

# LIPIDI

I lipidi sono composti eterogenei la cui proprietà comune è l'**insolubilità** in acqua.

## **Diversi tipi di lipidi:**

- Acidi grassi
- Lipidi di riserva
- Lipidi di membrana

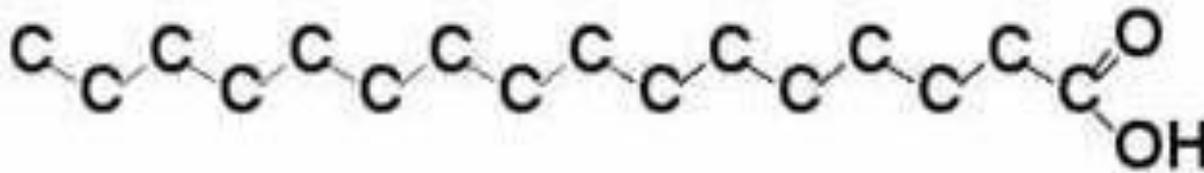
## **Altre molecole di natura lipidica**

- Ormoni (es. ormoni steroidei, ormoni tiroidei)
- Vitamine
- Cofattori

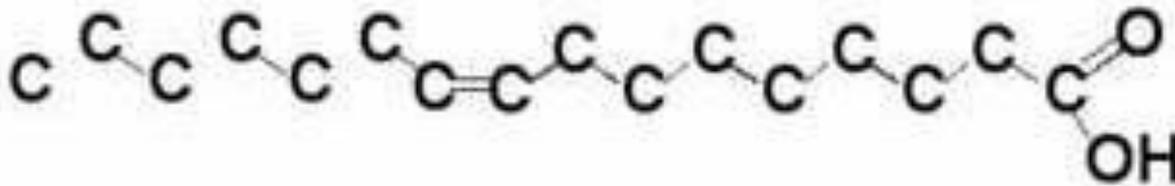
# ACIDI GRASSI

acidi carbossilici con catena idrocarburica

saturo



insaturo



# ACIDI GRASSI: ACIDI CARBOSSILICI CON CATENA IDROCARBURICA

## Nomenclatura acidi grassi

Estremità metilica

Estremità carbossilica



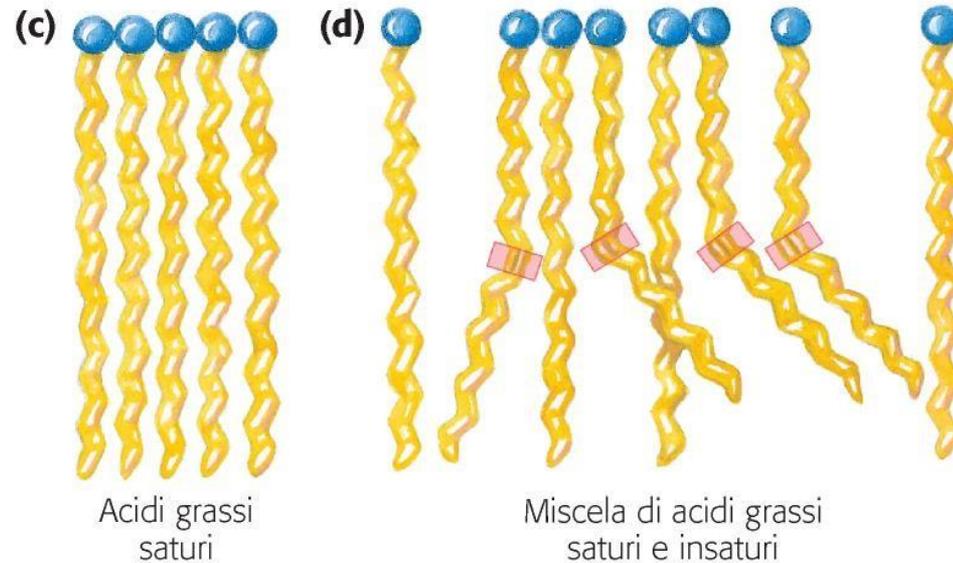
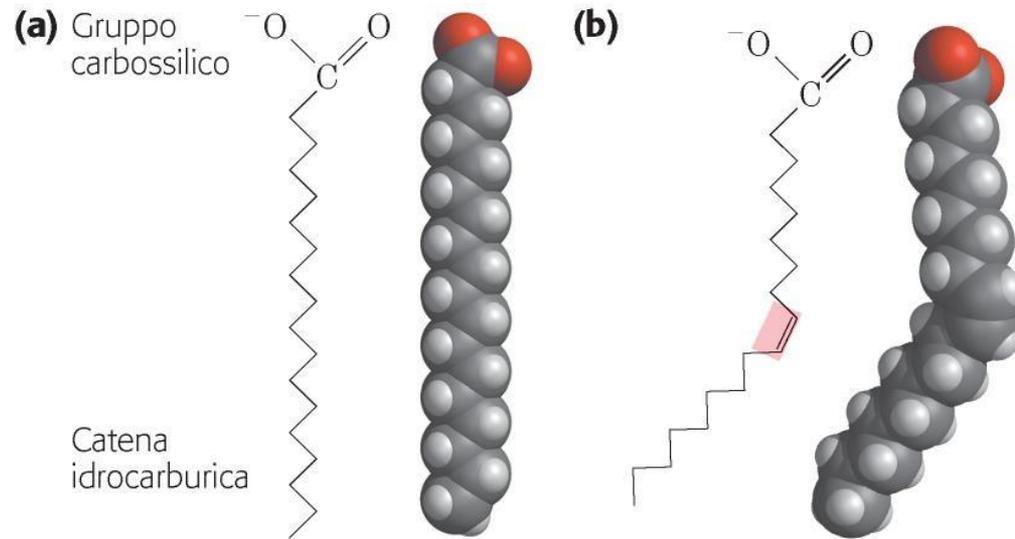
carbon numbering system

