Fatty acids

- Fatty acids are a class of compounds containing a long hydrophobic hydrocarbon chain and a terminal carboxylate group
- They exist free in the body as well as fatty acyl esters in more complex molecules such as triglycerides or phospholipids.
- Fatty acids can be oxidized in all tissues, particularly liver and muscle to provide energy
- They are also structural components of membrane lipids such as phospholipids and glycolipids.
- Esterified fatty acids, in the form of triglycerides are stored in adipose cells
- Fatty acids are also precursors of Eicosanoids

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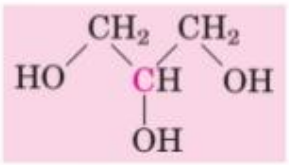
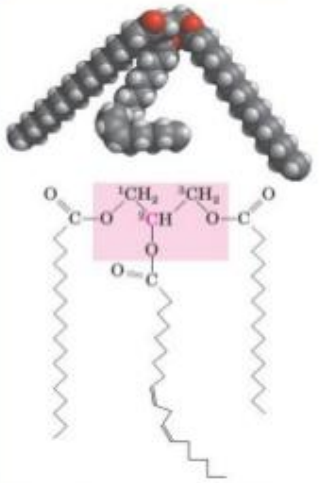
Structure of fatty acids

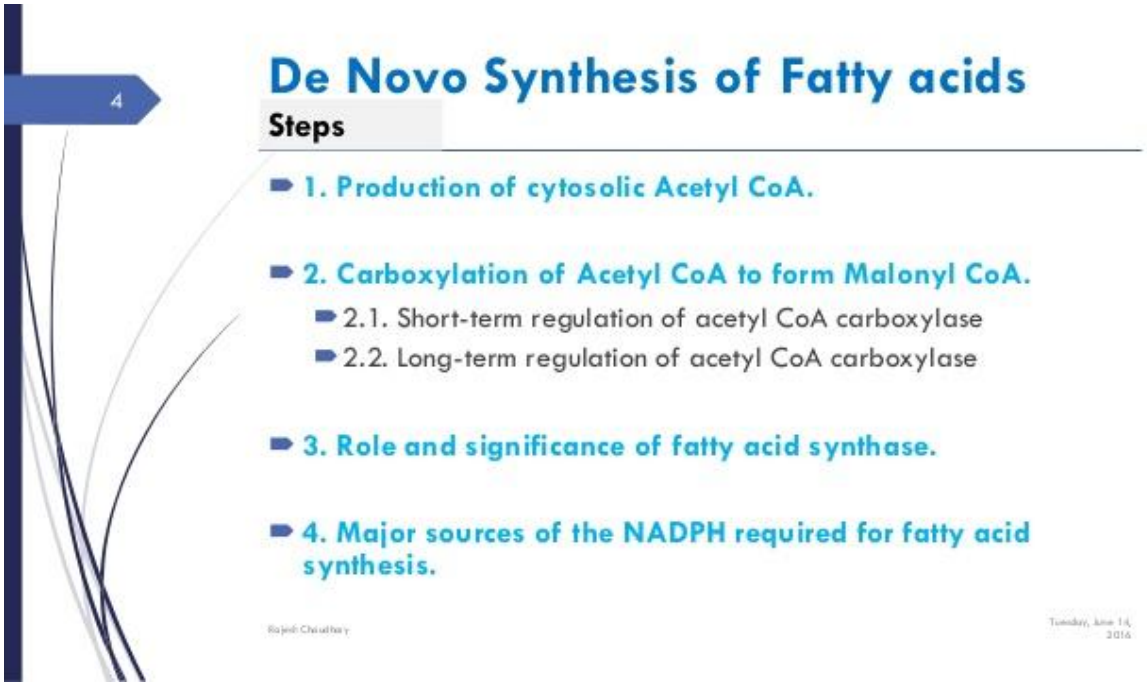
$CH_3(CH_2)_n$	COO^-
Hydrophobic hydrocarbon chain	Hydrophilic carboxyl group (ionized at pH 7)



Glycerol



1-Stearoyl, 2-linoleoyl, 3-palmitoyl glycerol, a mixed triacylglycerol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De Novo Synthesis of Fatty acids
Steps
1. Production of cytosolic Acetyl CoA.
2. Carboxylation of Acetyl CoA to form Malonyl CoA.
2.1. Short-term regulation of acetyl CoA carboxylase
2.2. Long-term regulation of acetyl CoA carboxylase
3. Role and significance of fatty acid synthase.
4. Major sources of the NADPH required for fatty acid synthesis.
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