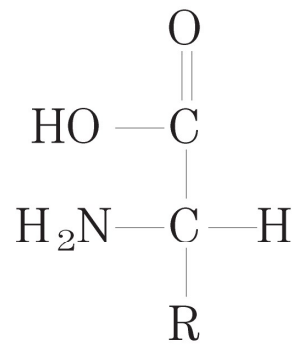
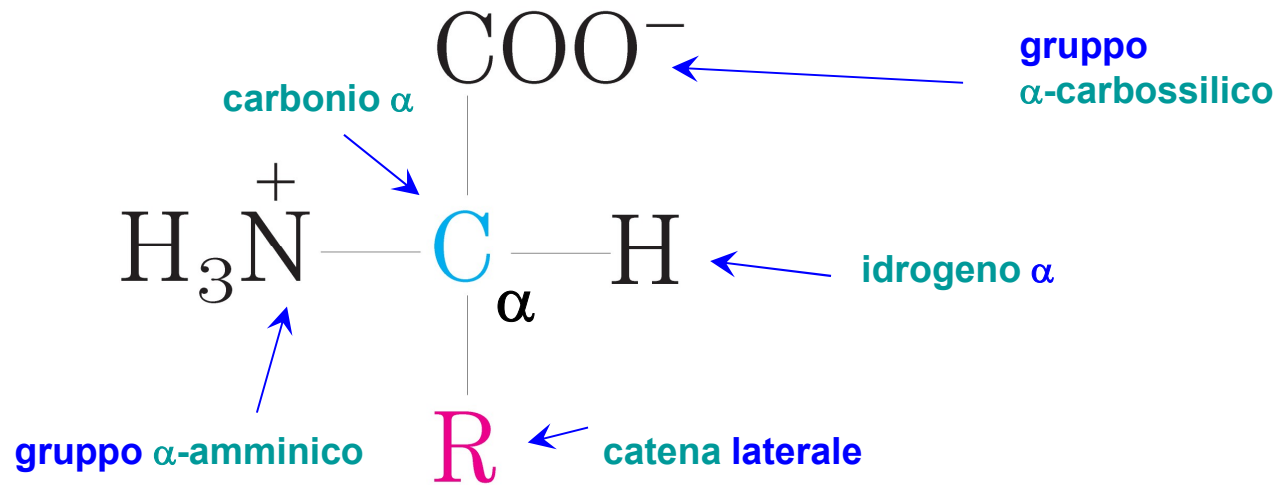
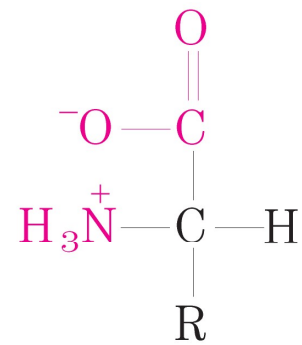


AMMINOACIDI



Forma
non ionica

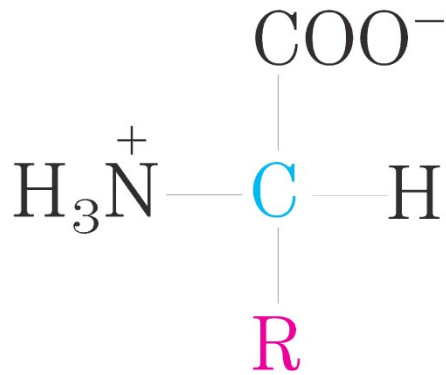


Forma
zwitterionica

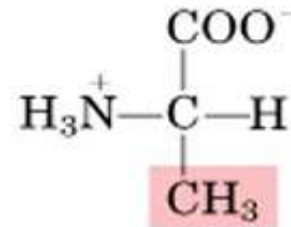
amminoacidi con catene laterali alifatiche

catene laterali chimicamente inerti e quindi non modificabili

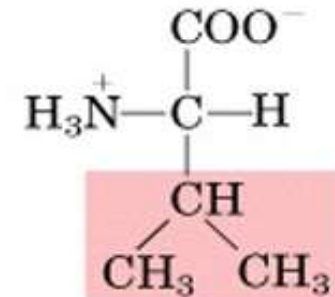
partecipano solo ad interazioni
idrofobiche e vdW



