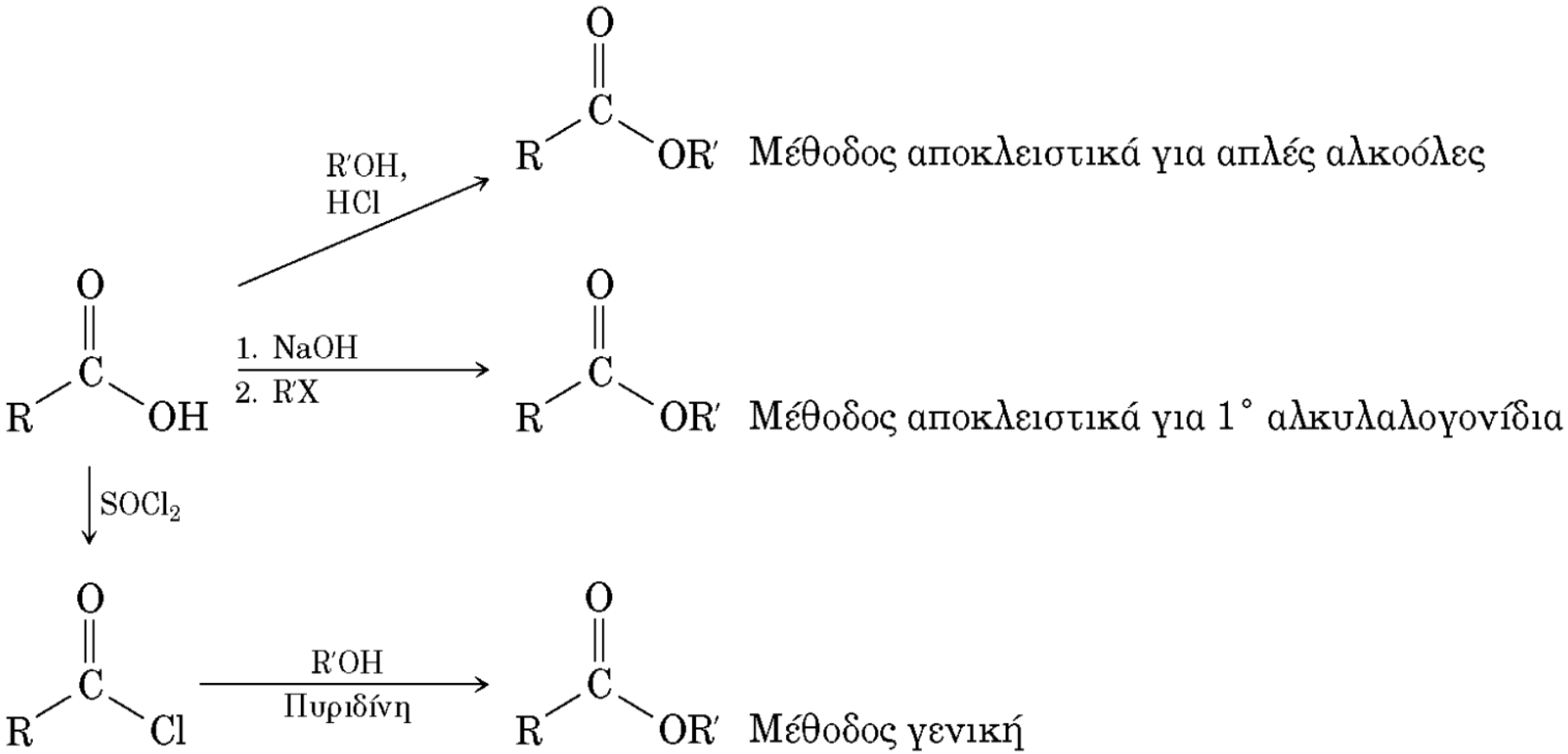
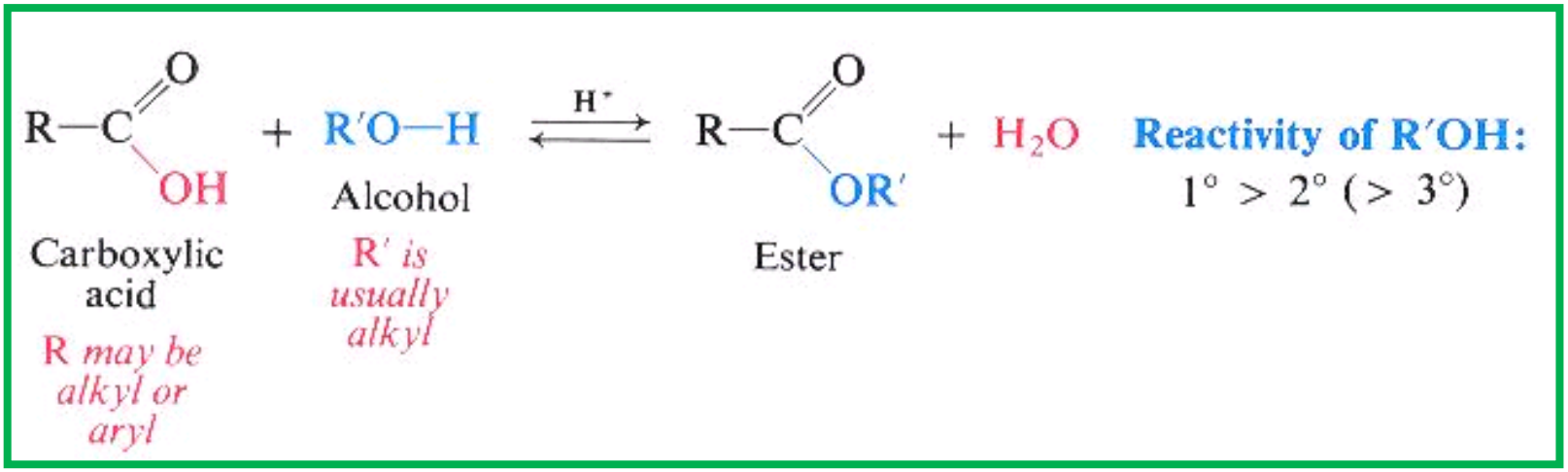
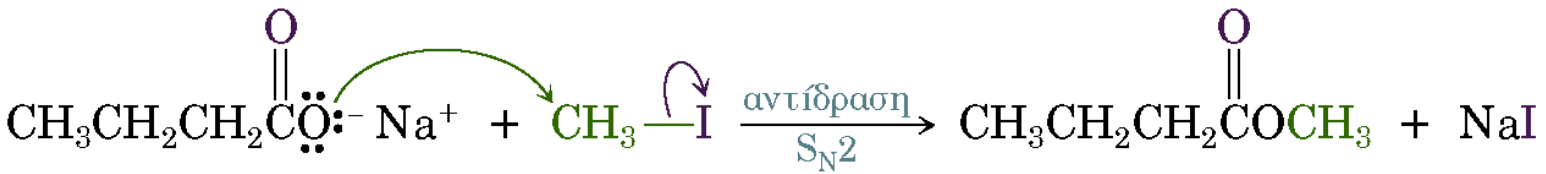
ΕΣΤΕΡΕΣ

