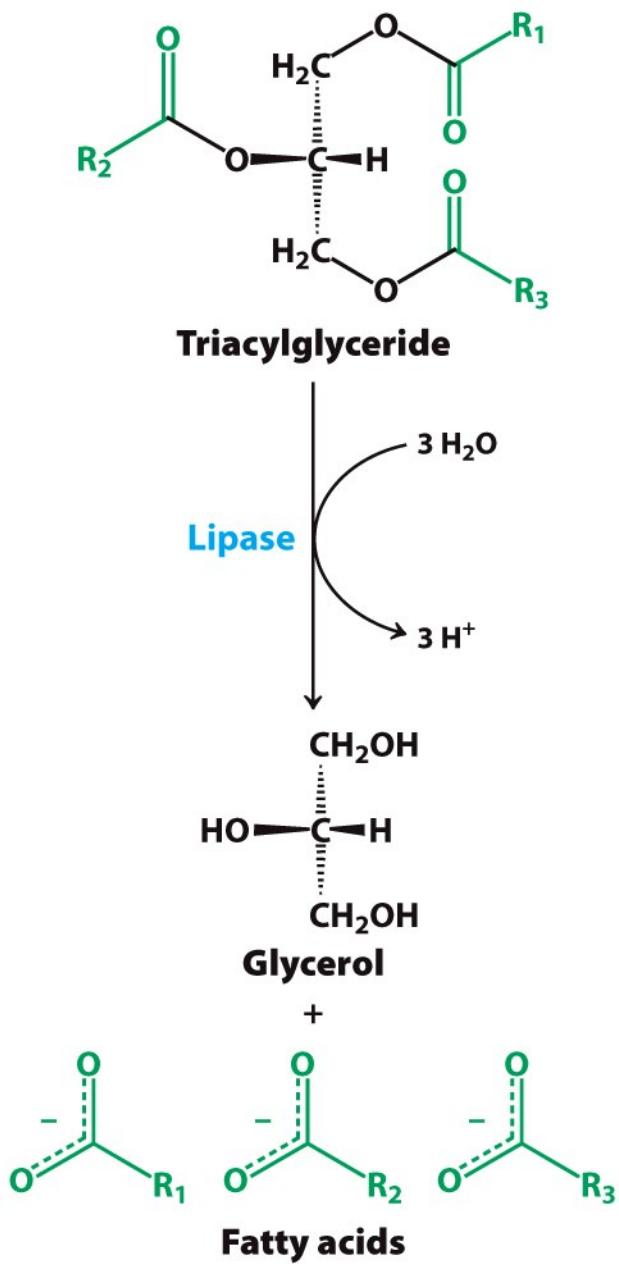


# An acyl group

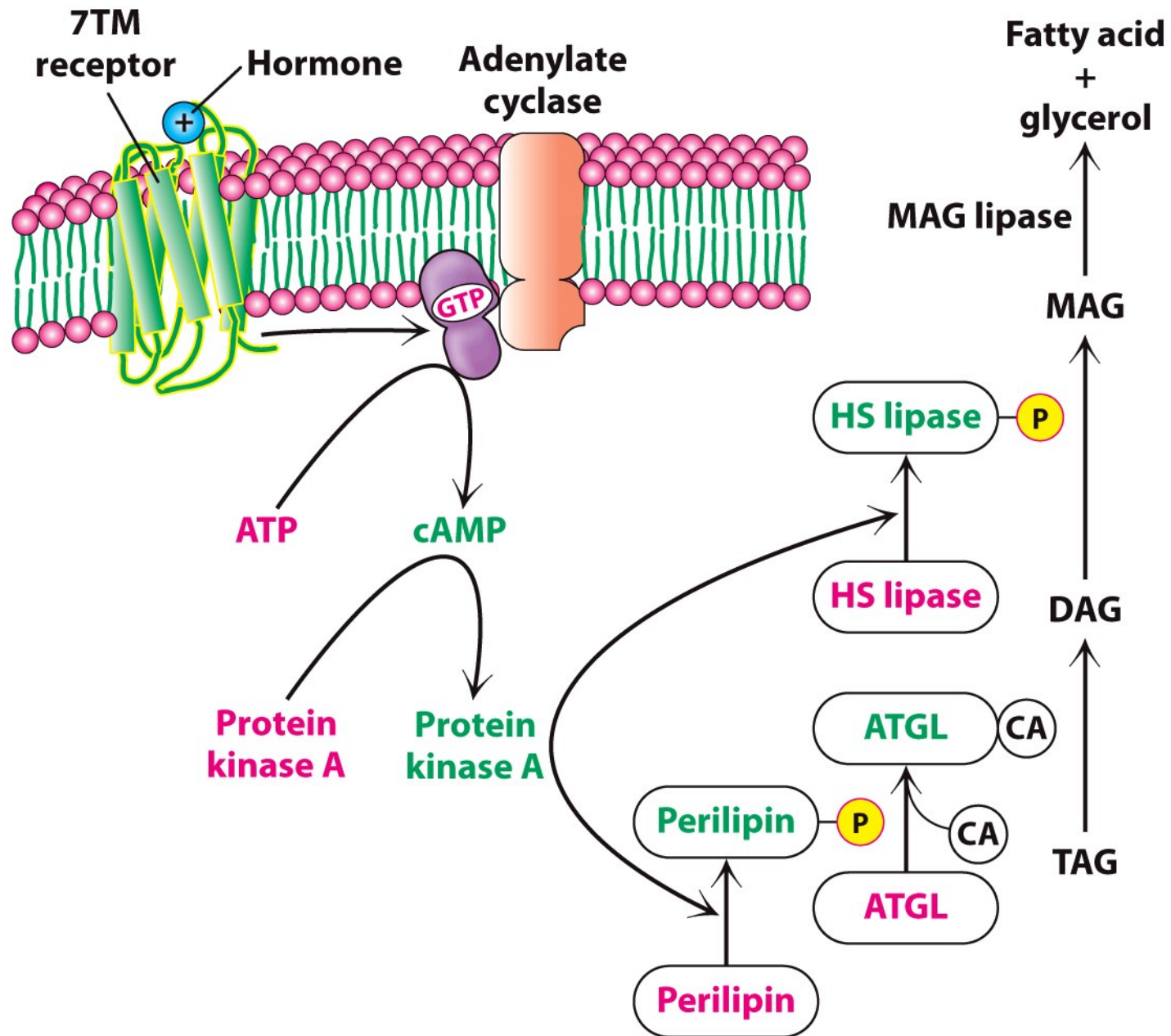
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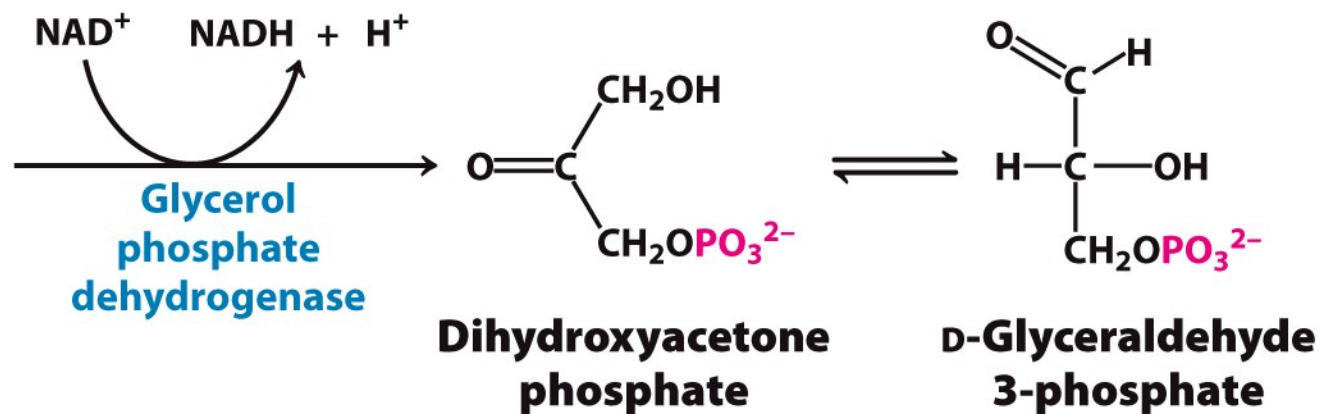
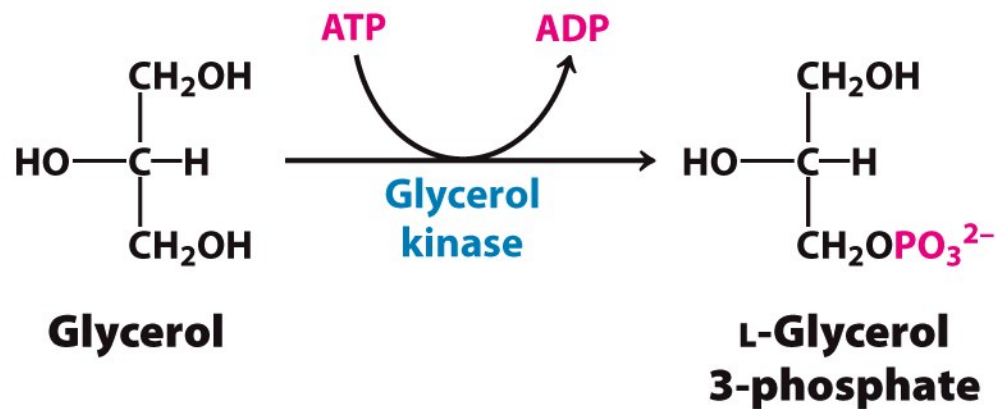
