

# LA CÉLULA

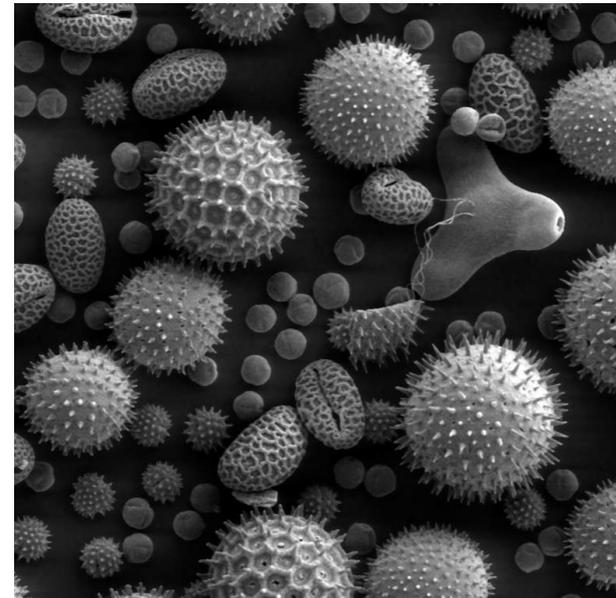
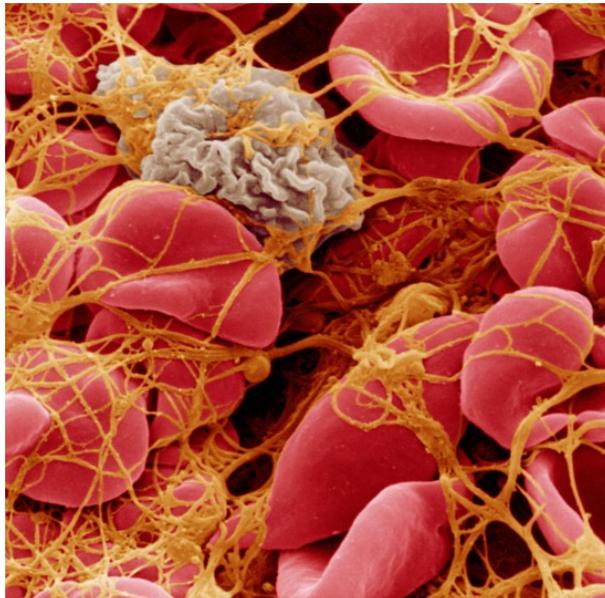
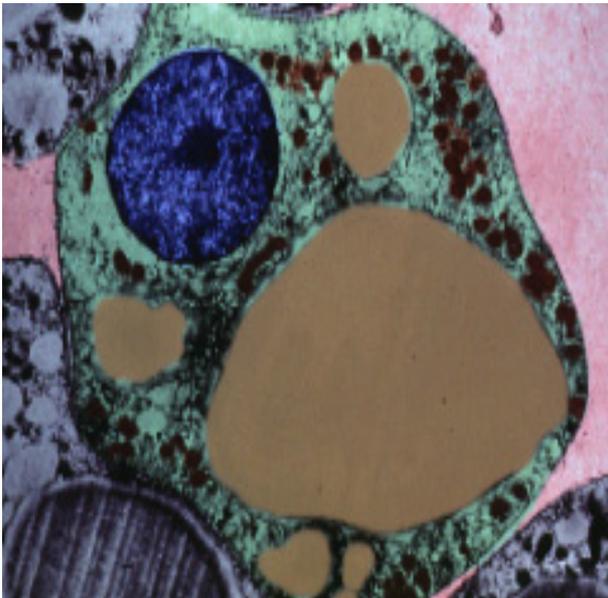
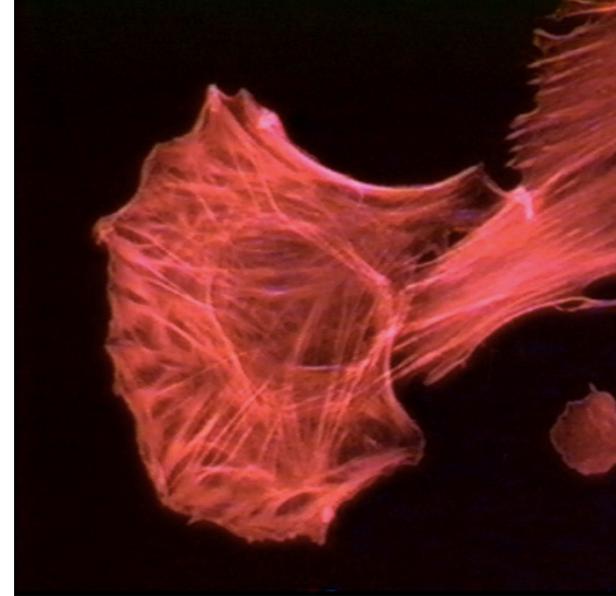
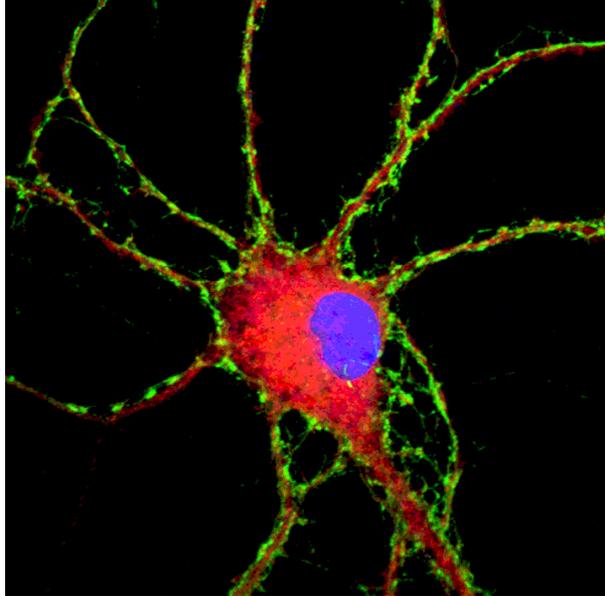
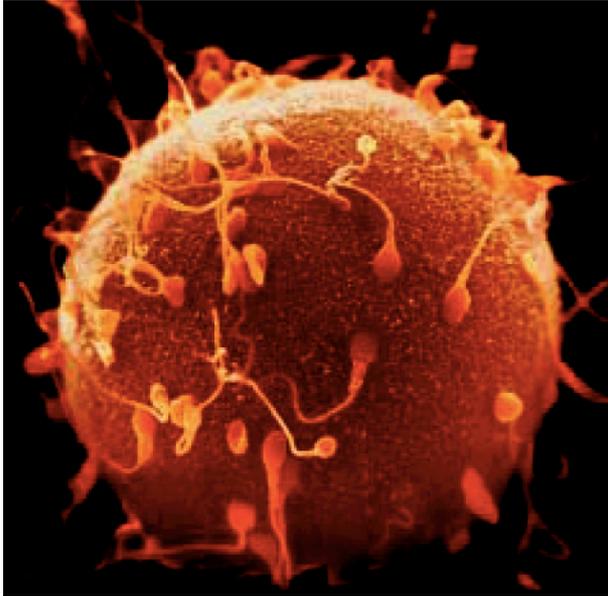
Orgánulos celulares

y

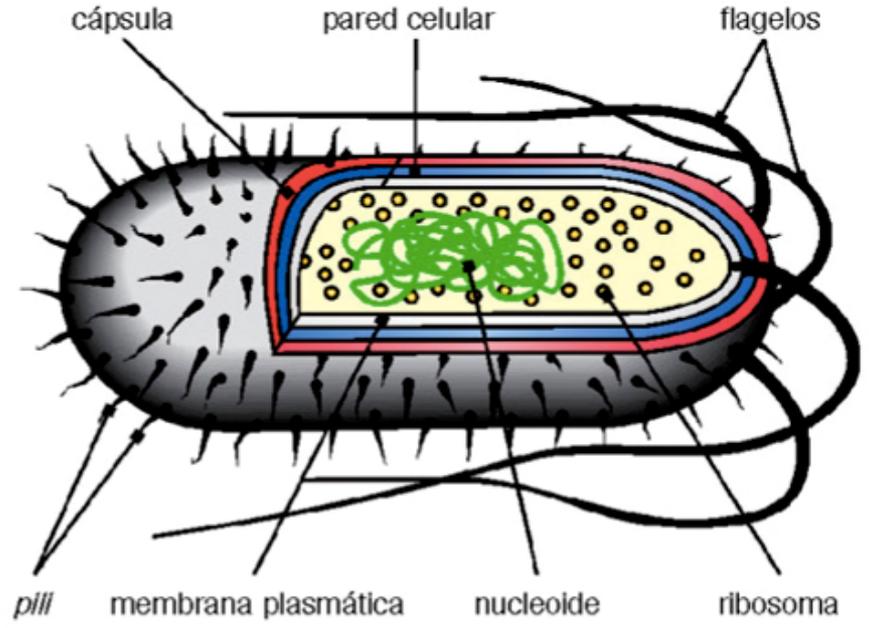
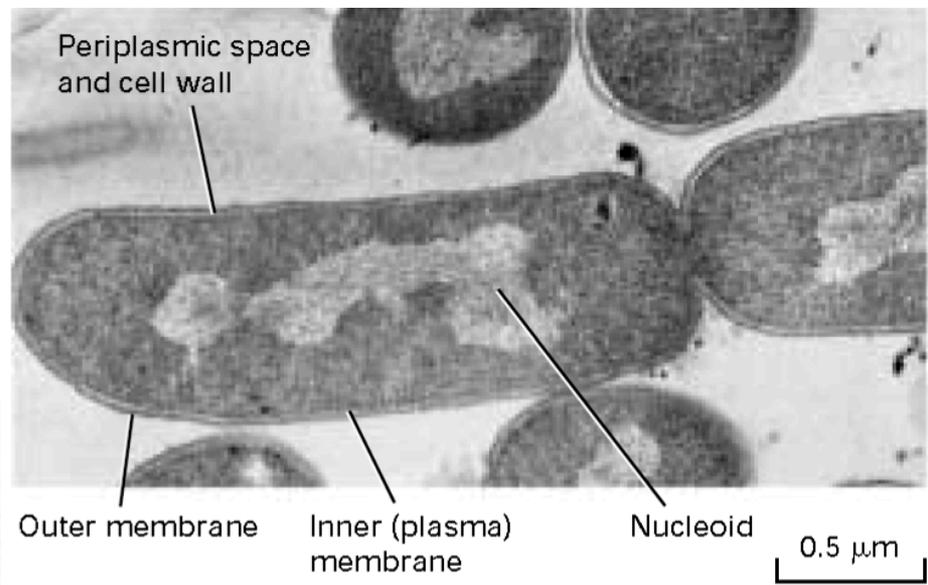
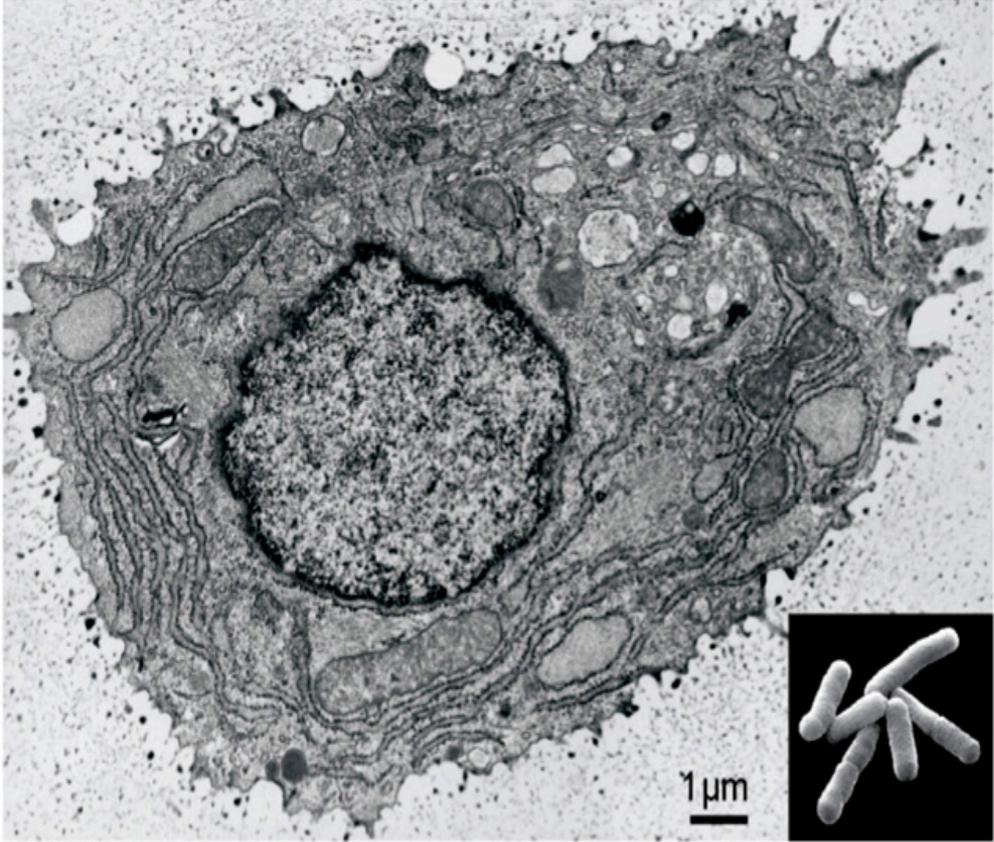
Compartimentación metabólica

# LA CÉLULA

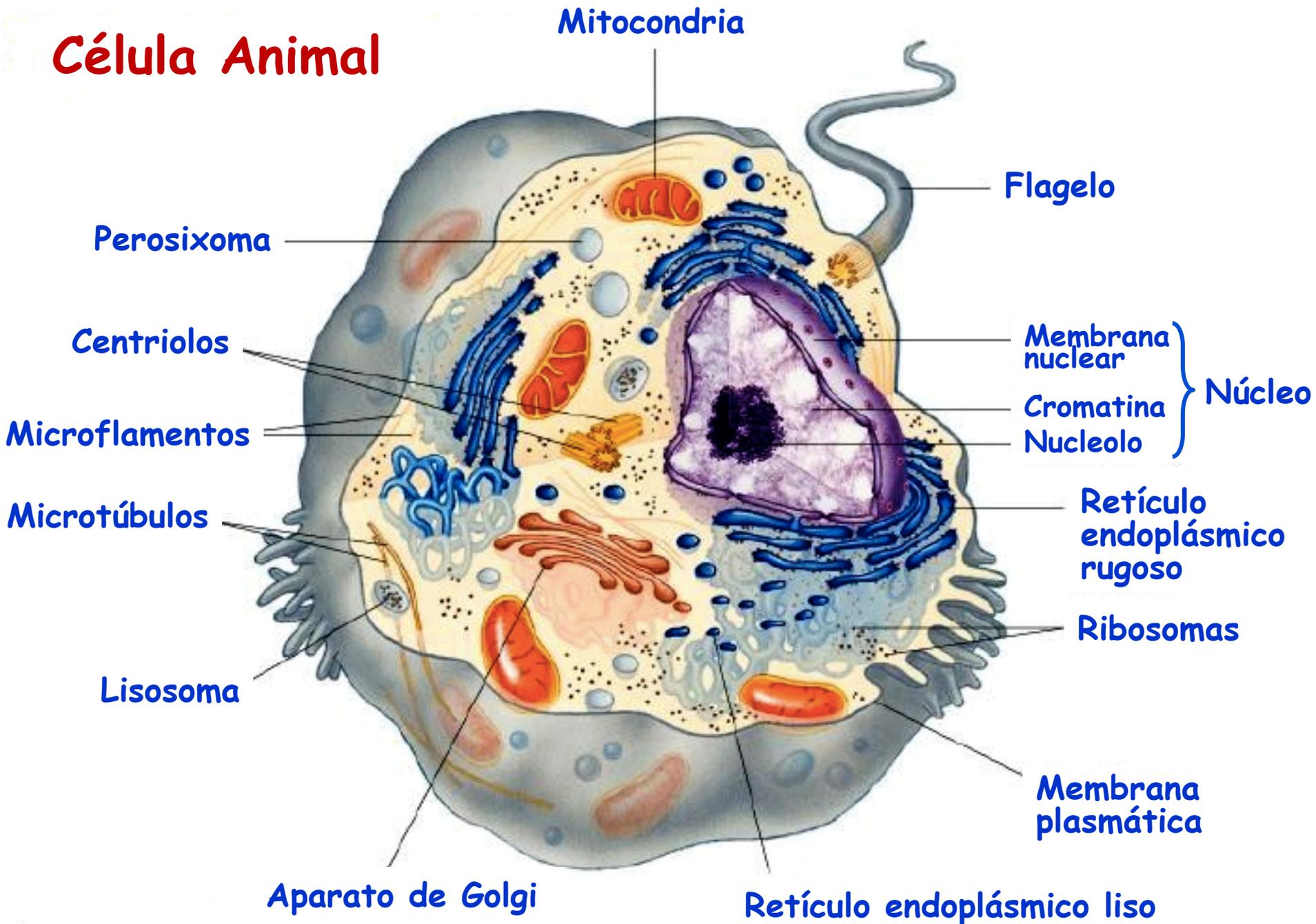
Unidad básica de la vida, con gran diversidad de formas y tamaños