Σχηματισμός εστέρων από καρβοξυλικά οξέα

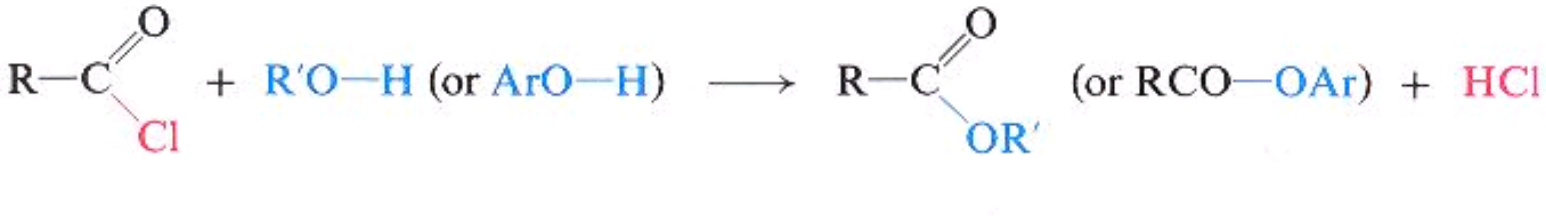




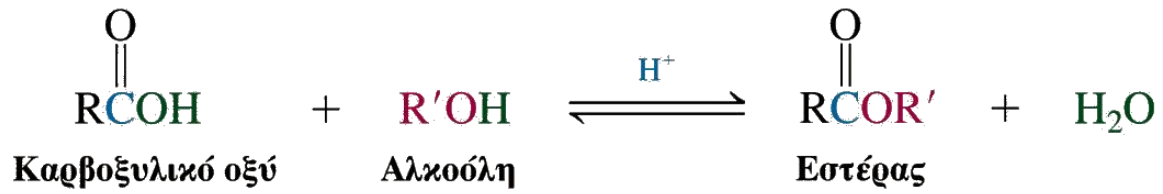


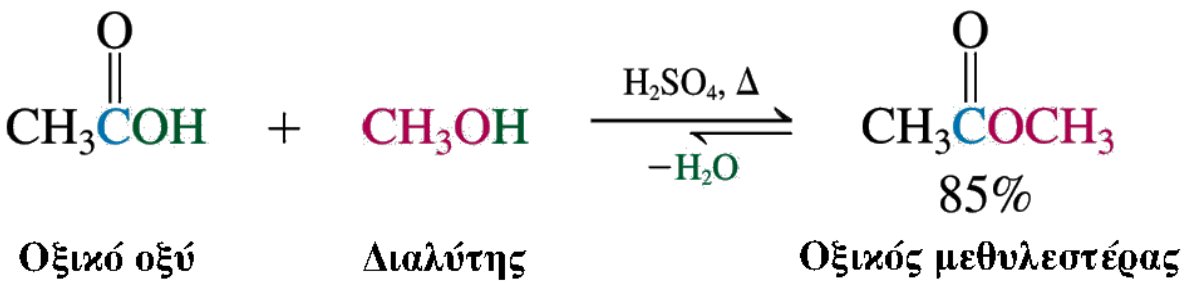
Βουτανοϊκό νάτριο

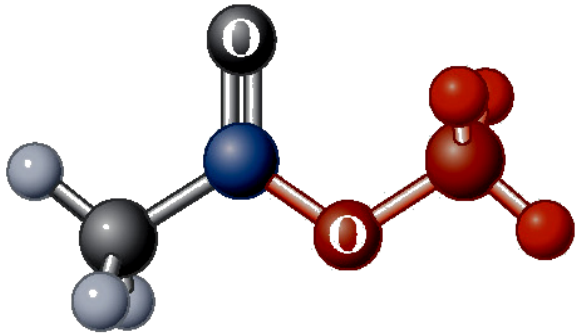
Βουτανοϊκό μεθύλιο, ένας εστέρας (97%)

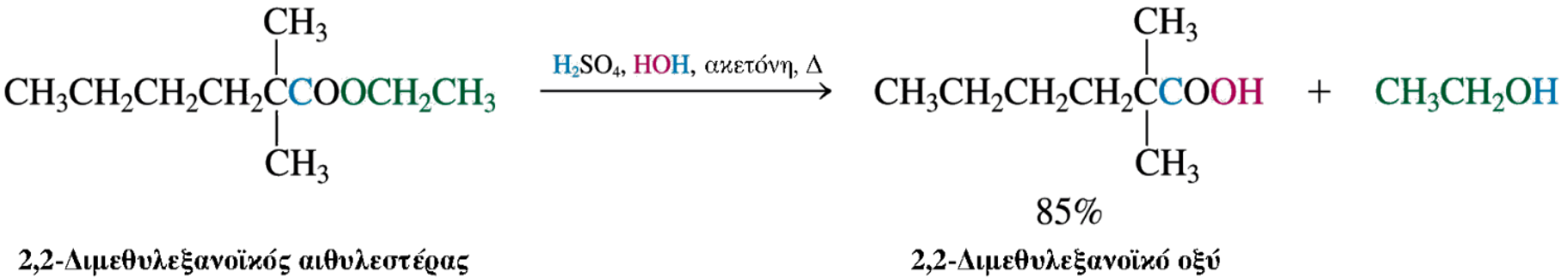


Καταλυόμενη από οξέα εστεροποίηση (Fischer)



