

(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 amino acids forming a peptide bond

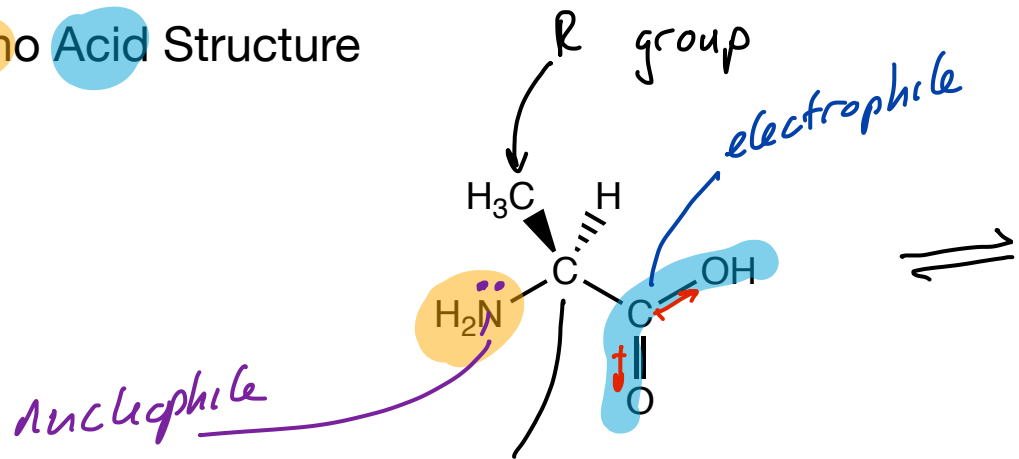
Comment on the reactivity of ammonium carboxylates as compared to amines and carboxylic acids

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

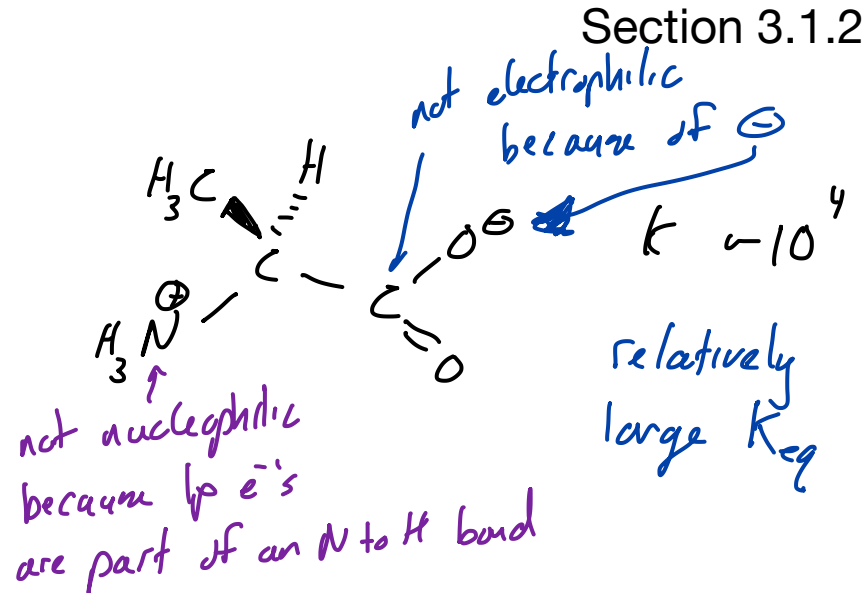
Identify to which category an amino acid belongs when provided with its structure

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

Amino Acid Structure



The "α" in α-amino acid is just referring to both the amine and the CO₂H being bonded to the same C

