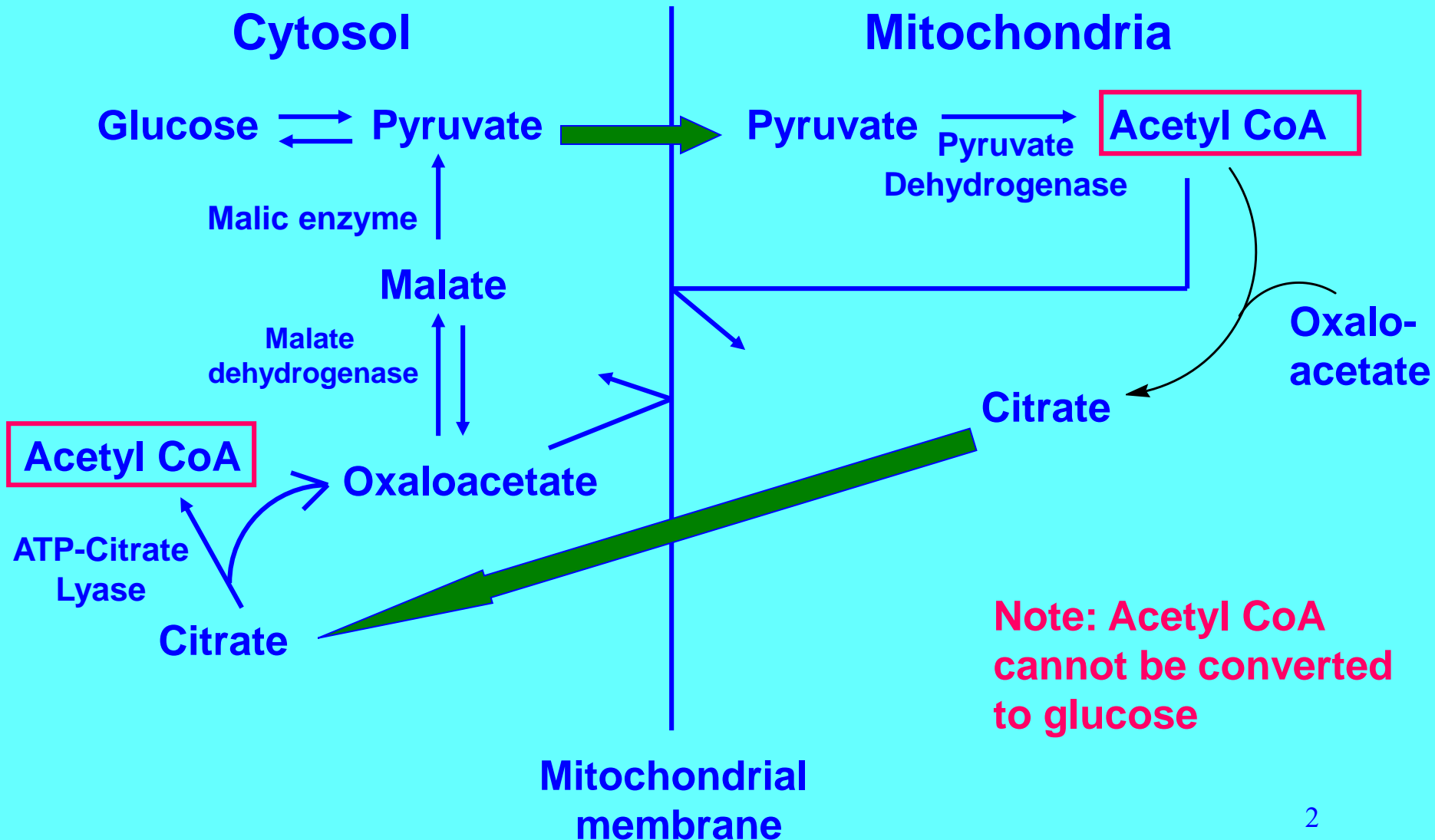


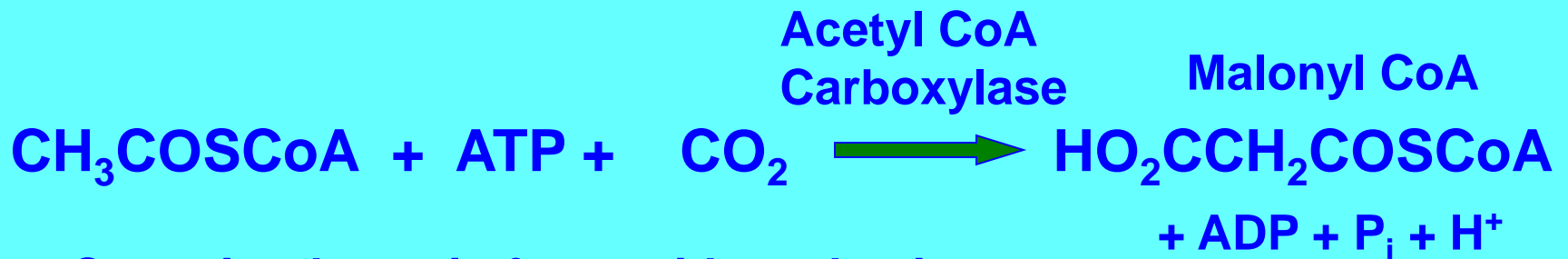
Fatty Acid synthesis

- **Occurs in cytosol**
- **Starts with acetyl CoA**
 - **Problem:**
 - » **Most acetyl CoA produced in mitochondria**
 - » **Acetyl CoA unable to traverse mitochondrial membrane**

Citrate As Carrier of Acetate Groups



Fatty Acid Biosynthesis: Formation of Malonyl CoA

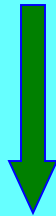


- Committed step in fatty acid synthesis
- Reaction is irreversible
- Acetyl-coA is mainly derived from excess amount of ingested carbohydrate .
- Acetyl-CoA carboxylase is the regulatory enzyme of FA synthesis pathway .

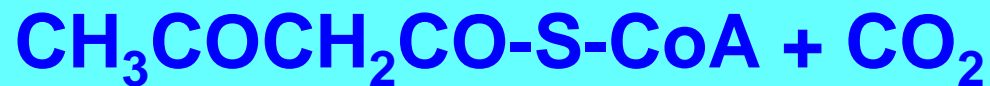
Fatty Acid Biosynthesis: Formation of Acetoacetyl CoA