n n-1 n-2 n-3 4 3 2 1

omega designation system

$\omega$ 1  $\omega$ 2  $\omega$ 3  $\gamma$   $\beta$   $\alpha$

# Acidi grassi

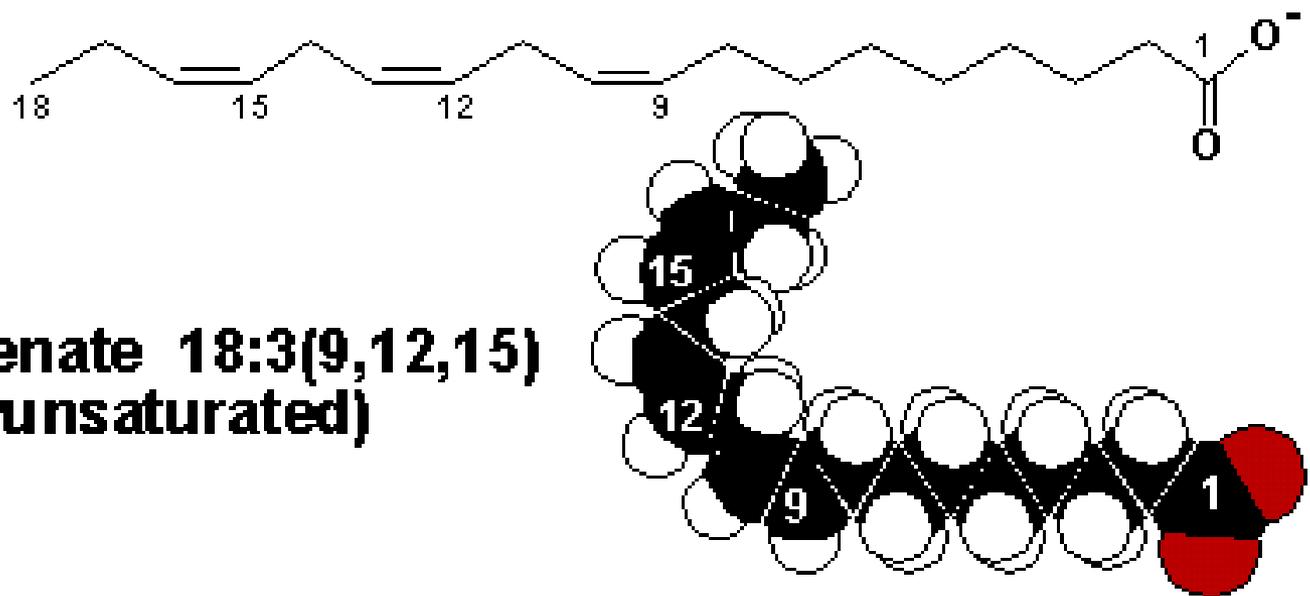


# Structure of Some Fatty Acids

**palmitate 16:0  
(saturated)**



**linolenate 18:3(9,12,15)  
(polyunsaturated)**



