



Module 10

Beta Oxidation

Session Slides with Notes

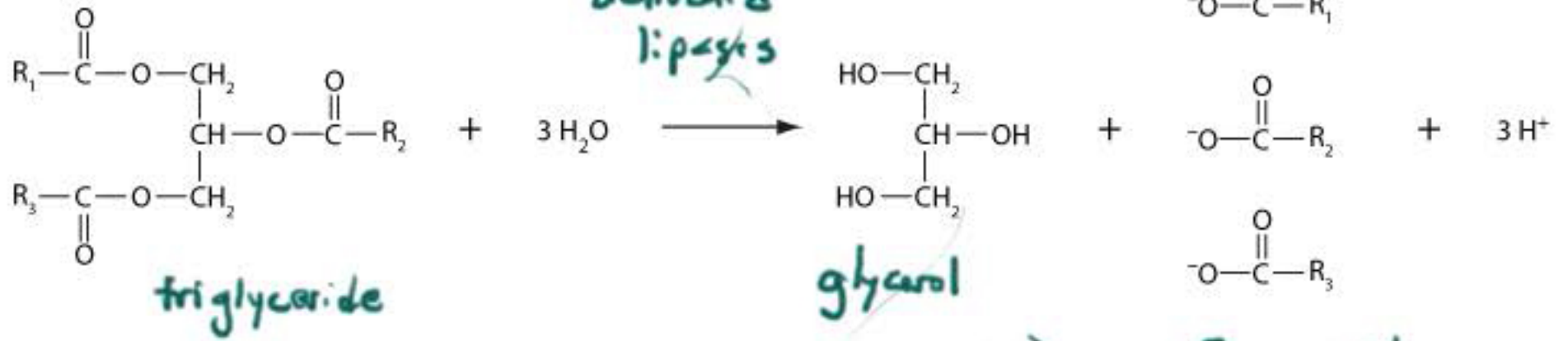
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Oxidation

hydrolysis by
cAMP \Rightarrow protein kinase A

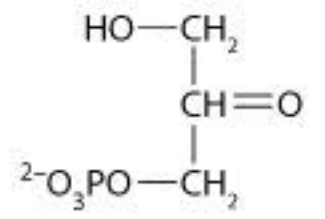
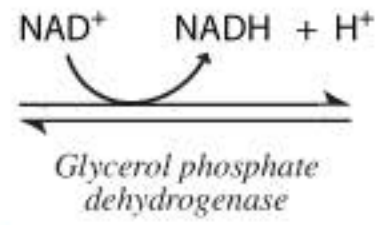
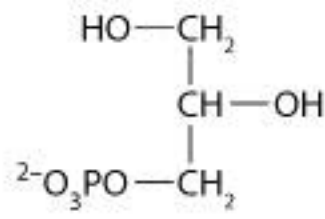
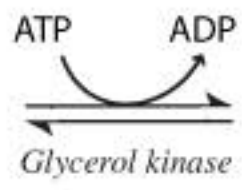
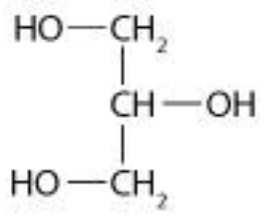
activated
lipase



triglyceride

glycerol
(glucogenic)

Fatty acids
(ketogenic)



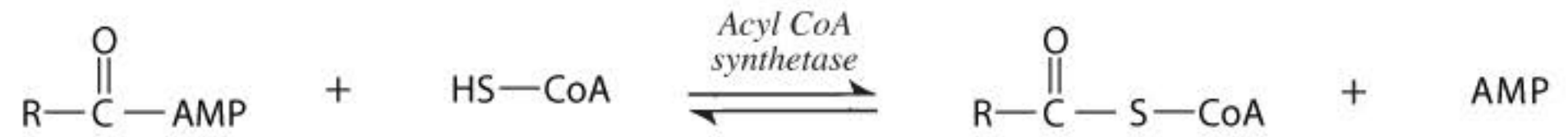
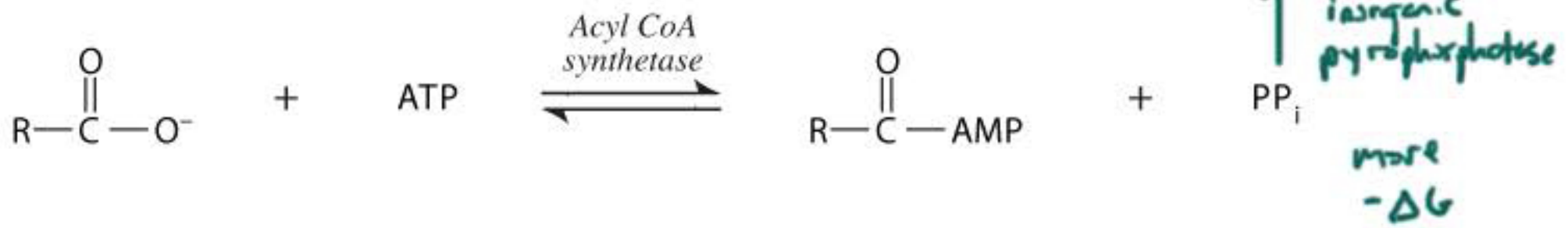
glycerol 3-phosphate

