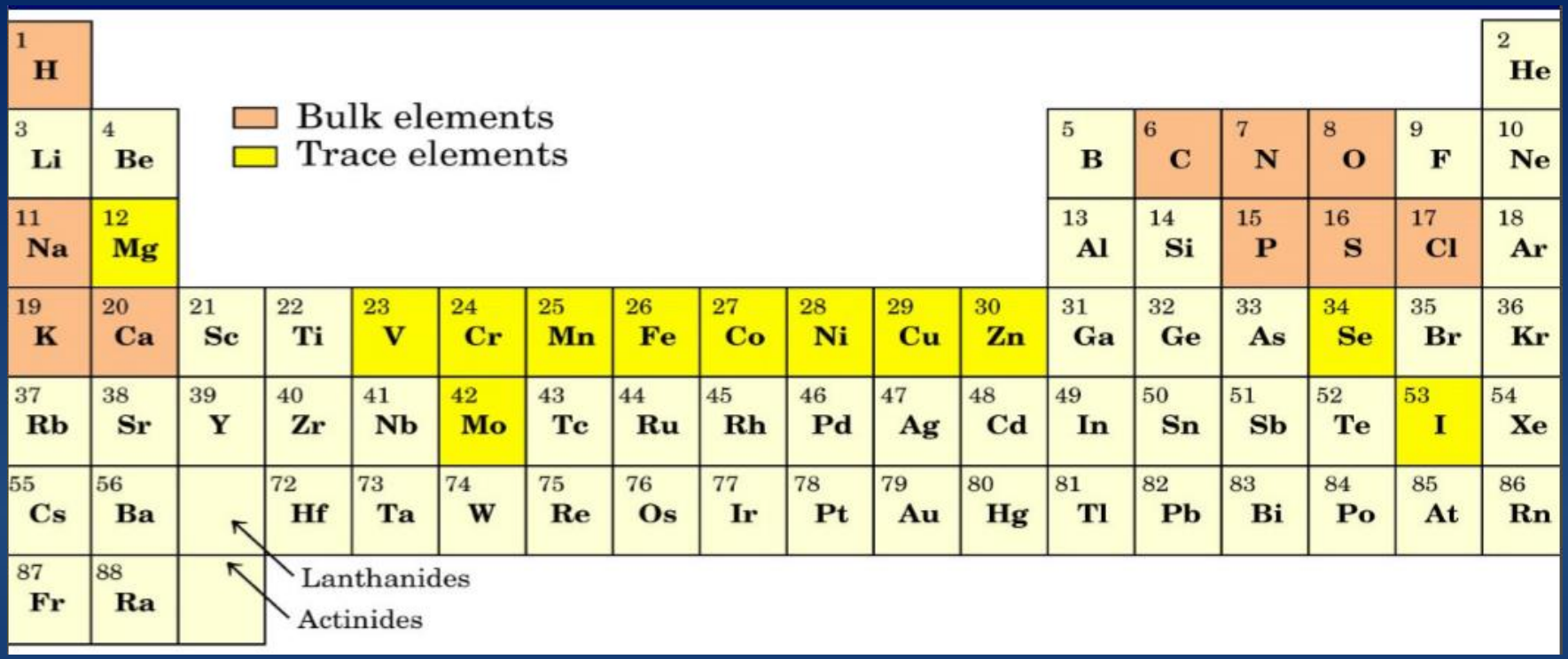
UFABC

Bioquímica: Estrutura, Propriedades e Funções de Biomoléculas
Bacharelado em Ciência & Tecnologia

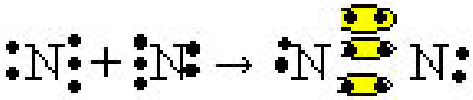
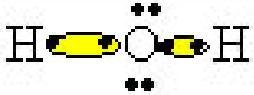
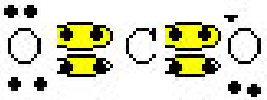
Funções Orgânicas
Revisão

Universidade Federal do ABC

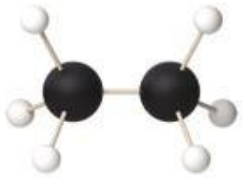
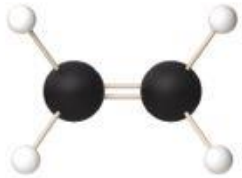


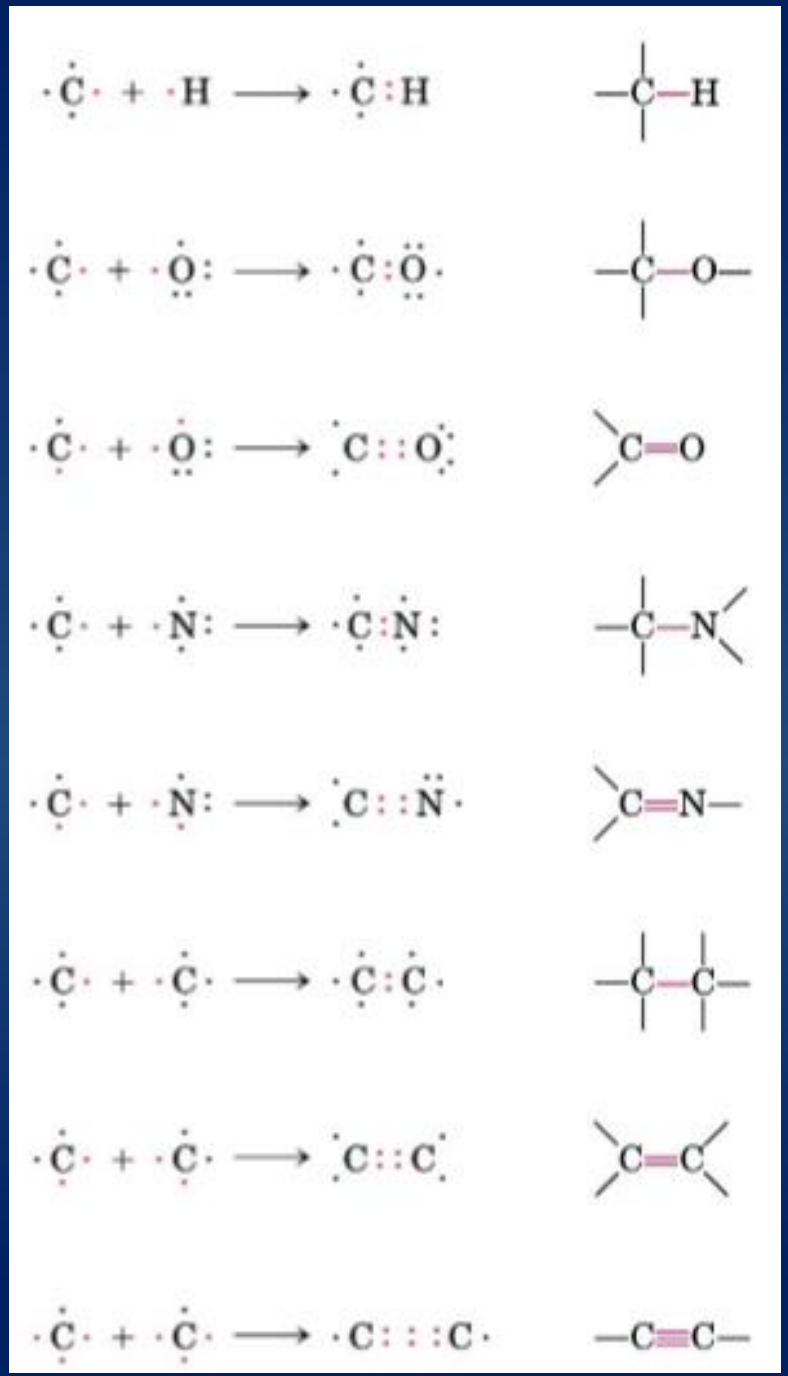
Macroelementos (alaranjado): componentes estruturais das células e dos tecidos. Necessários na dieta em quantidades diárias medidas em gramas.
Microelementos (amarelo): necessidades diárias bem menores.

