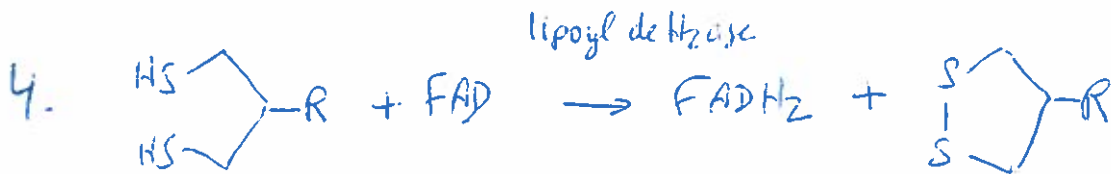
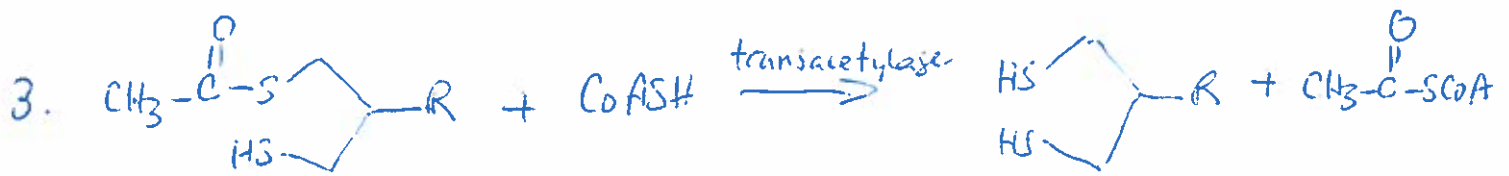
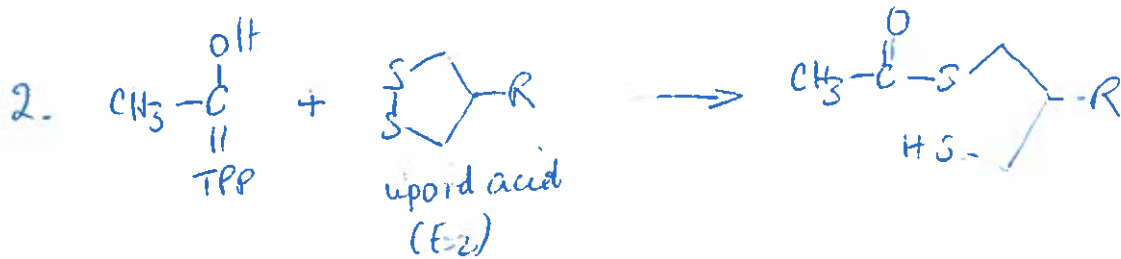
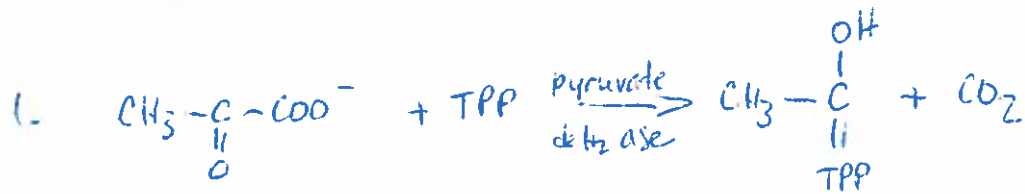


Glycolysis

1. $\text{Glc} + \text{ATP} \xrightarrow{\text{hexokinase}} \text{Glc-6-P} + \text{ADP} + \text{H}^+$
2. $\text{Glc-6-P} \xrightarrow[\text{isomerase}]{\text{phosphohexose}} \text{Fru-6-P}$
3. $\text{Fru-6-P} \xrightarrow{\text{PFK}} \text{Fru-1,6-bis P} + \text{ADP} + \text{H}^+$
4. $\text{Fru-1,6-bis P} \xrightarrow[\text{bis P aldolase}]{\text{fruktose 1,6 bis P}} \text{Dehydroxyacetone-P} + \text{D-Glyceraldehyde-3-P}$
 $\downarrow \text{5-triose P isomerase}$
 $\text{D-Glyceraldehyde-3-P}$
6. $\text{D-glyceraldehyde-3-P} + \text{P}_i + \text{NAD}^+ \xrightarrow[\text{dehydrogenase}]{\text{glyceraldehyde-3-P}} \text{1,3 bis-P-glycerate} + \text{NADH} + \text{H}^+$
7. $\text{1,3-bis-P-glycerate} + \text{ADP} \xrightarrow[\text{kinase}]{\text{P-glycerate}} \text{3-P-glycerate} + \text{ATP}$
8. $\text{3-P-glycerate} \xrightarrow[\text{mutase}]{\text{P-glycerate}} \text{2-P-glycerate}$
9. $\text{2-P-glycerate} \xrightarrow{\text{enolase}} \text{P-enol-pyruvate} + \text{H}_2\text{O}$
10. $\text{P-enol pyruvate} + \text{N}^+ + \text{ADP} \xrightarrow[\text{kinase}]{\text{pyruvate}} \text{pyruvate} + \text{ATP}$
- 11a. $\text{Pyruvate} + \text{NADH} \xrightarrow[\text{dehydrogenase}]{\text{lactate}} \text{lactate} + \text{NAD}^+ + \text{H}^+$
- 11b. $\text{pyruvate} \xrightarrow[\text{TPP}]{\text{pyruvate decarboxylase}} \text{acetaldehyde} + \text{CO}_2$; $\text{acetaldehyde} + \text{NADH} + \text{H}^+ \rightarrow \text{Ethanol} + \text{NAD}^+$
- 11c. $\text{pyruvate} \rightarrow \text{TCA}$

Link between glycolysis and TCA



TCA

1. oxaloacetate + acetyl CoA + H₂O $\xrightarrow[\text{synthase}]{\text{citrate}}$ citrate + CoA + H⁺
2. Citrate $\xrightarrow{\text{aconitase}}$ isocitrate
3. Isocitrate + H⁺ + NAD⁺ $\xrightarrow[\text{dehydrogenase}]{\text{isocitrate}}$ α-ketoglutarate + NADH + H⁺ + CO₂
4. α-ketoglutarate + CoA + NAD⁺ $\xrightarrow[\text{complex}]{\text{αketoglutarate dehydrogenase}}$ Succinyl CoA + NADH + CO₂
5. Succinyl CoA + GDP + P_i $\xrightarrow[\text{synthetase}]{\text{succinyl CoA}}$ Succinate + GTP + CoA
6. Succinate + FAD $\xrightarrow[\text{dehydrogenase}]{\text{succinate}}$ fumarate + FADH₂
7. fumarate + H₂O $\xrightarrow{\text{fumarate}}$ L-malate
8. L-malate + NAD⁺ $\xrightarrow[\text{dehydrogenase}]{\text{malate}}$ oxaloacetate + NADH + H⁺