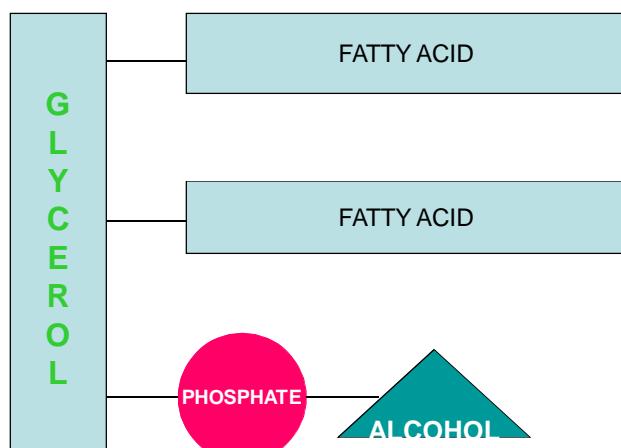
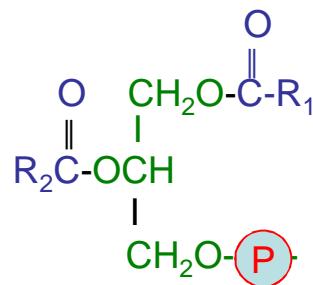


# Biosynthesis of Glycerophospholipids

also known as  
Phosphoglycerides or  
Phosphoacylglycerol  
Lippincott's Ch 17



PHOSPHOACYLGLYCEROL

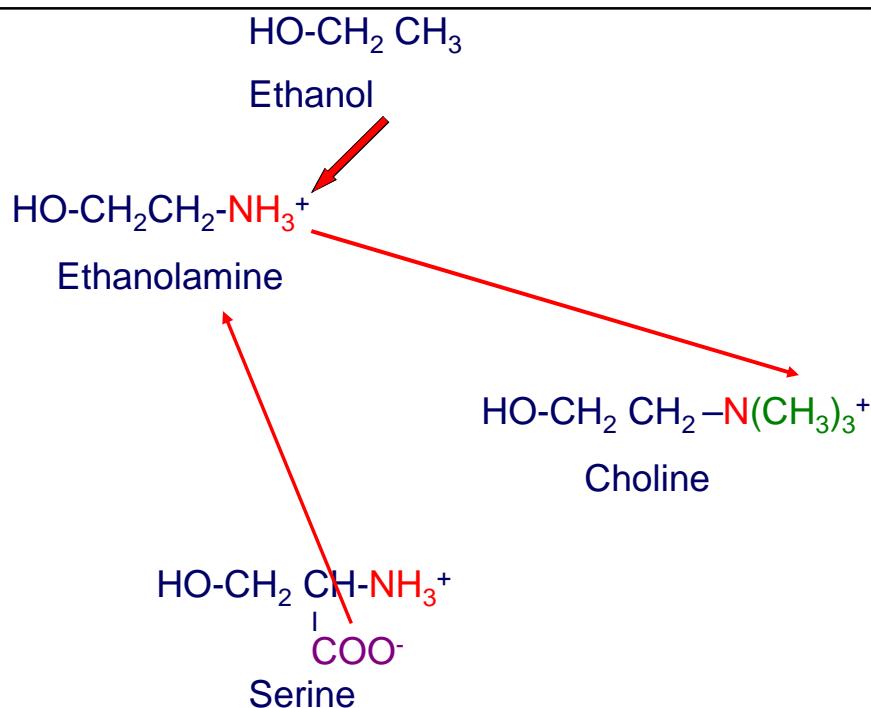


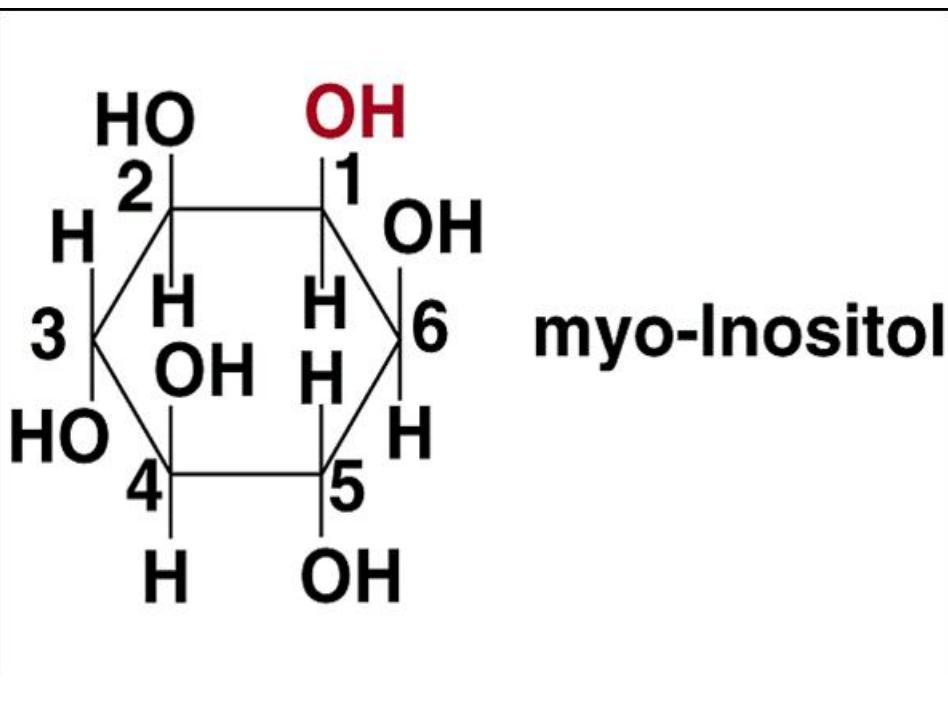
Phosphatidic Acid

Can Form Ester with Alcohol:

