

Universidad Nacional Autónoma de México

Química Orgánica IV (1606)

Laboratorio

Semestre 2027 - 1

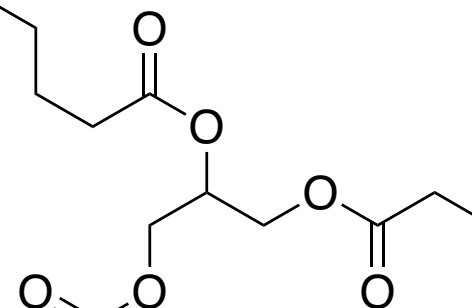
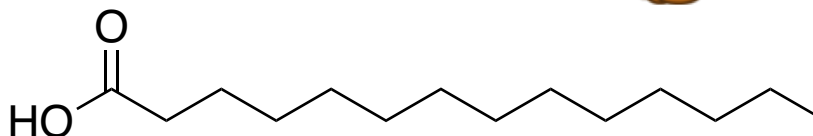


M. en C. Arturo García Zavala

Práctica 7

Lípidos II

Saponificación de Trimiristina

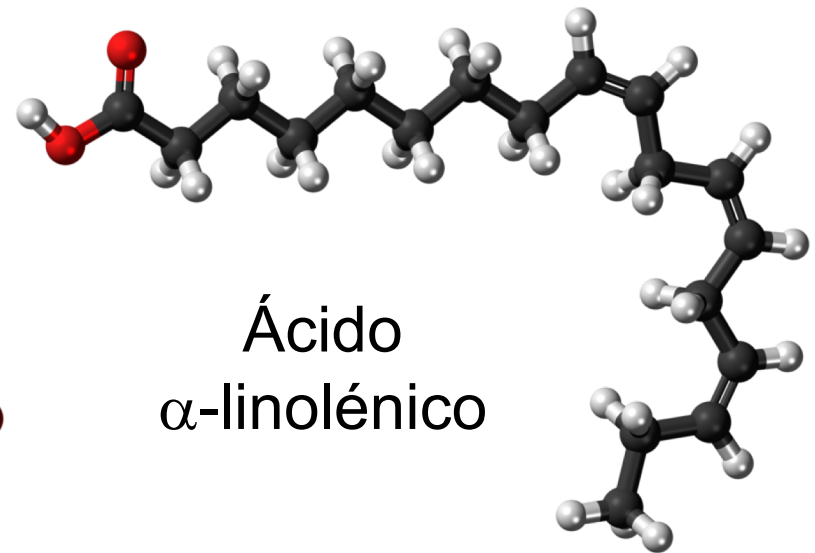
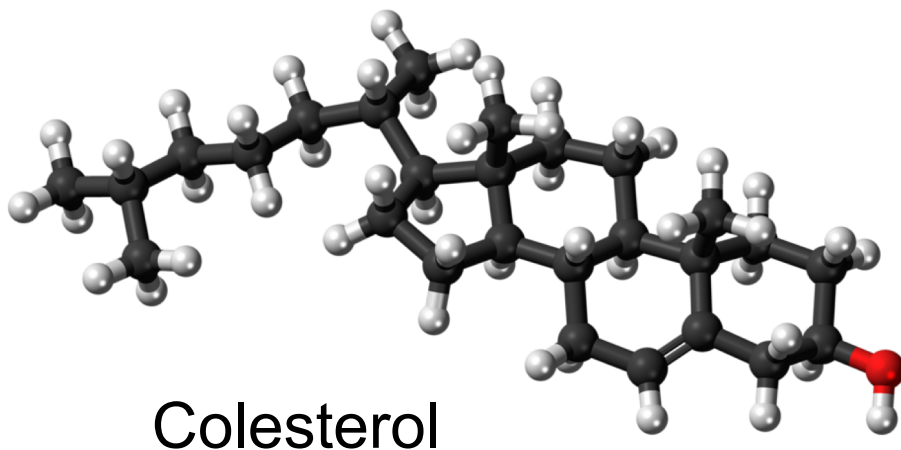


5/10/2026

Lípidos

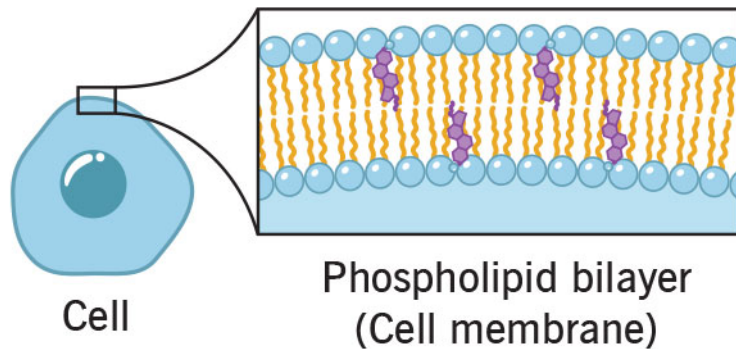
Biomoléculas que se caracterizan por tener escasa solubilidad en agua, pero son solubles en disolventes no polares.

Sus estructuras son predominantemente no polares (zona hidrofóbica) y solo presentan una pequeña fracción polar (zona hidrofílica).



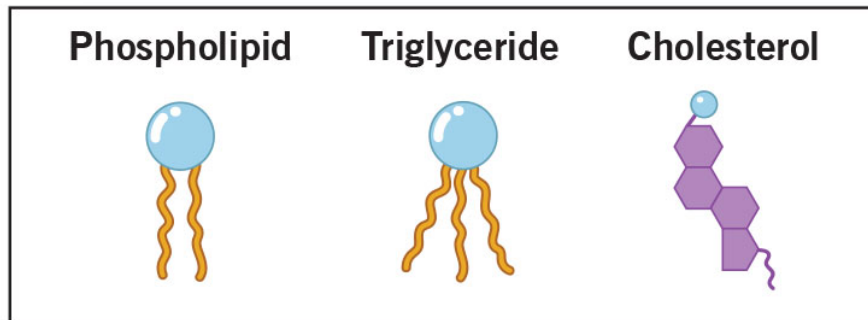
Clasificación de lípidos

De acuerdo con su
función bioquímica

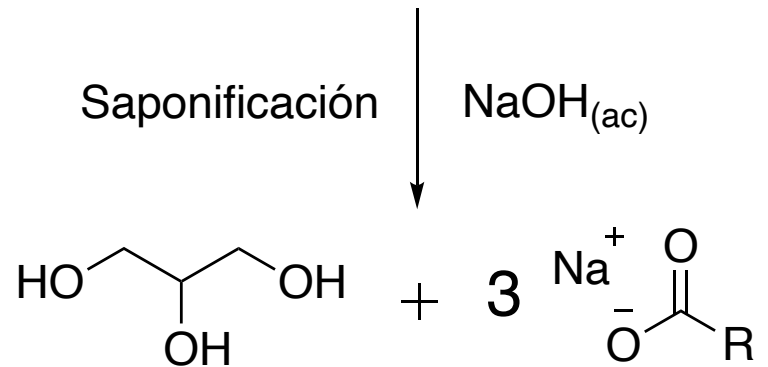
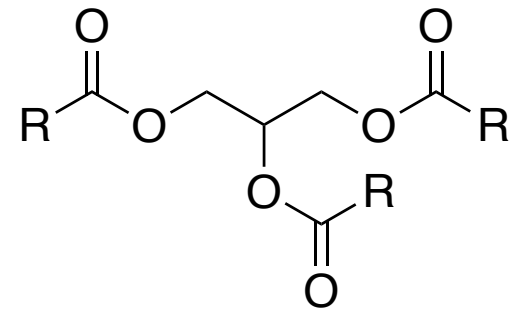


