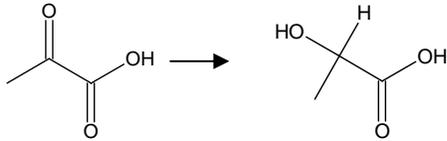


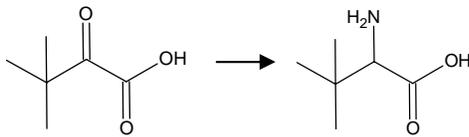
**Example Reactions from the EC Classes**

Class 1. Oxidoreductases

(a) EC 1.1.1.27 – lactate dehydrogenase  
pyruvate + NADH + H<sup>+</sup> → lactate + NAD<sup>+</sup>

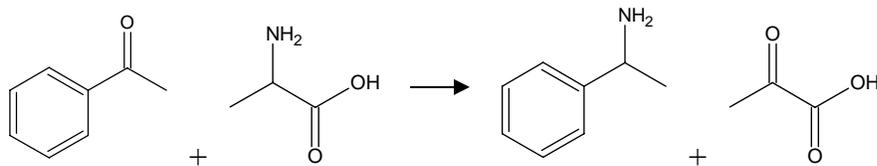


(b) EC 1.4.1.9 leucine dehydrogenase (reductive amination)  
trimethylpyruvate + NADH + NH<sub>4</sub><sup>+</sup> → L-tert-leucine + NAD<sup>+</sup> + H<sub>2</sub>O

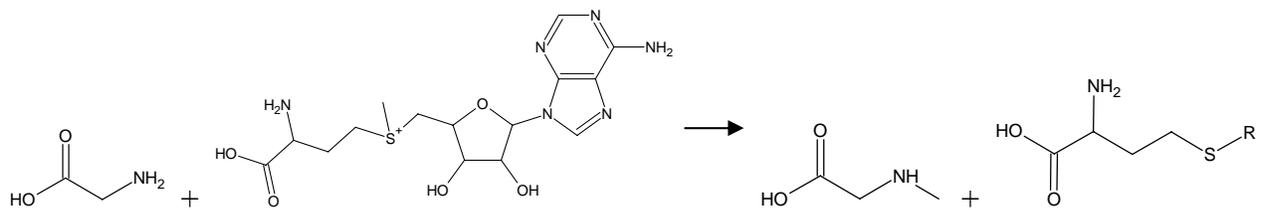


Class 2. Transferases

(a) EC 2.6.1.x transaminase  
acetophenone + L-alanine → phenylethylamine + pyruvate



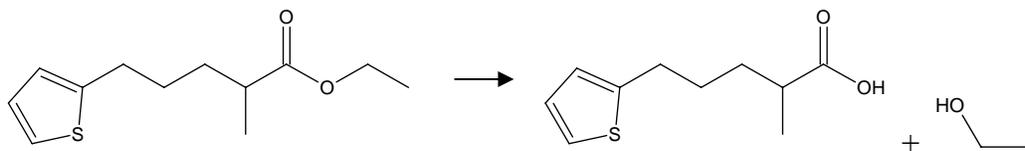
(b) EC 2.1.1.20 glycine-N-methyltransferase  
glycine + S-adenosyl-methione → methylamino-acetic acid + S-adenosyl-cysteine



### Class 3. Hydrolases

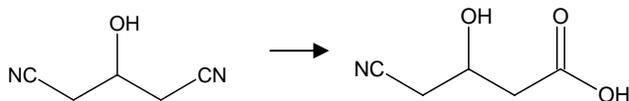
(a) EC 3.1.1.x lipase

ethyl 2-methyl-5-thien-2-ylpentanoate + H<sub>2</sub>O → 2-methyl-5-thien-2-ylpentanoic acid + ethanol



(b) EC 3.5.5.1 nitrilase

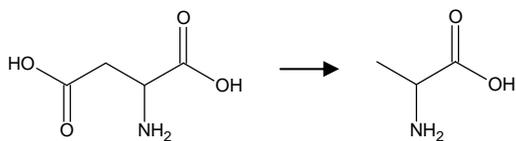
3-hydroxypentanedinitrile + 2H<sub>2</sub>O → 4-cyano-3-hydroxybutanoic acid



### Class 4. Lyases

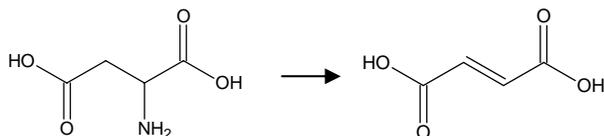
(a) EC 4.1.1.12 L-Asp-β-decarboxylase

aspartate → alanine + CO<sub>2</sub>



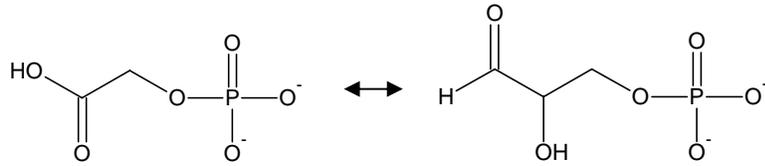
(b) EC 4.3.1.1 aspartate ammonia lyase (aspartase)

aspartate → fumarate + NH<sub>3</sub>

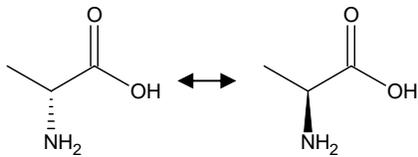


## Class 5. Isomerases

(a) EC 5.3.1.1 triose phosphate isomerase  
dihydroxyacetone phosphate  $\rightarrow$  glyceraldehyde-3-phosphate



(b) EC 5.1.1.1 alanine racemase  
L-alanine  $\rightarrow$  D-alanine



## Class 6. Ligases

(a) EC 6.5.1.1 DNA ligase (ATP-dependent)

Consult your neighborhood bio book!