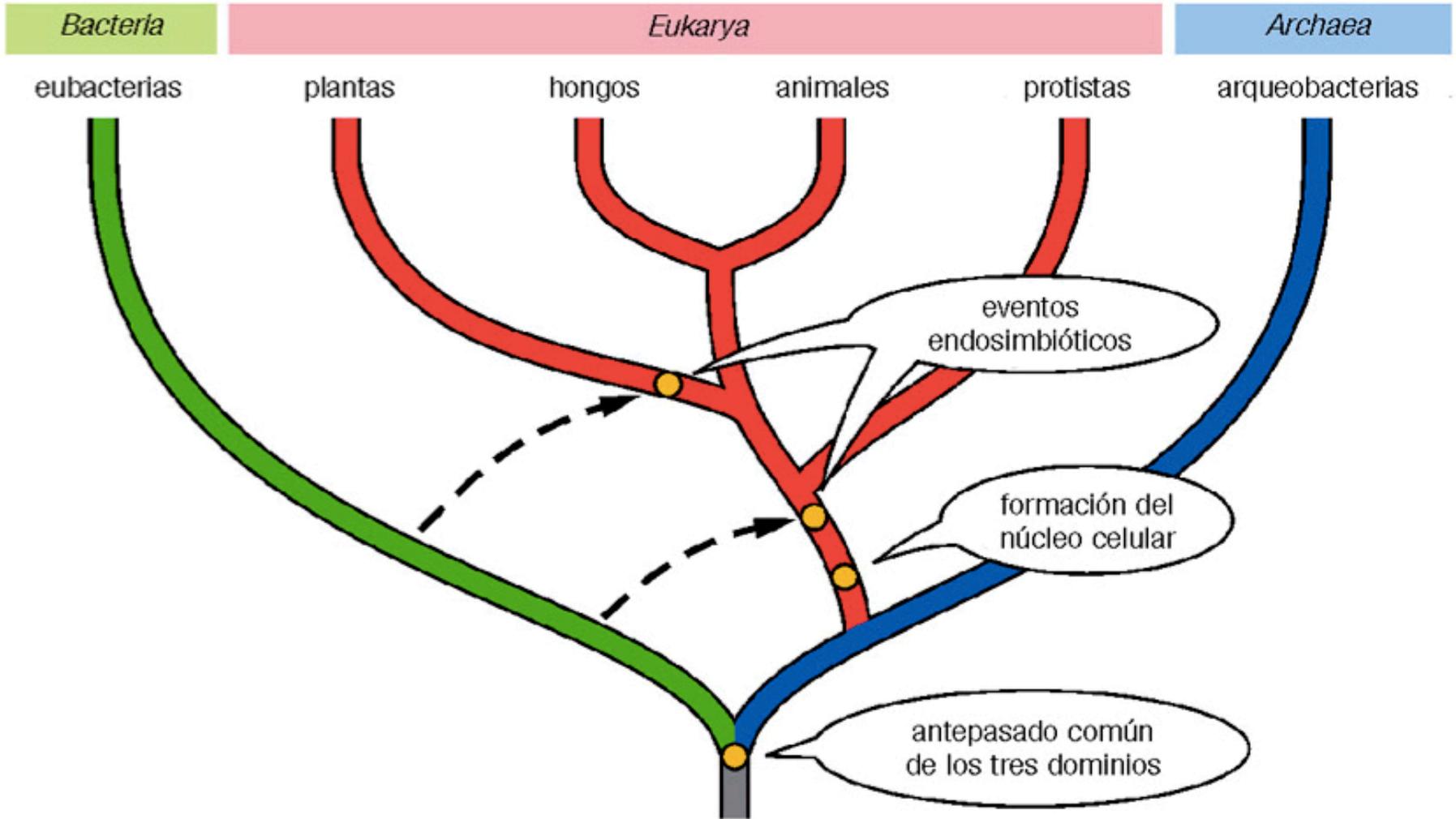
# PROCARIOTAS VS EUCARIOTAS

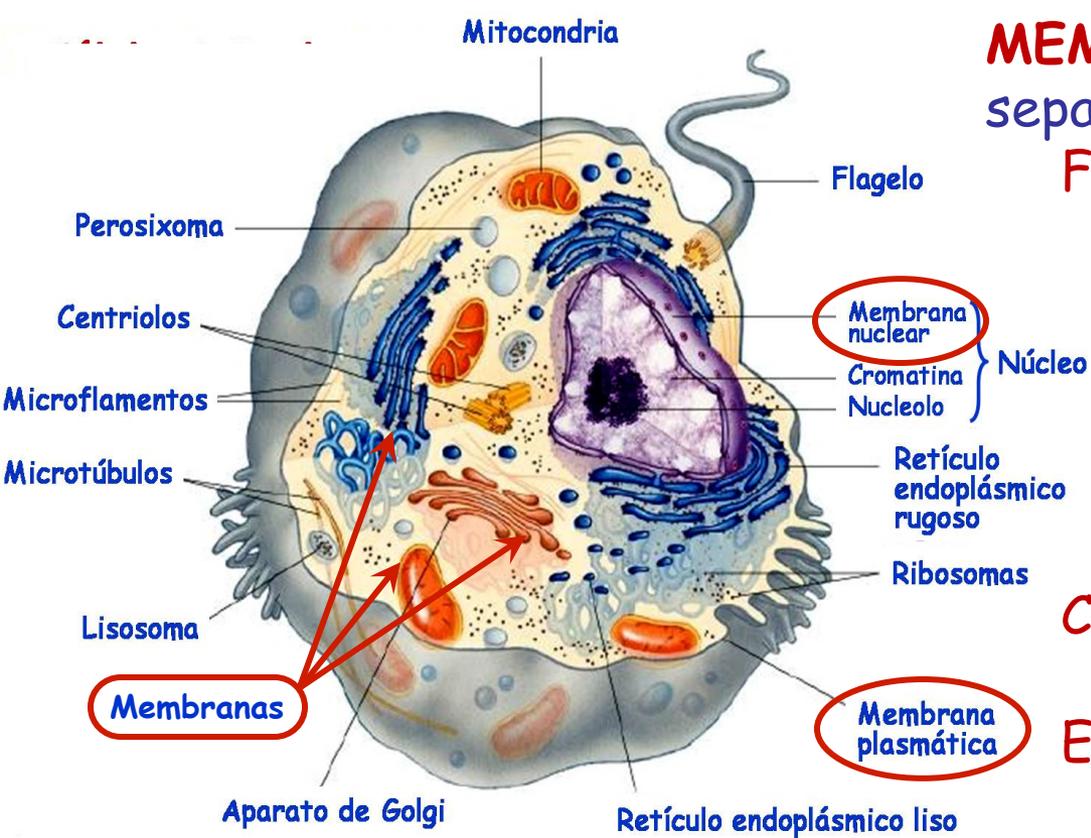


# Célula Animal



# Dominios y Reinos de los Seres Vivos





# MEMBRANAS BIOLÓGICAS:

separación física entre dos medios

## Funciones:

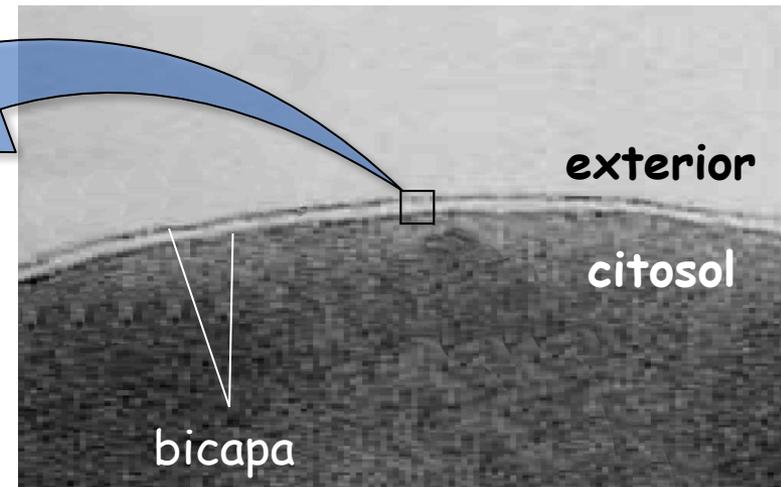
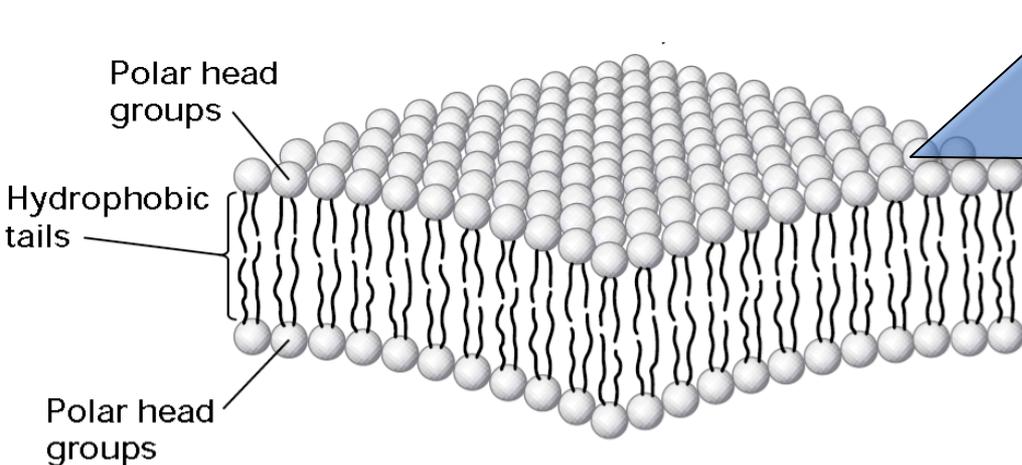
Transporte (entrada y salida)  
 Recepción de señales  
 Funciones específicas  
 transporte de electrones  
 transmisión impulso nervioso  
 absorción de nutrientes ...

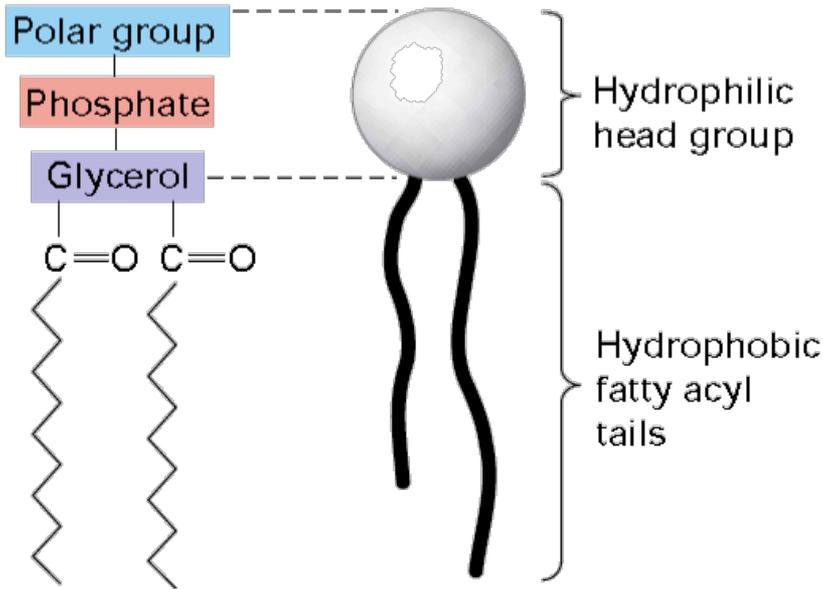
## Componentes:

lípidos, proteínas, carbohidratos

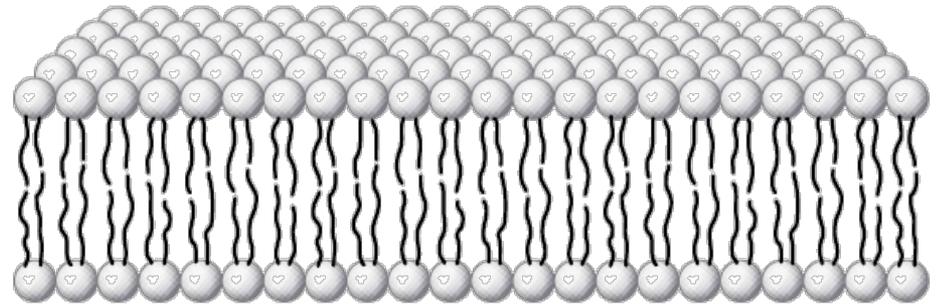
## Estructura:

Bicapa Lipídica (Mosaico Fluido)