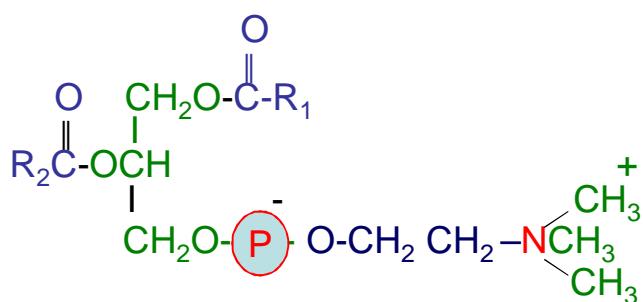
- |                |            |
|----------------|------------|
| - Serine       | - Inositol |
| - Ethanolamine | - Glycerol |
| - Choline      |            |

Phosphatidyl -

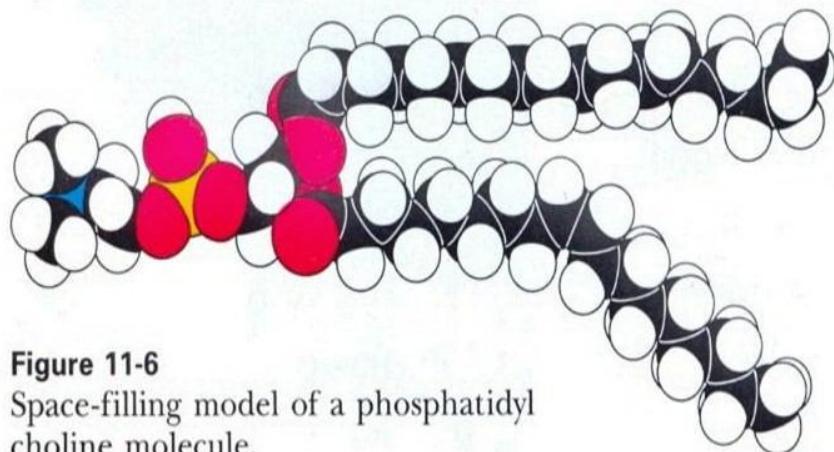




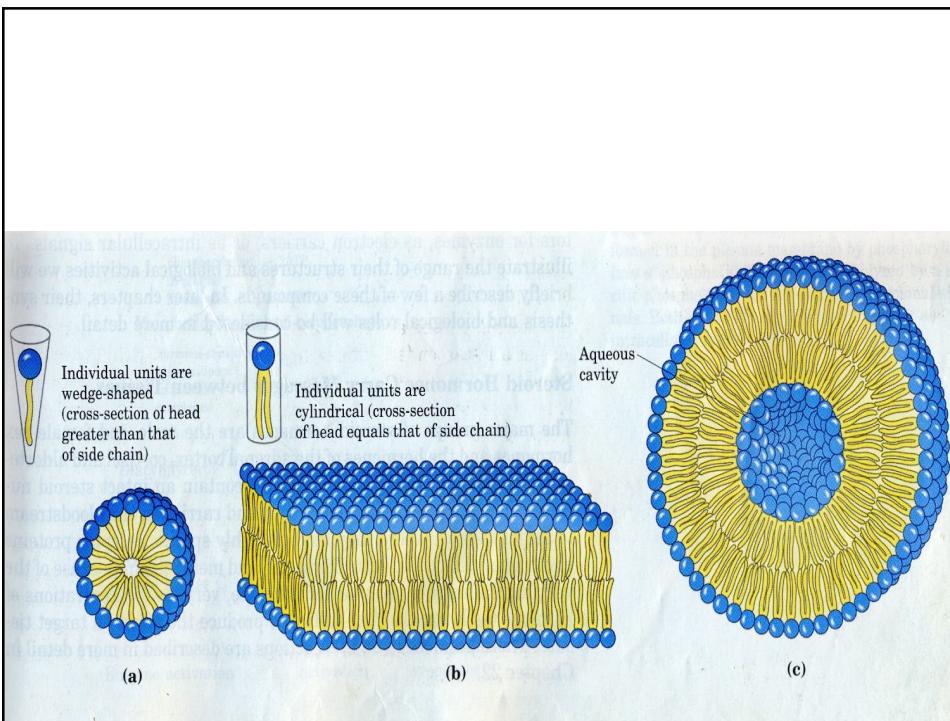
myo-Inositol

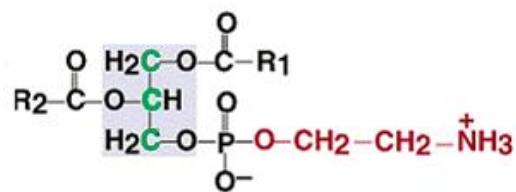


Phosphatidyl Choline (Lecithin)