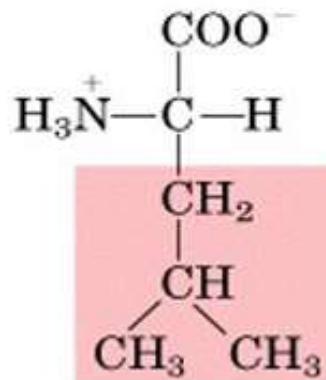
Nonpolar, aliphatic R groups



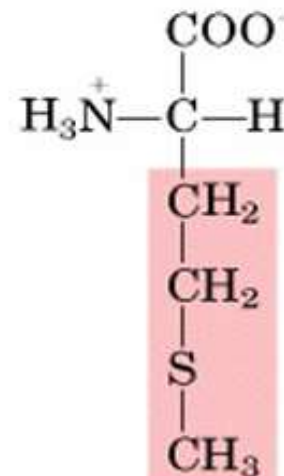
Alanine



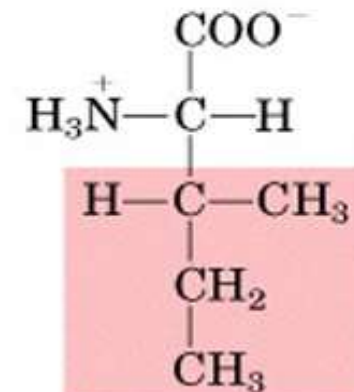
Valine



Leucine



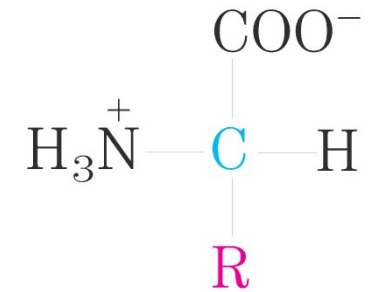
Methionine



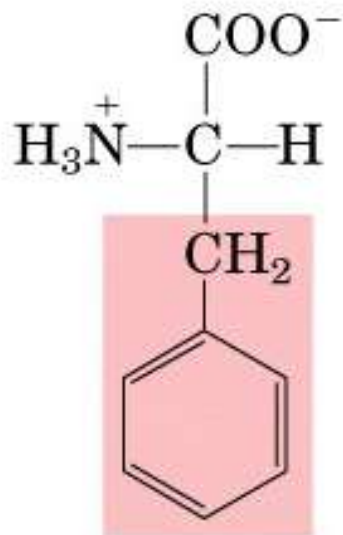
Isoleucine

amminoacidi con catene laterali aromatiche

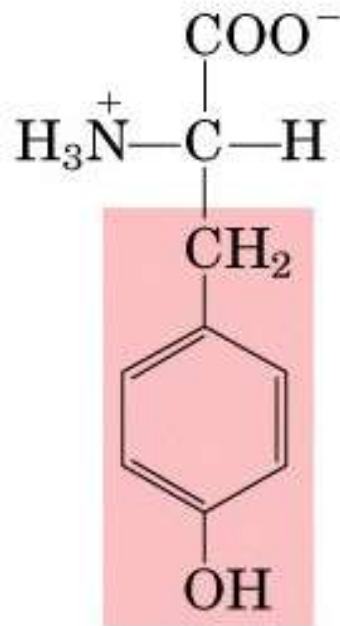
- *partecipano ad interazioni idrofobiche.*
- *Tyr e Trp partecipano a legami-H*



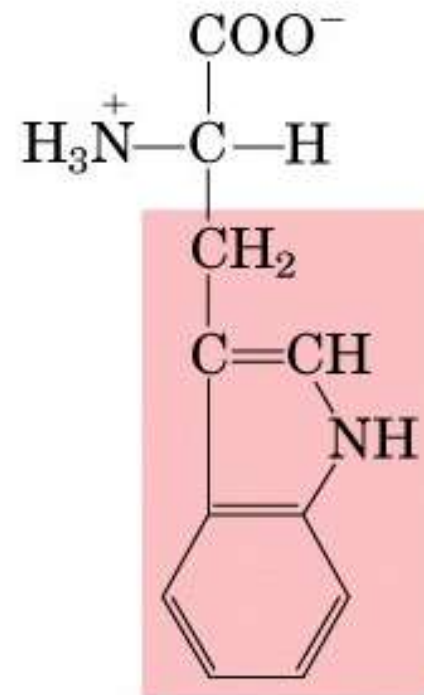
Aromatic R groups



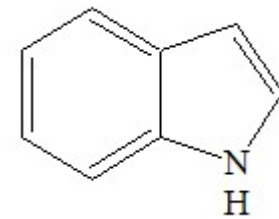
Phenylalanine



Tyrosine



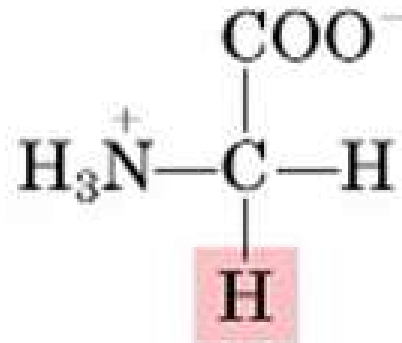
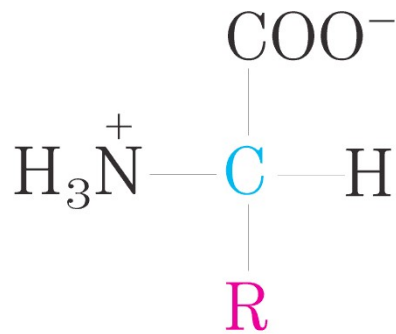
Tryptophan