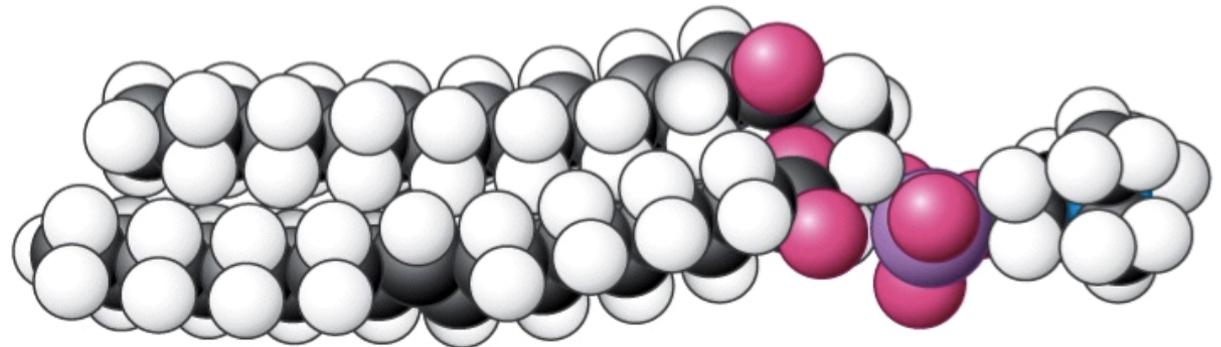




**Glycerophospholipid**

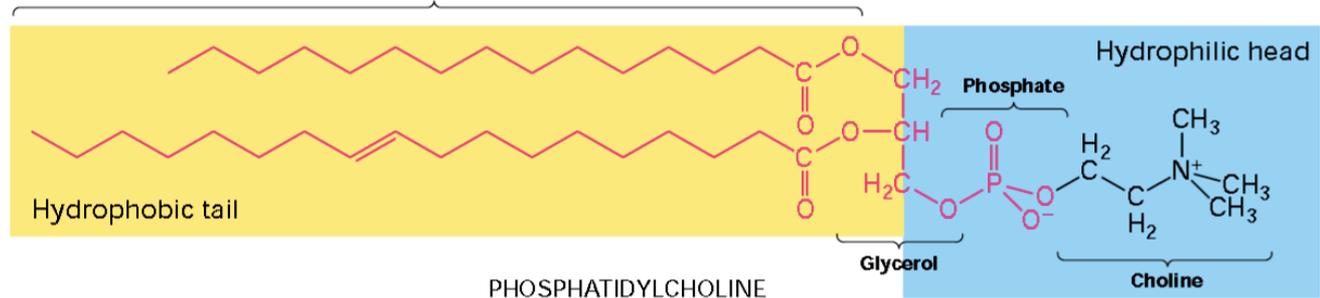


**Phospholipid bilayer**

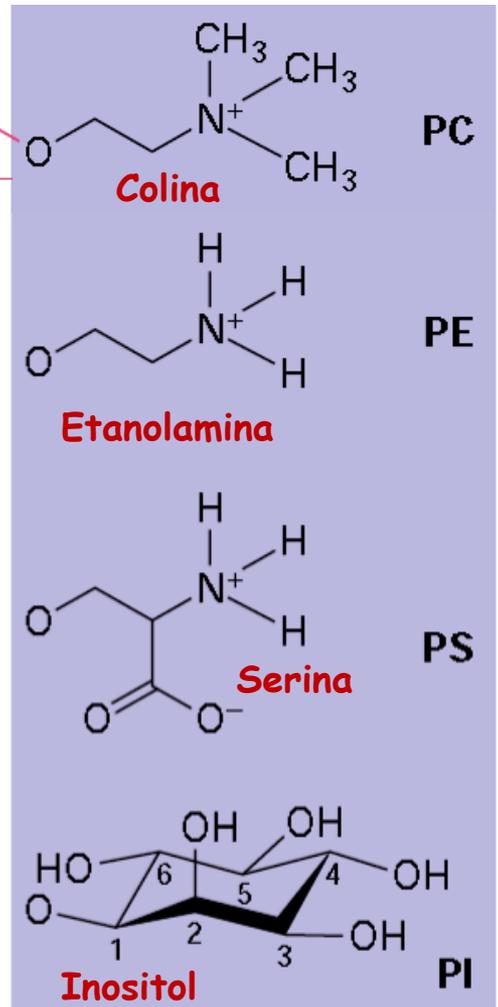
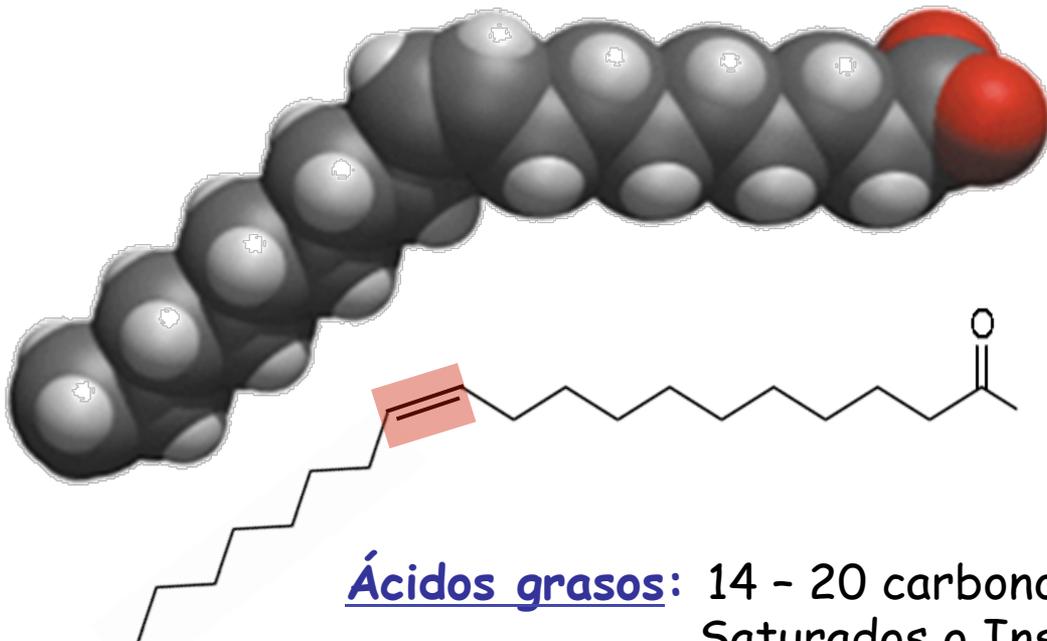
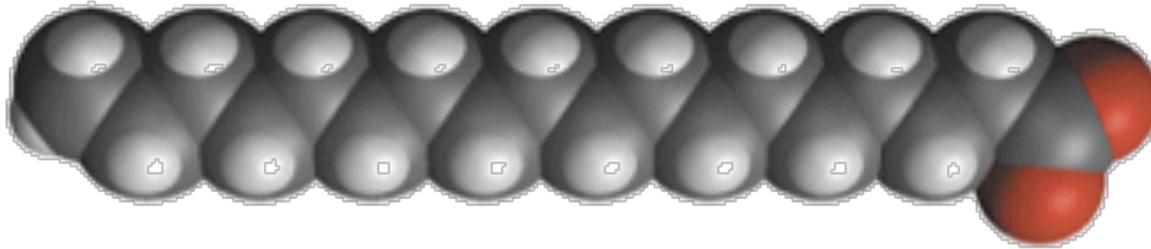
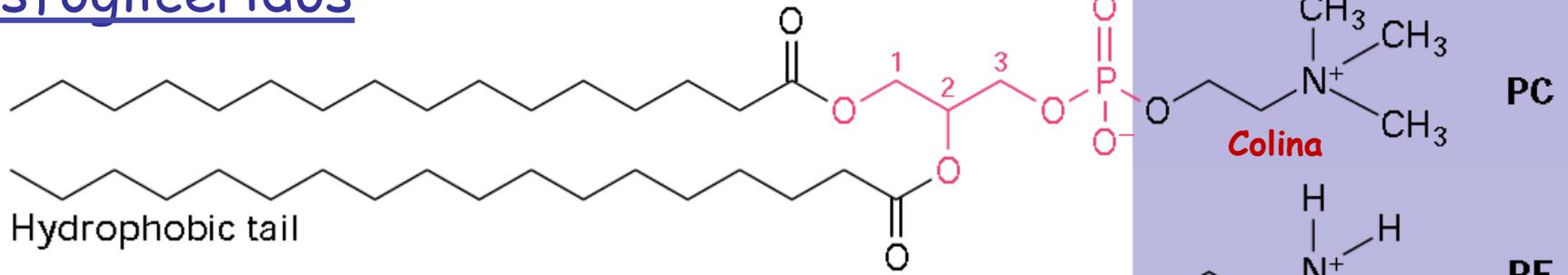


**Fatty acid chains**

# Fosfolípidos

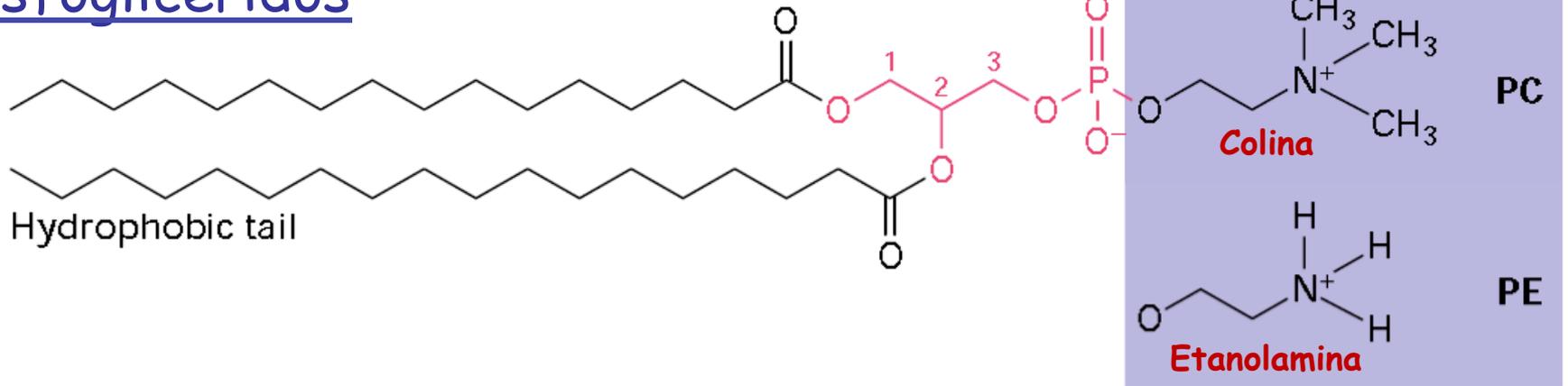


# Fosfoglicéridos

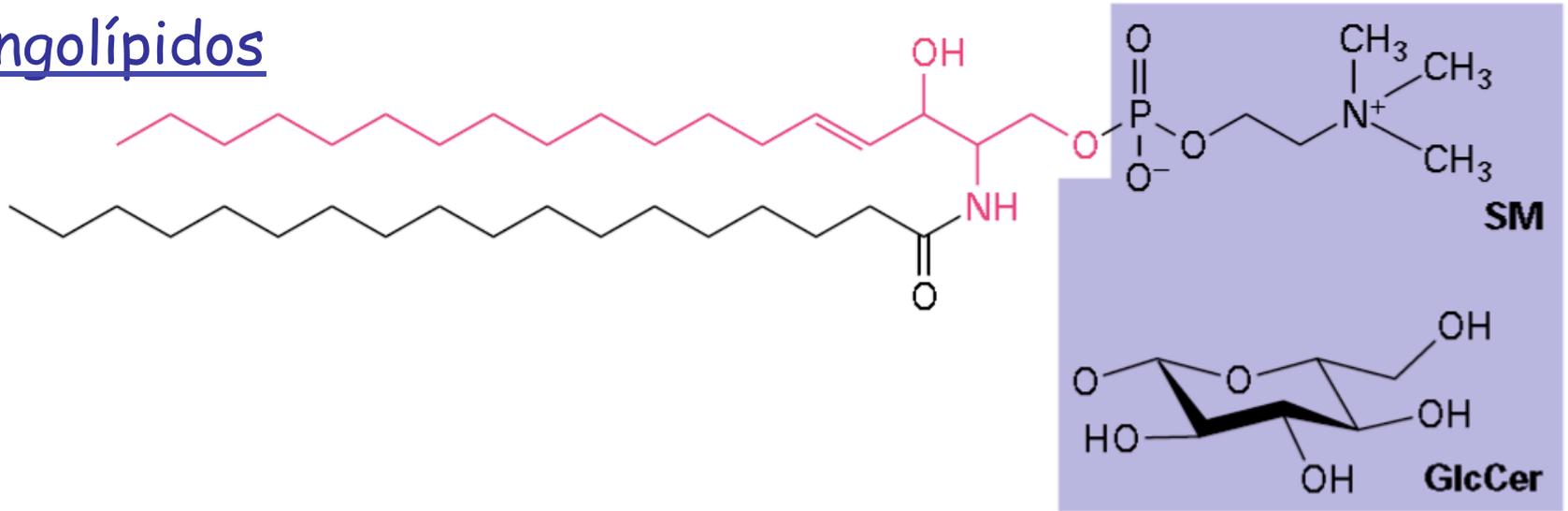


## Cabezas polares

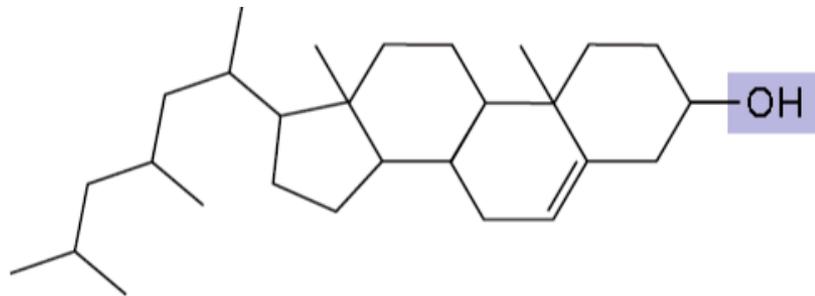
# Fosfoglicéridos

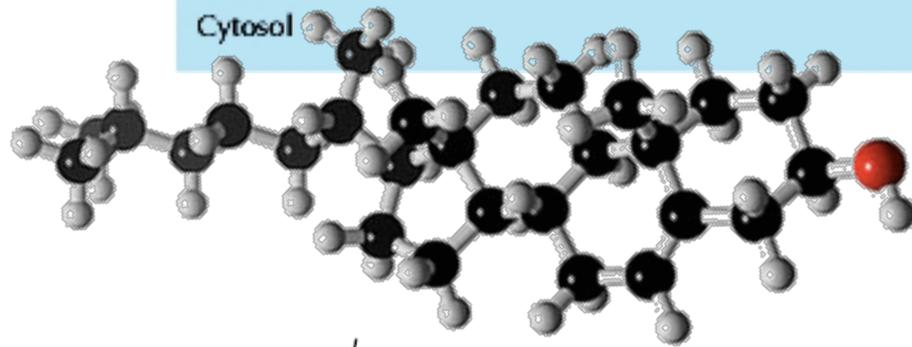
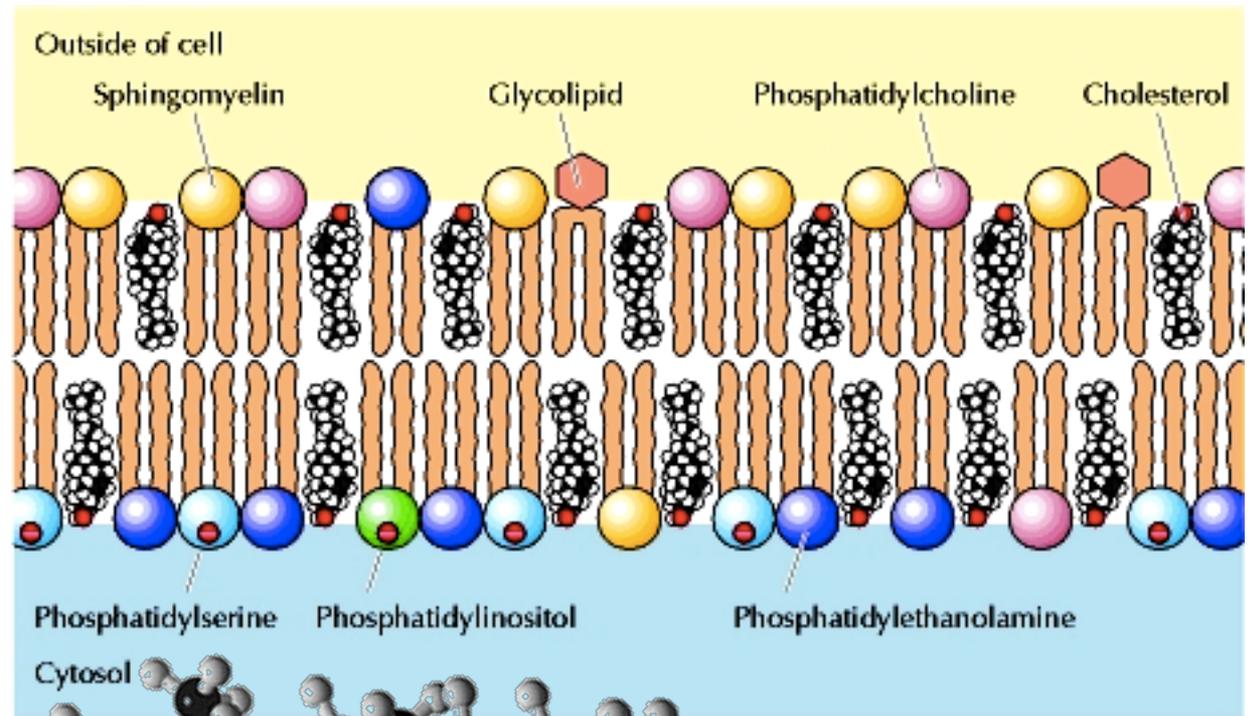