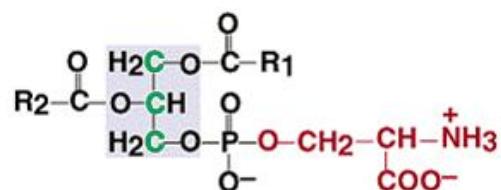


**Figure 11-6**  
Space-filling model of a phosphatidyl choline molecule.

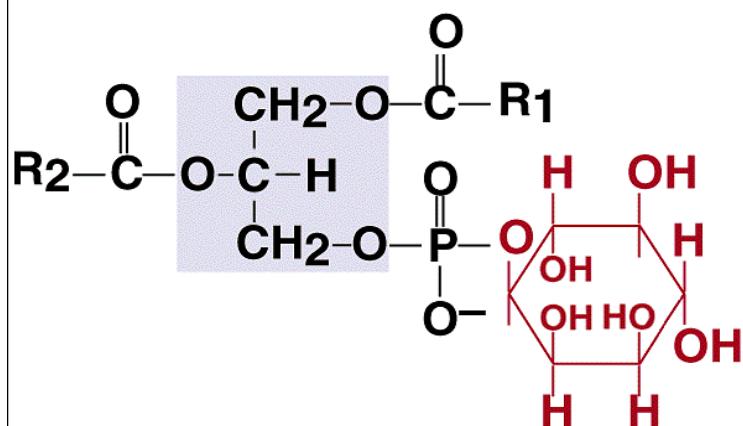




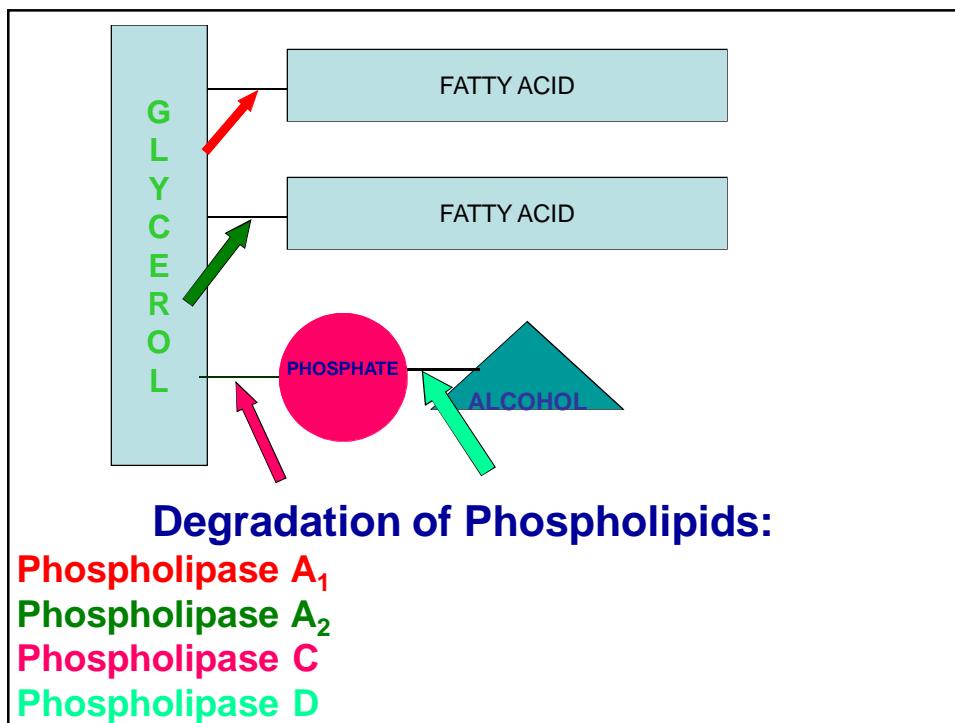