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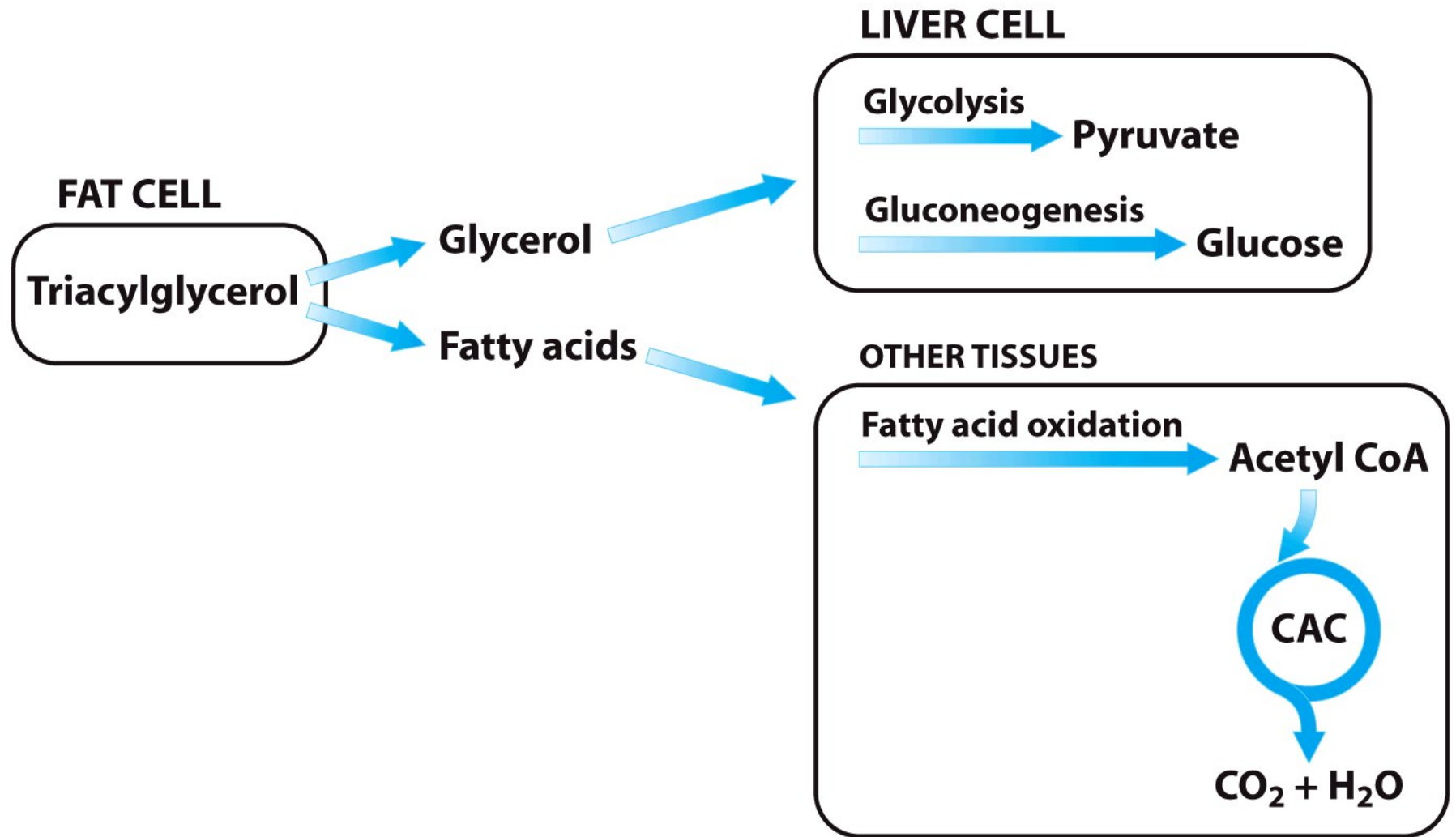
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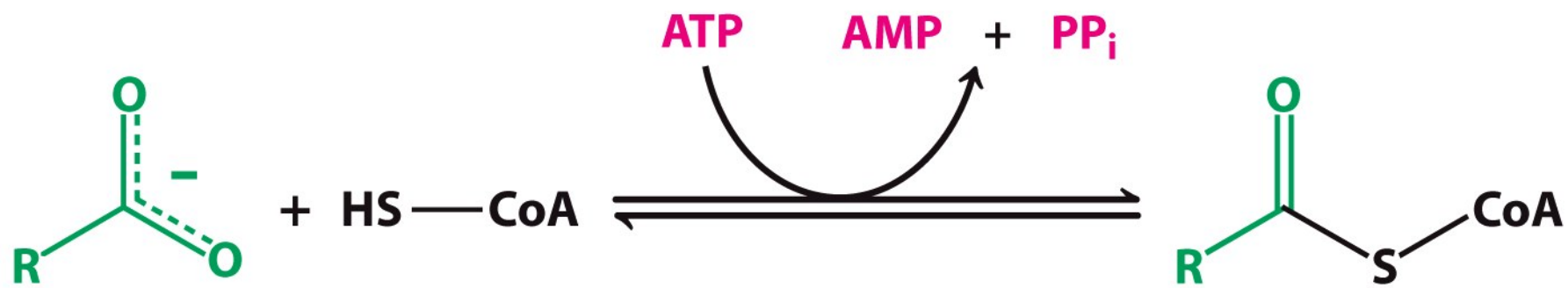
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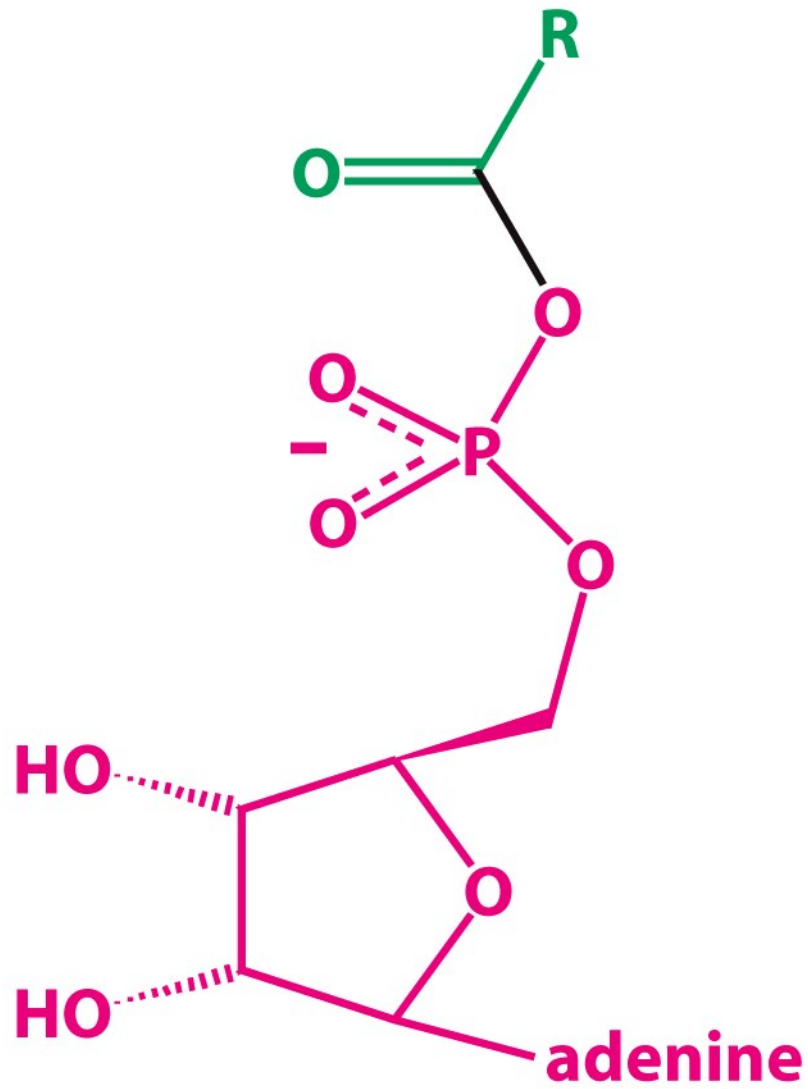