# Esfingolípidos

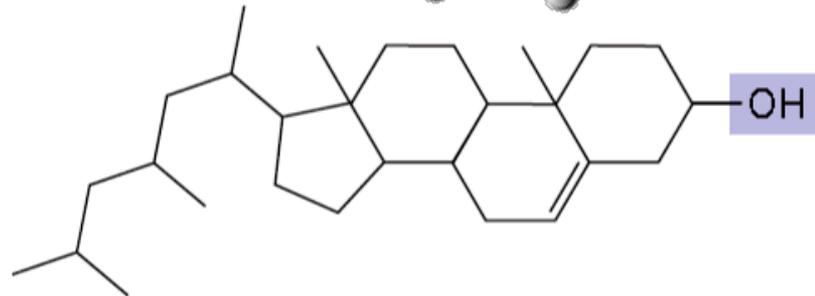


# Colesterol

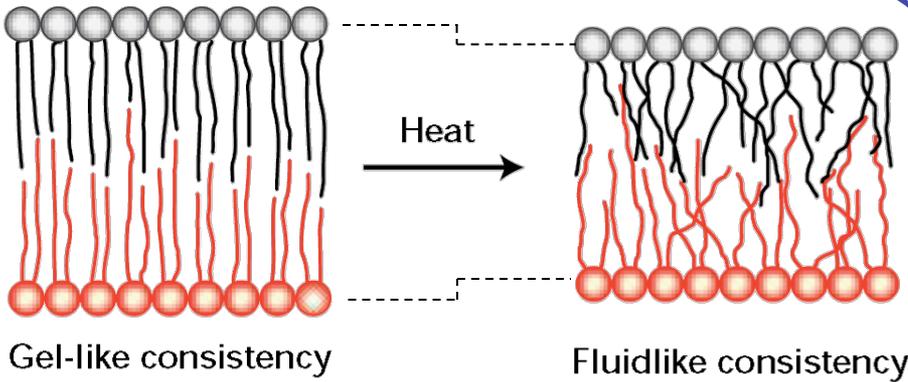
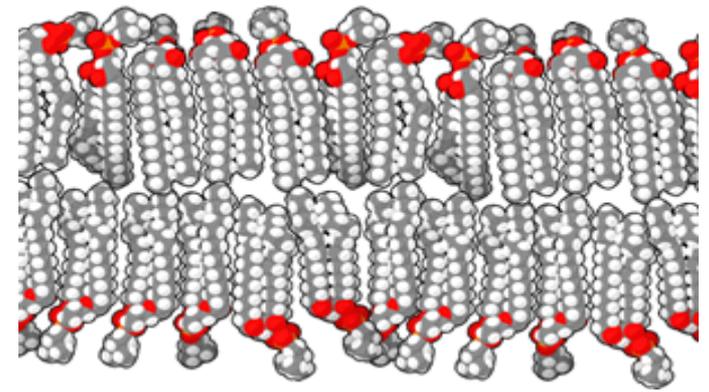
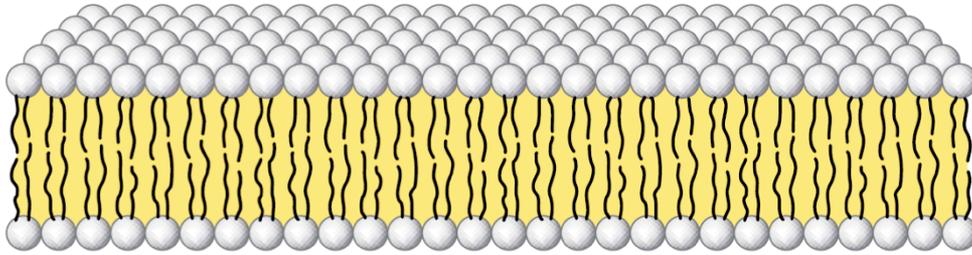




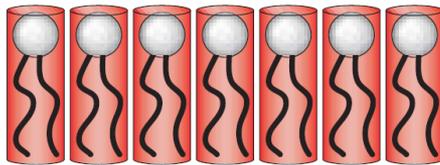
## Cholesterol



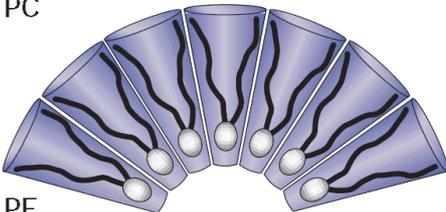
# Bicapa Lipídica → Mosaico Fluido



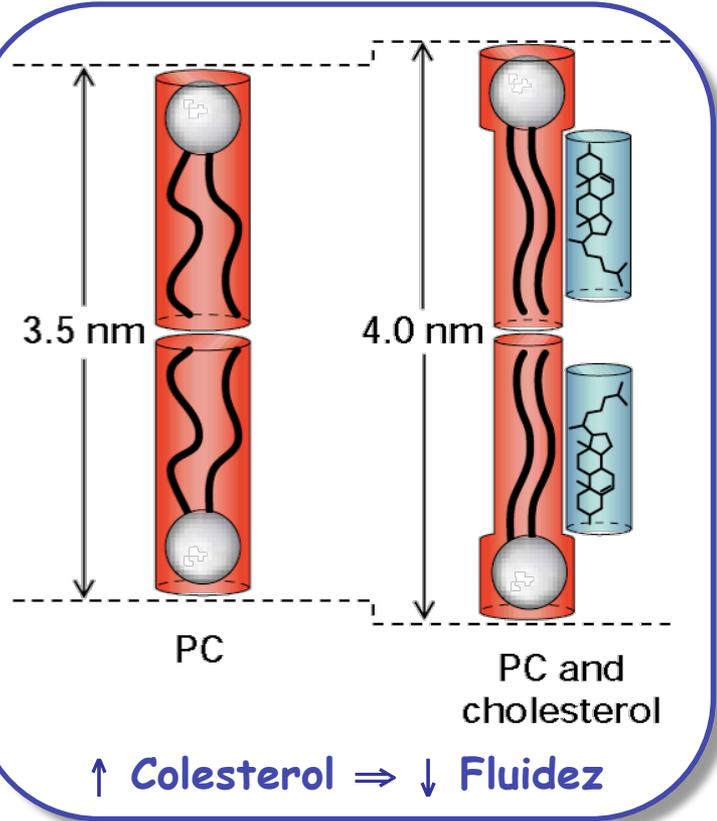
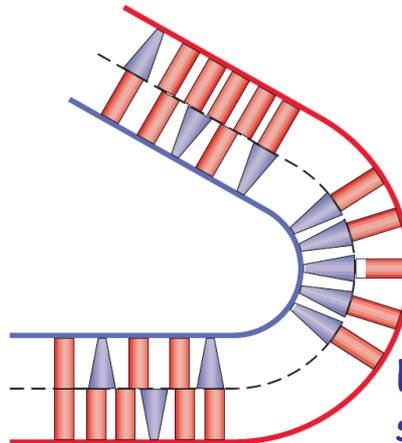
↑ **Temperatura** ⇒ ↑ **Fluidez**



PC



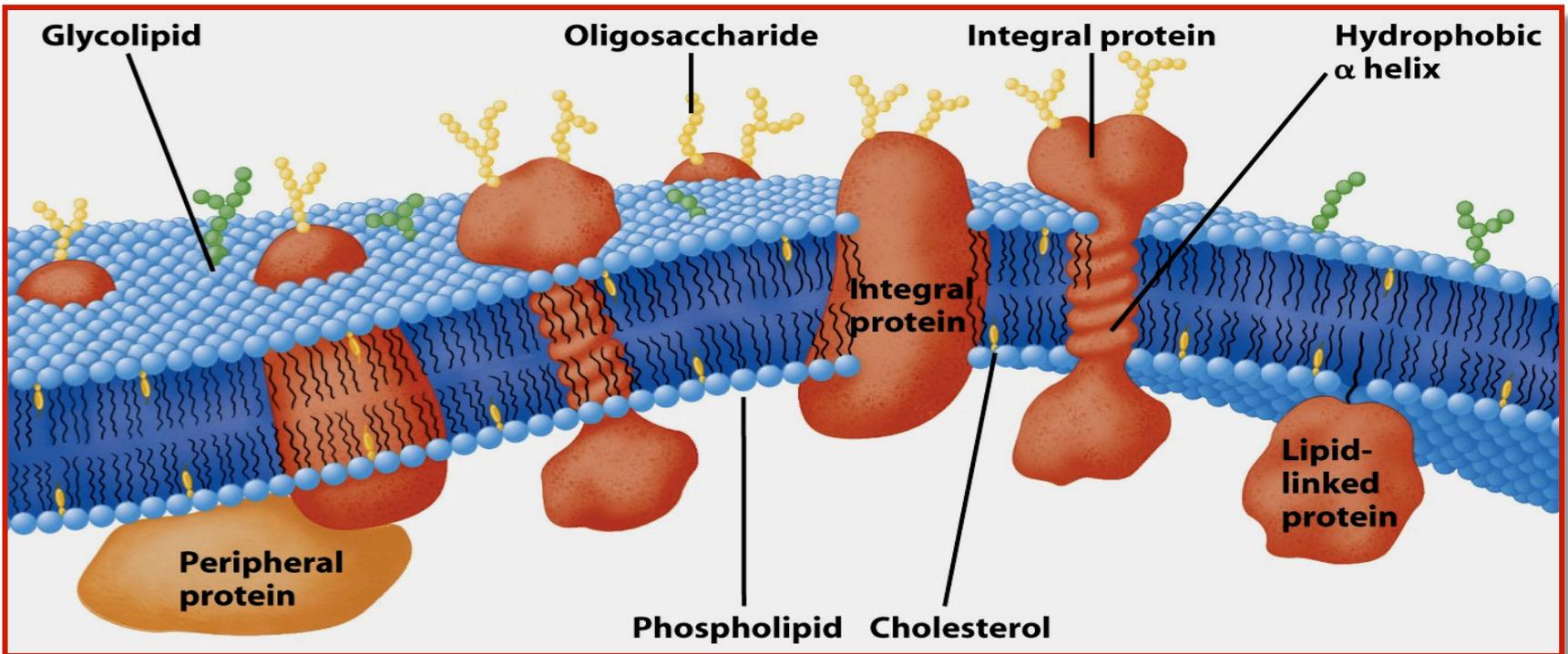
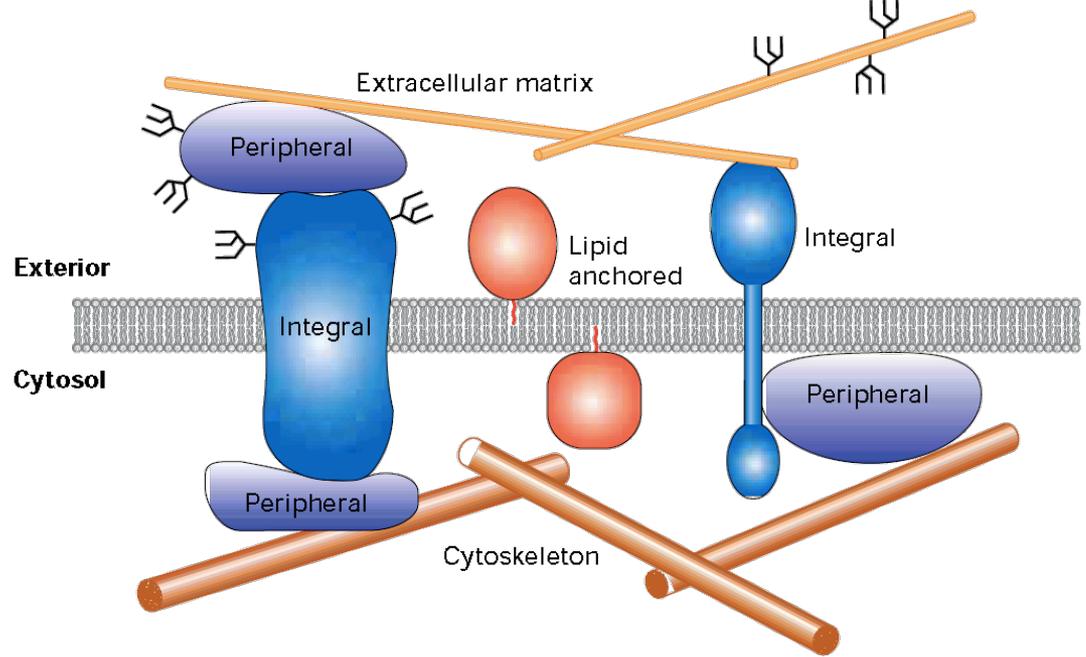
PE



↑ **Colesterol** ⇒ ↓ **Fluidez**

El tamaño de la cabeza polar influye sobre la curvatura de la bicapa

# Proteínas de Membrana

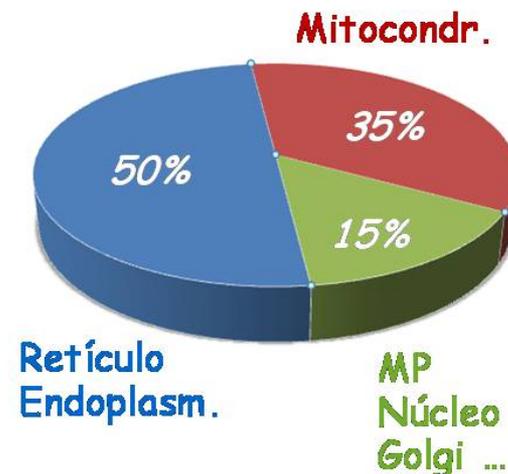


# ORGÁNULOS CELULARES

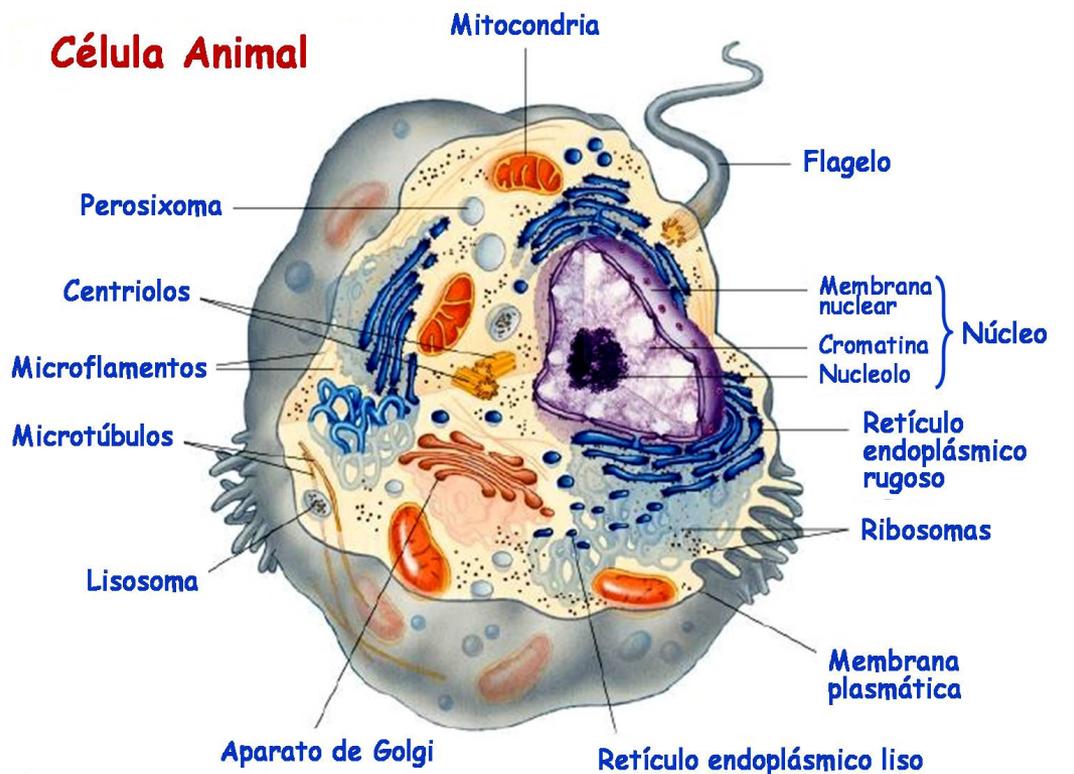
(delimitados por membranas)