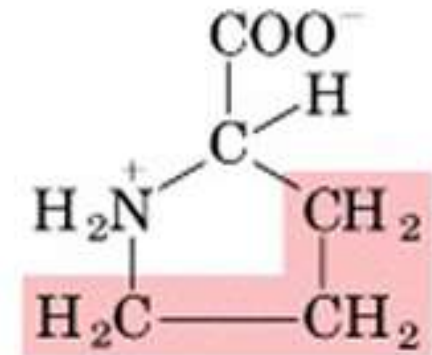
INDOLO

amminoacidi con catene laterali polari neutre

- *importanti caratteristiche strutturali (flessibilità/rigidità)*
- *non reattive*

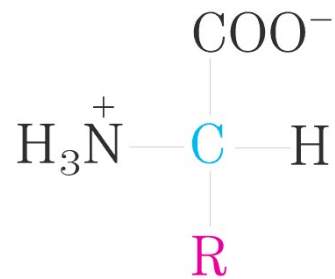


Glycine

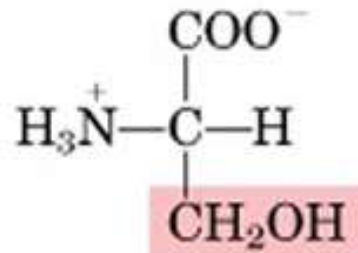


Proline

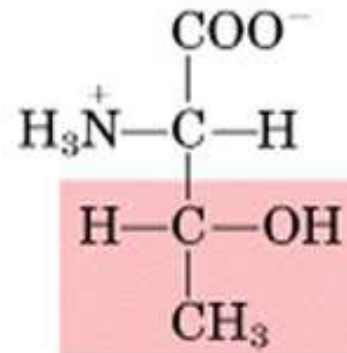
amminoacidi con catene laterali polari, non cariche (idrofiliche)



