

Discussion Exercise 4: Six classes of enzymes

Introduction to the six classes of enzymes:

Name:	Definition	Types of enzymes
1. Oxidoreductases	Catalyzes a reaction in which substrate is NET oxidized or reduced	Dehydrogenase Oxidase Peroxidase reductase
2. Transferases	Transfer of functional group from one molecule to another	Kinase transferase
3. Hydrolases	Catalyzes a hydrolysis reaction	Phosphatase Protease, peptidase nuclease
4. Lyases	Group is eliminated to form a double bond; In reverse reaction, group added across double bond with no ATP	Decarboxylase Hydratase Lyase Synthase
5. Isomerases	Catalyzes isomerizations, including stereoisomerization	Isomerase Mutase racemase
6. Ligases	Catalyzes formation of a bond with ATP hydrolysis	Carboxylase synthetase

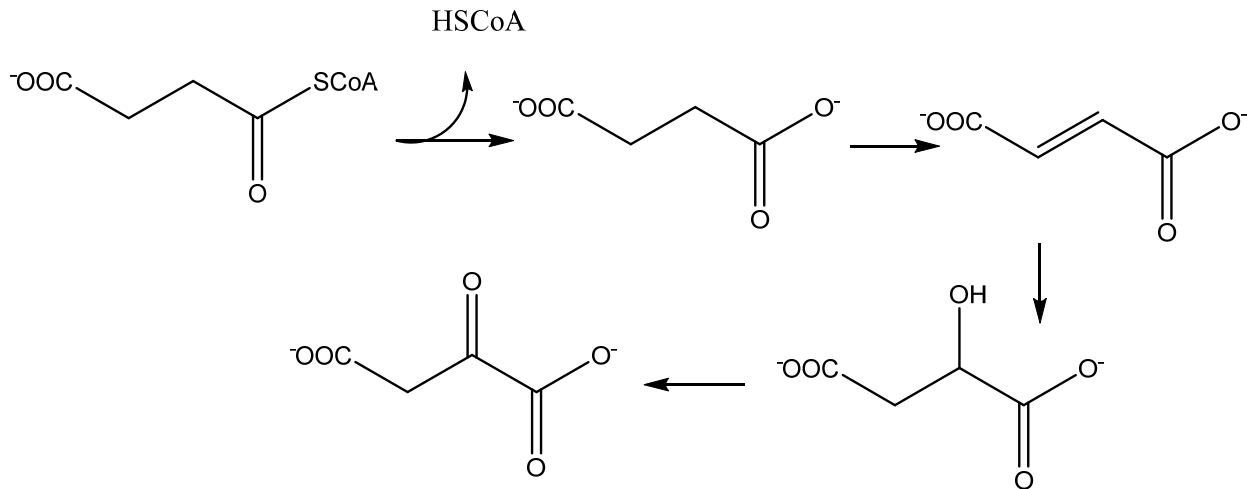
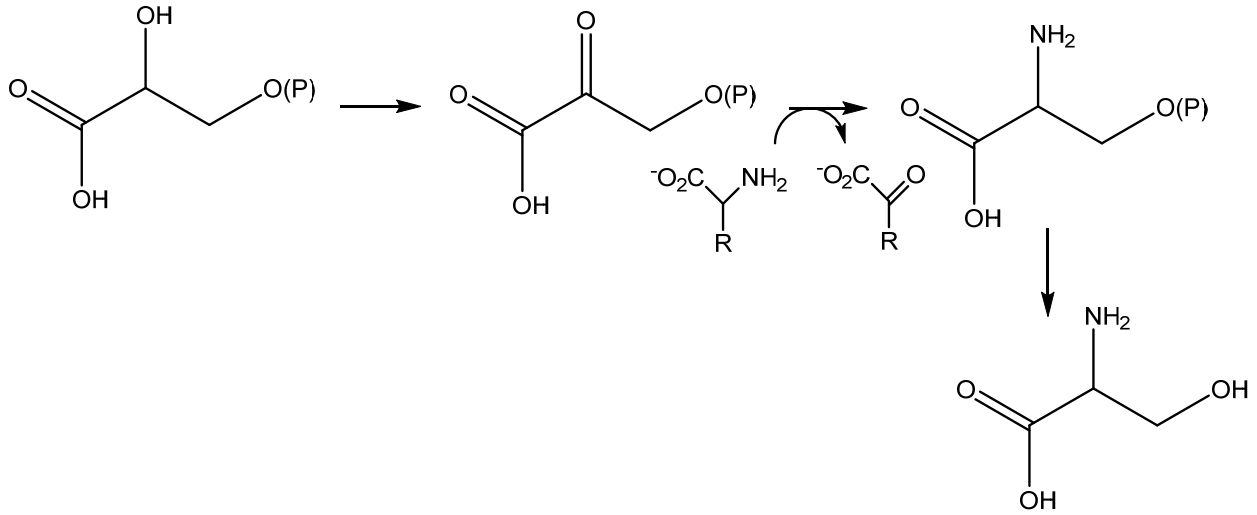
Skill 1: Predict the class of an enzyme based on its name

Problem 1: To which EC class do each of the following enzymes belong?

- A. Hexokinase
- B. Glucose-6-phosphate isomerase
- C. Glyceraldehyde-3-phosphate dehydrogenase
- D. phosphoglycerate mutase

Skill 2: Predict the enzyme class given a chemical reaction

Problem 2: An enzyme from which class will catalyze the following reactions?



Skill 3: Predict the name of an enzyme based on a reaction

Problem 3: Match the following enzyme names with the appropriate reaction of the urea cycle: Arginase, argininosuccinate lyase, argininosuccinate synthetase, ornithine transcarbamoylase.

