

# Lipídeos

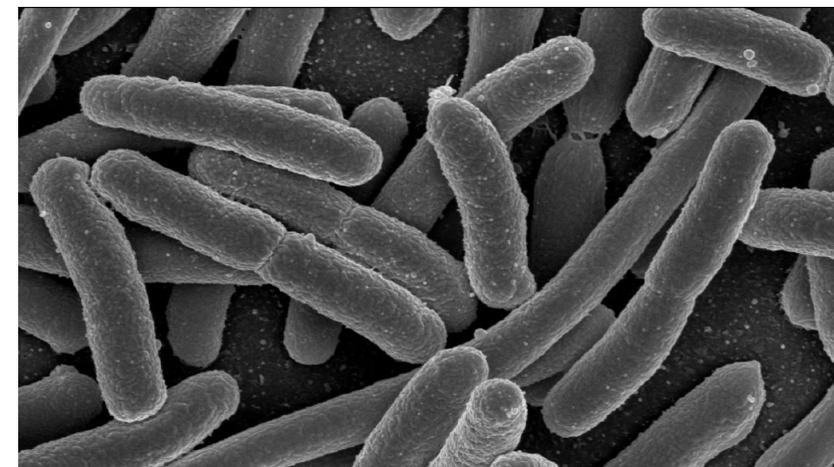
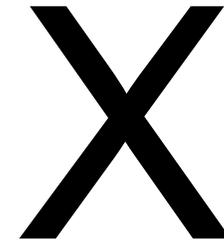
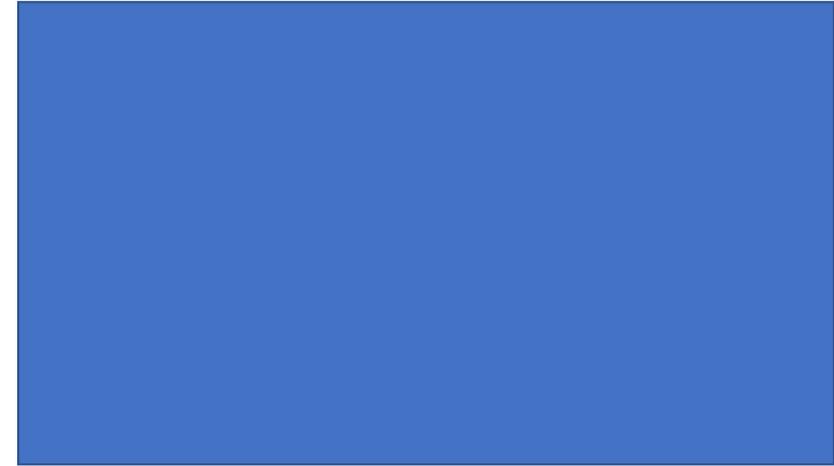


Membranas

Carlos Hotta

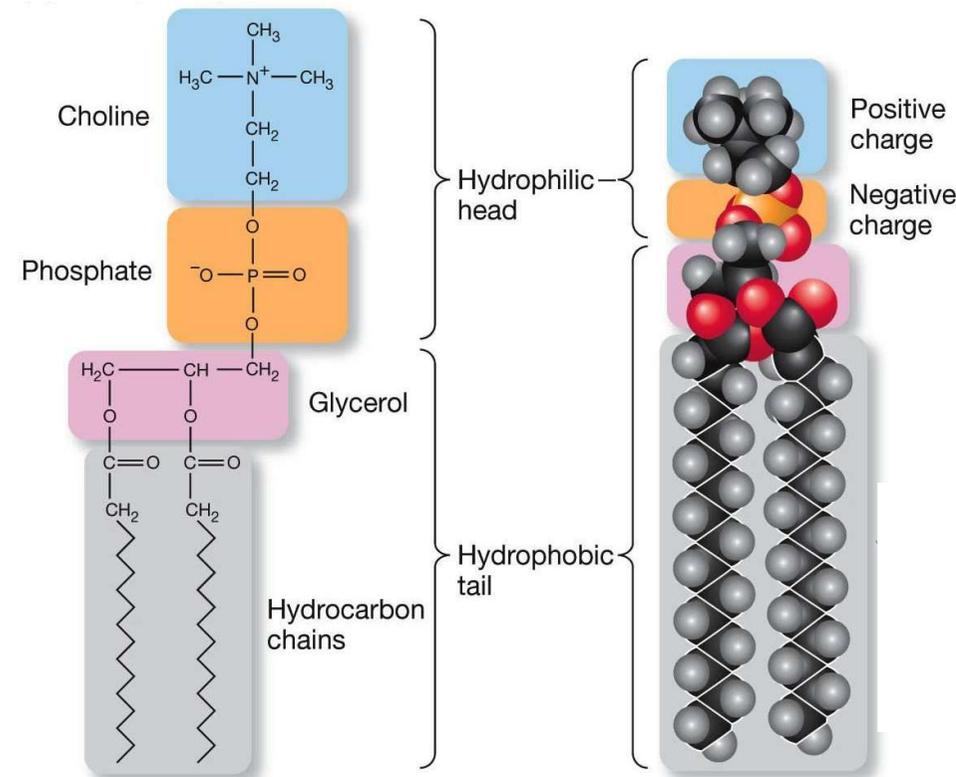
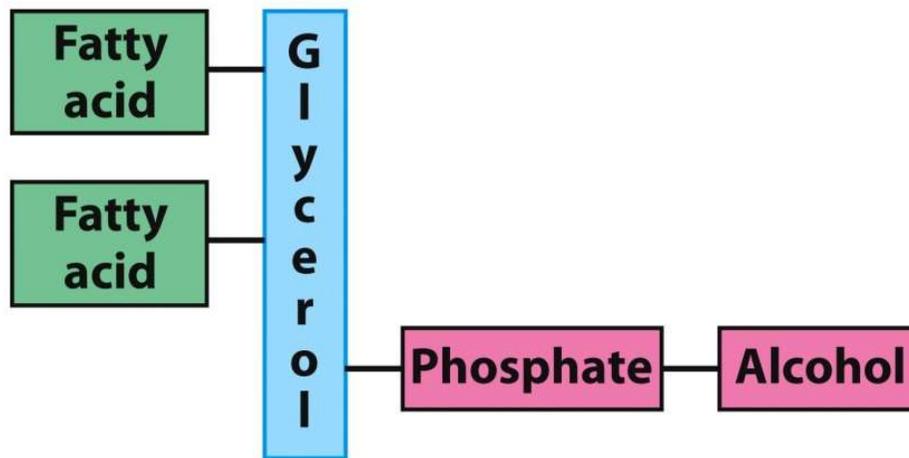
# A composição molecular das células