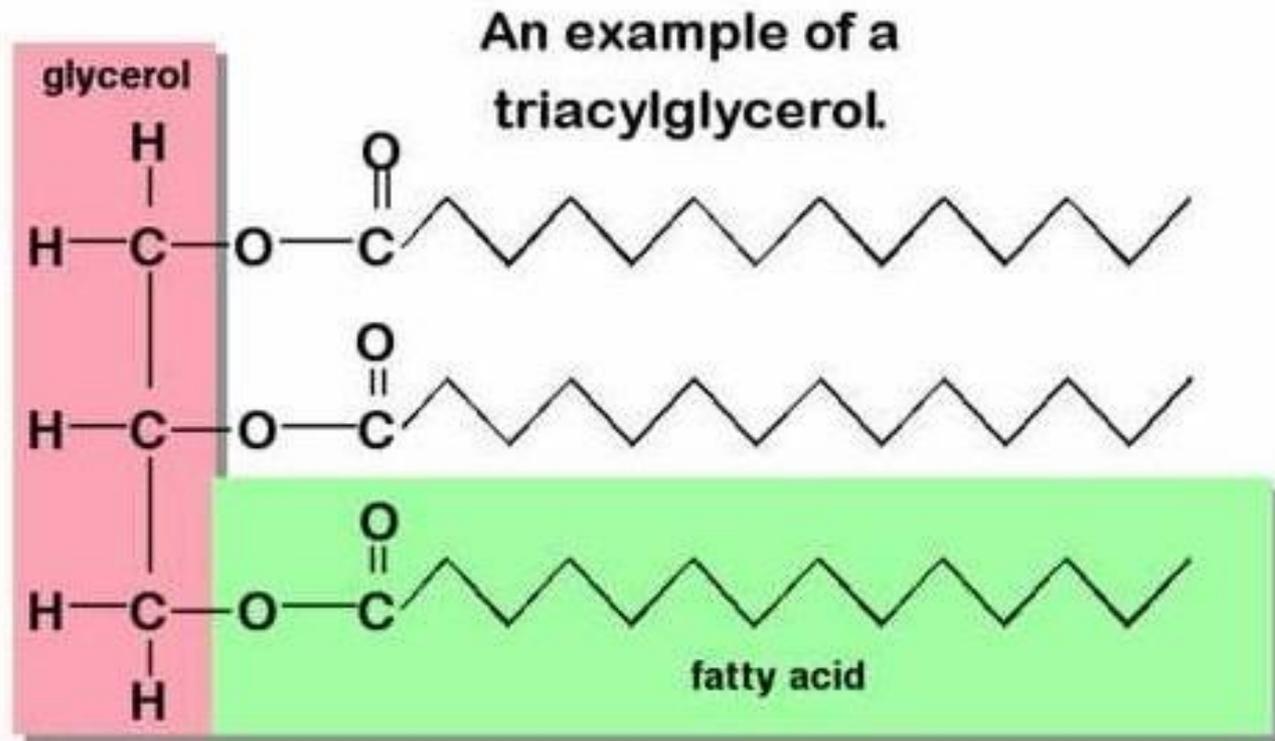
# I triacilgliceroli trigliceridi, lipidi neutri, "grassi"

Sono lipidi non polari, idrofobici

Sono una **riserva energetica** e forniscono un isolamento termico.

Sono conservati in grande quantità negli **adipociti** sotto forma di gocce di grasso