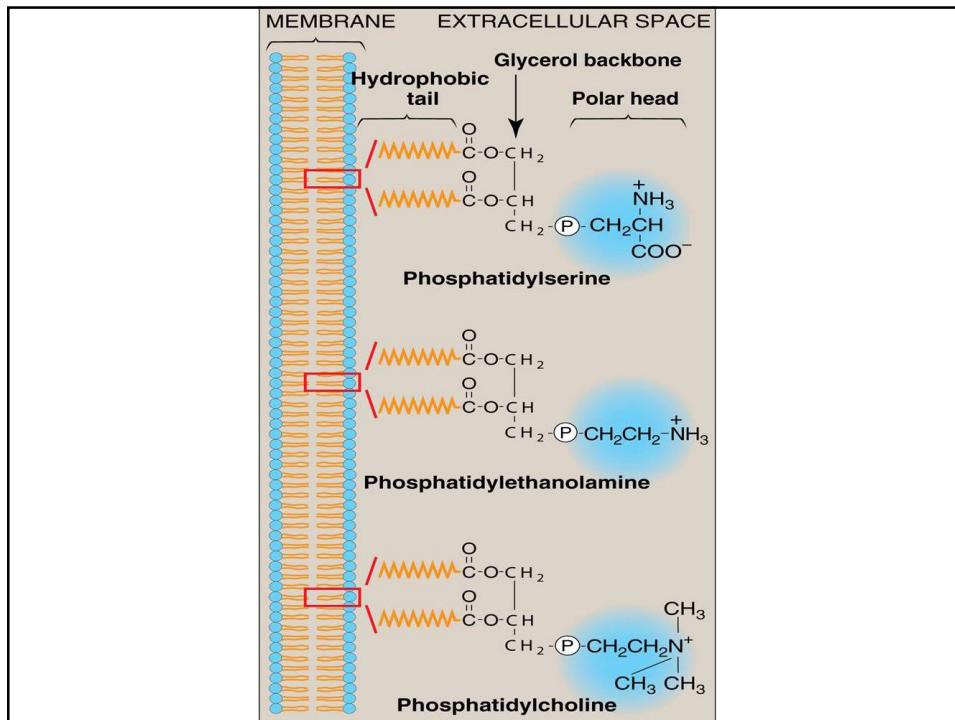
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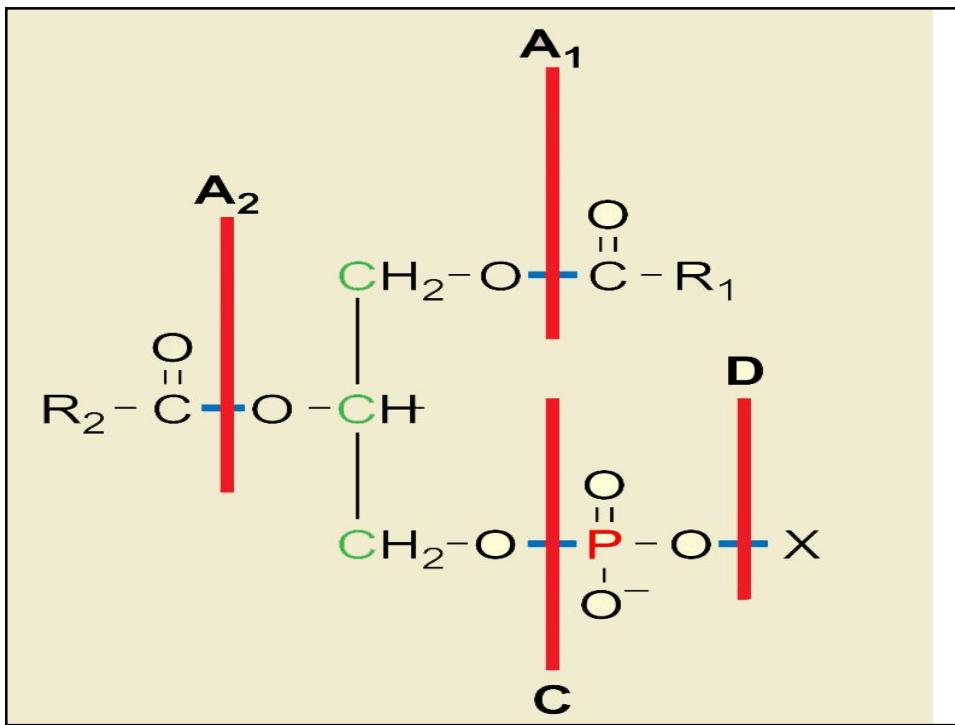
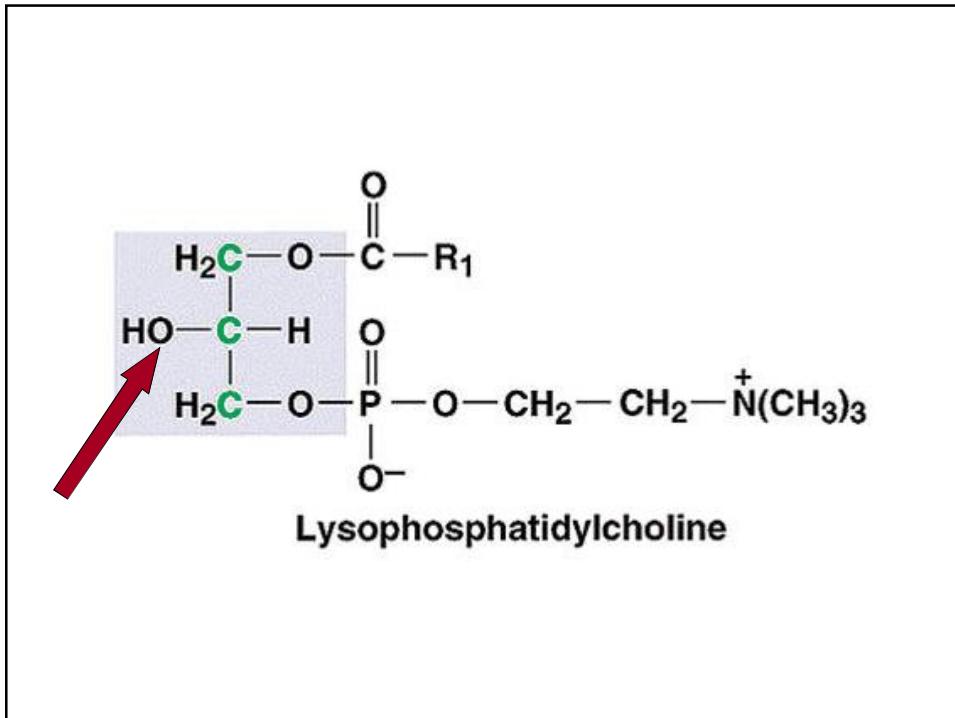