DAP



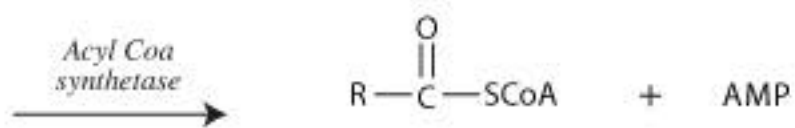
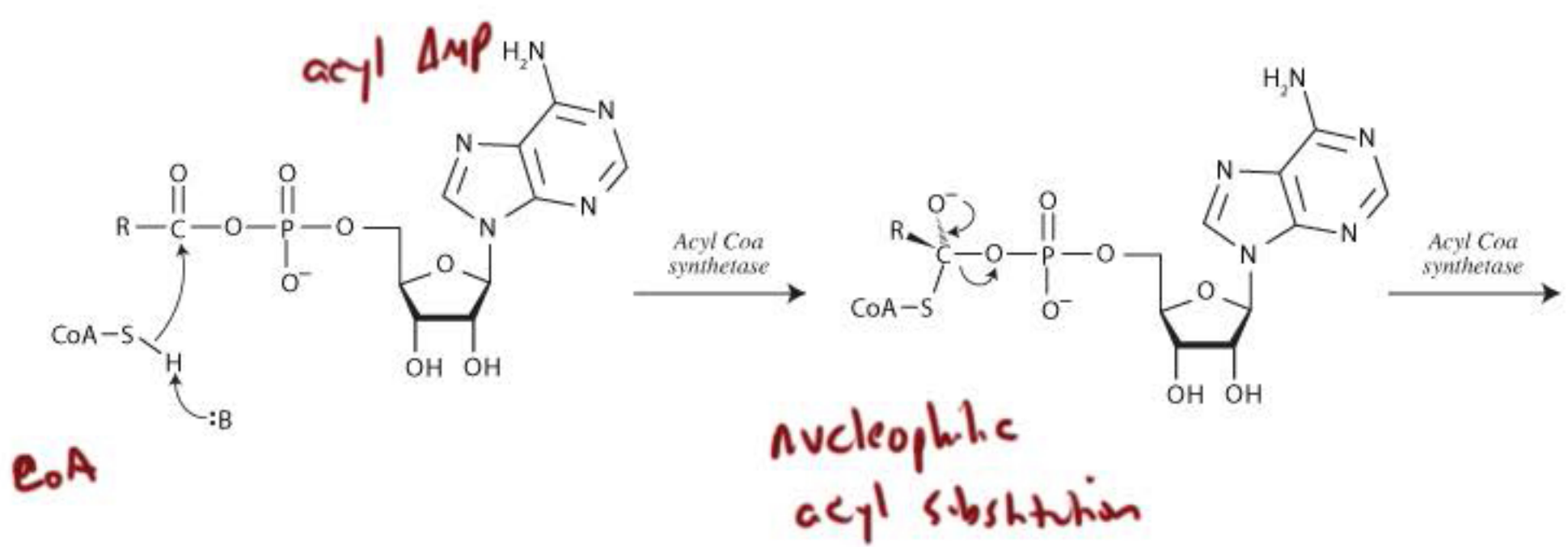
glycolysis or
gluconeogenesis