Componentes	Bactérias (% peso)	Humanos (% peso)
H <sub>2</sub> O	70	65
Proteínas	15	20
Ácidos Nucleicos:		
DNA	1	0,1
RNA	6	1
Polissacarídeos e precursores	3	0,5
Lipídeos e precursores	2	12
Outras moléculas orgânicas	1,5	0,4
Íons inorgânicos	1,5	1

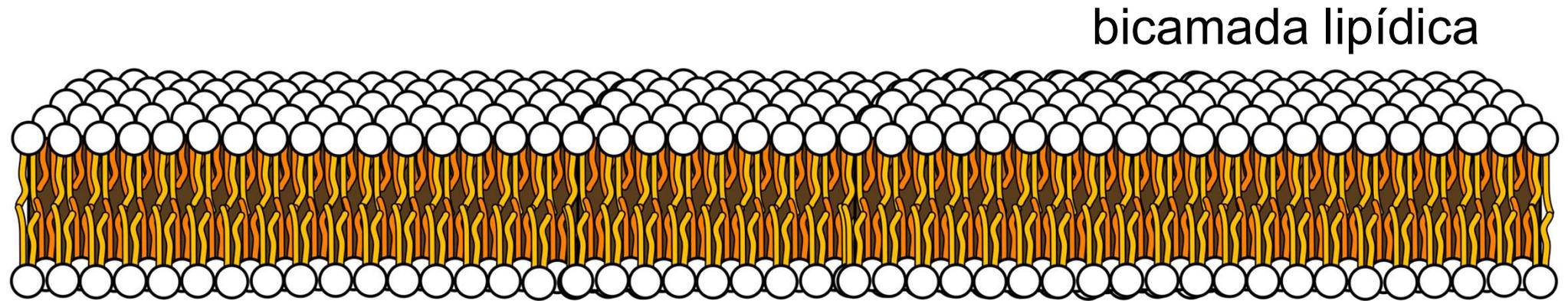
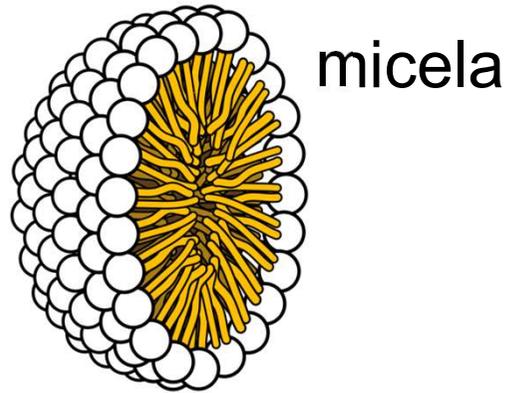


# Tipos de lipídeos: III. fosfolipídeos

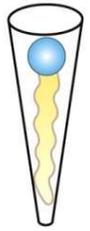
- Diacilgliceróis que possuem um grupo fosfato ligado ao glicerol
- São moléculas anfipáticas
- Compõe a maior parte da membrana plasmática e membranas organelares



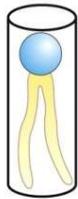
As caudas hidrofóbicas de fosfolipídeos evitam a água



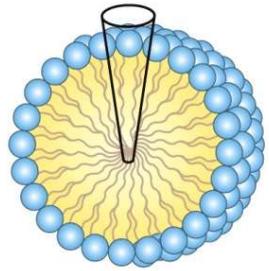
O que determina se será formada uma micela ou uma bicamada lipídica?



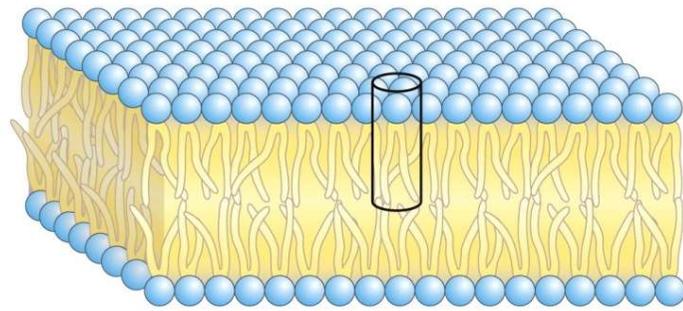
Individual units are wedge-shaped (cross section of head greater than that of side chain).