Phospholipid bilayer
(Cell membrane)

Lipids



De acuerdo con su
reactividad química

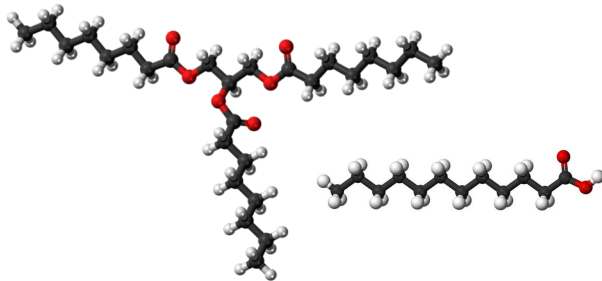


Clasificación de lípidos

De acuerdo con su función bioquímica

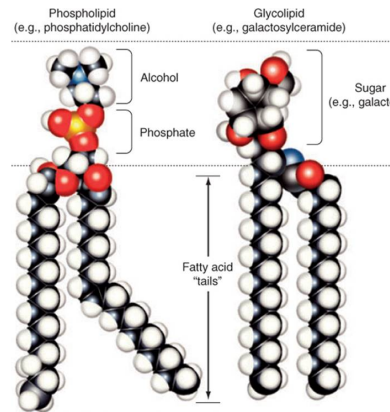
Lípidos de
almacenamiento

-Ácidos grasos
-Triacilgliceroles



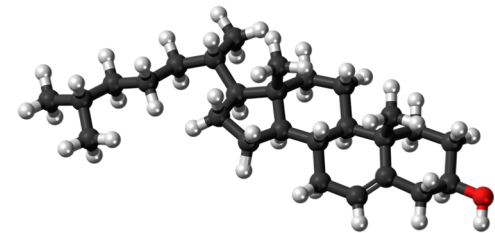
Lípidos
estructurales

-Fosfolípidos
-Glucolípidos



Lípidos
señalizadores
celulares

-Hormonas
esteroidales



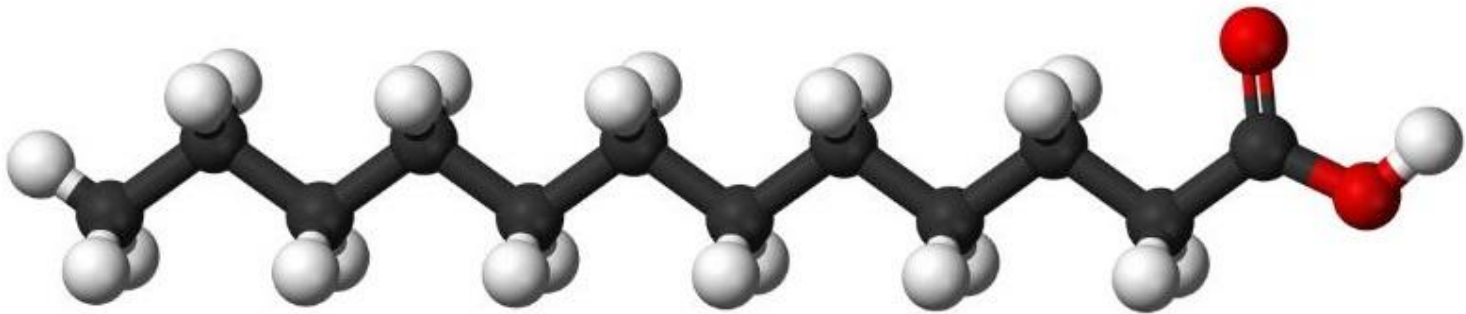
Nelson, D. L., & Cox, M. M. (2009). *Lehninger. Principios de bioquímica*. Ediciones Omega.

Clasificación de lípidos

Lípidos de almacenamiento

Ácidos grasos

Ácidos carboxílicos de C_4 hasta C_{36}



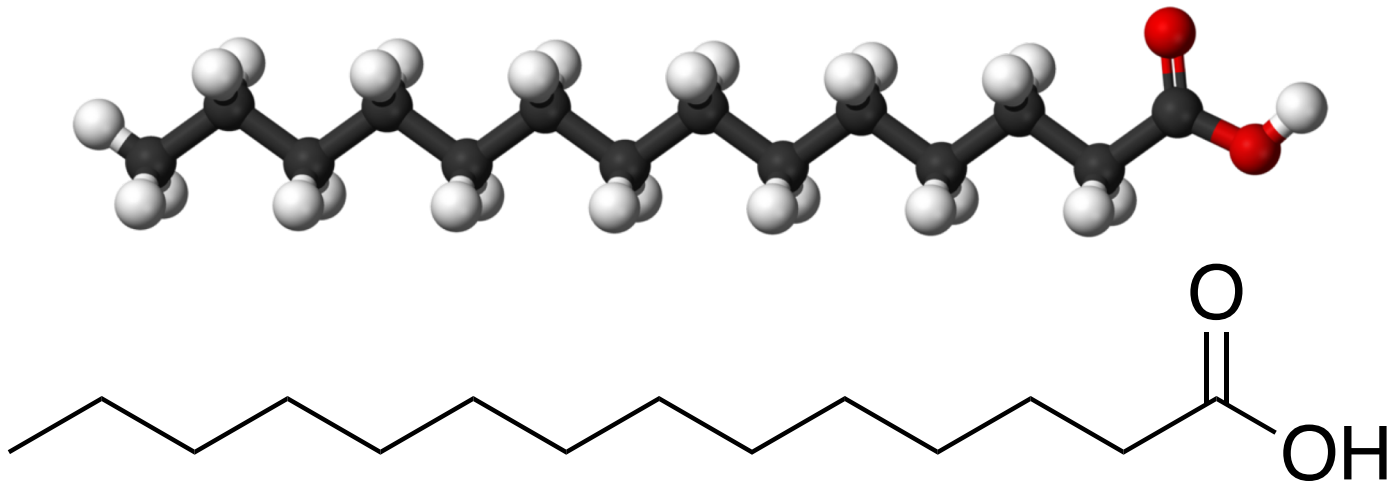
Ácido láurico (Ácido *n*-dodecanoico)

Clasificación de lípidos

Lípidos de almacenamiento

Ácidos grasos

Ácidos saturados



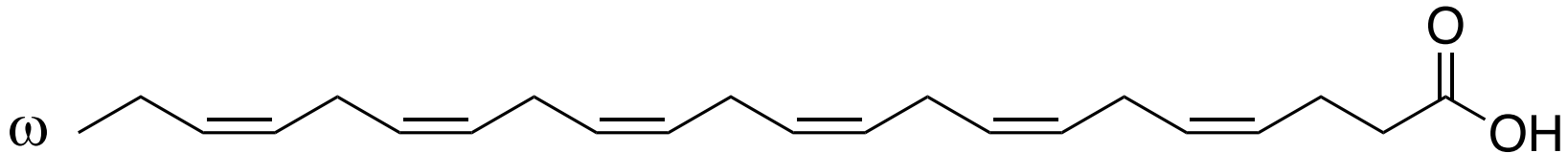
Ácido mirístico (Ácido *n*-tetradecanoico)