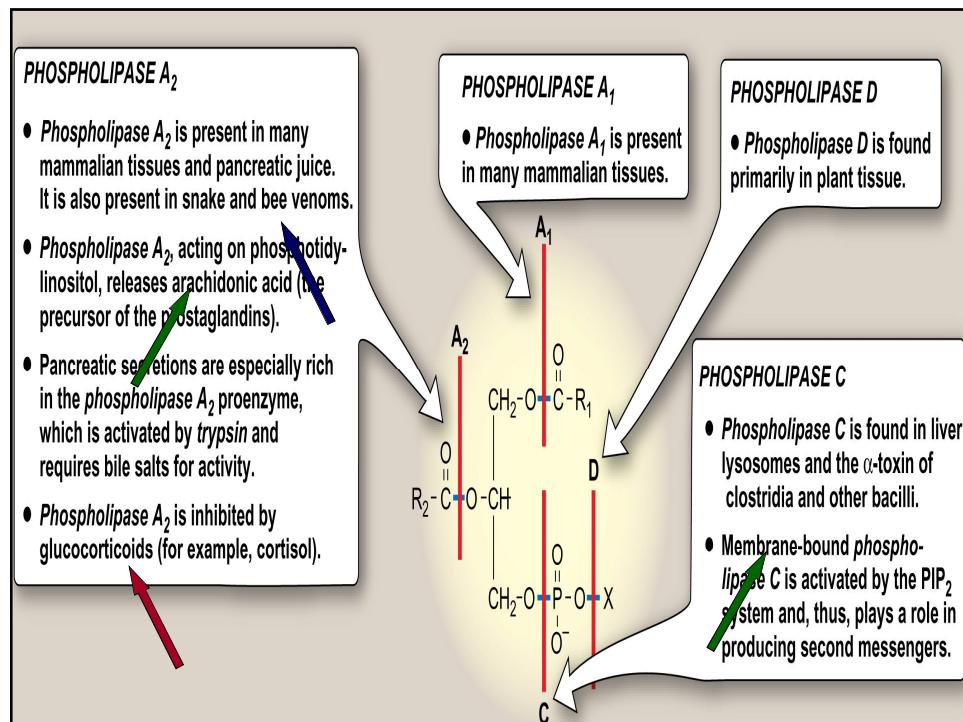
??