Individual units are cylindrical (cross section of head equals that of side chain).

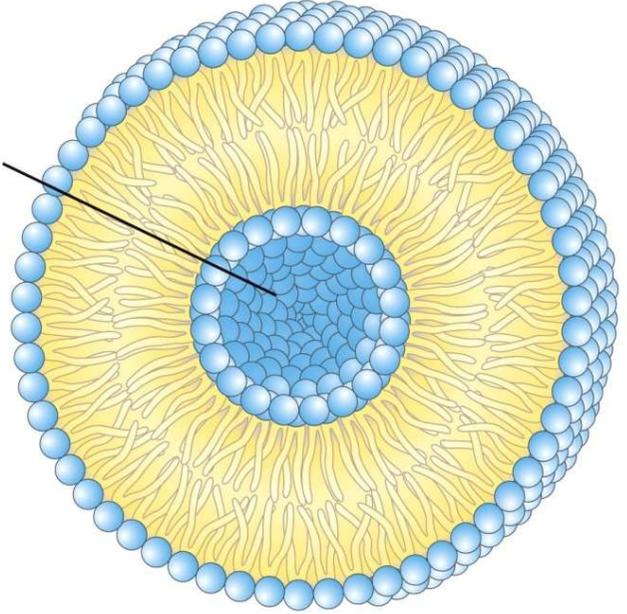


(a) Micelle



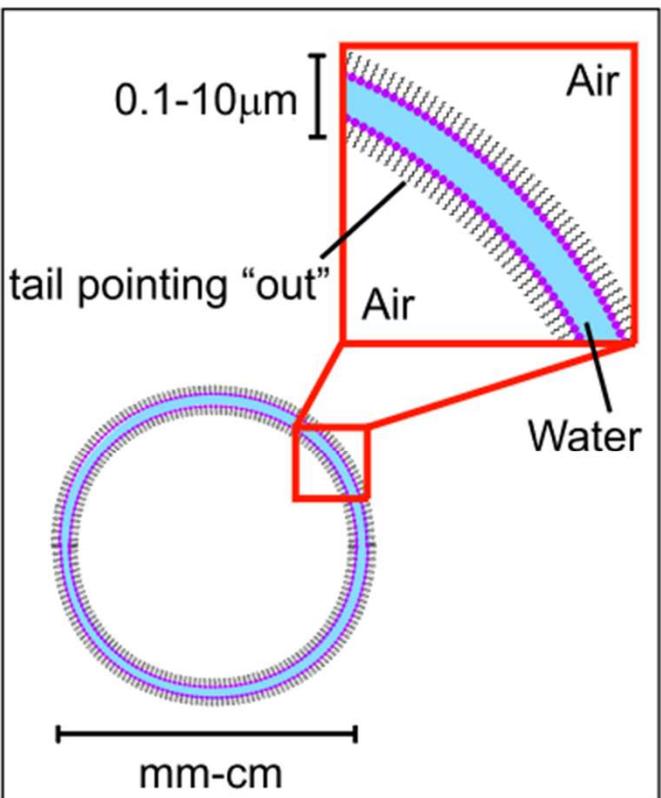
(b) Bilayer

Aqueous cavity

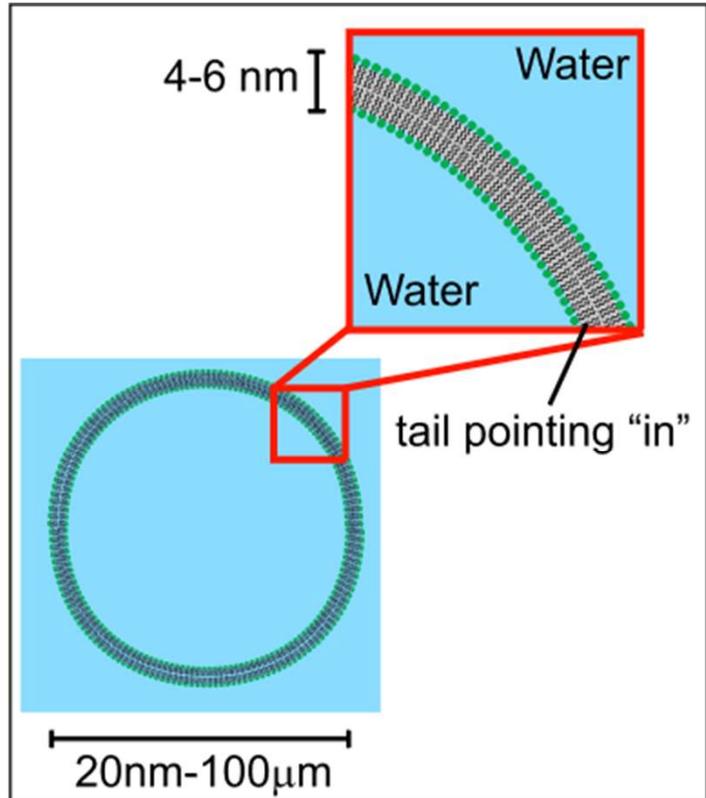


(c) Vesicle

# Uma bolha de sabão depende da interação do ar, detergente e água

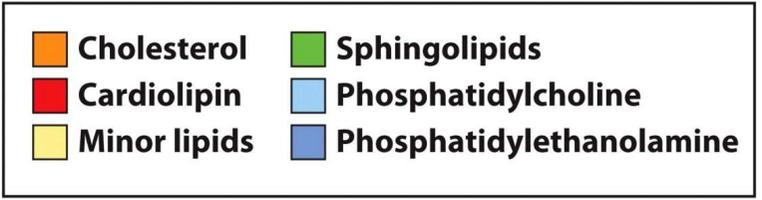
