

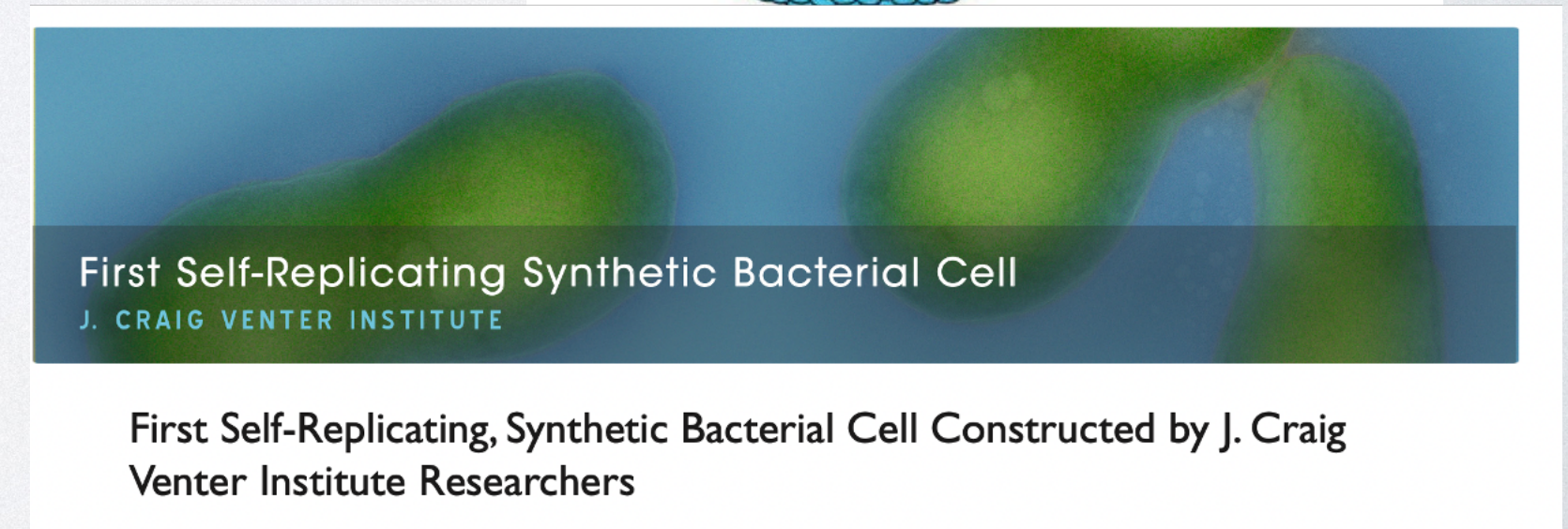
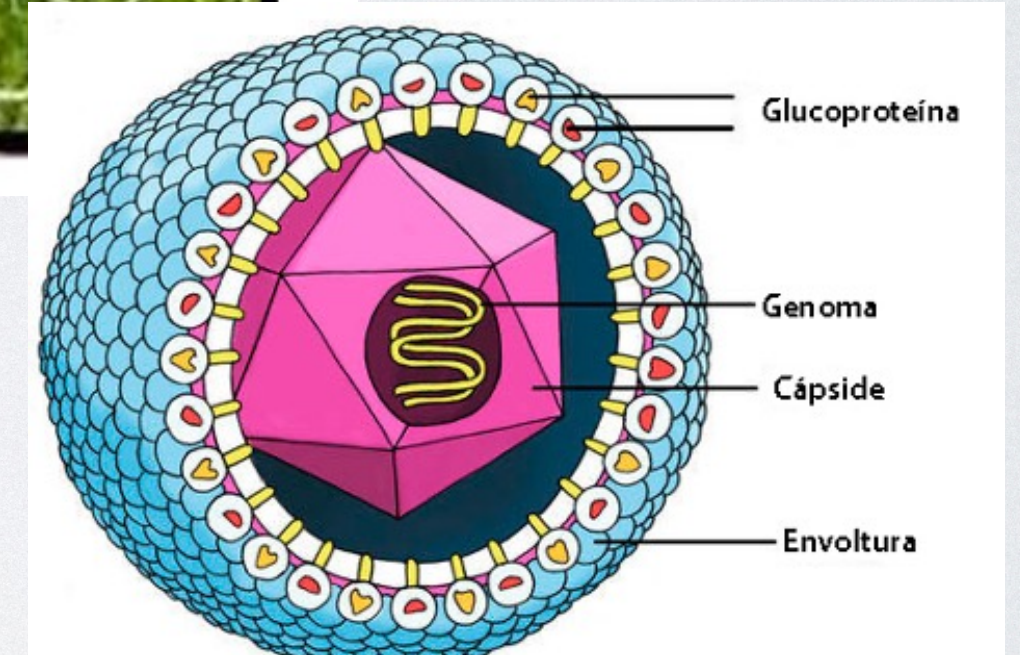
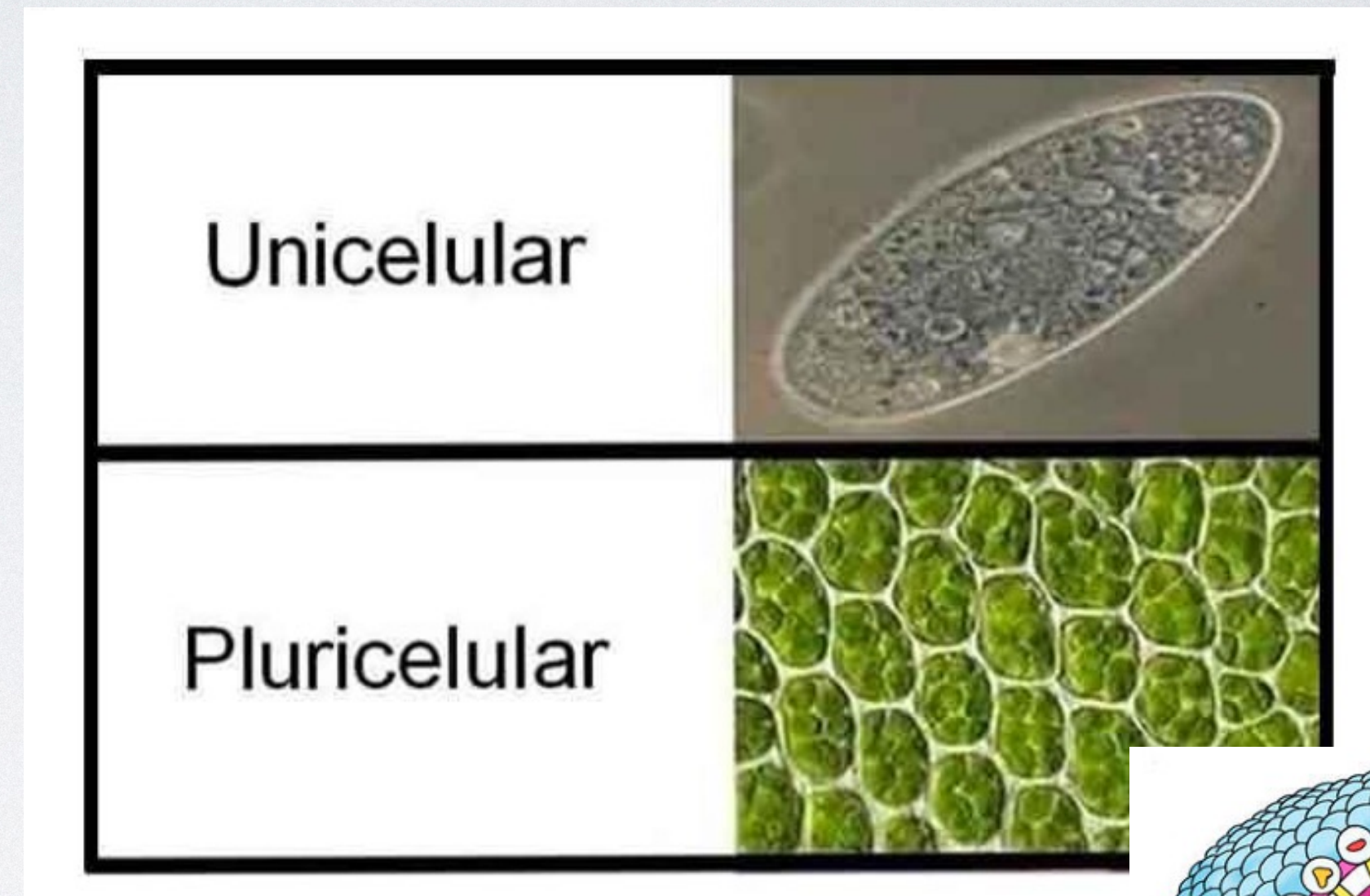
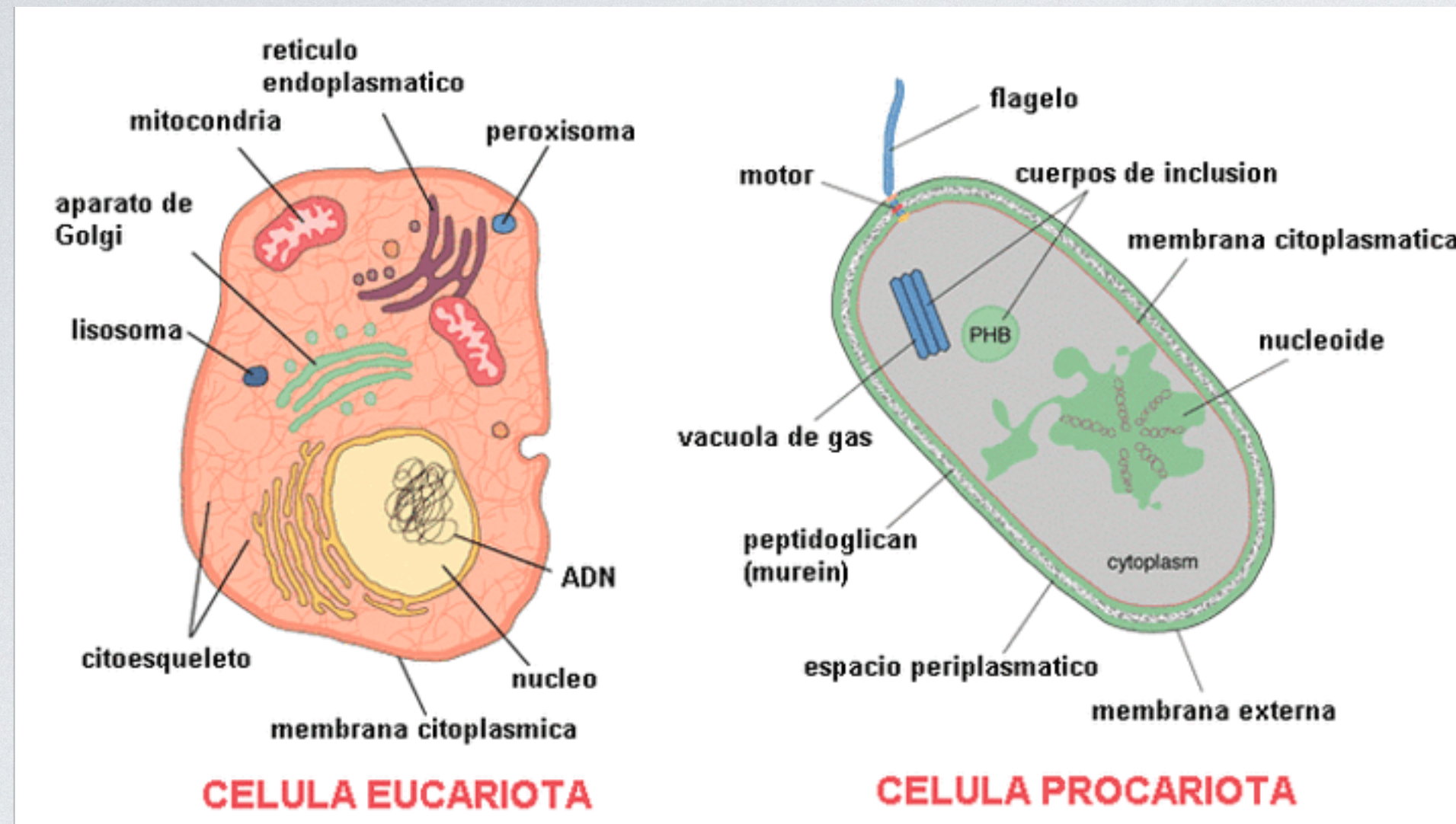
Tema 3.- A célula e a organización celular

Curso 2023 - 2024

- ❑ Xeneralidades. Tipos celulares
- ❑ Célula procariota
- ❑ Célula eucariota: características comúns
- ❑ Células eucariotas: diferenzas

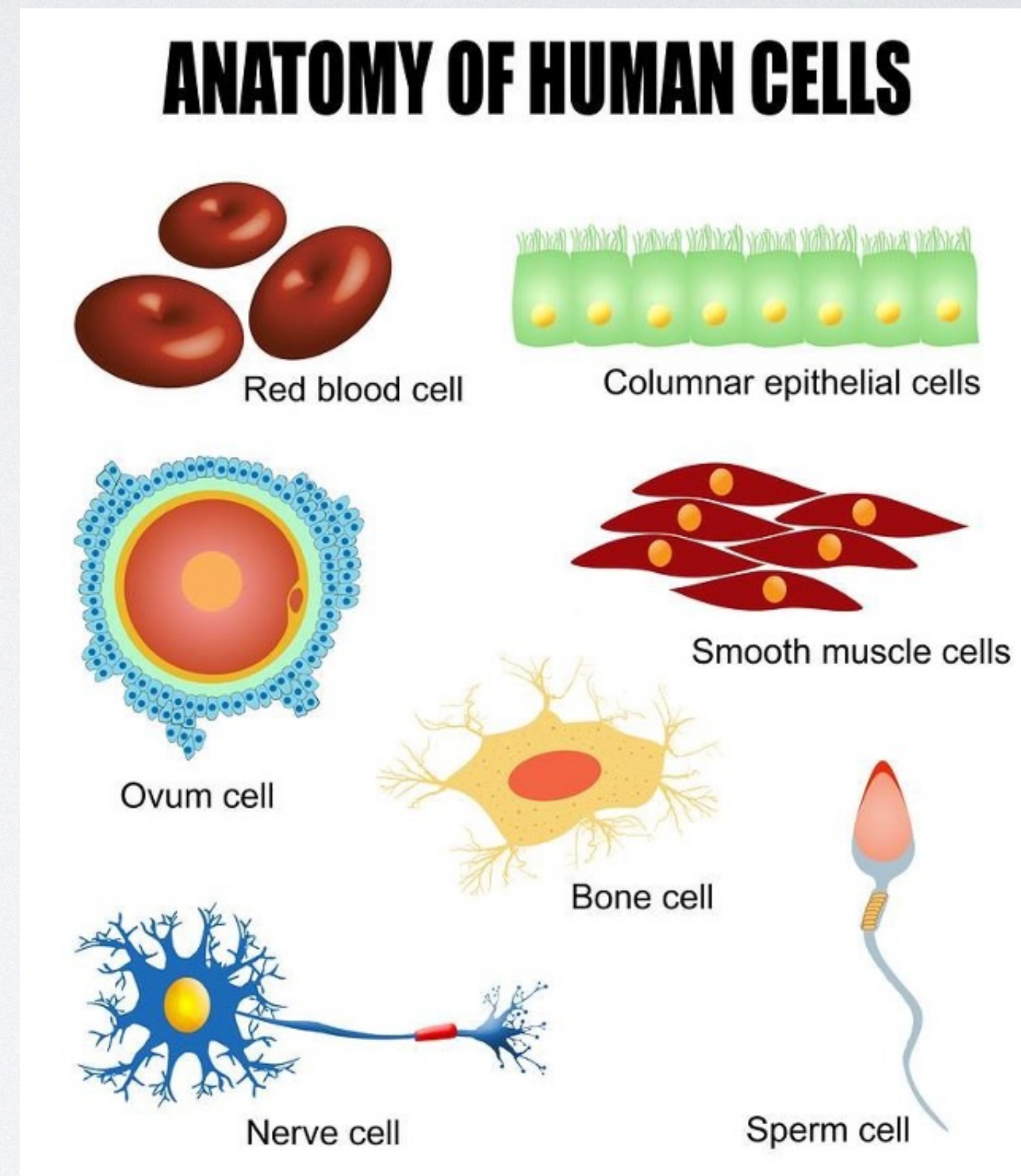
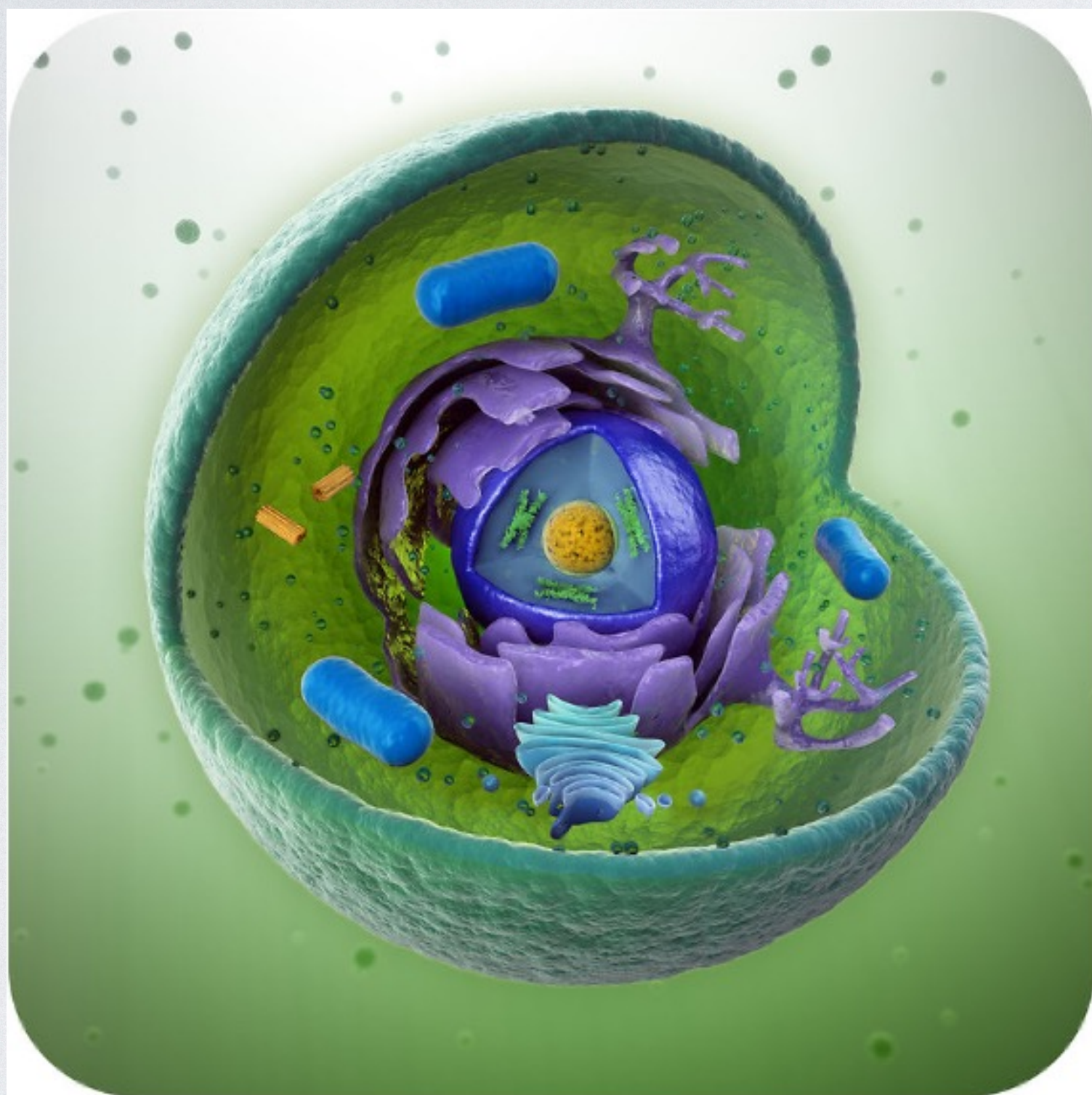


