(10) **Today**

Chap 3: Amino Acids, Peptides, and Proteins

Next Class (11)

Chap 3: Amino Acids, Peptides, and Proteins

(12) **Second Class from Today**

Chap 3: Amino Acids, Peptides, and Proteins

Third Class from Today (13)

Chap 3: Amino Acids, Peptides, and Proteins

Biochem Test 1 is being rescheduled to Wed. Feb 26

Draw a generic amino acid and explain why they typically exist as ammonium carboxylates

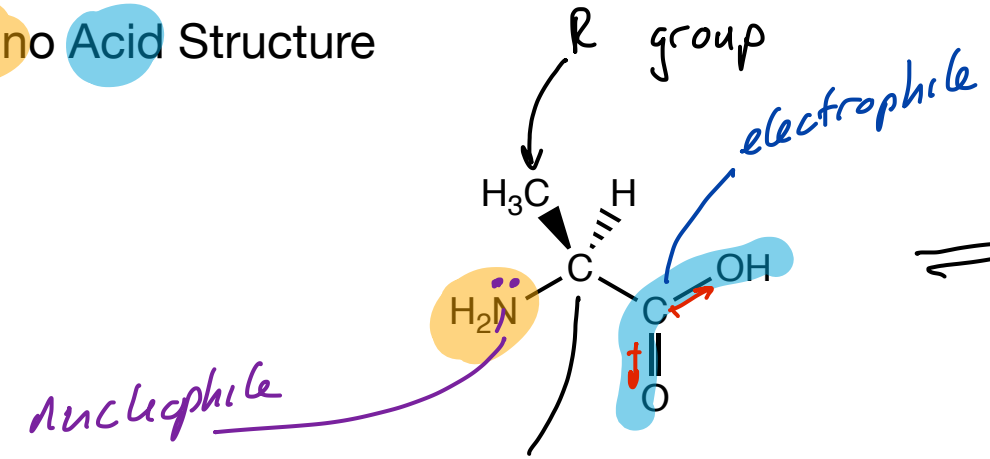
Draw the reaction of a amino acids forming a peptide bond
Comment on the reactivity of ammonium carboxylates as compared to amines and carboxylic acids

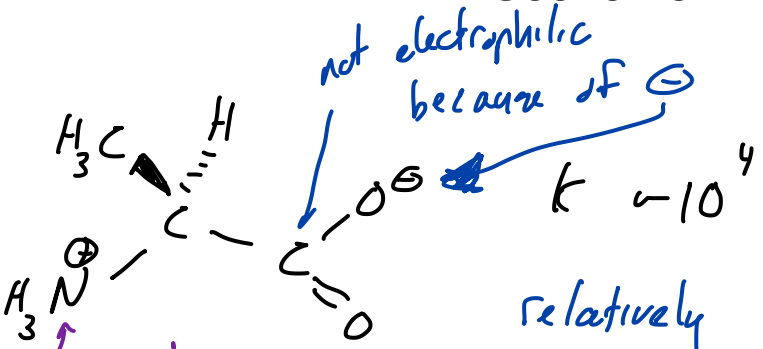
Draw at least one amino acid from the each of the four categories with the correct stereochemistry

Identify to which category an amino acid belongs when provided with its structure

Comment on traits (reactivity, IMF's, structural) of amino acid side chains

Amino Acid Structure





α-amino acid is just refering to both the amine and the CO_2H are bonded to the same C

