

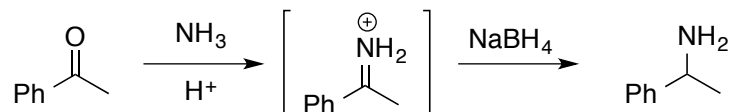
OUTLINE

Amino Acid Synthesis

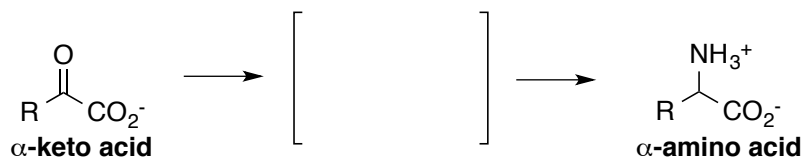
- Organic Synthesis – Reductive Amination - McMurry 26.3
- Biosynthesis of Asparagine and Proline – not in the textbook, use lecture notes
- SKIP reading section 29.9 of the McMurry text (not covered this year)

HW assignment online “CHEM 109 HW (Lectures 1-6)”Organic Synthesis

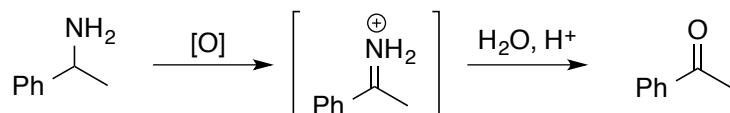
Reductive Amination (Ketone \rightarrow [Imine] \rightarrow Amine)

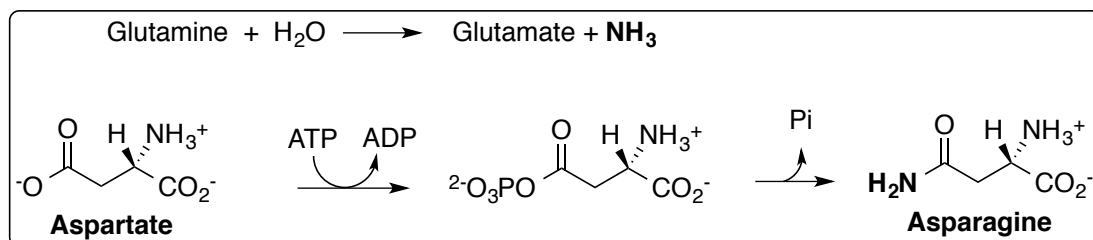


Applied to amino acid synthesis:

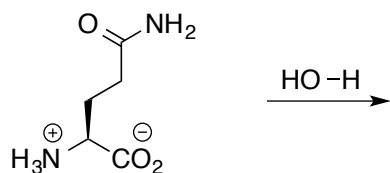
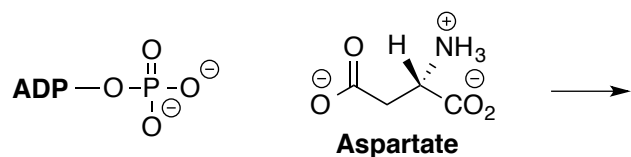
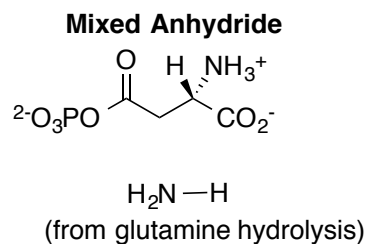


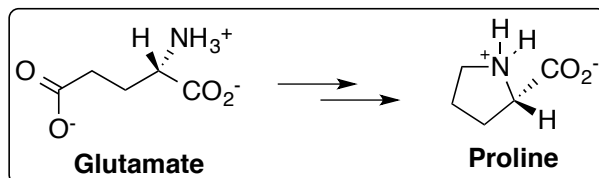
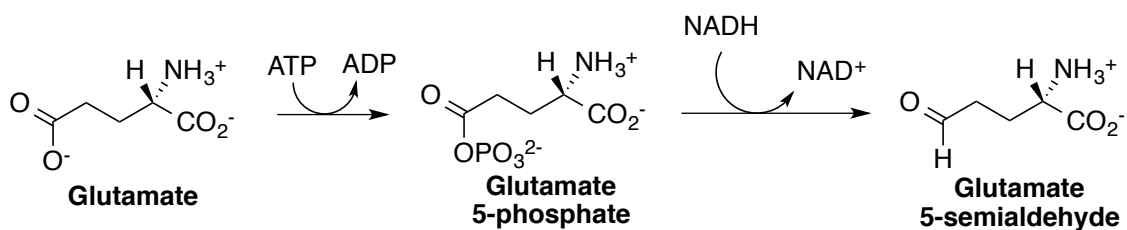
Reverse Reductive Amination (Amine \rightarrow [Imine] \rightarrow Ketone)



Biosynthesis of Asparagine

Each step takes place in the active site of an enzyme, which contains all acids (H⁺) and bases (:B) necessary to complete each transformation (more on that later). Until then, feel free to use H⁺ and :B as needed.

Hydrolysis of Glutamine*Phosphate Transfers with ATP**Amide Formation*

Biosynthesis of Proline*Formation and NADH Reduction of Phosphoester**Intramolecular Reductive Amination*