A célula



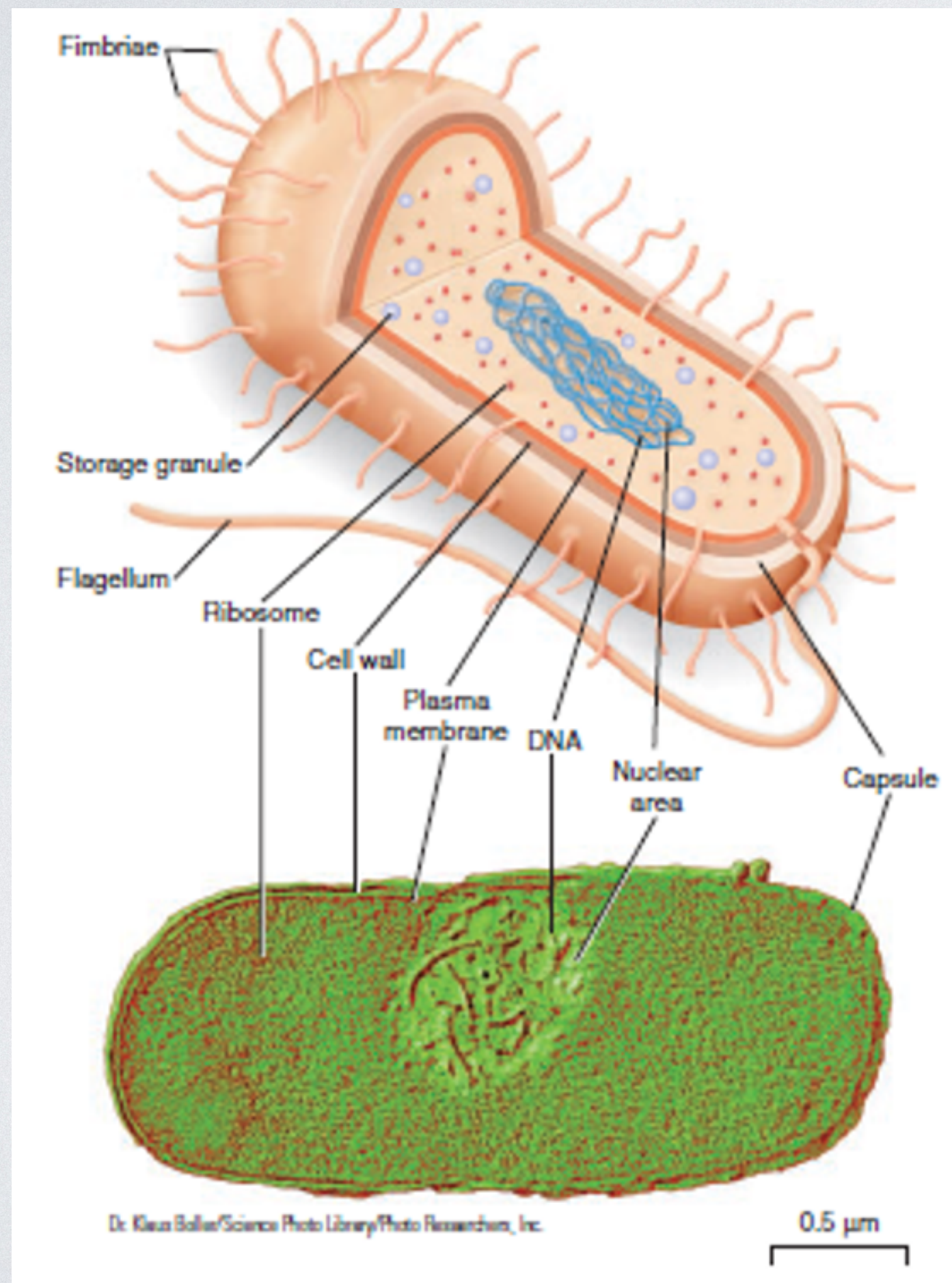
A célula

Tema 3

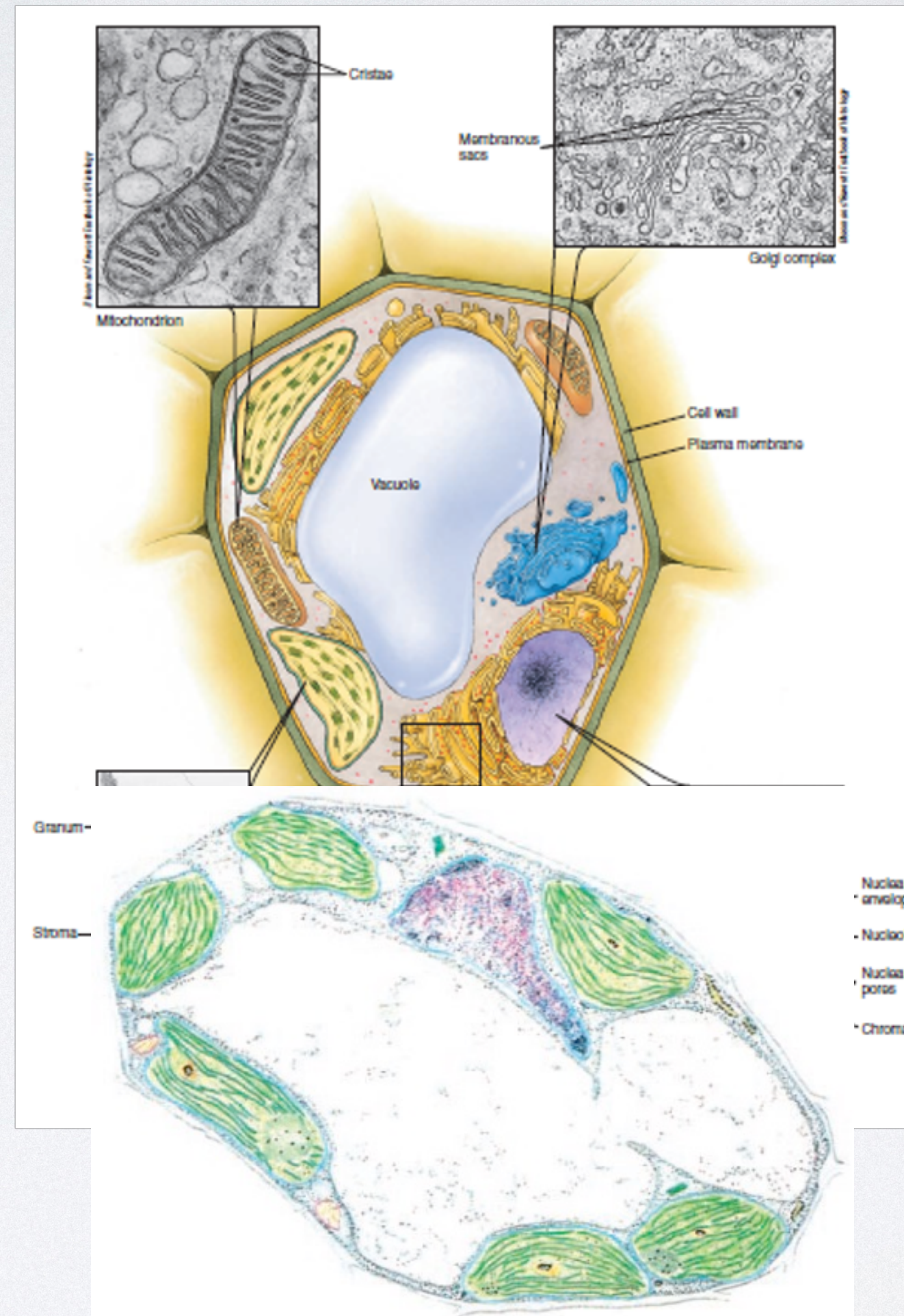


A célula

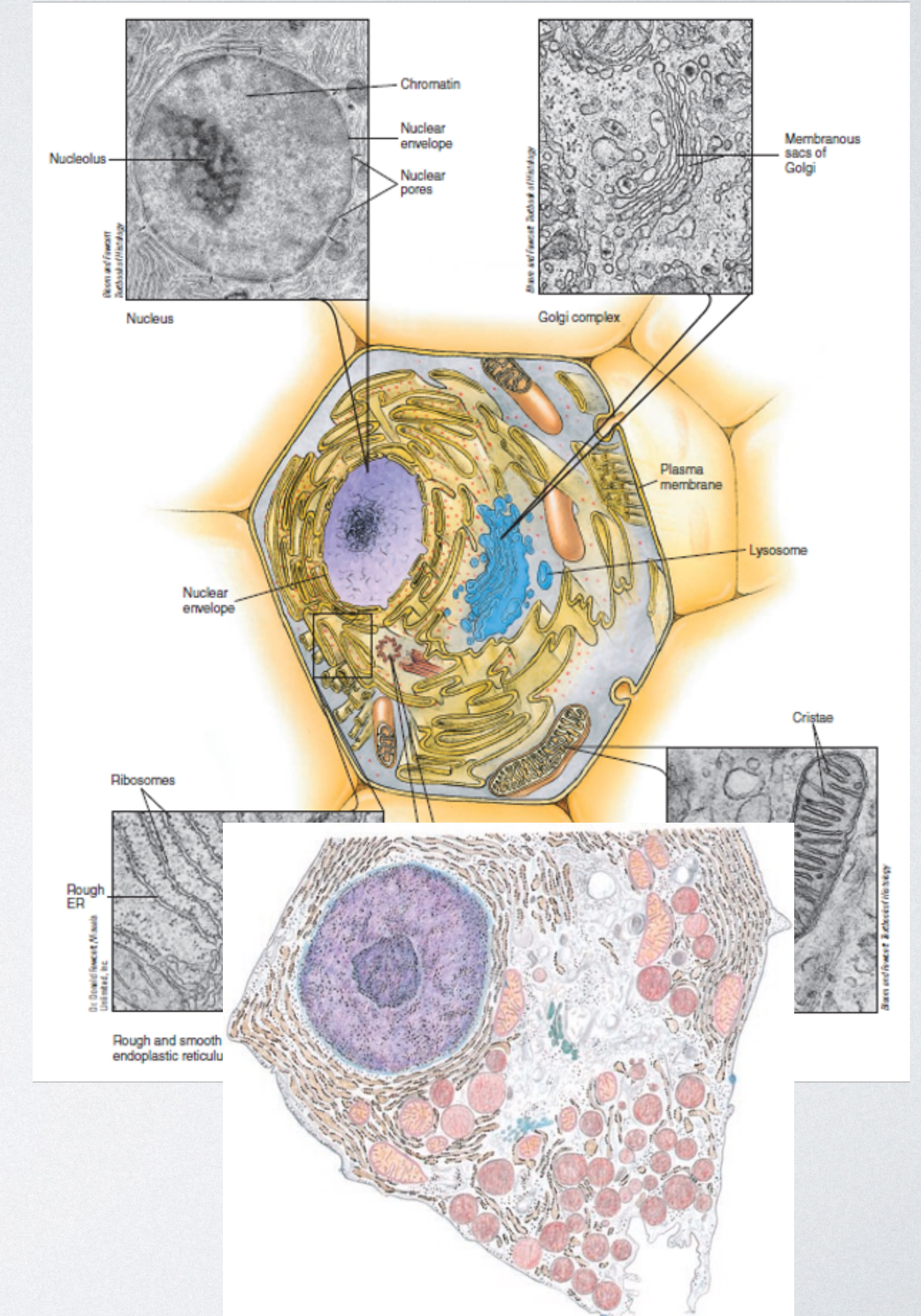
Célula procariota



Célula eucariota vexetal

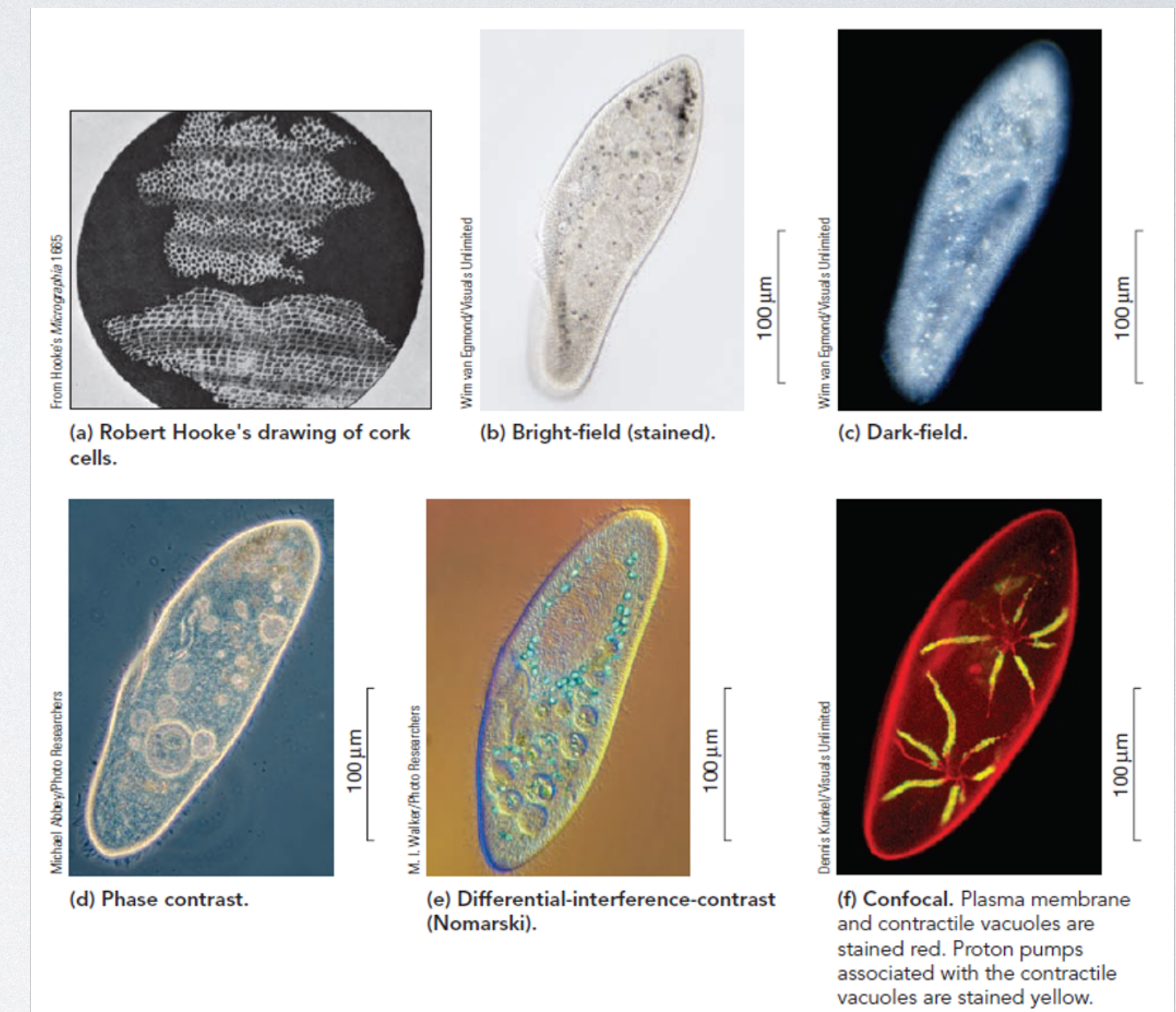
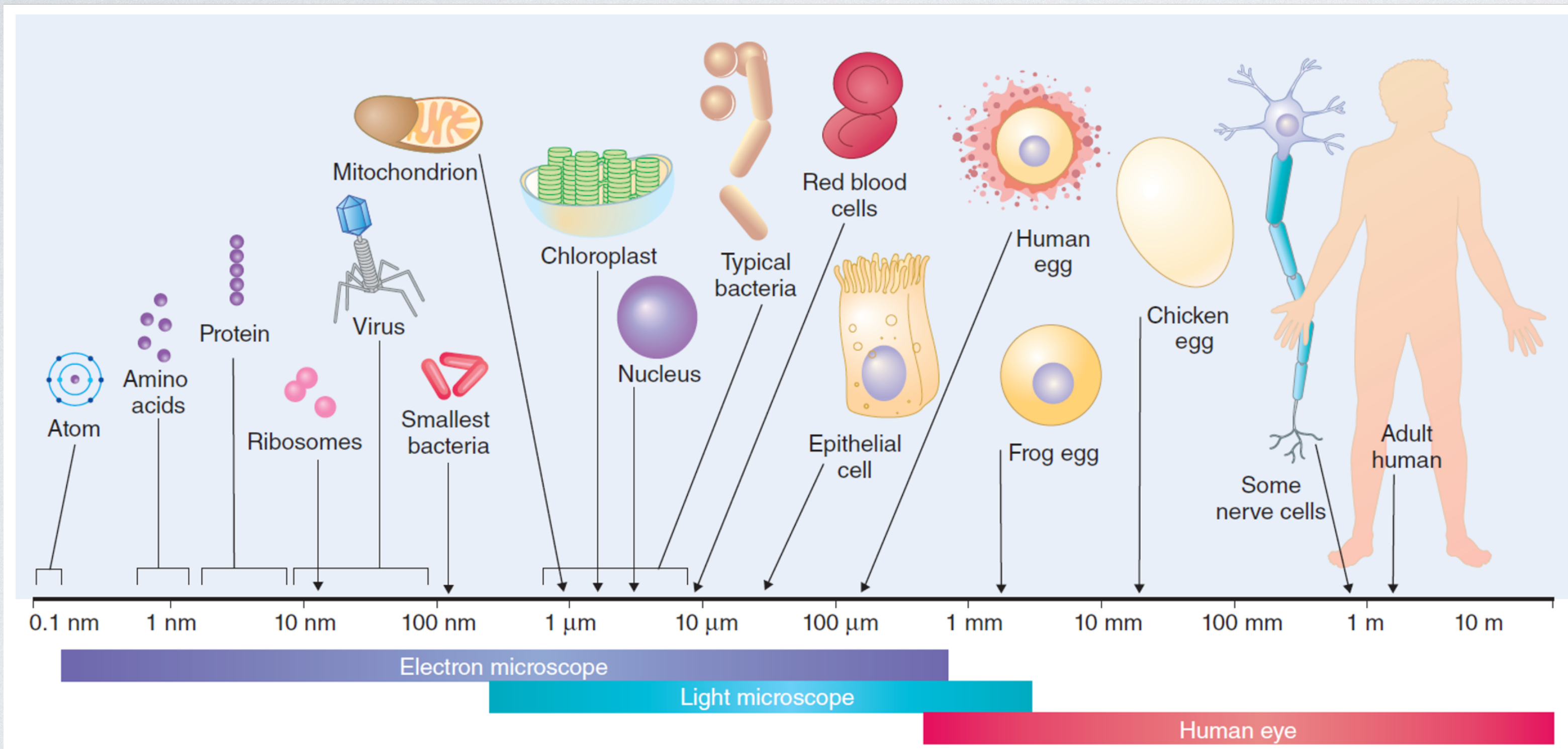


Célula eucariota animal



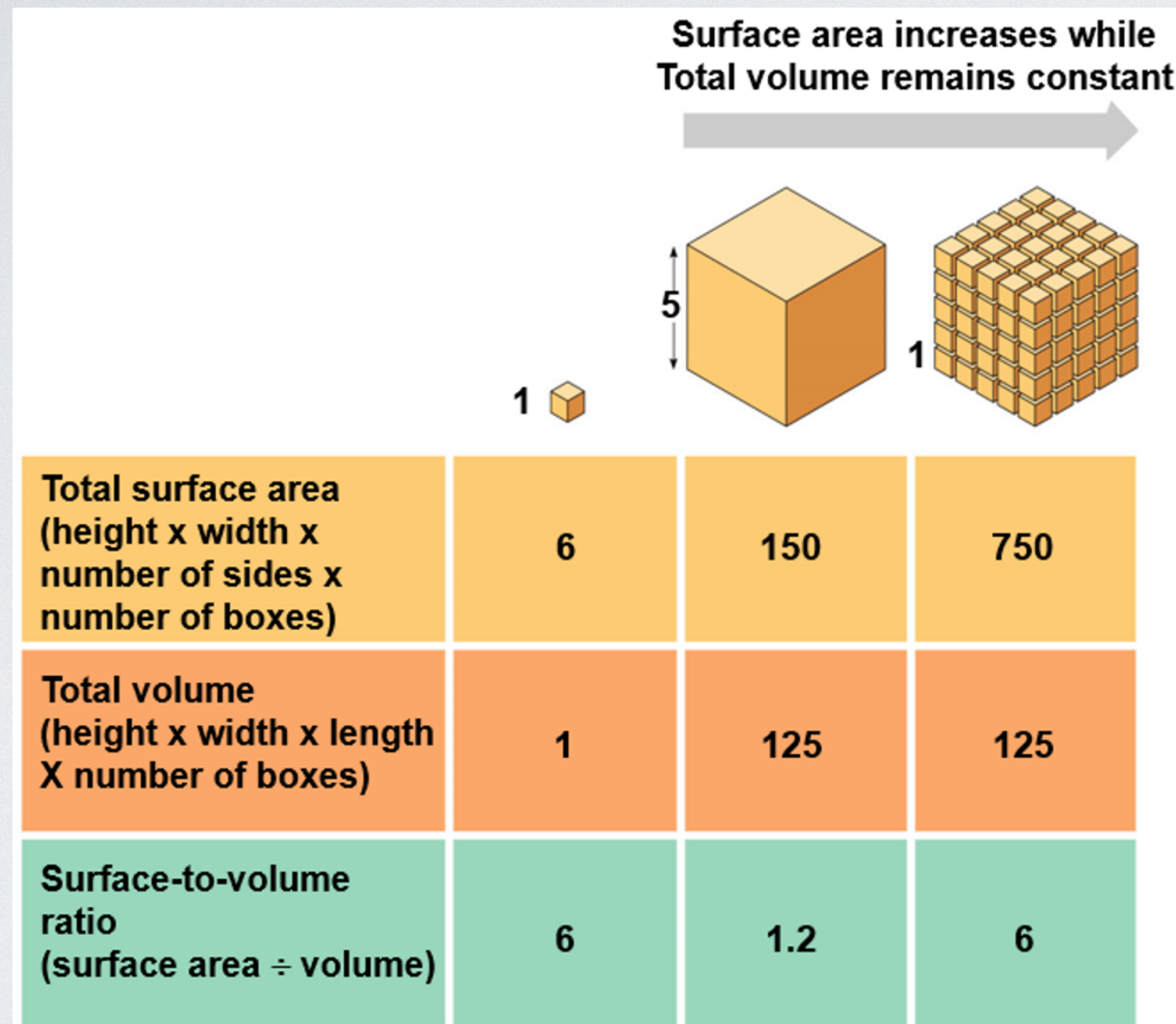
A célula

Tema 3



What programs the size of animal cells?

