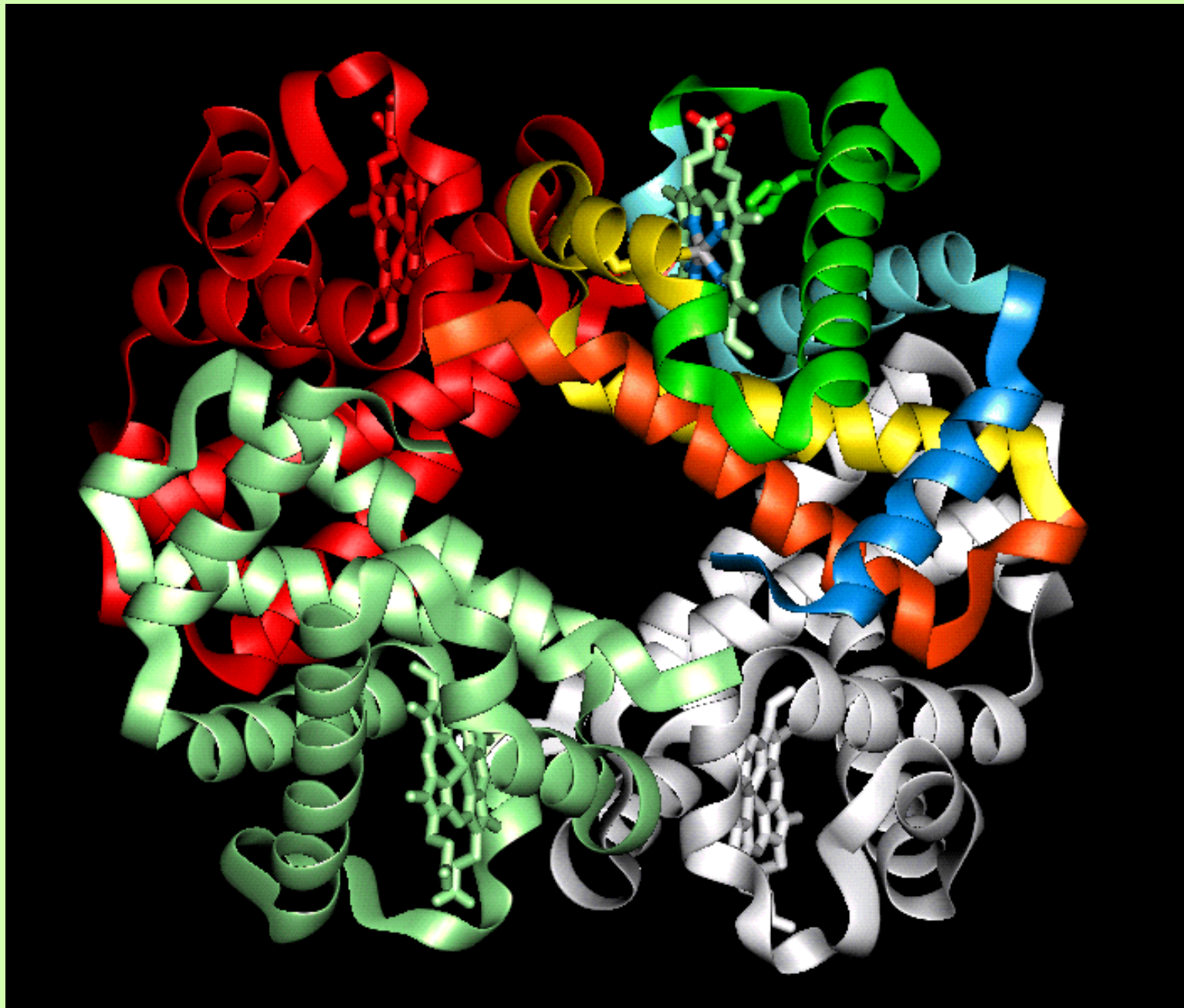
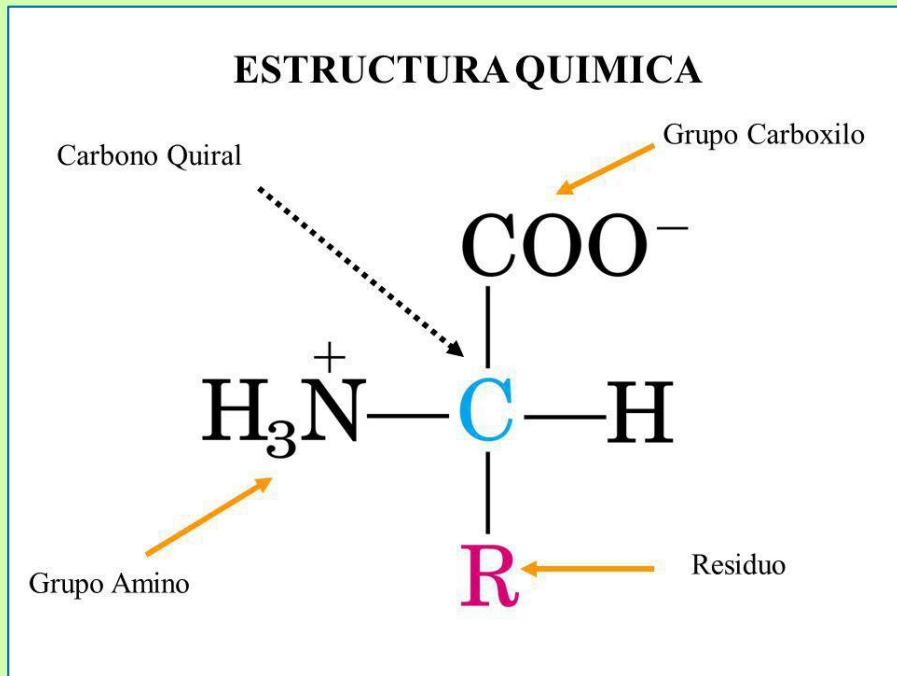


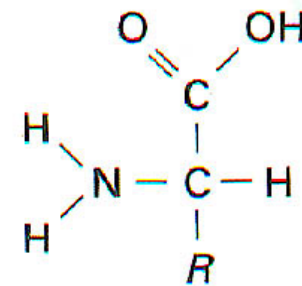
Tema 1.4: LAS PROTEÍNAS



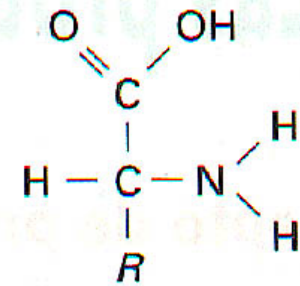
LOS AMINOÁCIDOS



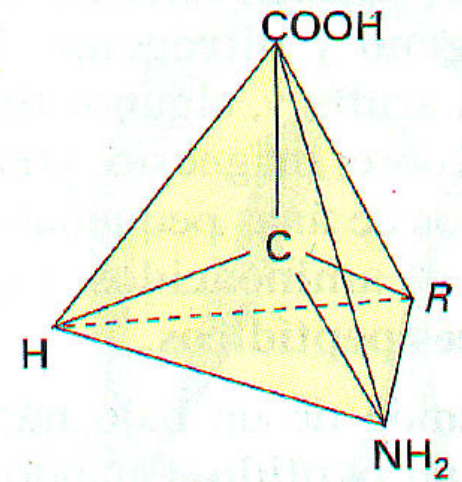
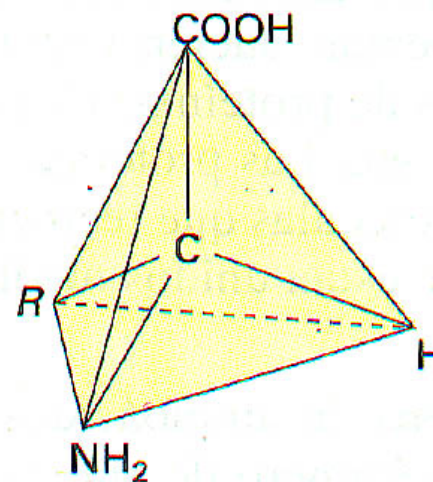
ACTIVIDAD ÓPTICA