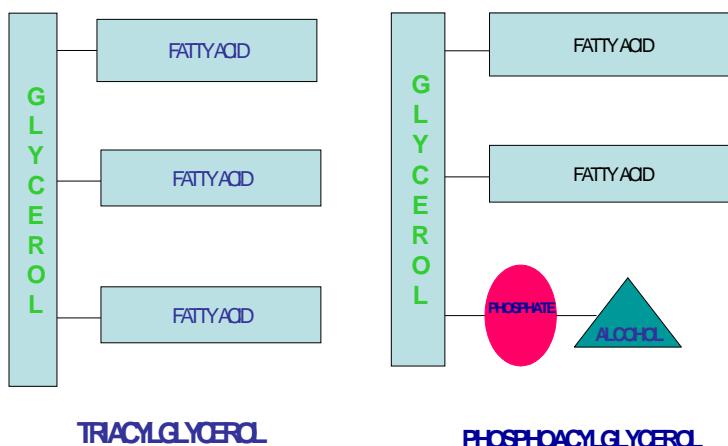
# Phosphatidylinositol



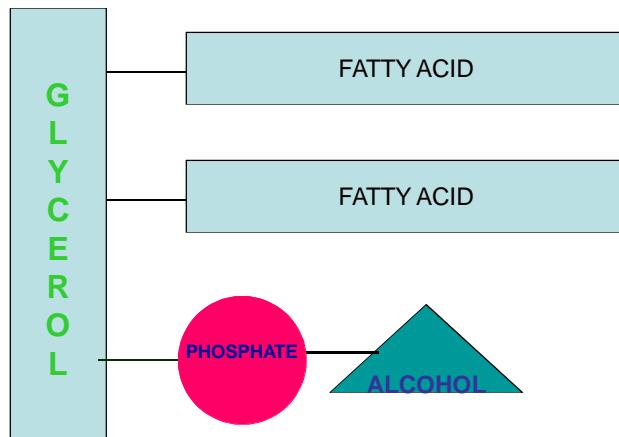
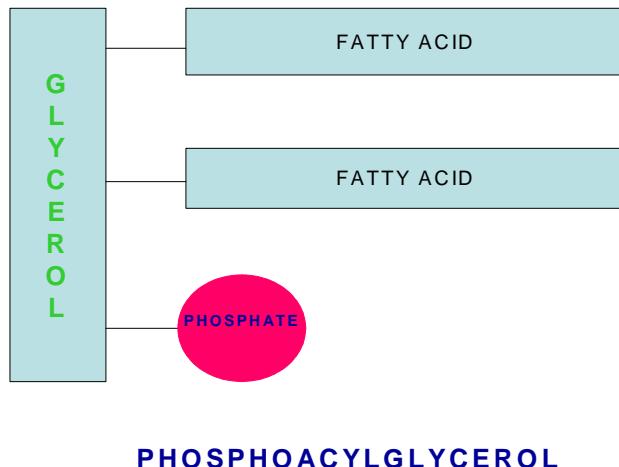




## Biosynthesis of Triacylglycerol & Phosphoacylglycerol



## Phosphotadic Acid is Common Intermediate



Biosynthesis of glycerophospholipids

$\text{Alcohol}_1$

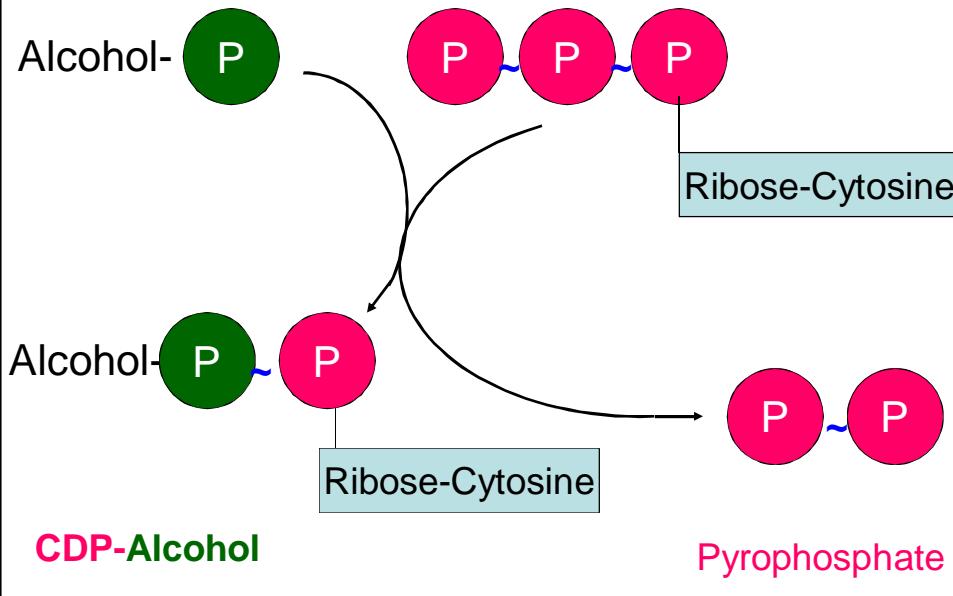
$\text{Phosphate}$

$\text{Alcohol}_2$

Transfer ~( $\text{Phosphate-Alcohol}_1$ ) to  $\text{Alcohol}_2$  or

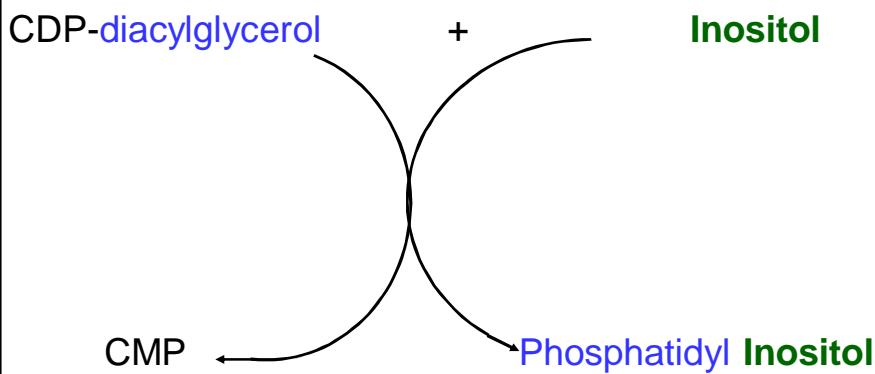
Transfer ~( $\text{Phosphate-Alcohol}_2$ ) to  $\text{Alcohol}_1$