Shixuan Liu^{1,2,3*}, Ceryl Tan^{1,2†}, Mike Tyers⁴, Anders Zetterberg⁵ and Ran Kafri^{1,2*}



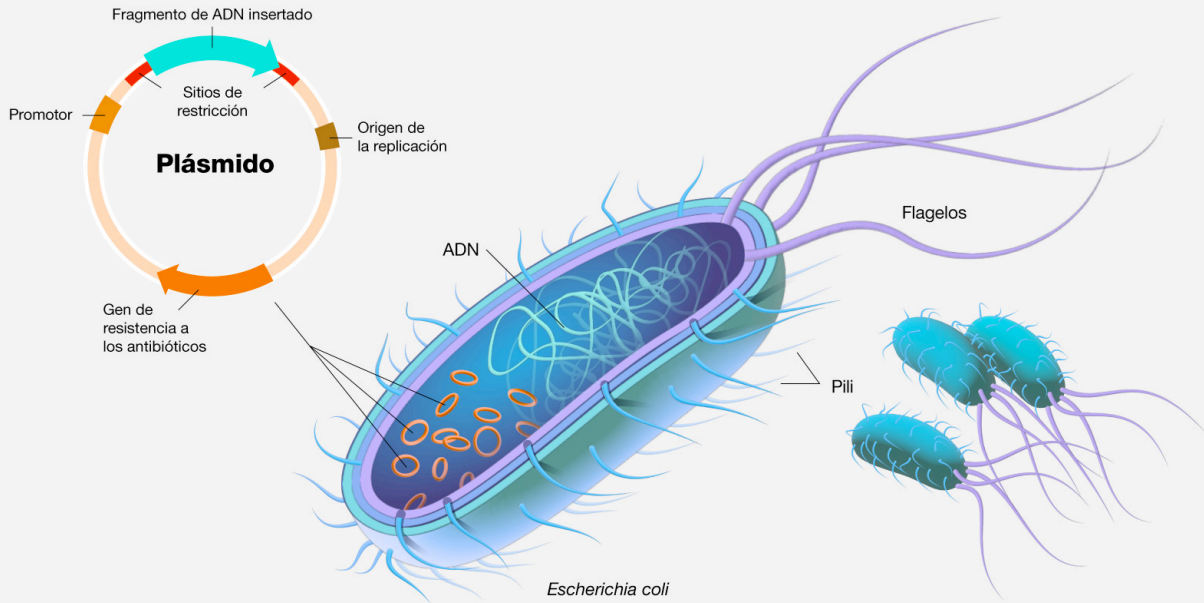
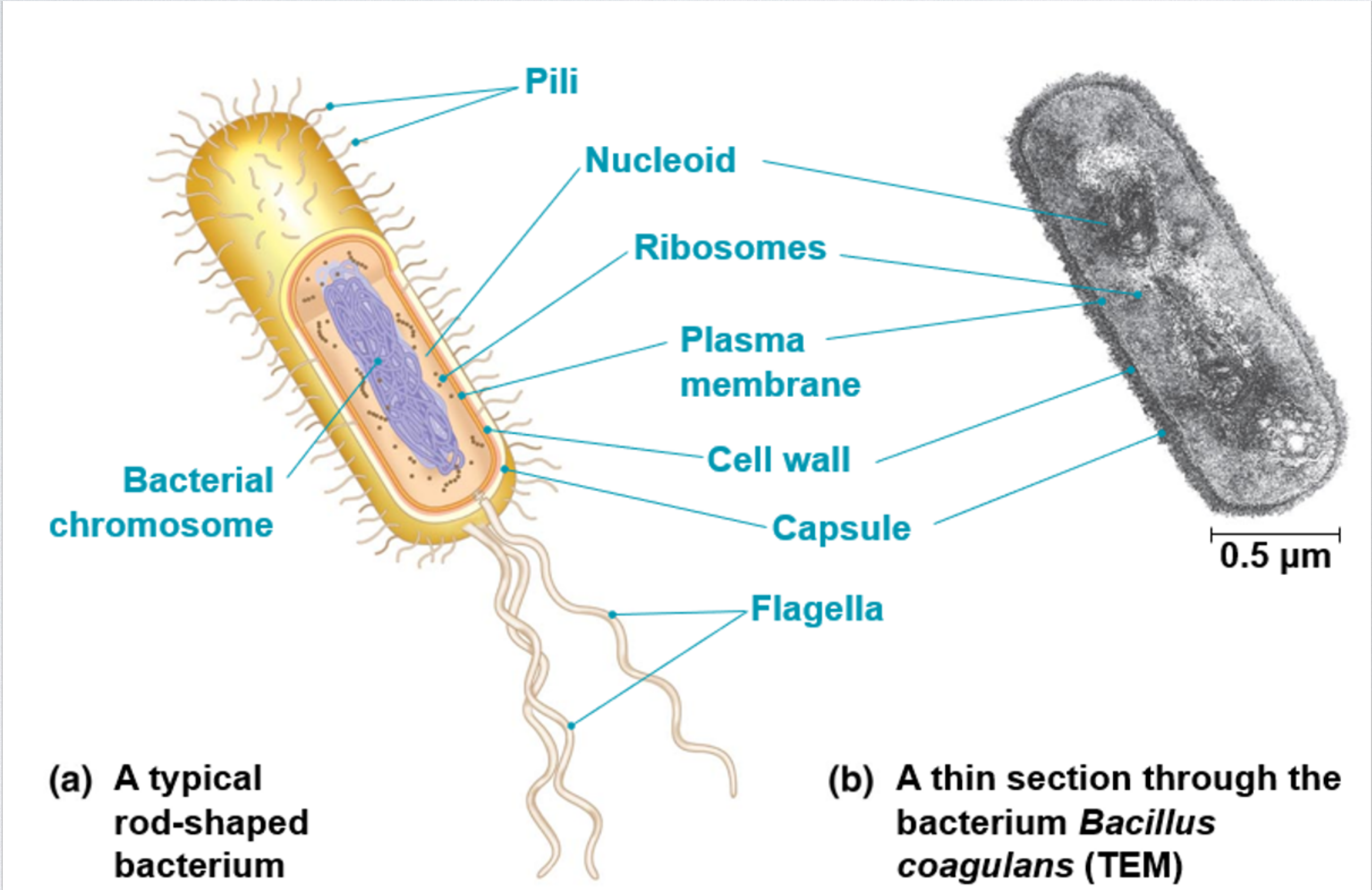
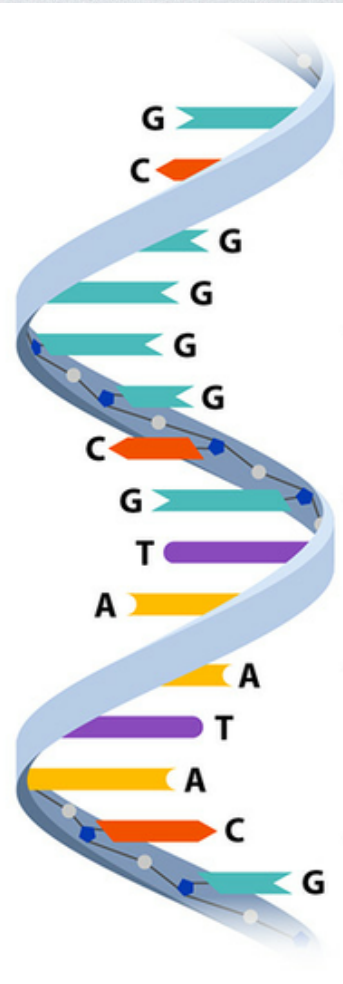
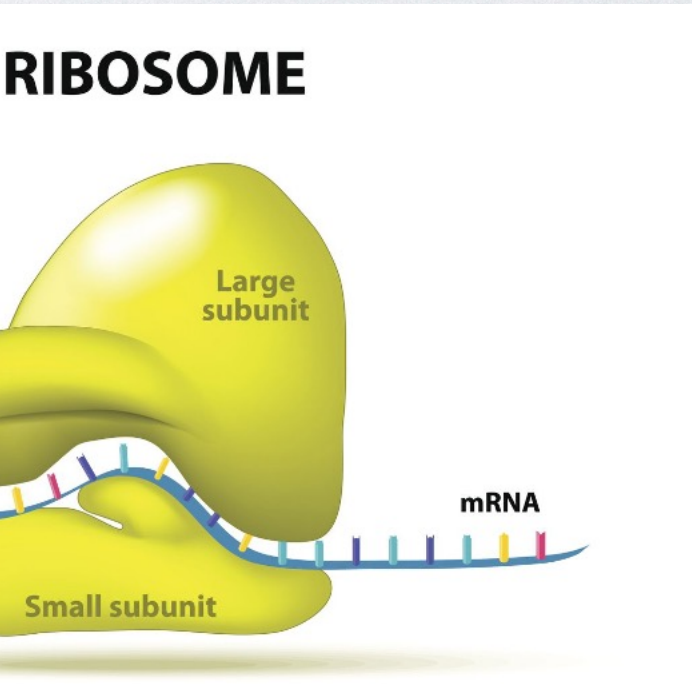
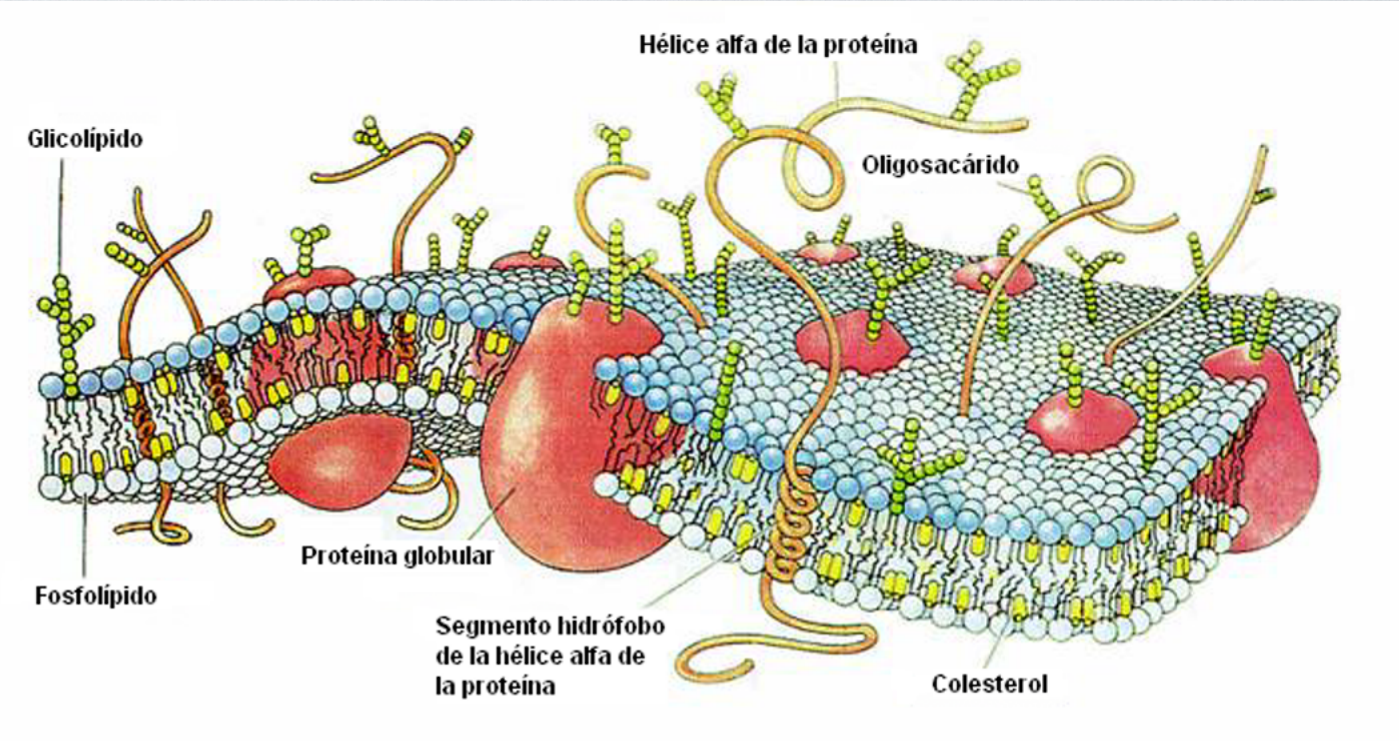
Tamaño celular:

➡ 0,1 - 10 micras procariotas

➡ 10 - 100 micras eucariotas

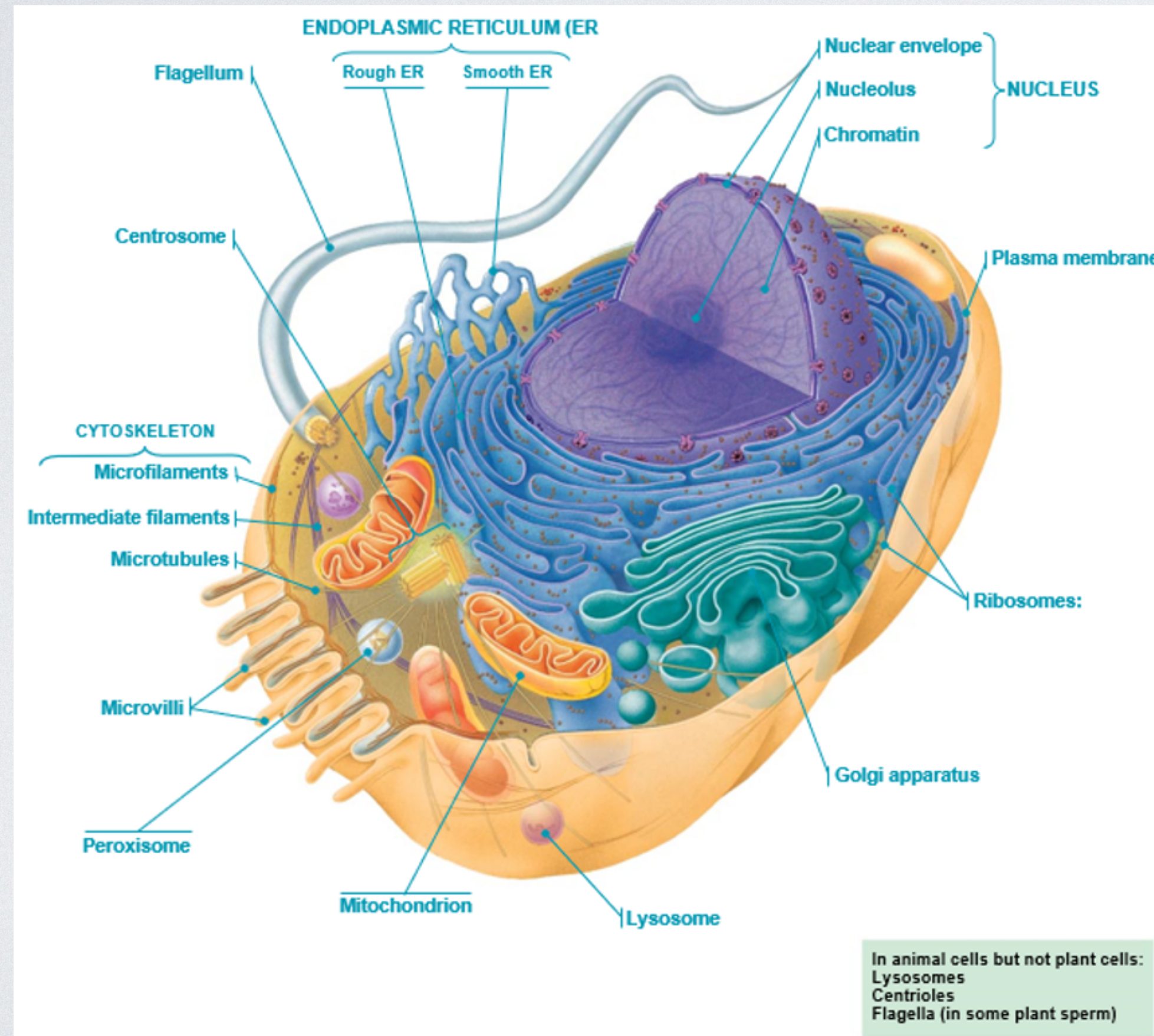
A célula procariota

Bacterias
Arqueas

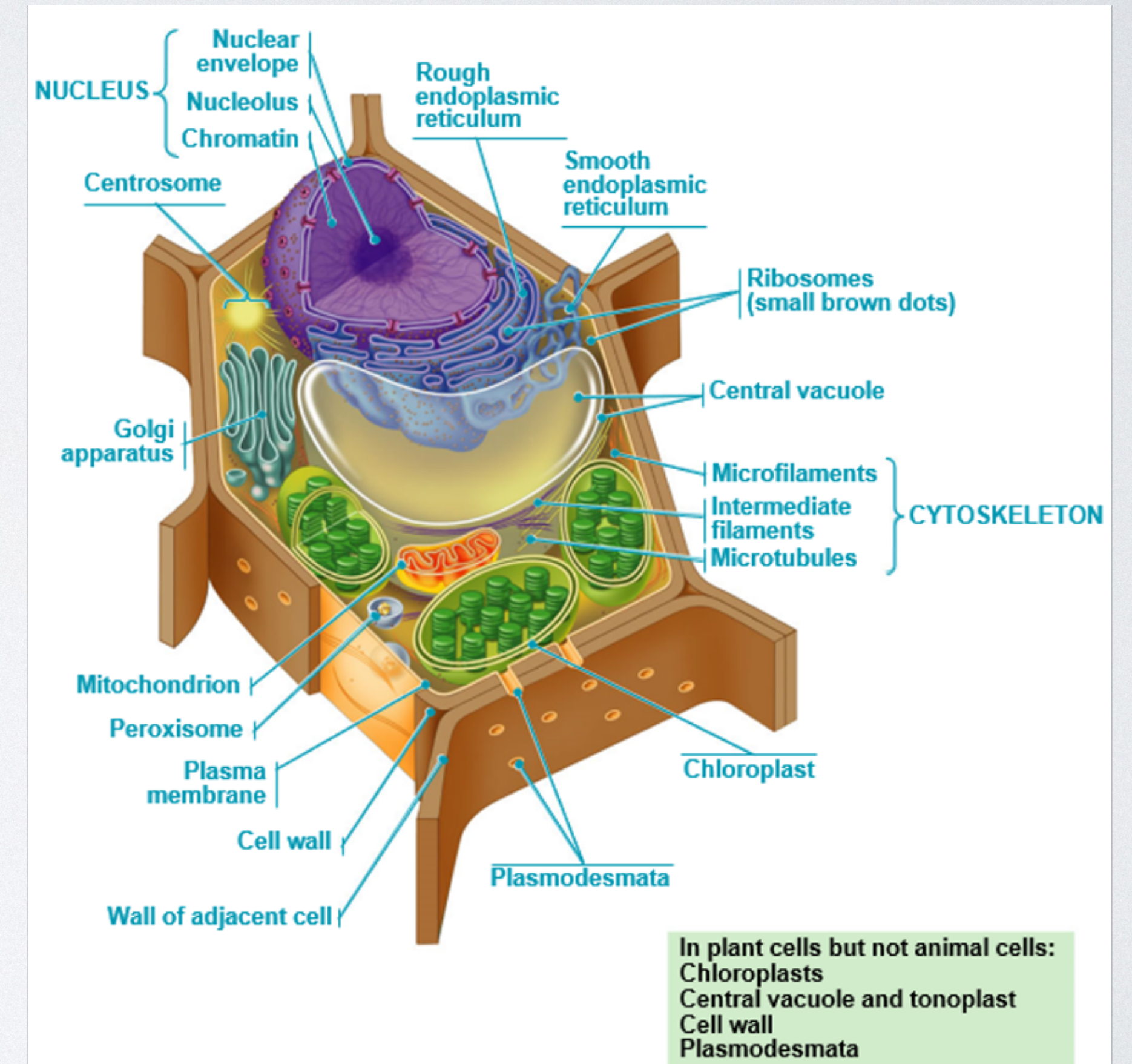


A célula eucariota

Célula eucariota animal



Célula eucariota vexetal



A célula eucariota



Protista



Plantae

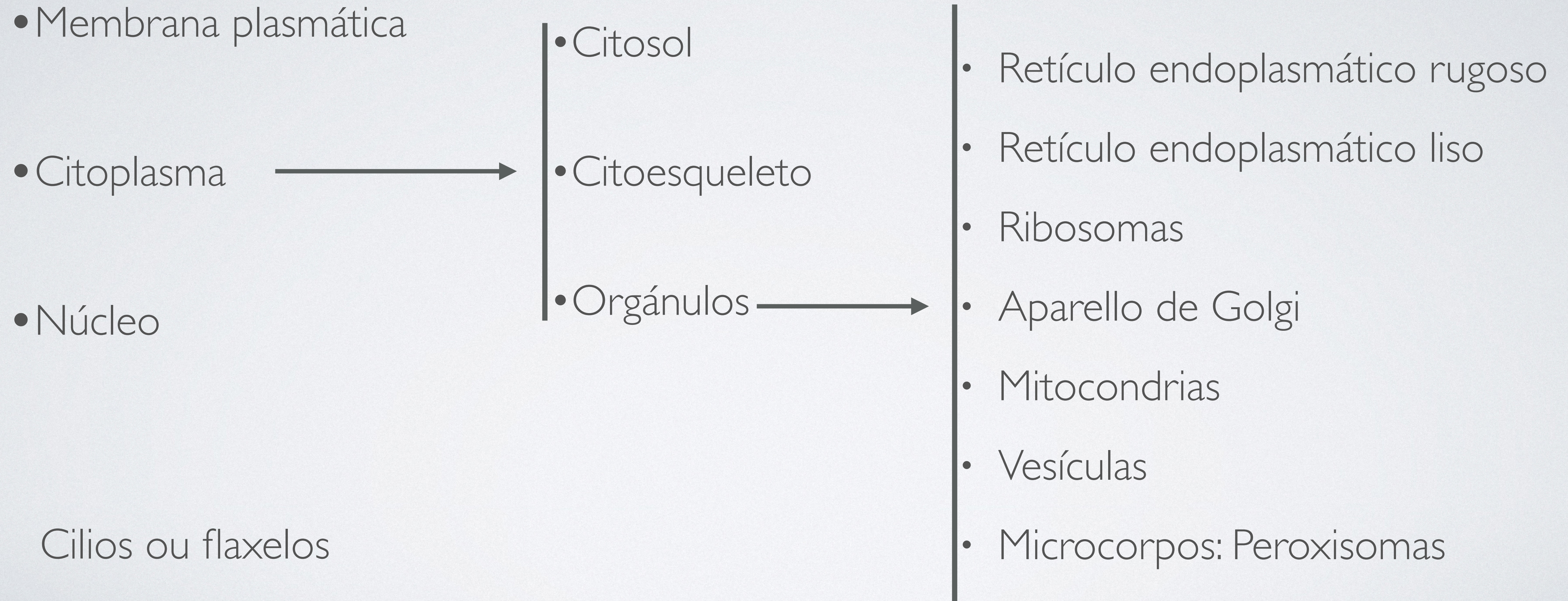


Fungi



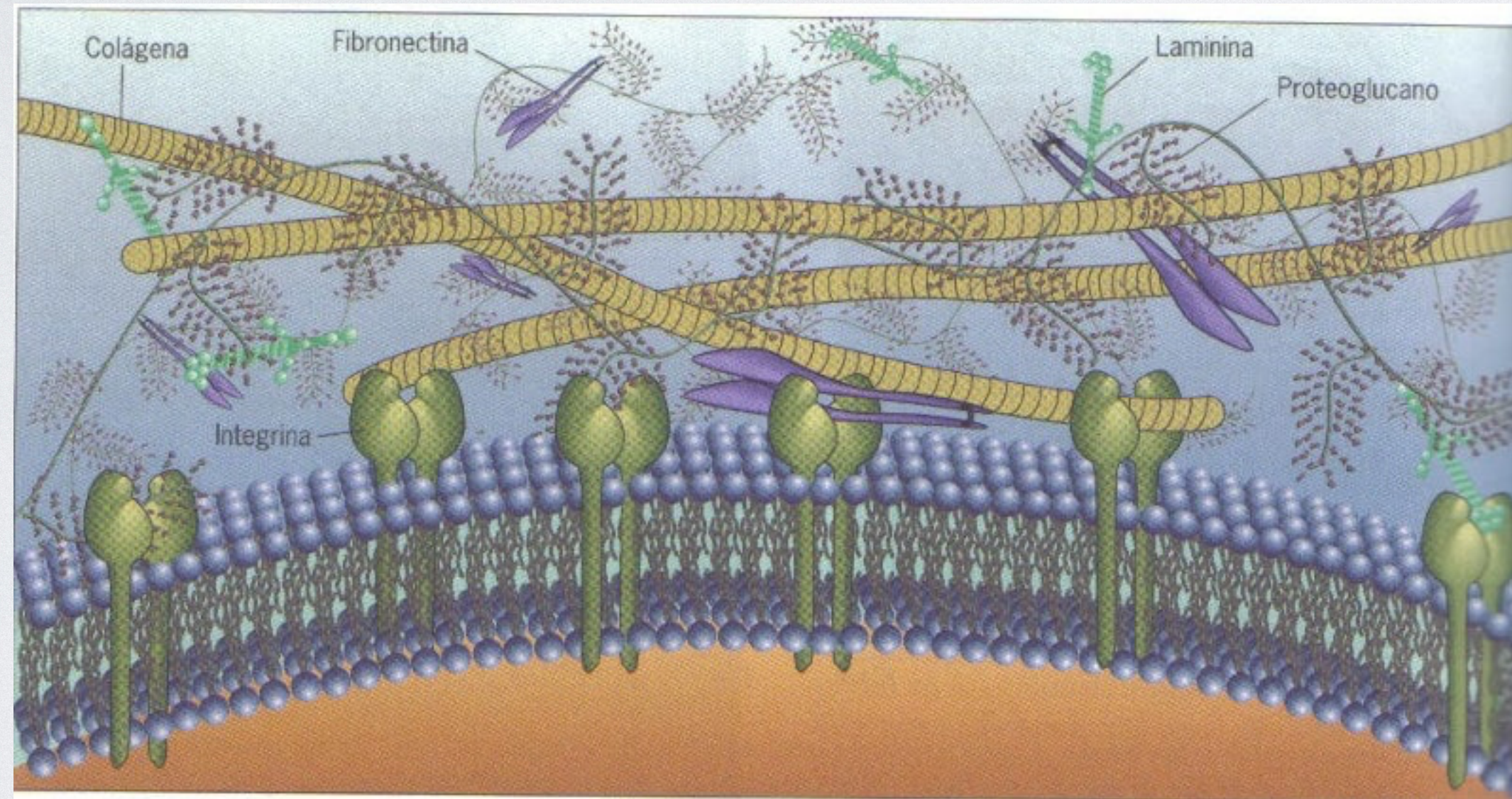
Animalia

A célula eucariota: características comuns



A célula eucariota: características comunes

Matriz extracelular

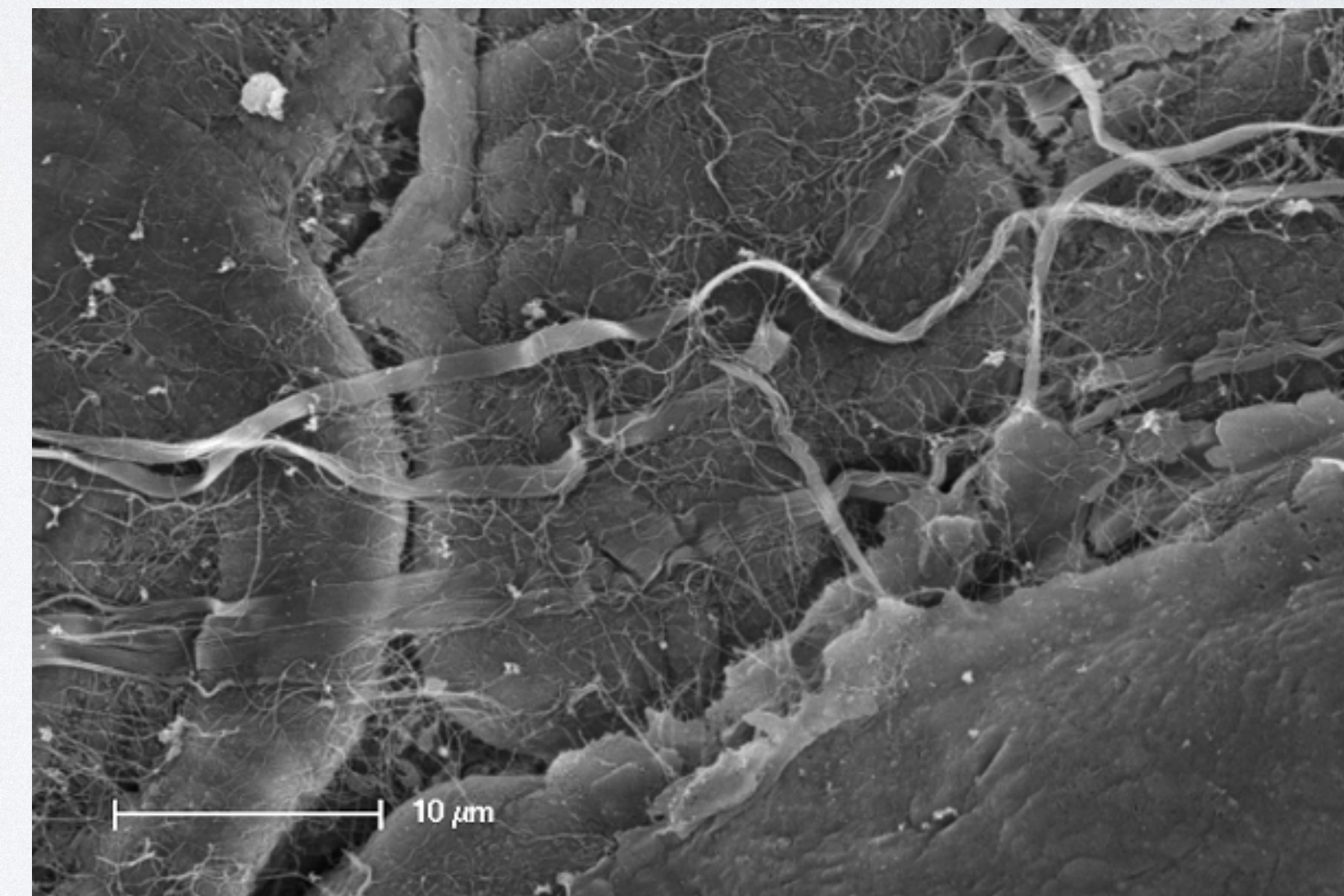
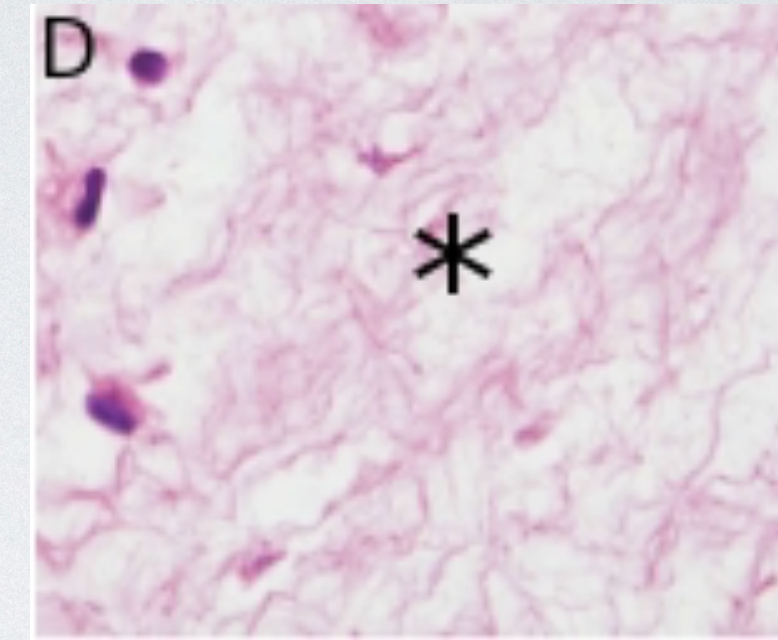
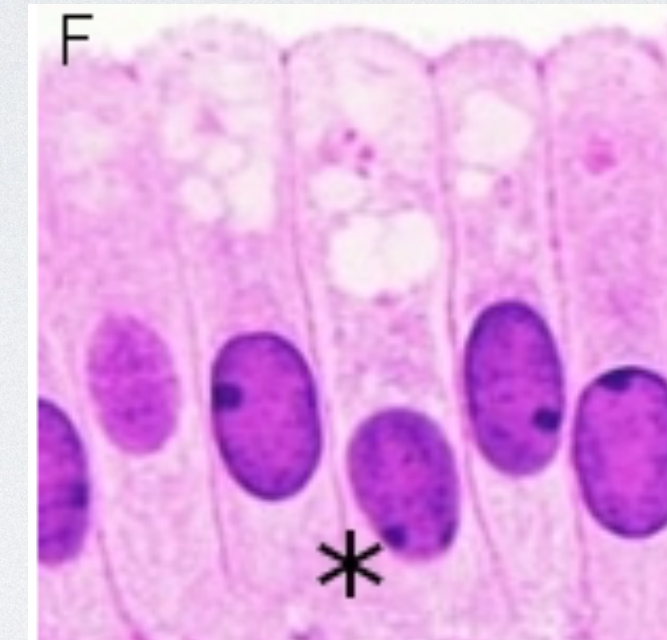
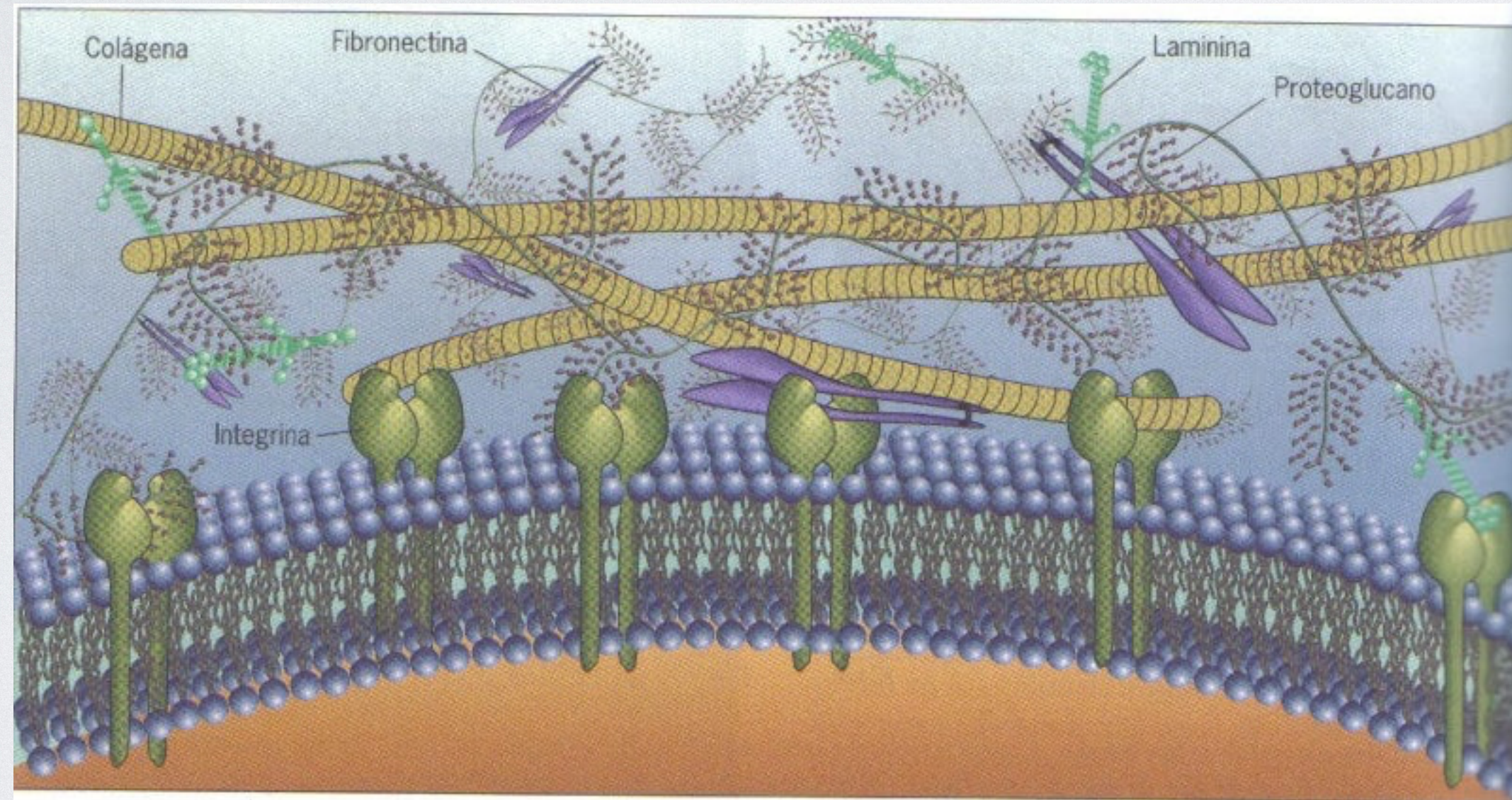


Funciones:

- Adhesión
- Integridade
- Propiedades mecánicas
- Forma celular
- Comunicación celular
- Movemento celular
- Fisioloxía e diferenciación celular

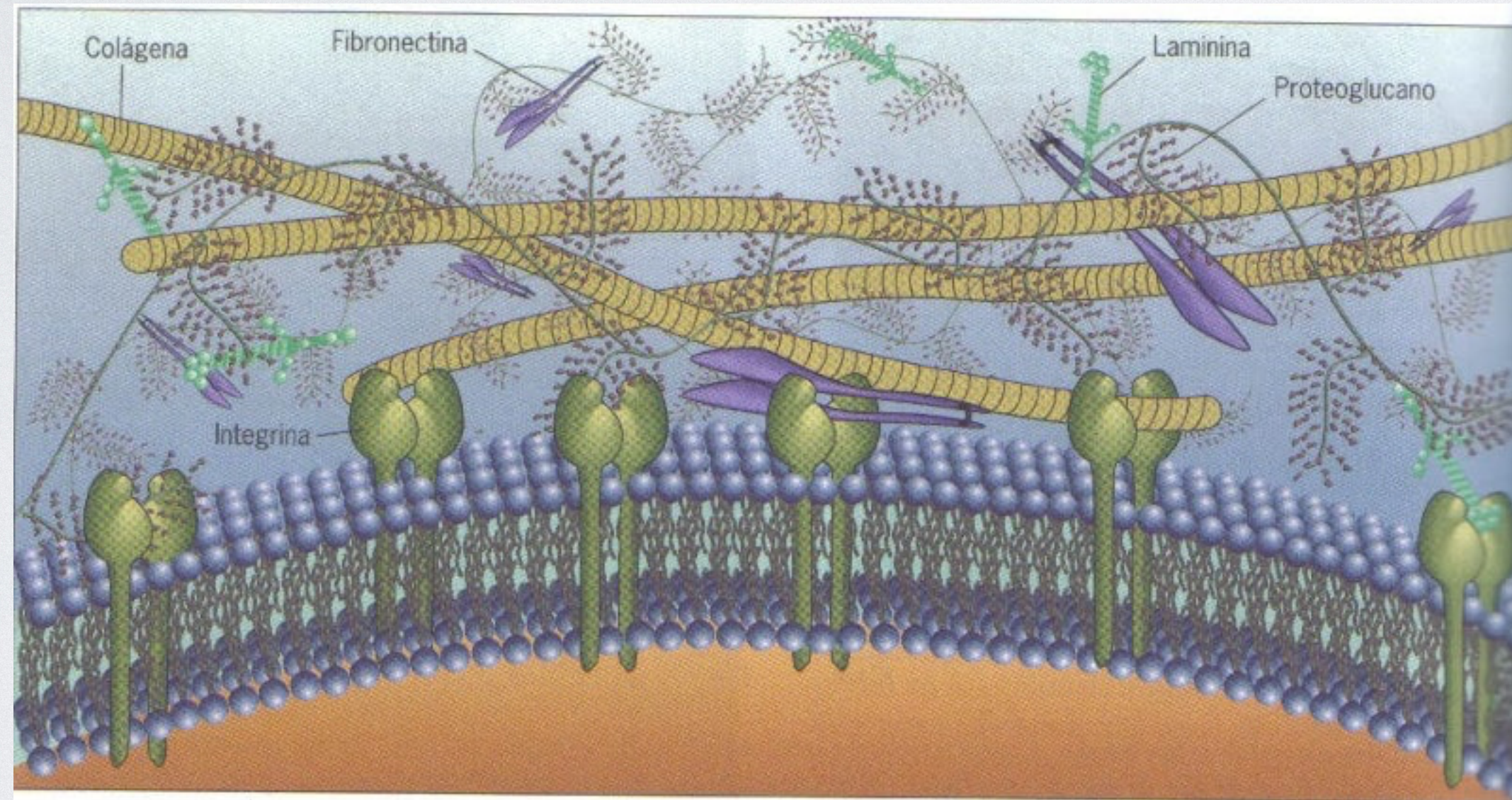
A célula eucariota: características comuns