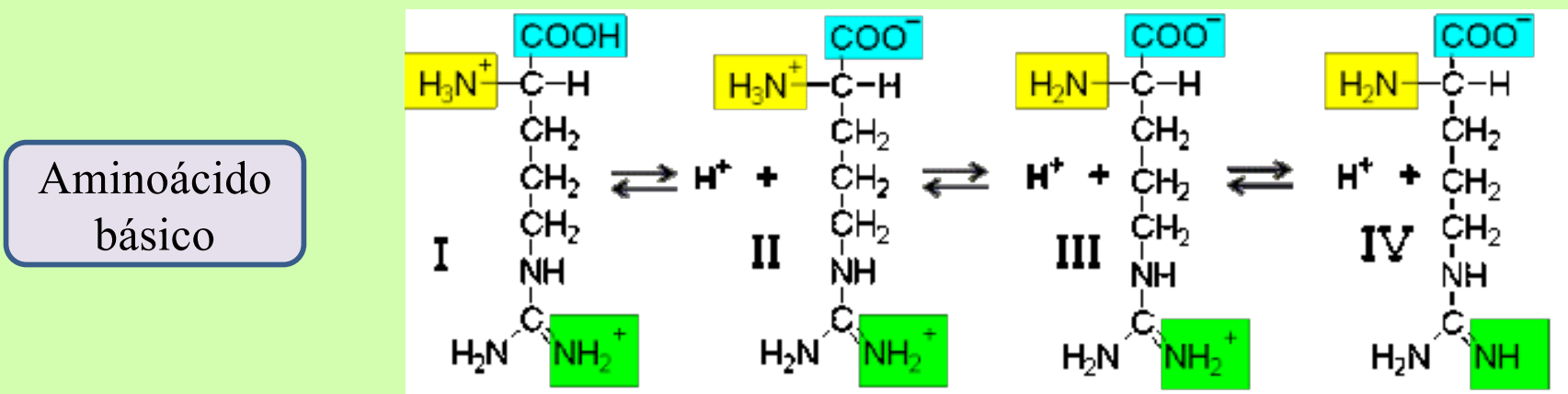
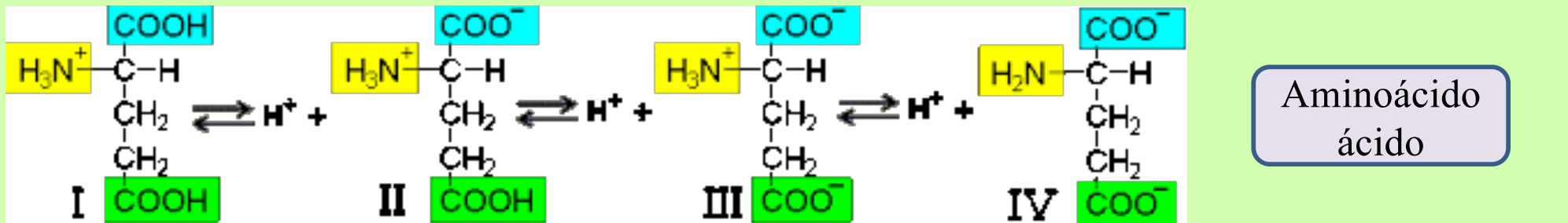
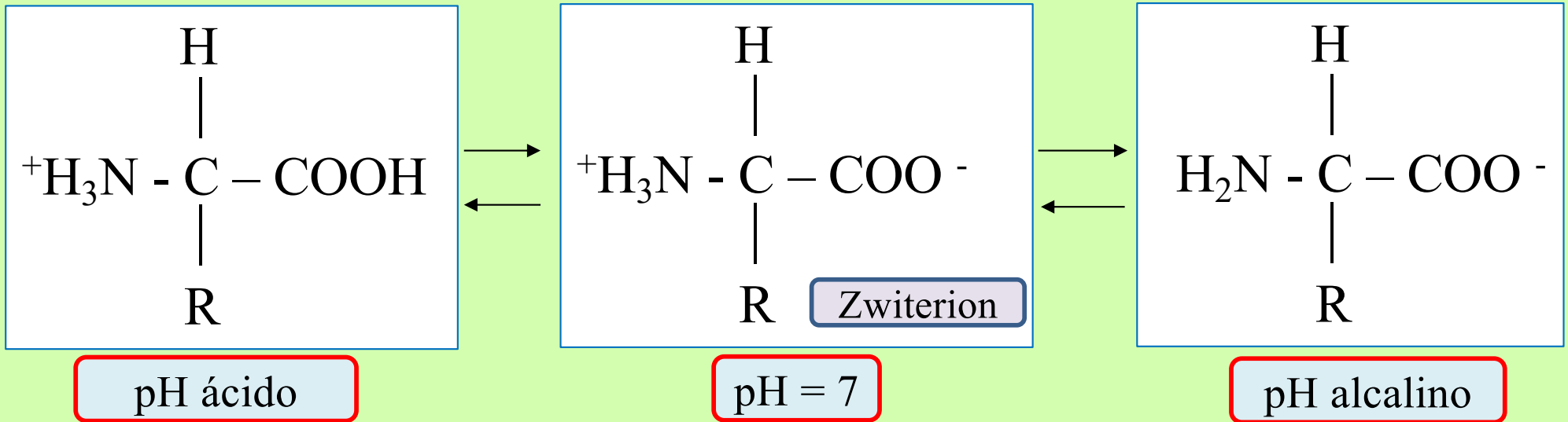
Configuración L



Configuración D



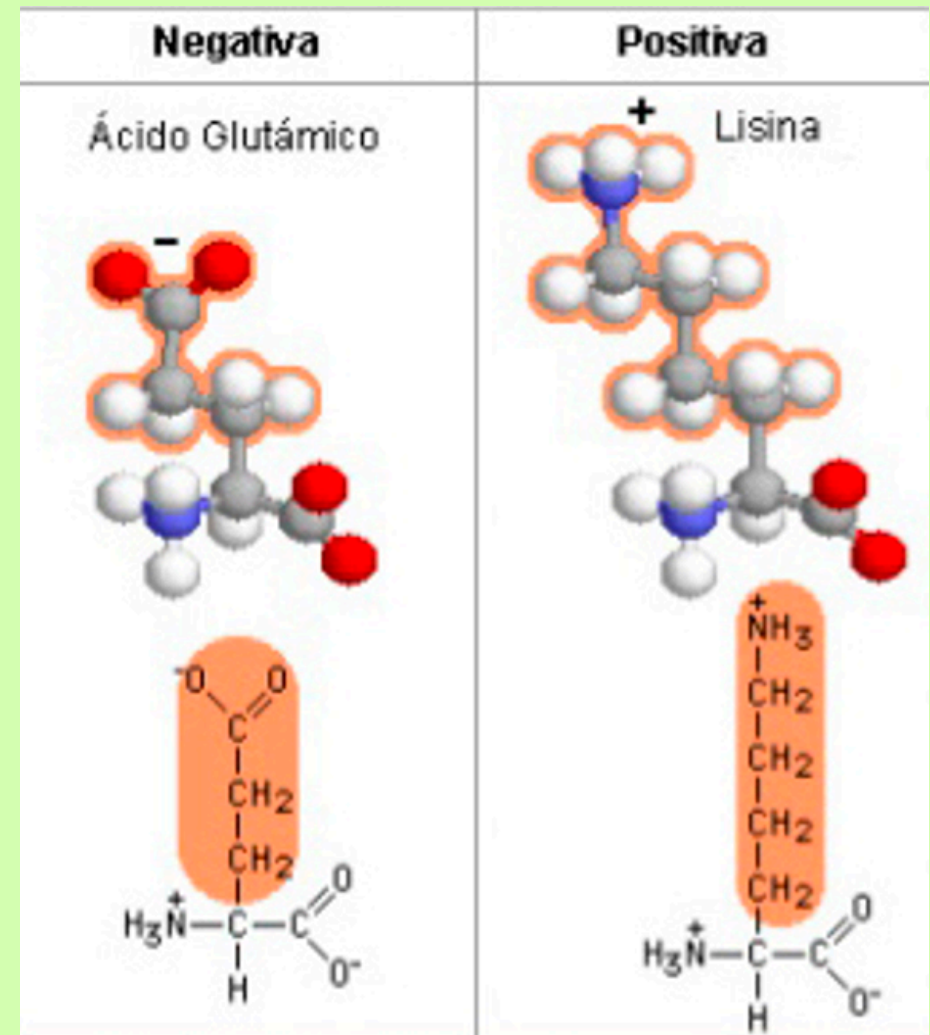
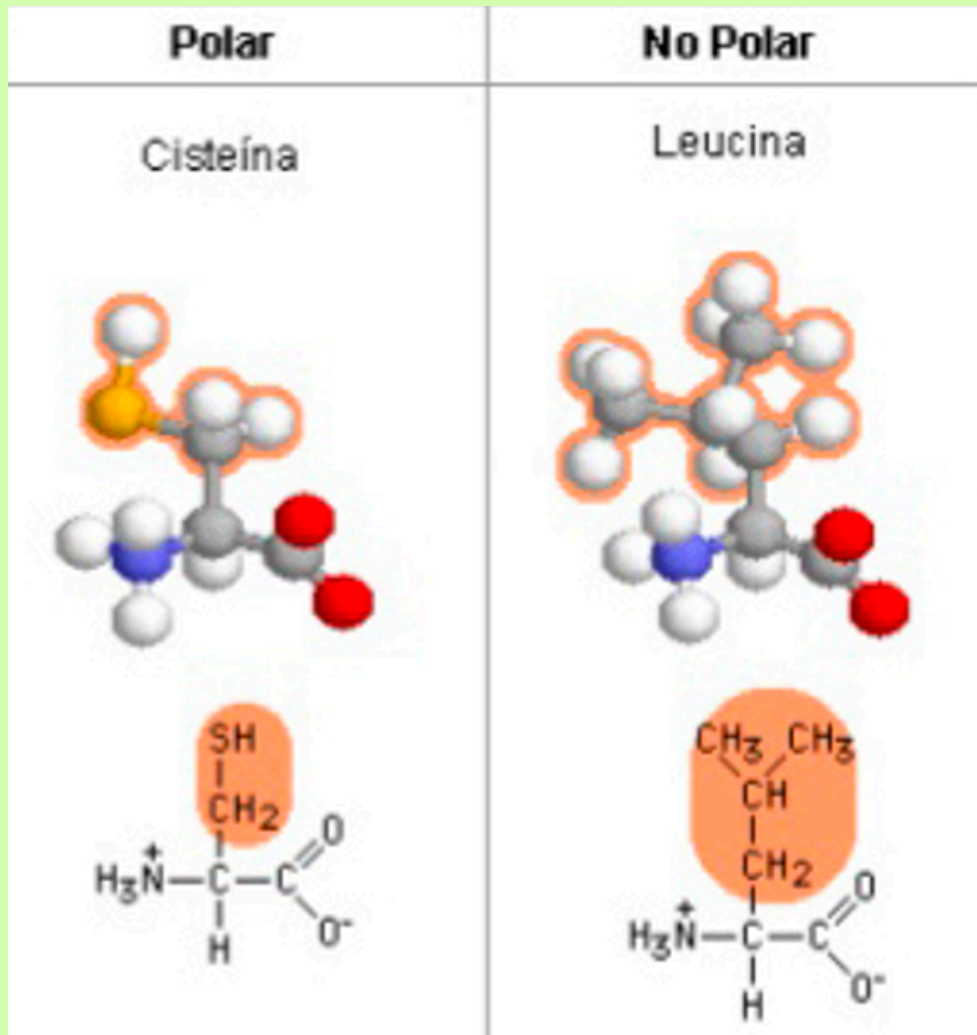
CARÁCTER ANFÓTERO



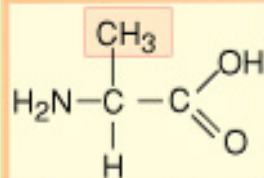
CLASIFICACIÓN DE LOS AMINOÁCIDOS

SIN CARGA

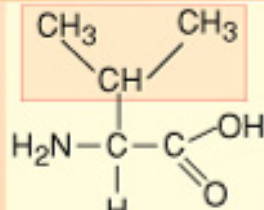
CON CARGA



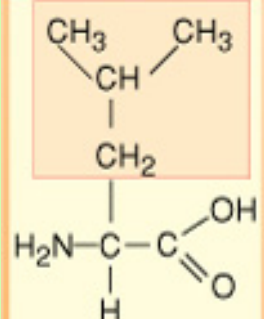
No polares



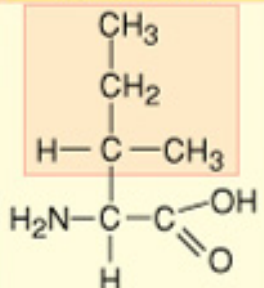
Alanina (ala)