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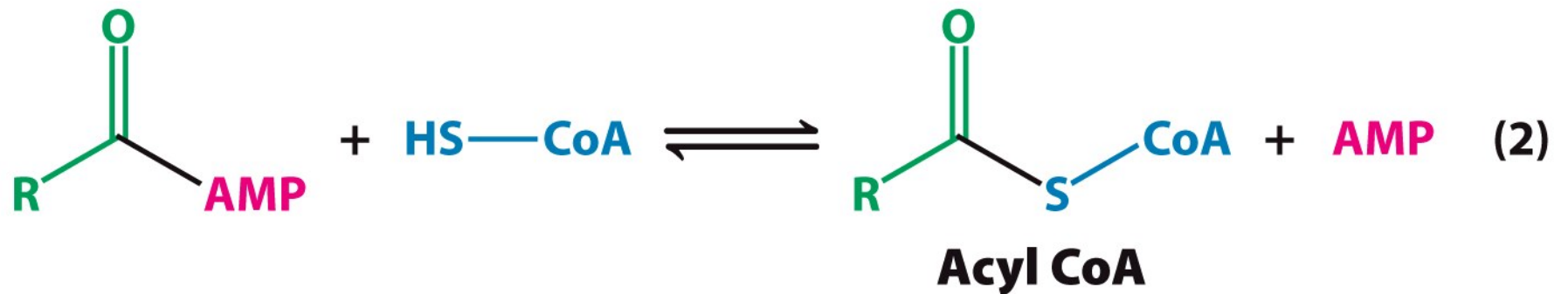
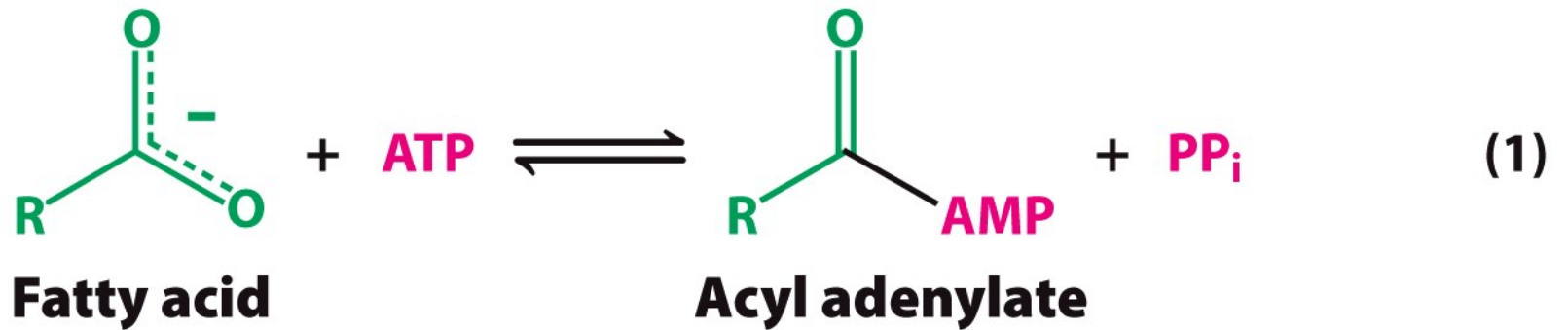
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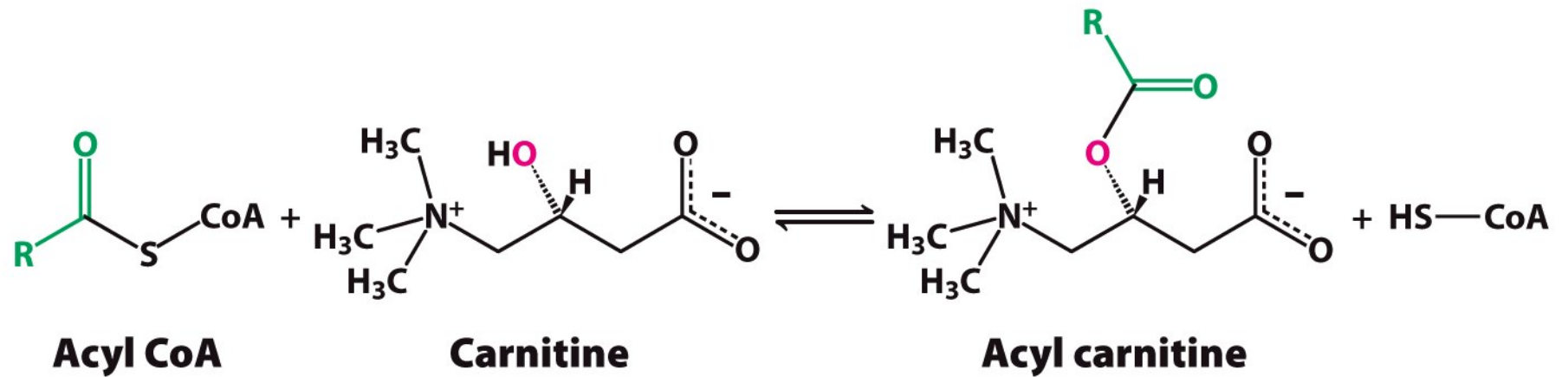