Ligações Covalentes

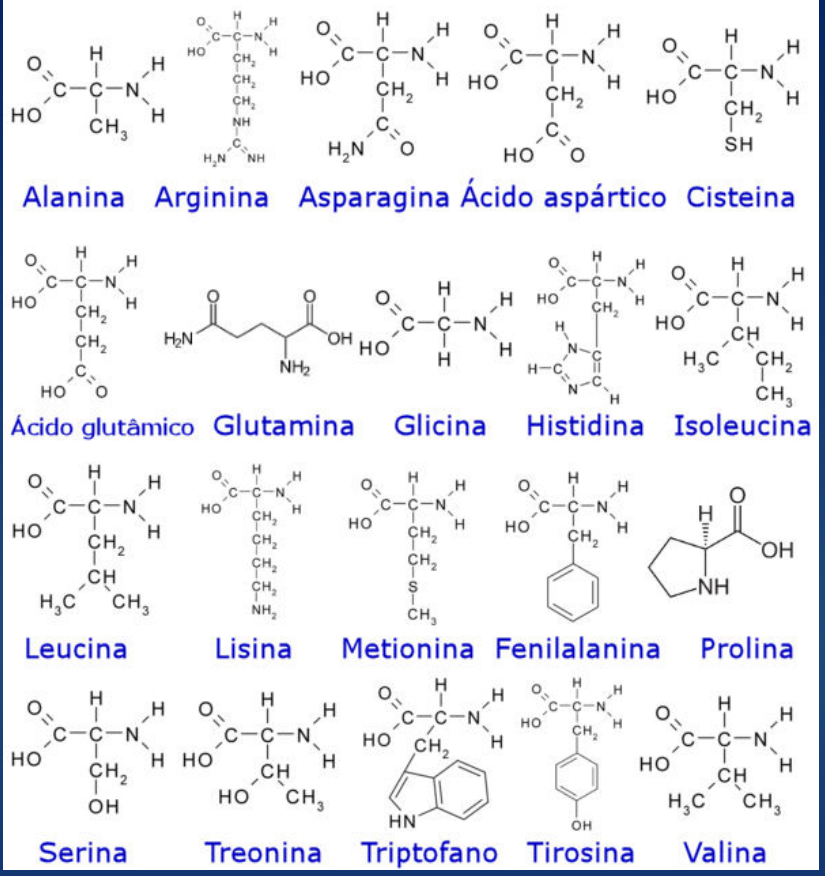
Fórmula Molecular	Fórmula Eletrônica	Fórmula Estrutural
H_2		H—H
O_2		O=O
N_2		N≡N
H_2O		H—O—H
CO_2		O=C=O

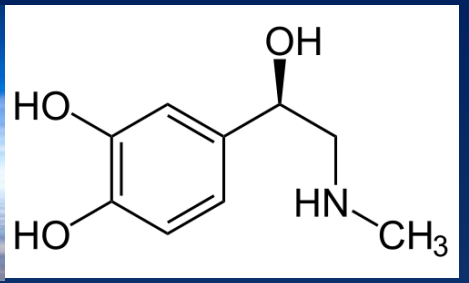
Ligações Covalentes em Compostos Orgânicos

Nome	Etano	Eteno	Etino
Fórmula molecular	C_2H_6	C_2H_4	C_2H_2
Fórmula de estrutura	H_3C-CH_3	$H_2C=CH_2$	$HC\equiv CH$
Modelo molecular			

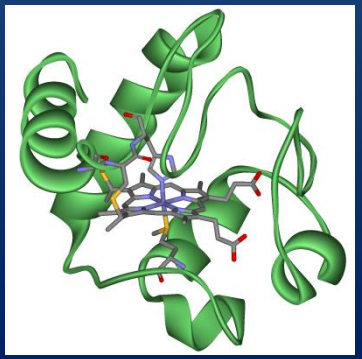


AMINOÁCIDOS

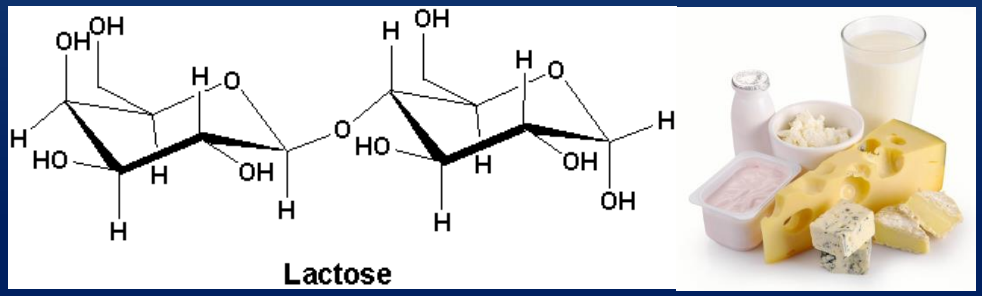




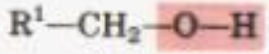
Adrenalina

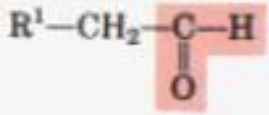


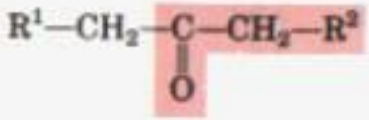
Citocromo c

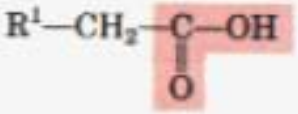


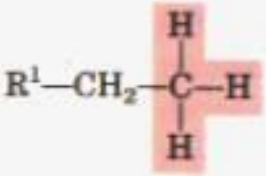
Grupos Funcionais das biomoléculas

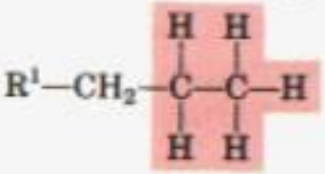
Hidroxila 

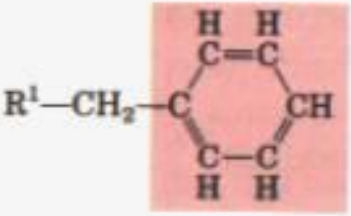
Carbonila (aldeído) 

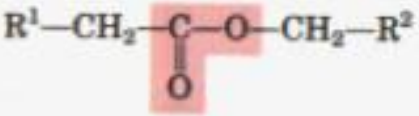
Carbonila (cetona) 