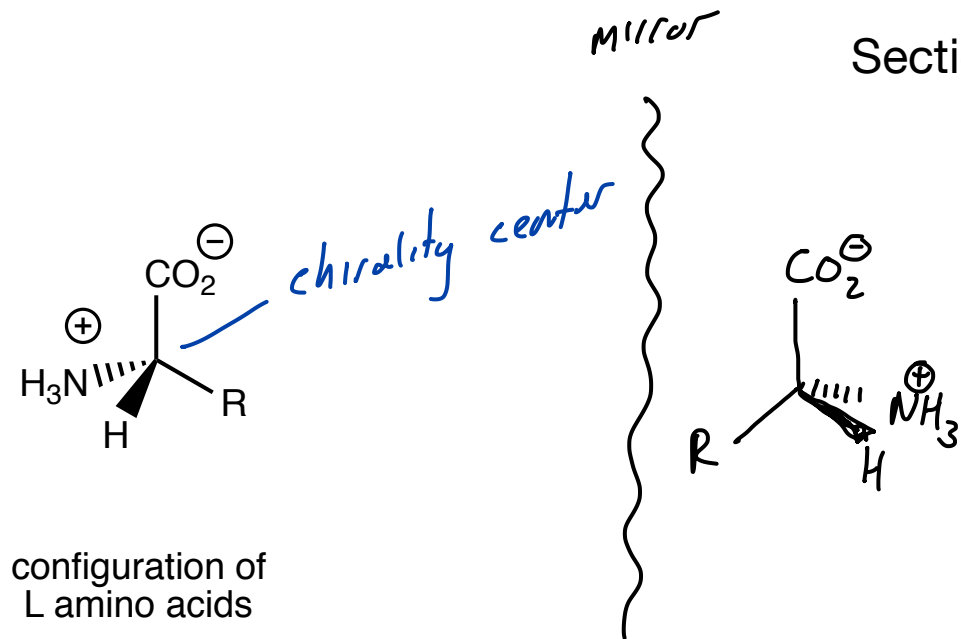


the weakly basic amine abstracts the weakly acidic H⁺ from the CO₂H



$$1.8 \times 10^{-5} \times \frac{1}{10^{-10}} \approx 10^4$$

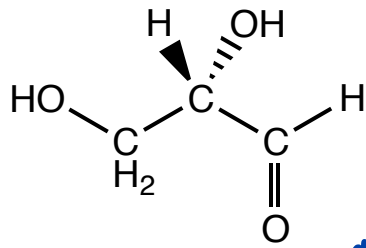




chiral objects have nonsuperposable mirror images ...

"left" and "right" versions

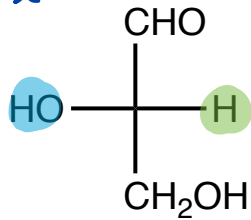
a C atom with 4 different groups bonded to it is chiral



absolute configuration ... determined using a set of rules

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

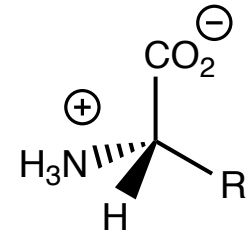
lowercase l + (-) mean



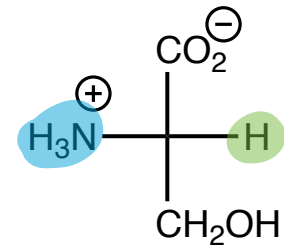
levorotatory, molecules rotate the plane of polarized light to the left ... this is determined experimentally and NOT related to R or S

capital L is assigned to this stereoisomer of glyceraldehyde

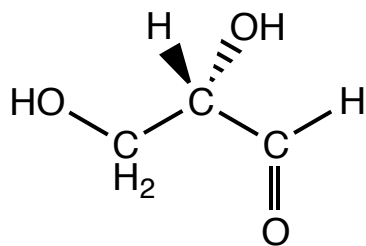
L doesn't necessarily mean the plane of polarized light is rotated to the left (counterclockwise)



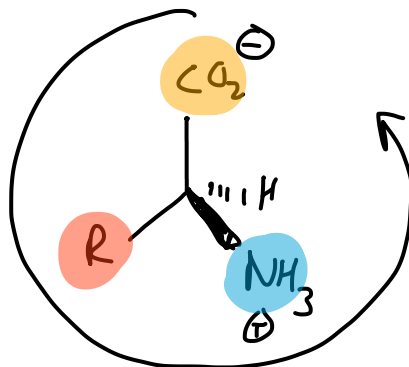
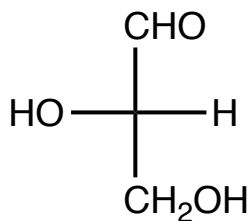
configuration of L amino acids



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



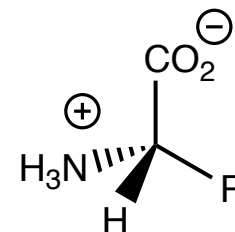
(S)-glyceraldehyde
 (l)-glyceraldehyde
 (-)-glyceraldehyde
 L-glyceraldehyde