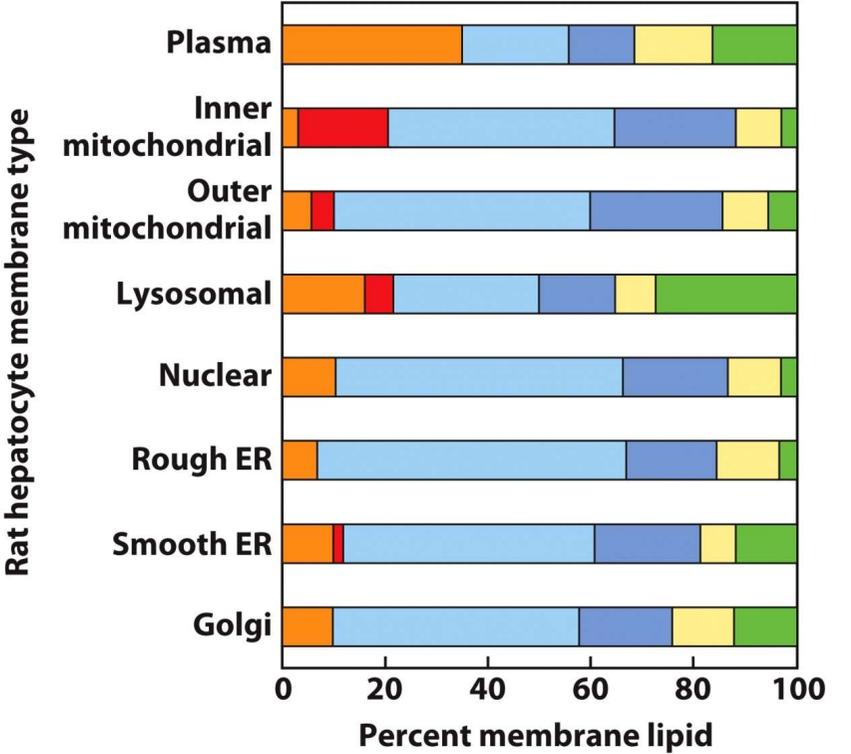


Soap Bubble



Lipid Vesicle

# As membranas possuem diferentes composições

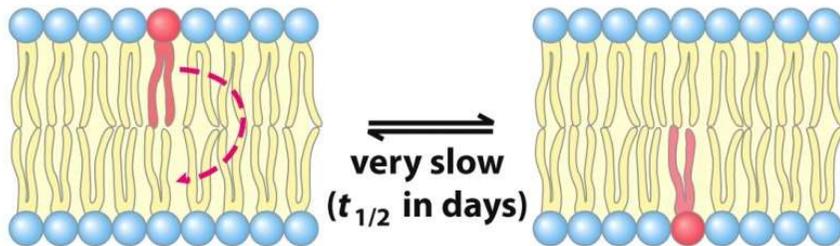




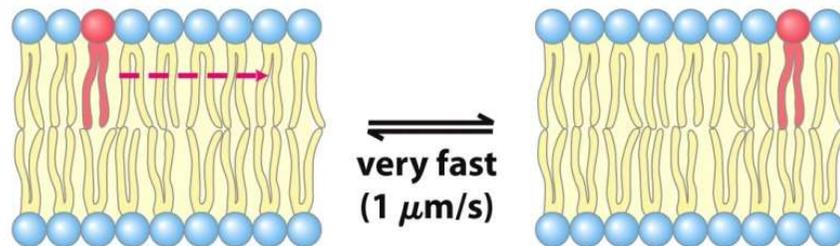
# A membrana é fluida

- Possui uma espessura de 60 – 100 Å
- É irregular
- É semi-permeável

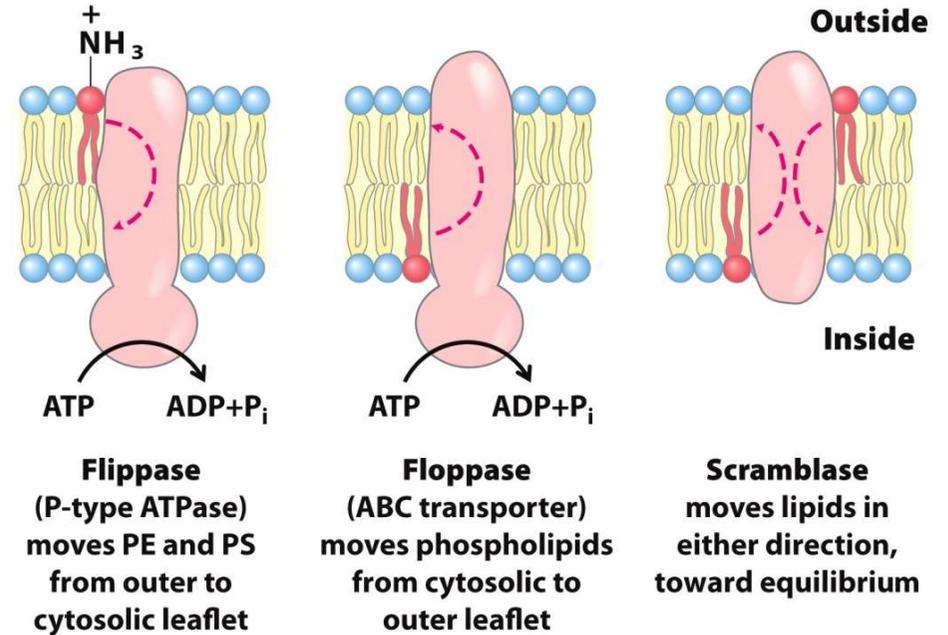
**(a) Uncatalyzed transbilayer (“flip-flop”) diffusion**



