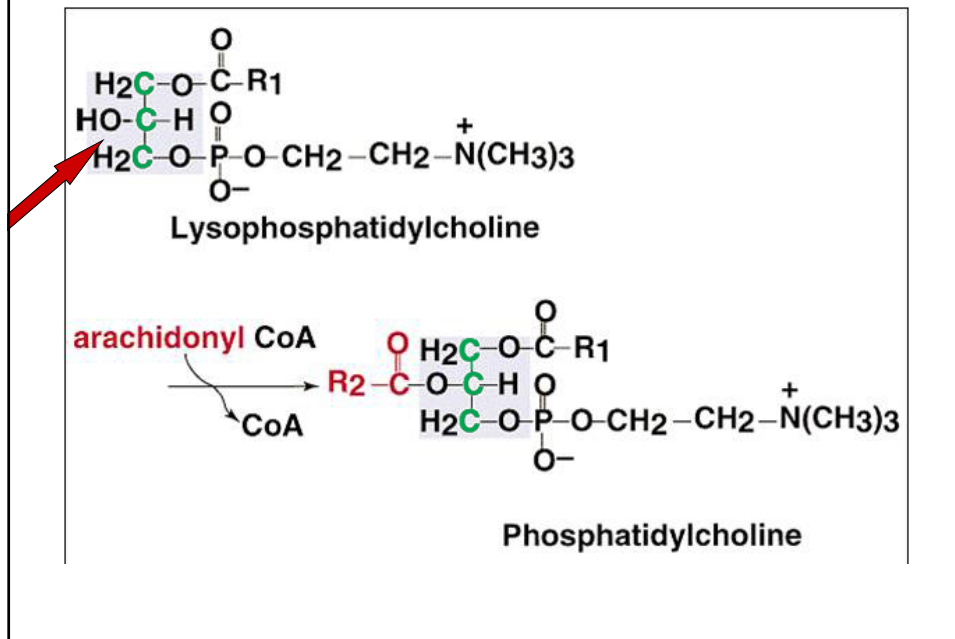
- Methylation of Phosphatidyl Ethanolamine**