## Formation of Activated Carrier



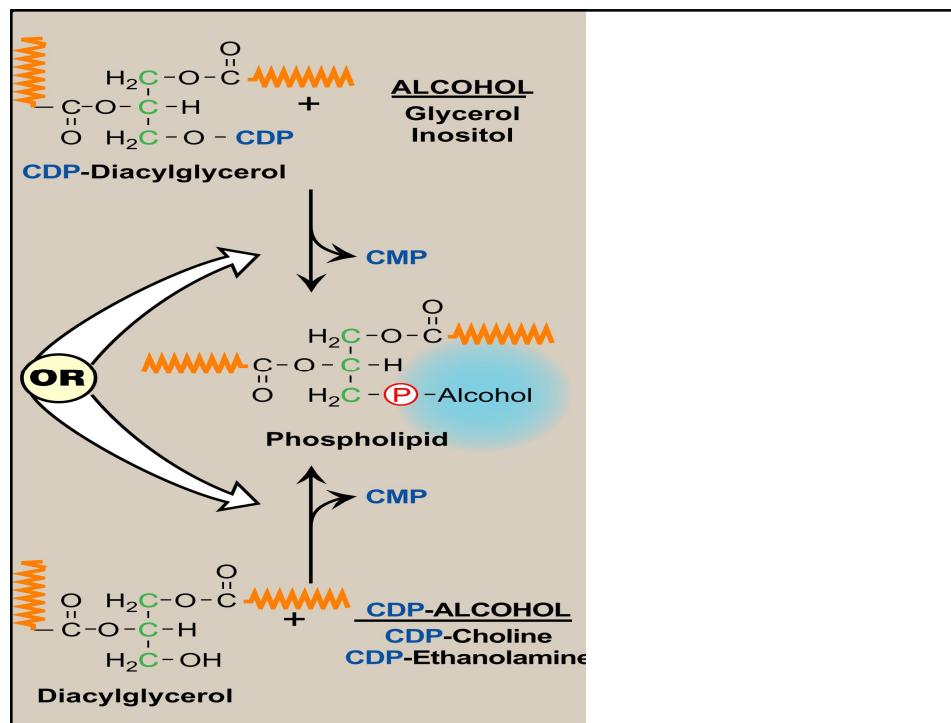
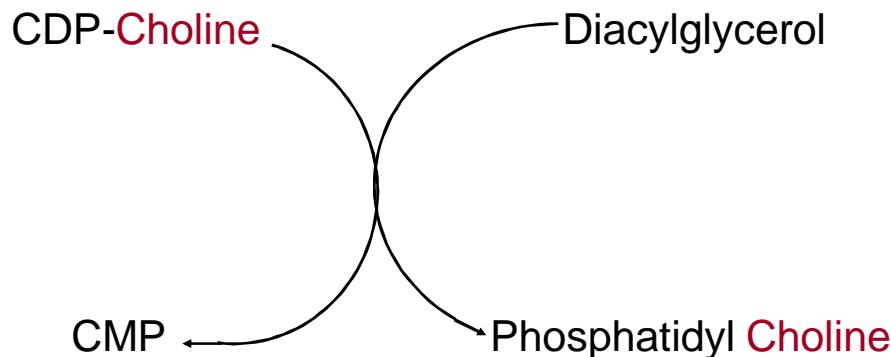
## Synthesis of Phosphatidyl Inositol