## Acyl adenylate

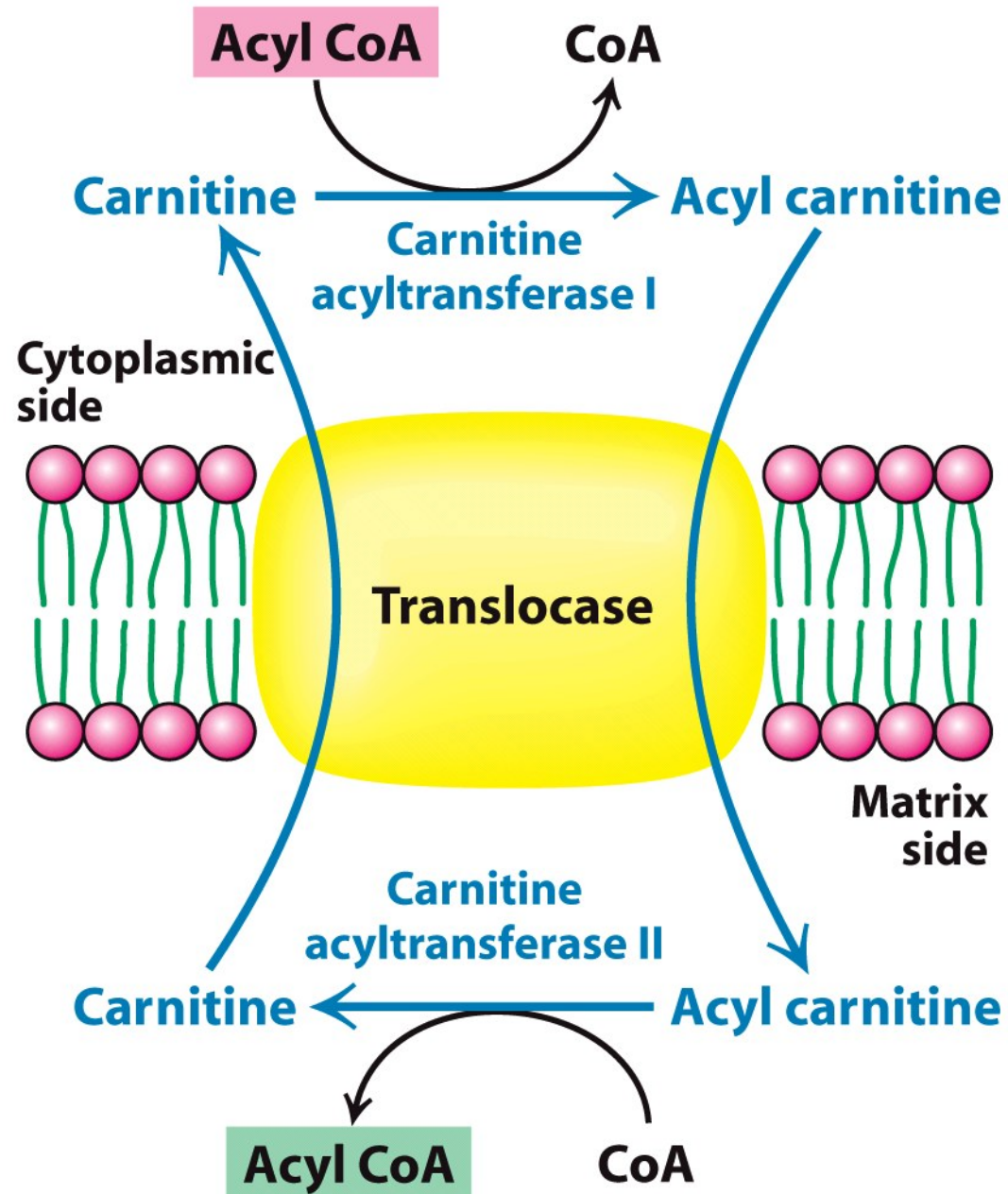


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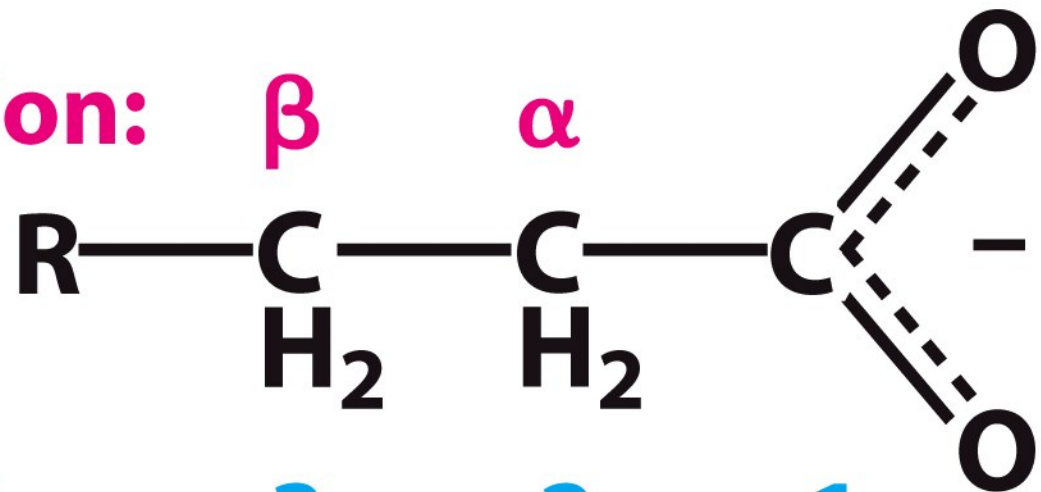


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**Figure 27.4**  
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**Symbolic notation:**