Matriz extracelular



A célula eucariota: características comunes

Matriz extracelular

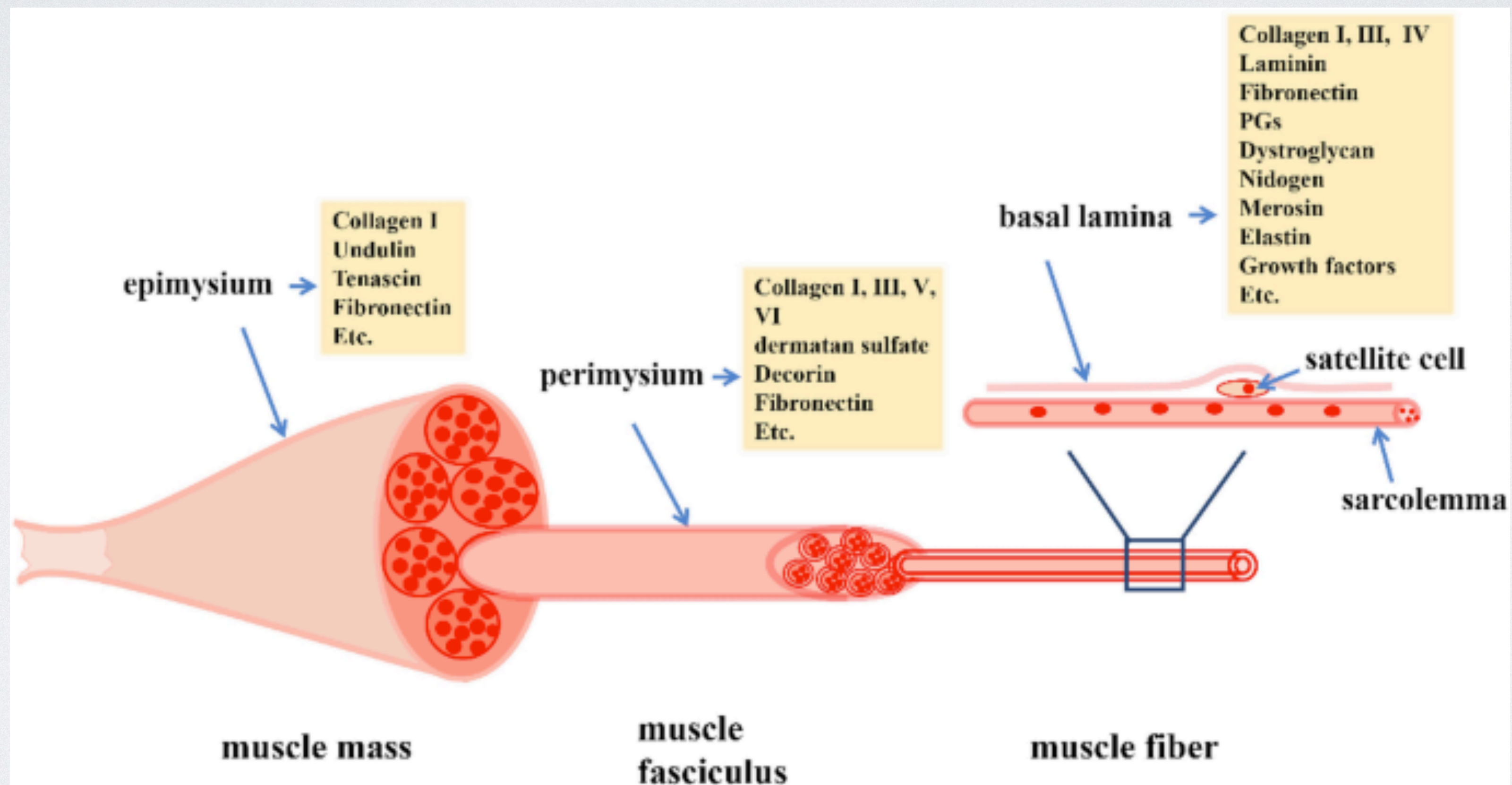


Composición:

- Proteínas fibrilares (colágeno, elastina)
- Proteínas no fibrilares
- Celulosa
- Hemicelulosa
- Lignina

A célula eucariota: características comuns

Matriz extracelular

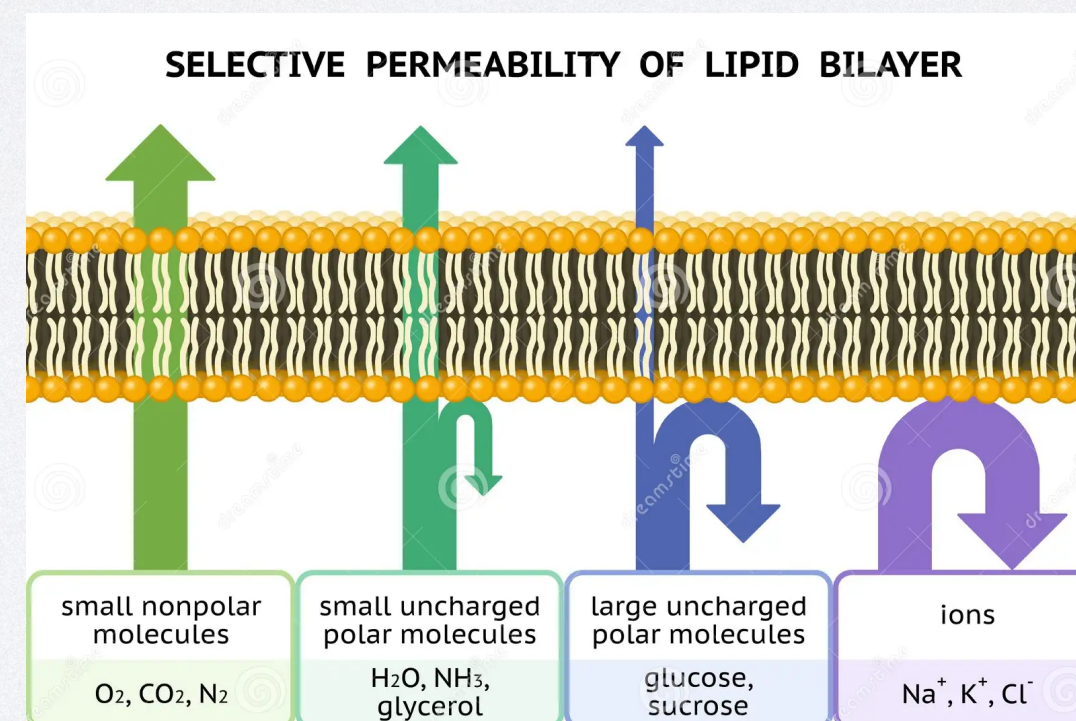
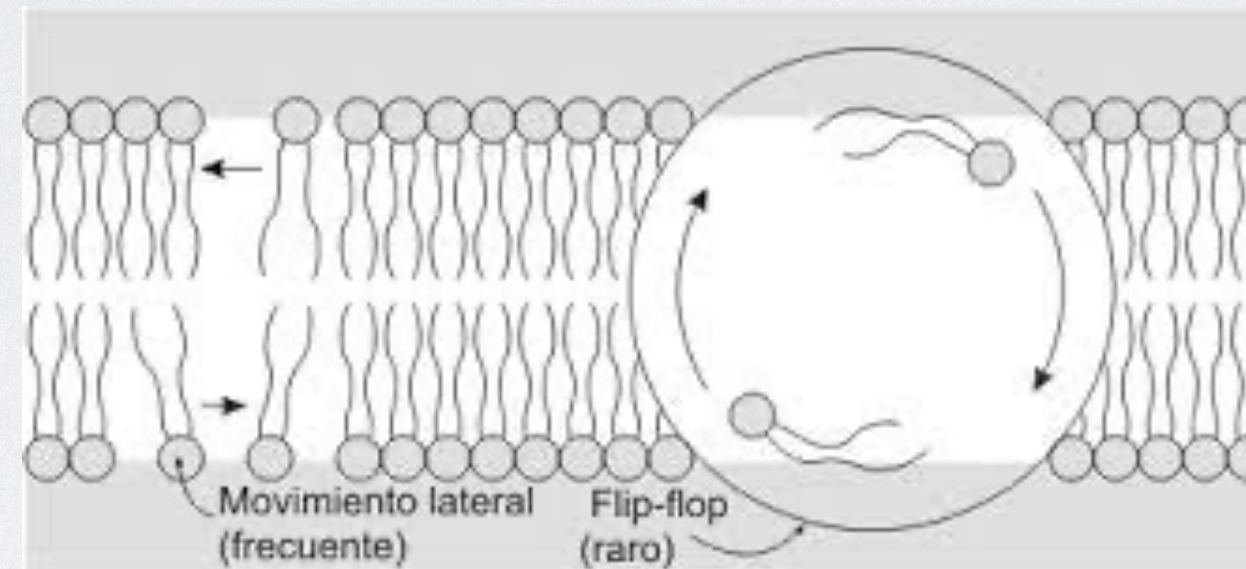


A célula eucariota: características comunes

Membrana plasmática

Propiedades:

- Fluida
- Semipermeable
- Reparación
- Flexible e maleable
- Renovación constante

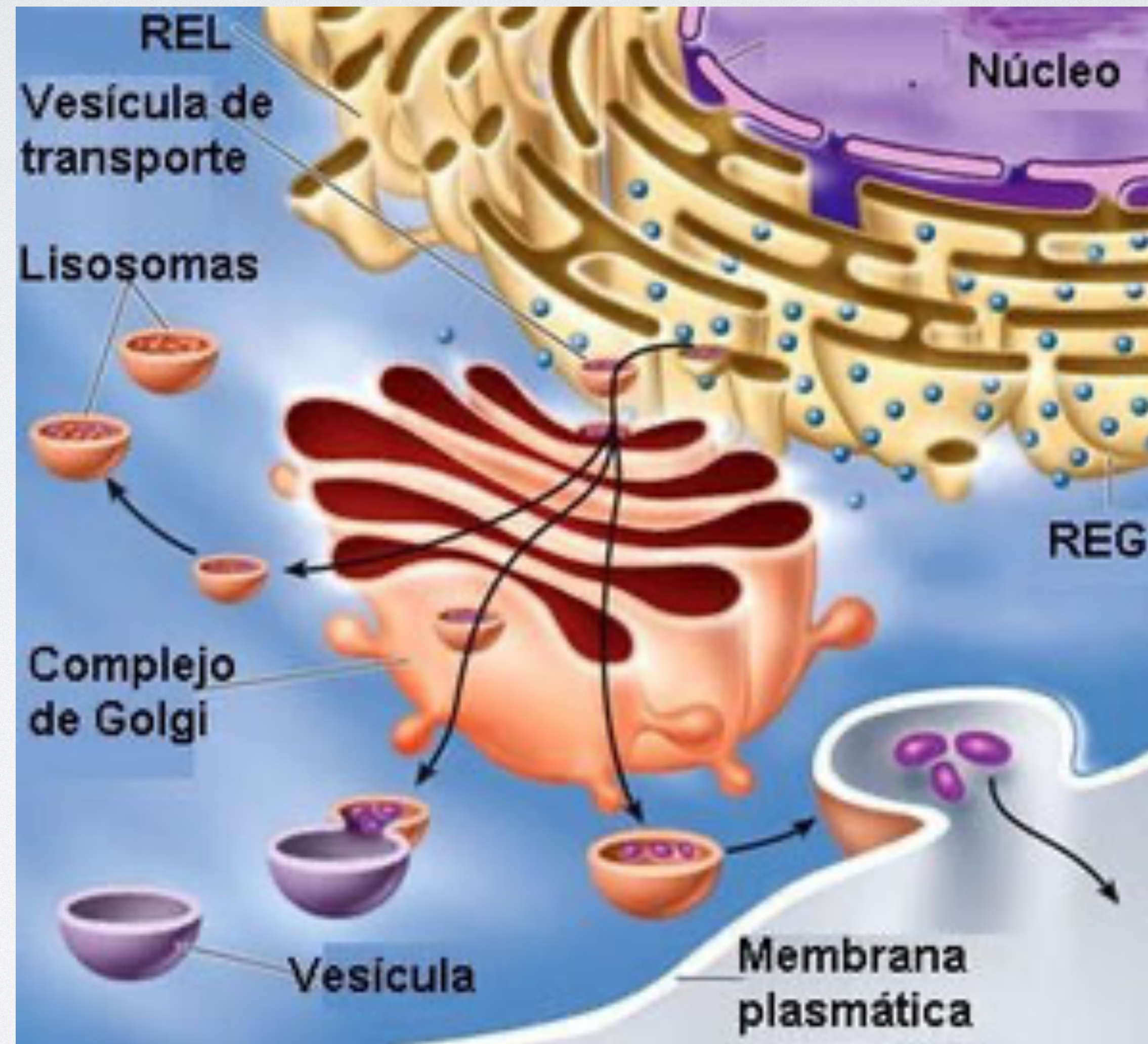


Funciones:

- Gradiente iónico
- Transmisión información
- Transporte
- Adherencia
- Metabolismo
- Barreira

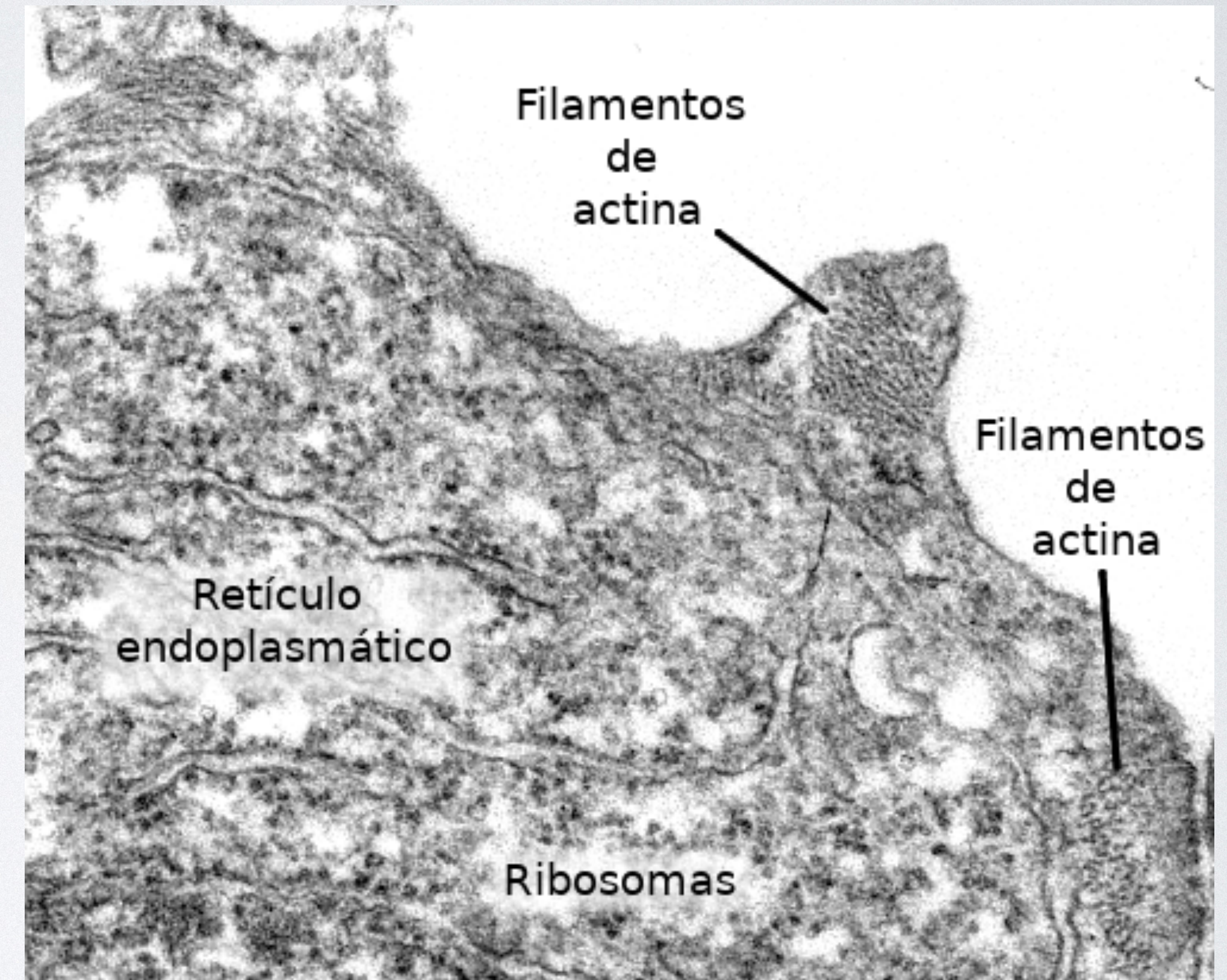
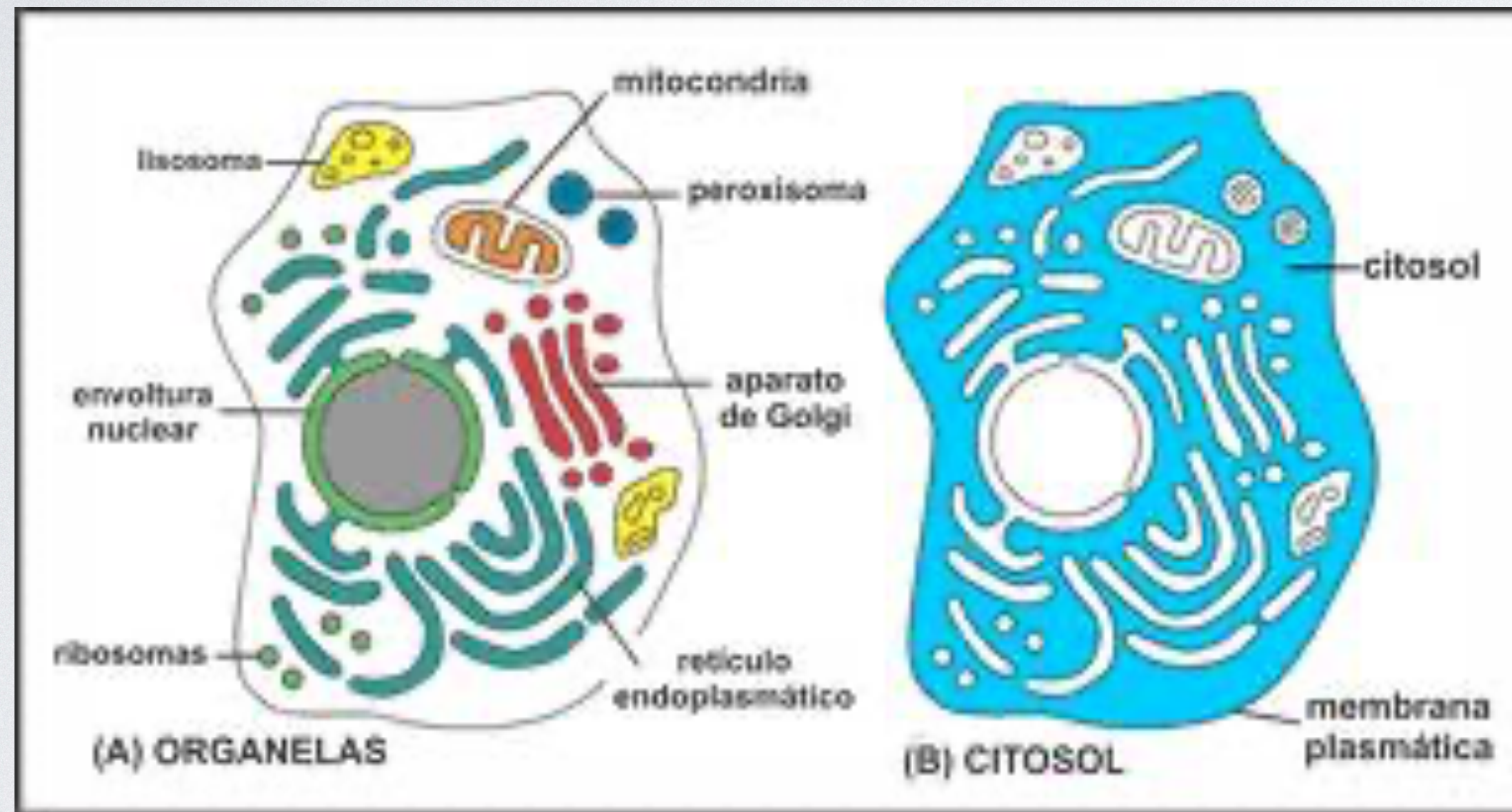
A célula eucariota

