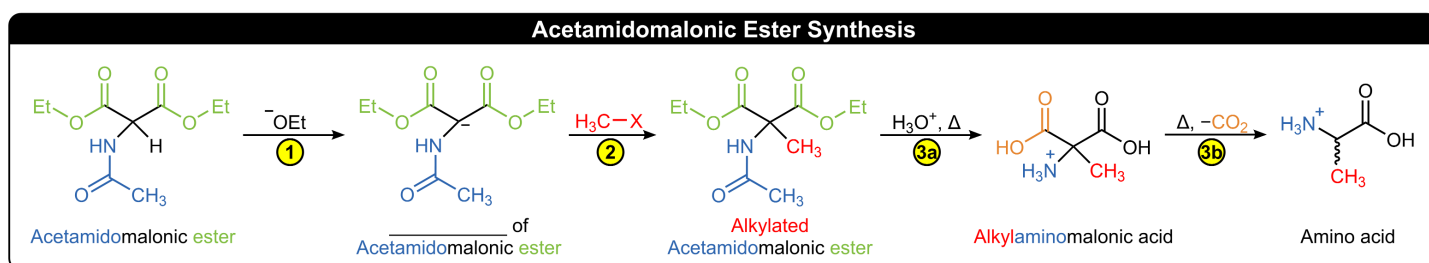
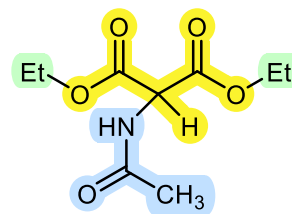


CONCEPT: SYNTHESIS OF AMINO ACIDS: ACETAMIDOMALONIC ESTER SYNTHESIS

Intro to Acetamidomalonic Ester Synthesis

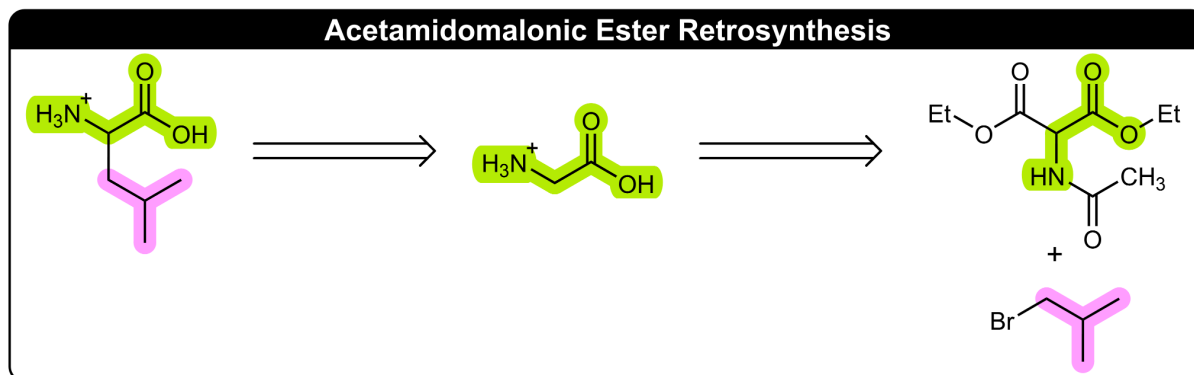
- Acetamidomalonic ester synthesis is a variation of _____ ester synthesis.
 - Uses **diethyl acetamidomalonate** as the starting material.
- Takes place in ____ steps:
 - Enolization:** A strong base deprotonates the _____ atom of **acetamidomalonic ester**.
 - Alkylation of Enolate:** Enolate anion attacks an **alkyl halide** in an _____ reaction.
 - Hydrolysis:** The **amide** and the _____ are hydrolyzed.
 - Decarboxylation:** One of the two _____ groups is lost as CO_2 .



EXAMPLE: Draw the structure of the product when the enolate of diethyl acetamidomalonate reacts with methyl iodide followed by treatment with warm aqueous acid.

Synthesis of Amino Acids

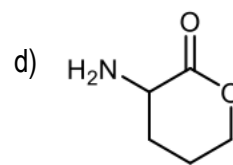
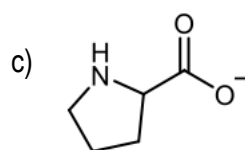
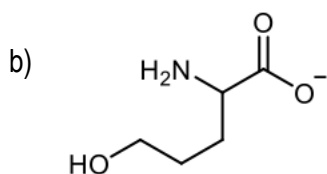
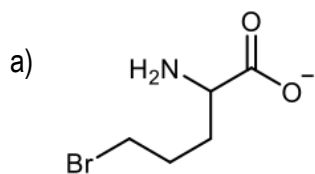
- Acetamidomalonic ester synthesis produces amino acids in good yields.
 - The **base structure** of the amino acid comes from the acetamidomalonic ester.
 - The **side chain** comes from an _____.



CONCEPT: SYNTHESIS OF AMINO ACIDS: ACETAMIDOMALONIC ESTER SYNTHESIS

EXAMPLE: Suggest an alkyl halide to synthesize methionine using acetamidomalonic ester synthesis.

PRACTICE: Which amino acid is formed when 1,3-dibromopropane is used in the acetamidomalonic ester synthesis and the final product mixture is treated with a base?



PRACTICE: How can aspartic acid be synthesized using acetamidomalonic ester synthesis?