Fatty Acid Activation



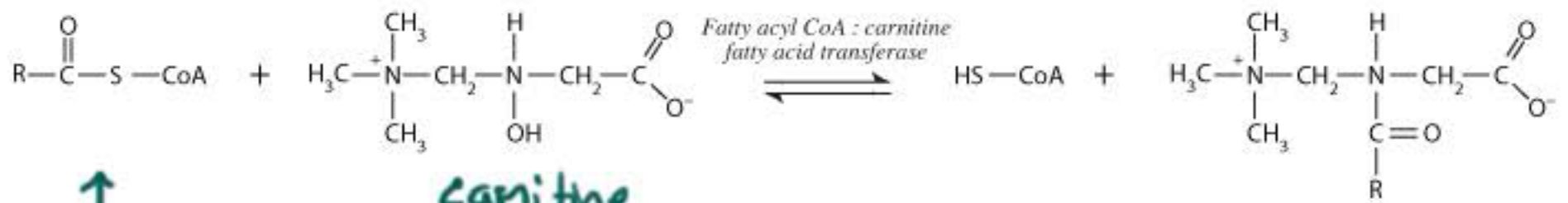
acyl AMP
activated
(phosphate
anhydride)

acyl CoA
activated
(thioester)



acyl CoA

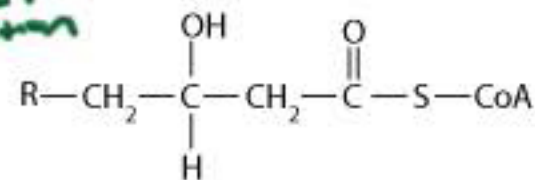
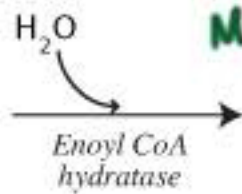
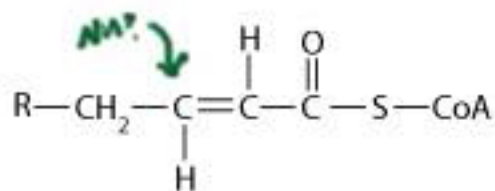
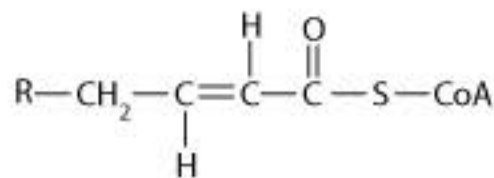
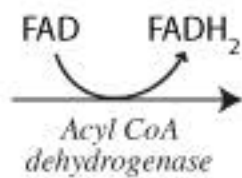
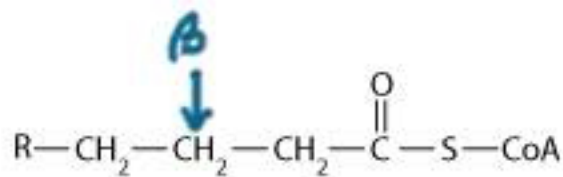
Getting acyl CoA into the mitochondrion for β oxidation



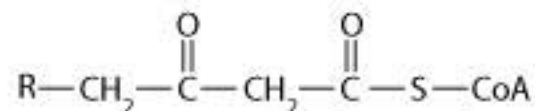
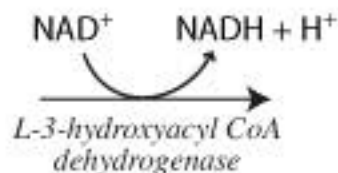
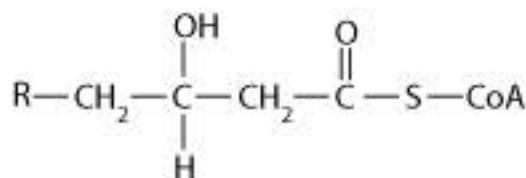
↑
in cytosol