Clasificación de lípidos

Lípidos de almacenamiento

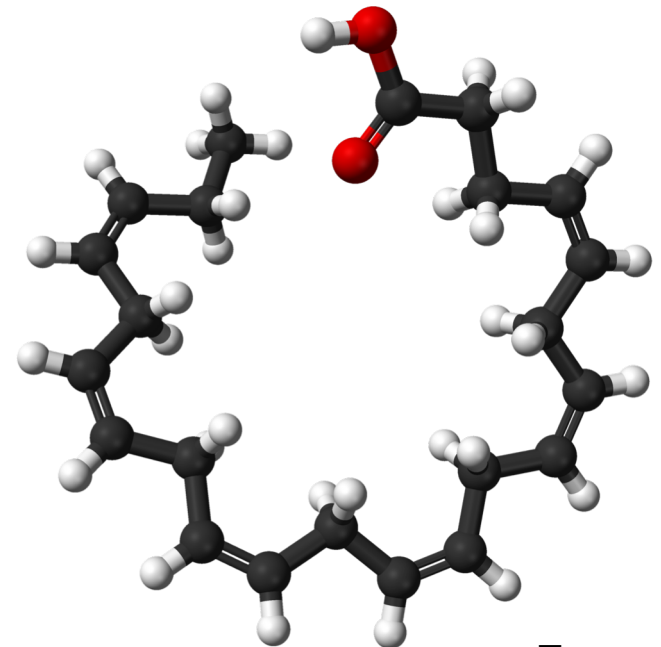
Ácidos
insaturados

Ácidos grasos



Ácido docosahexenoico (DHA)

Omega 3

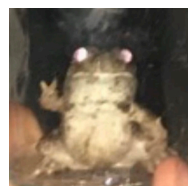
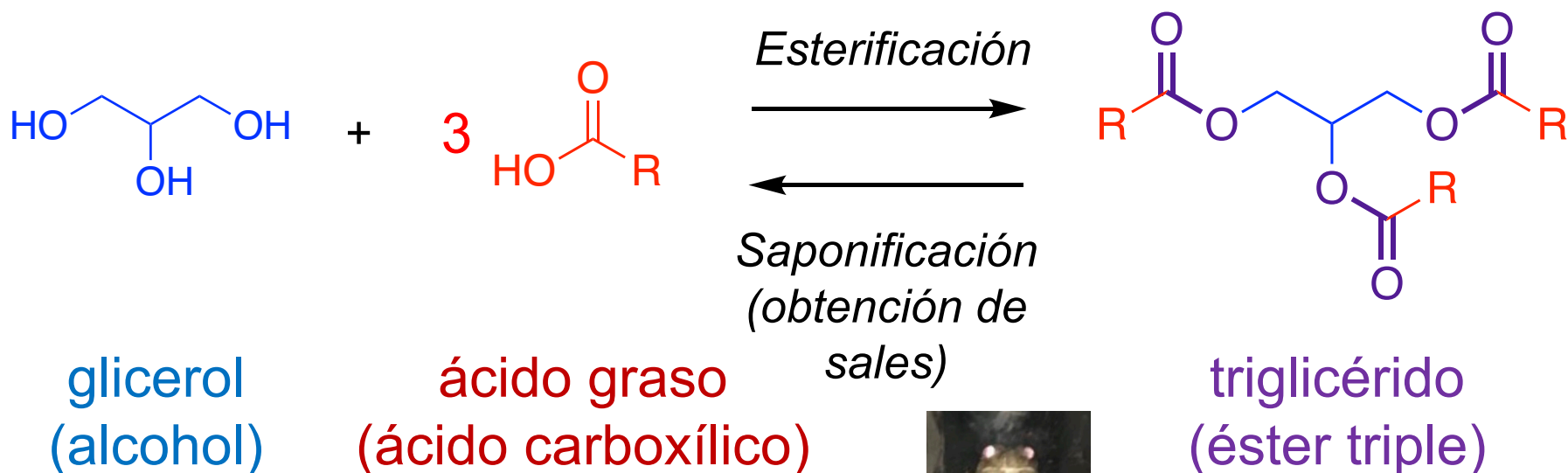


Clasificación de lípidos

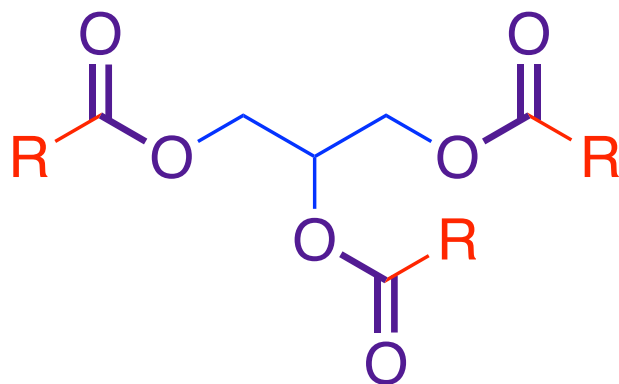
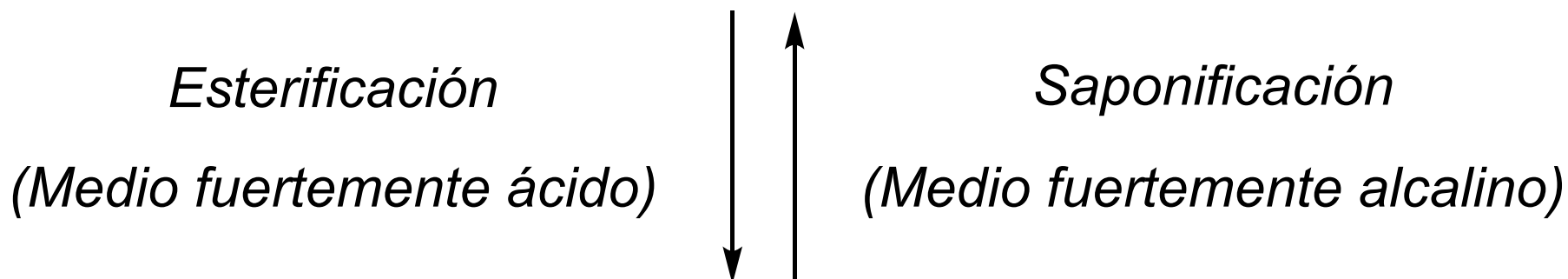
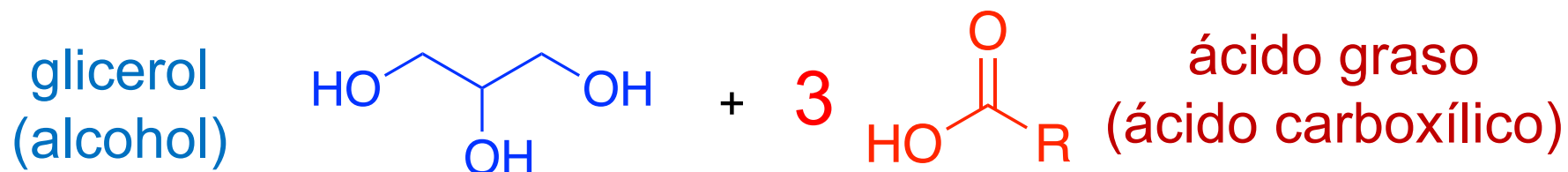
Lípidos de almacenamiento