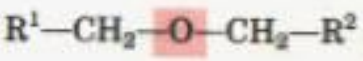
Carboxila 

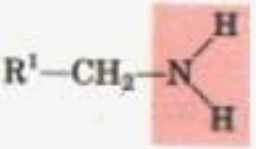
Metila 

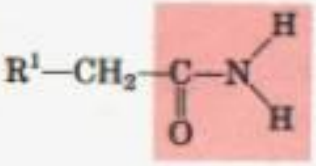
Etila 

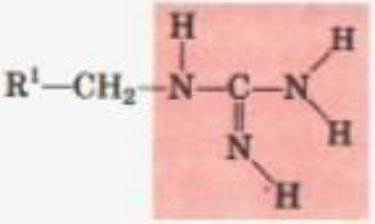
Fenila 

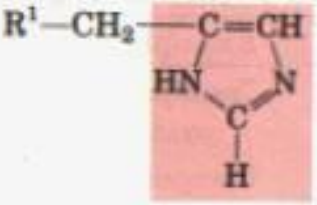
Éster 

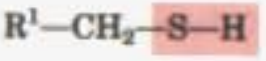
Éter 

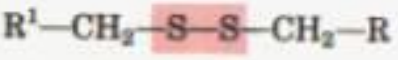
Amina 

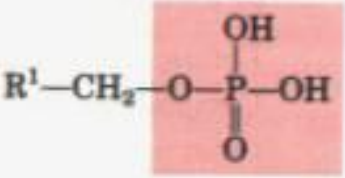
Amida 

Guanidina 

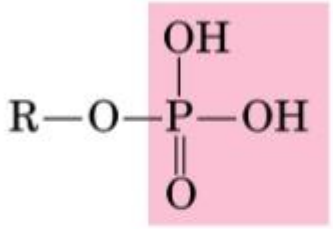
Imidazol 

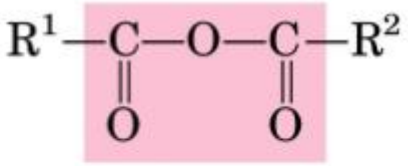
Sulfidrila 

Dissulfeto 

Fosforila 

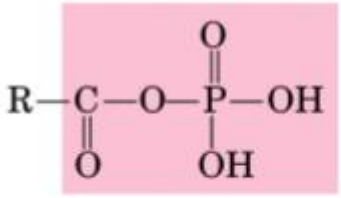
Phosphoryl

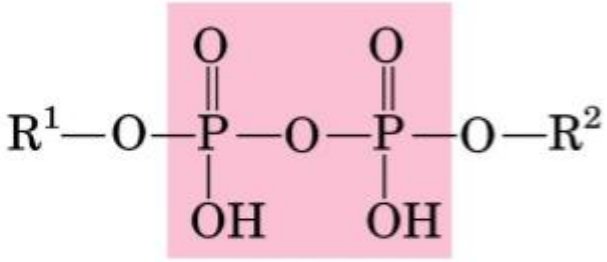




Anhydride
(two carboxylic acids)

Mixed anhydride
(carboxylic acid and phosphoric acid; also called acyl phosphate)



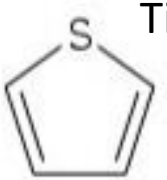


Phosphoanhydride

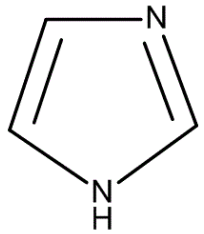
Grupos Funcionais aromáticos das biomoléculas