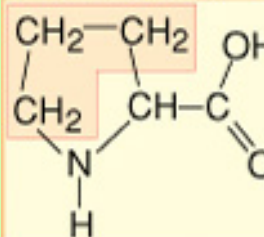
Valina (val)



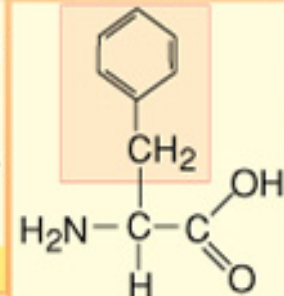
Leucina (leu)



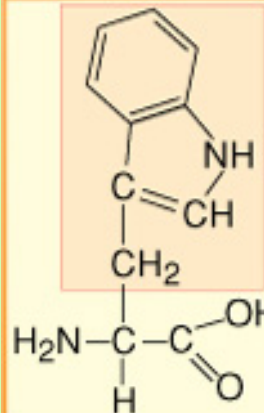
Isoleucina (ile)



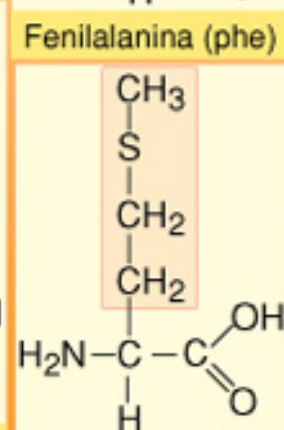
Prolina (pro)



Fenilalanina (phe)

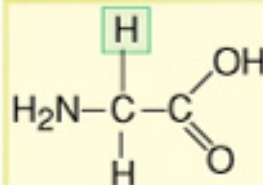


Triptófano (trp)

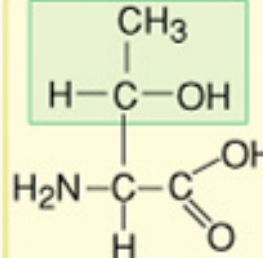


Metionina (met)

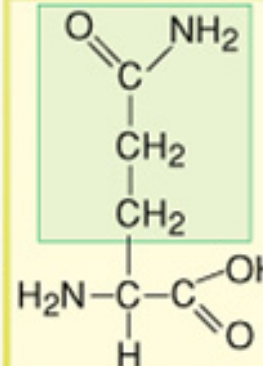
Polares (con carga neutra a pH7)



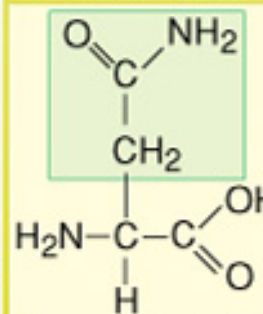
Glicina (gly)



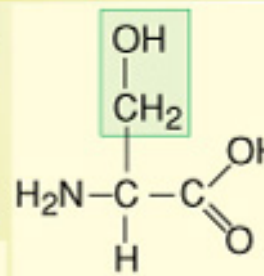
Treonina (thr)



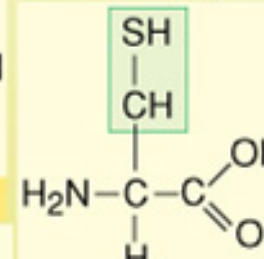
Glutamina (gln)



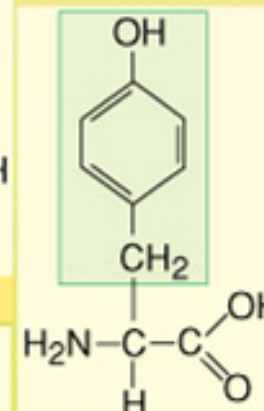
Asparragina (asn)



Serina (ser)

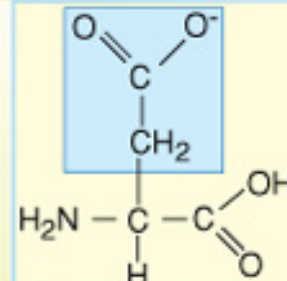


Cisteína (cys)

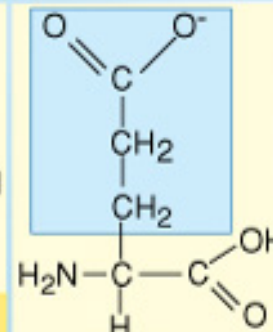


Tirosina (tyr)

Ácidos (cargados negativamente a pH7)

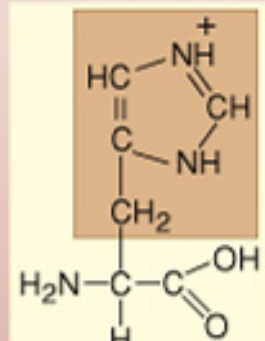


Ácido aspártico (asp)

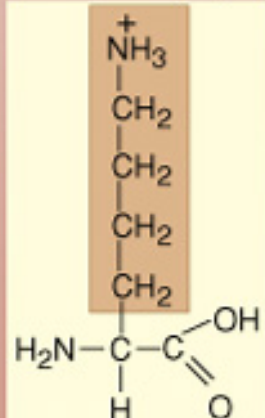


Ácido glutámico (glu)

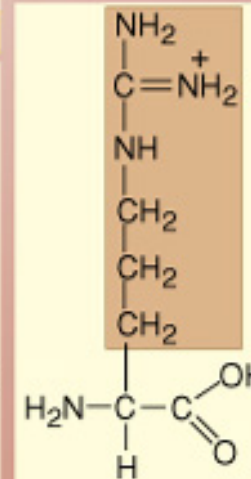
Básicos (cargados positivamente a pH7)



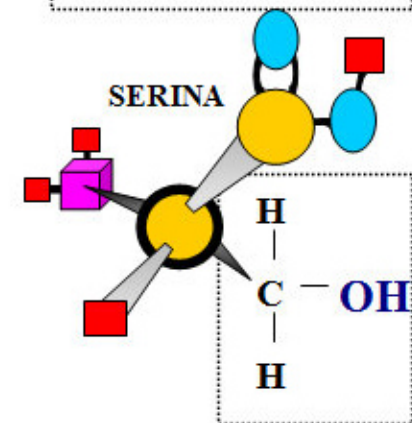
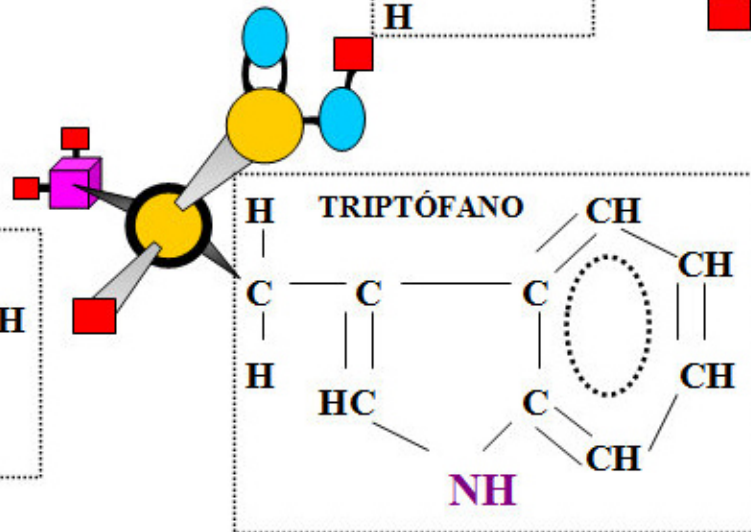
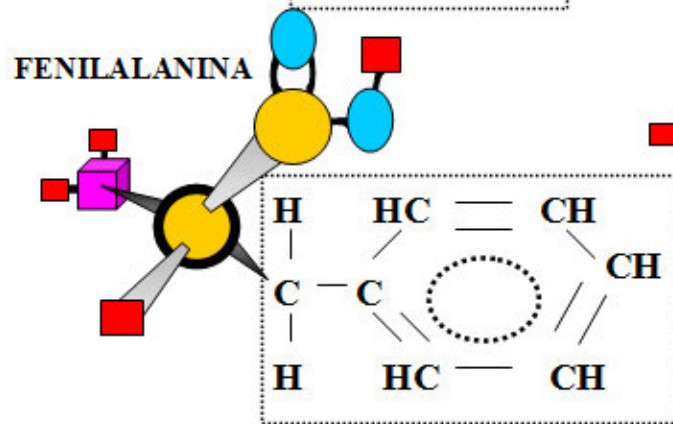
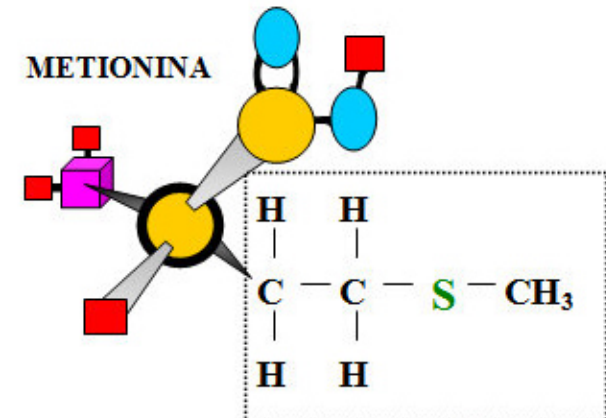
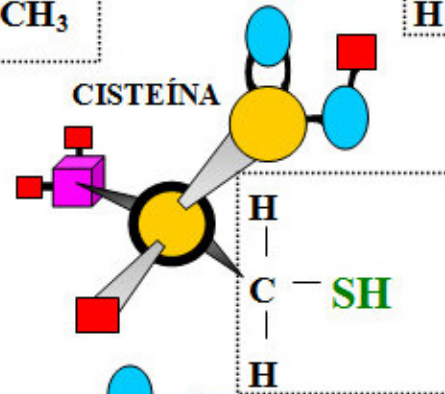
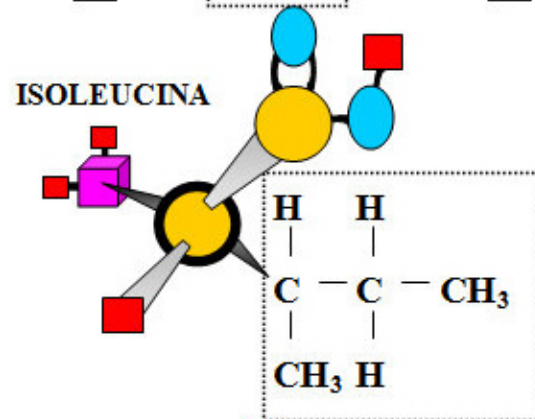
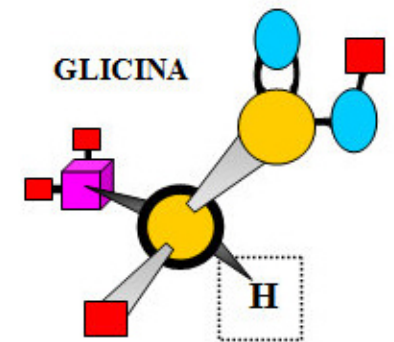
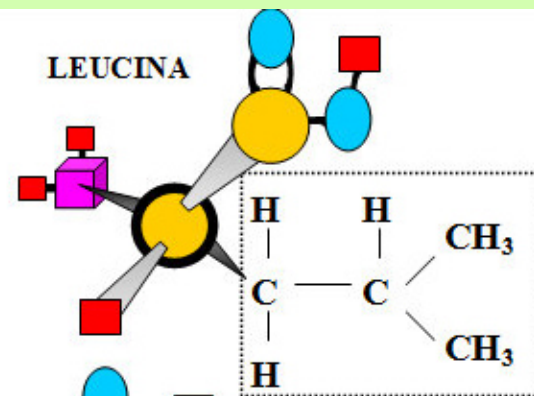
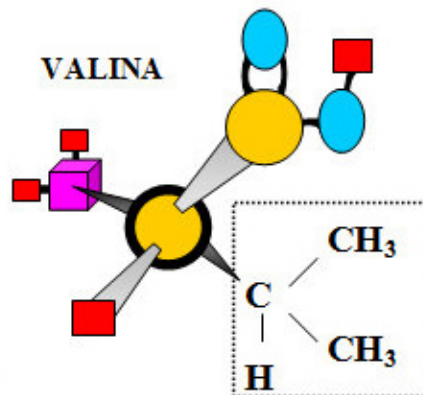
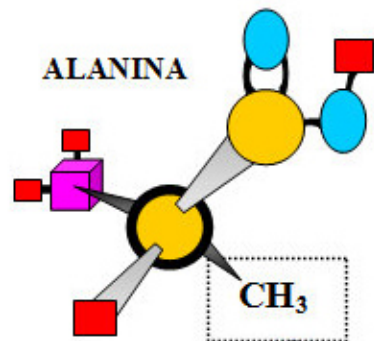
Histidina (his)