Triglicéridos (Triacilglicerol)

Ésteres de glicerol con 3 ácidos grasos



Clasificación de lípidos



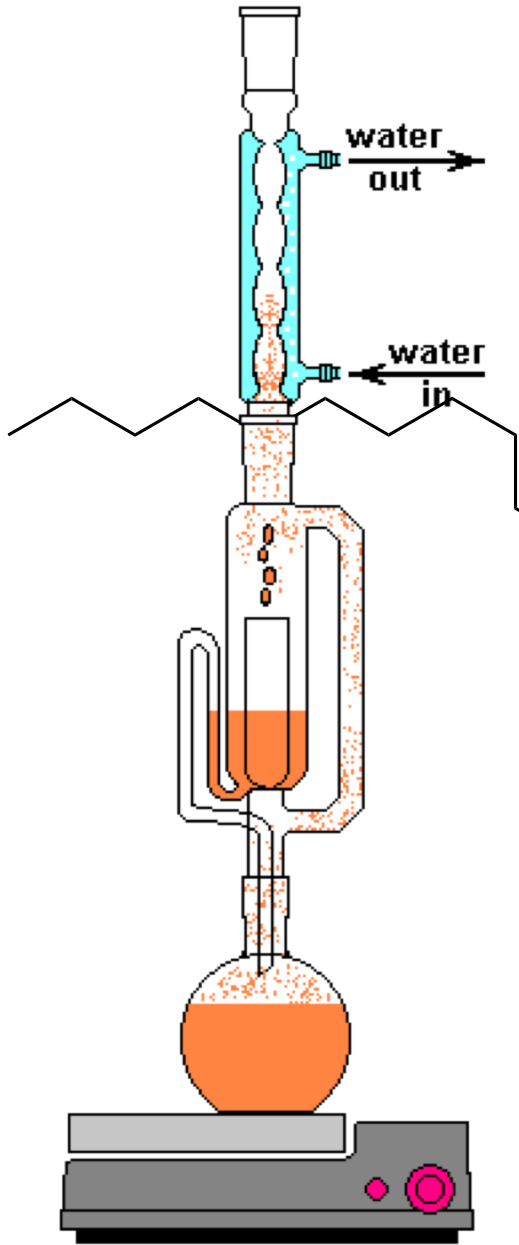
triglicérido (éster triple)

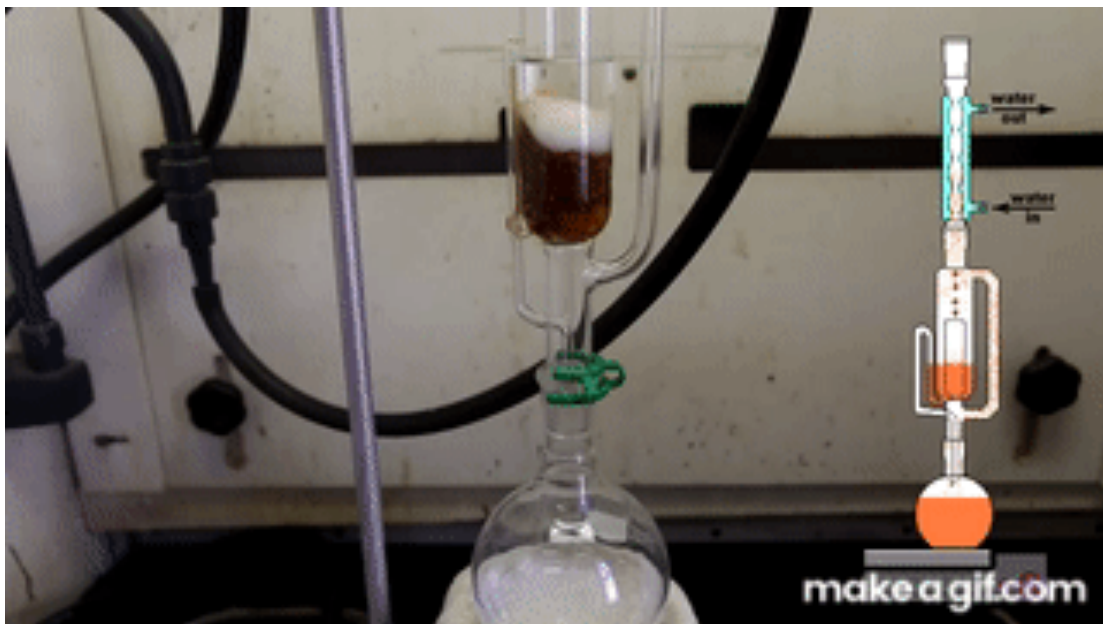
Clasificación de lípidos

Lípidos de almacenamiento

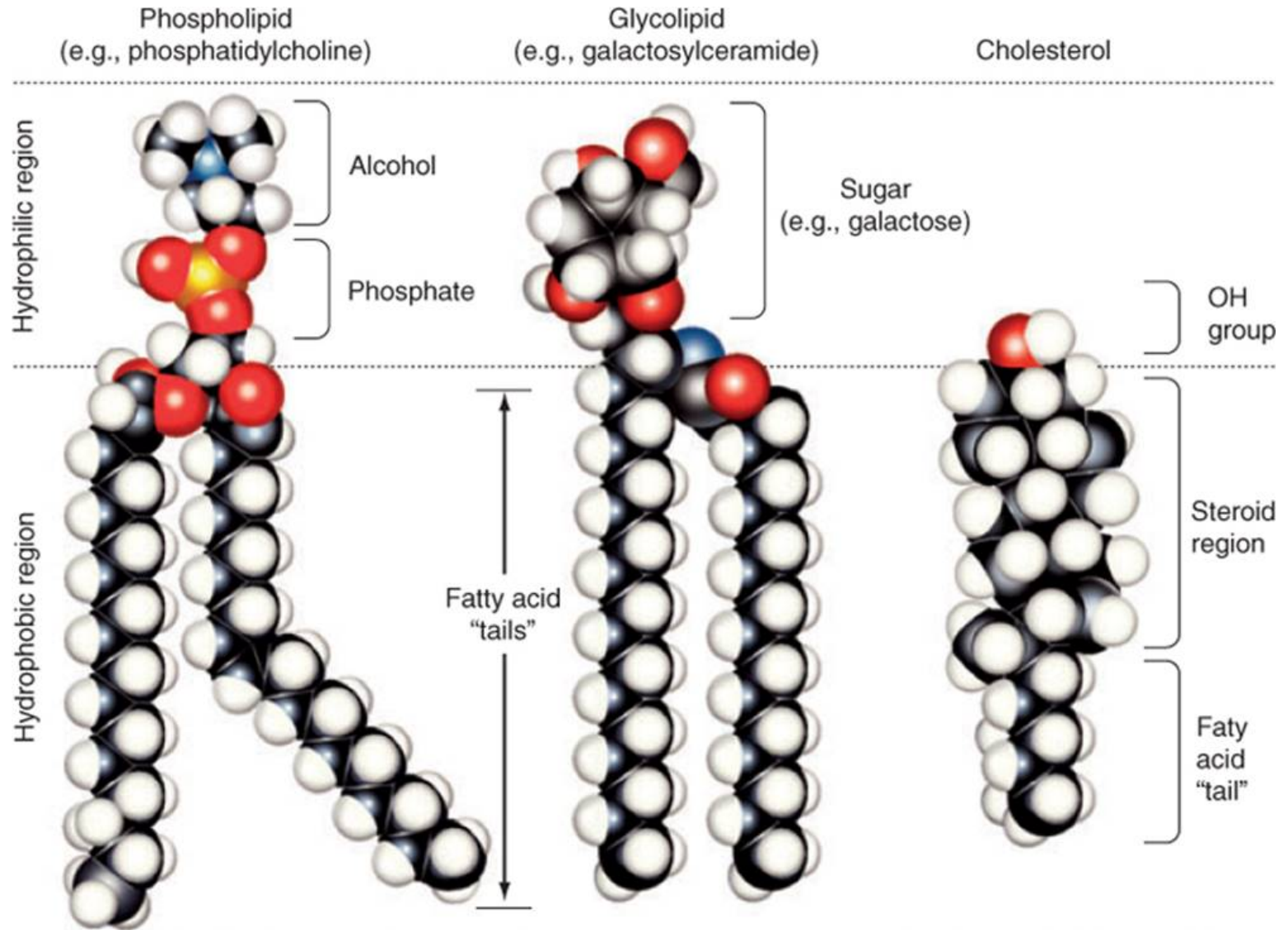
Triglicéridos (Triacilgliceroles)