**(b) Uncatalyzed lateral diffusion**

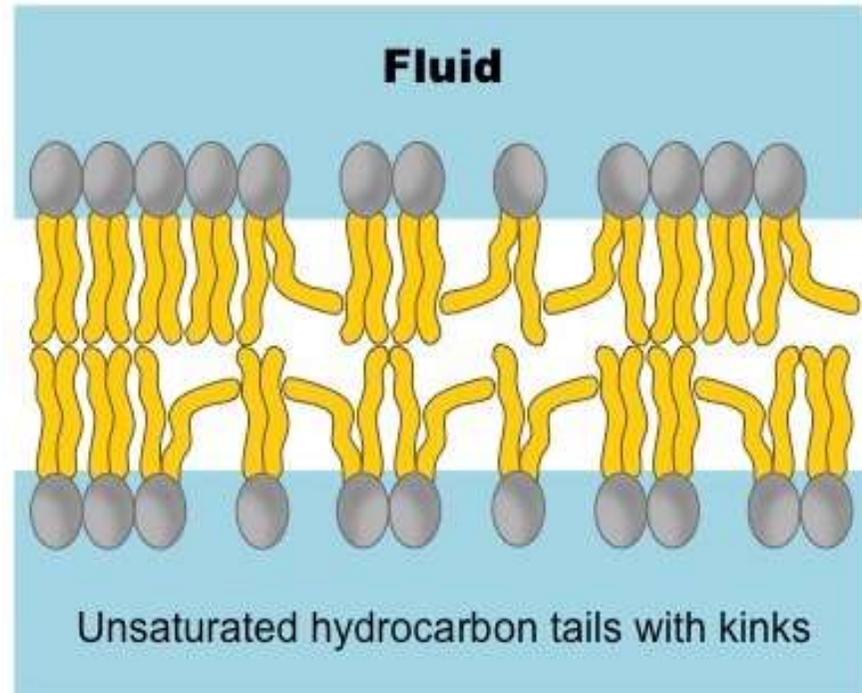
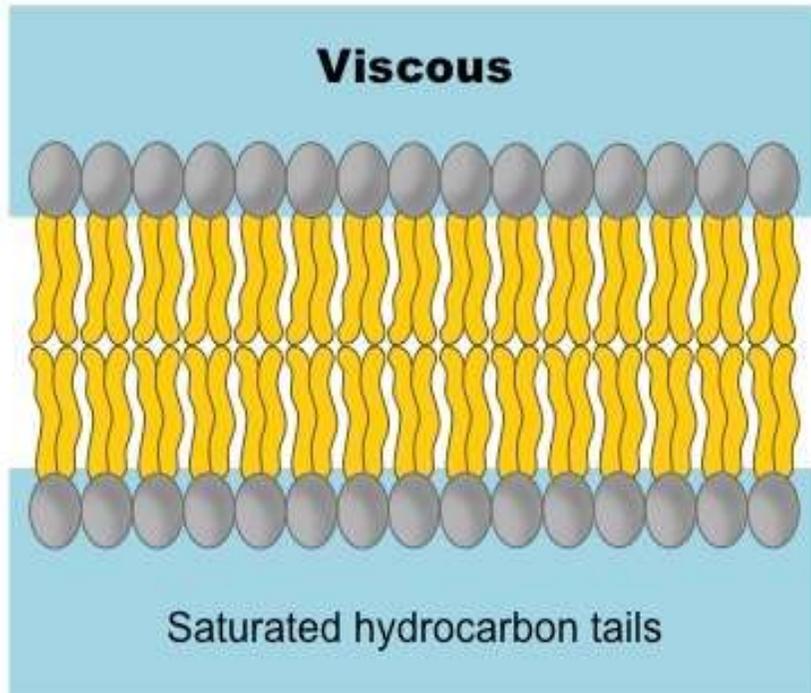