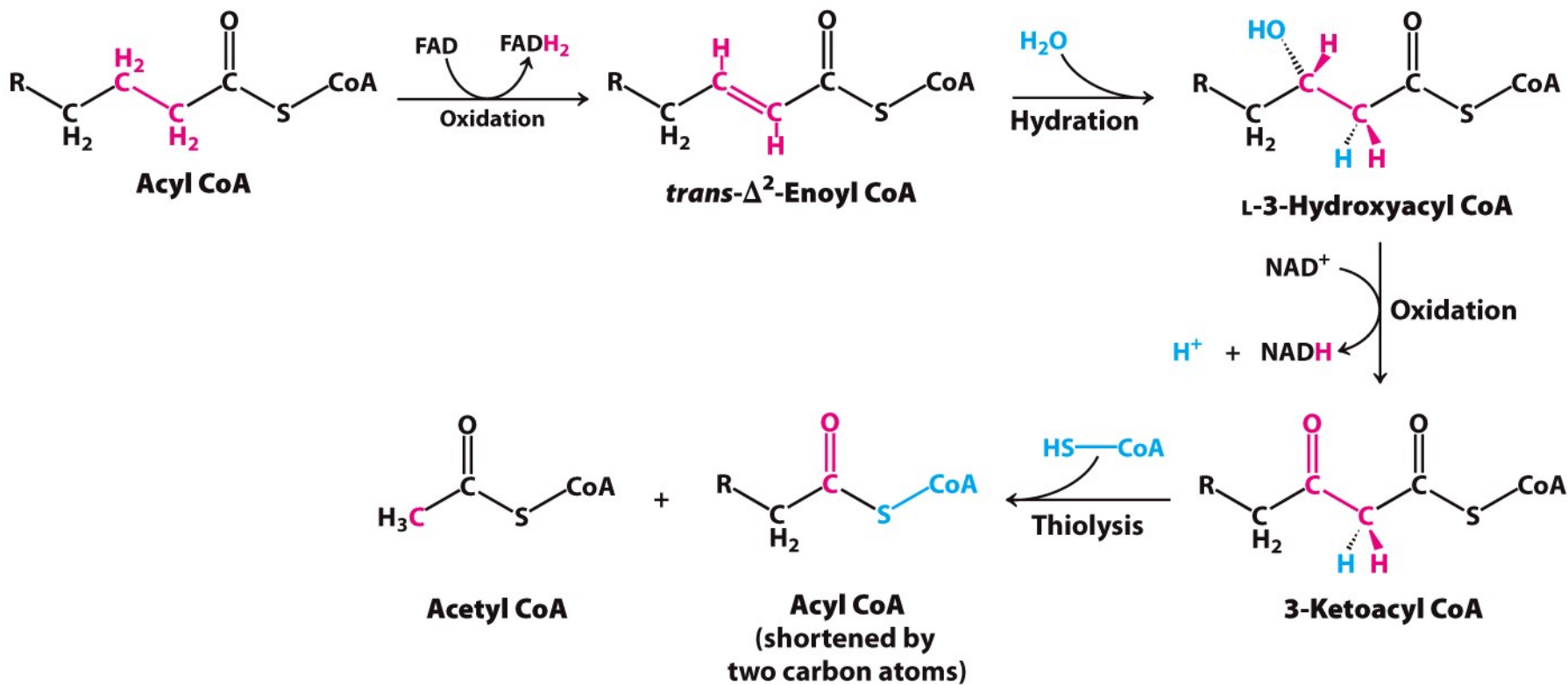
**Carbon number:**

**3      2      1**

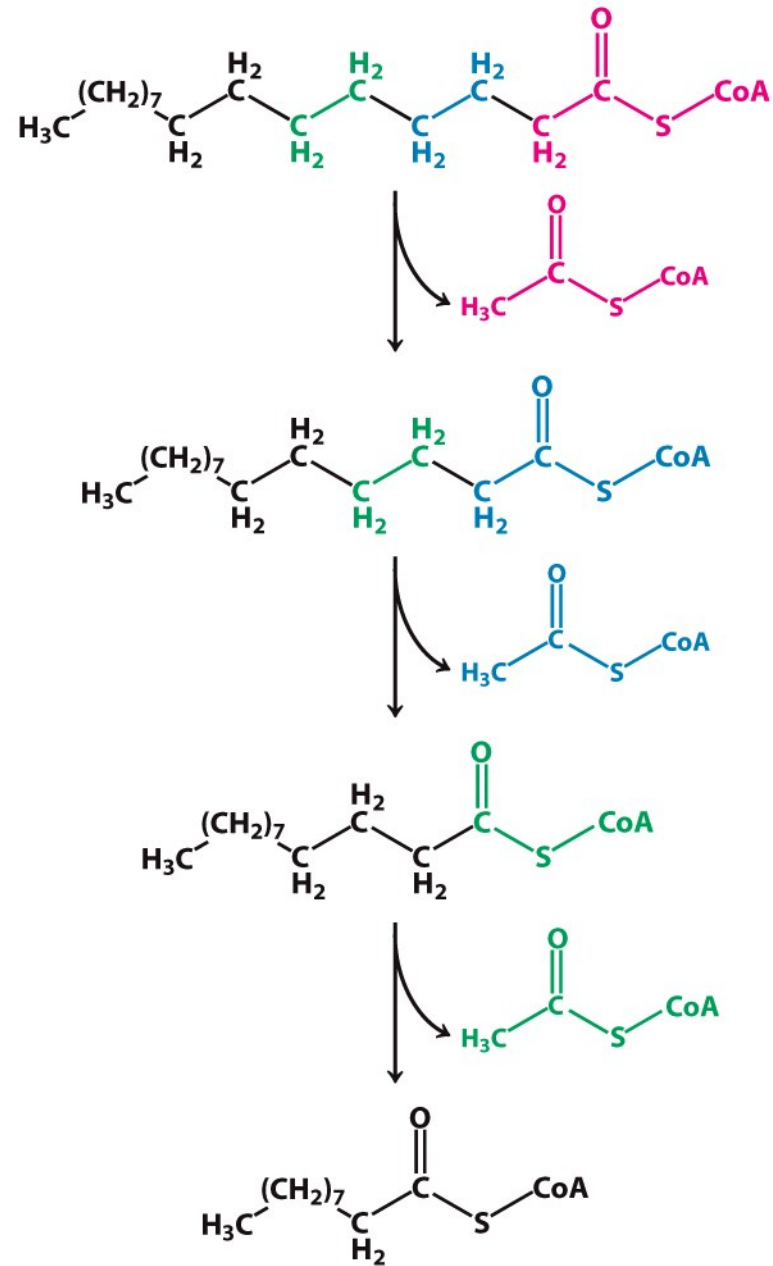
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**Figure 27.6**  
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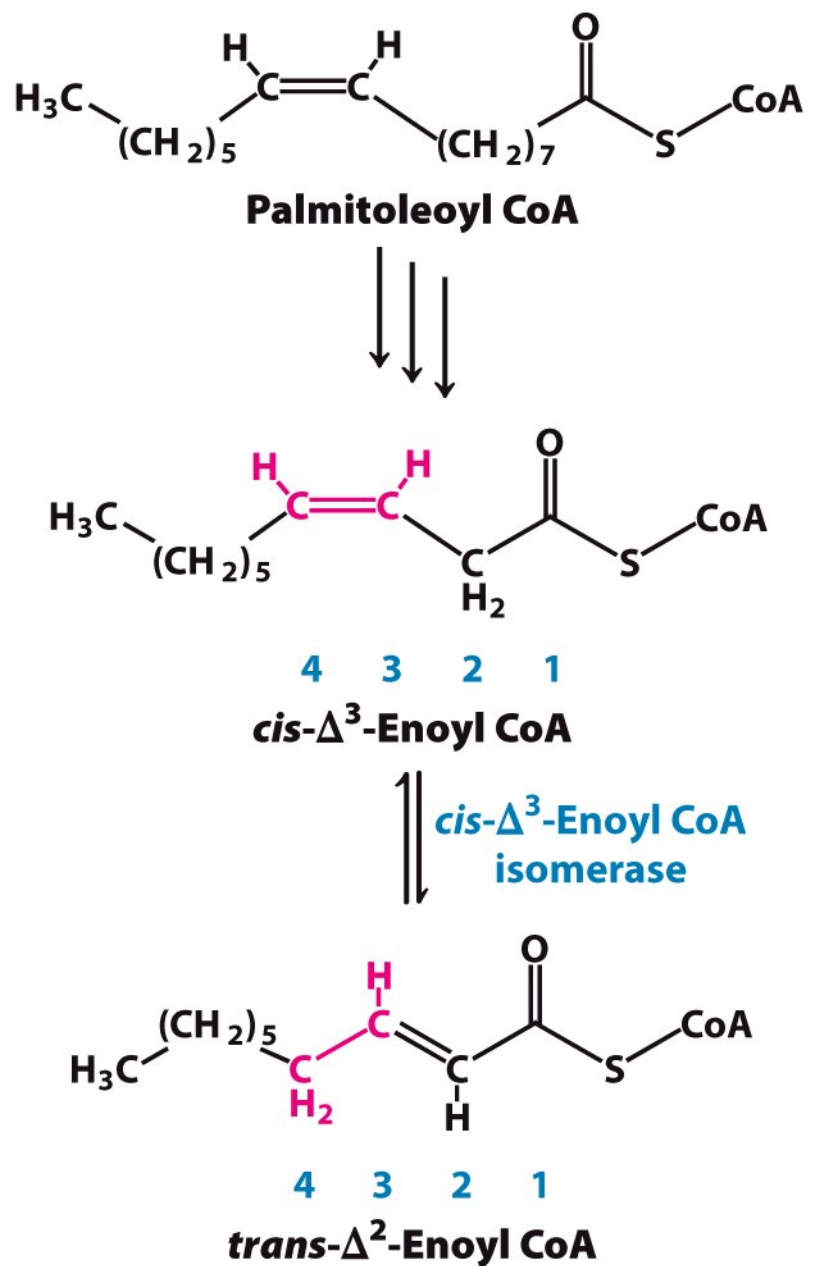
**Table 27.1** Principal reactions required for fatty acid degradation