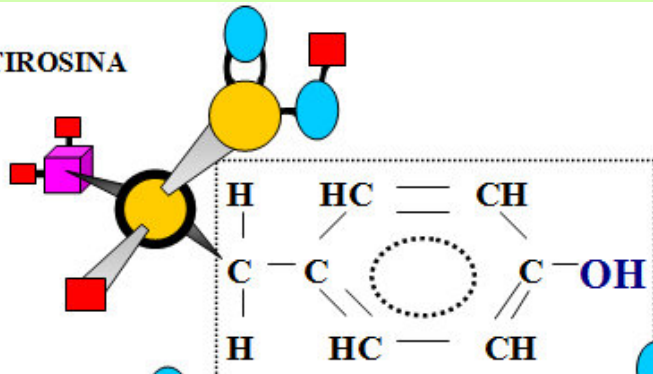
Lisina (lys)



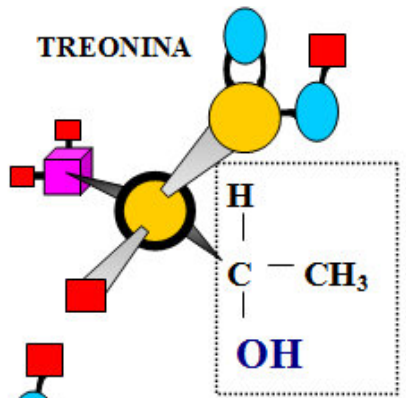
Arginina (arg)