**(c) Catalyzed transbilayer translocations**



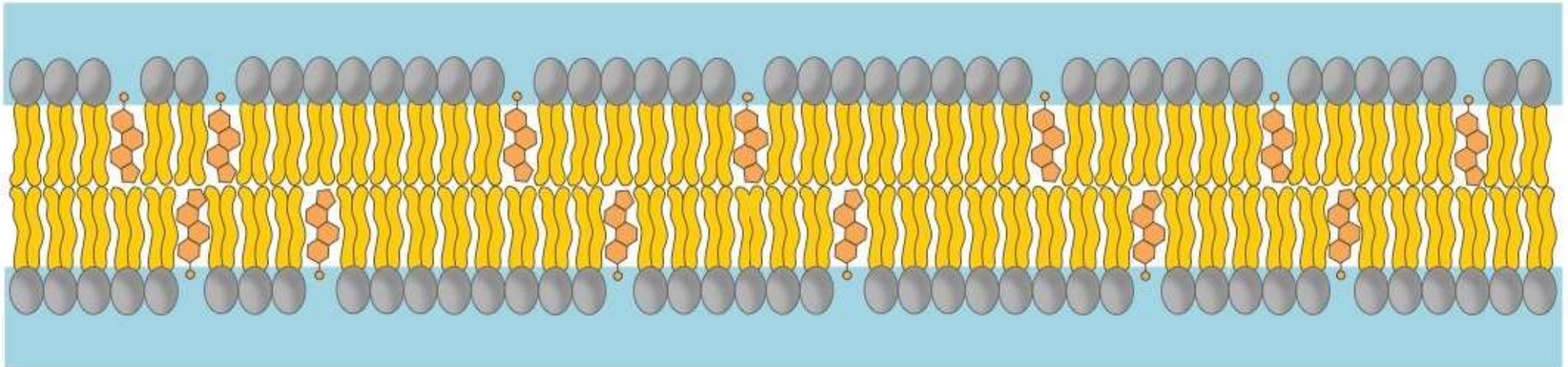
# A composição da membrana plasmática muda sua fluidez

Ácidos graxos saturados organizam-se de forma mais compacta, diminuindo a fluidez



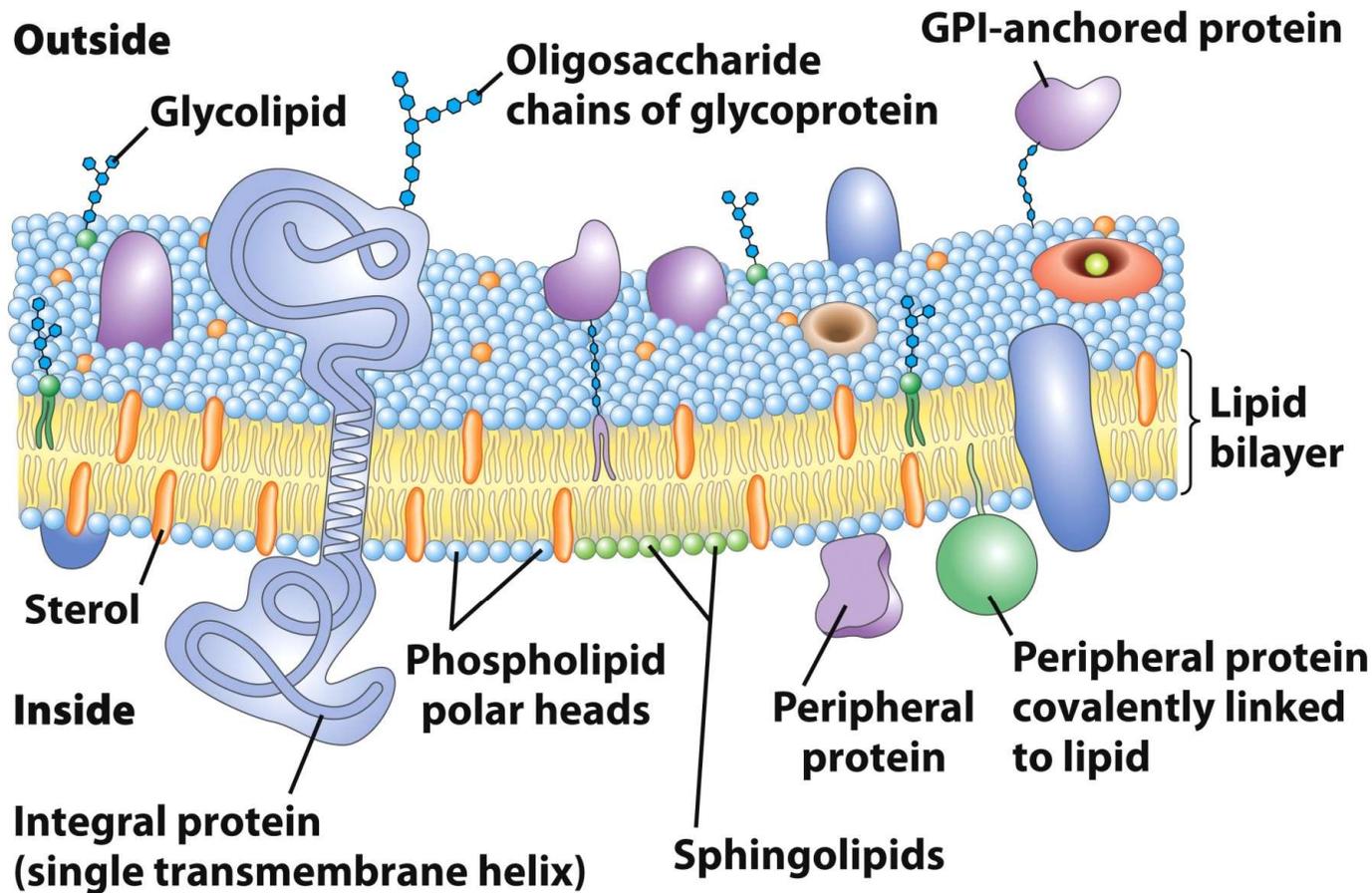
# O colesterol aumenta a estabilidade da membrana

No **calor**, a membrana é mais fluida. O colesterol evita a dispersão dos fosfolipídios.