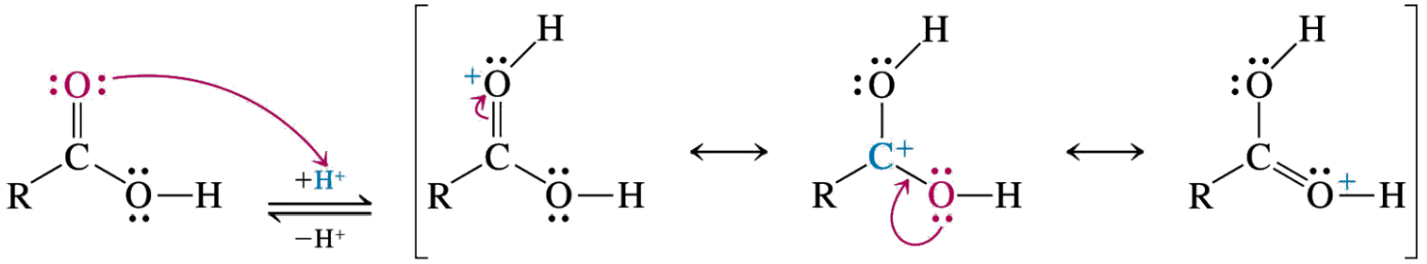




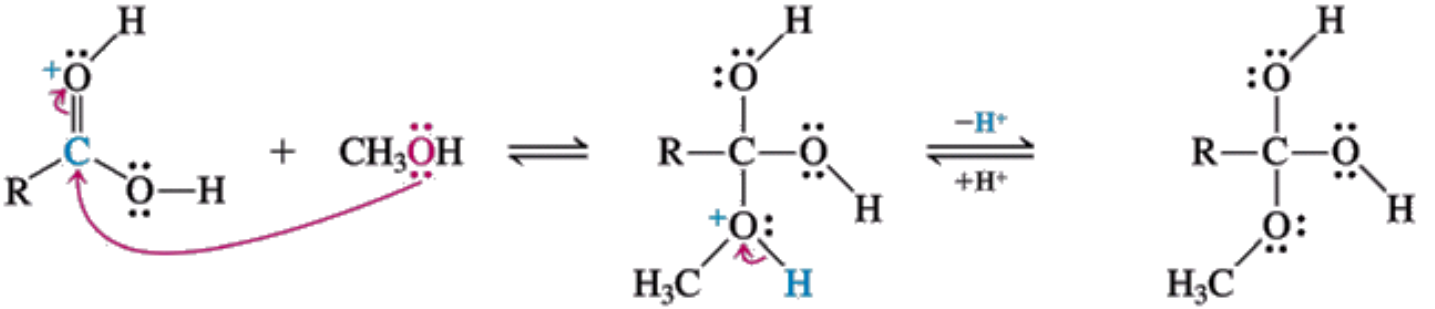


Μηχανισμός καταλυόμενης από οξύ εστεροποίησης

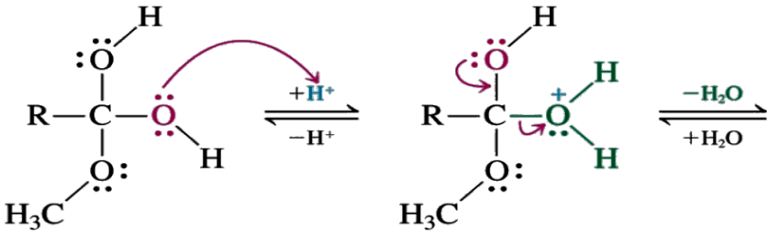
Στάδιο 1. Πρωτονίωση της καρβοξυλικής ομάδας