carnitine
↑
shuttle

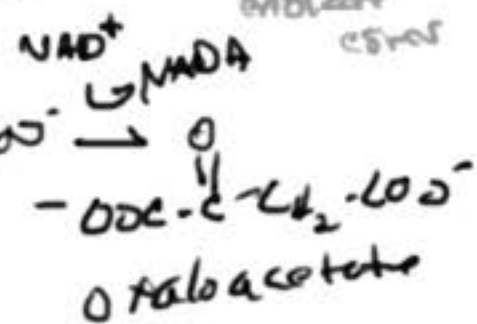
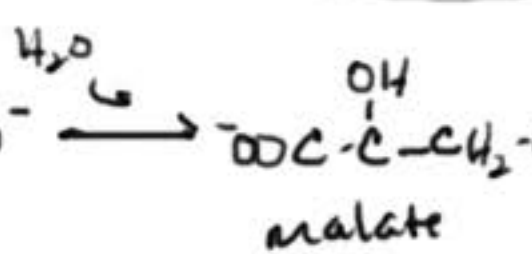
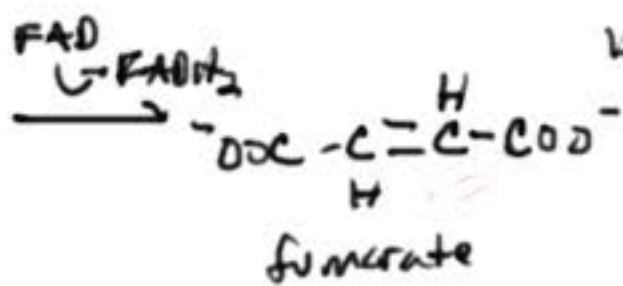
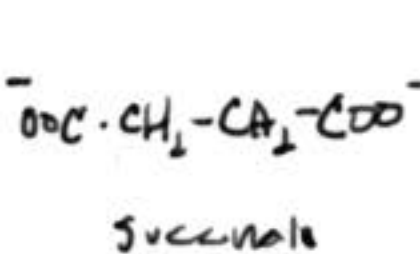
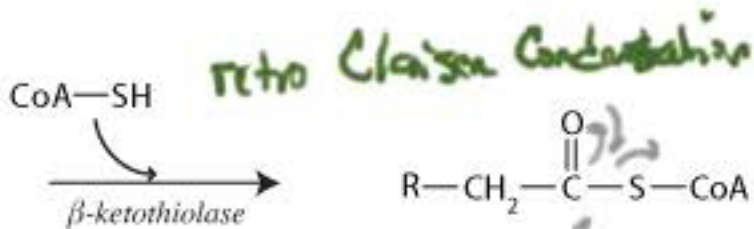
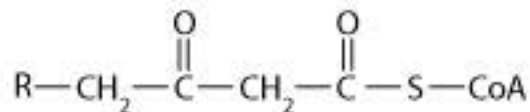


