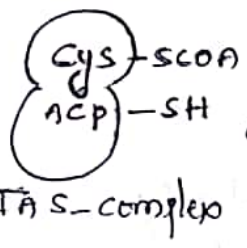
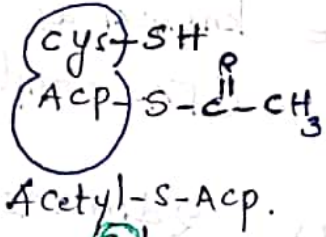


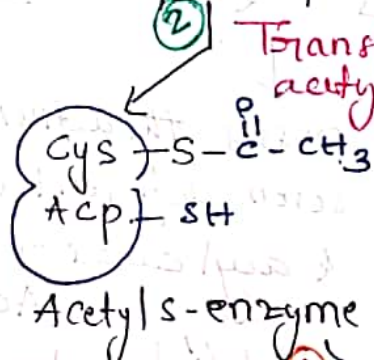
→ The Acetyl CoA transferred to ACP in FAS. by the enzyme



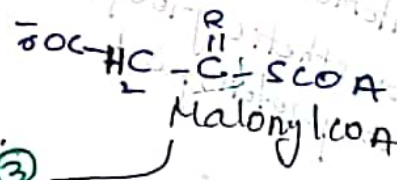
acetyl CoA-ACP Transacylase



← The Acetyl unit is then transferred from ACP to cystein by the enzyme FAS. Thus ACP falls vacant.

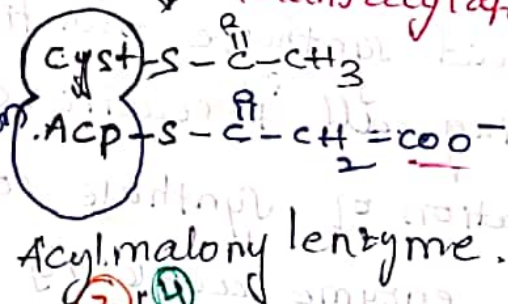


Transfer of acetyl to cystein



Transfer of malonyl group from malonyl CoA to ACP

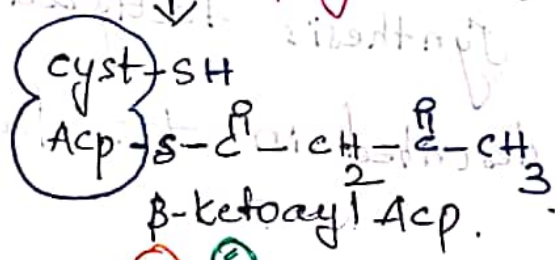
Malanoyl CoA-ACP Transacylase



→ The released CO<sub>2</sub> releases some free energy which is utilised for forward reaction

→ Acetyl unit attached to cystein is transferred to malonyl group (bound in ACP)

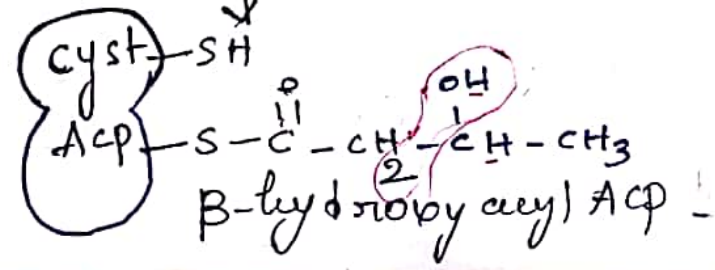
β-ketoacyl ACP synthase



→ The reducing equivalent supplied by NADPH

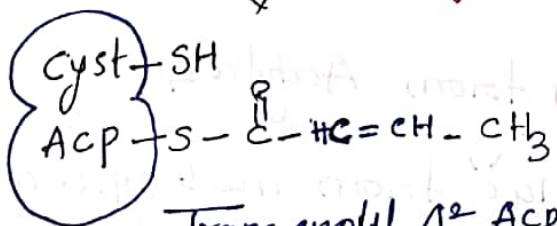
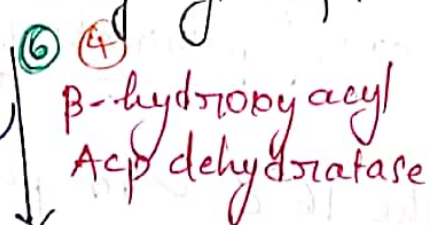
→ β-ketoacyl ACP ⇒ reduce the ketoacyl group to hydroxyacyl group