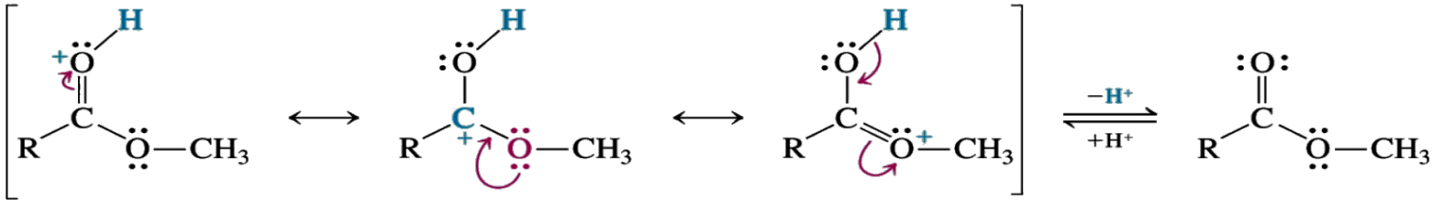


Στάδιο 2. Προσβολή από μεθανόλη



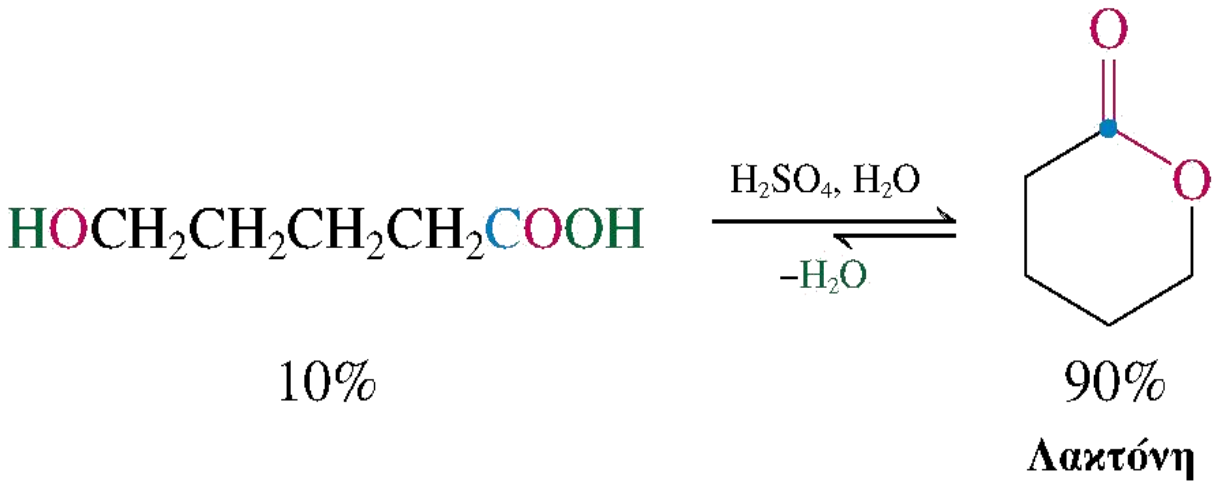
Στάδιο 3. Απόσπαση νερού

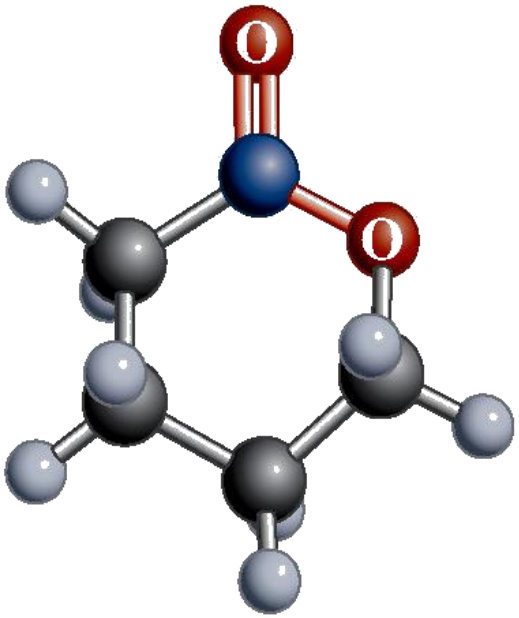




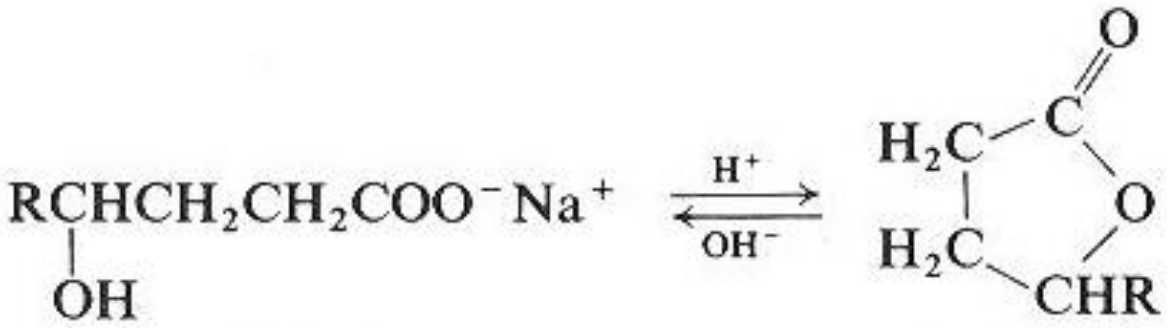
Σχηματισμός λακτονών από υδροξυ-οξέα

Σχηματισμός λακτόνης





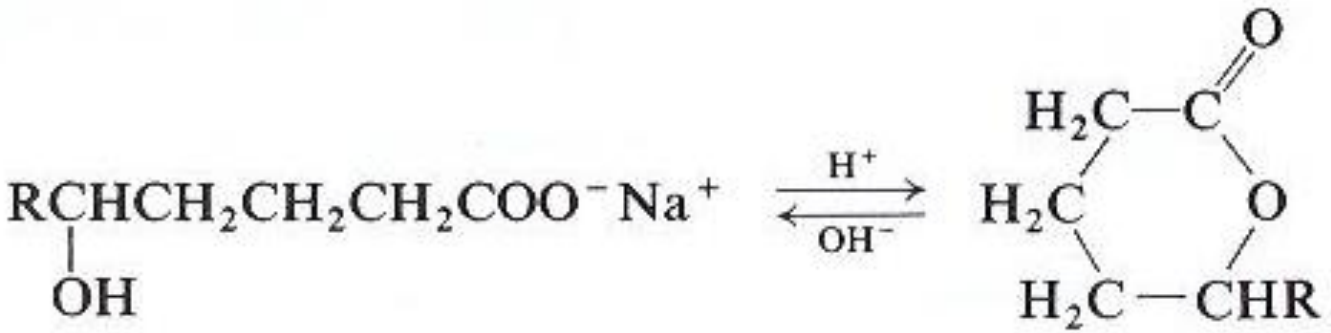
Λακτόνες



Salt of a
γ-hydroxy acid

A γ-lactone

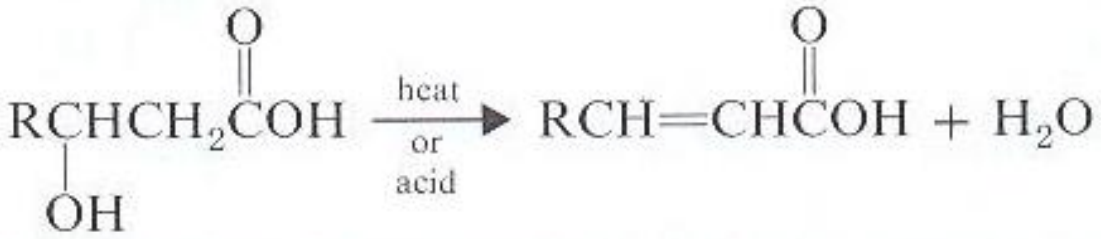
A cyclic ester: five-membered ring



Salt of a