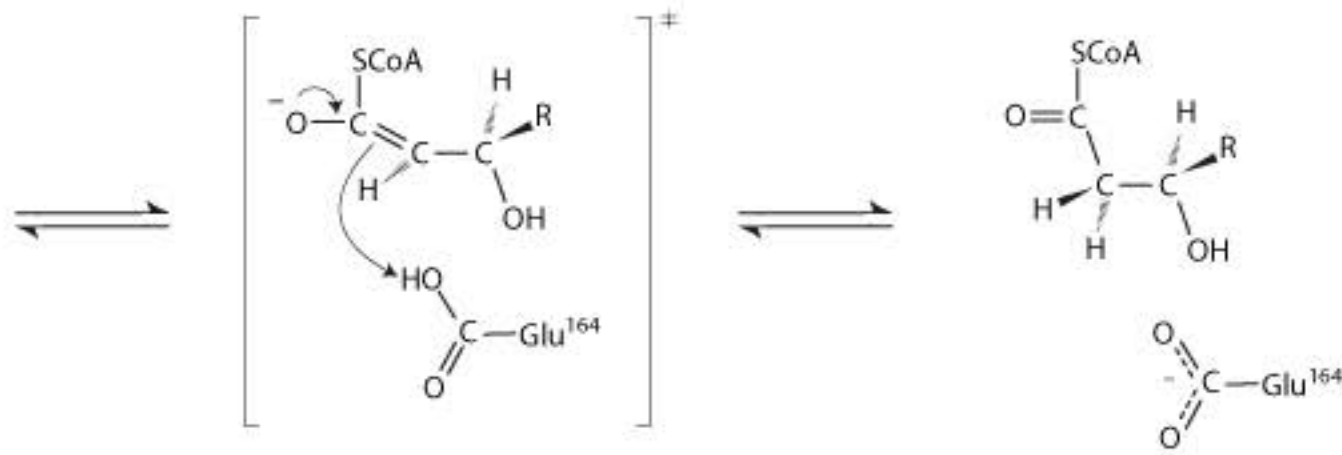
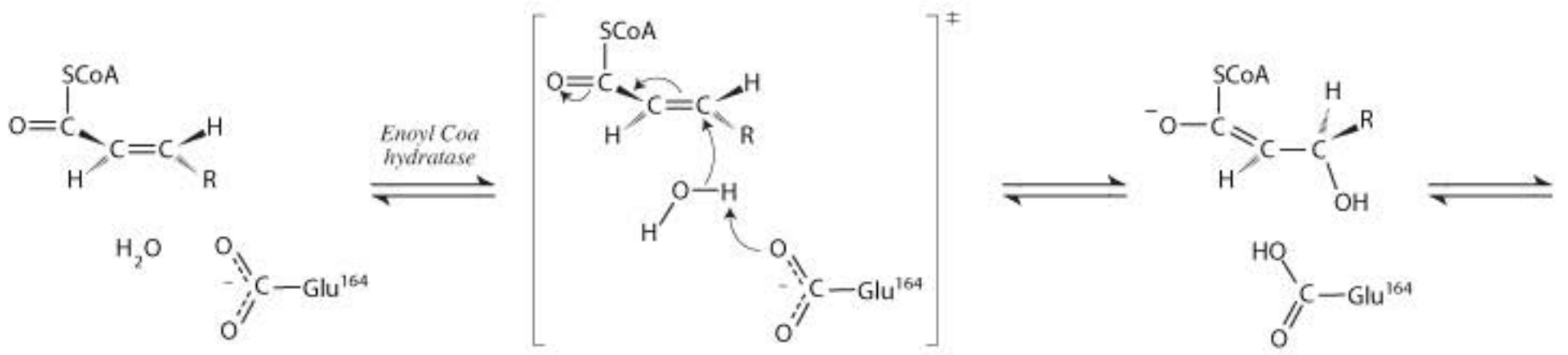


Michael addition - nucleophiles add at β position of α, β unsaturated carbonyl compounds