Endomembranas



A célula eucariota: características comuns

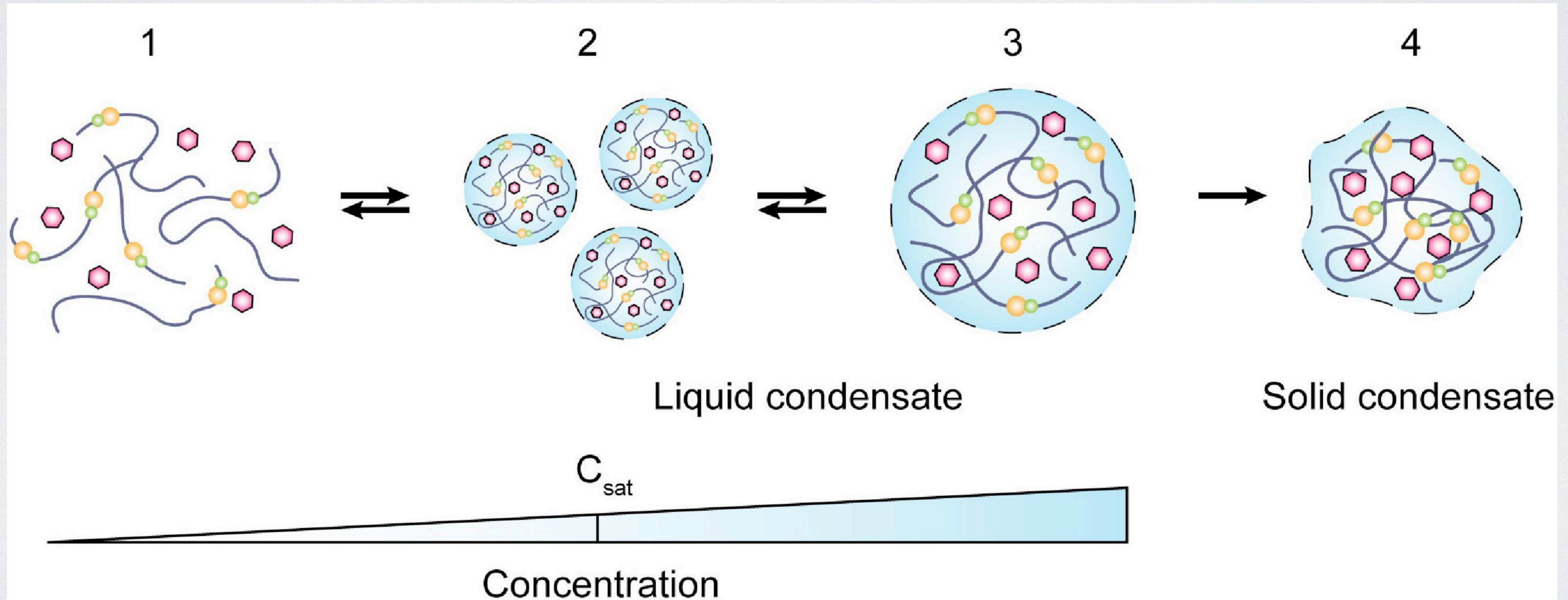
Citosol



Citosol

A célula eucariota: características comuns

Segregación de fase líquido líquido

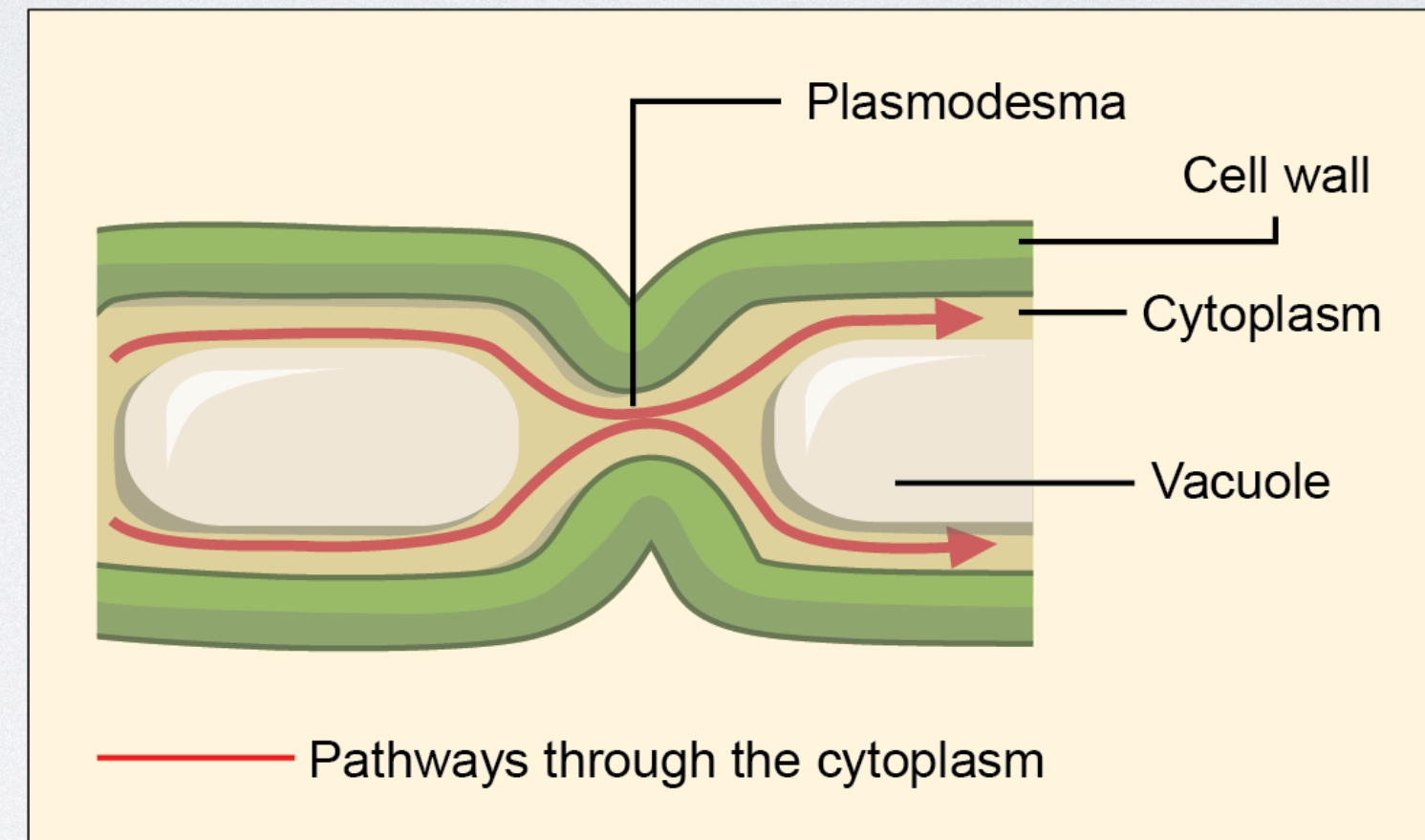
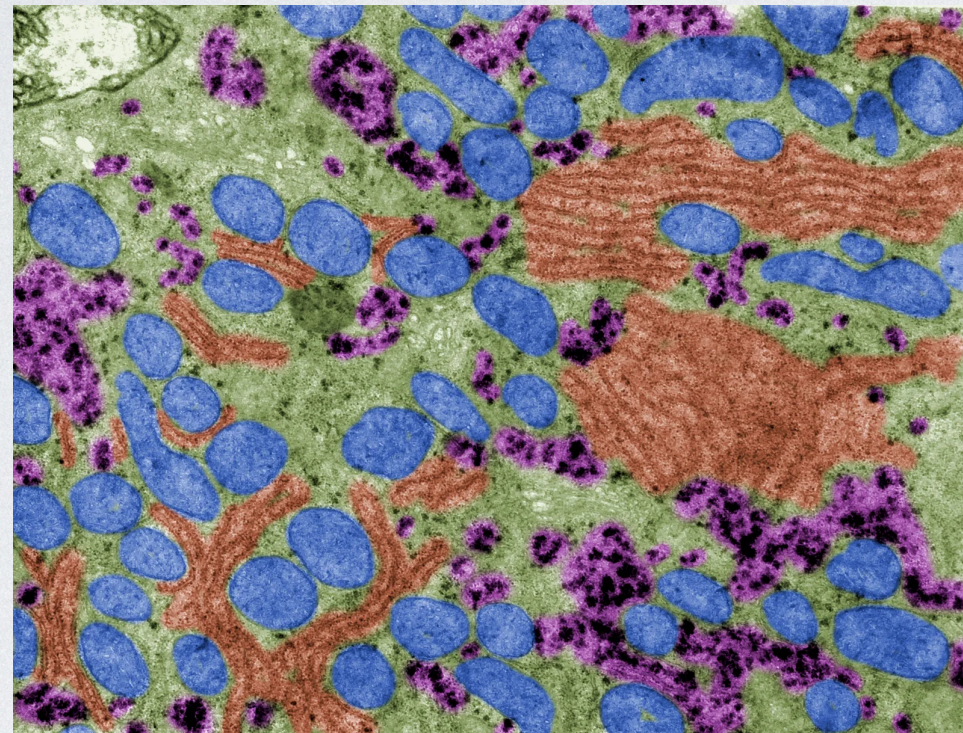


A célula eucariota: características comuns

Citosol

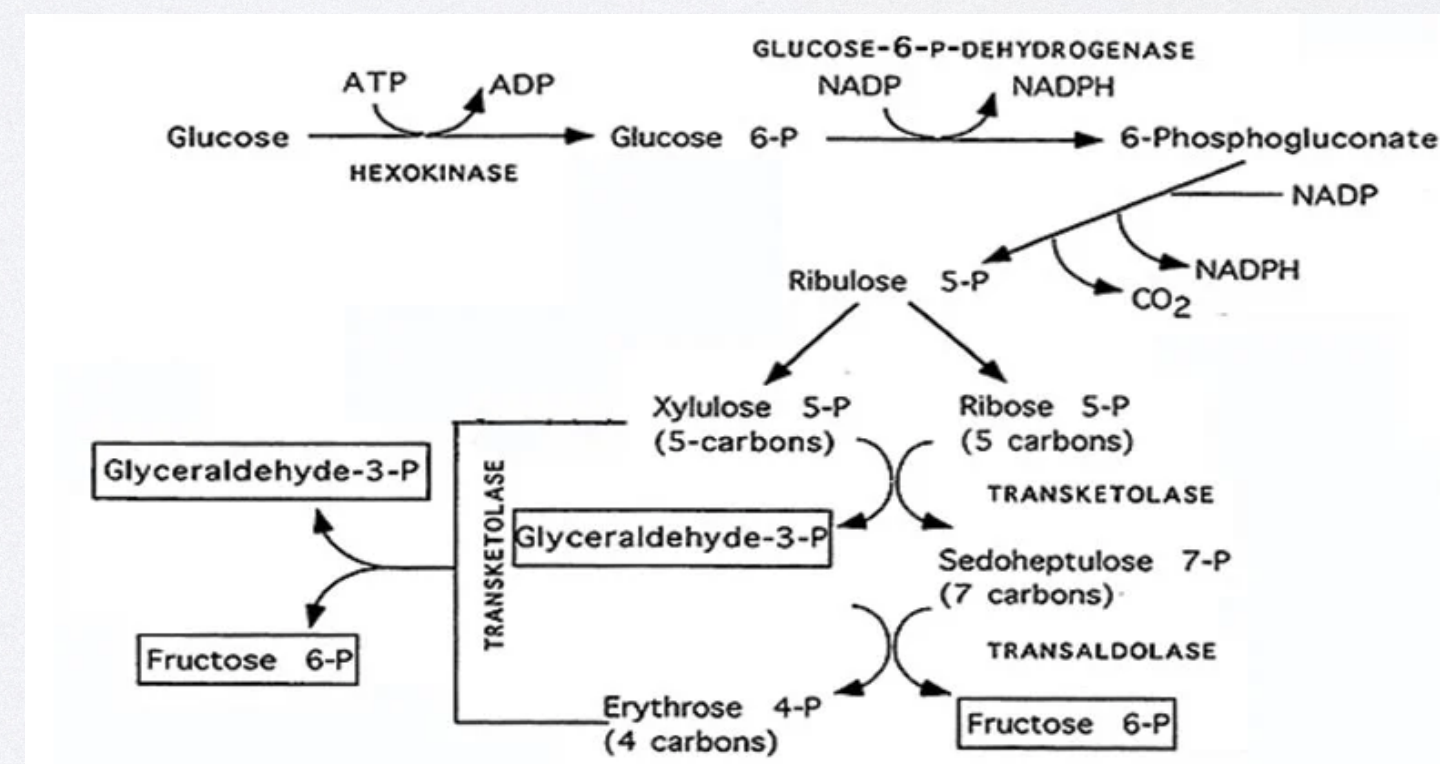
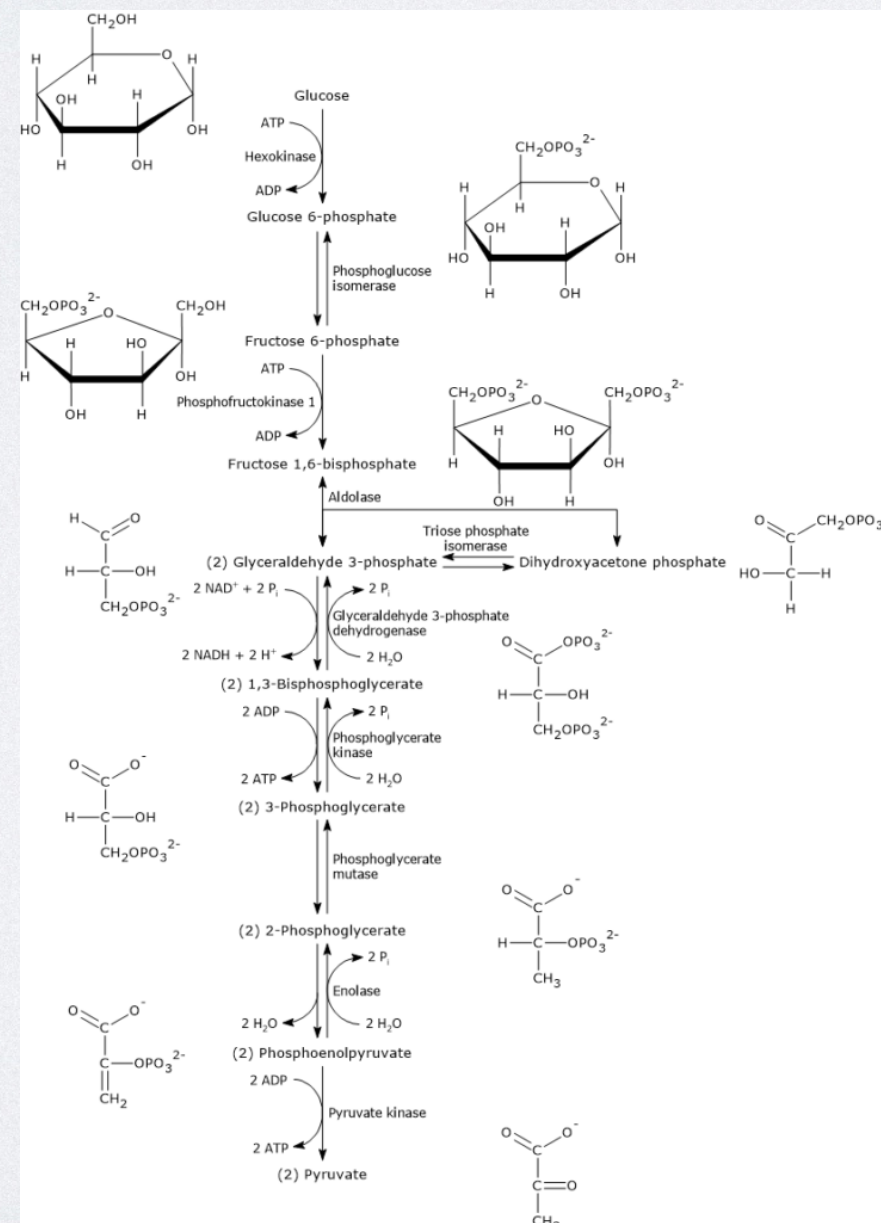
Composição:

- Água
- Moléculas
- Iões



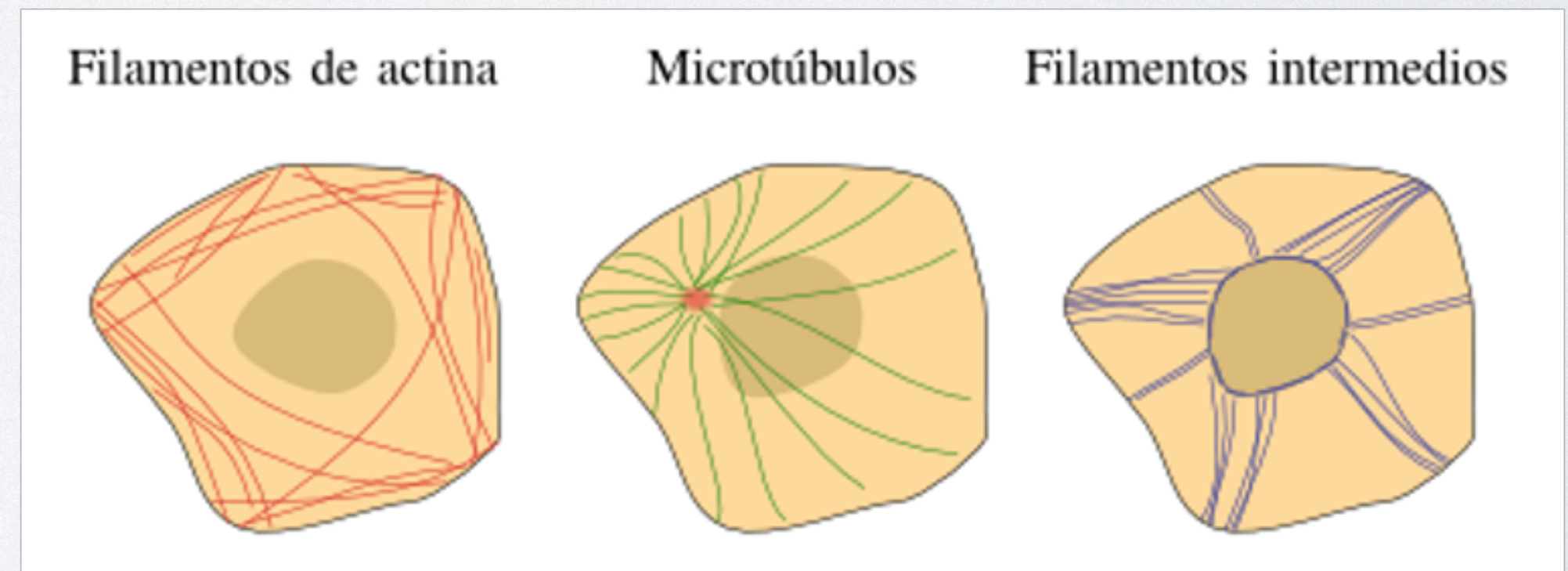
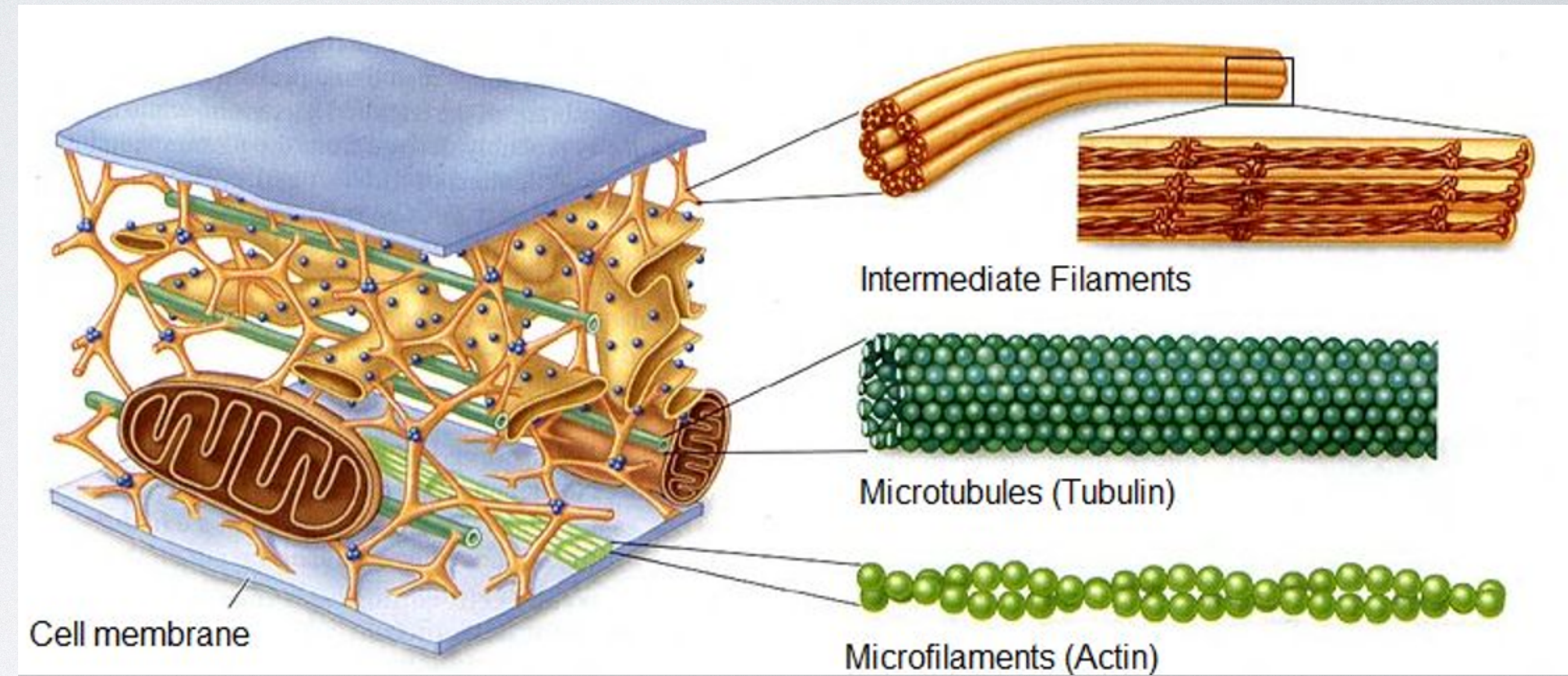
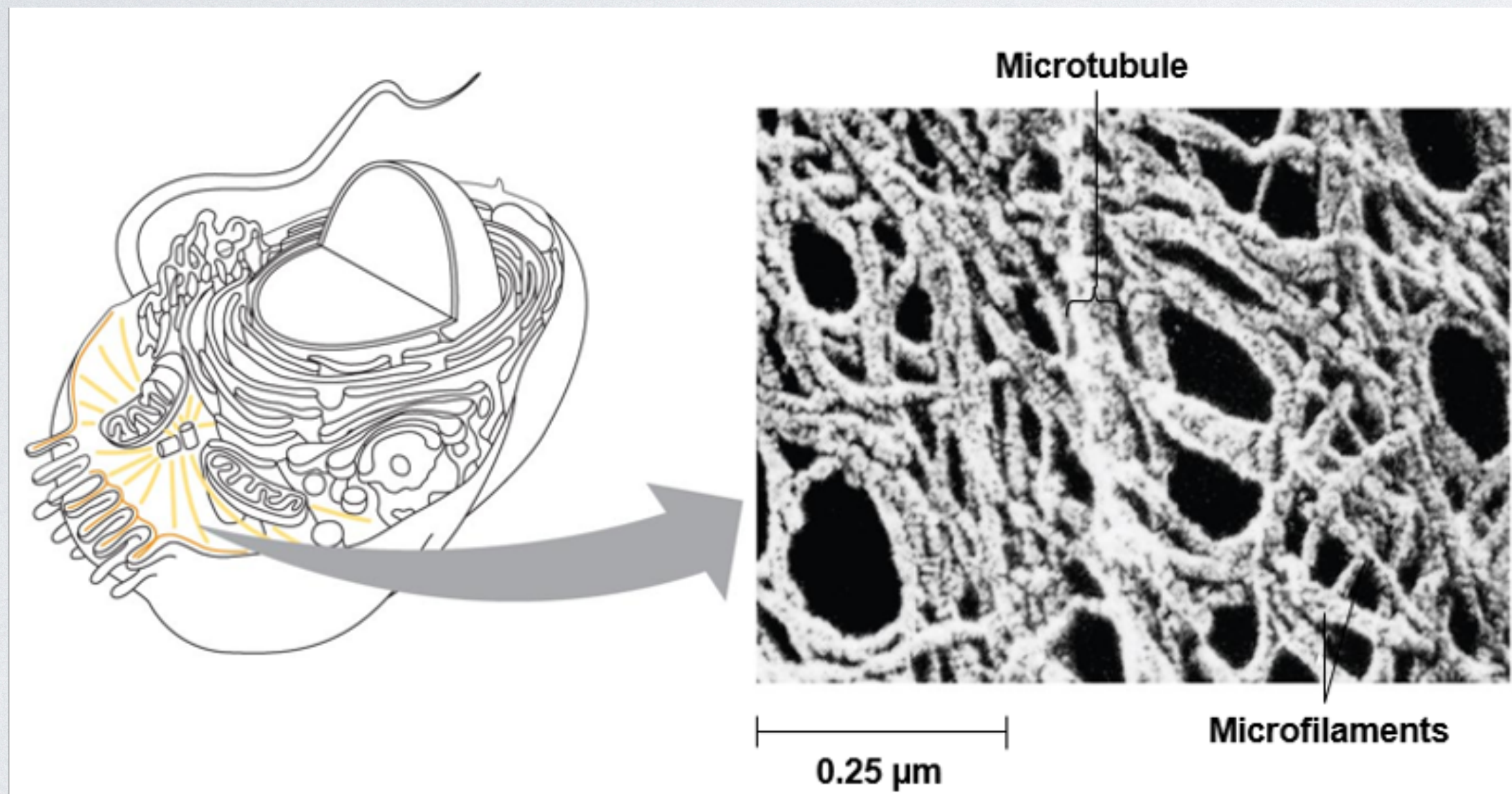
Funcions:

- Tampón
- Metabolismo
- Movimento
- Conexión celular



A célula eucariota: características comuns

Citoesqueleto



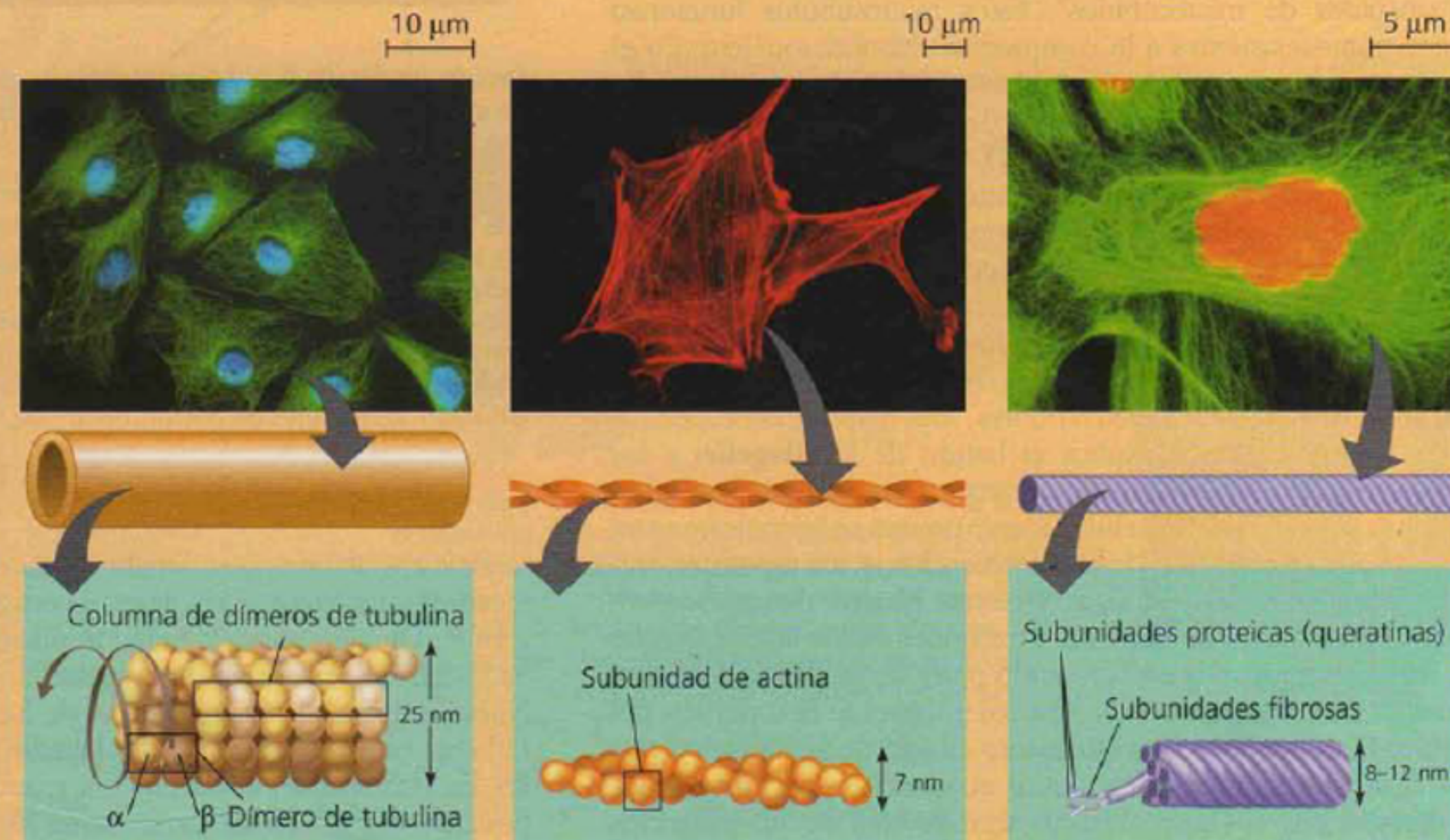
Citoesqueleto

Tema 3

Cuadro 6-1. La estructura y la función del citoesqueleto

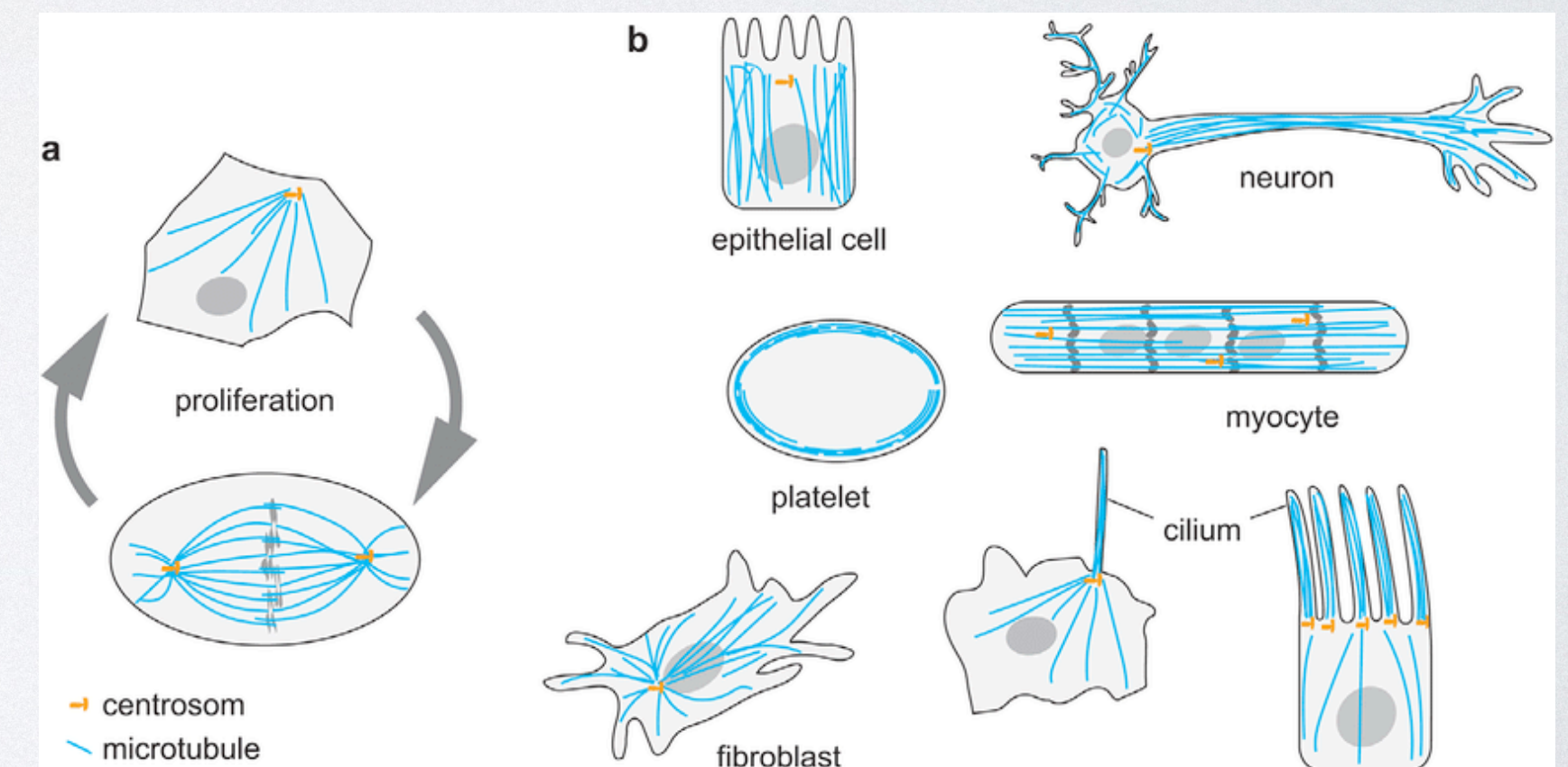
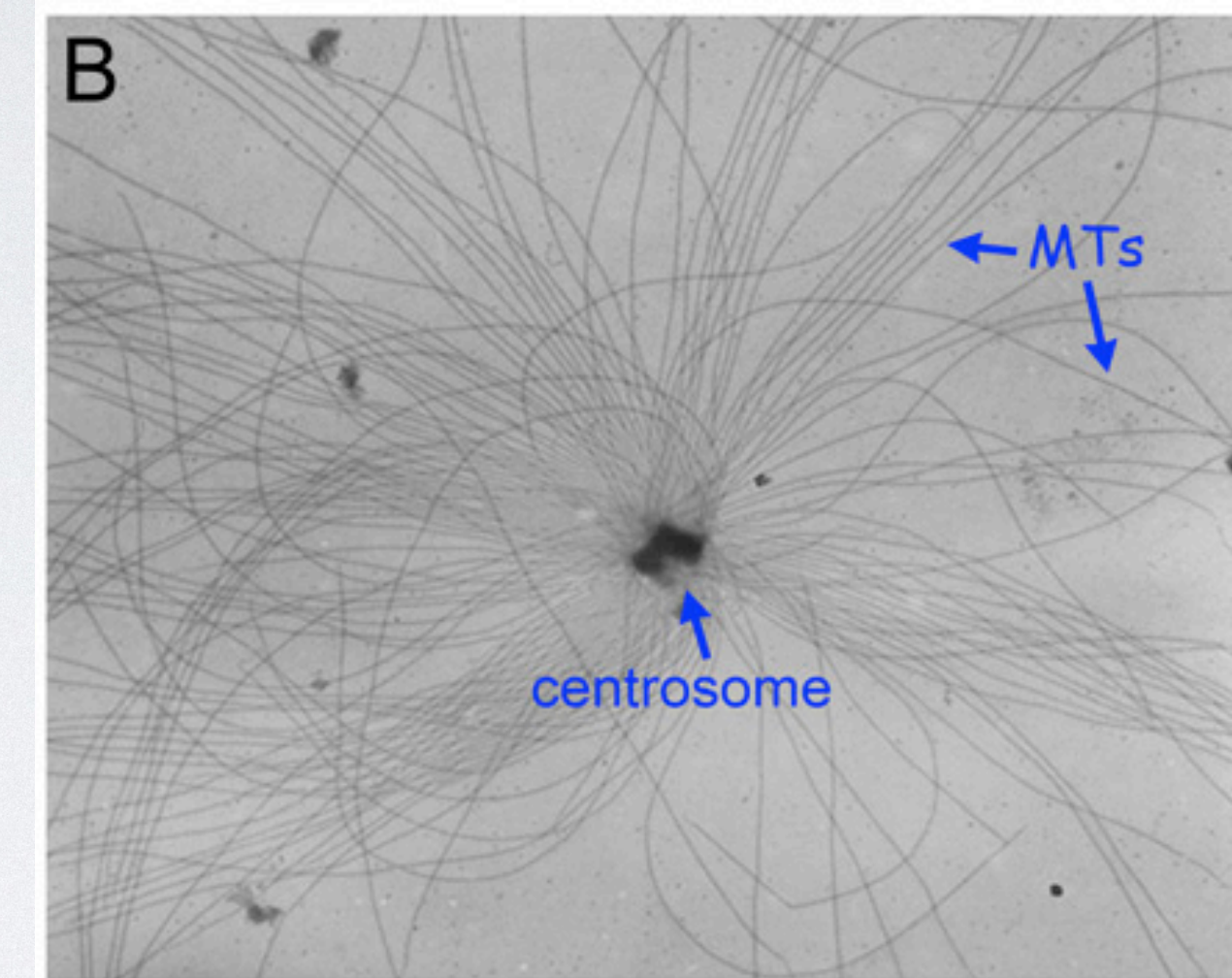
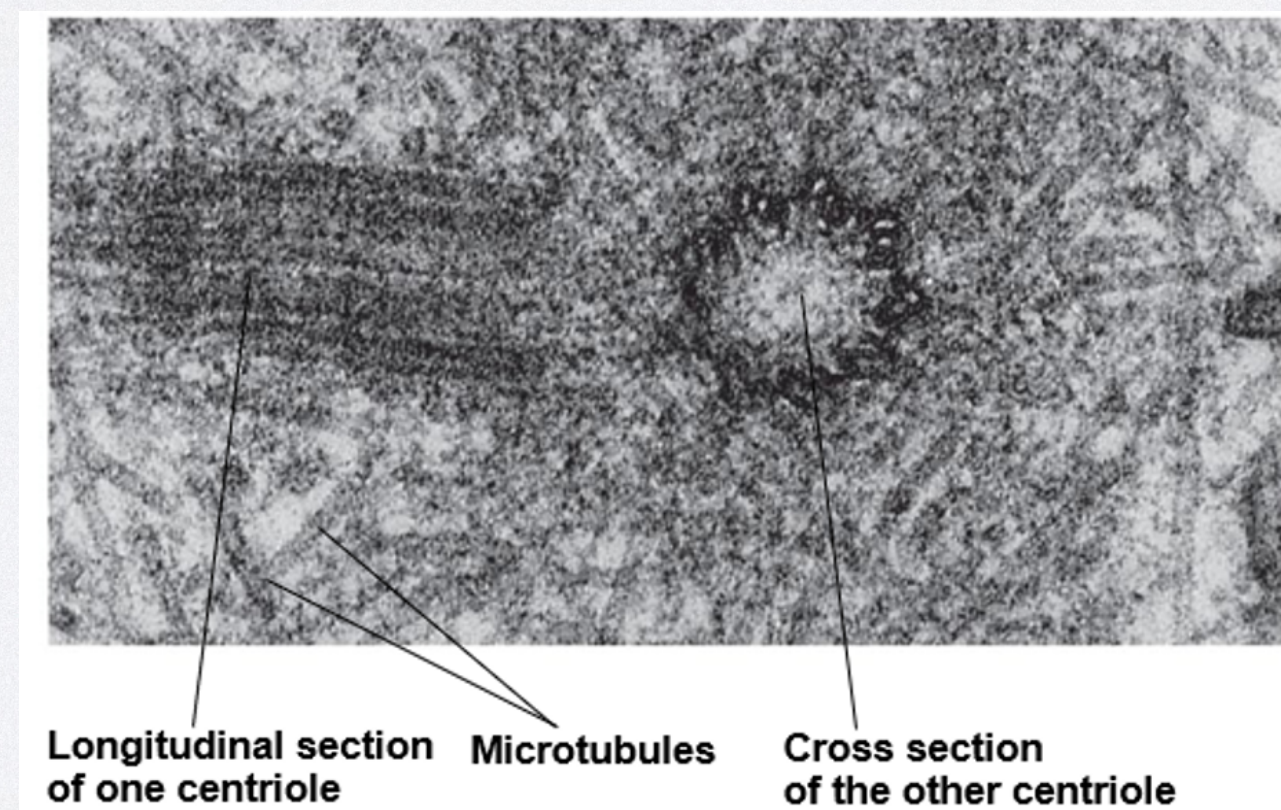
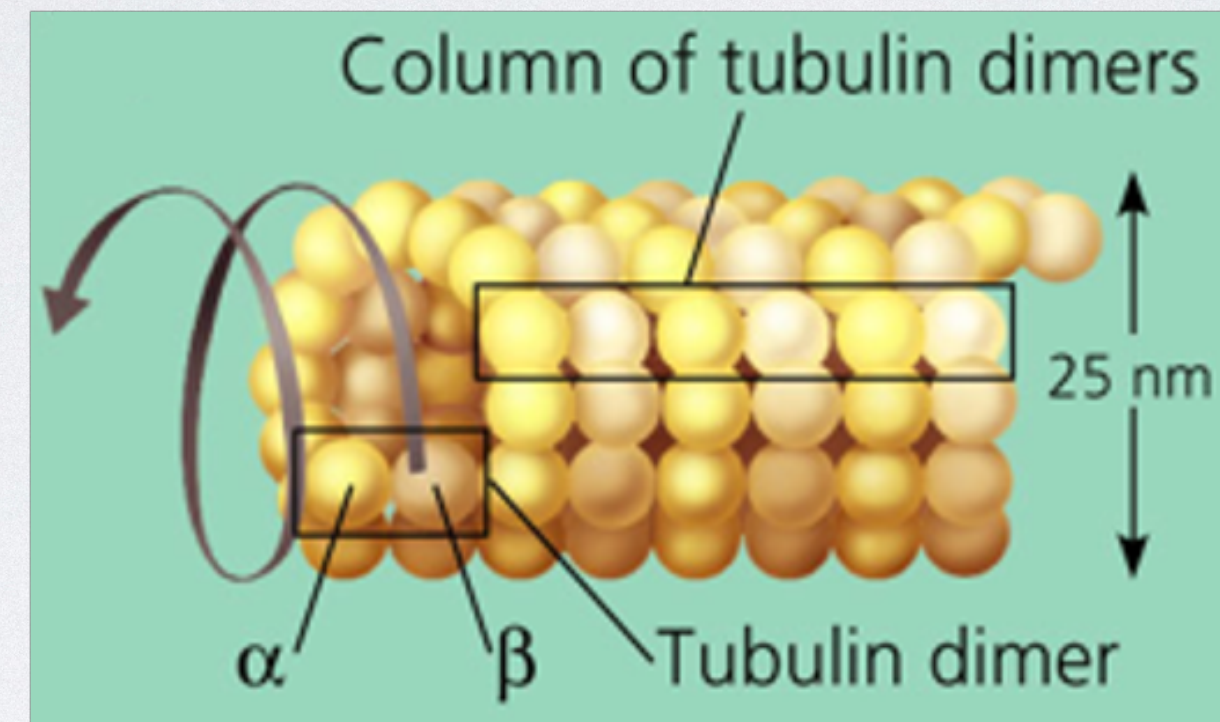
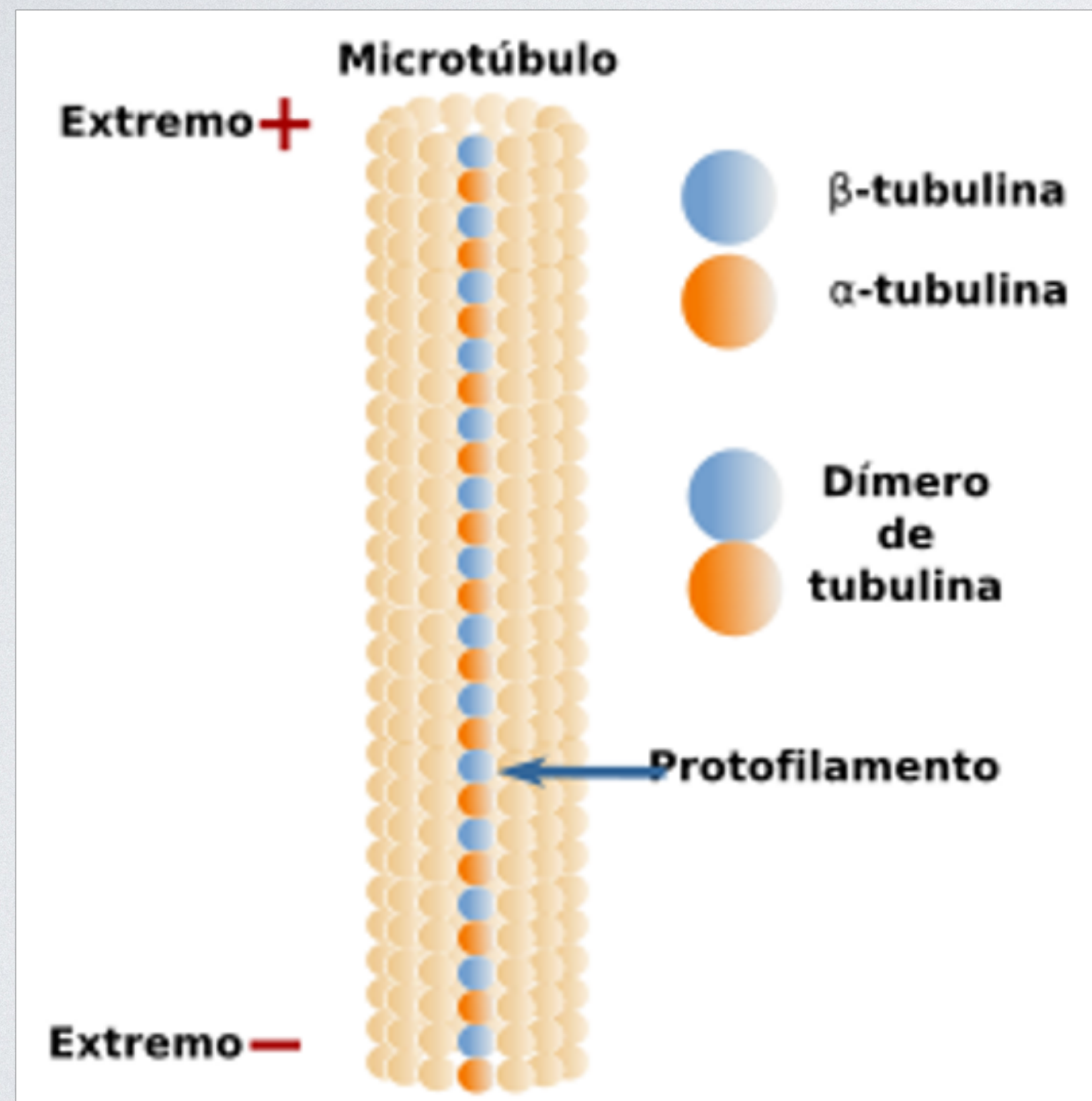
Propiedad	Microtúbulos (polímeros de tubulina)	Microfilamentos (filamentos de actina)	Filamentos intermedios
Estructura	Tubos huecos; las paredes están constituidas por 13 columnas de moléculas de tubulina	Dos hebras entrelazadas de actina, cada una formada por un polímero de subunidades de actina	Proteínas fibrosas superenrolladas formando cables más gruesos
Diámetro	25 nm con una luz de 15 nm	7 nm	8-12 nm
Subunidades proteicas	Tubulina, constituida por α tubulina y β tubulina	Actina	Una de varias de las diferentes proteínas de la familia de las queratinas, dependiendo del tipo de célula
Funciones principales	Mantenimiento de la forma de la célula ("vigas" resistentes a la compresión) Motilidad de la célula (como en cilios o flagelos) Movimientos de los cromosomas durante la división celular Movimientos de los orgánulos	Mantenimiento de la forma de la célula (elementos de soporte de tensiones) Cambios en la forma de la célula Contracción muscular Corriente citoplasmática Motilidad celular (como en los pseudópodos) División celular (formación del surco de segmentación)	Mantenimiento de la forma de la célula (elementos de soporte de tensiones) Anclaje del núcleo y de otros orgánulos Formación de la lámina nuclear