δ-hydroxy acid

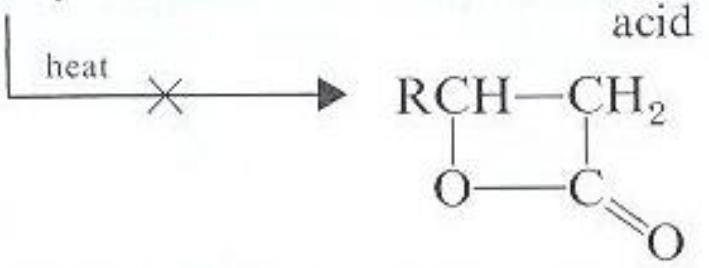
A δ-lactone

A cyclic ester: six-membered ring



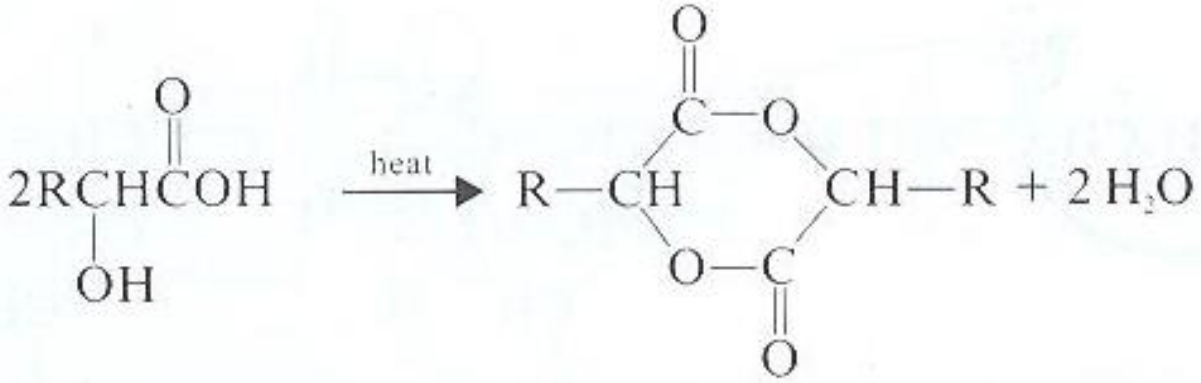
β-Hydroxy acid

α,β-Unsaturated acid



β-Lactone
(does not form)

When α-hydroxy acids are heated, they form cyclic diesters



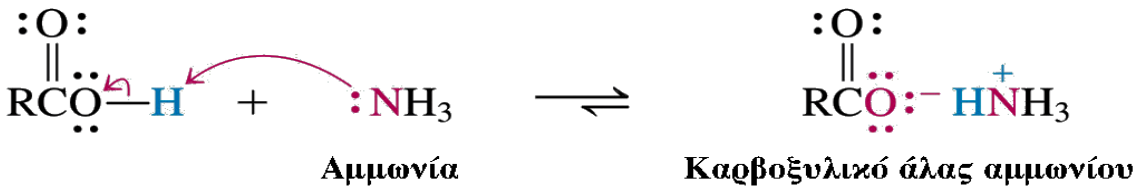
α-Hydroxy acid

A lactide

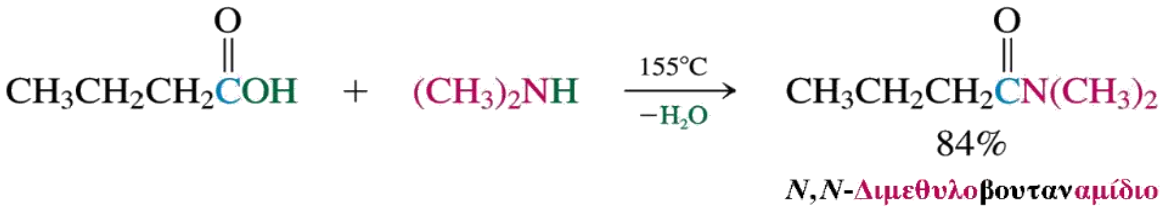
ΑΜΙΔΙΑ

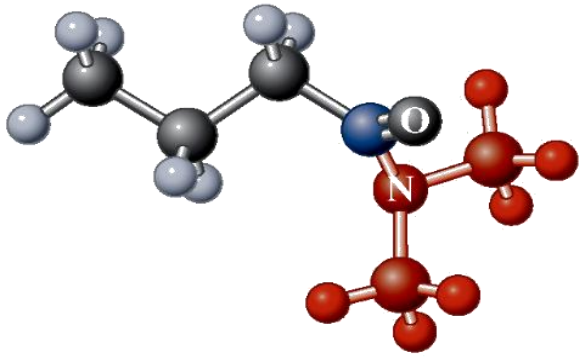
Σχηματισμός αμιδίων από καρβοξυλικά οξέα