# TRIGLICERIDE O TRIACILGLICEROLO



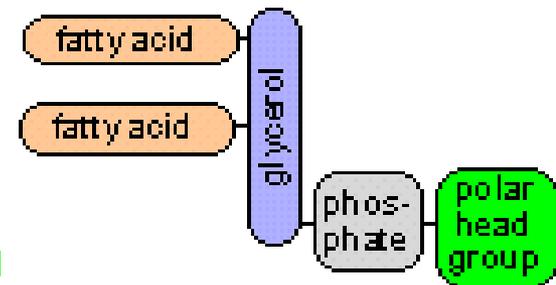
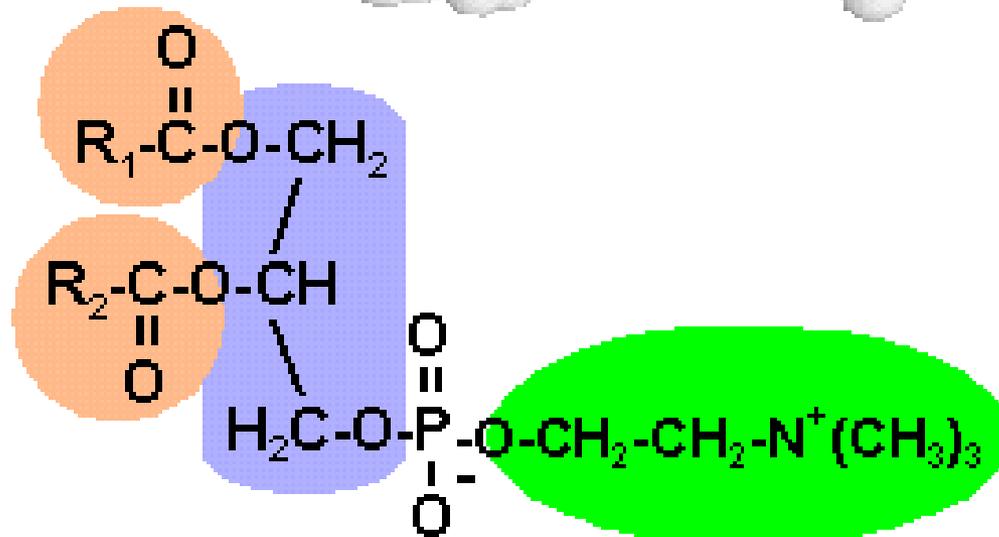
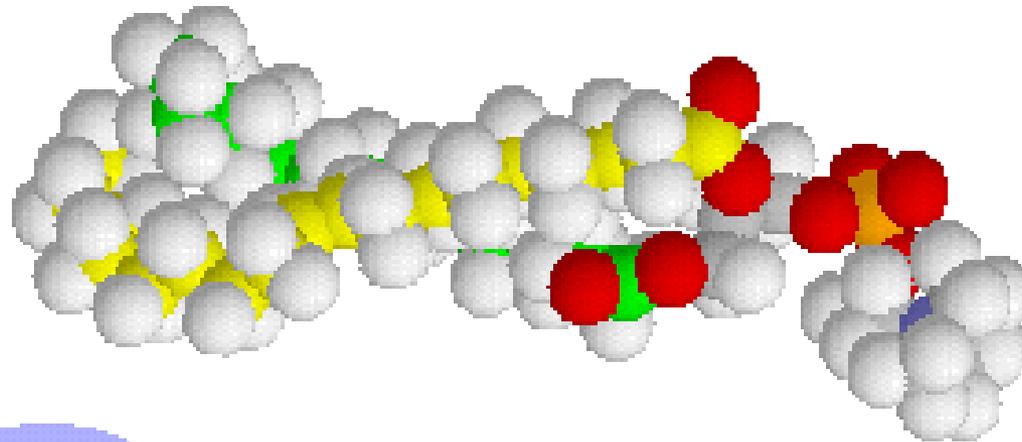
# Lipidi strutturali delle membrane

Sono molecole anfipatiche: una estremità della molecola è idrofobica e l'altra è idrofilica

