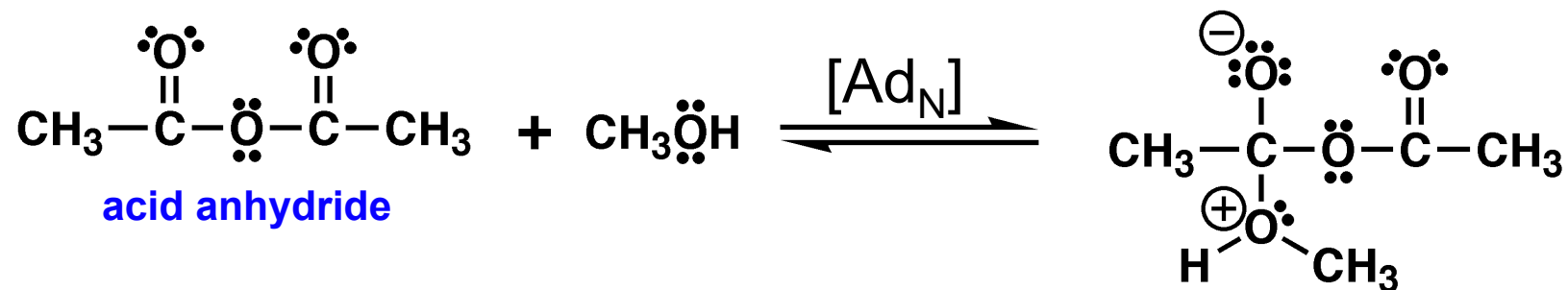
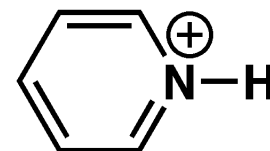
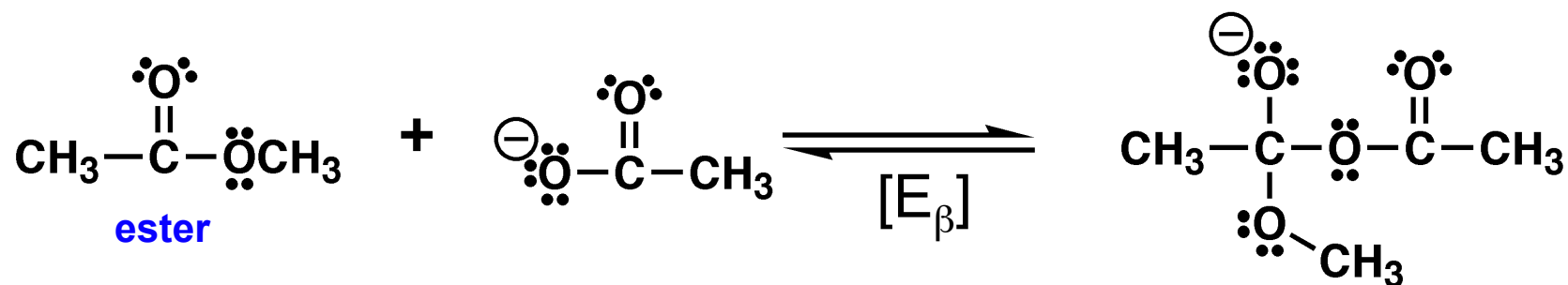
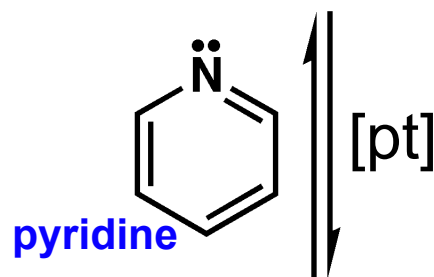