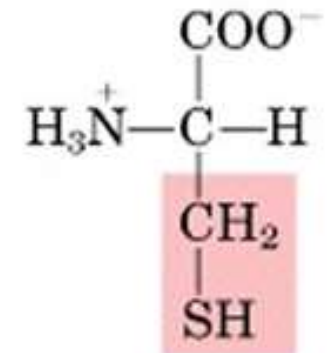
Polar, uncharged R groups



Serine



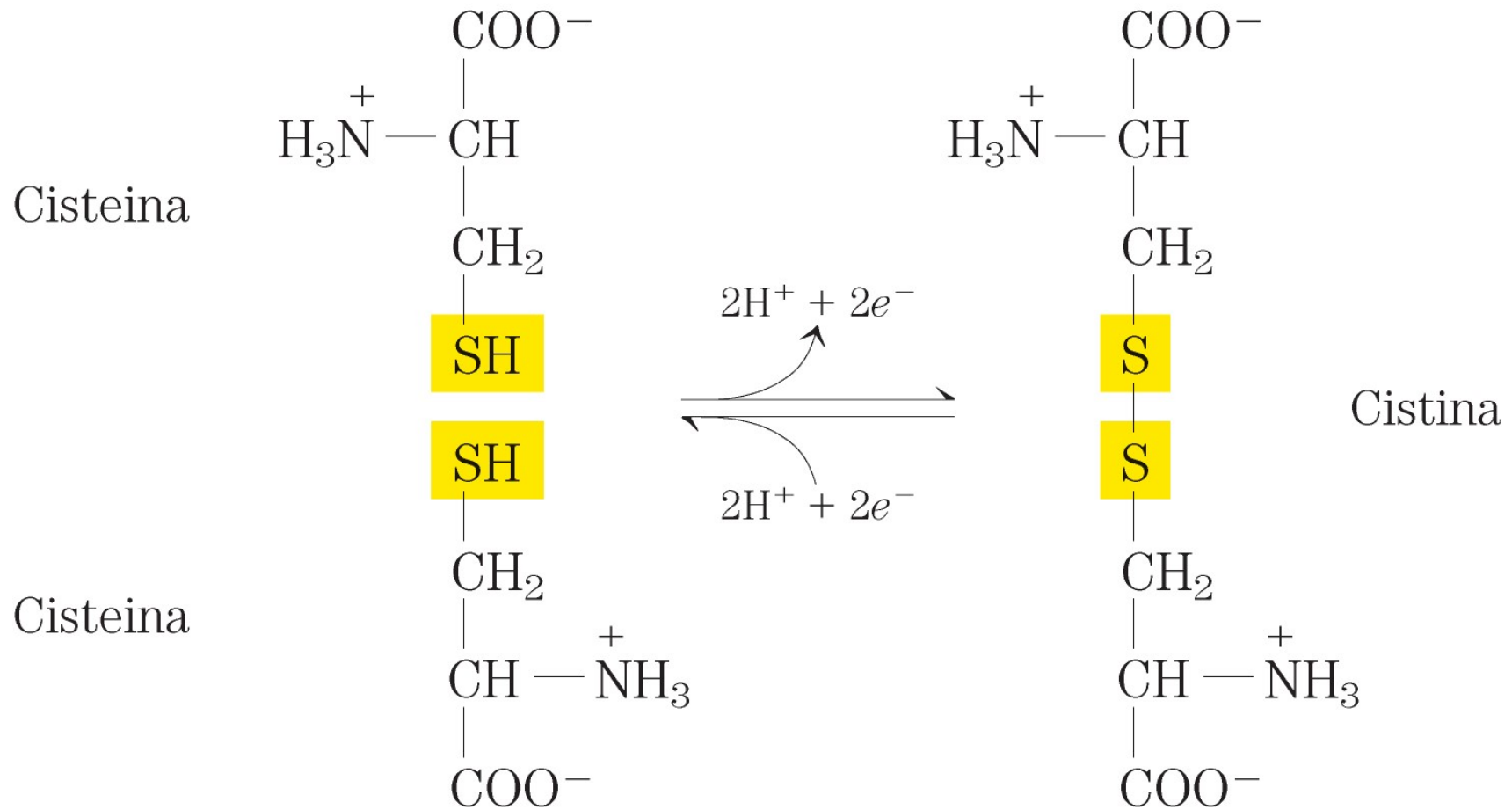
Threonine



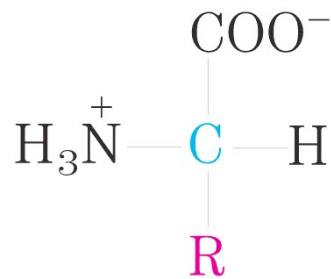
Cysteine

- *le catene laterali sono polari e idrofiliche*
- *partecipano alla formazione di legami-H*

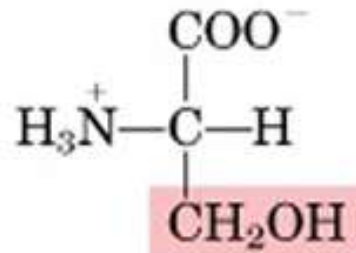
- *le catene laterali di Cys sono polari e partecipano alla formazione di legami **covalenti** (ponti disolfuro) strutturalmente importanti*



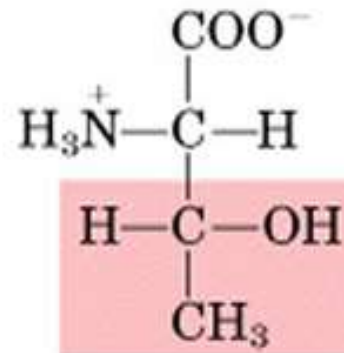
amminoacidi con catene laterali polari, non cariche (idrofiliche)



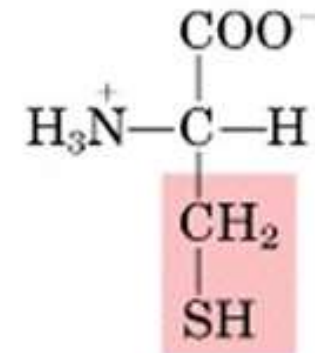
Polar, uncharged R groups



Serine

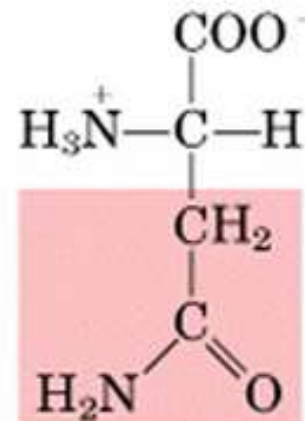


Threonine

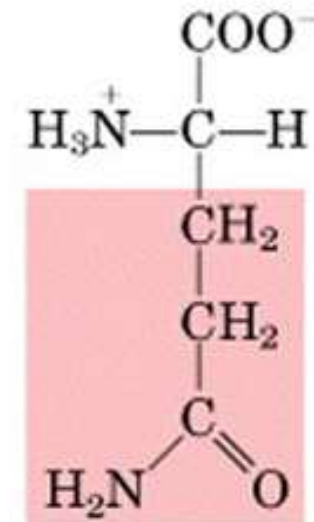


Cysteine

- *le catene laterali sono polari e idrofiliche*
- *partecipano alla formazione di legami-H*