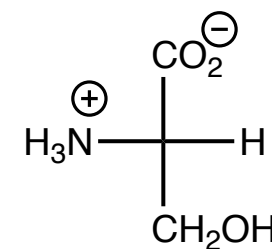
correct (H back)
counterclockwise
CORN

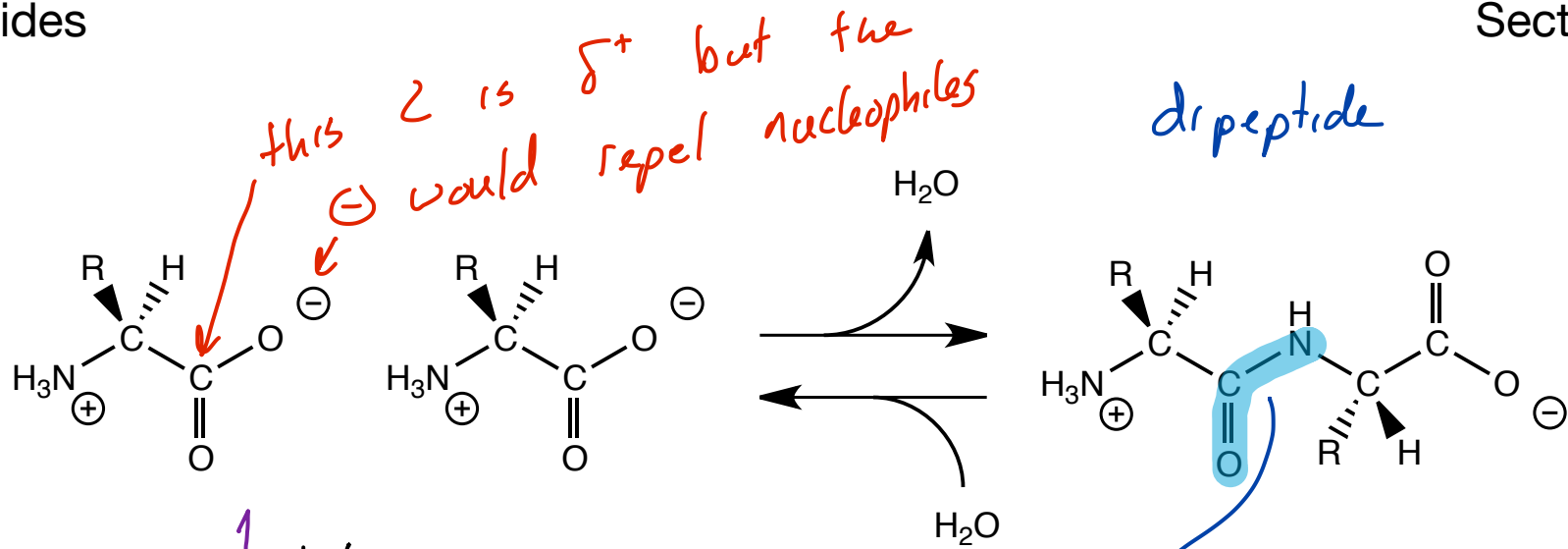
CO₂ to R to N

Circle



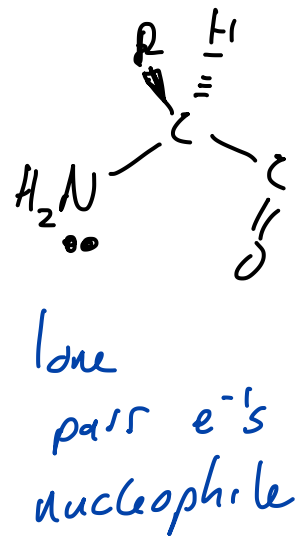
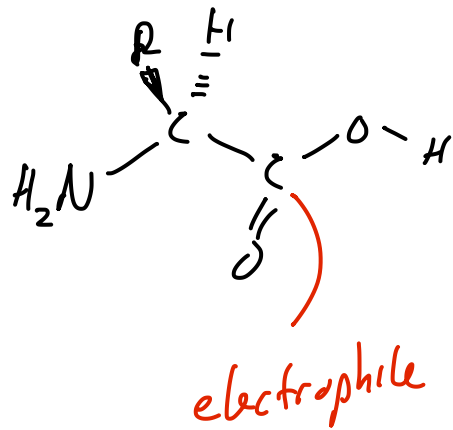
configuration of
 L amino acids





amides are nucleophilic ...
 - ammonium ions are not
 ~ 200°

amide linkage
 peptide bond



In lab, heating at high temp drives the equilibrium to the dipeptide
 200° isn't going to work biochemically
 biochemical systems derivatize the carboxylic acid function group