Trimiristina
(Triglicérido del ácido mirístico)

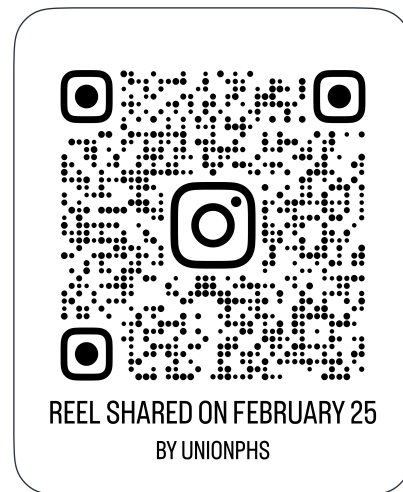
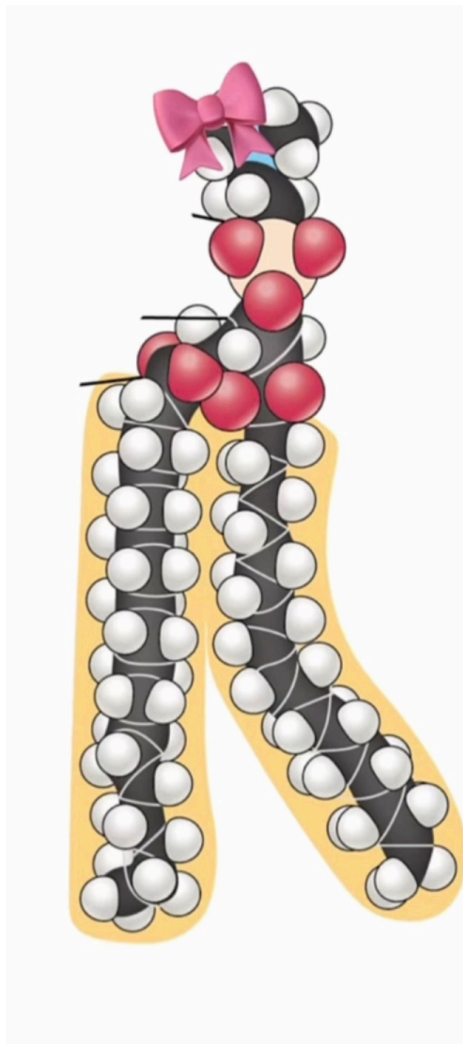
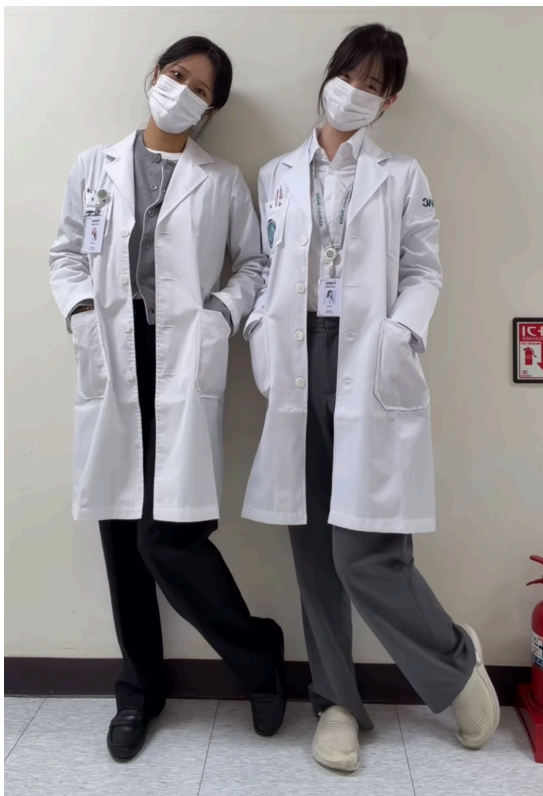