Asparagine

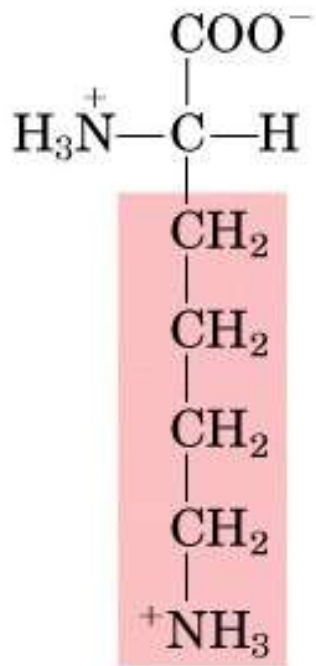


Glutamine

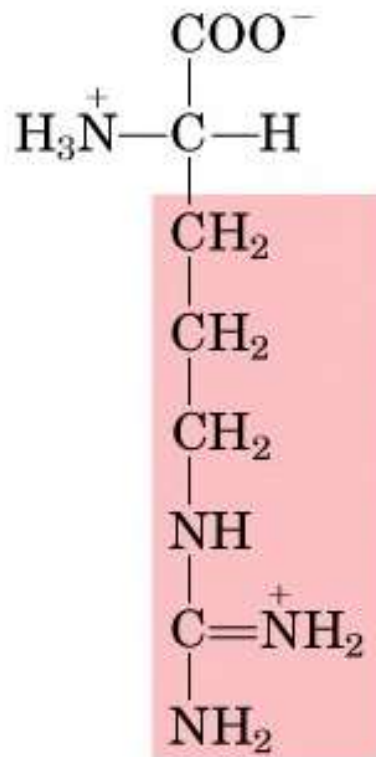
amminoacidi con catene laterali basiche

- catene laterali polari cariche positivamente (R,K, per H dipende dal pH)
- partecipano ad interazioni elettrostatiche