- Núcleo, Retículo endoplásmico y Golgi (1 por célula)
- Múltiples Mitocondrias, Lisosomas y Peroxisomas
- Núcleo y Mitocondrias cuentan con doble membrana (también los cloroplastos de las células vegetales)

## % Membranas Celulares



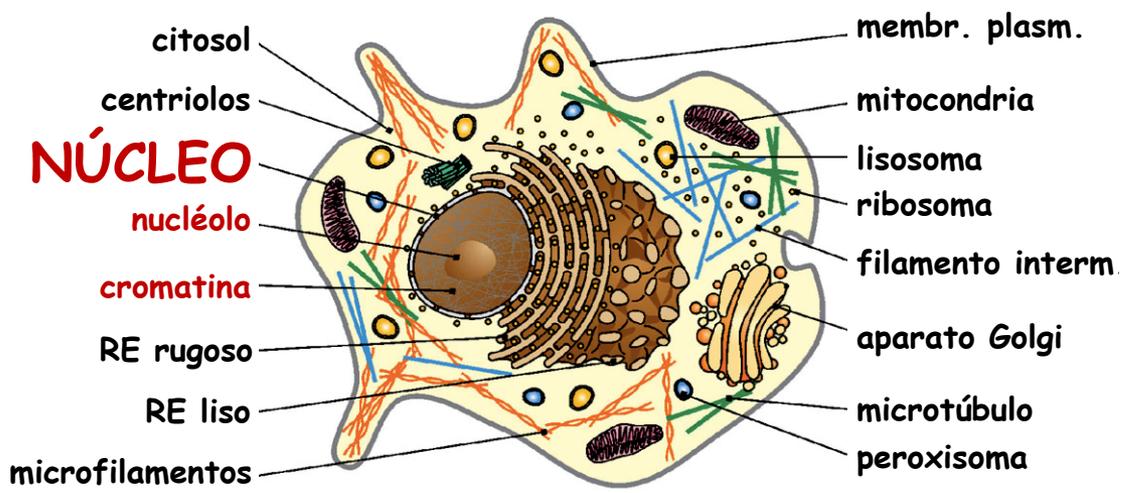
## Célula Animal



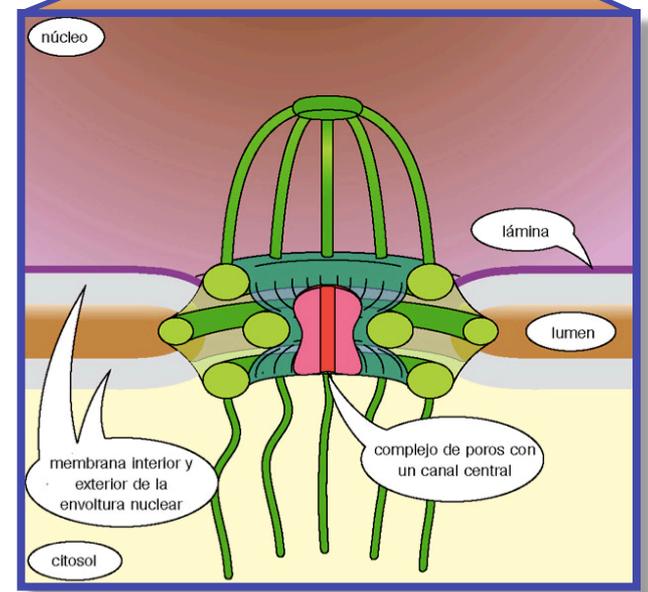
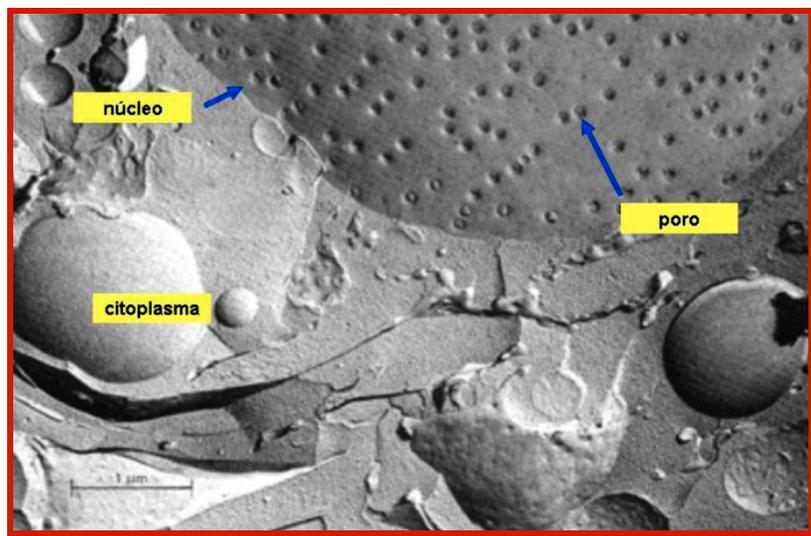
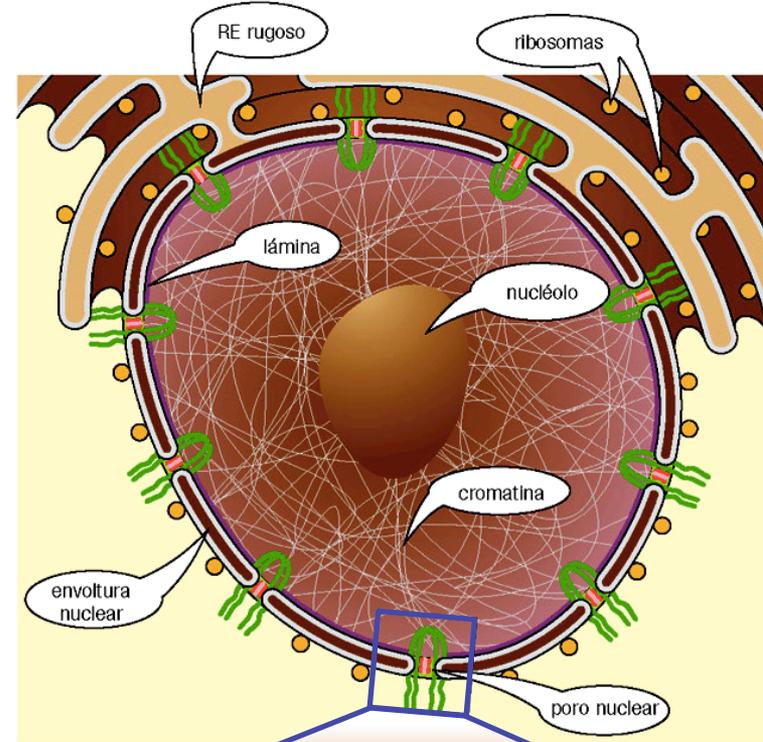
## CITOSOL:

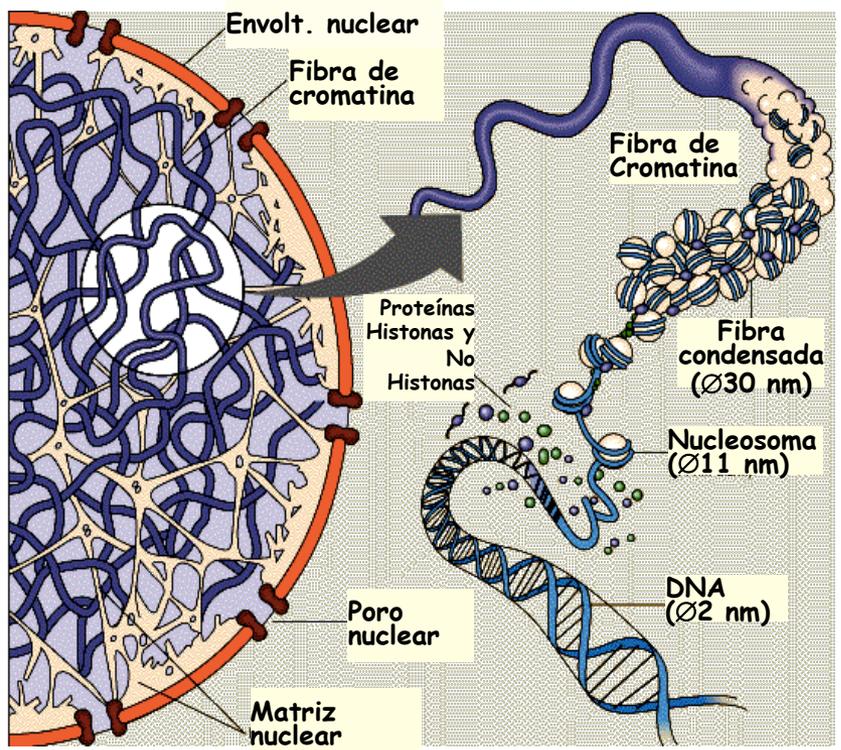
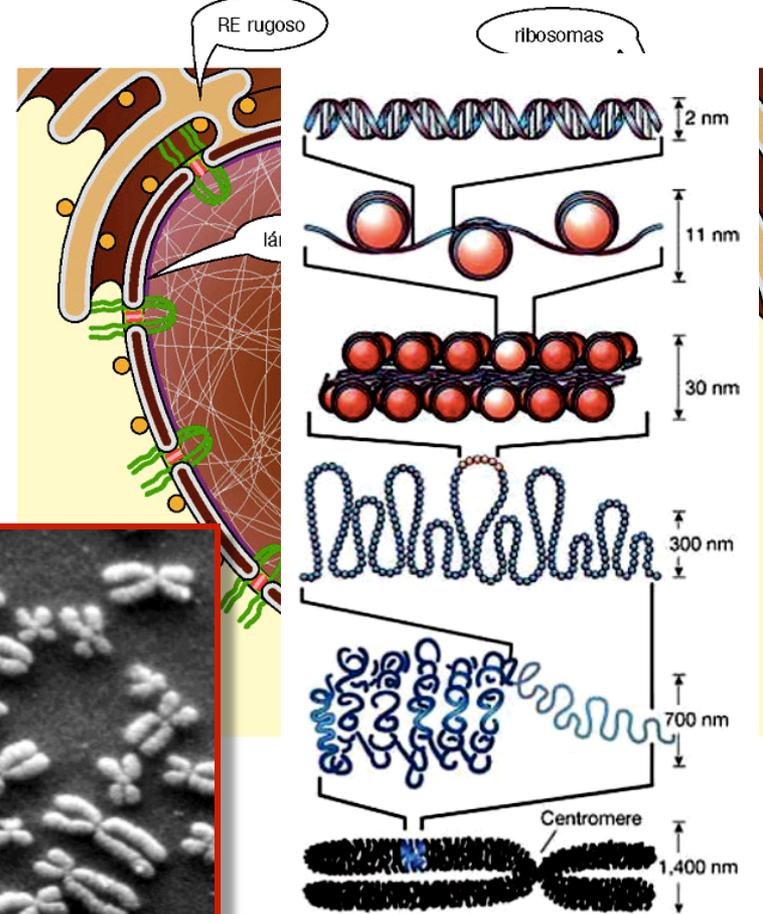
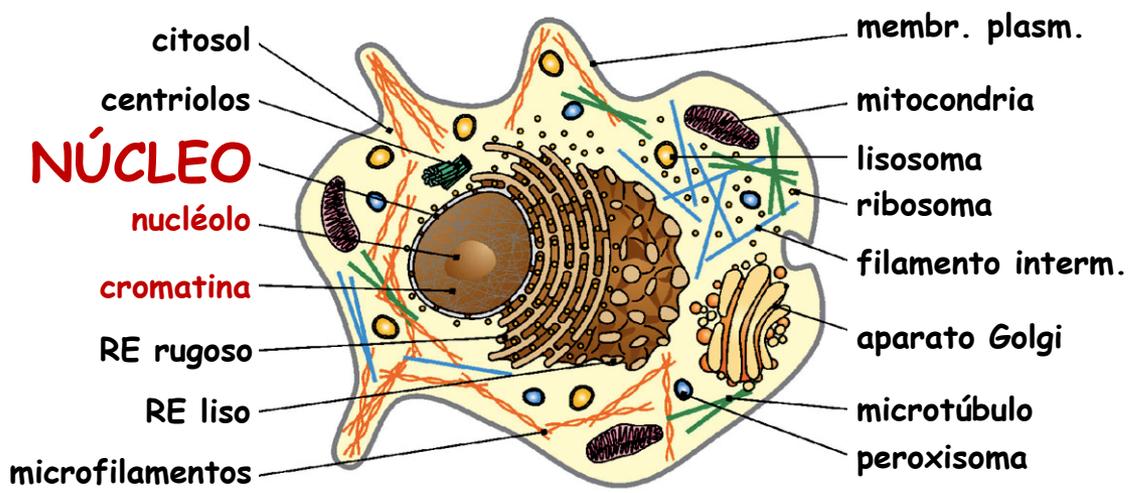
- Medio líquido intracelular en el que "flotan" todos los orgánulos celulares..
- En él se localiza la mayor parte del metabolismo celular (*i.e.*, *metabolismo anaerobio de la glucosa; biosíntesis de proteínas, glucógeno, ácidos grasos; transmisión de señales ...*)
- Tiene una alta concentración de proteínas/enzimas (~300 mg/ml)

**CITOPLASMA:** Conjunto formado por el Citosol y los orgánulos celulares con excepción del Núcleo

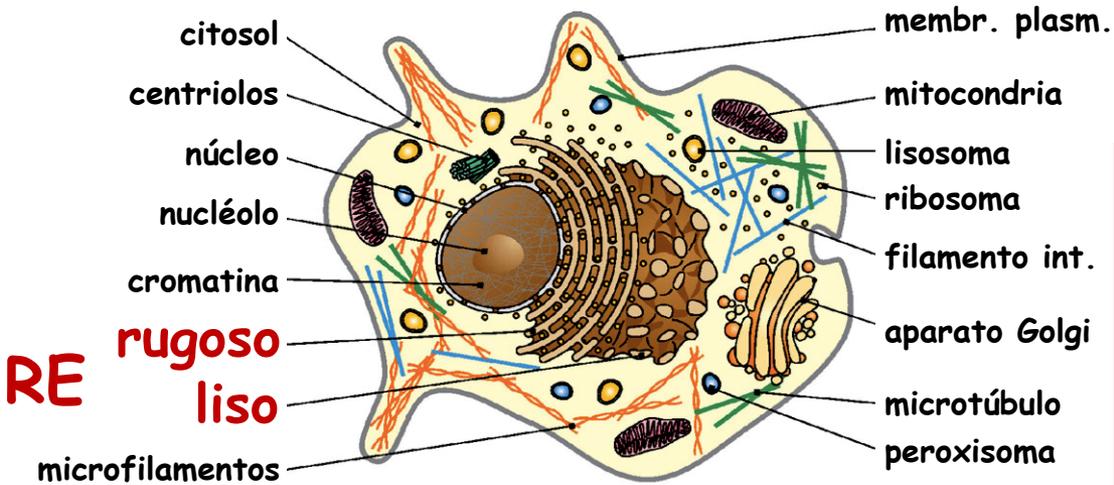


- Envoltura Nuclear  $\Rightarrow$  doble bicapa lipídica
- Bicapa externa conectada con membrana de RE
- Lumen perinuclear conectado con lumen de RE
- Poros nucleares