Step	Reaction	Enzyme
1	$\text{Fatty acid} + \text{CoA} + \text{ATP} \rightleftharpoons \text{acyl CoA} + \text{AMP} + \text{PP}_i$	Acyl CoA synthetase (also called fatty acid thiokinase and fatty acid: CoA ligase)*
2	$\text{Carnitine} + \text{acyl CoA} \rightleftharpoons \text{acyl carnitine} + \text{CoA}$	Carnitine acyltransferase I and II (also called carnitine palmitoyl transferase I and II)
3	$\text{Acyl CoA} + \text{E-FAD} \rightleftharpoons \text{trans-}\Delta^2\text{-enoyl CoA} + \text{E-FADH}_2$	Acyl CoA dehydrogenases (several isozymes having different chain-length specificity)
4	$\text{trans-}\Delta^2\text{-Enoyl CoA} + \text{H}_2\text{O} \rightleftharpoons \text{L-3-hydroxyacyl CoA}$	Enoyl CoA hydratase (also called crotonase or 3-hydroxyacyl CoA hydrolyase)
5	$\text{L-3-hydroxyacyl CoA} + \text{NAD}^+ \rightleftharpoons \text{3-ketoacyl CoA} + \text{NADH} + \text{H}^+$	L-3-Hydroxyacyl CoA dehydrogenase
6	$\text{3-Ketoacyl CoA} + \text{CoA} \rightleftharpoons \text{acetyl CoA} + \text{acyl CoA}$ (shortened by two carbon atoms)	$\beta$ -Ketothiolase (also called thiolase)