Pirrol

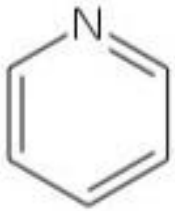
Furano



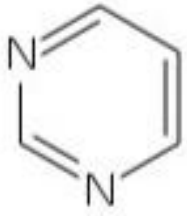
Tiofeno



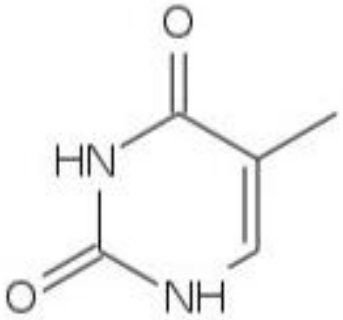
Imidazol



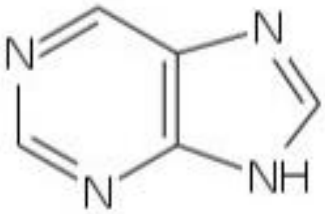
Piridina



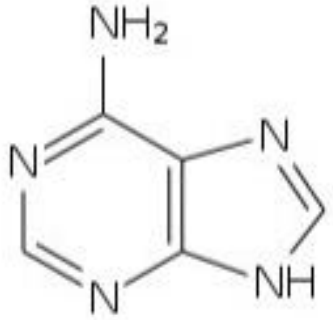
Pirimidina



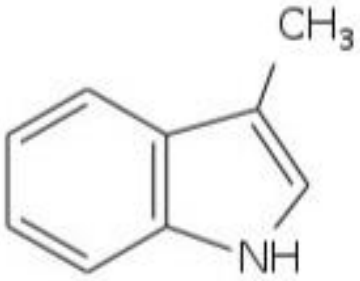
Timina



Purina

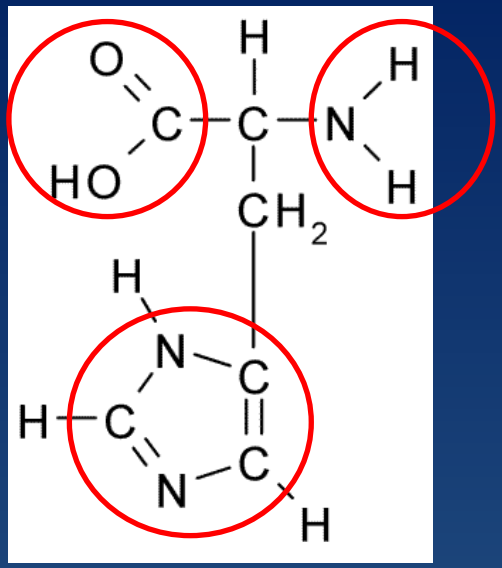


Adenina

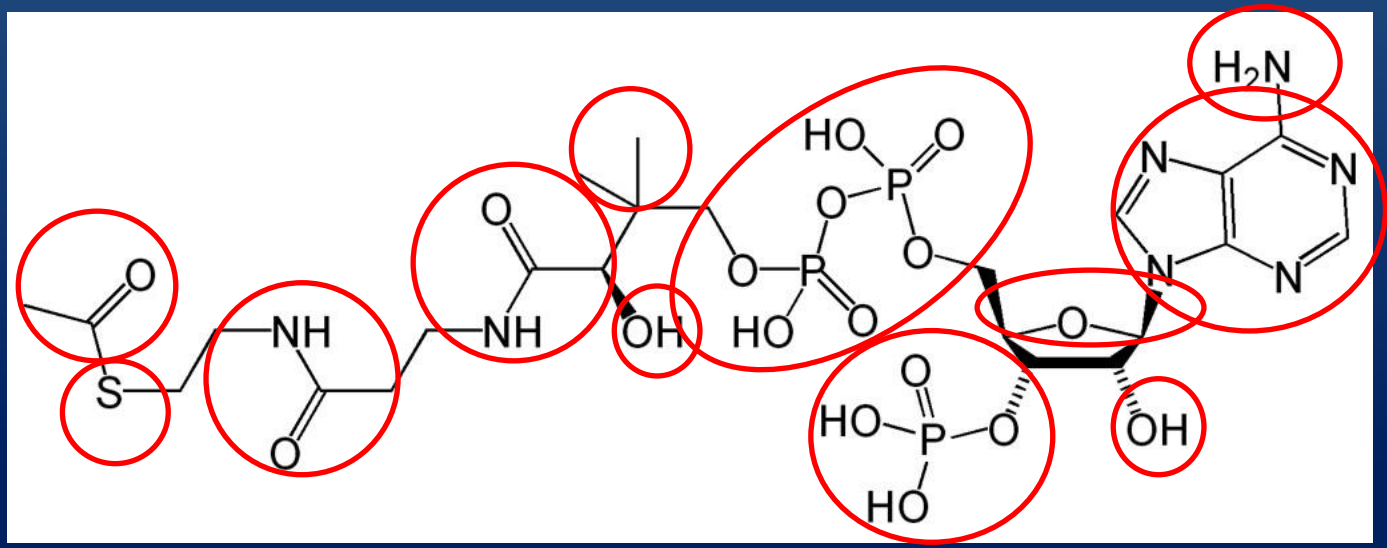


Escatol

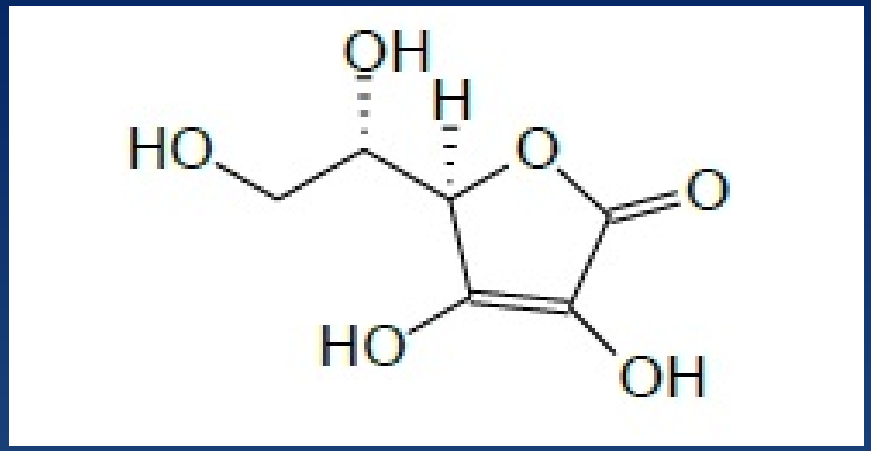
Histidina



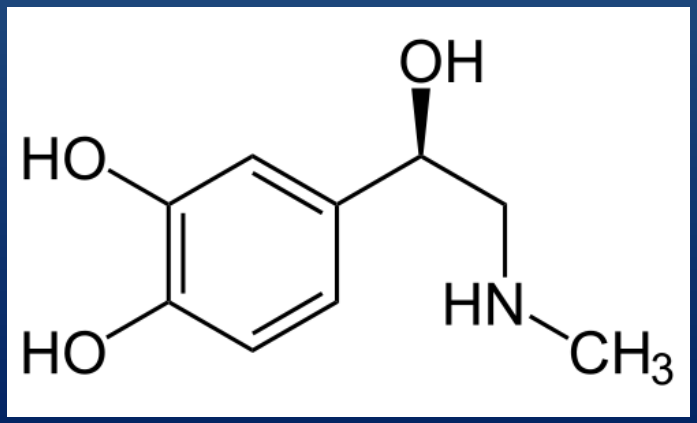
Acetil-coenzima A



Identificar os grupos funcionais desses dois compostos orgânicos



Vitamina c



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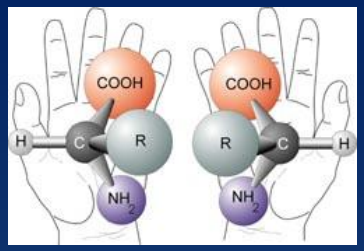
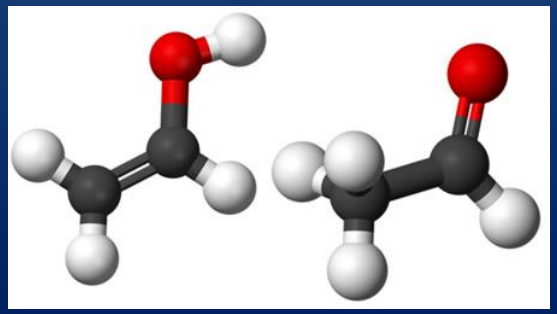
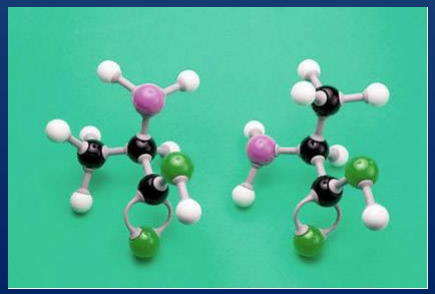


Isomeria

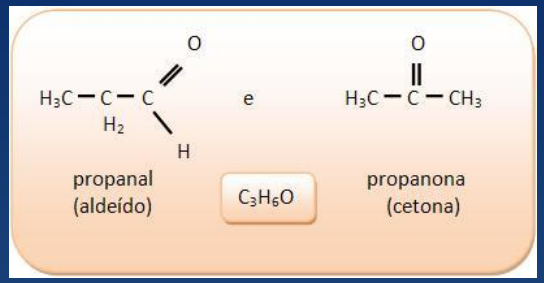
Fenômeno caracterizado pela ocorrência de duas ou mais substâncias diferentes que apresentam a mesma fórmula molecular, mas diferentes fórmulas estruturais.



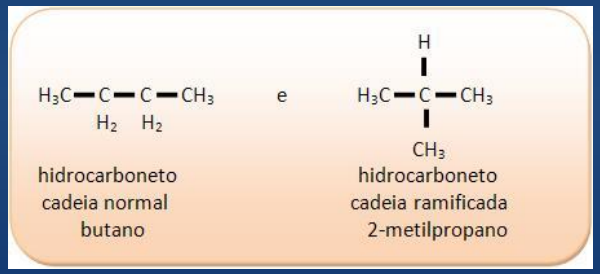


Tipos de Isômeros
Isomeria Plana

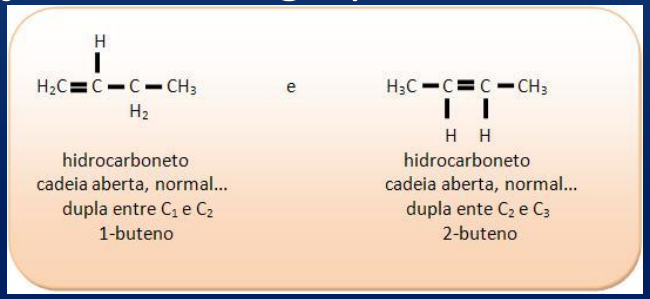
- Isomeria de função: Isômeros que pertencem a funções diferentes.



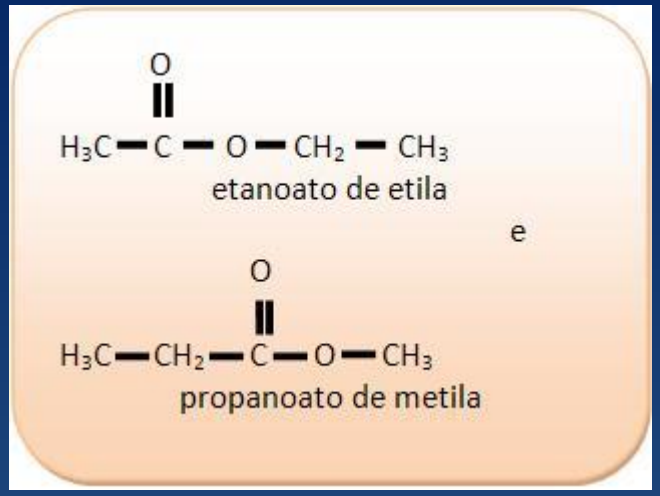
- Isomeria de cadeia: Pertencem à mesma função, mas possuem cadeias diferentes.