the weakly basic amine abstracts the weakly acidic H^+ from the CO_2H

$NH_4^{\oplus}$ K_a 10^{-10}

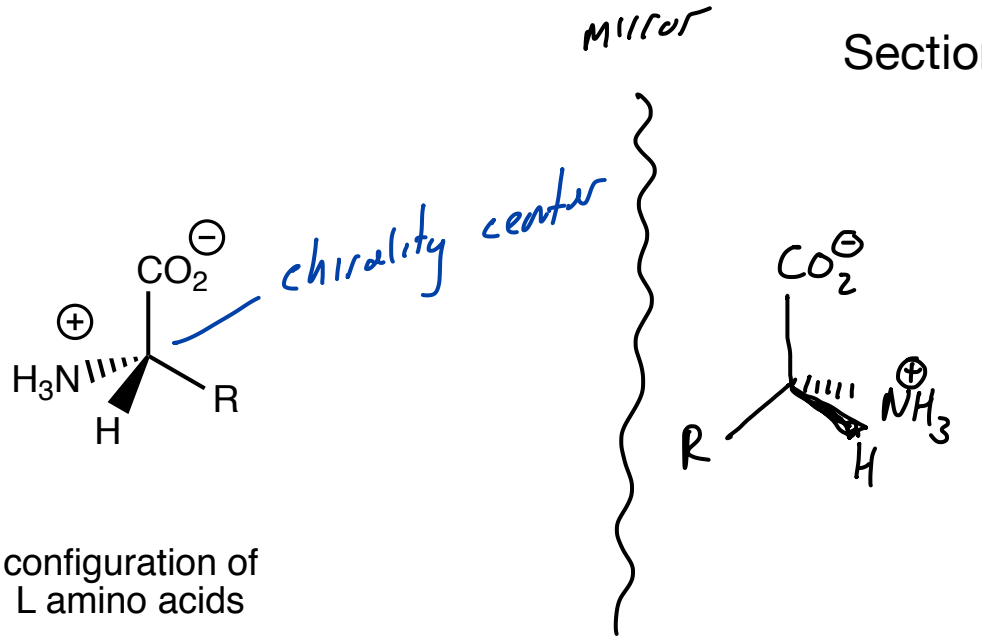
CH_3CO_2H K_a 1.8×10^{-5}

$NH_3 + CH_3CO_2H \rightleftharpoons NH_4^{\oplus} + CH_3CO_2^{\ominus}$

$1.8\times10^{-5} \times \frac{1}{10^{-10}}$

$NH_4^+ \rightleftharpoons H^+ \quad NH_3 \quad 10^{-10}$

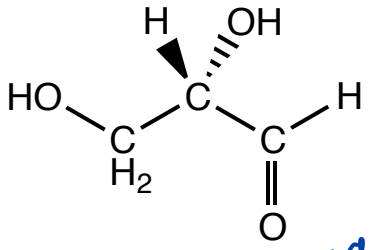
$CH_3CO_2H \rightleftharpoons H^+ + CH_3CO_2^- \quad 1.8\times10^{-5}$



configuration of
L amino acids

chiral objects have nonsuperposable mirror images ...

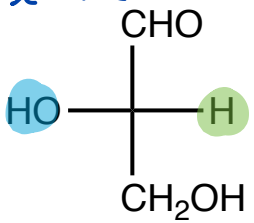
"left" and "right" versions



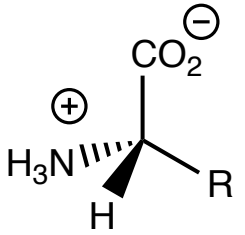
absolute configuration ... determined using a set of rules

(*S*)-glyceraldehyde
(*l*)-glyceraldehyde
(-)-glyceraldehyde
L-glyceraldehyde

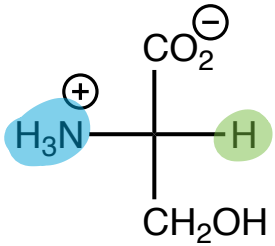
lowercase *l* + (-) mean levorotatory rotate the plane of polarized light to the left ... determined experimentally NOT related to R or S



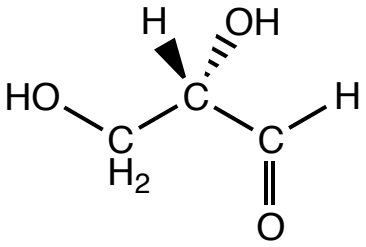
Capital L is assigned to this stereoisomer of glyceraldehyde