- Glicerofosfolipidi
- Sfingolipidi
- Steroli

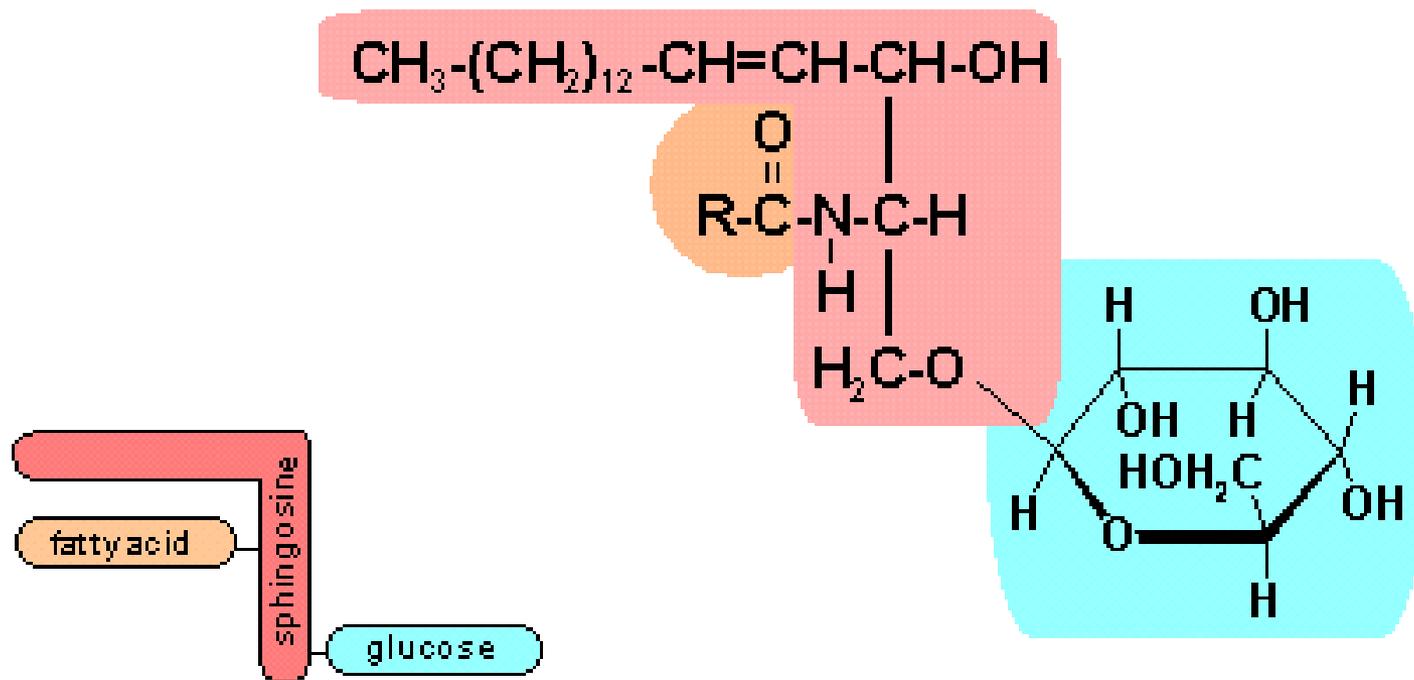
# Structure of a Glycerolipid

phosphatidylcholine, a typical glycerophospholipid

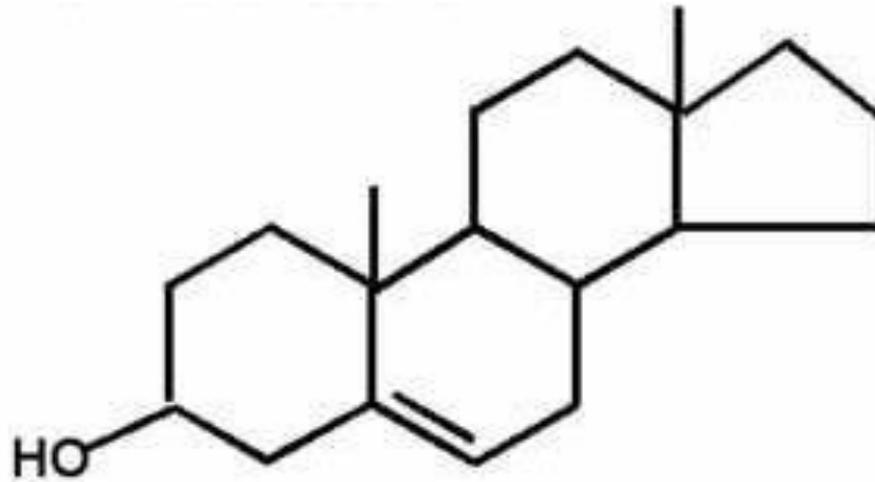


# Structure of a Sphingolipid

glucosylceramide, a typical glycosphingolipid