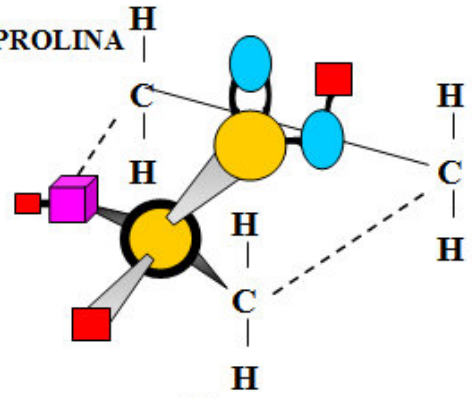
TIROSINA



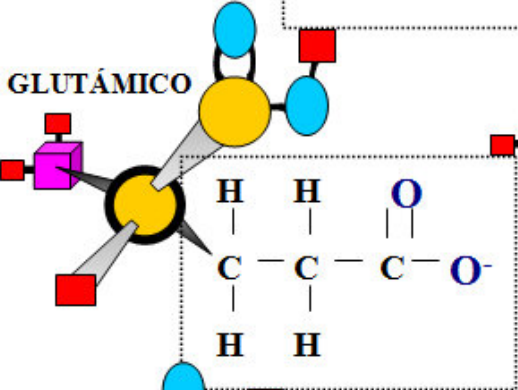
TREONINA



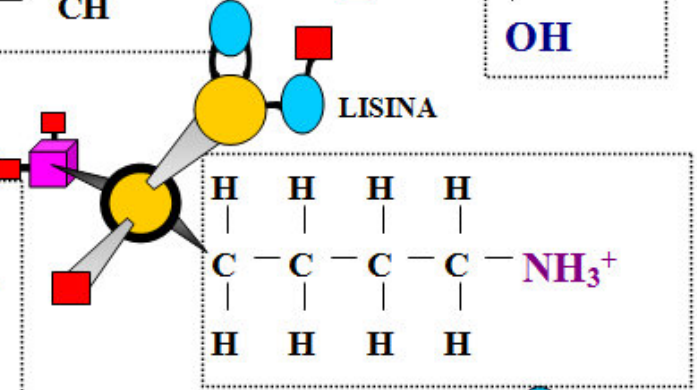
PROLINA



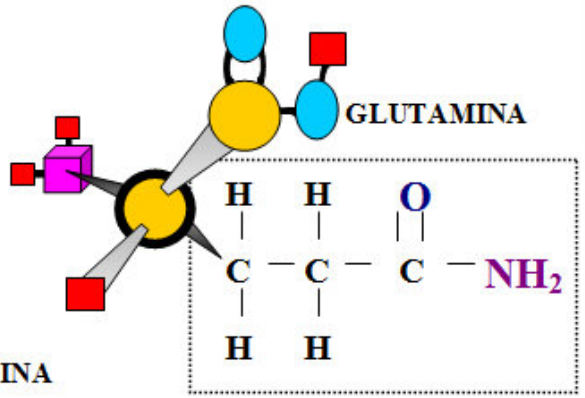
GLUTÁMICO



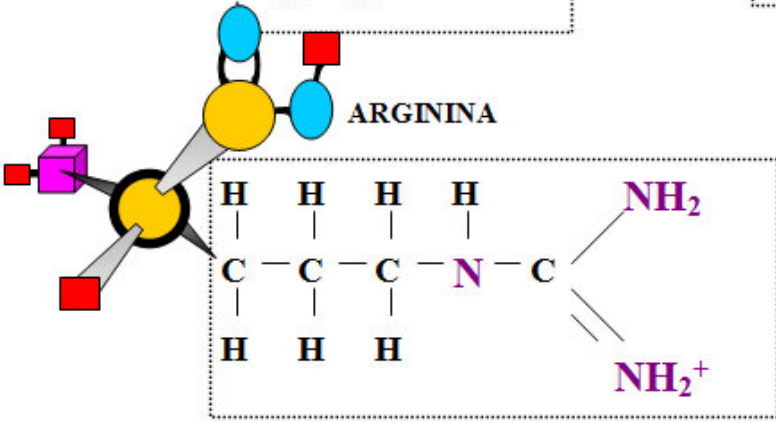
LISINA



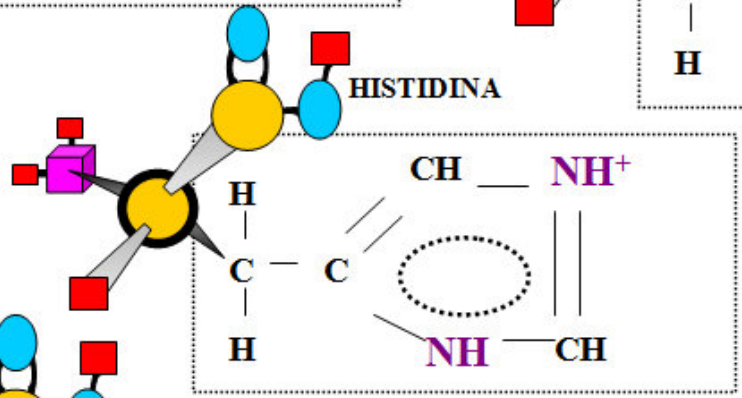
GLUTAMINA



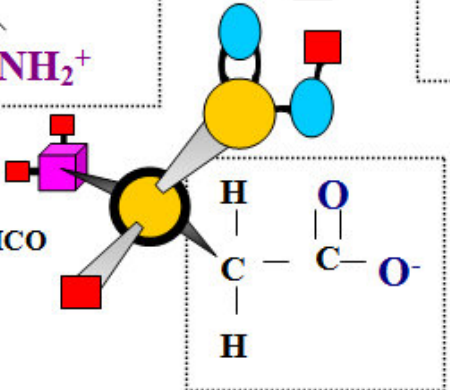
ARGININA



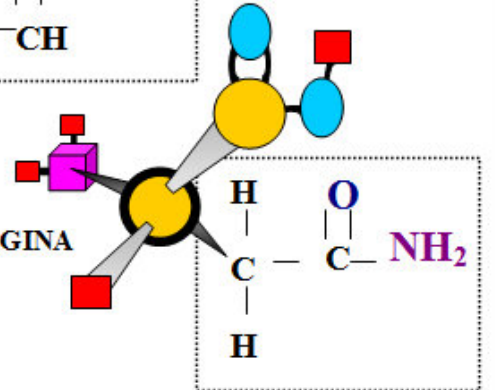
HISTIDINA



ASPÁRTICO



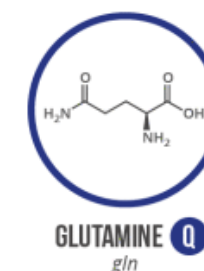
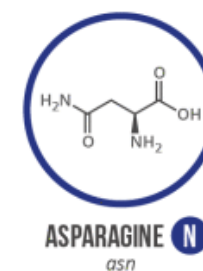
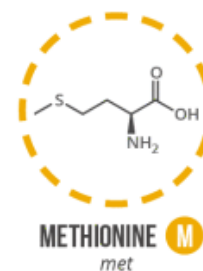
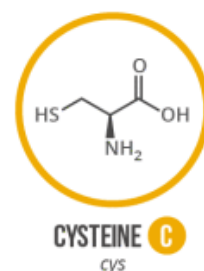
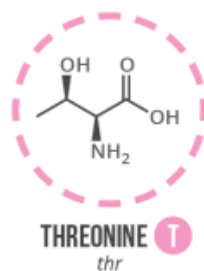
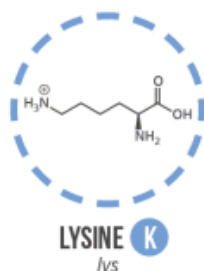
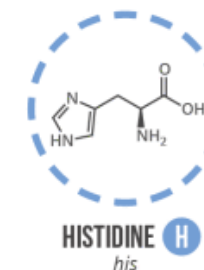
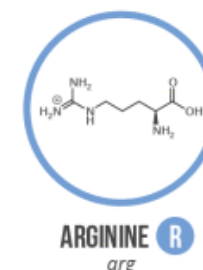
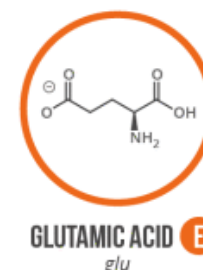
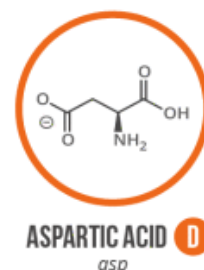
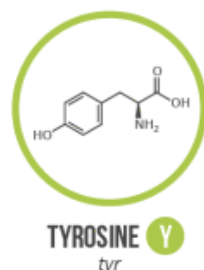
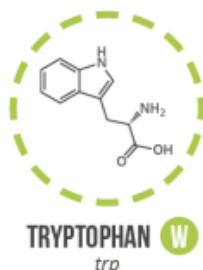
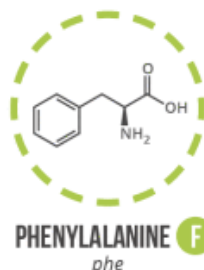
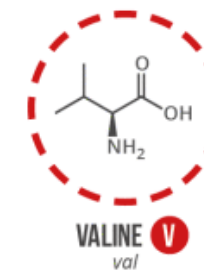
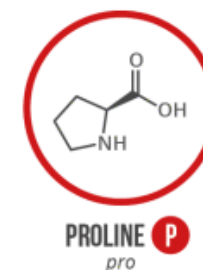
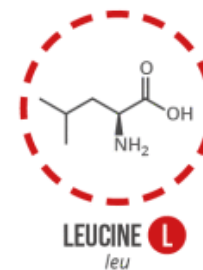
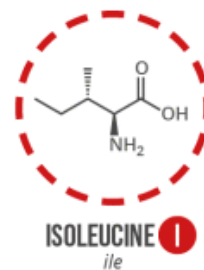
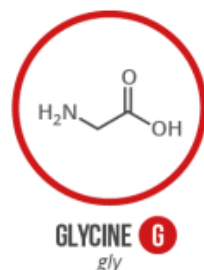
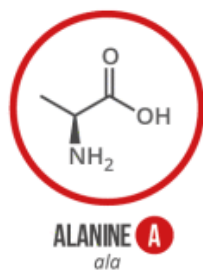
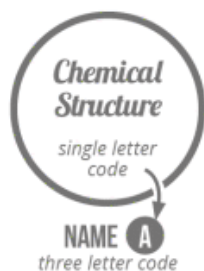
ASPARRAGINA



A GUIDE TO THE TWENTY COMMON AMINO ACIDS

AMINO ACIDS ARE THE BUILDING BLOCKS OF PROTEINS IN LIVING ORGANISMS. THERE ARE OVER 500 AMINO ACIDS FOUND IN NATURE - HOWEVER, THE HUMAN GENETIC CODE ONLY DIRECTLY ENCODES 20. 'ESSENTIAL' AMINO ACIDS MUST BE OBTAINED FROM THE DIET, WHILST NON-ESSENTIAL AMINO ACIDS CAN BE SYNTHESISED IN THE BODY.

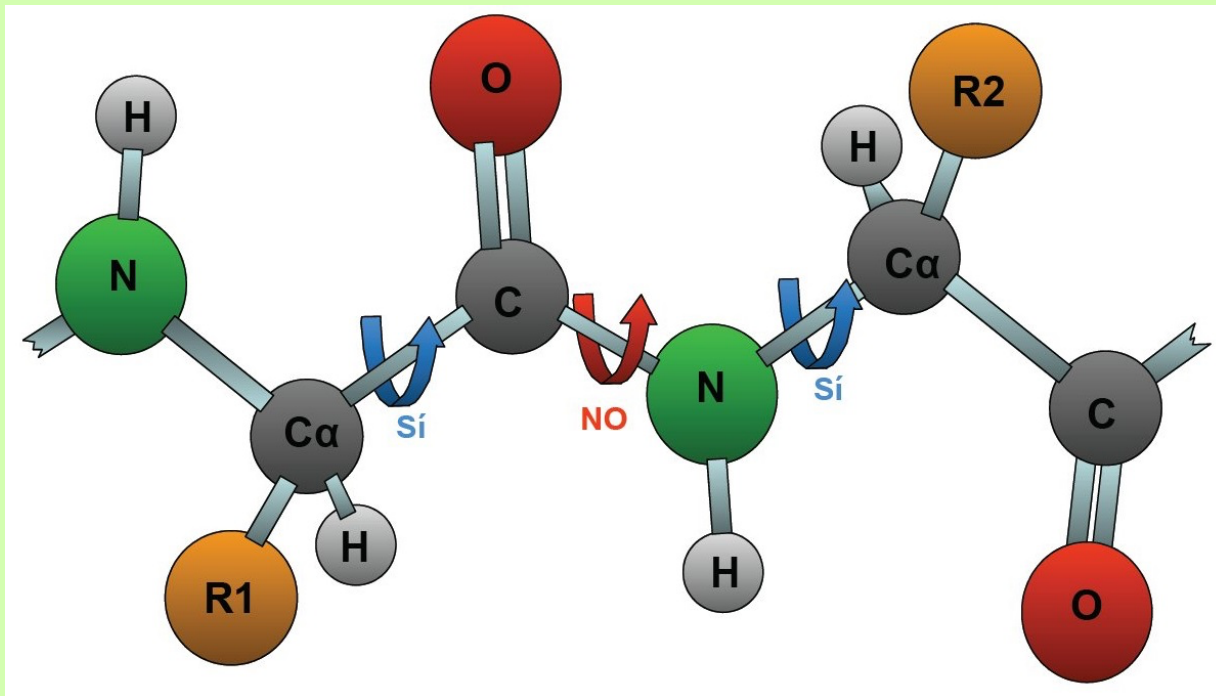
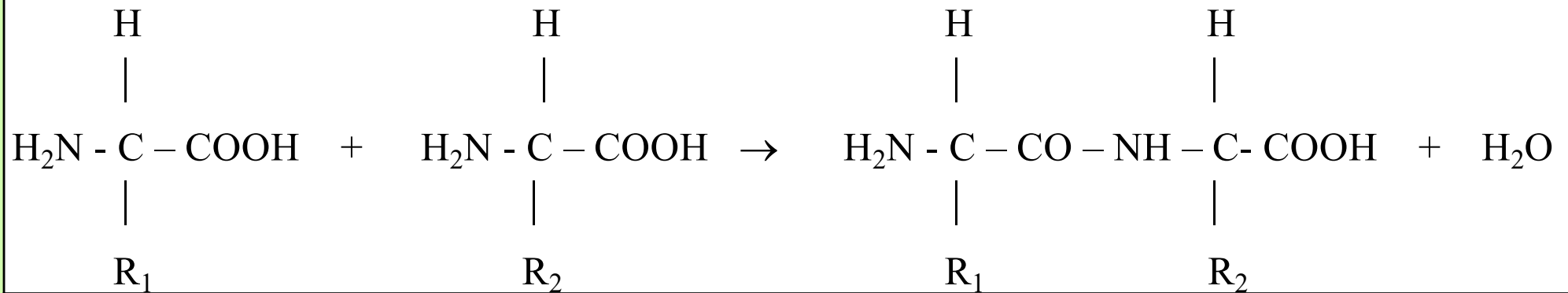
Chart Key: ● ALIPHATIC ● AROMATIC ● ACIDIC ● BASIC ● HYDROXYLIC ● SULFUR-CONTAINING ● AMIDIC ○ NON-ESSENTIAL ○ ESSENTIAL



Note: This chart only shows those amino acids for which the human genetic code directly codes for. Selenocysteine is often referred to as the 21st amino acid, but is encoded in a special manner. In some cases, distinguishing between asparagine/aspartic acid and glutamine/glutamic acid is difficult. In these cases, the codes asx (B) and glx (Z) are respectively used.

