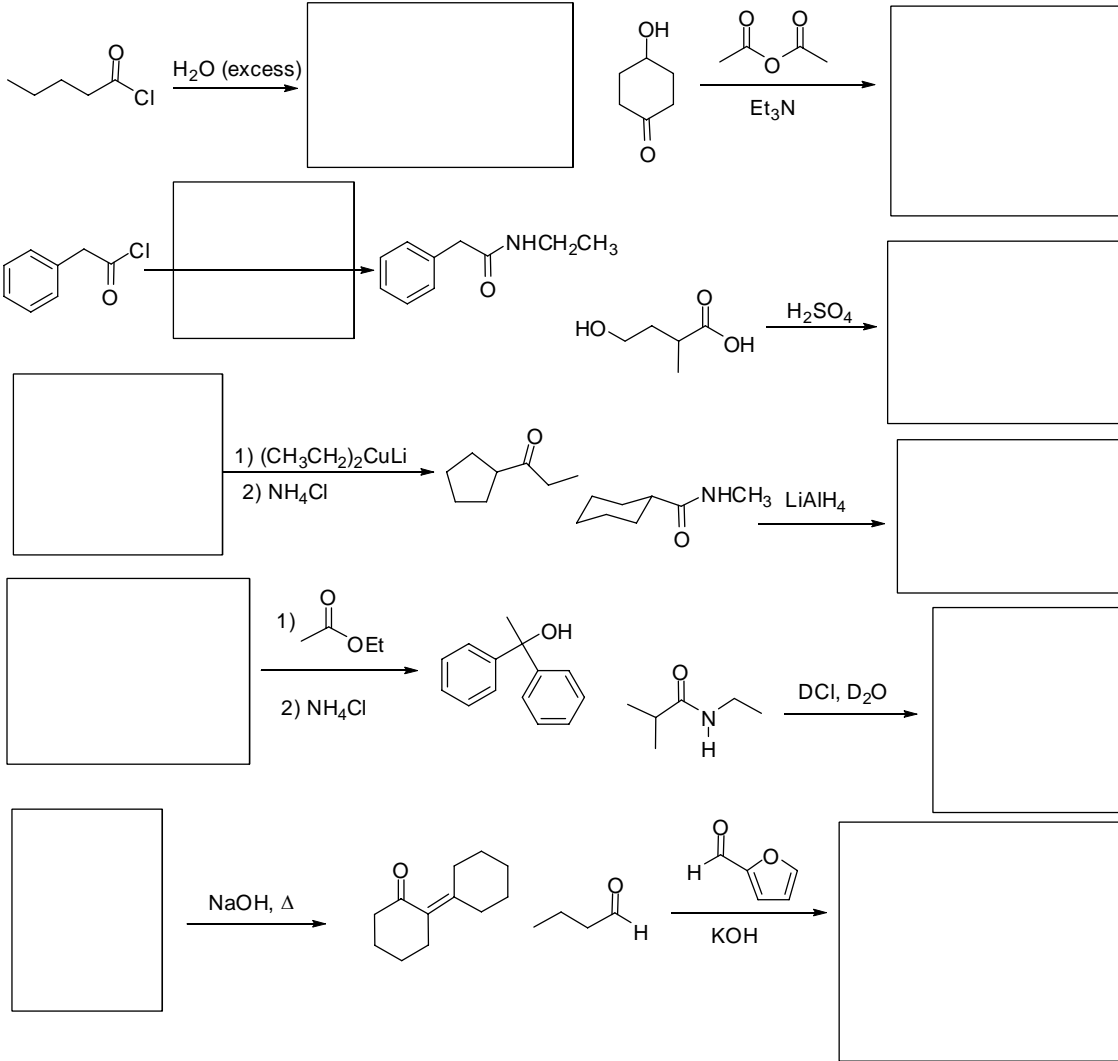
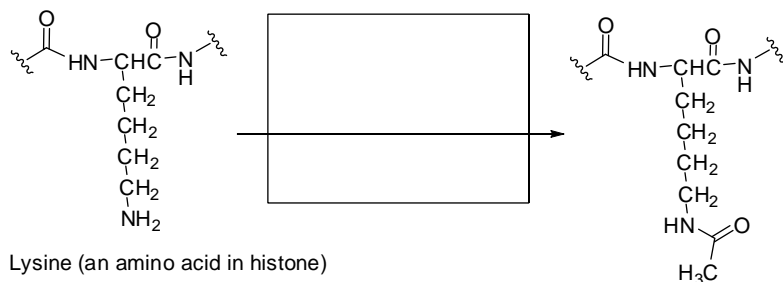


1. Provide the product or reagent to complete the following reactions. (4 pts. each)



2. Histone acetylation and deacetylation has a key role in turning gene expression on and off. It therefore is a focus of many current cancer research studies. Answer the following questions about this reaction based on your knowledge of acid derivative reactions.

a) Show the reagent a chemist would use to promote the acetylation reaction in the box below. (4 pts.)

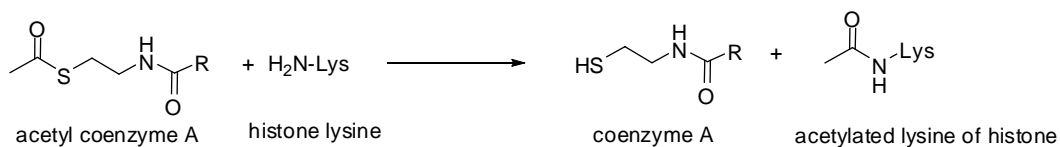


b) What type of functional group is reacting in the starting material and what type of functional group is formed in the product? Be as specific as possible. (2 pts. each)

starting material: _____

product: _____

c) Nature acetylates the amine with acetyl coenzyme A. Show the curved electron flow arrows that depict the mechanism for the reaction of the amine of lysine with the thioester of acetyl coenzyme A. (8 pts.)



d) What type of mechanism is represented by this acetylation reaction? (1,000,000 pts.)