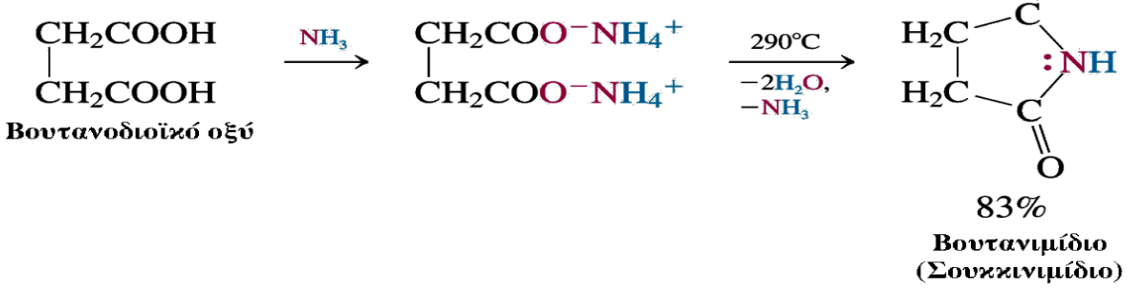
Άλατα αμμωνίου από καρβοξυλικά οξέα

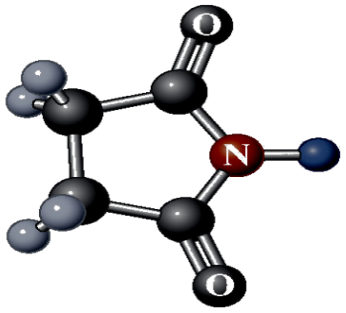


Σχηματισμός αμιδίου από αμίνη και καρβοξυλικό οξύ

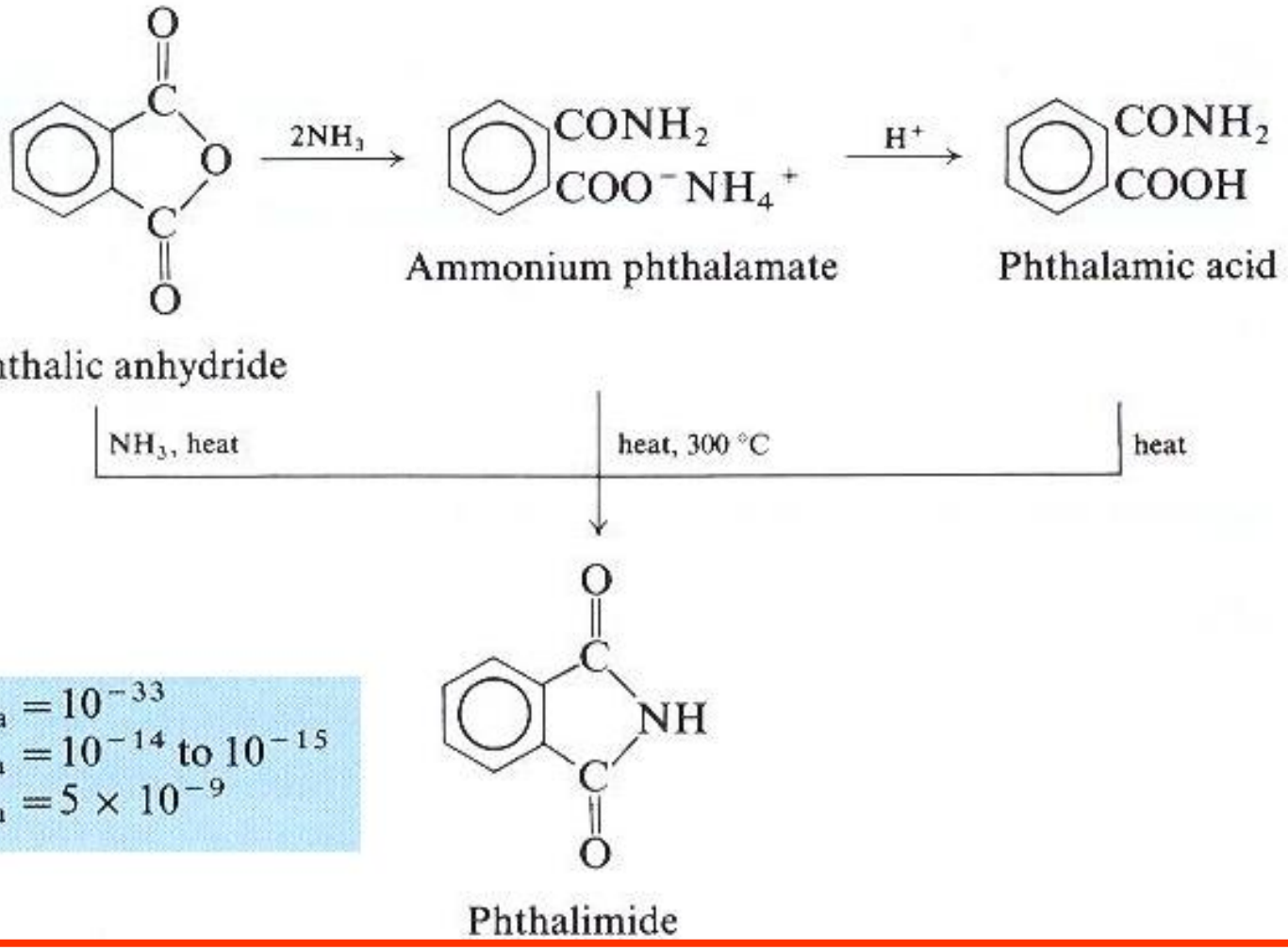






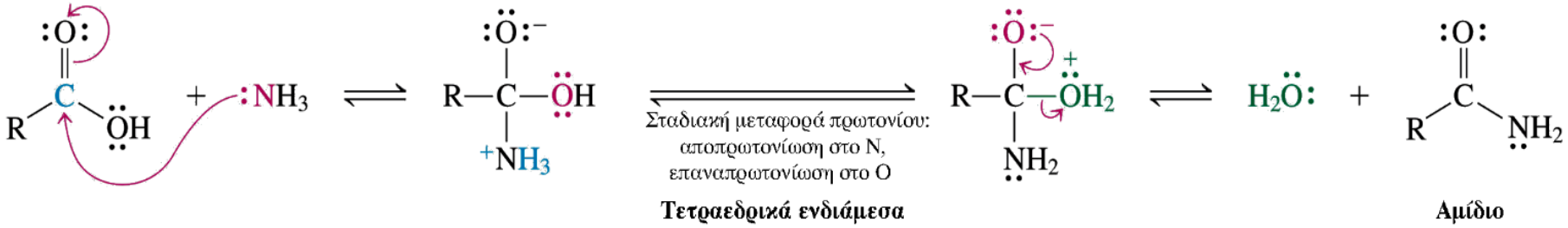


Imides



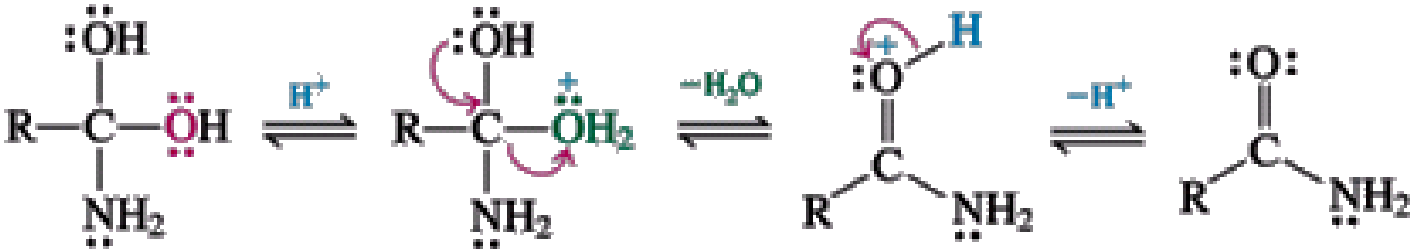
Ammonia, $K_a = 10^{-33}$
Benzamide, $K_a = 10^{-14}$ to 10^{-15}
Phthalimide, $K_a = 5 \times 10^{-9}$