EL ENLACE PEPTÍDICO

Se establece entre el grupo amino de un aminoácido y el carboxilo de otro



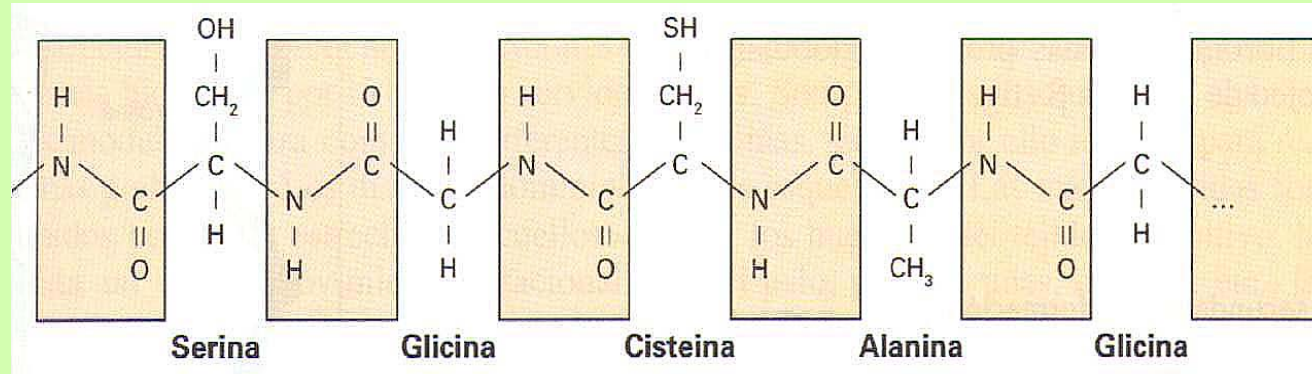
Los grupos R no participan

Es un enlace plano y rígido

Es hidrolizable

ESTRUCTURA PRIMARIA

Es la secuencia lineal de aminoácidos, unidos entre sí por un enlace peptídico

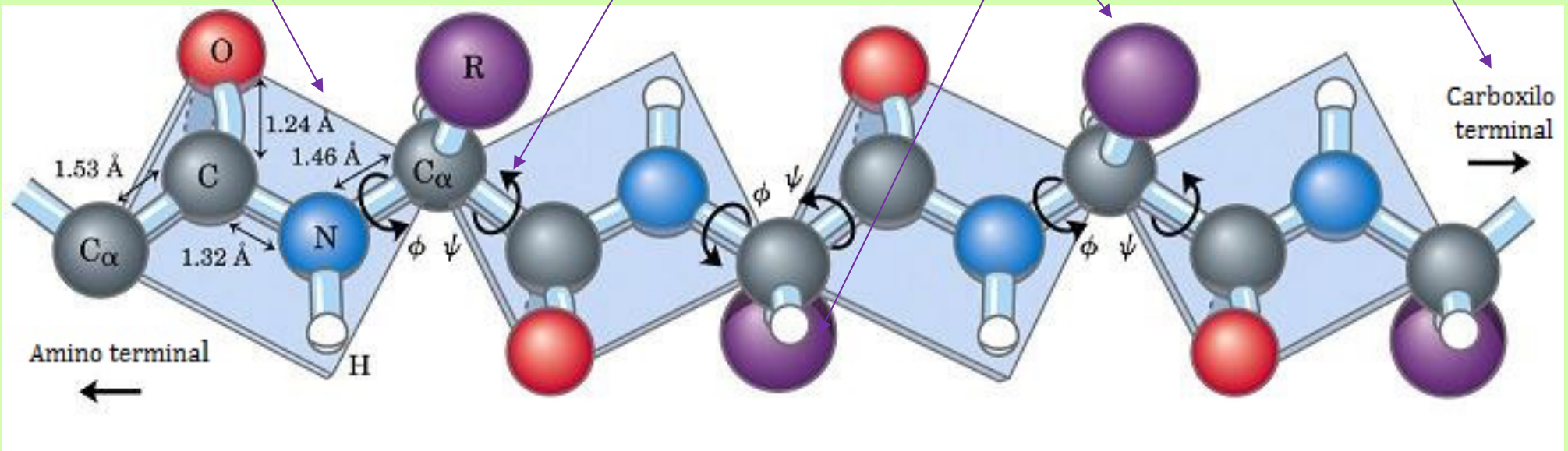


Los cuatro átomos implicados en el enlace peptídico están en el mismo plano.

La cadena rota a nivel de los $C\alpha$

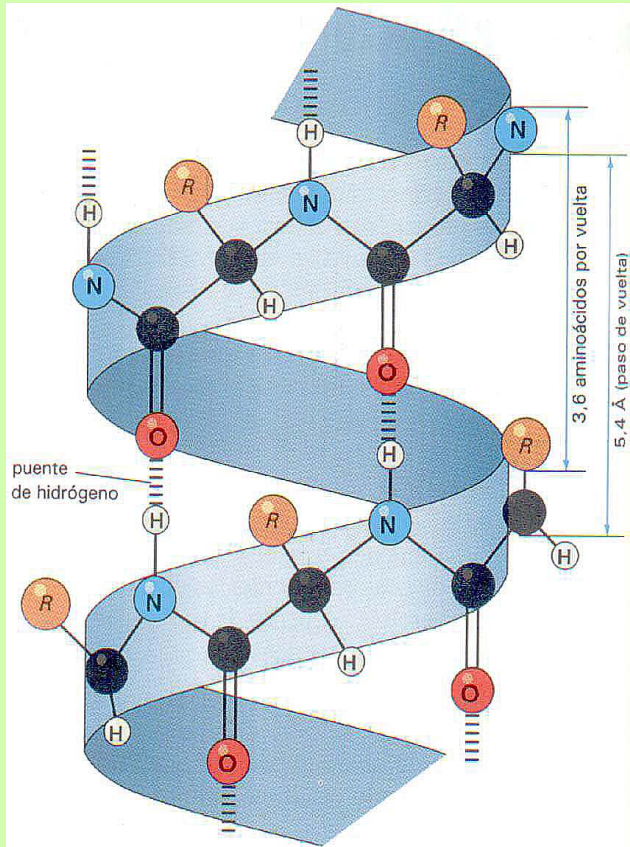
Cadenas R dispuestas de forma alterna

Amino al inicio y carboxilo al final



ESTRUCTURA SECUNDARIA

Repliegues estabilizados por puentes de hidrógeno entre aminoácidos no contiguos.