# STEROLI

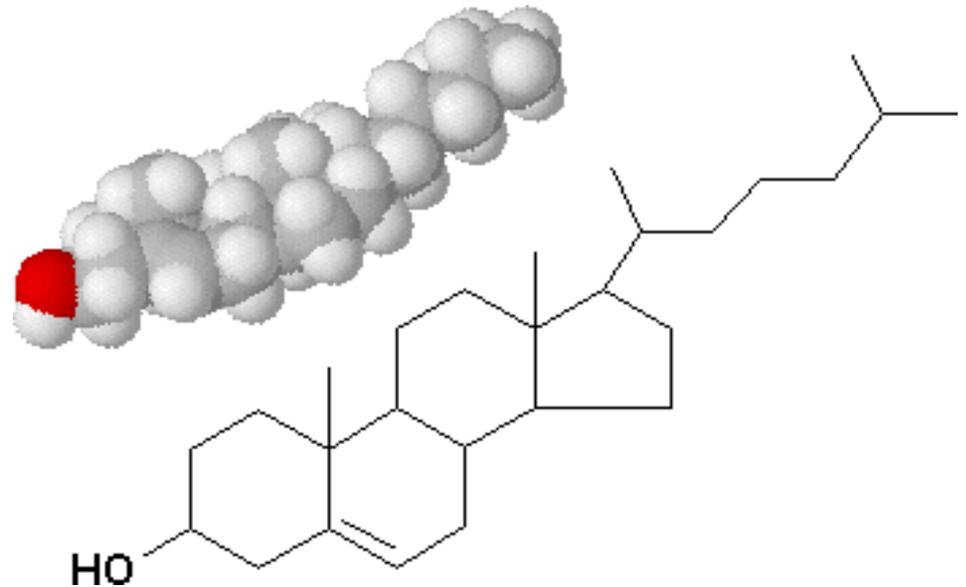


# COLESTEROLO

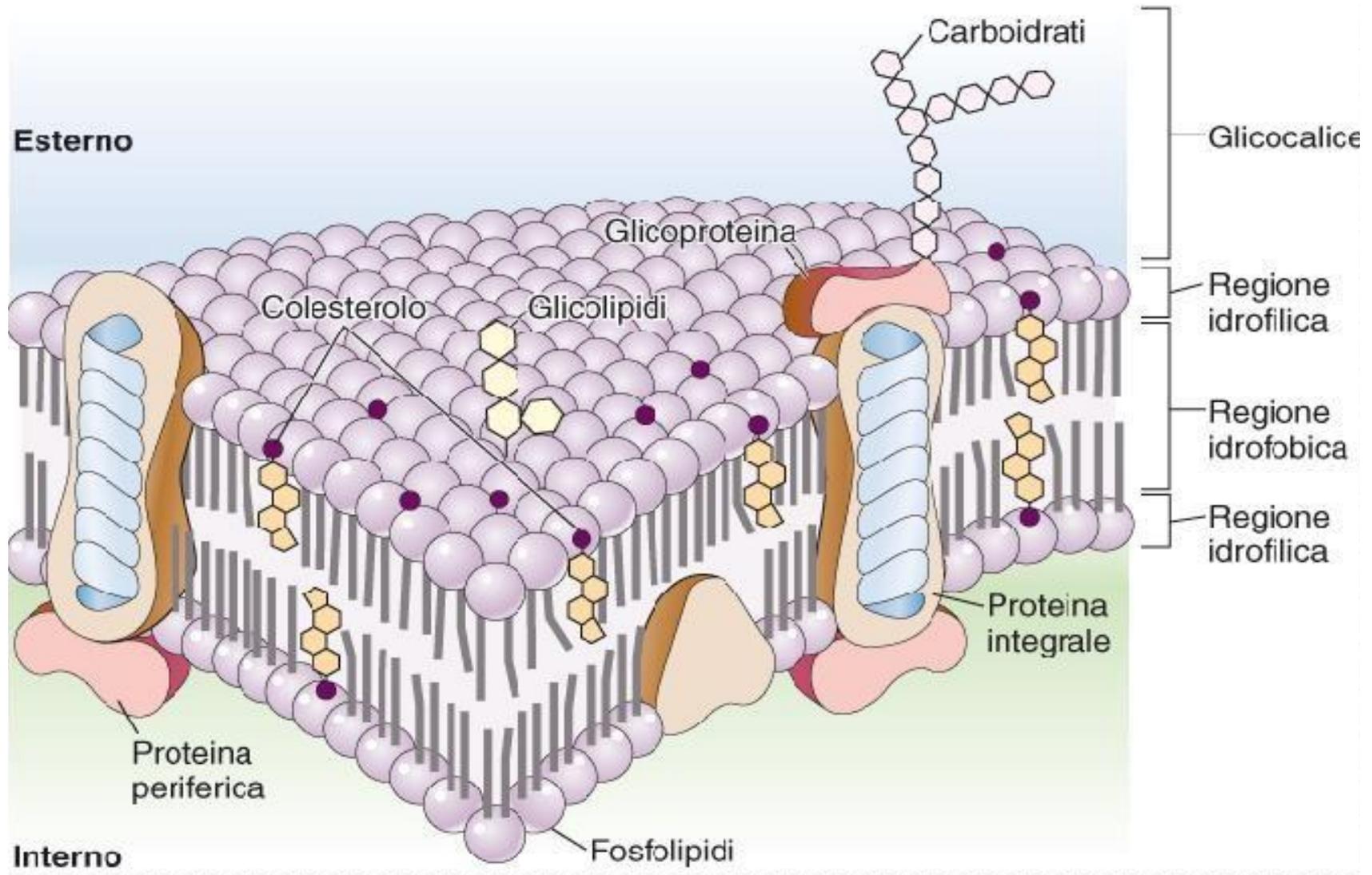
• **Componente delle membrane**

• **Precursore di**

- **Ormoni steroidei**
- **Acidi biliari**
- **Vitamina D**