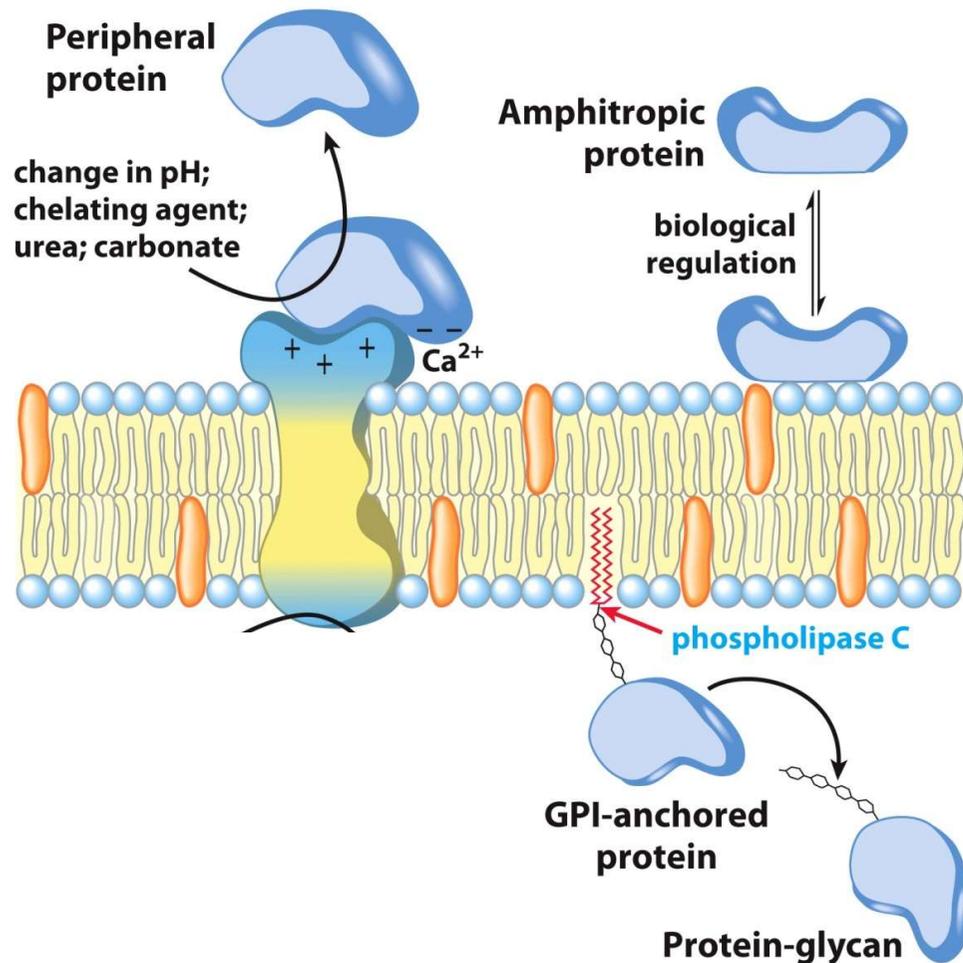
No **frio**, a membrana é mais rígida. O colesterol aumenta a sua fluidez, evitando a sua quebra.

# A membrana plasmática possui uma grande quantidade de componentes



- A membrana é fluida, permitindo a movimentação de seus componentes

# Muitas proteínas se associam às membranas



- Proteínas podem ser integrais, periféricas ou anfitrópicas
- Algumas membranas possuem proteínas como o seu componente mais abundante