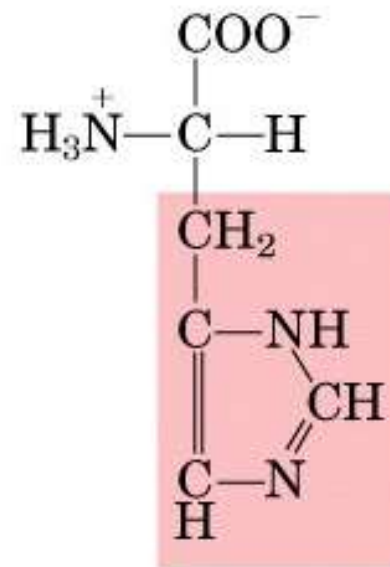
Positively charged R groups



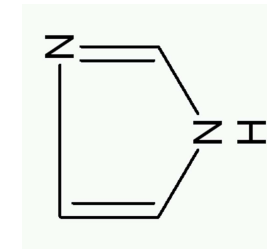
Lysine



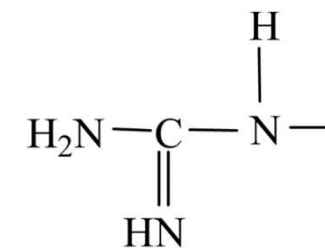
Arginine



Histidine

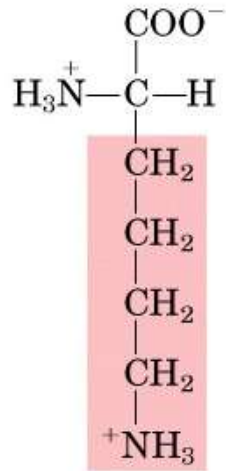


IMIDAZOLO

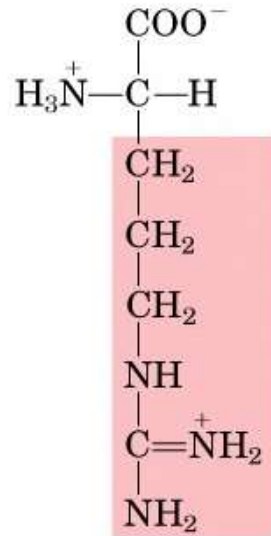


Gruppo guanidinico

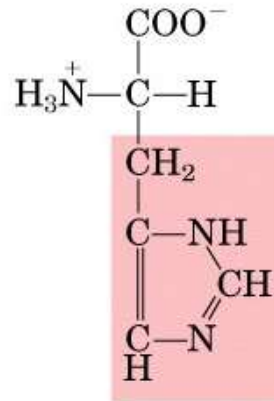
Positively charged R groups



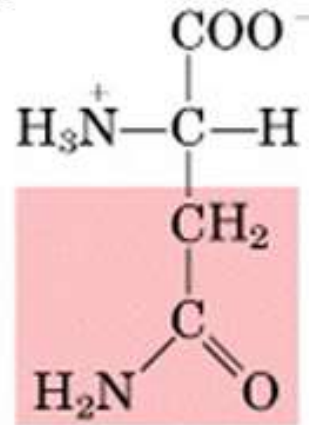
Lysine



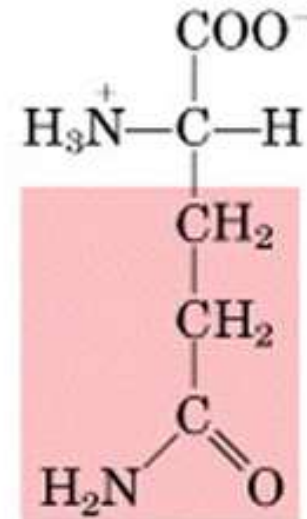
Arginine



Histidine



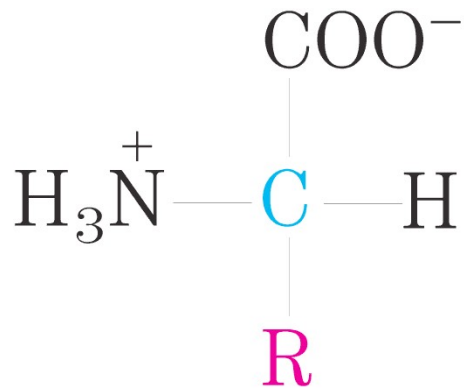
Asparagine



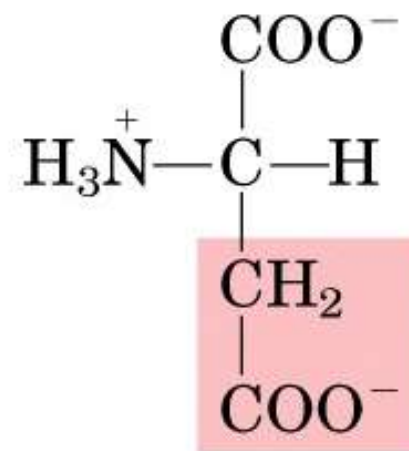
Glutamine

amminoacidi con catene laterali acide

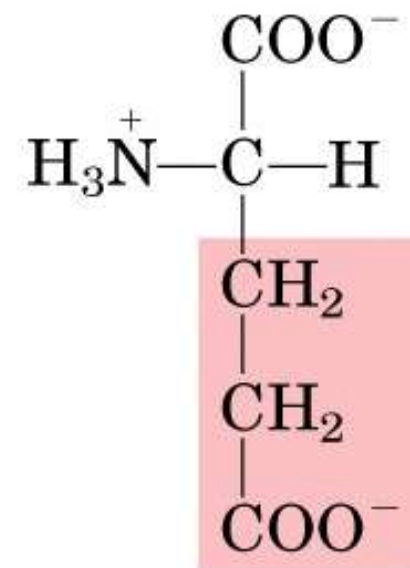
- *catene laterali polari cariche negativamente (anioniche)*
- *partecipano ad interazioni elettrostatiche*