# Modello di membrane biologiche



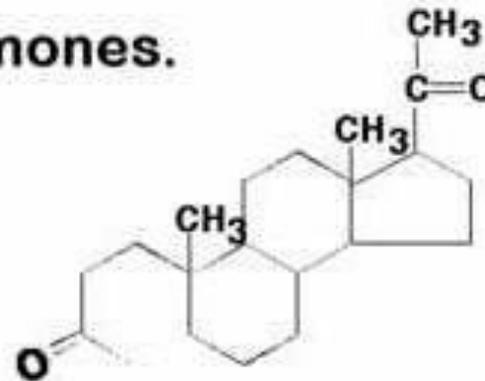
# STEROIDI

## derivati degli steroli

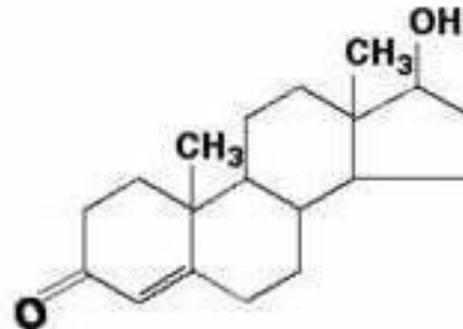
- ormoni** prodotti dalla **corteccia surrenalica**
- ormoni sessuali** prodotti dalle **gonadi**

Some reproductive hormones.

