

QCM1

- QCM2 A

QCM3 E

OCM4 D

OCM 6 A

QCM8 D

- QCM 9 D

OCM 10 A

The reaction mechanism proceeds in four steps:

- Claisen Condensation:** Ethyl cyclohexanecarboxylate and ethyl chloroacetate react in the presence of K_2CO_3 to form ethyl 2-(2-oxocyclohexyl)acetate and ethanol. Curved arrows show the deprotonation of the α -carbon of ethyl cyclohexanecarboxylate by K_2CO_3 , followed by nucleophilic attack on the carbonyl carbon of ethyl chloroacetate.
- Hydrolysis:** The intermediate ethyl 2-(2-oxocyclohexyl)acetate is hydrolyzed with OH^- to yield 2-(2-oxocyclohexyl)acetic acid and ethanol. Curved arrows show the attack of OH^- on the ester carbonyl and subsequent cleavage of the C-O bond.
- Acid Chloride Formation:** The carboxylic acid reacts with NH_3 to form the corresponding acid chloride, 2-(2-oxocyclohexyl)acetyl chloride. Curved arrows show the nucleophilic attack of the nitrogen lone pair on the carbonyl carbon and the departure of the chloride ion.
- Amidation:** The acid chloride reacts with NH_3 to form the final product, 2-(2-oxocyclohexyl)carboxamide. Curved arrows show the nucleophilic attack of the nitrogen lone pair on the carbonyl carbon and the departure of the chloride ion.