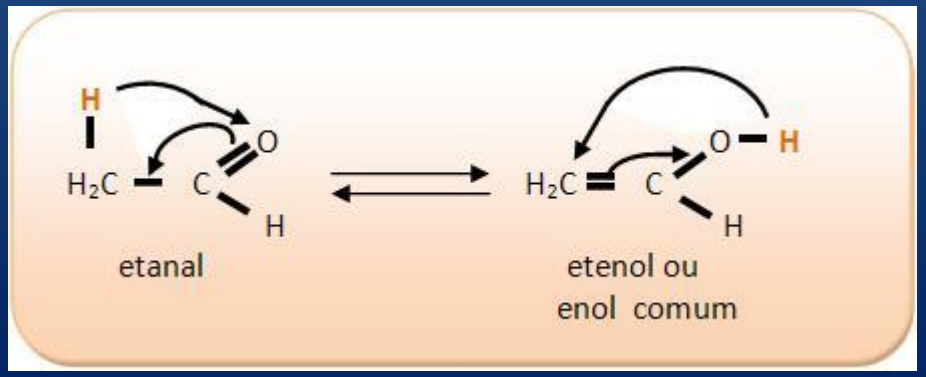
- Isomeria de posição: Pertencem à mesma função, possuem o mesmo tipo de cadeia, apresentam diferença na posição de um grupo funcional, de uma ramificação ou de uma insaturação.

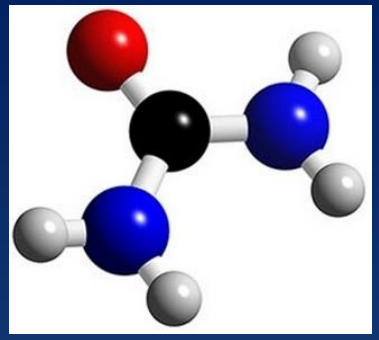


- Isomeria de compensação (metameria): apresentam mesma função e tipo de cadeia, porém possuem diferença na posição de um heteroátomo.

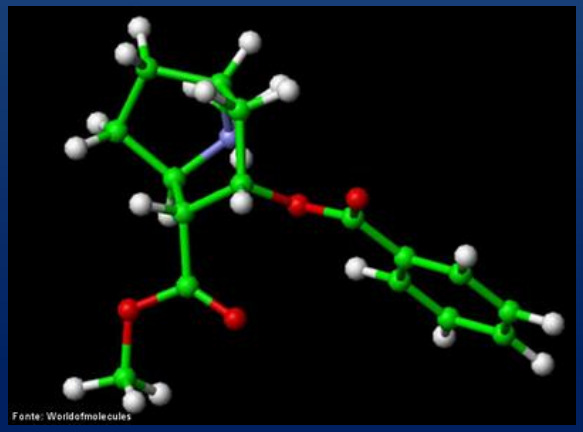


- Isomeria dinâmica (tautomeria): os isômeros coexistem em equilíbrio dinâmico em solução.