Negatively charged R groups

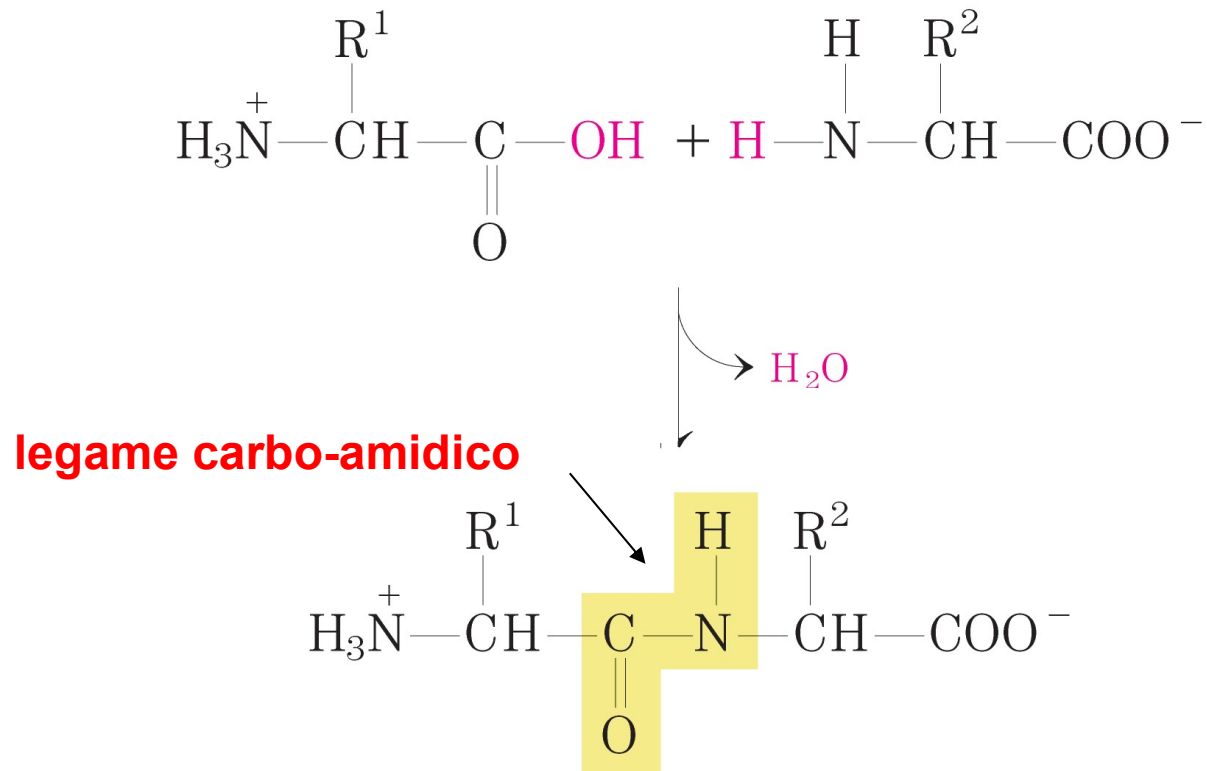


Aspartate



Glutamate

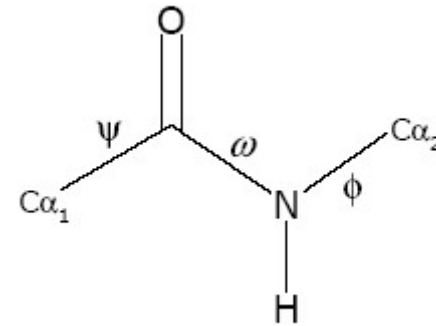
II LEGAME PEPTIDICO



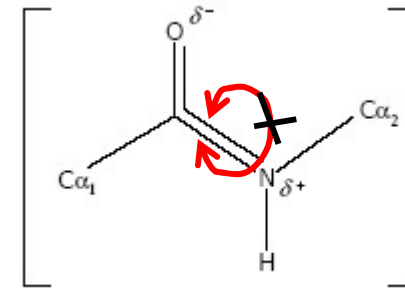
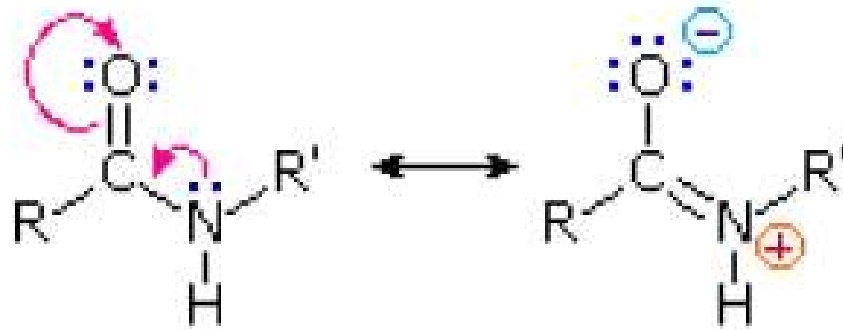
Per convenzione il legame peptidico viene scritto con l'aa che ha il gruppo amminico libero a sinistra e l'aa che ha il gruppo COOH libero a destra.

I due aa vengono definiti rispettivamente *amminoacido N-terminale* e *amminoacido C-terminale*

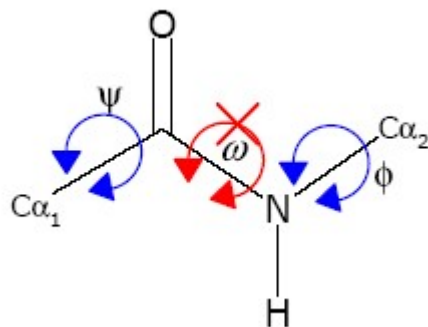
A causa della distribuzione degli elettroni il legame peptidico ha specifiche proprietà **geometriche**:



Stabilizzazione per risonanza



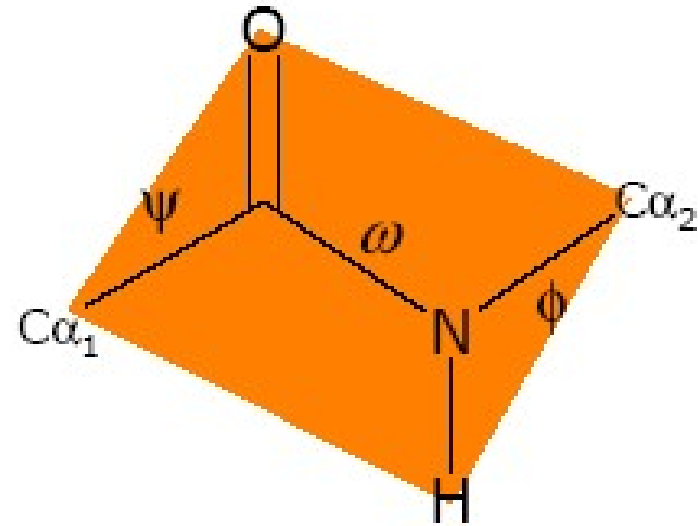
- Non vi è libera rotazione intorno al legame C-N