Μηχανισμός σχηματισμού αμιδίου

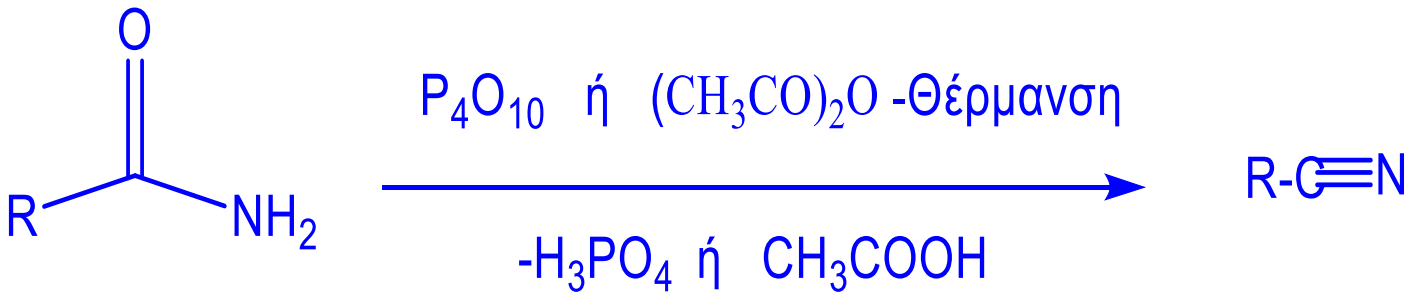


Τετραεδρικά ενδιάμεσα **Αμίδιο**

Εναλλακτικός μηχανισμός σχηματισμού αμιδίου

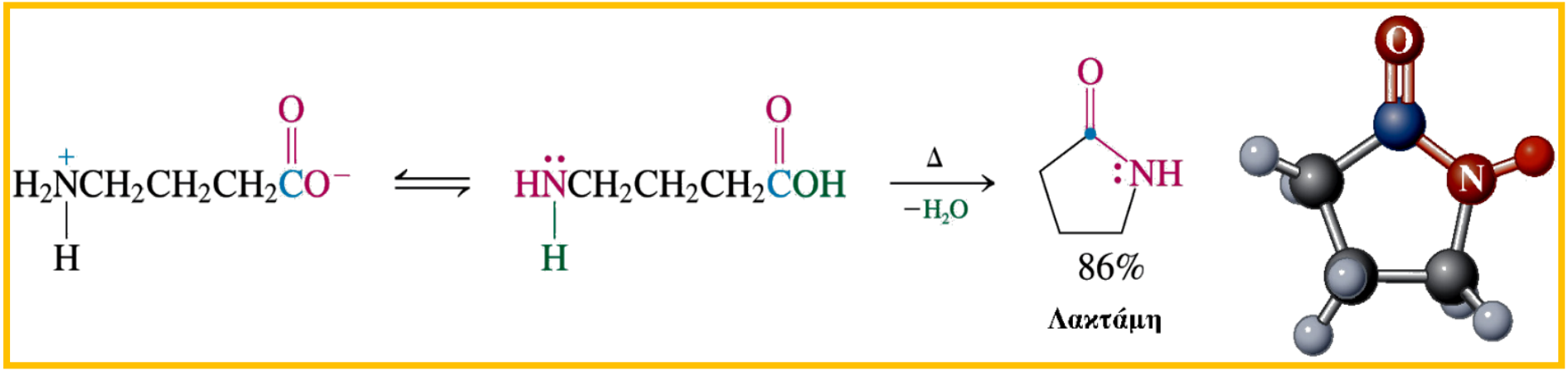


Σχηματισμός νιτριλίων από αμίδια

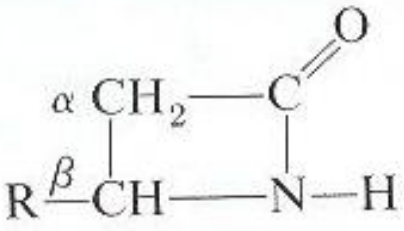


ΙΔΙΑΙΤΕΡΑ ΓΙΑ ΝΙΤΡΙΛΙΑ ΠΟΥ ΔΕΝ ΜΠΟΡΟΥΝ ΝΑ ΠΑΡΑΣΚΕΥΑΣΘΟΥΝ ΜΕ ΠΥΡΗΝΟΦΙΛΗ ΥΠΟΚΑΤΑΣΤΑΣΗ ΚΑΤΑ ΤΗΝ ΕΠΙΔΡΑΣΗ ΝΙΤΡΙΛΙΩΝ ΣΕ ΑΛΚΥΛΑΛΟΓΟΝΙΔΙΑ