β -Keto acyl
Synthetase

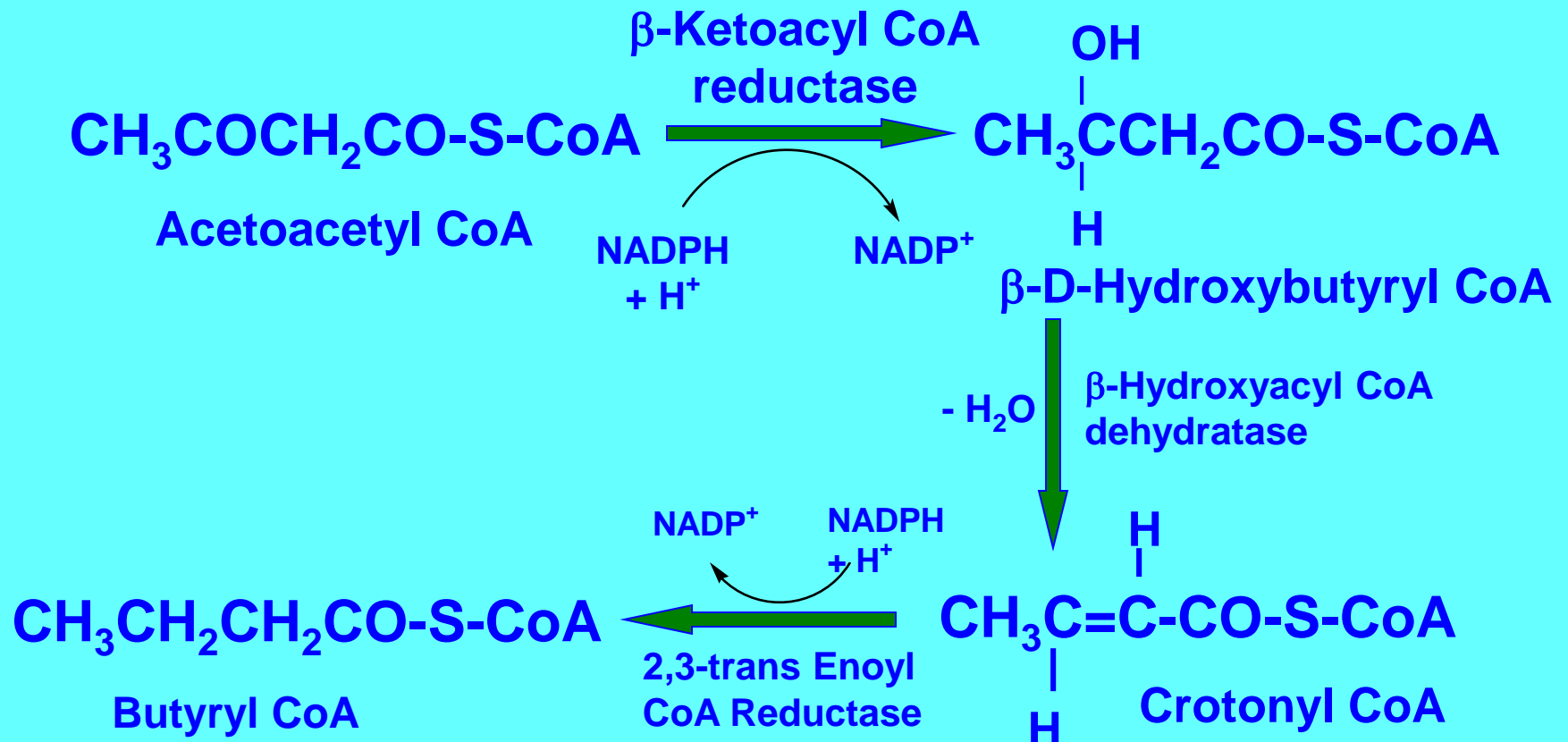


Condensation



Acetoacetyl CoA

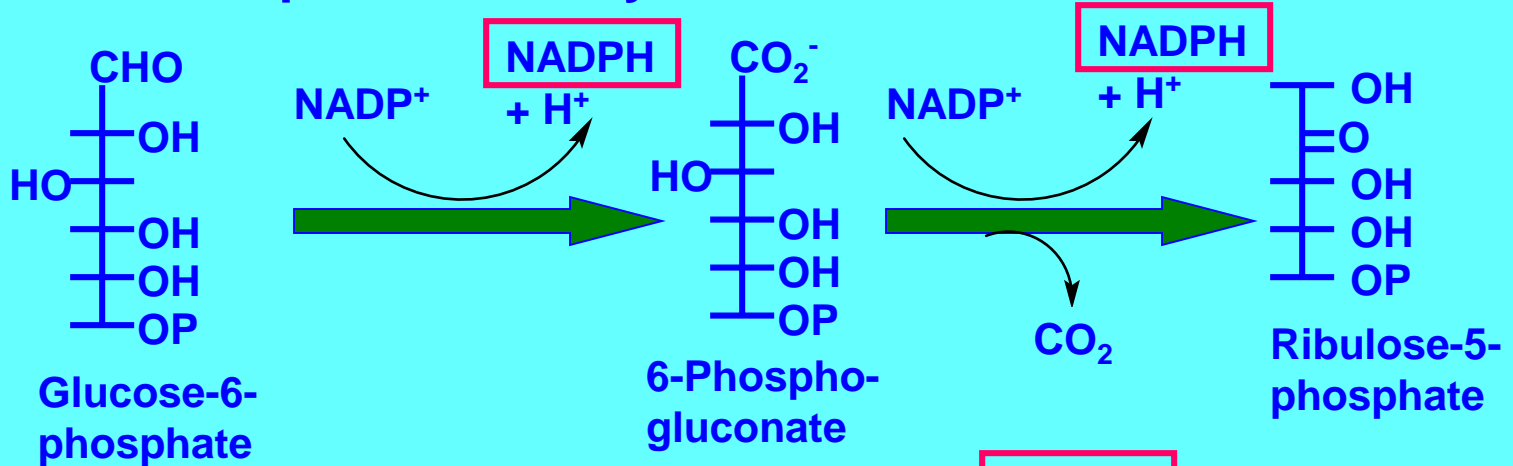
Fatty Acid Biosynthesis: Formation of Butyryl CoA