progesterone

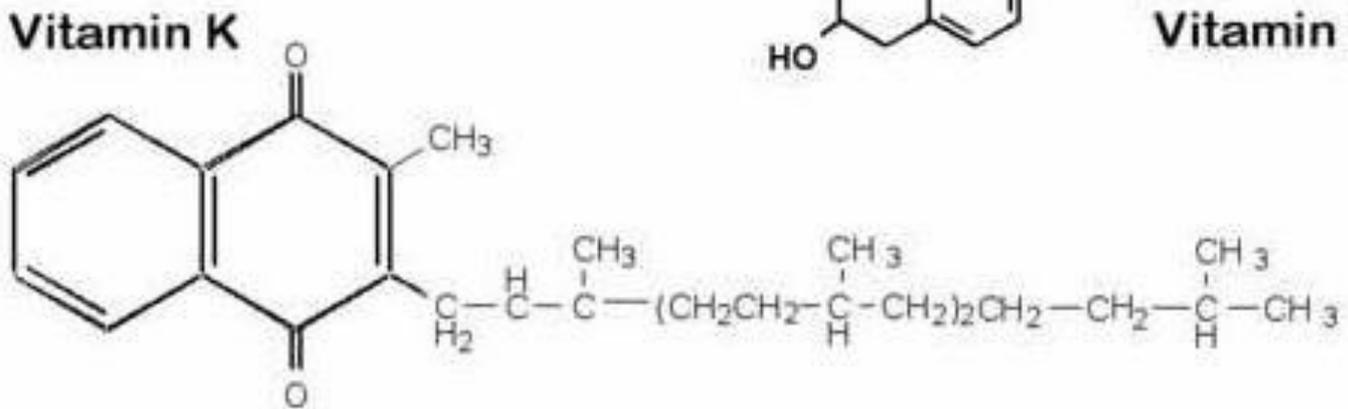
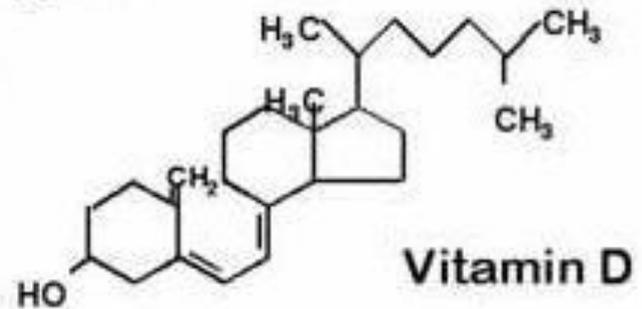
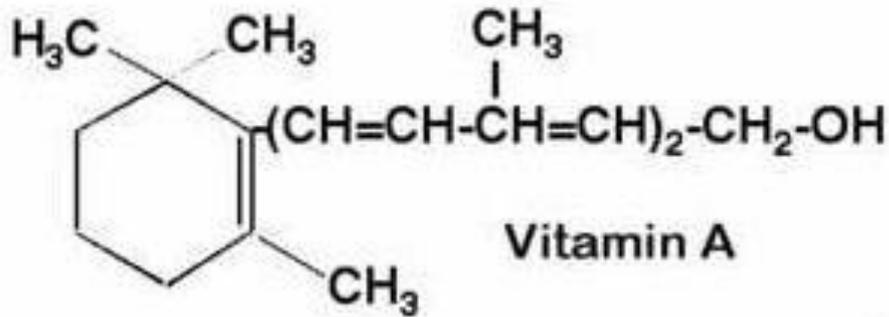


testosterone



# VITAMINE LIPOSOLUBILI

Vitamine A, E, D, K



# TRASPORTO DEI LIPIDI nel sangue

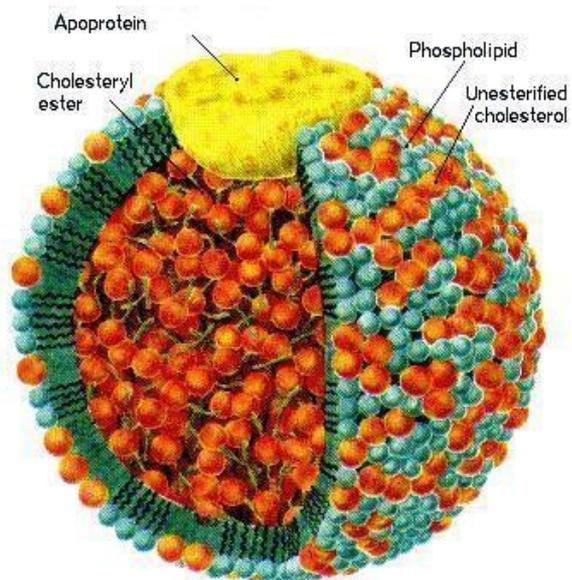
I lipidi sono molecole non solubili o scarsamente solubili in acqua.

Per essere **trasportati** in circolo vengono **veicolati da proteine**

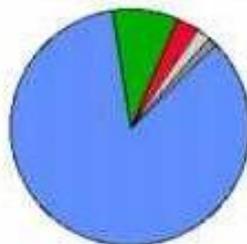
- albumina (acidi grassi)
- lipoproteine (trigliceridi, colesterolo, esteri del colesterolo, fosfolipidi)

# LE LIPOPROTEINE

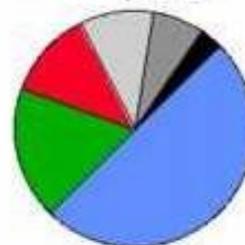
Funzione principale: trasporto dei lipidi nel sangue.



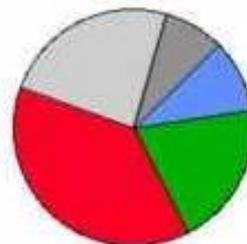
Chylomicron



VLDL



LDL



HDL