Lípidos estructurales

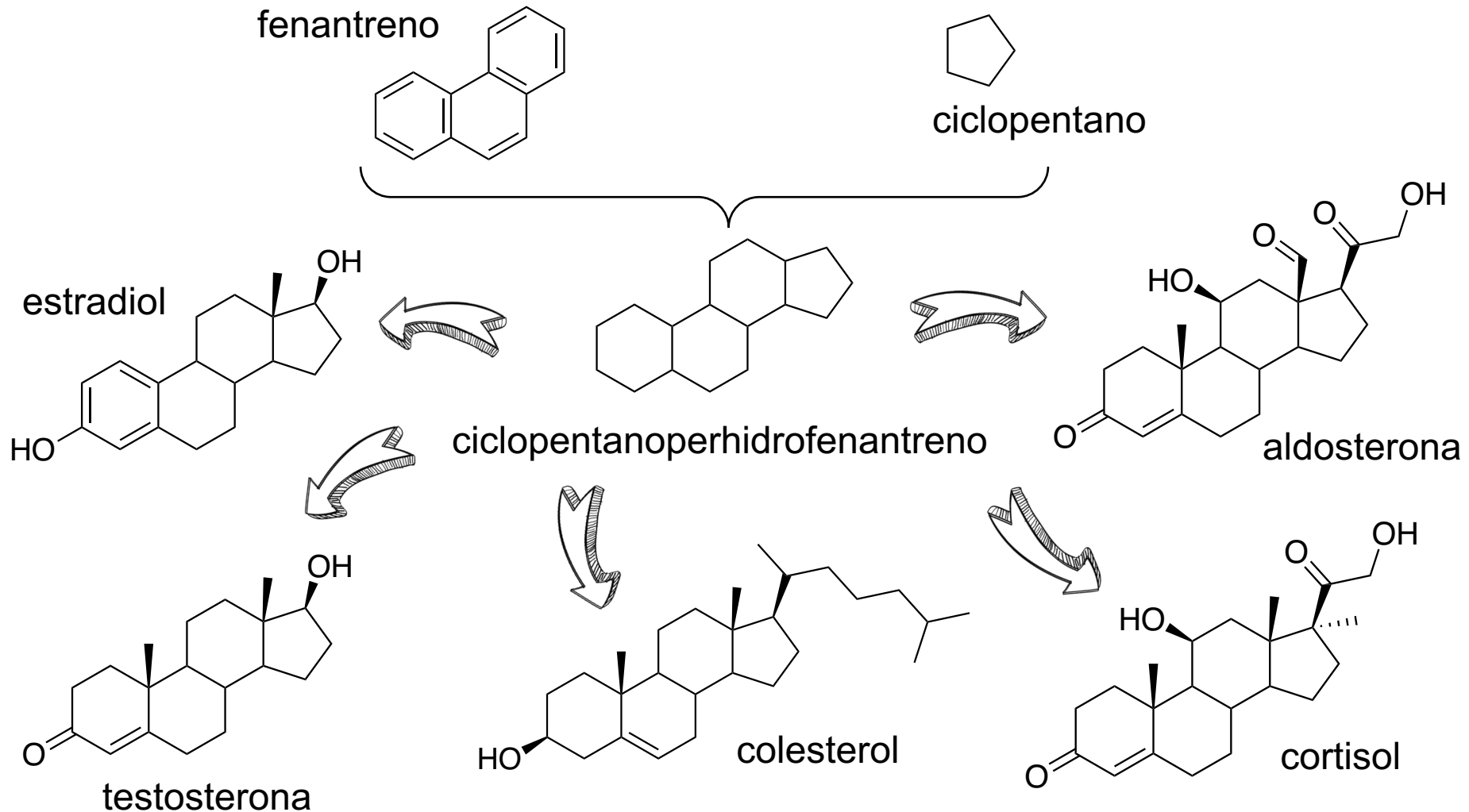


Koeppen & Stanton: Berne and Levy Physiology, 6th Edition.
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Lípidos señalizadores celulares