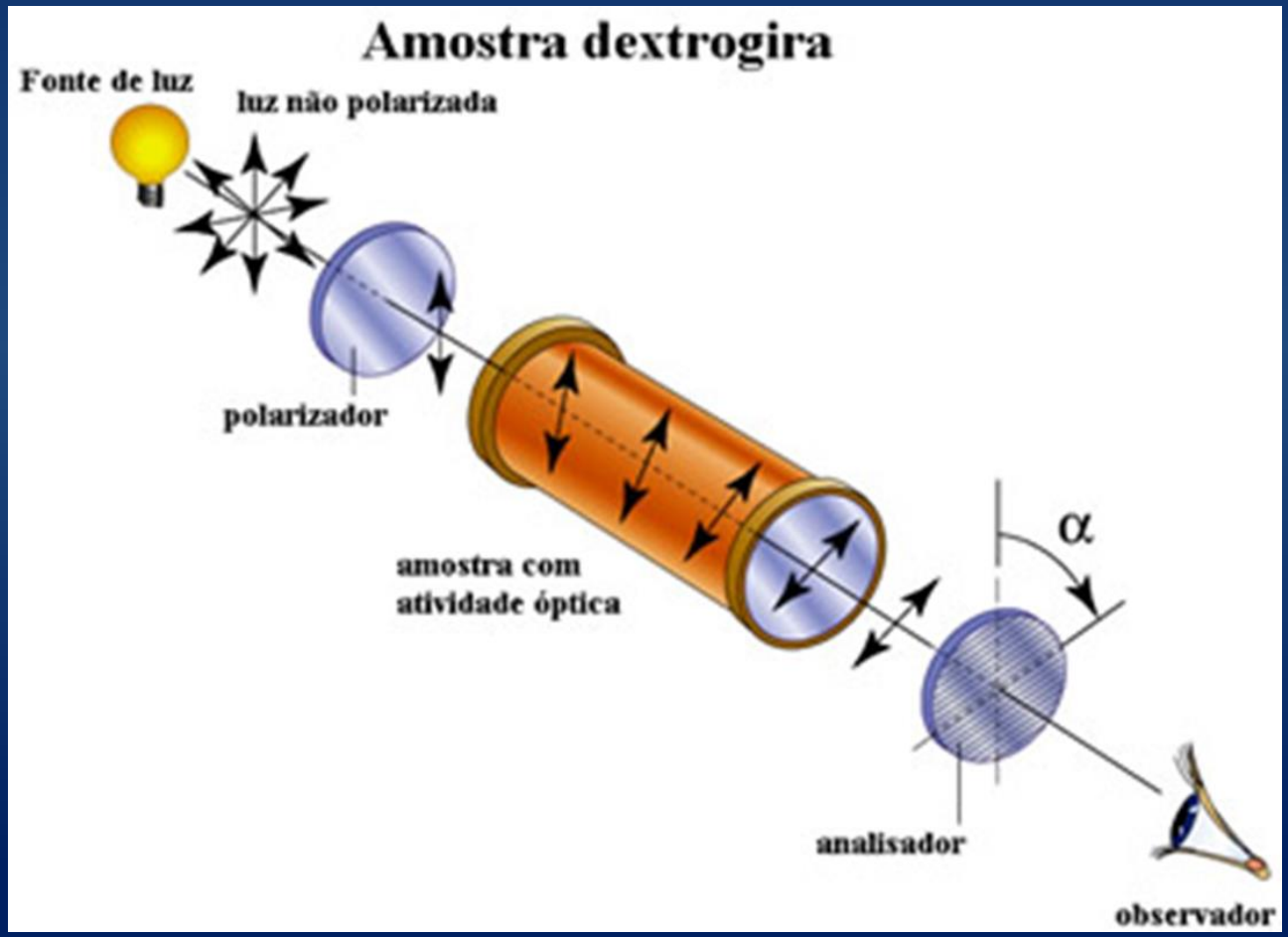


A Estrutura Tridimensional

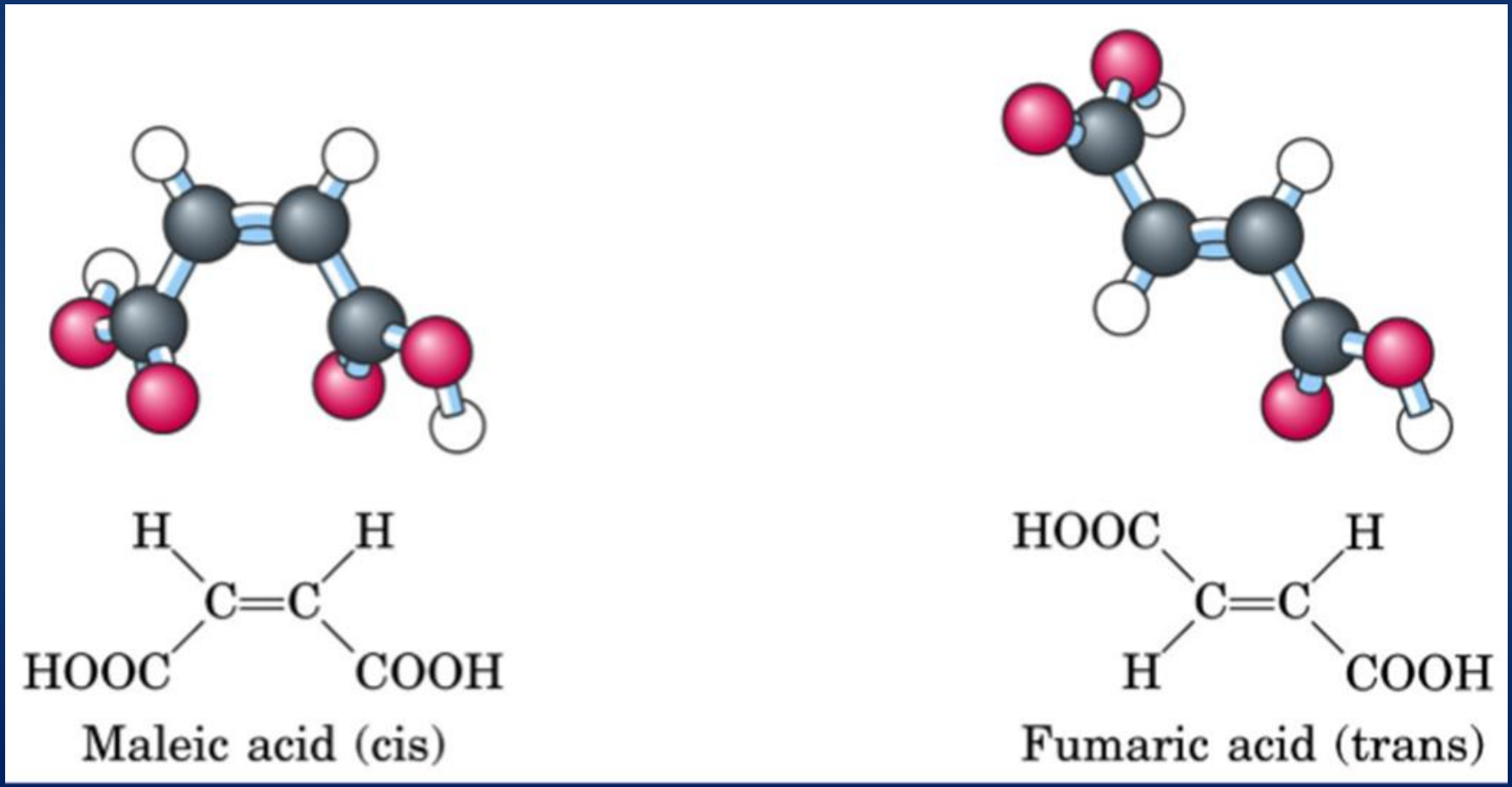


Isomeria Óptica ou Estereoisomeria

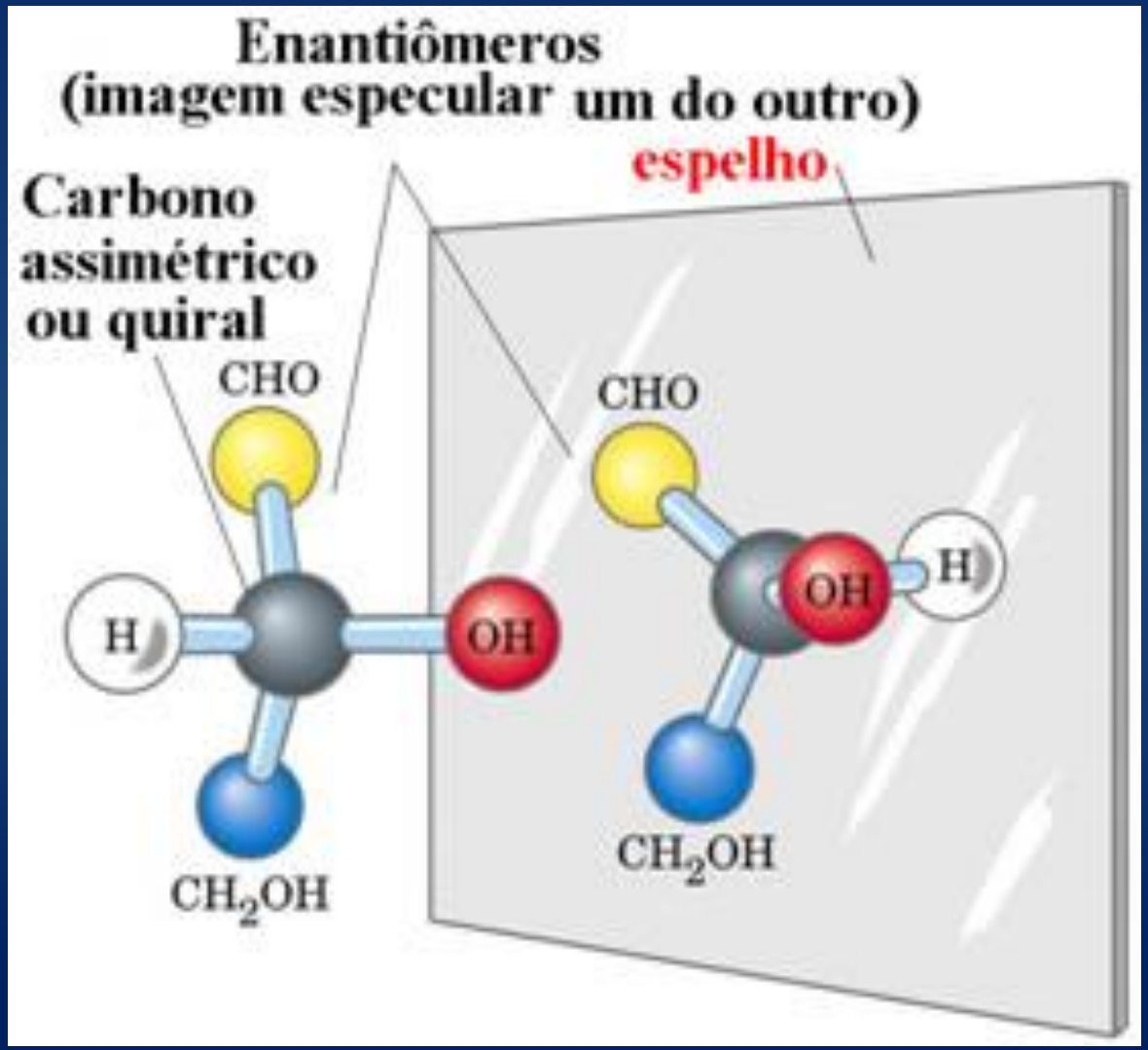
Isômeros com propriedade de promover a rotação da *luz plano polarizada*.