β-ketoacyl reductase

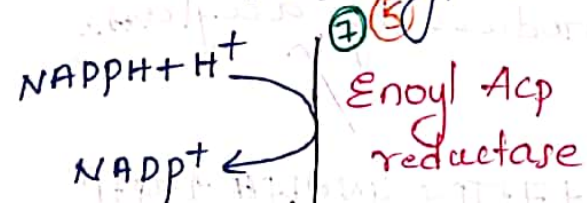


$\beta$ -hydroxyacyl - Acp.

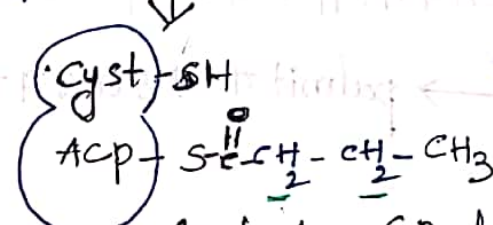
→ Dehydration occurs in this step.  
 → Double bond introduced between  $\alpha$  &  $\beta$  carbon atoms



Trans enoyl  $\Delta^2$  Acp.



← NADPH depending reaction  
 ↓  
 To produce acyl - Acp

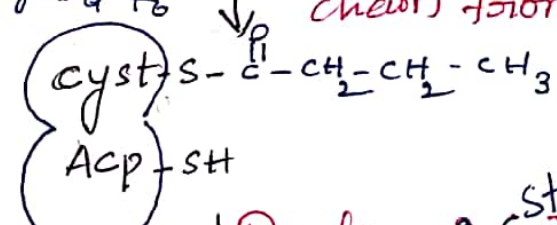


← the 4 c' unit attached to Acp is butyryl grp.

→ Transfer of 4' c'-chain attached to Acp transferred to cysteine.

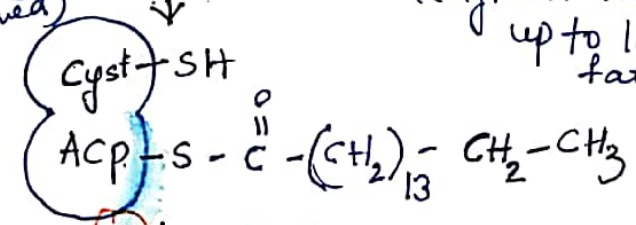
Acyl-Acp (Butyryl) - Acp

⑥ Transfer of carbon chain from Acp to cyst.

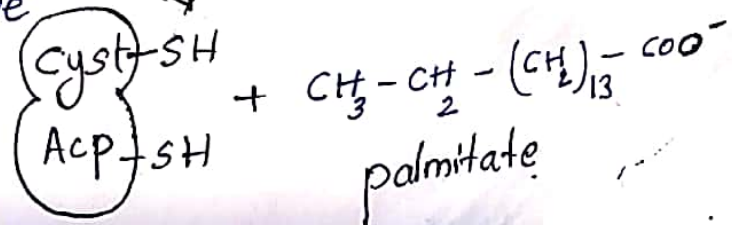


→ lengthening of chains occurs (from malonyl coA) every time 2 c' attached

Acylenzyme  
 Reactions 2-6 repeated six more times & form lengthen the chain up to 16 c' containing fatty acid formation



Separation of palmitate from fatty acid synthase occurs





# Summary of palmitate synthesis:

→ of the 16 C in palmitate, only 2 C comes from Acetyl CoA

→ remaining 14 C from malonyl CoA which in turn is produced by acetyl CoA.