Hormonas esteroidales



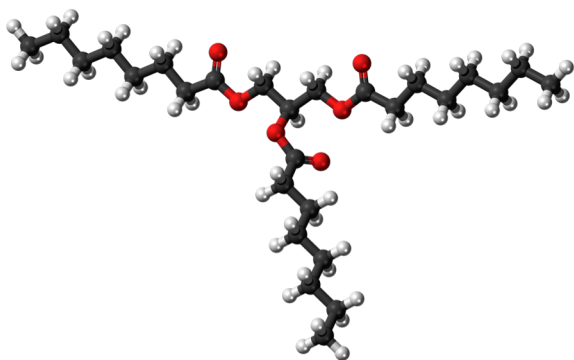
Clasificación de lípidos

De acuerdo con su reactividad química

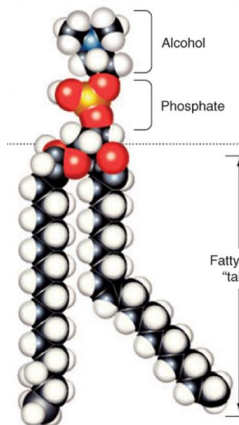
Lípidos
saponificables

Lípidos
no saponificables

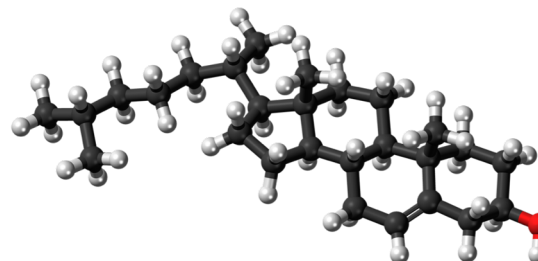
Triacilglicerolos



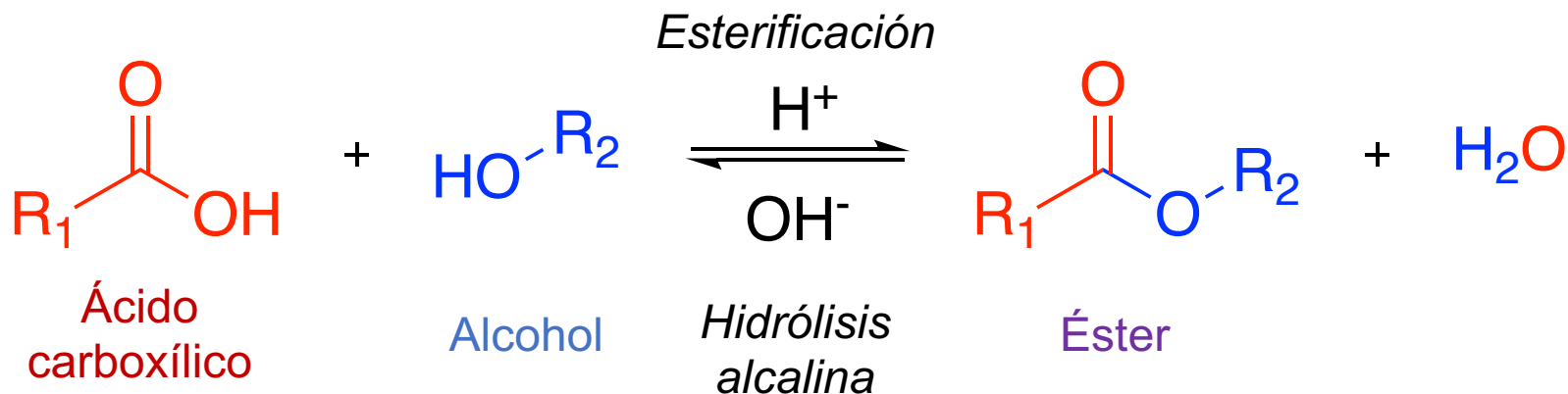
Fosfolípidos



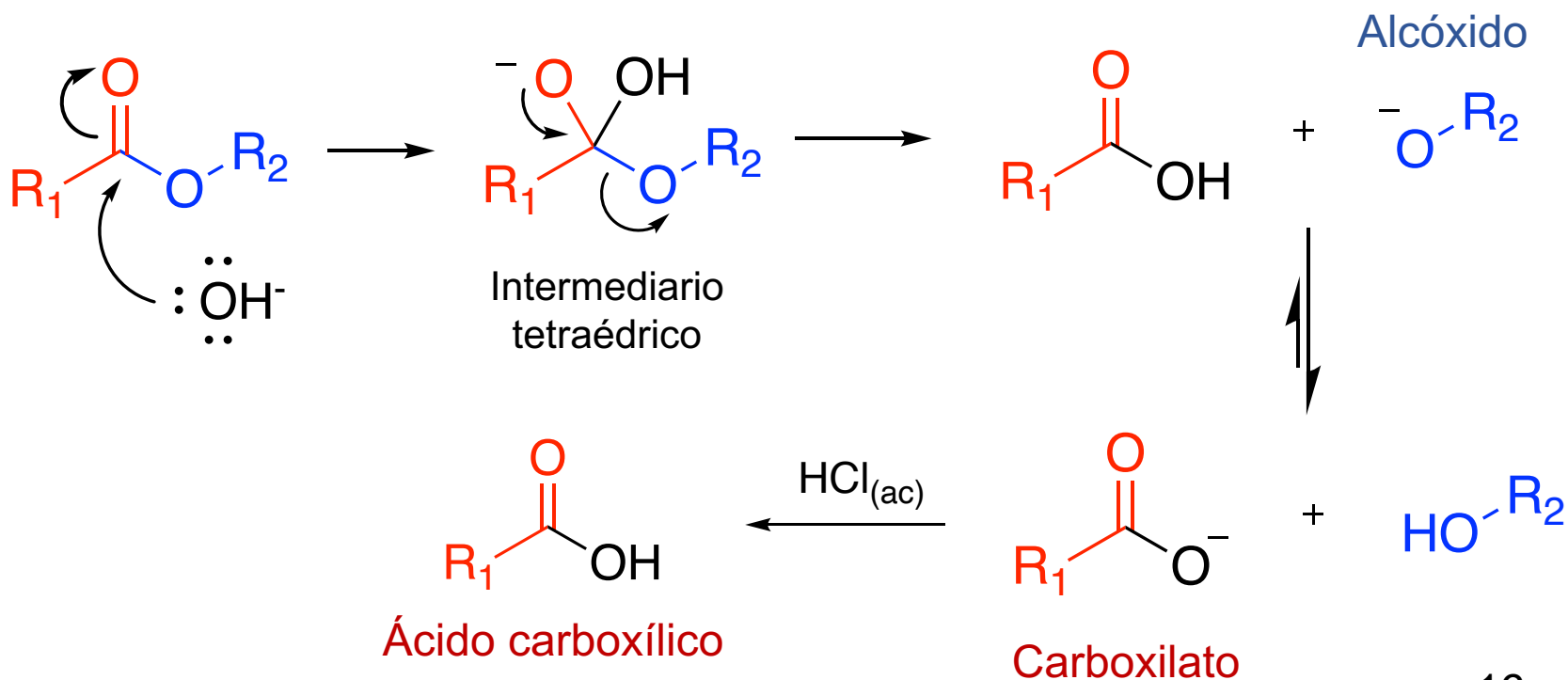
Hormonas esteroideas



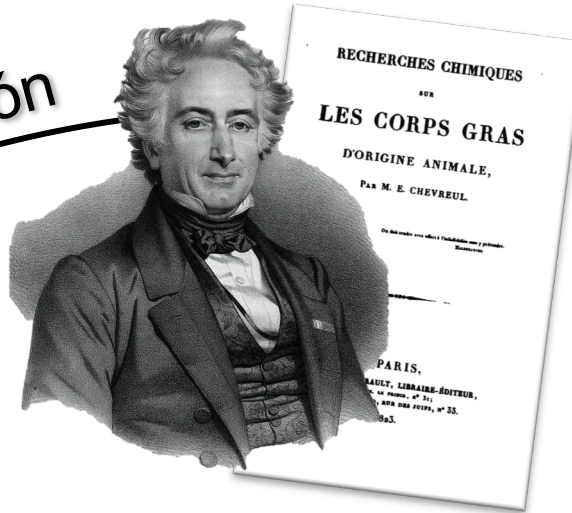
'lipids' in *IUPAC Compendium of Chemical Terminology*, 5th ed. International Union of Pure and Applied Chemistry; 2025. Online version 5.0.0, 2025. <https://doi.org/10.1351/goldbook.L03571>



Mecanismo de hidrólisis alcalina



Michel Eugène Chevreul
(1786-1889)

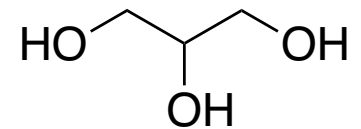


Saponificación

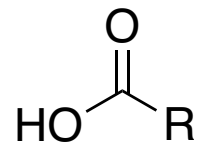
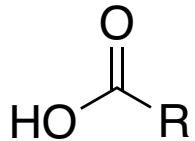
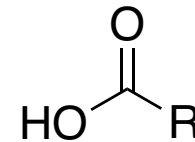
1809

El proceso de saponificación termina en las sales*

Glicerol



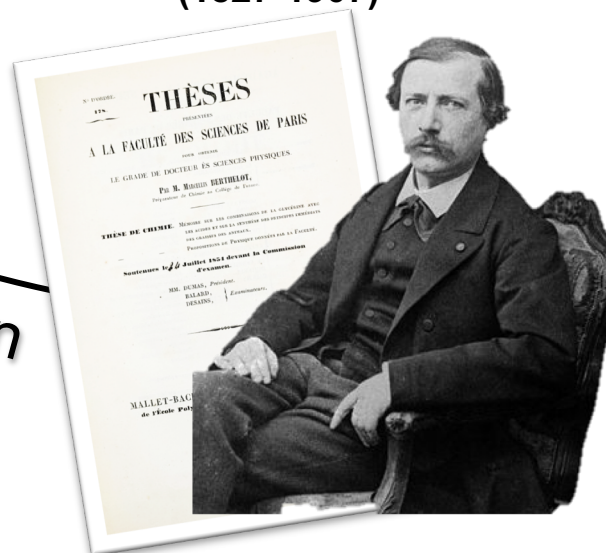
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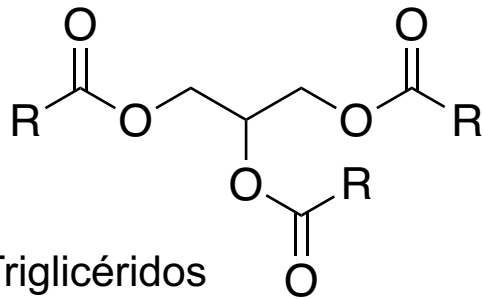
Ácidos grasos