Transfer of Phosphatidic acid to Inositol



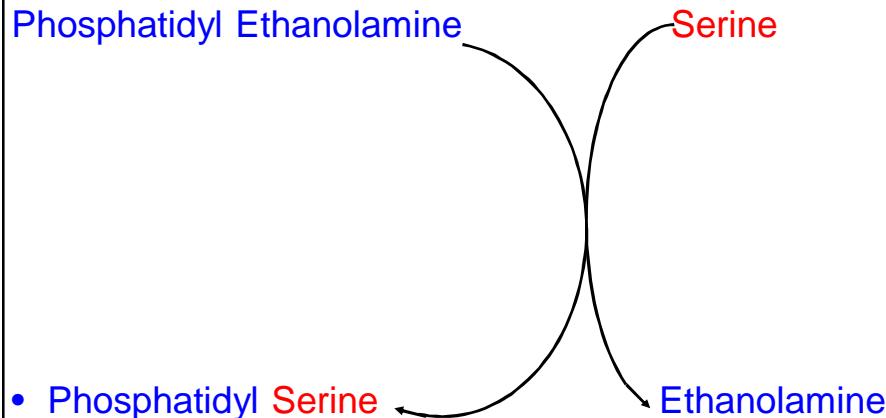
## Synthesis of Phosphatidyl Choline

Transfer of Phosphocholine (Ethanolamine) to Diacylglycerol



## Alteration of Polar Head Group

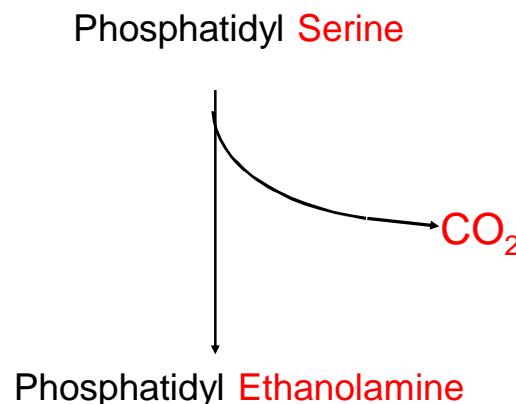
- Exchange of the Polar Head Group



- Phosphatidyl **Serine**

## Alteration of Polar Head Group

- Decarboxylation of Phosphatidyl Serine

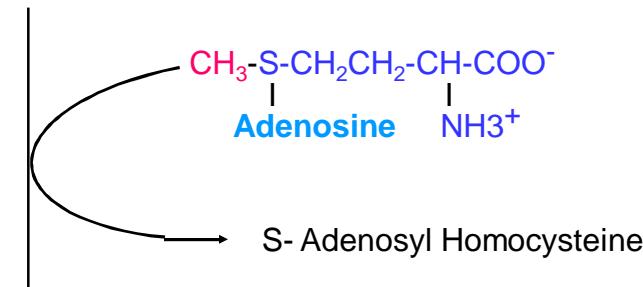


## Alteration of Polar Head Group

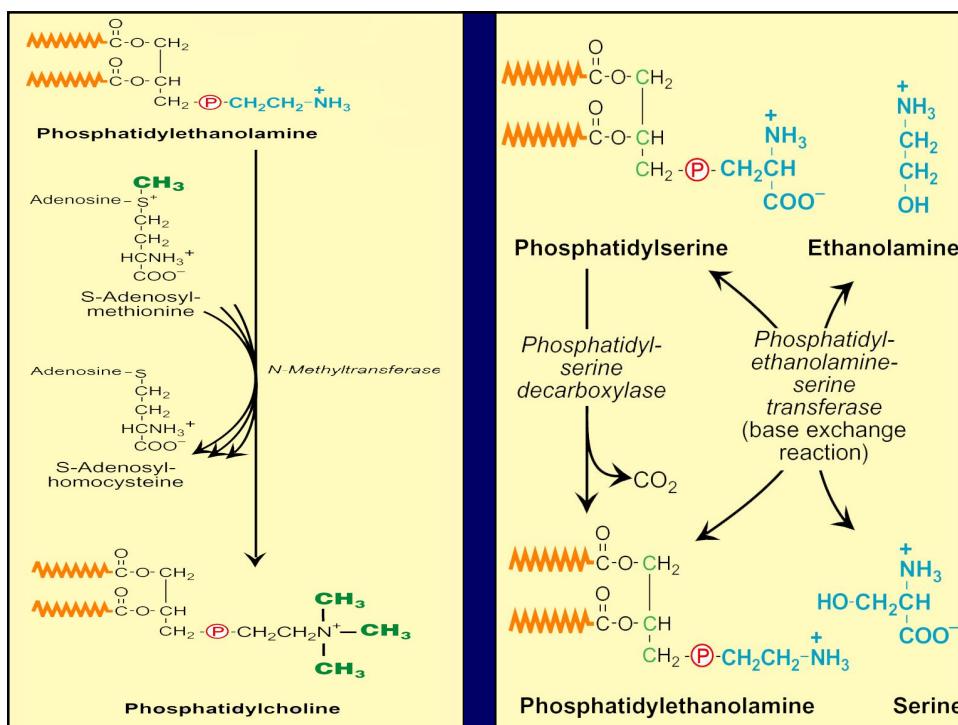
- Methylation of Phosphatidyl Ethanolamine**

S- Adenosyl Methionine (SAM); Methyl donor

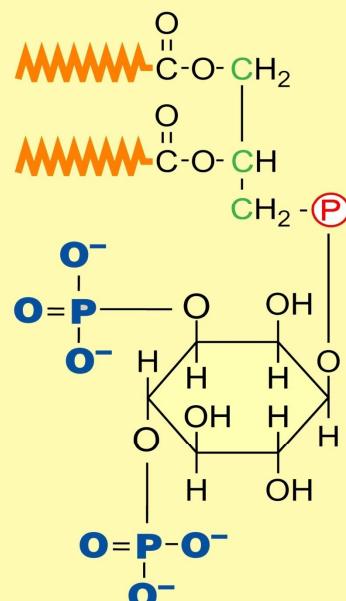
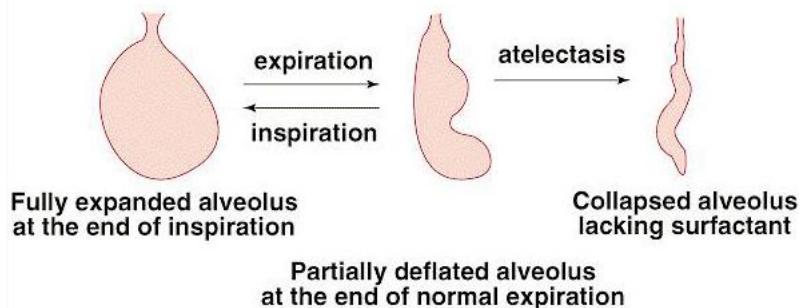
### Phosphatidyl Ethanolamine



### Phosphatidyl Choline



## Surfactant Action of Phospholipids



Phosphatidylinositol 4,5-bisphosphate