Hélice α

Triple hélice

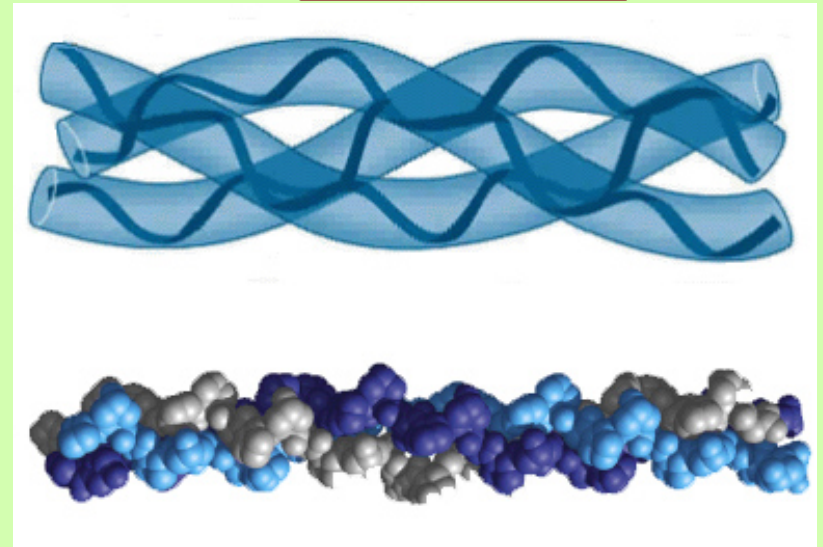
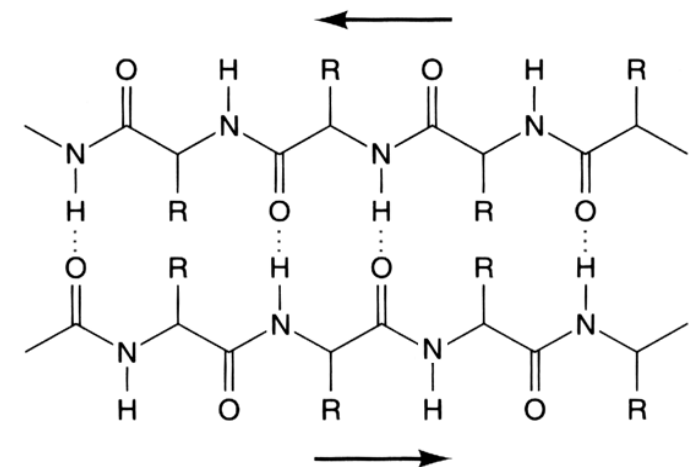
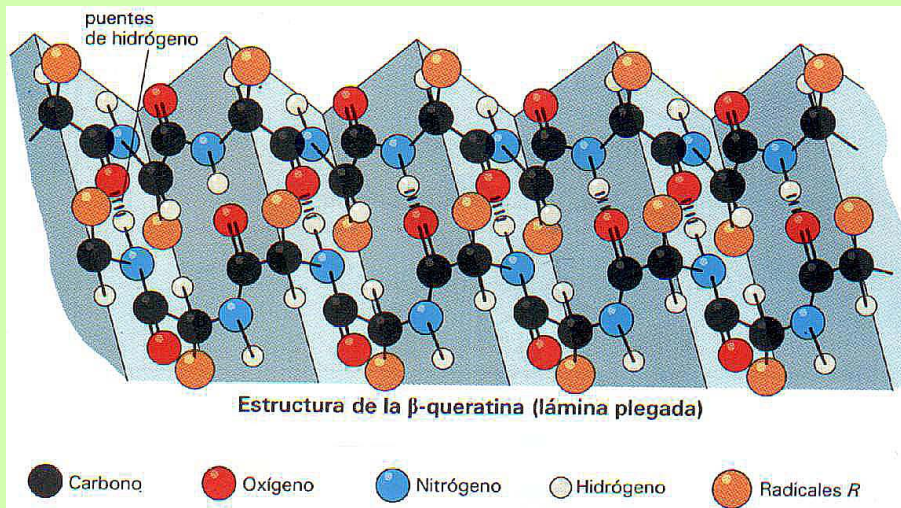
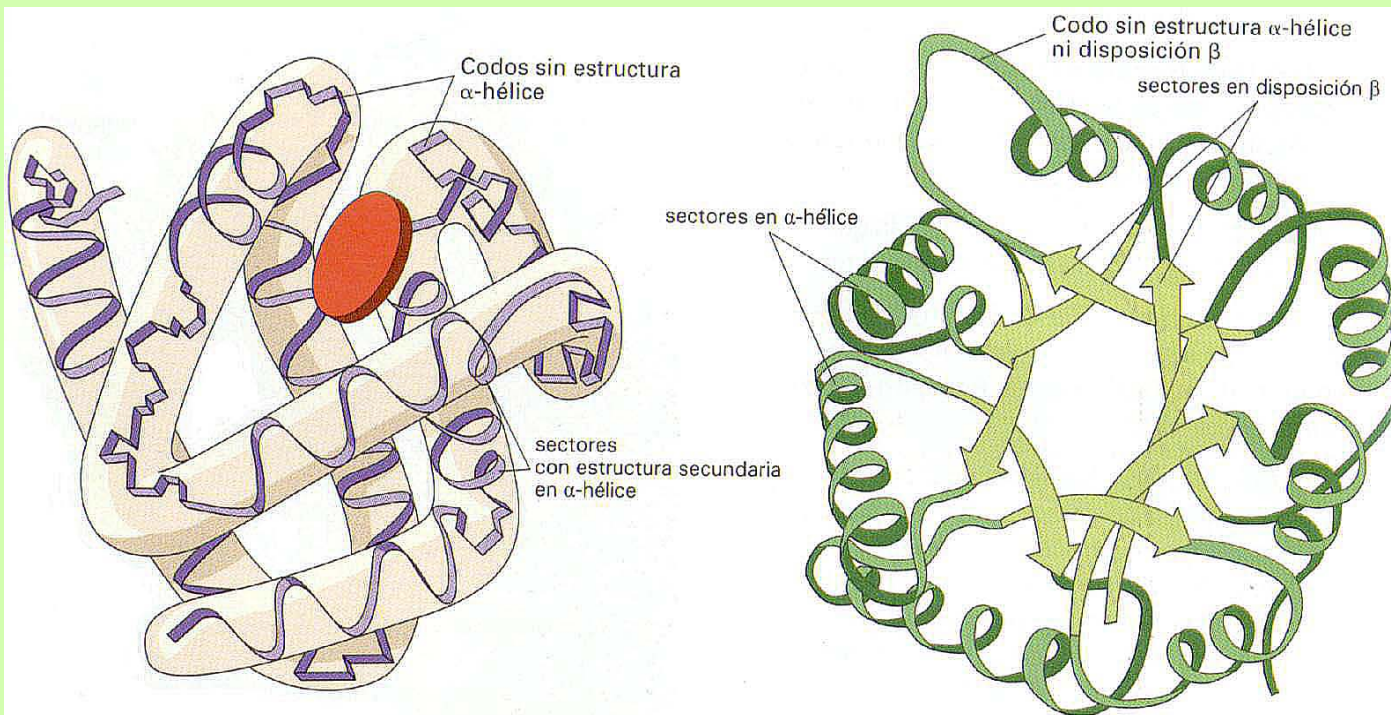
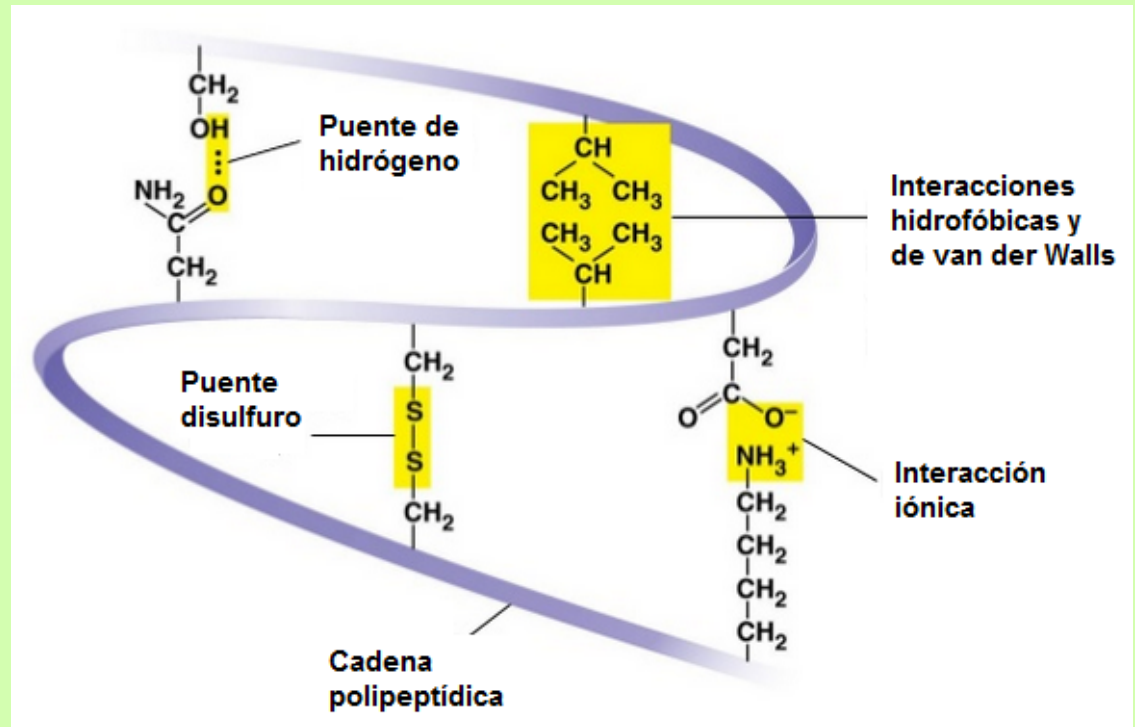


Lámina β



ESTRUCTURA Terciaria

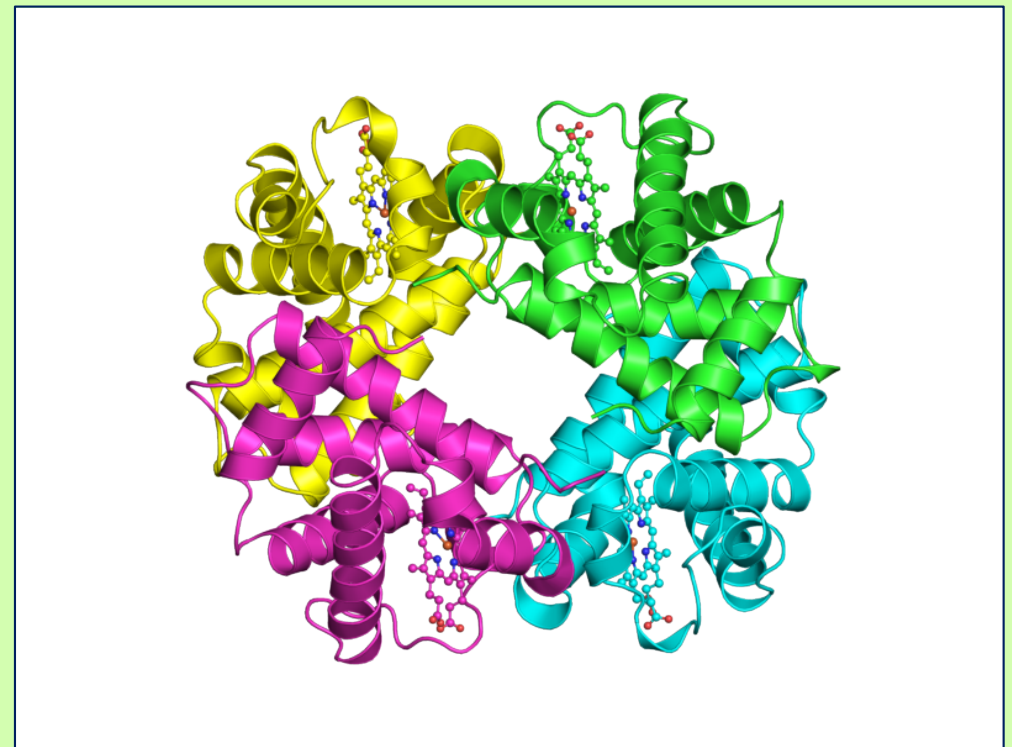
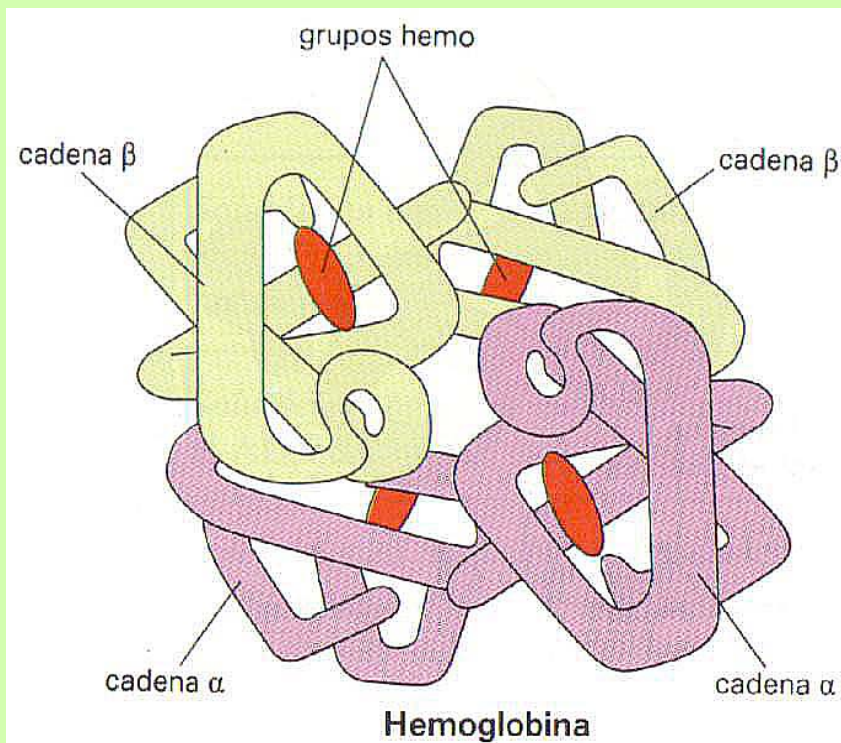
Enlaces débiles entre los grupos R de aminoácidos que pueden estar muy alejados en la secuencia