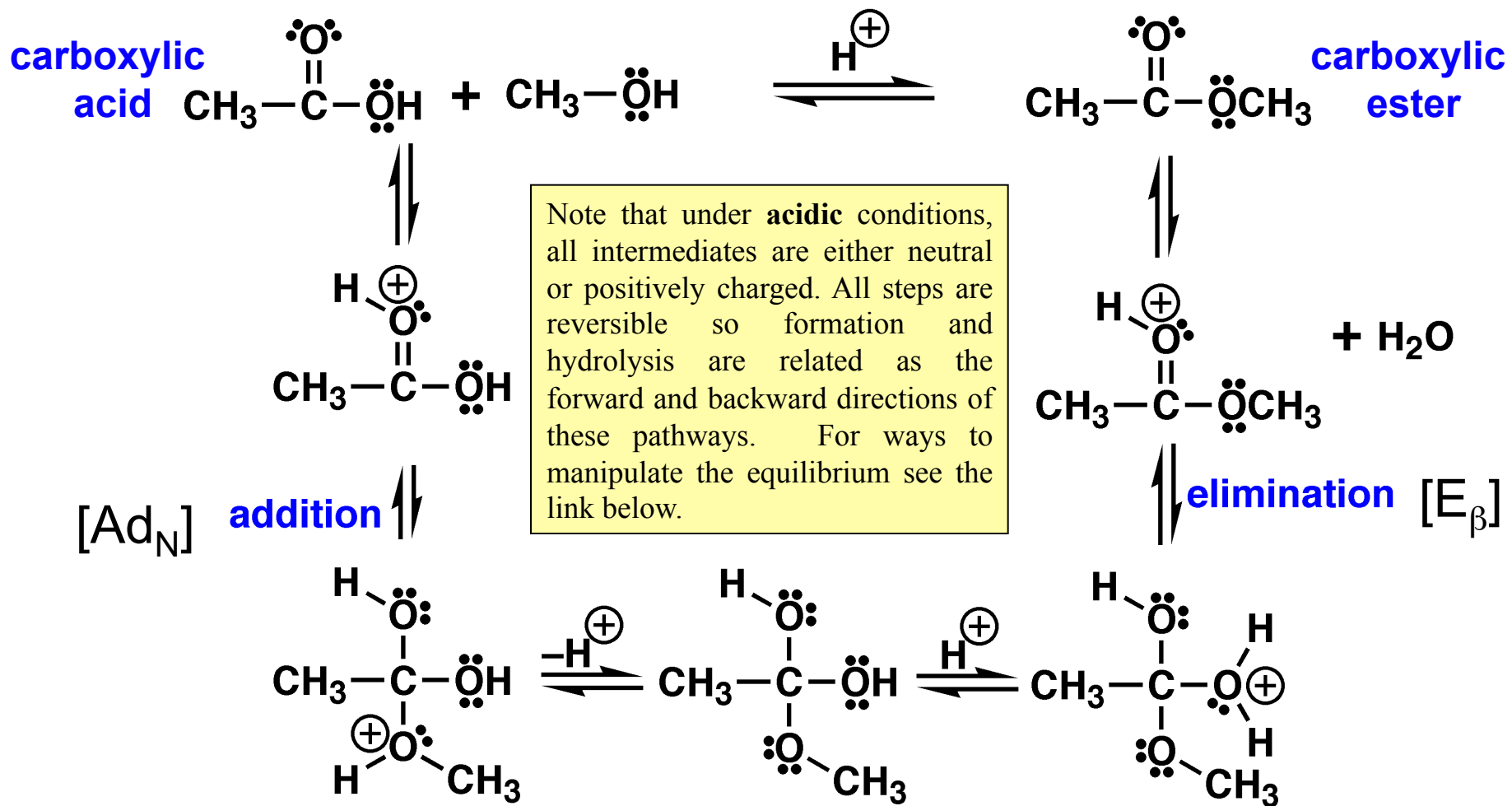
Ester Formation via the Acid Anhydride (Near Neutral Conditions)



These reactions are often conducted in presence of a weak base such a pyridine. The base assists in proton transfer steps.



Acid-Catalyzed Ester Formation via Carboxylic Acid



C=O nucleophilic addition

C=O nucleophilic substitution

C=O addition - loss of carbonyl oxygen

Conjugate addition

Ester hydrolysis/formation - acid catalysis

Amide formation from acid chloride

<http://www.chemtube3d.com/>

Manipulating the Equilibrium

<http://wps.prenhall.com/wps/media/objects/725/743131/0085f.html>

Acid-Catalyzed Amide Hydrolysis

Amides are stable functional groups but under forcing conditions can be made to hydrolyze to carboxylic acids. The acid-catalyzed process is used to hydrolyze peptides and proteins for amino acid composition and sequence determination.