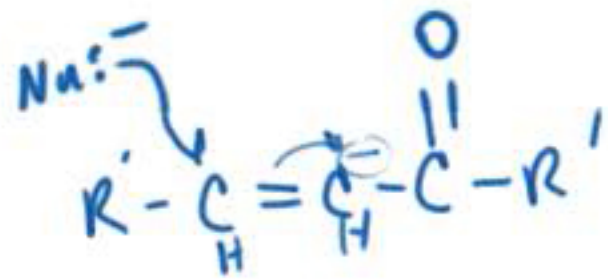


β keto thioesters

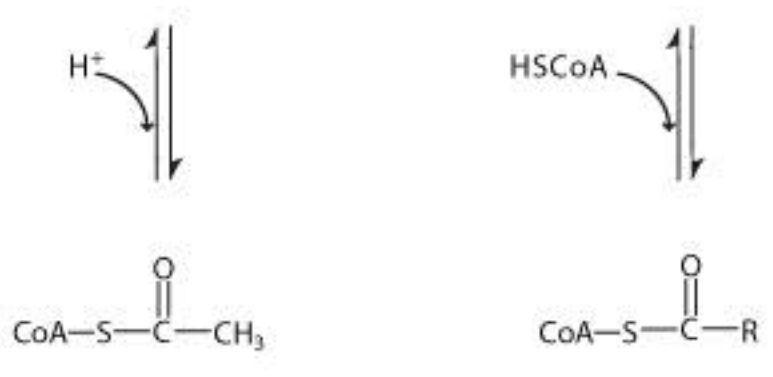
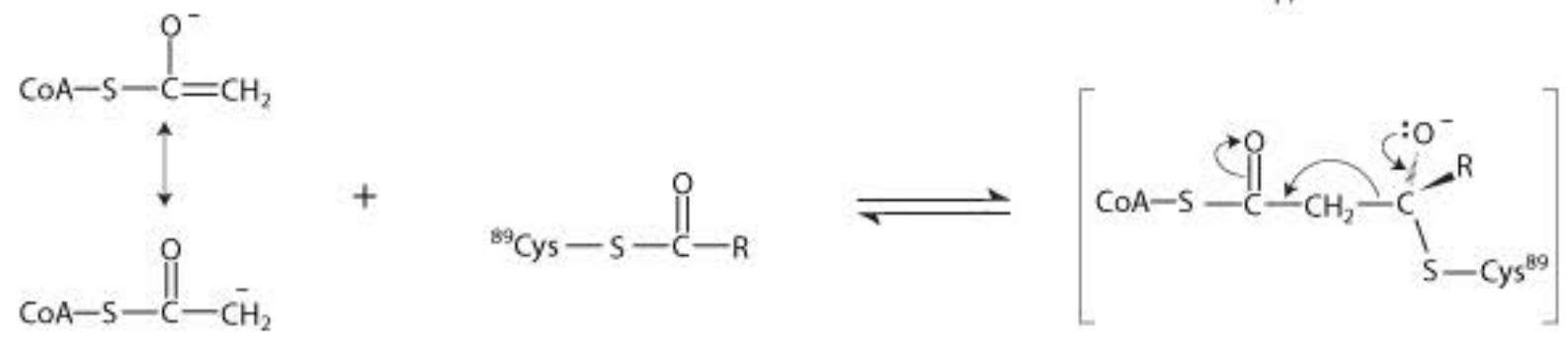
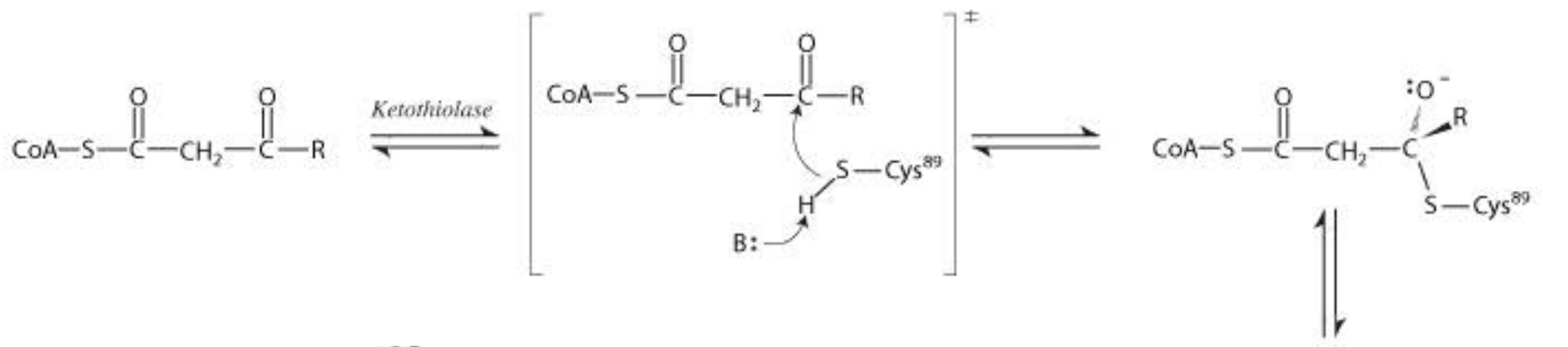




Enoyl CoA
 hydratase is
 a Michael
 addition



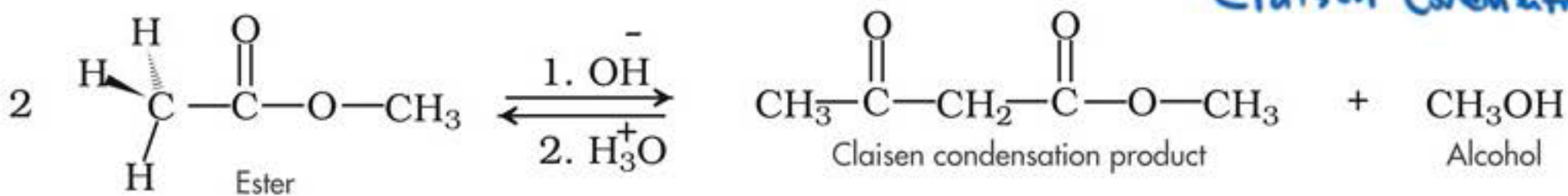
Nucleophiles add to the β
 carbon of α - β unsaturated
 carbonyl compounds.



Retro Claisen Condensation

supplemental

Claisen Condensation



like aldol addition but following
 the nucleophilic acyl substitution pattern