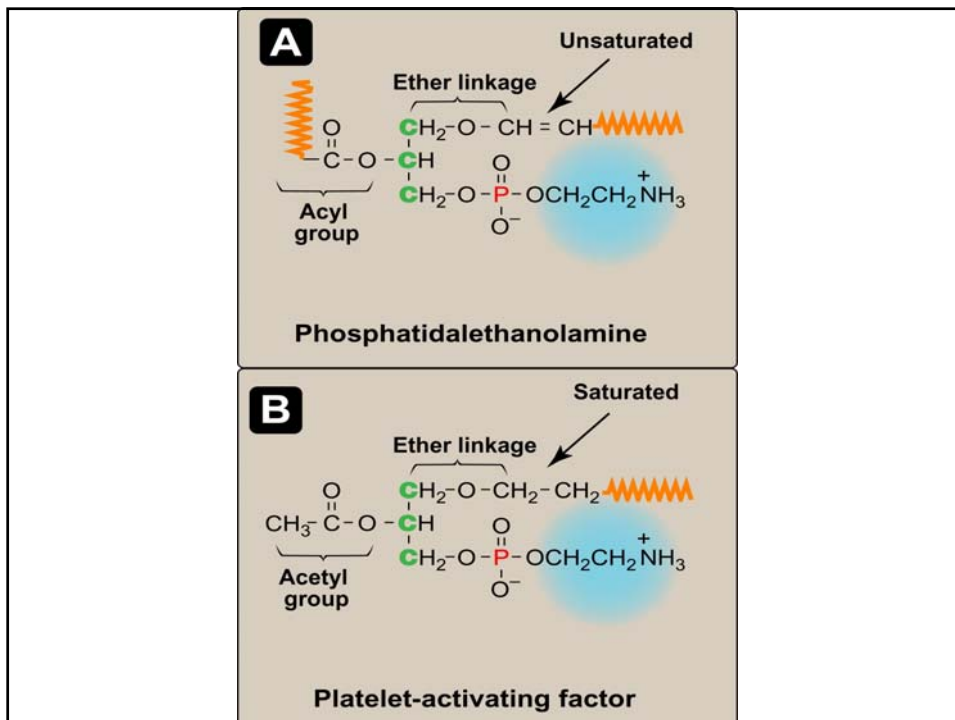
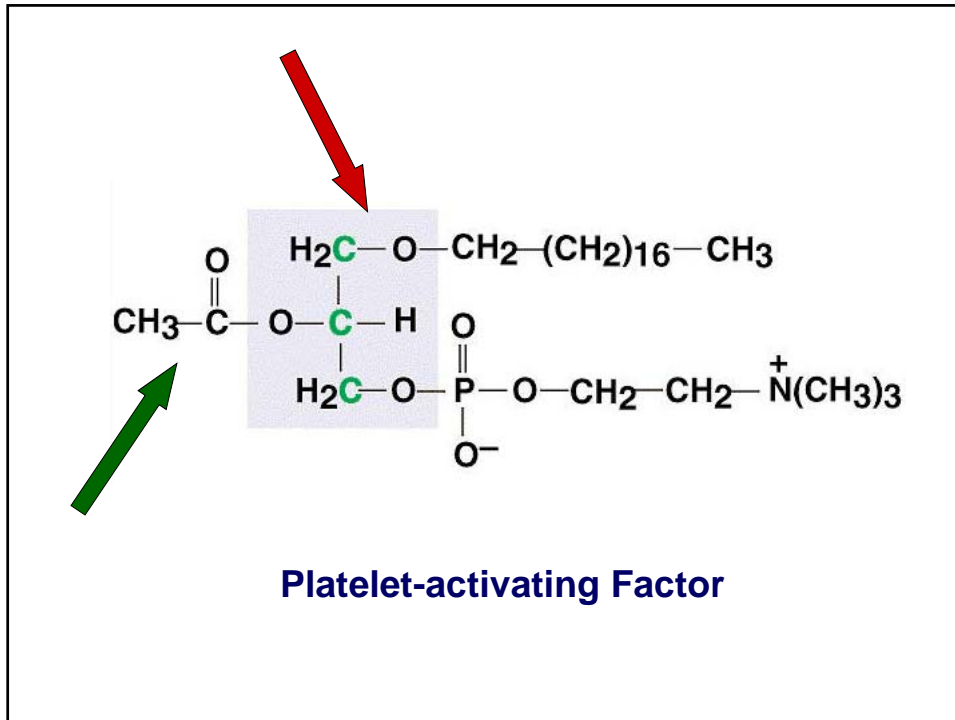
S- Adenosyl Methionine (SAM); Methyl donor

Phosphatidyl **Ethanolamine**

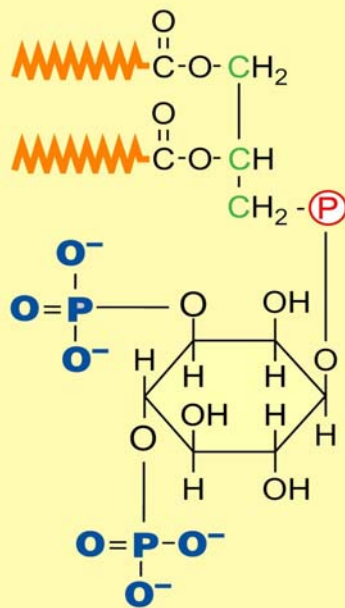
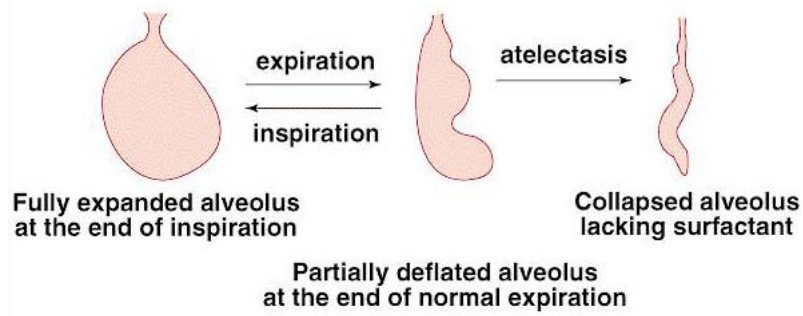


Remodeling Phospholipids: Changing the Fatty Acid





Surfactant Action of Phospholipids



Phosphatidylinositol 4,5-bisphosphate