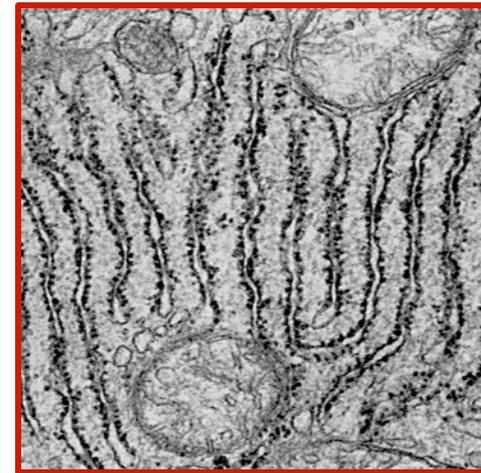
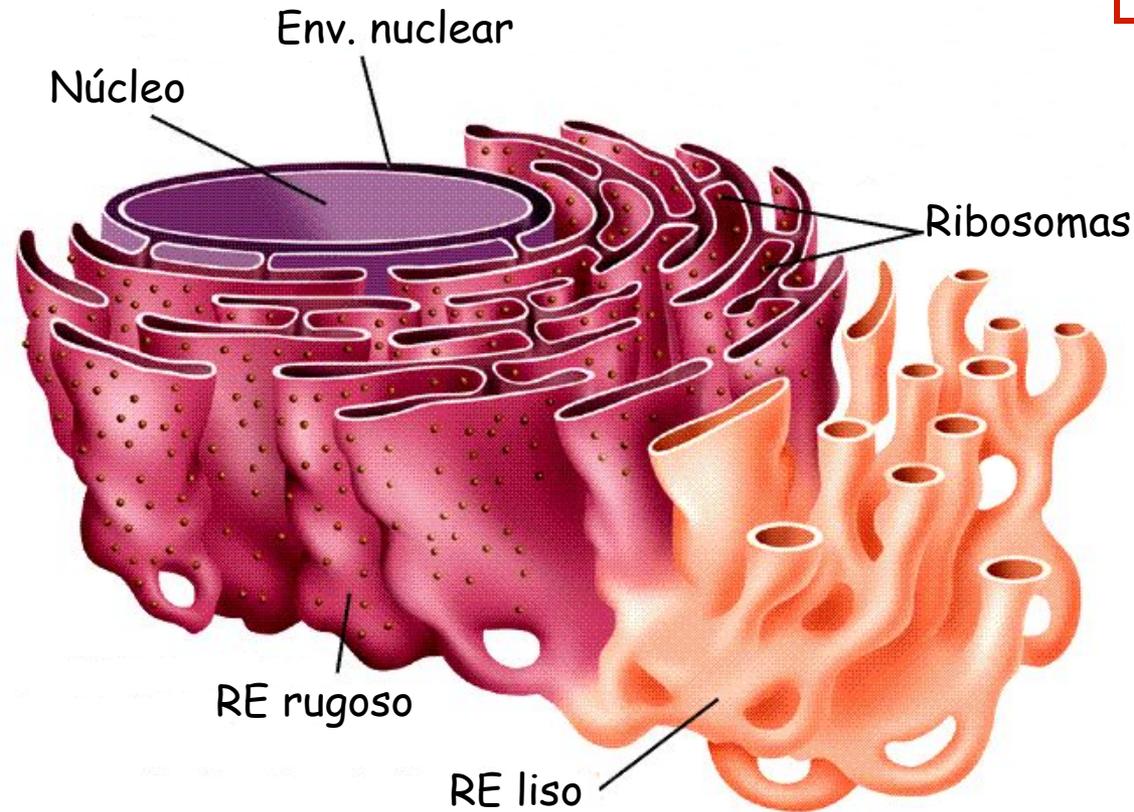
- Información genética almacenada en la Cromatina (DNA+proteínas -histonas)
- Empaquetamiento de cromosomas (economía de espacio)
- Replicación y transcripción del DNA
- Nucléolo: producción de rRNA
- Exportación de RNAs a través de los poros



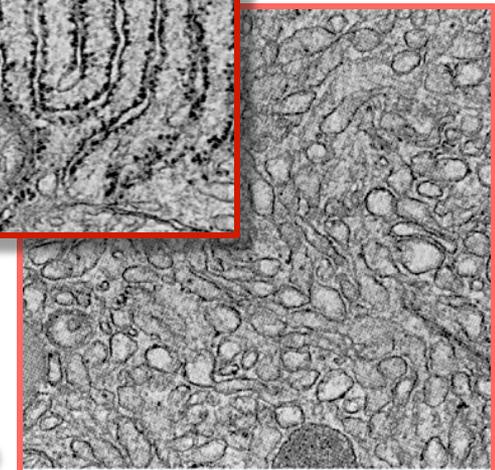
## Retículo Endoplásmico

### FUNCIONES

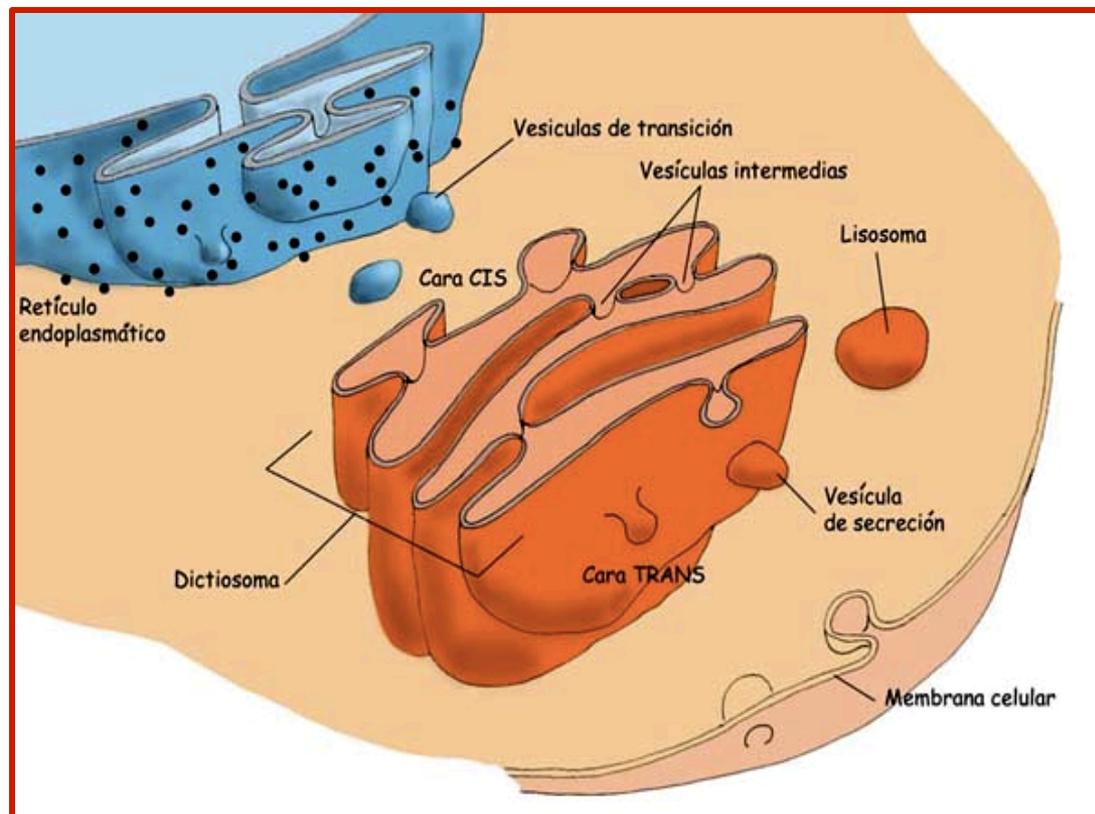
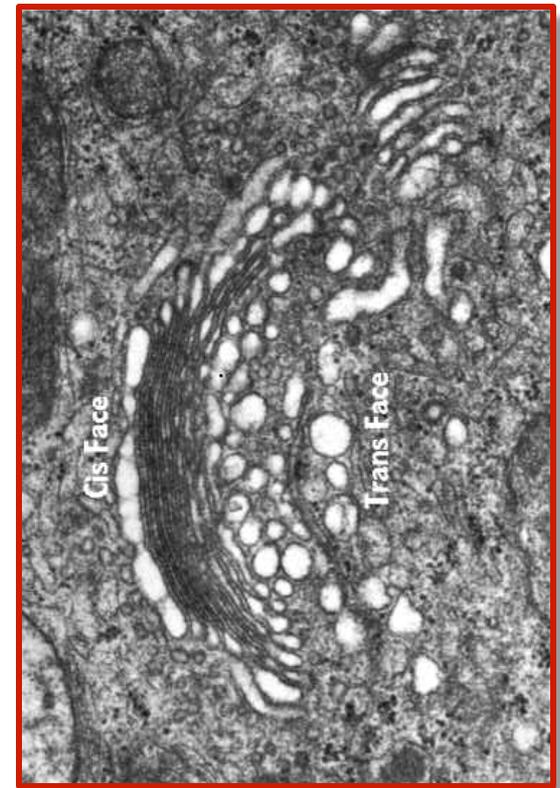
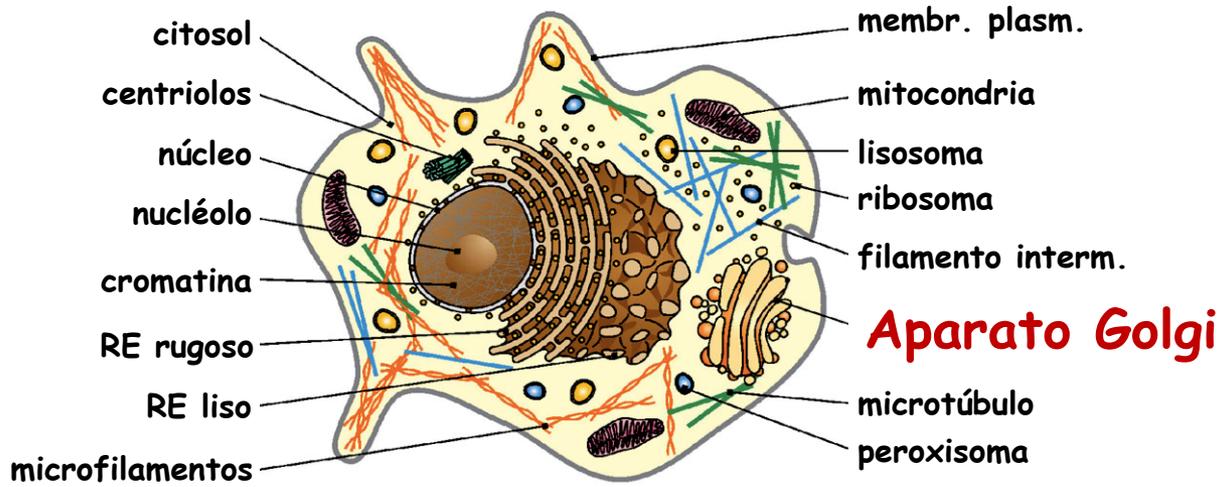
- Síntesis de proteínas de membrana y de secreción
- Síntesis de lípidos y esteroides
- Regulación del  $\text{Ca}^{2+}$  intracelular
- Metabolización y eliminación de xenobióticos
- Soporte mecánico