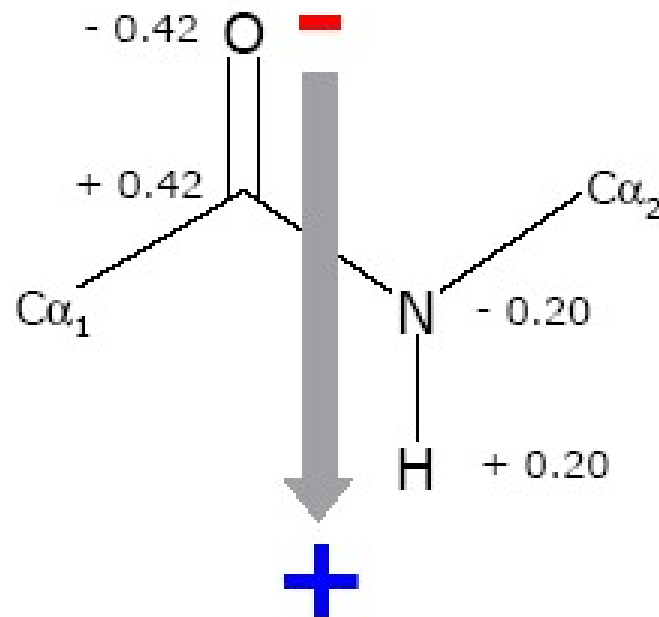
- Vi è libera rotazione solo intorno ai legami ϕ e ψ .

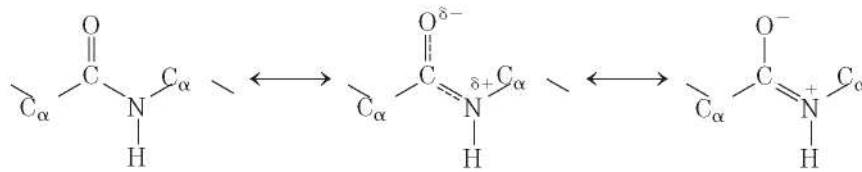
A causa della distribuzione degli elettroni il legame peptidico ha specifiche proprietà **geometriche**:

- È planare.



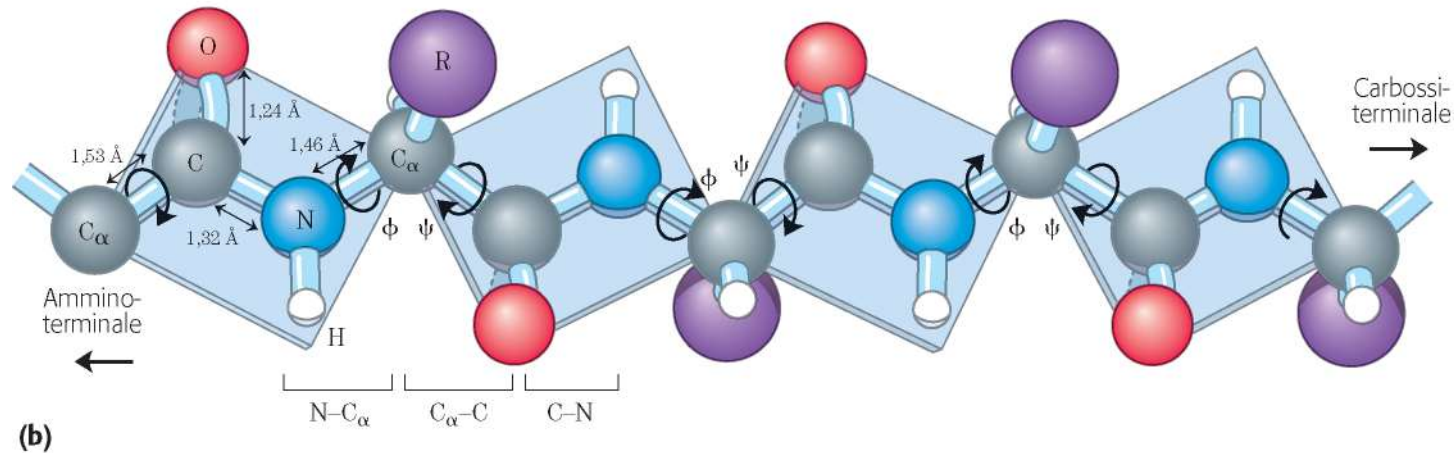
- È dipolare.





L'ossigeno carbossilico ha una parziale carica negativa e l'azoto ammidico una parziale carica positiva, per cui si genera un piccolo dipolo elettrico. Praticamente tutti i legami delle proteine hanno questa configurazione trans; un'eccezione è mostrata nella Figura 4.8b.

(a)



(b)

Dipeptide: peptide formato dall'unione di due aa;
tripeptide: peptide formato dall'unione di tre aa; ...etc

In genere:

Oligopeptide (pochi aa) polipeptide (molti aa...)