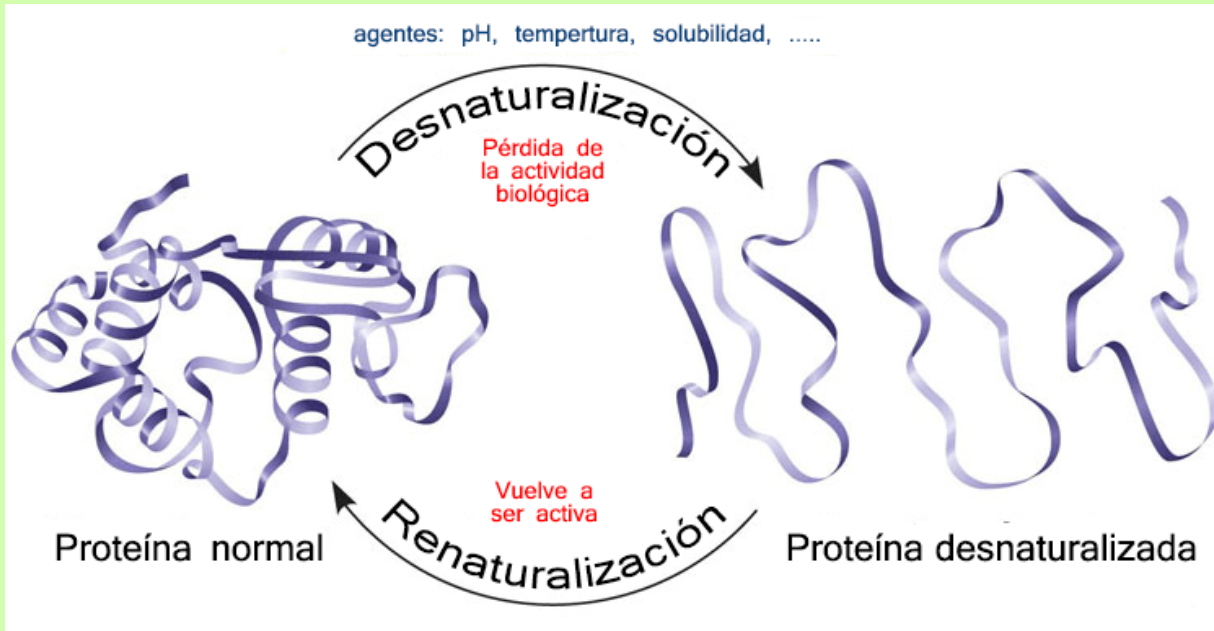
Aparece una conformación tridimensional específica

ESTRUCTURA CUATERNARIA

1. Proteínas que constan de varias cadenas polipeptídicas
2. Las subunidades proteicas se unen mediante enlaces débiles.



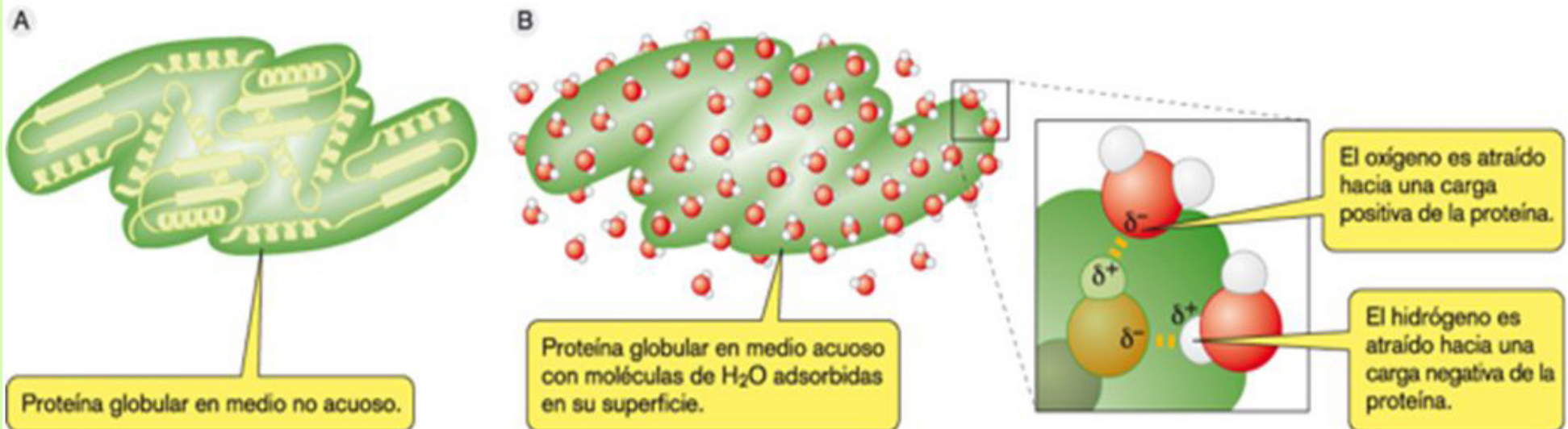
PROPIEDADES DE LAS PROTEÍNAS



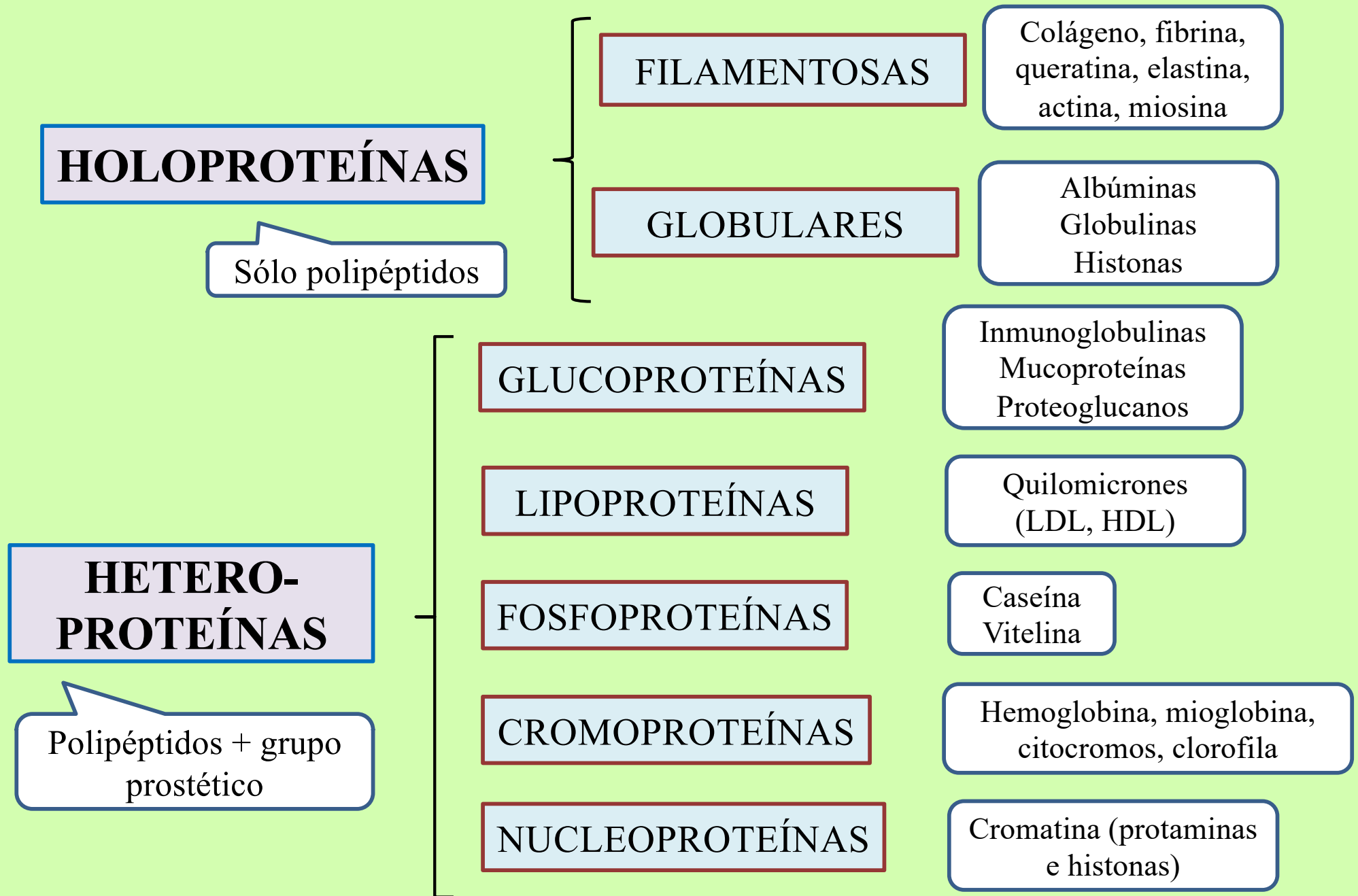
1. Desnaturalización reversible o irreversible por agentes físicos o químicos.

3. Especificidad ligada a su conformación tridimensional.

2. Solubilidad de las proteínas globulares



CLASIFICACIÓN DE LAS PROTEÍNAS



FUNCIONES DE LAS PROTEÍNAS

ESTRUCTURAL:
tubulina, queratina,
colágeno, elastina

REGULADORA:
insulina, glucagón,
paratohormona

TRANSPORTADORA:
Hemoglobina,
citocromos, liposomas,
permeasas

MOVIMIENTO:
tubulina, actina, miosina

**RESERVA DE
SUSTANCIAS:**
ferritina, albúminas,
caseína

CATALÍTICA:
enzimas

DEFENSIVA:
Inmunoglobulinas,
toxinas

HOMEOSTÁTICA:
Fibrinógeno, proteínas
tampón