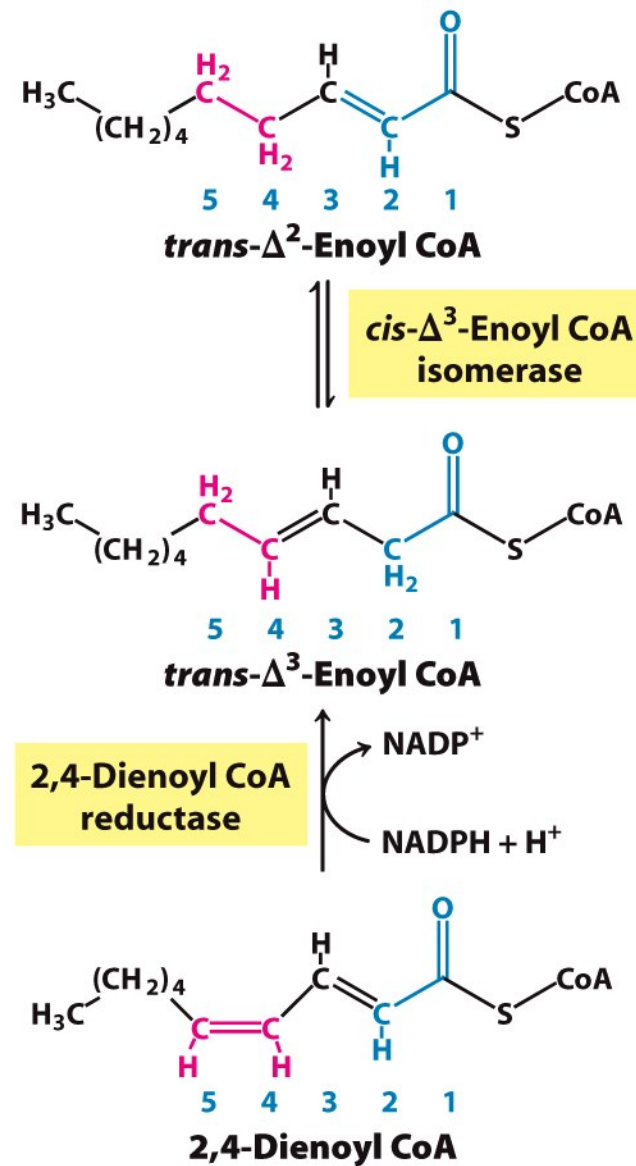
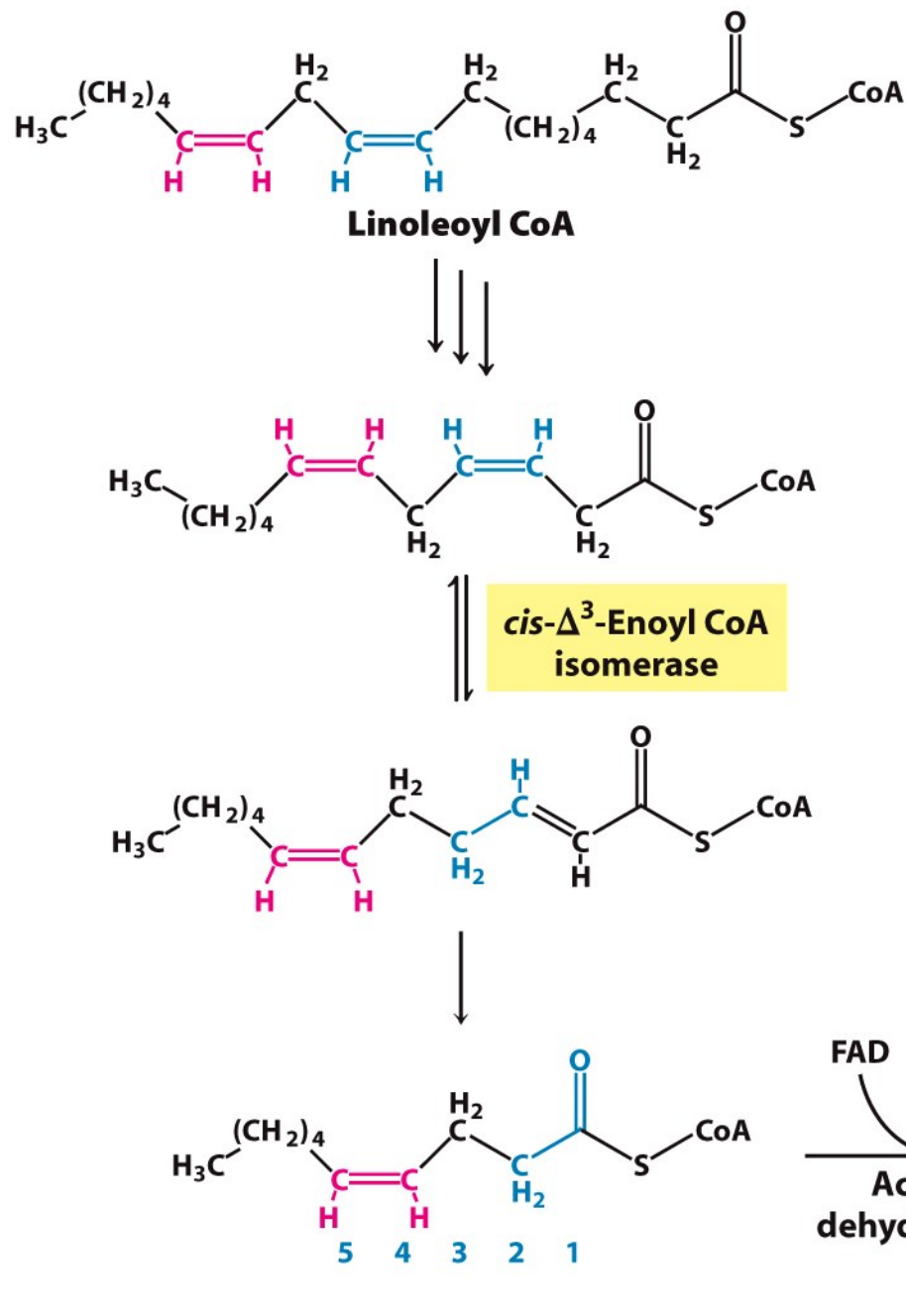
\*An AMP-forming ligase.

**Table 27.1**

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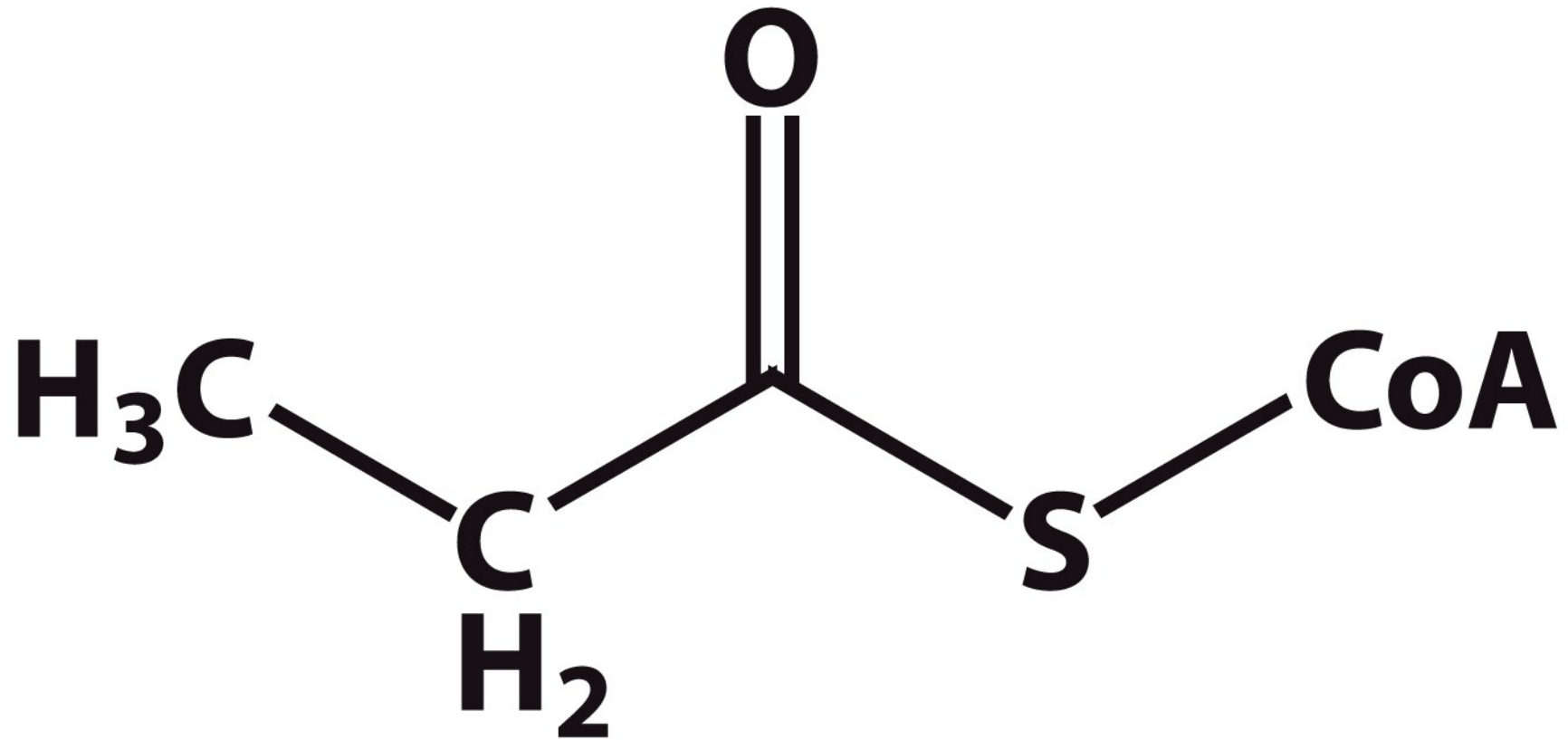