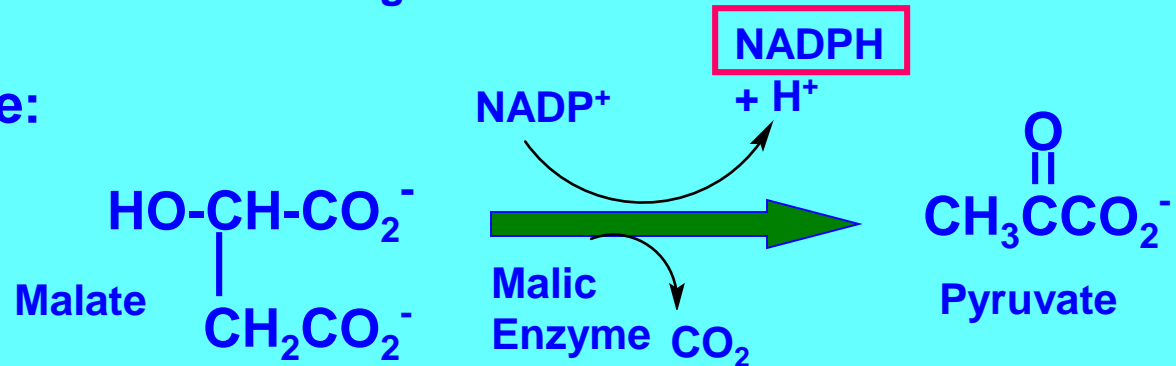
All these sequences of reaction are repeated with each term of cycle and there is an addition of 2 carbon units (derived from malonyl – CoA). 5

Fatty Acid Biosynthesis: Sources of NADPH

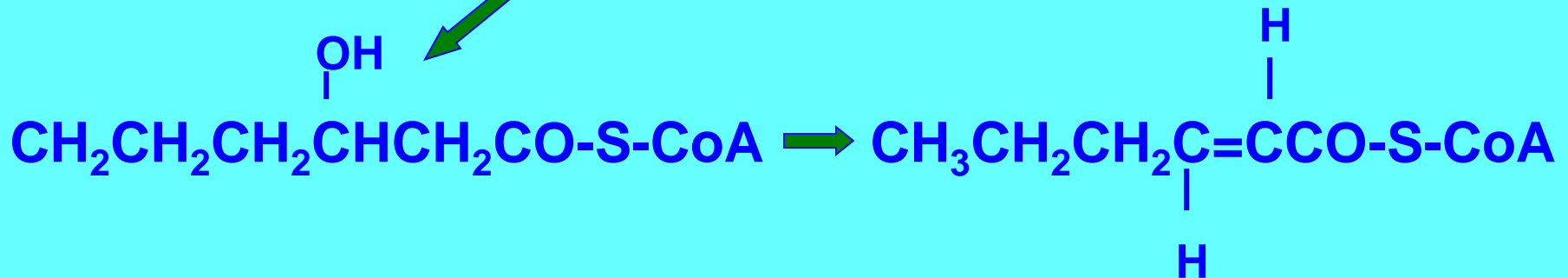
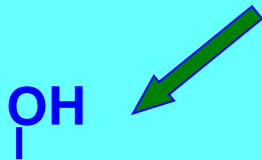
Pentose Phosphate Pathway:



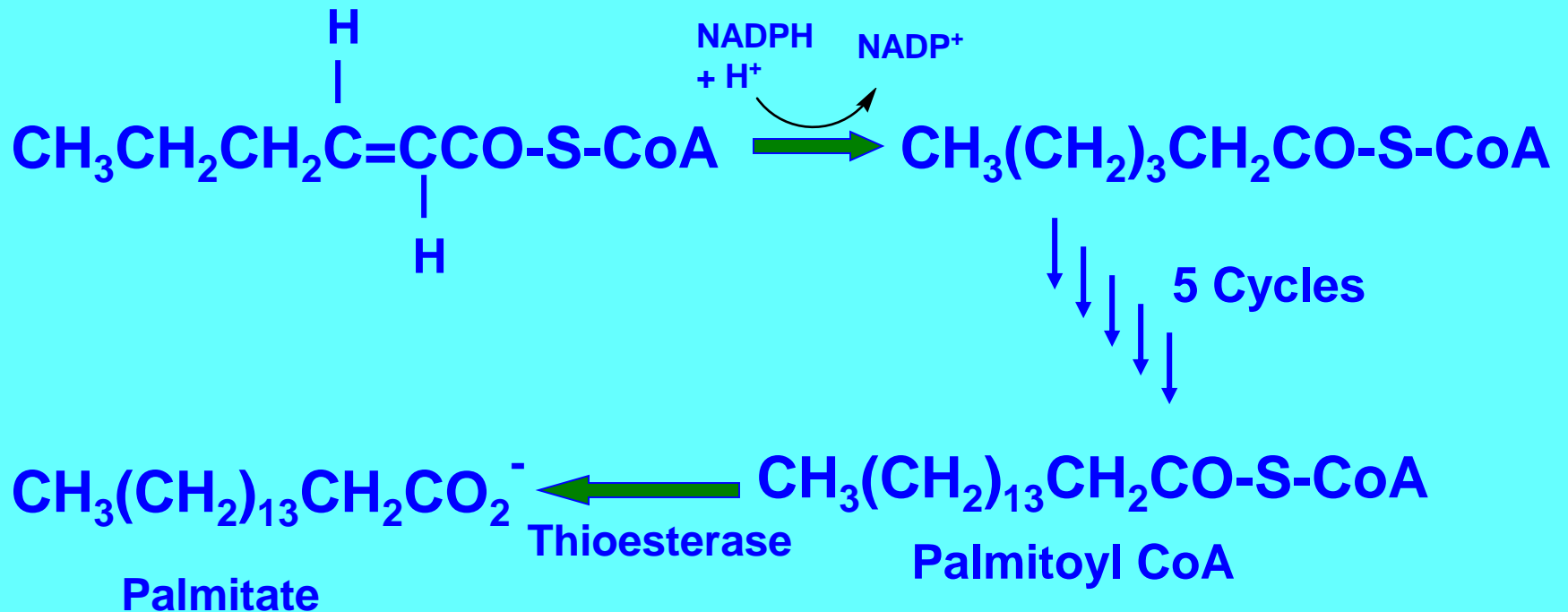
Malic Enzyme:



Fatty Acid Biosynthesis: Chain Elongation



Fatty Acid Biosynthesis: Chain Elongation (Cont'd)



The major FA , that is synthesized by the human , in this pathway is palmitic acid (C16) .