1854

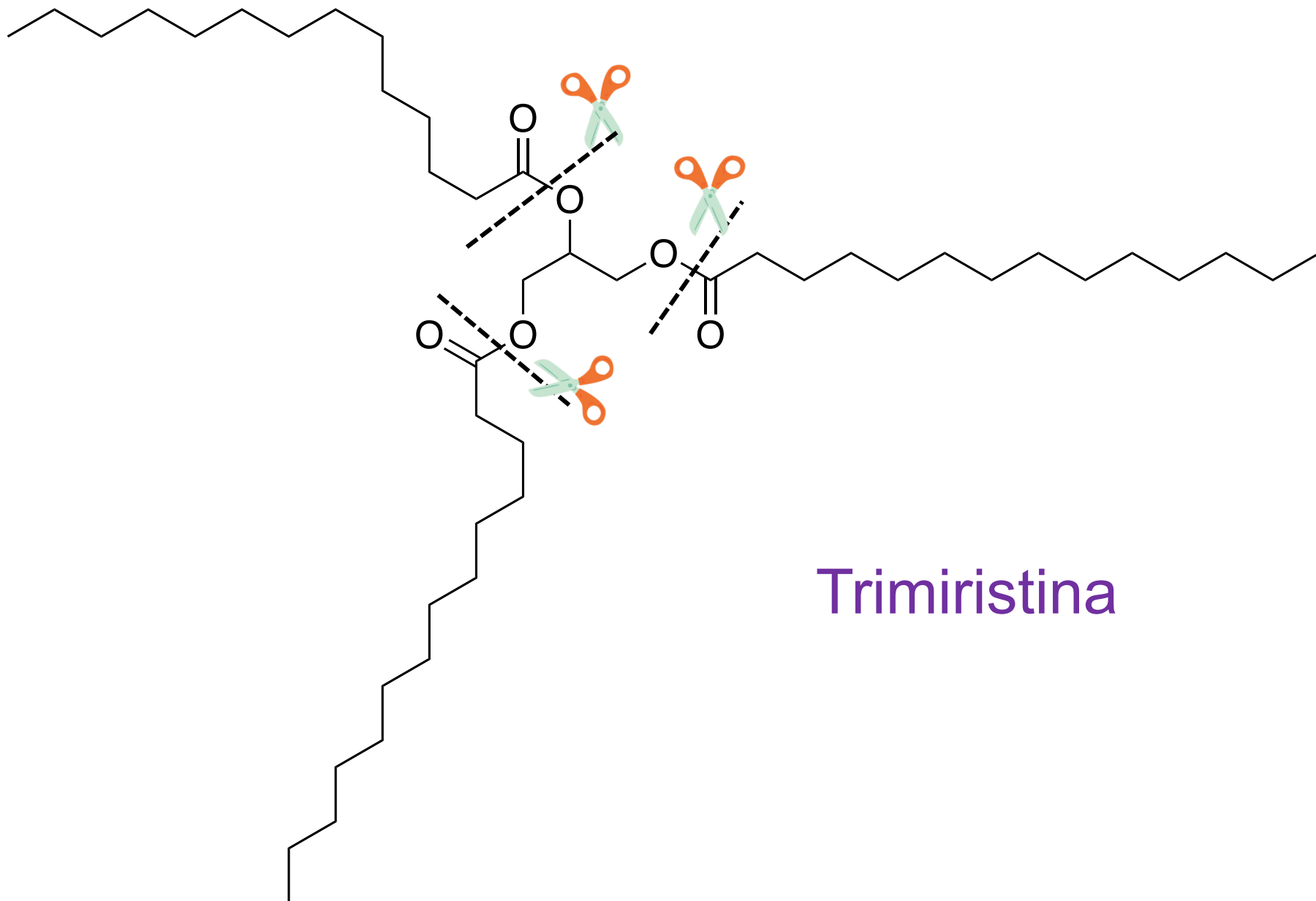
Marcellin Pierre Eugène Berthelot
(1827-1907)



Esterificación

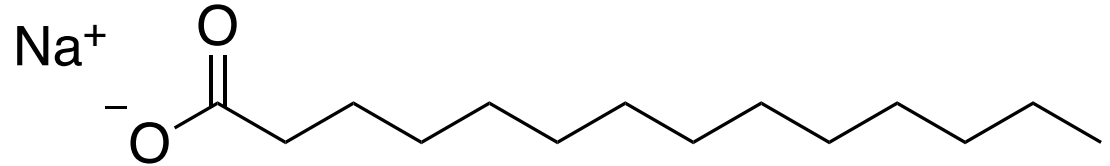


Triglicéridos de aceites y grasas

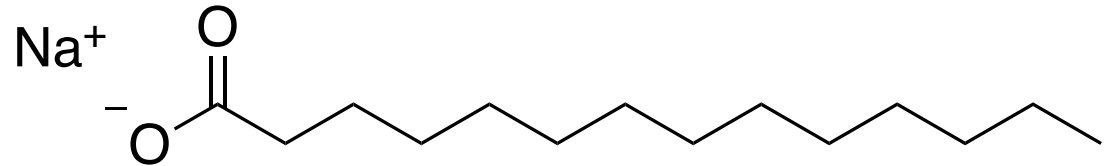
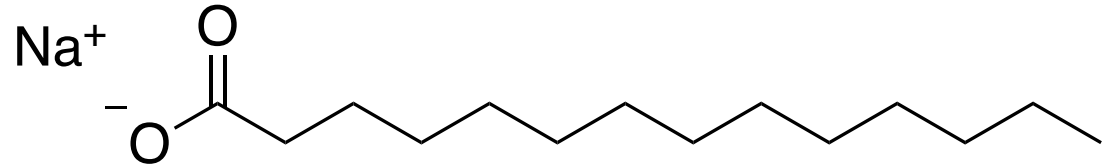
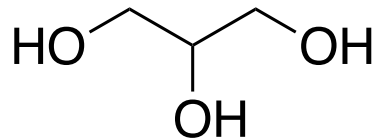


Trimiristina

Miristato de sodio

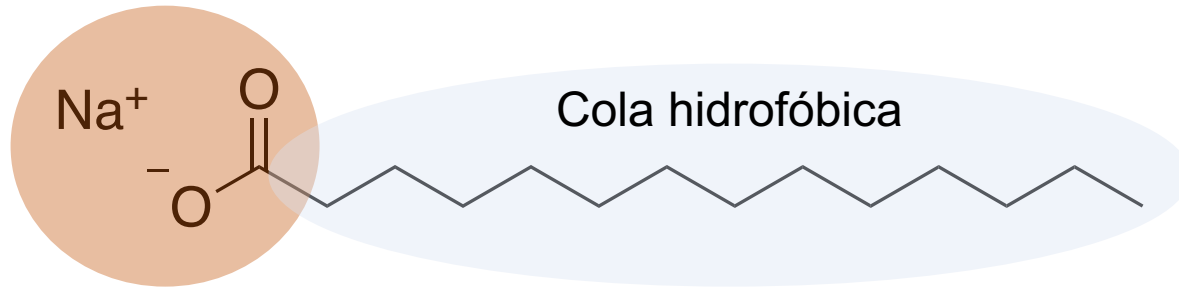


Glicerol



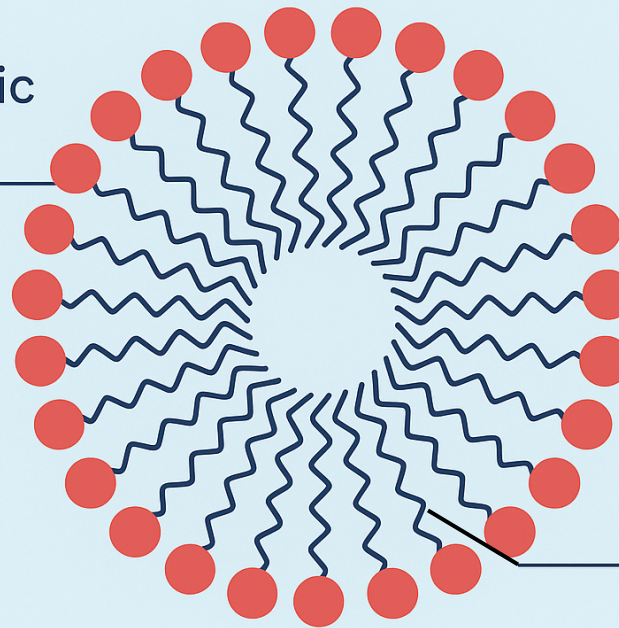
Sales de ácidos grasos (jabones)

Cabeza
hidrofílica



Micelle

Hydrophilic
head



Hydrophobic
tail