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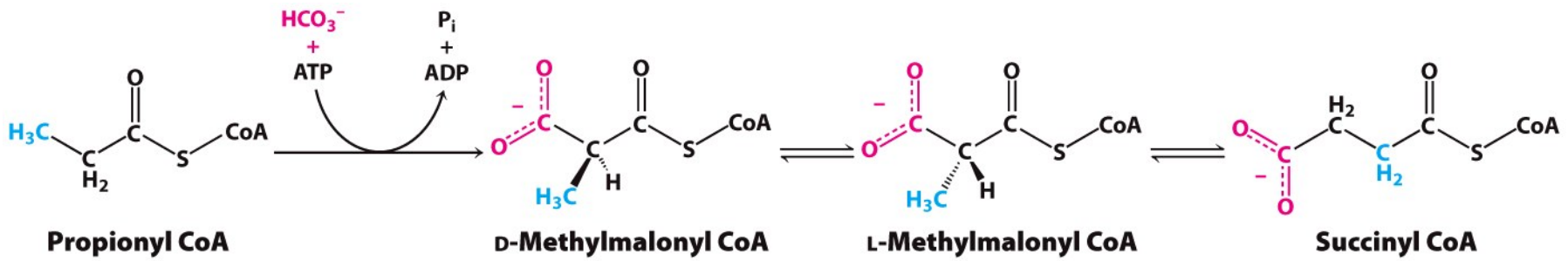


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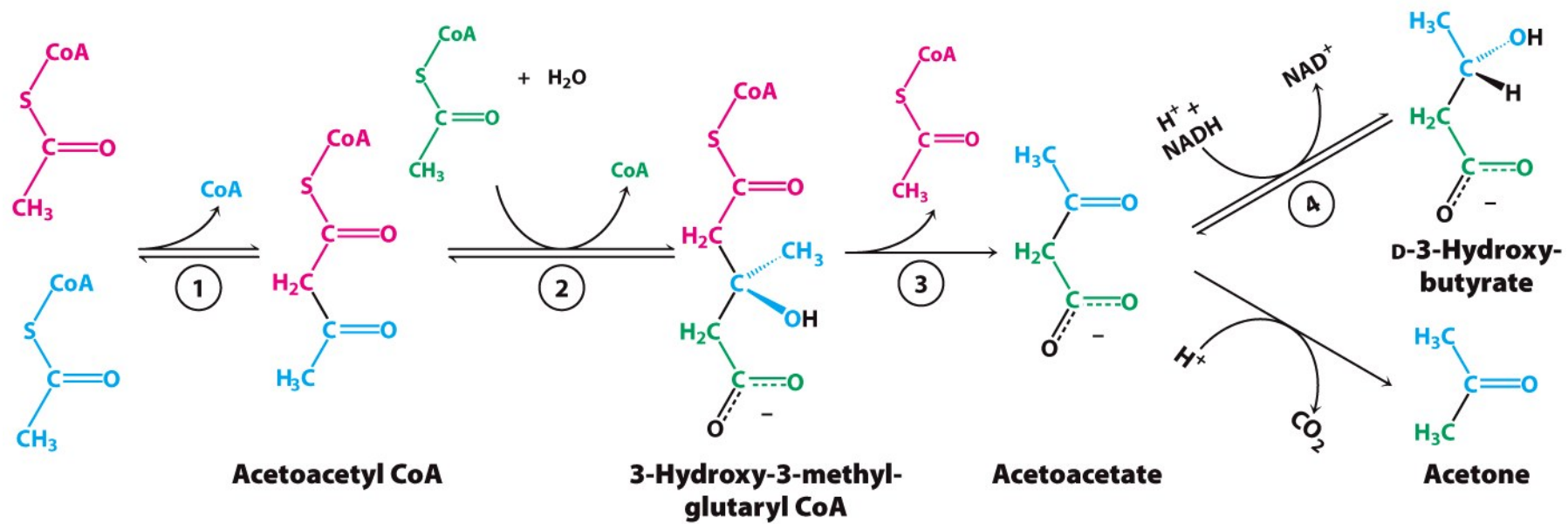




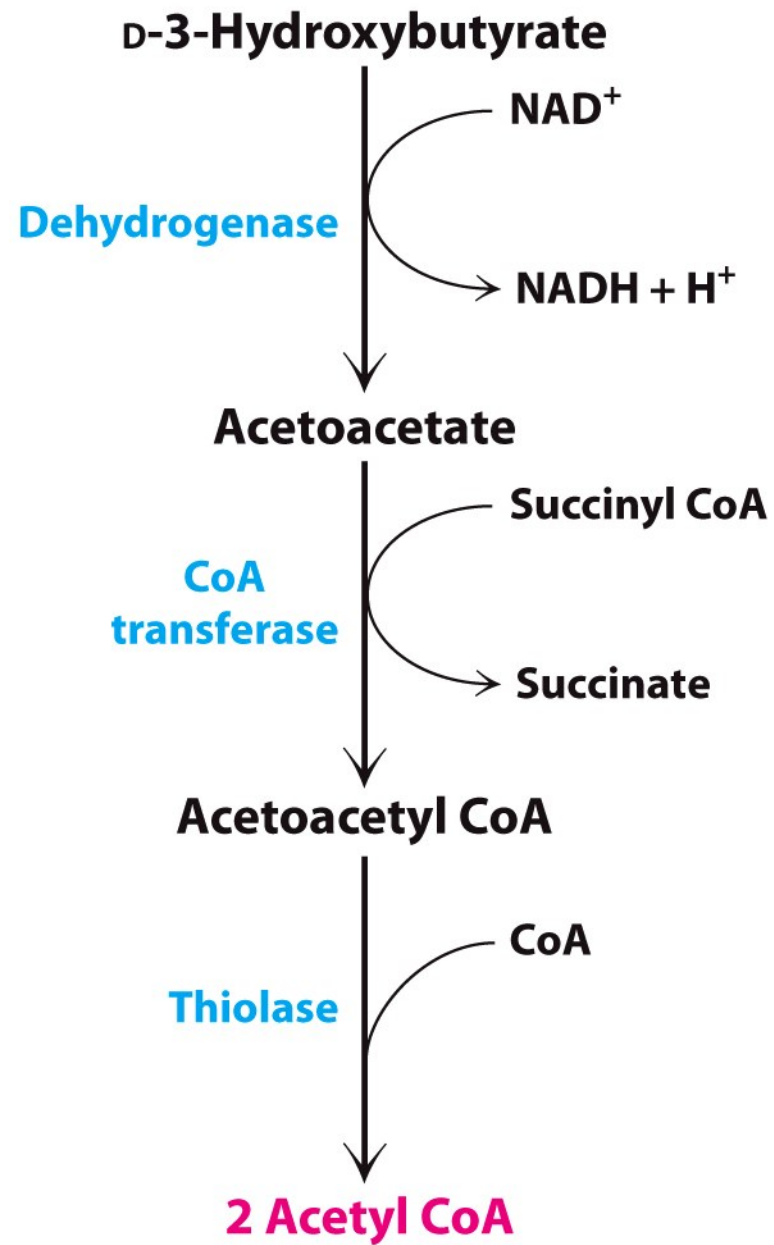
# Propionyl CoA



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**Figure 27.11**  
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