rugoso

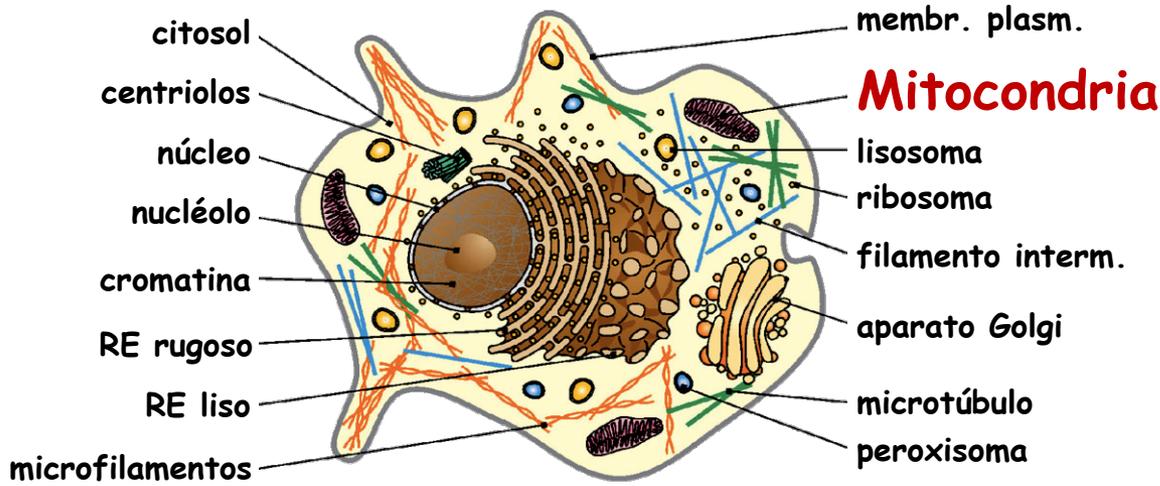


liso

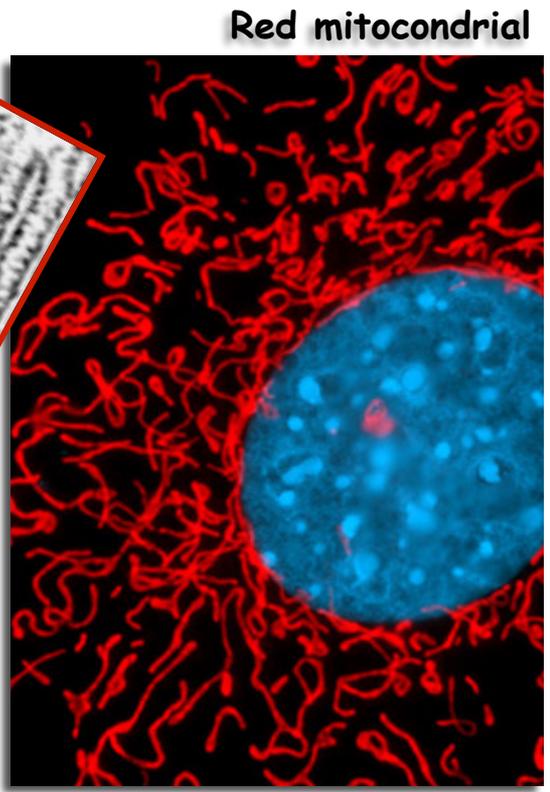
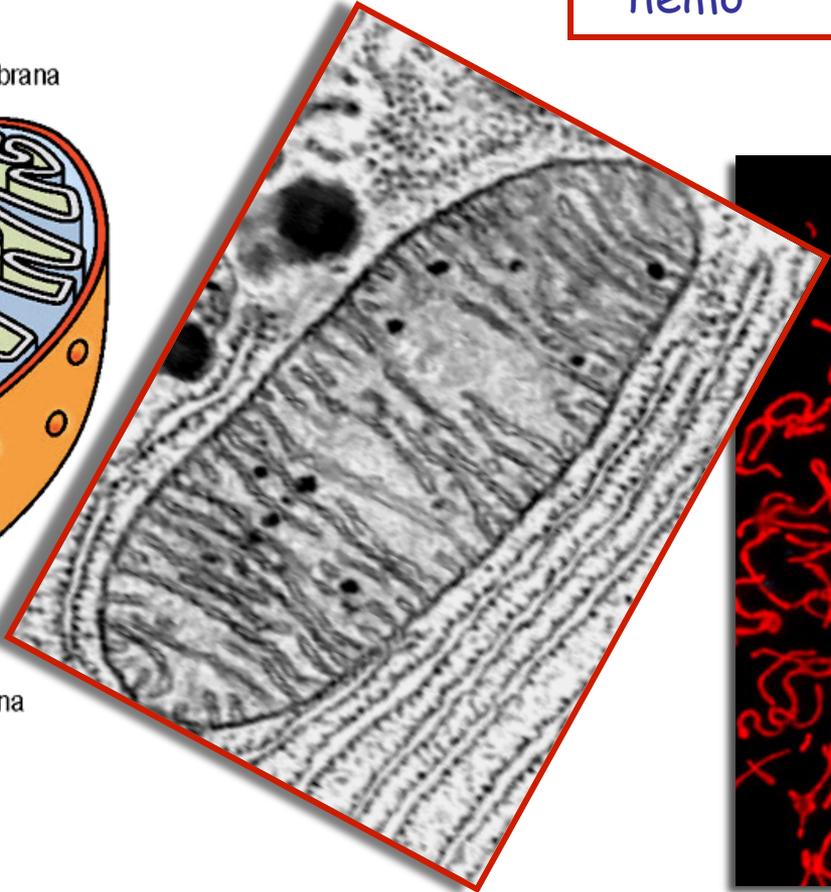
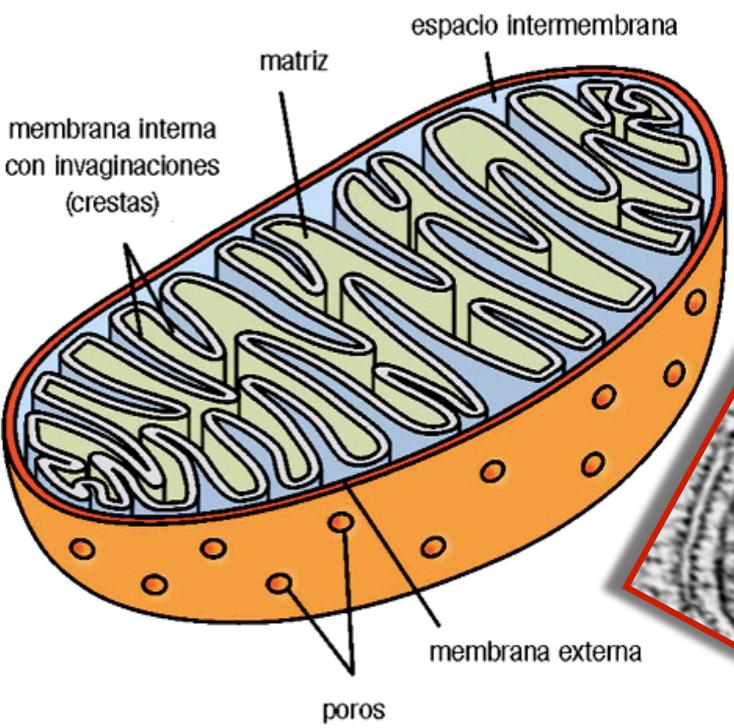


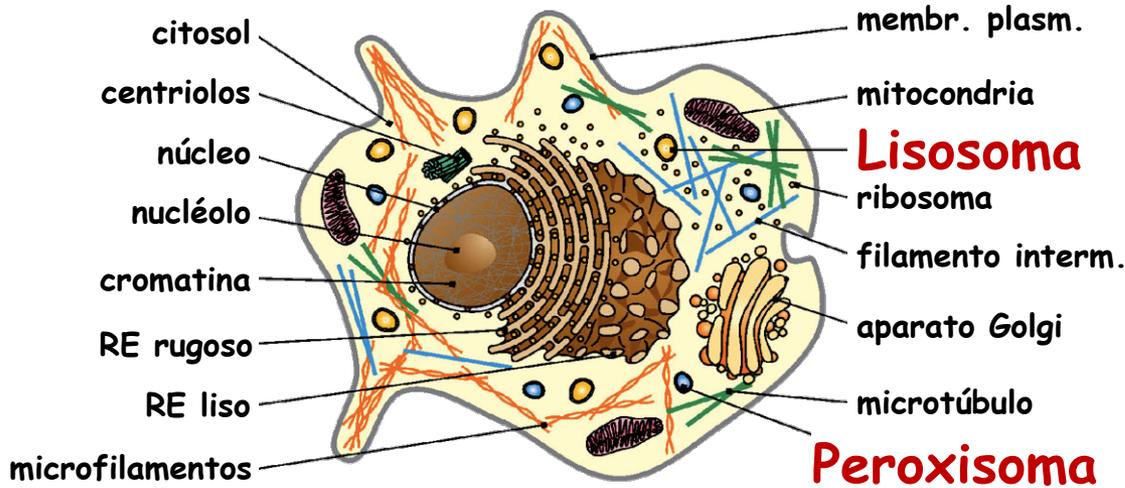
## FUNCIONES

- Modificación (i.e. glicosilación, puentes disulfuro, fosforilación ...), clasificación y "facturación" hasta su destino final (intra o extra celular) de las proteínas sintetizadas en el retículo endoplásmico.



- FUNCIONES**
- Producción de ATP
  - Respiración celular
  - Oxidación de carbohidratos y lípidos
  - Síntesis de la urea y del hemo





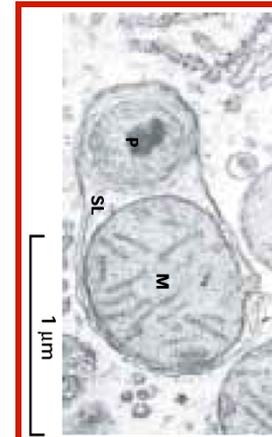
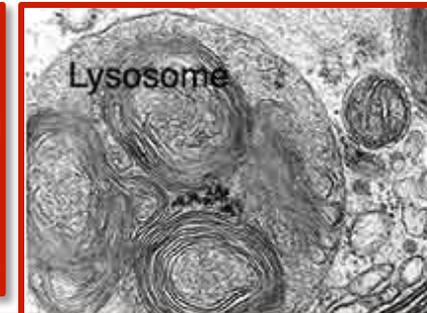
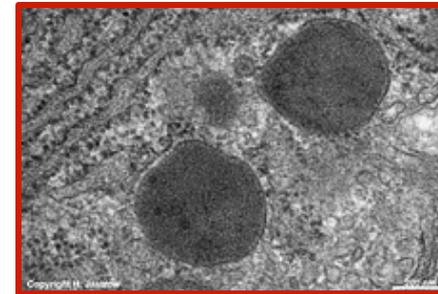
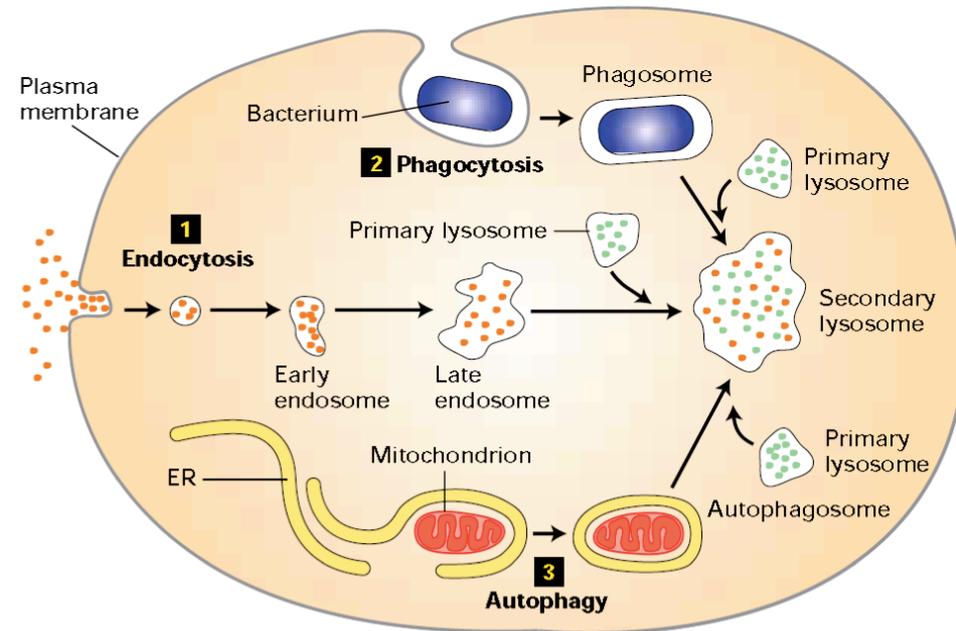
## FUNCIONES

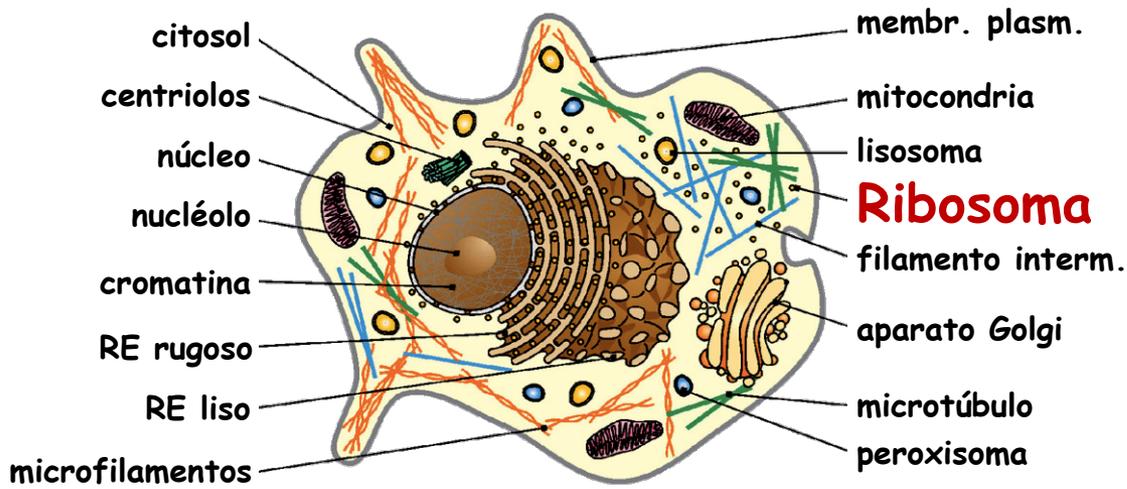
### Lisosomas

- Digestión celular
- Hidrólisis de proteínas, lípidos, glúcidos, ác. nucleicos

### Peroxisomas

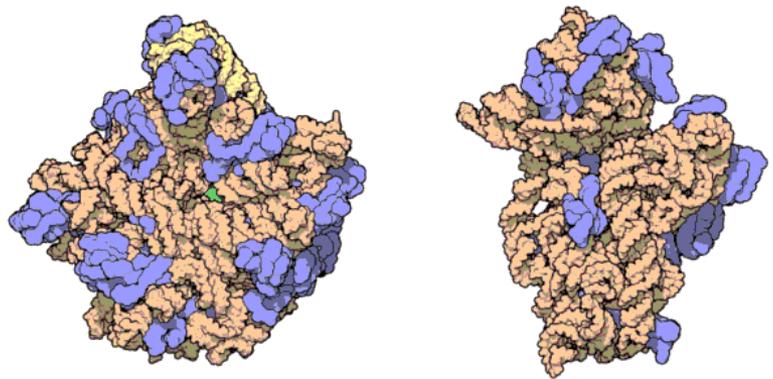
- Oxidación por  $O_2$  molecular
- Eliminación de  $H_2O_2$
- Eliminación de radicales





## FUNCIÓN

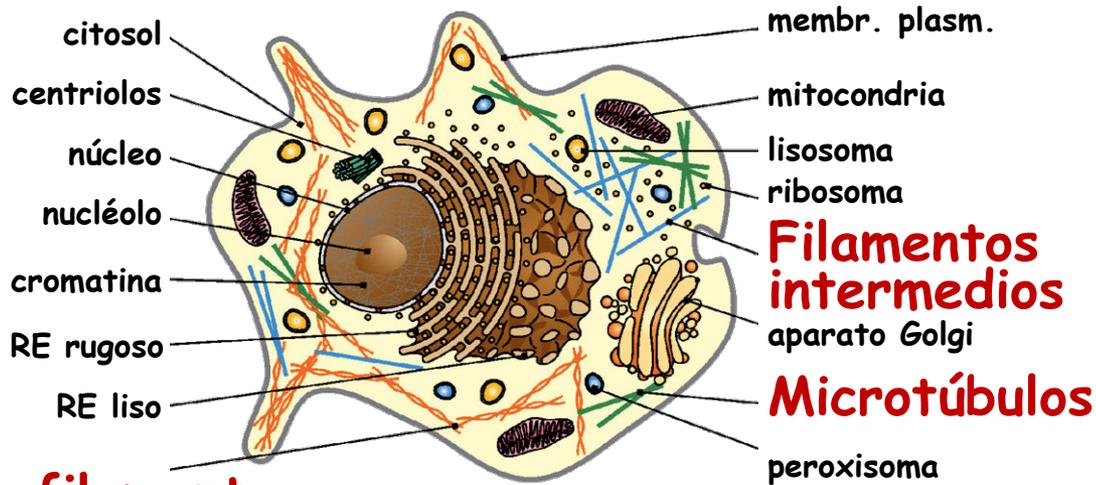
- Máquinas moleculares encargadas de la síntesis de proteínas : **traducen el mensaje genético**



Subunidad grande

Subunidad pequeña

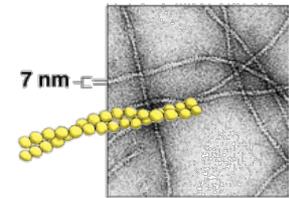




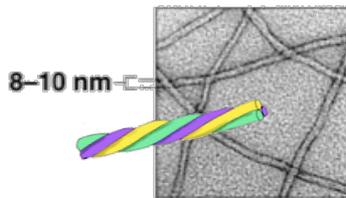
## FUNCIONES

- **CITOESQUELETO** (estabilidad mecánica)
- Morfología celular
- Movilidad celular
- Movimientos intracelulares (i.e., separación de cromosomas, desplazamientos de orgánulos)