# A membrana não é homogênea

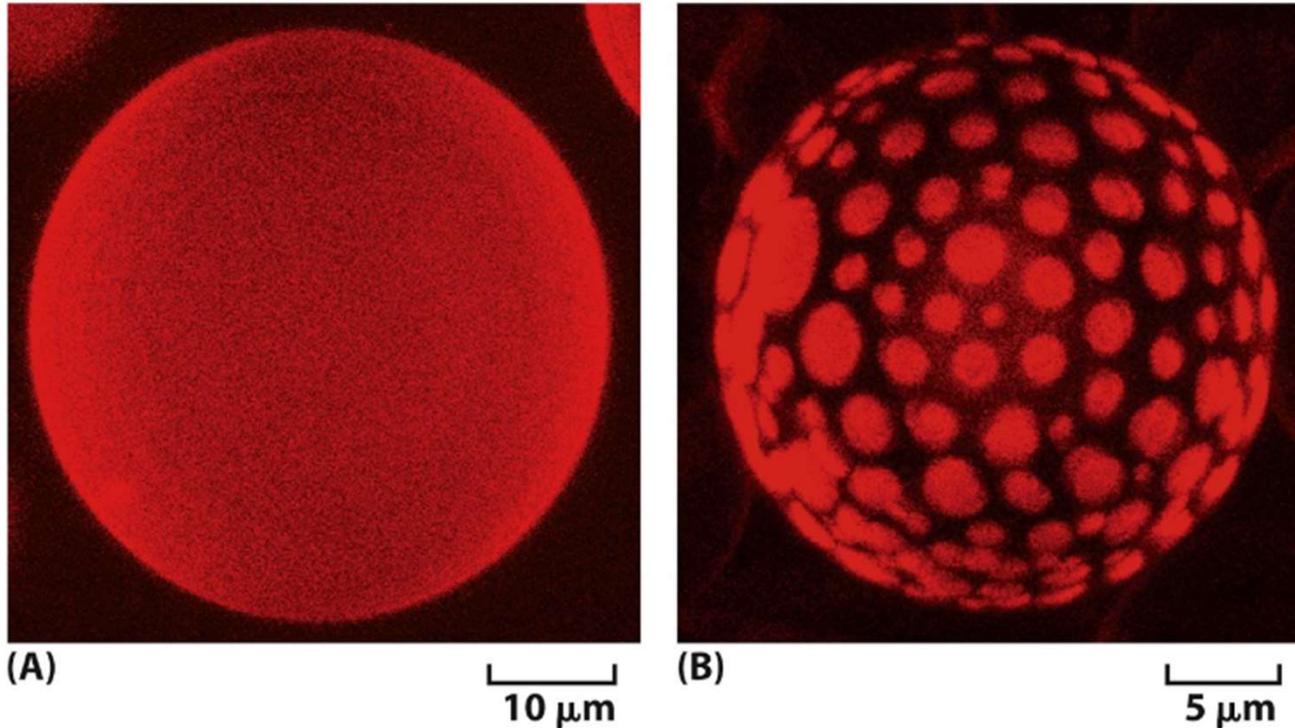
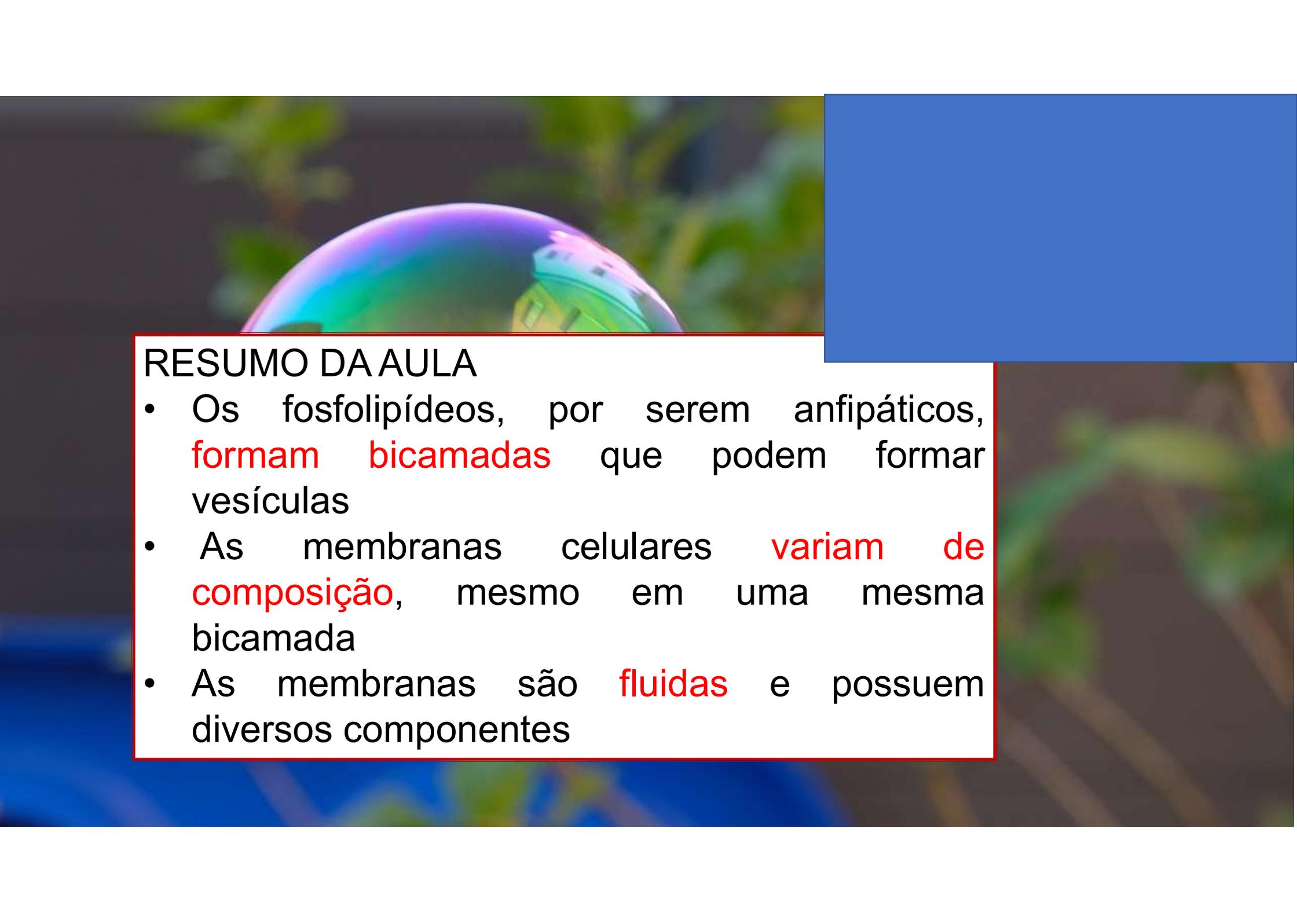


Figure 10-13 Molecular Biology of the Cell 5/e (© Garland Science 2008)

Left: liposomes made from 1:1 phosphatidylcholine and spingomyelin are homogeneous. Right: liposomes made from 1:1:1 phosphatidylcholine, spingomyelin and cholesterol form immiscible phases. The dye preferentially partitions into one of the phases.

- As membranas podem ter subdomínios com proteínas e lipídeos específicos



## RESUMO DA AULA

- Os fosfolipídeos, por serem anfipáticos, **formam bicamadas** que podem formar vesículas
- As membranas celulares **variam de composição**, mesmo em uma mesma bicamada
- As membranas são **fluidas** e possuem diversos componentes