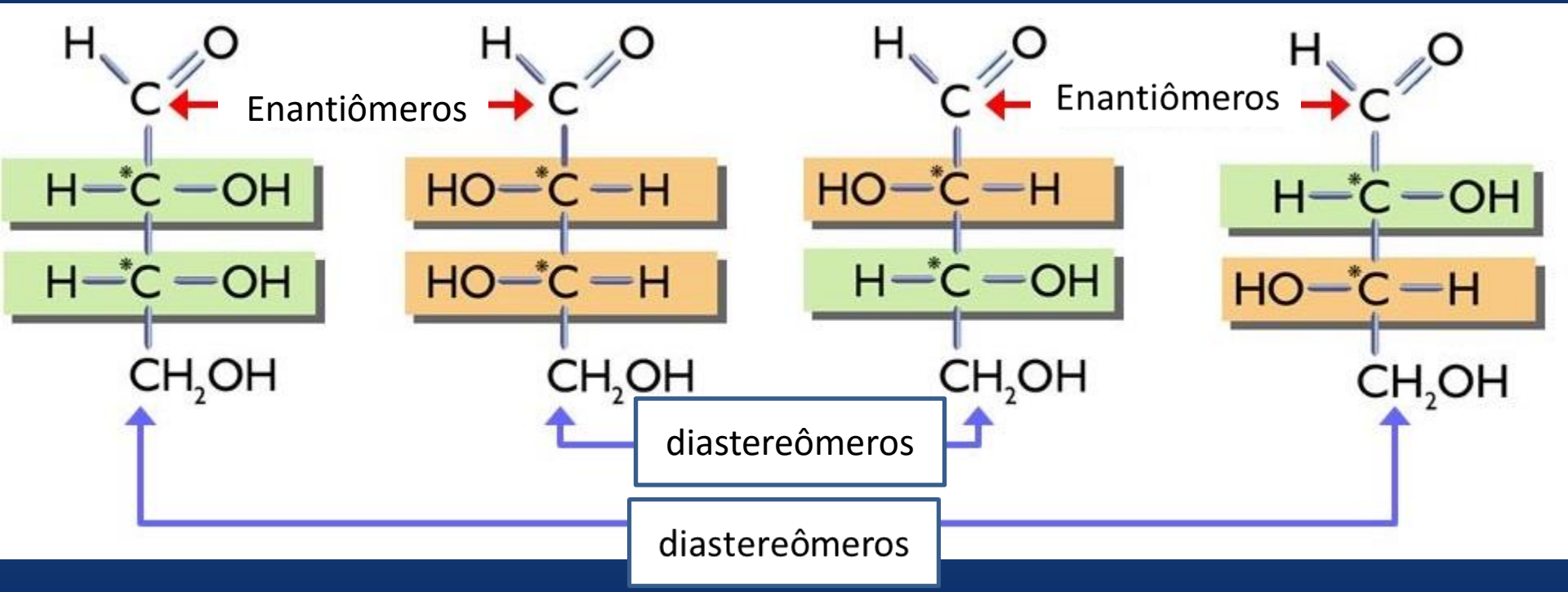


Isômeros geométricos ou isômeros cis-trans:

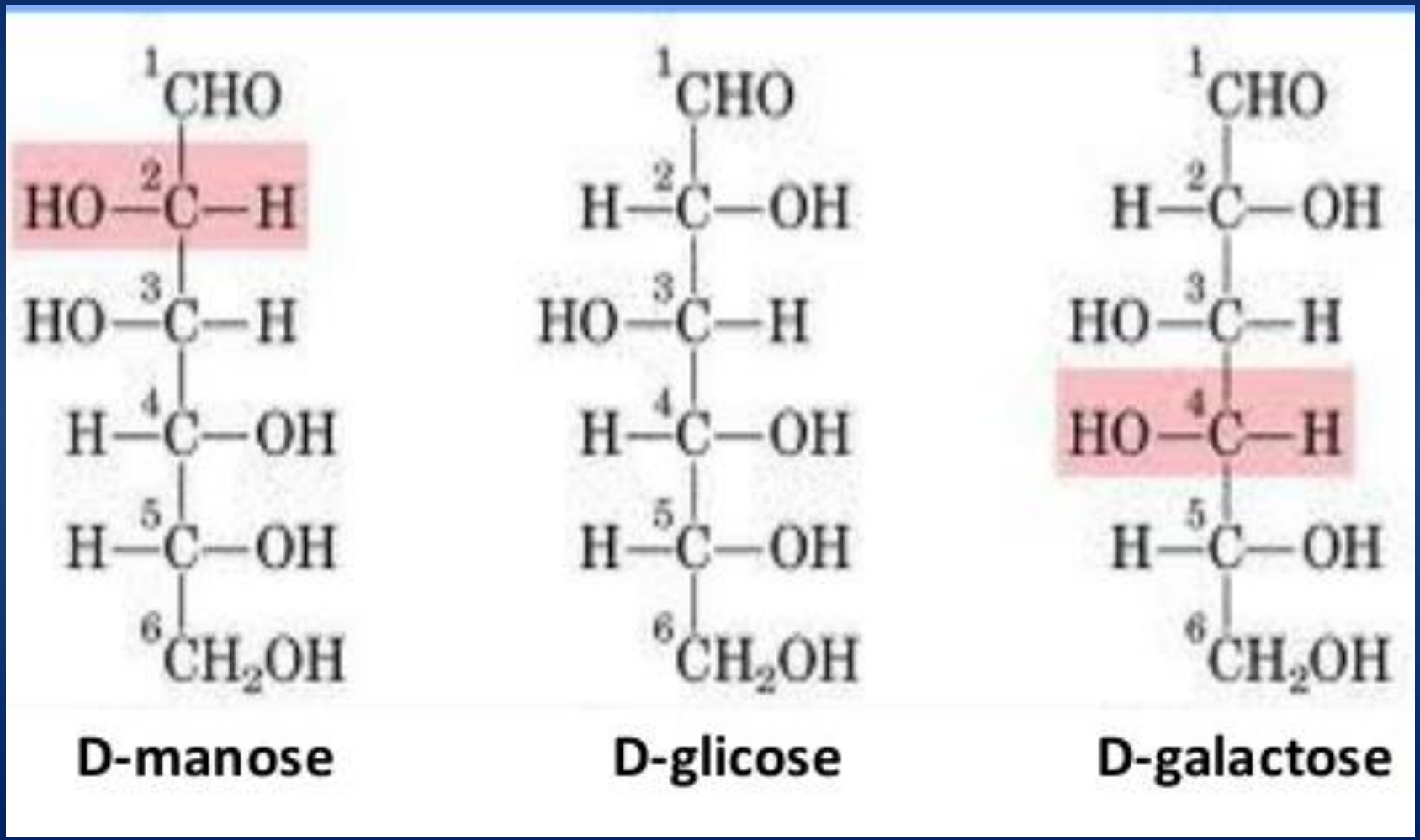


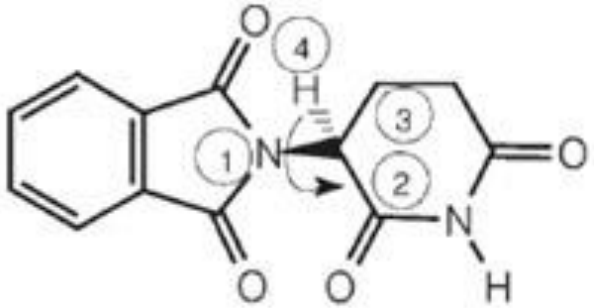
Carbono quiral: carbono que possui quatro grupos diferentes ligados a si (carbono assimétrico).