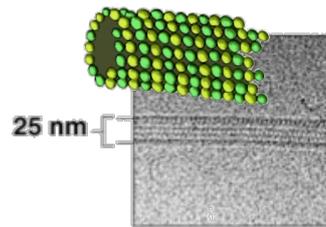
## Microfilamentos



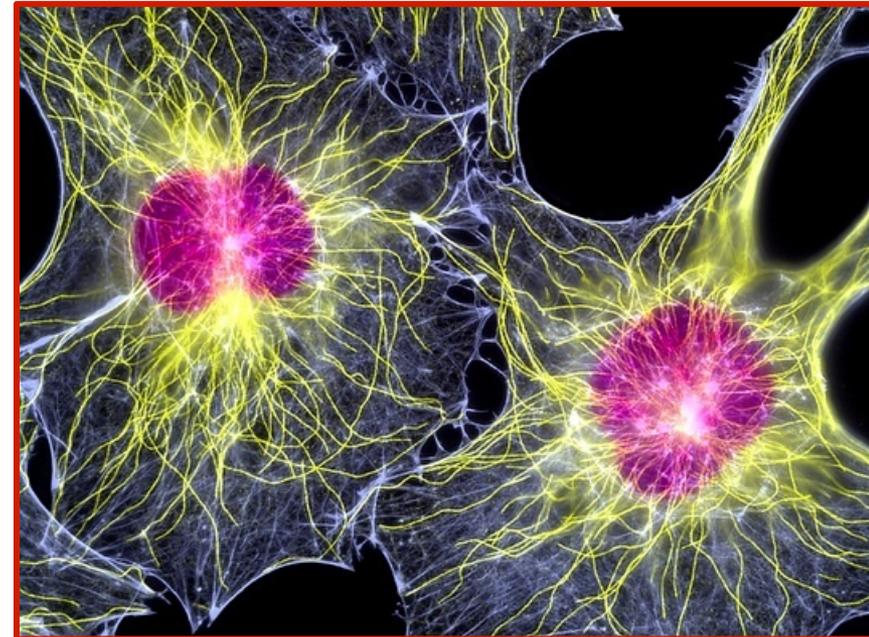
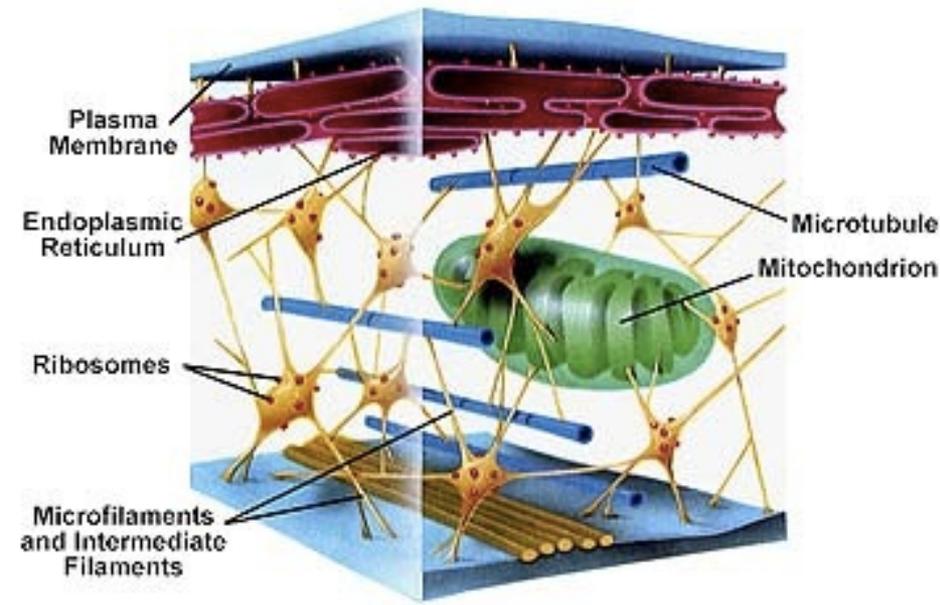
Microfilamentos

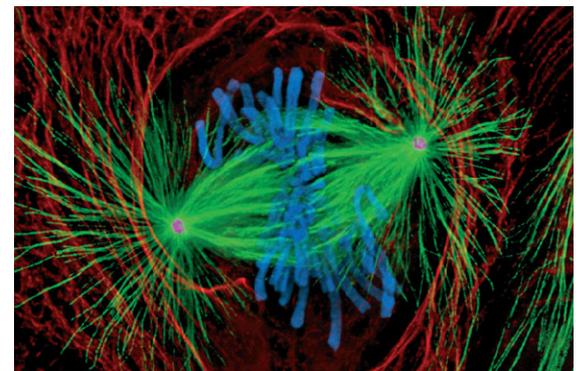
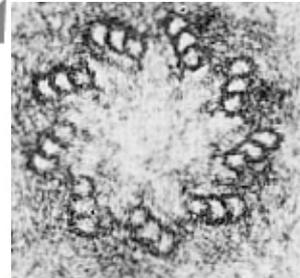
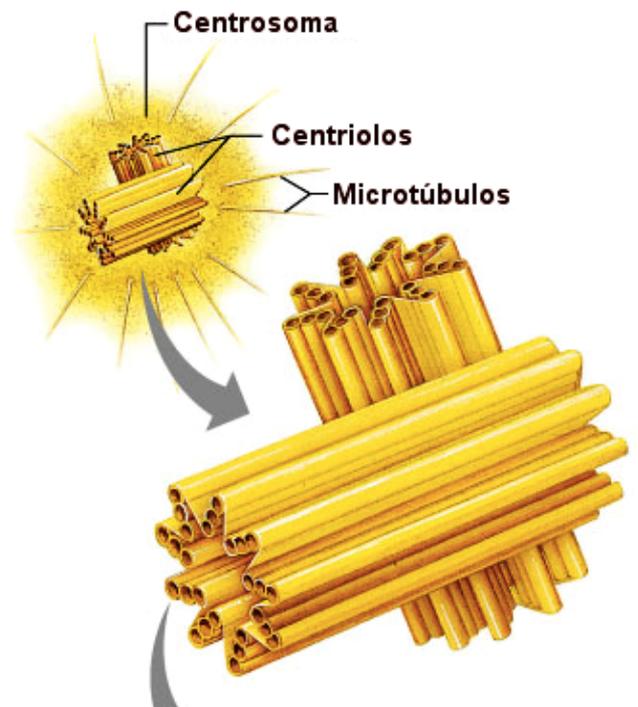
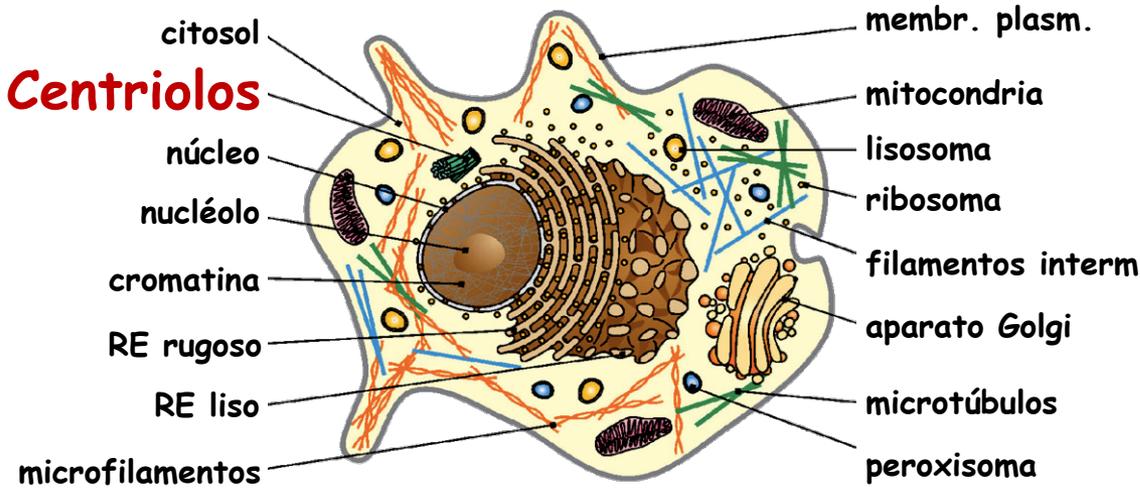


Filamentos intermedios

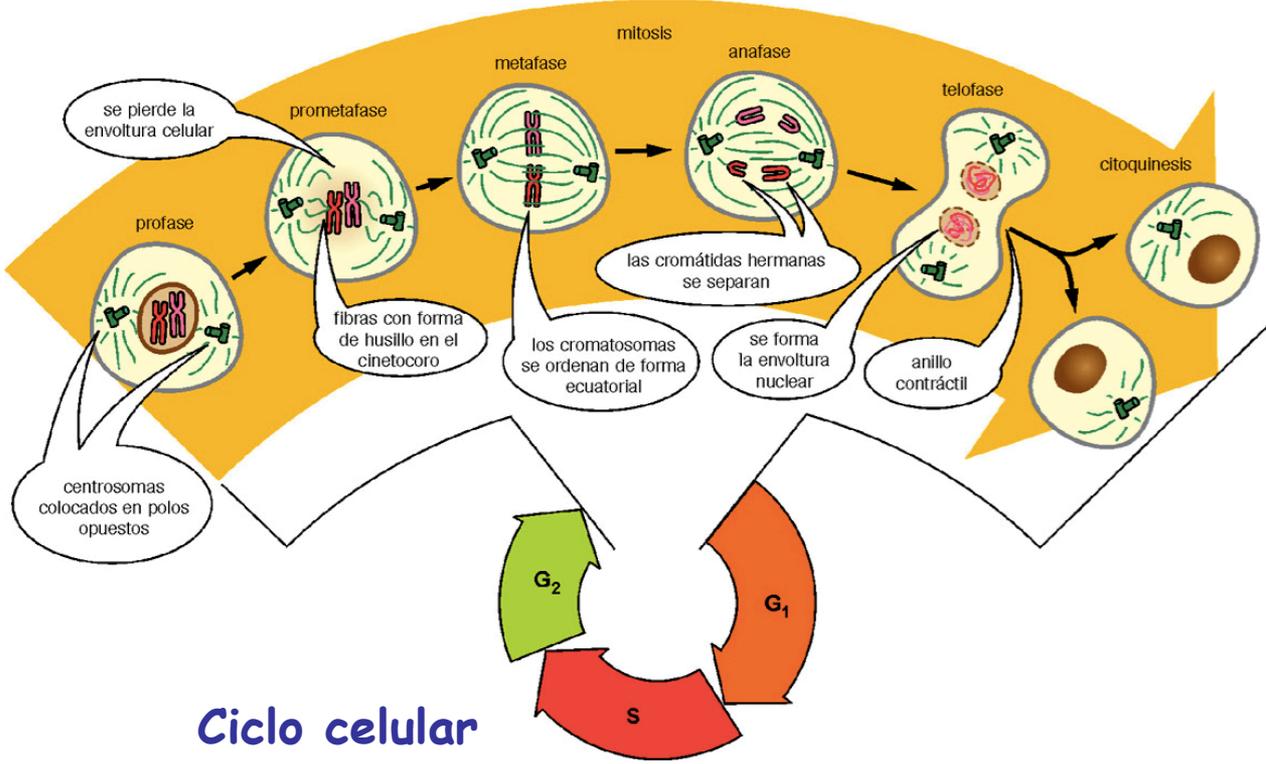


Microtúbulos

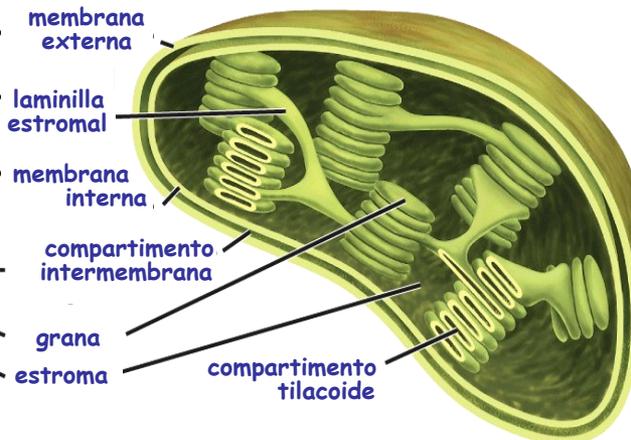
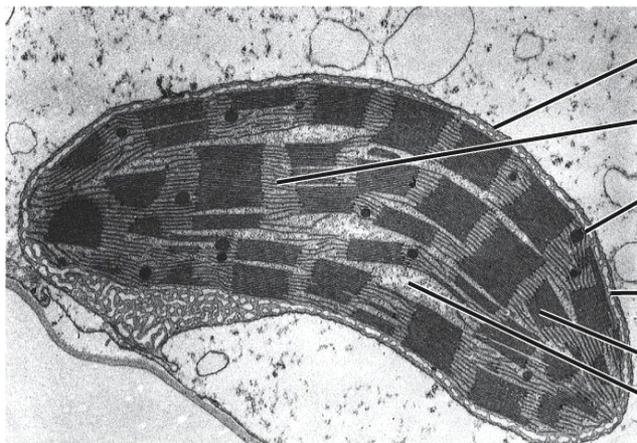
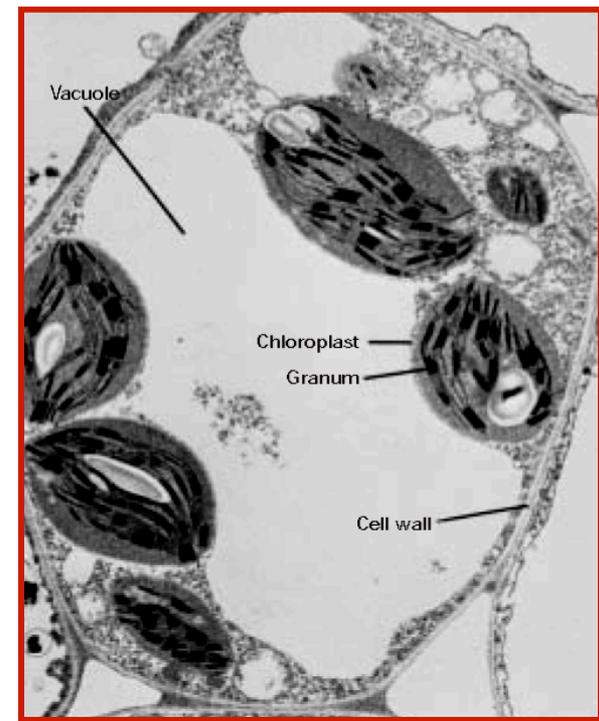
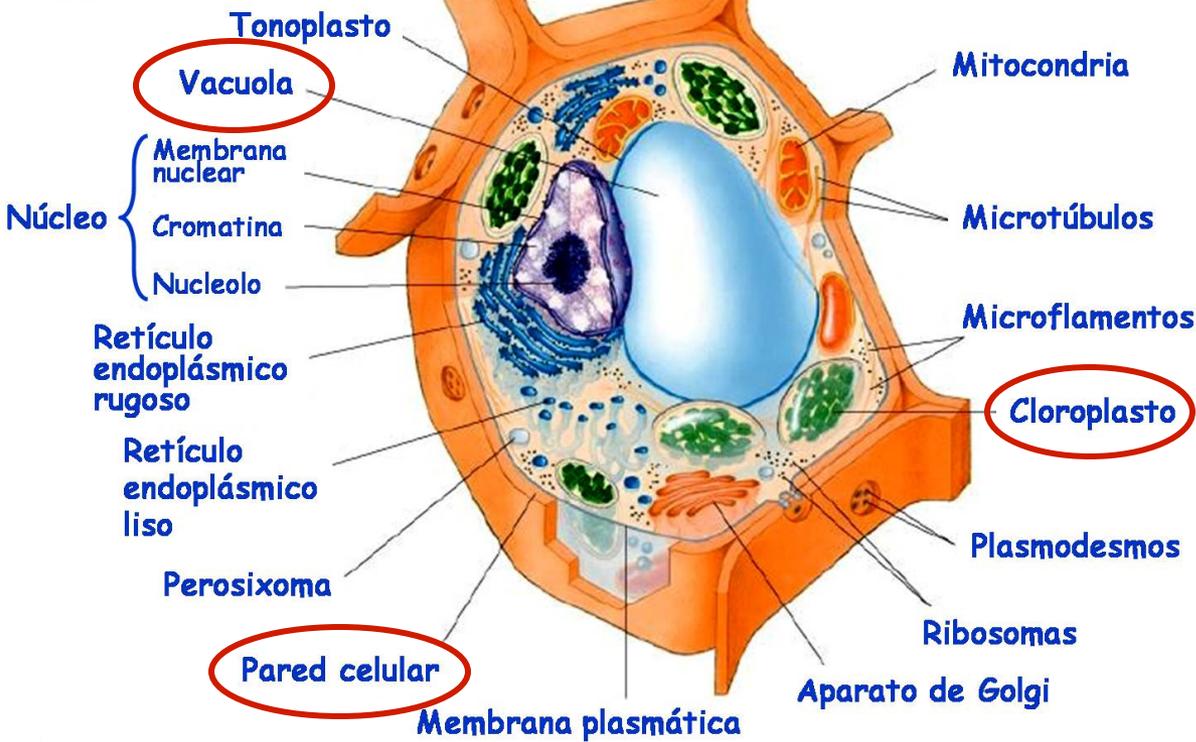




# Mitosis



# Célula Vegetal



## Cloroplastos

### Pared celular

- Resistencia a presión osmótica

### Vacuolas

- Acumulación de agua, iones, nutrientes, ...

### Cloroplastos

- Fotosíntesis