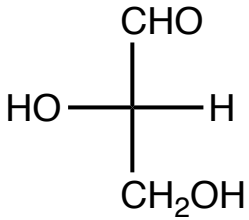
configuration of L amino acids

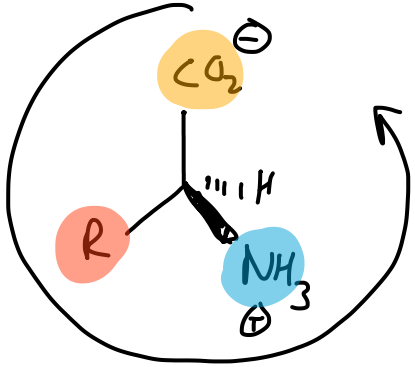


this is L 'cuz it kinda sorta looks like L-glyceraldehyde



(*S*)-glyceraldehyde
(*l*)-glyceraldehyde
(-)-glyceraldehyde
L-glyceraldehyde

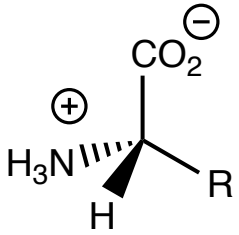




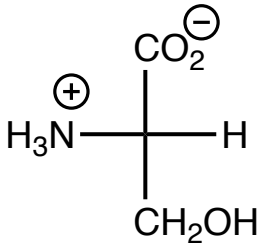
Correct (H back)
counter clockwise
corn

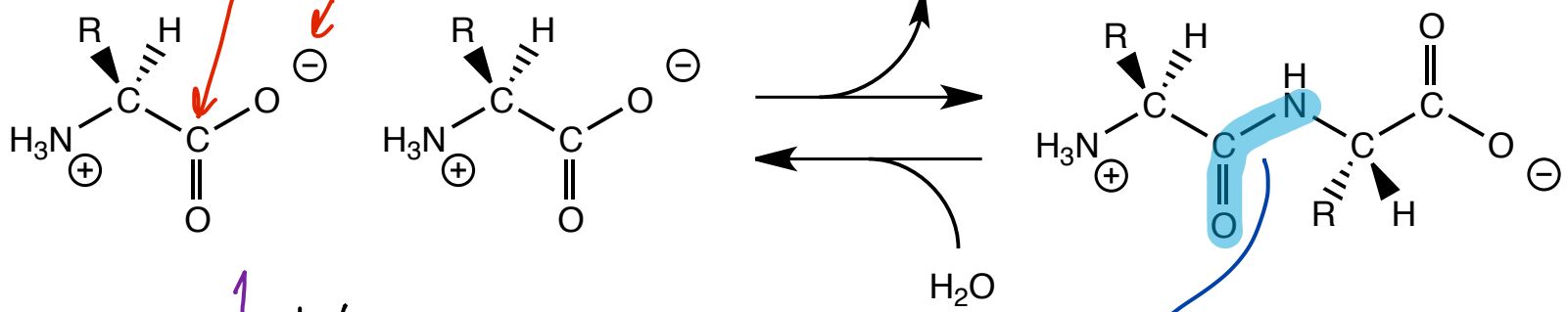
CO_2 to R to N

Circle



configuration of
L amino acids

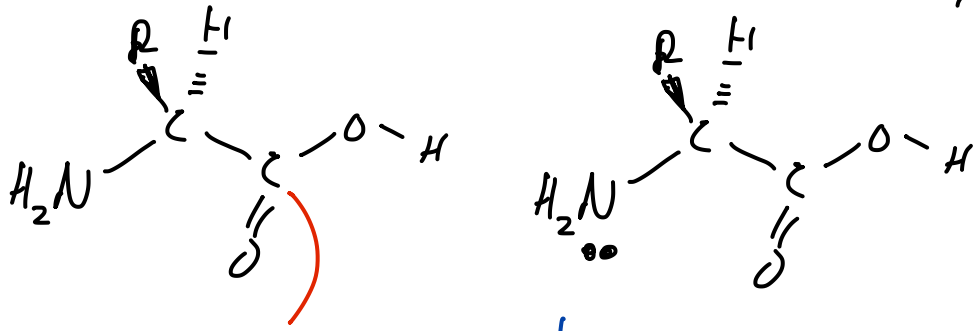




amines are nucleophilic ...

ammonium ions are not

~200°



200° isn't going to work biochemically

biochemical systems derivatize the carboxylic acid function group