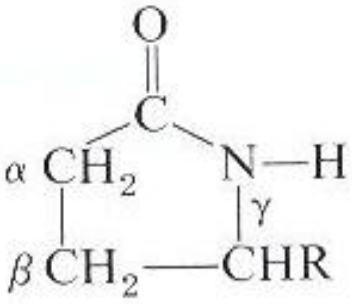
Σχηματισμός λακταμών από αμινοξέα



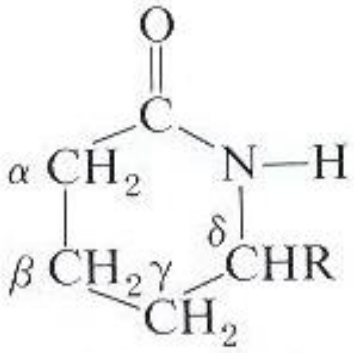
Lactams



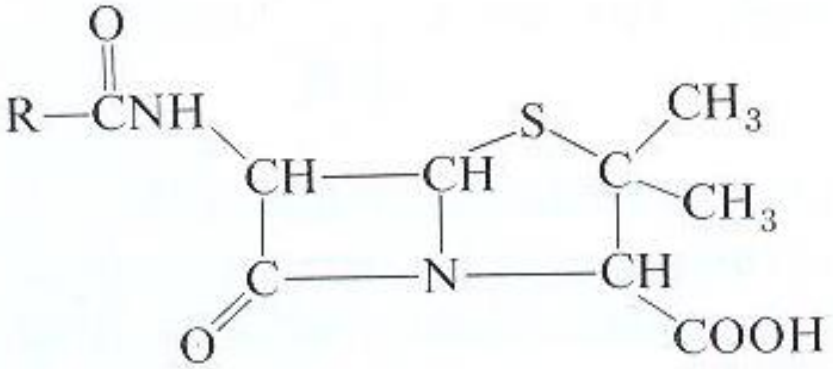
A β-lactam



A γ-lactam



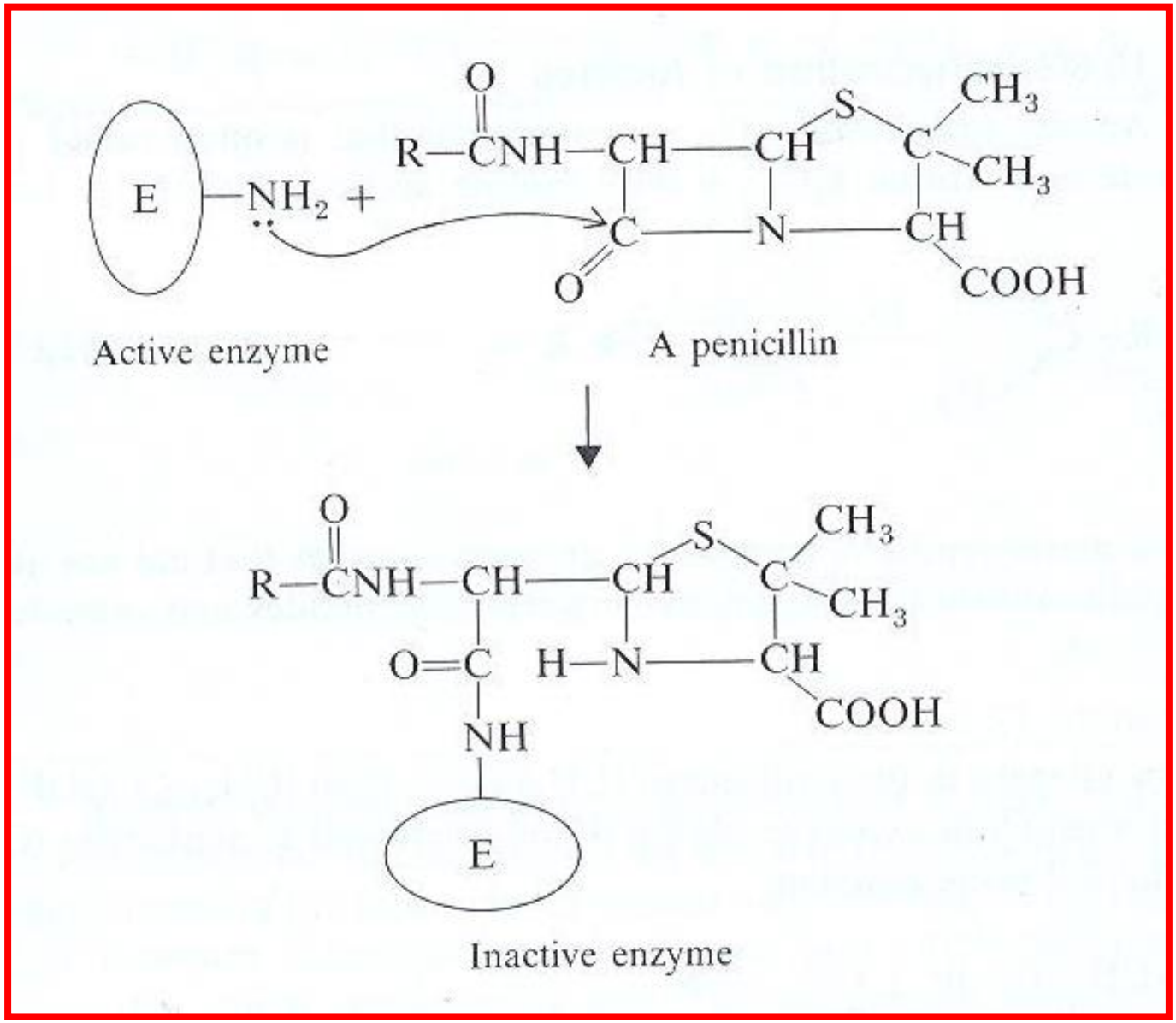
A δ-lactam

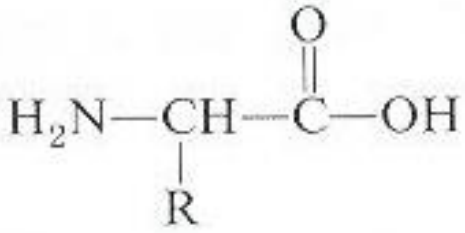


R = $C_6H_5CH_2$— (penicillin G)

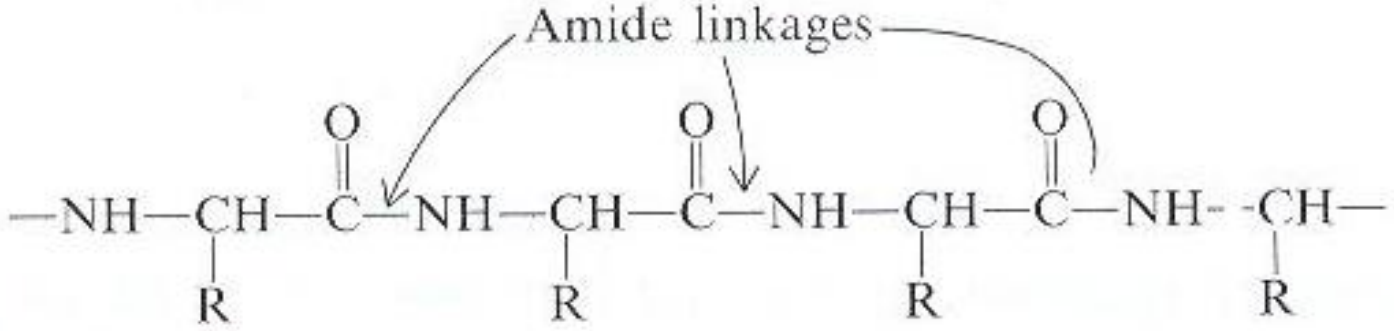
R = $C_6H_5CH(NH_2)$— (ampicillin)

R = $C_6H_5OCH_2$— (penicillin V)


E
NH2 +
O
R—CNH—CH—CH
S
CH3
C
CH3
N
CH
COOH
O
Active enzyme
A penicillin
O
R—CNH—CH—CH
S
CH3
C
CH3
O=C
H—N
CH
COOH
NH
E
Inactive enzyme



An α-amino acid



A portion of a polyamide chain as it might occur in a protein