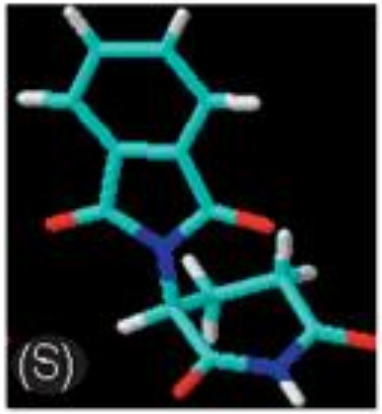

Enantiômeros
Enantiômeros
diastereômeros
diastereômeros

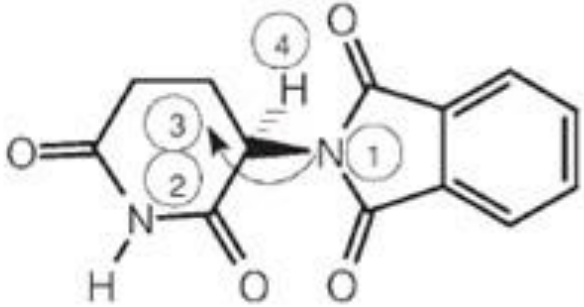
Epímeros: diferem em apenas um C*



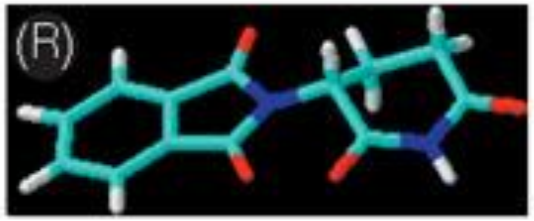


(S)-Talidomida
teratogênico



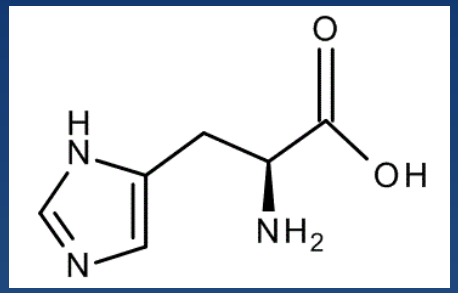


(R)-Talidomida
sedativo

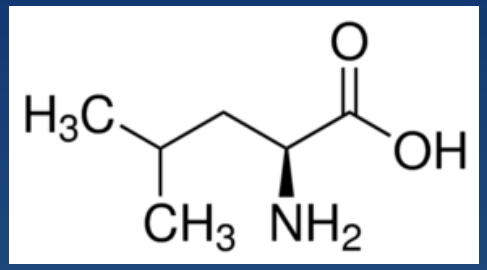


Moléculas biológicas são específicas

- Isômeros dos aminoácidos na proteínas: L

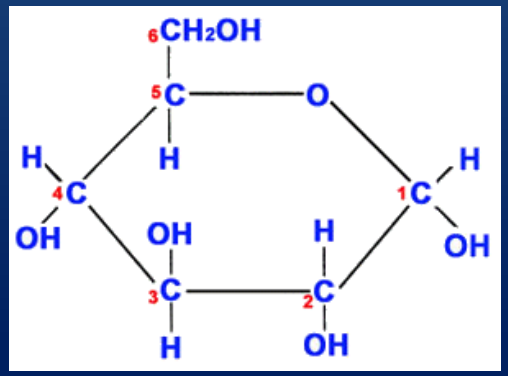


L-Histidina

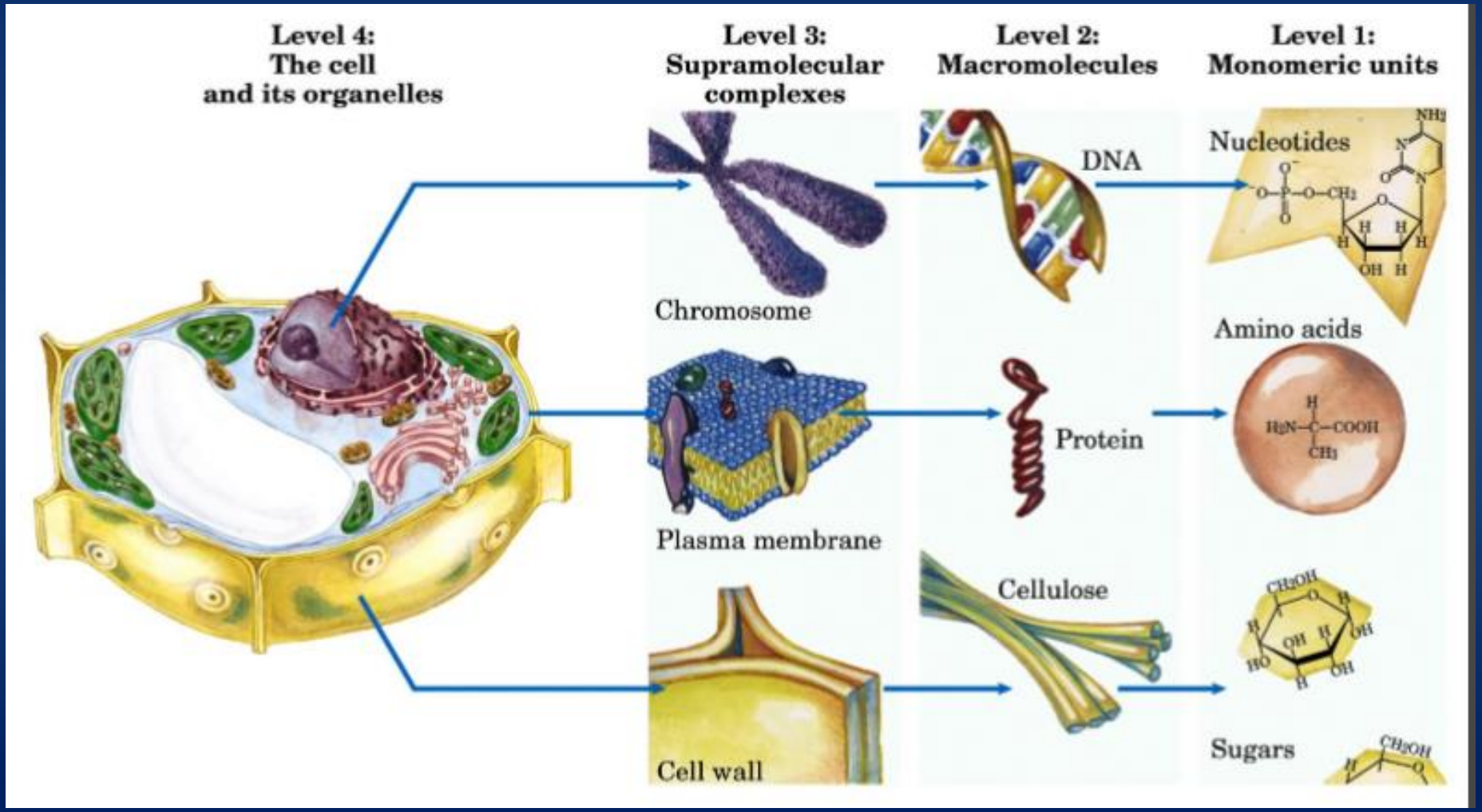


L-Leucina

- Glicose: D (unidade monomérica do amido)



Biomoléculas



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