Microfotografías de fibroblastos, un tipo de célula favorito para los estudios biológicos. Cada fibroblasto se ha tratado experimentalmente para marcar con fluorescencia la estructura de interés.



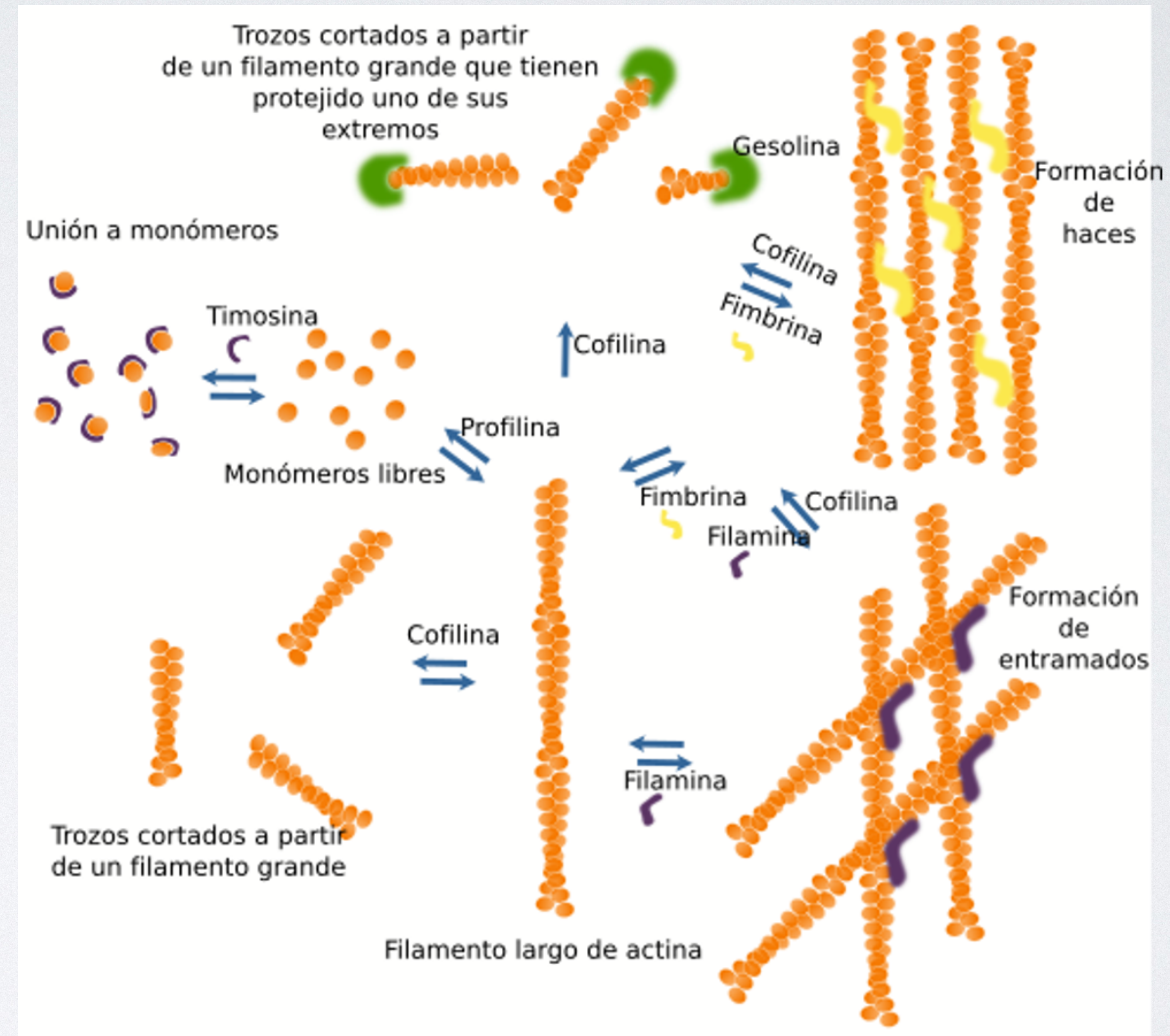
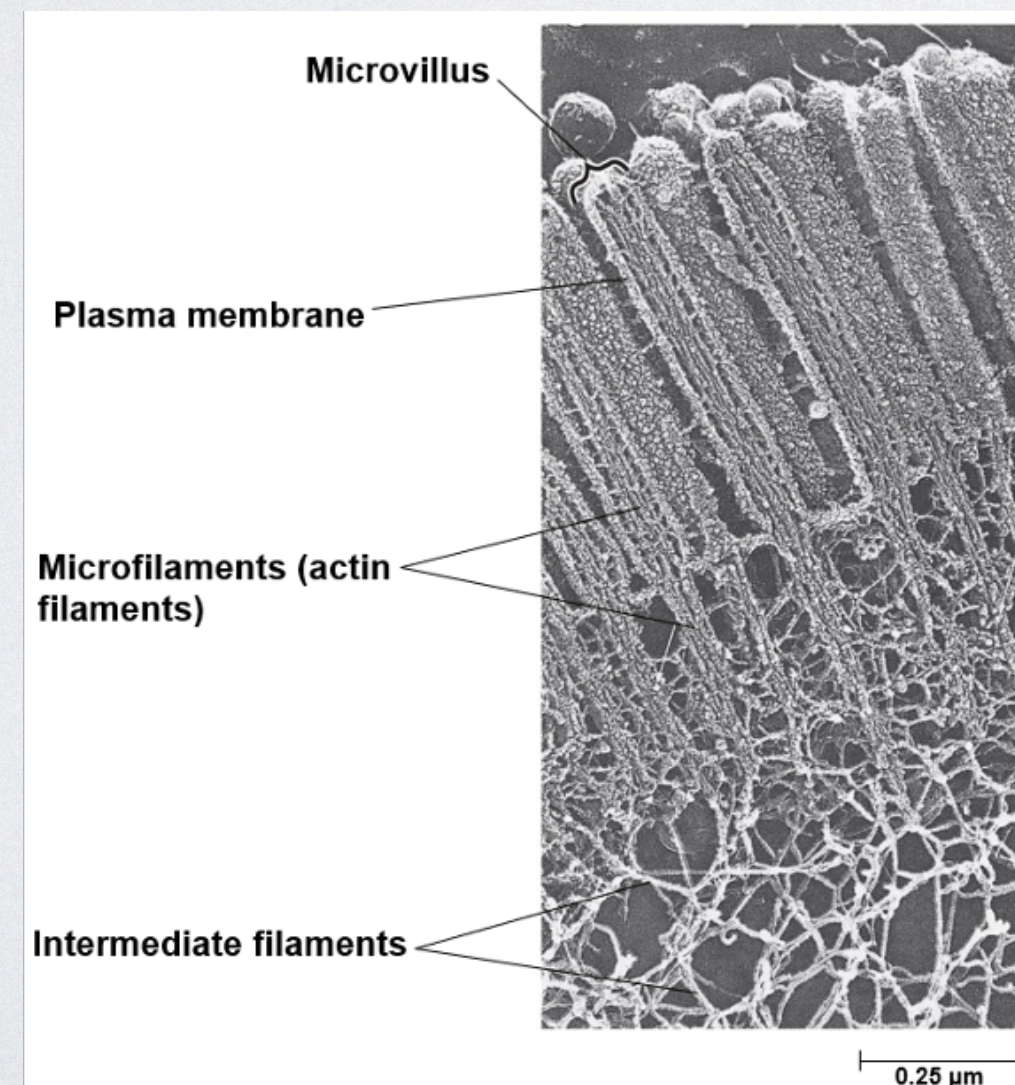
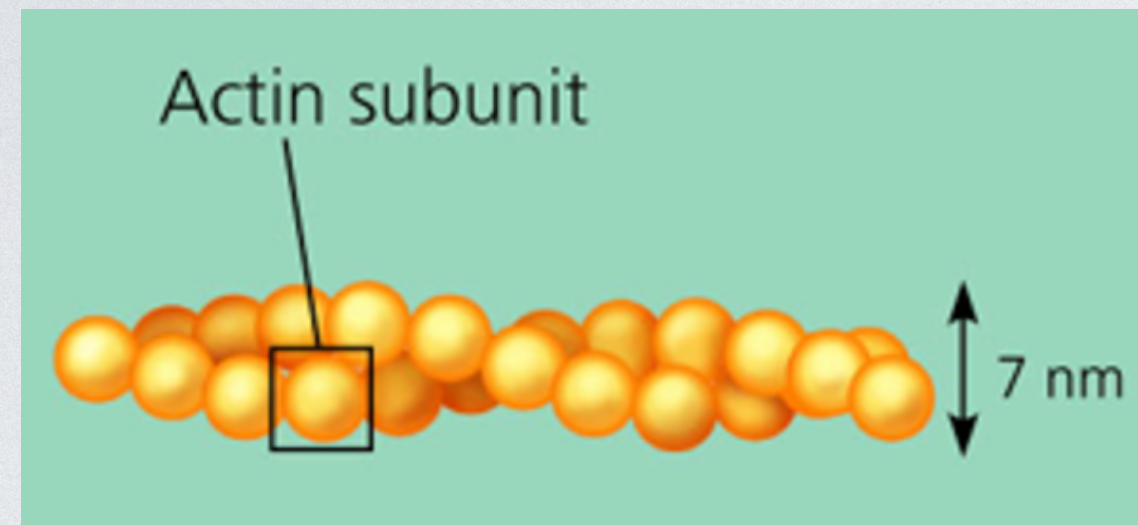
A célula eucariota: características comuns

Citoesqueleto: microtúbulos



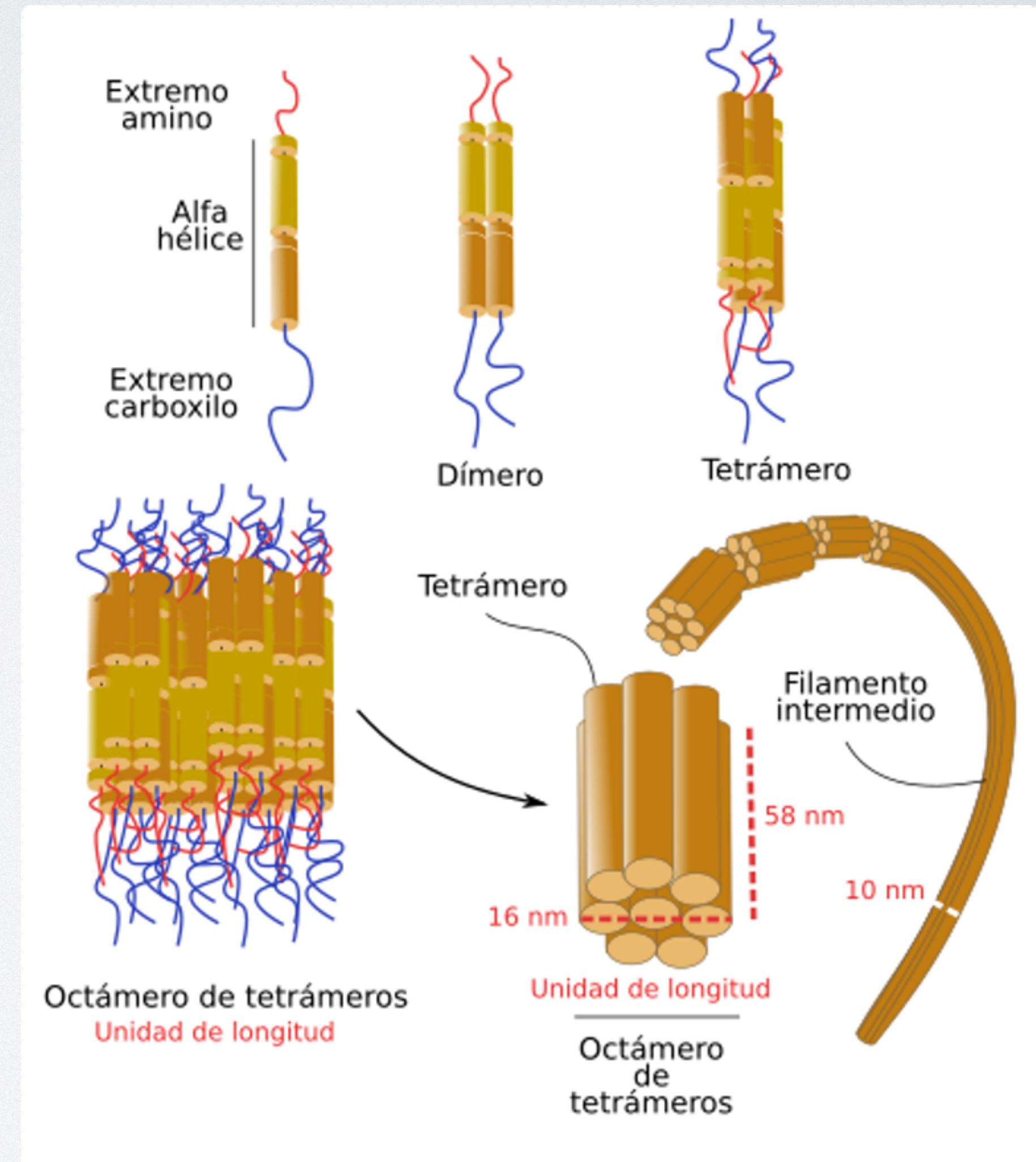
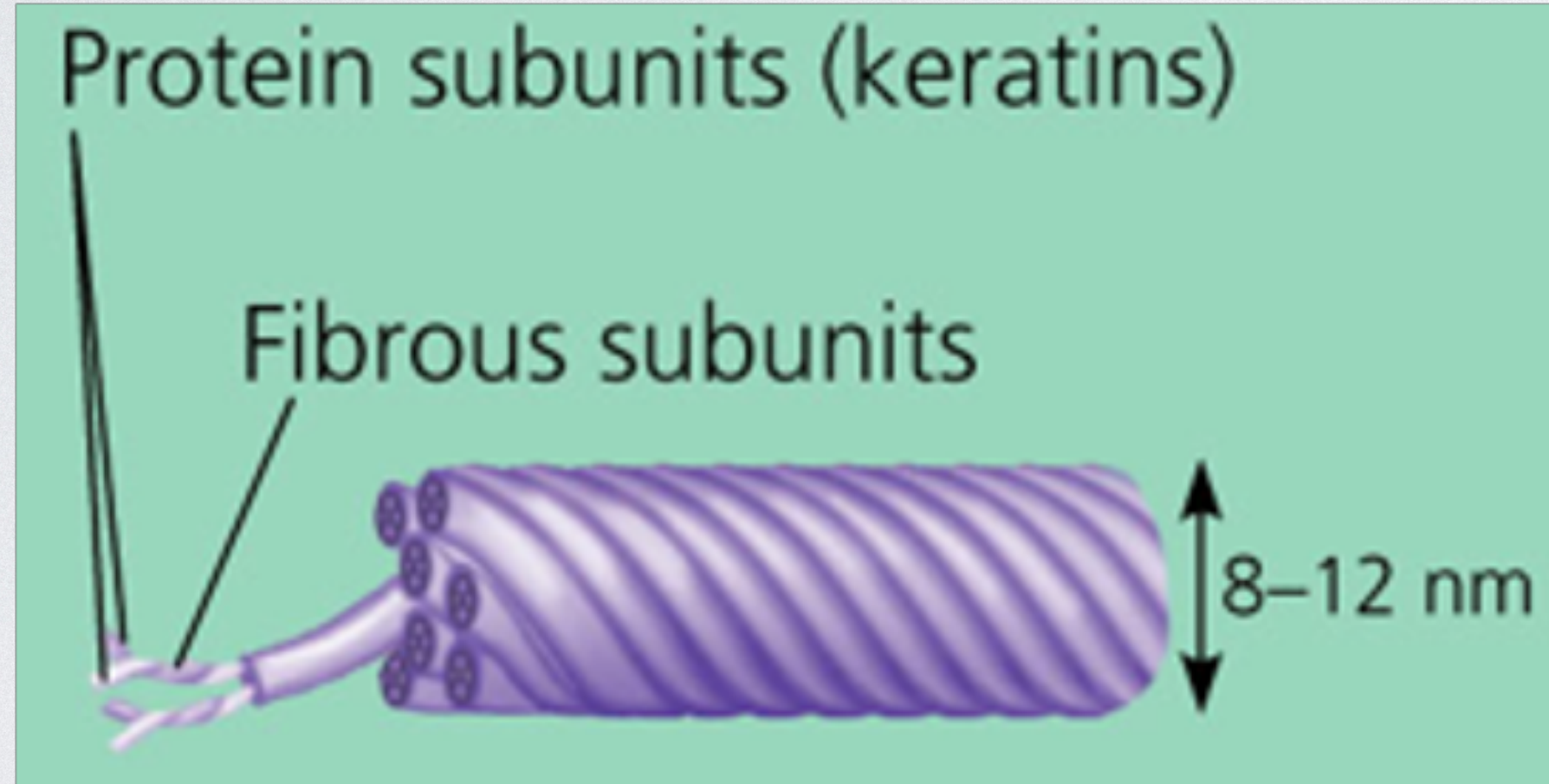
A célula eucariota: características comunes

Citoesqueleto: microfilamentos



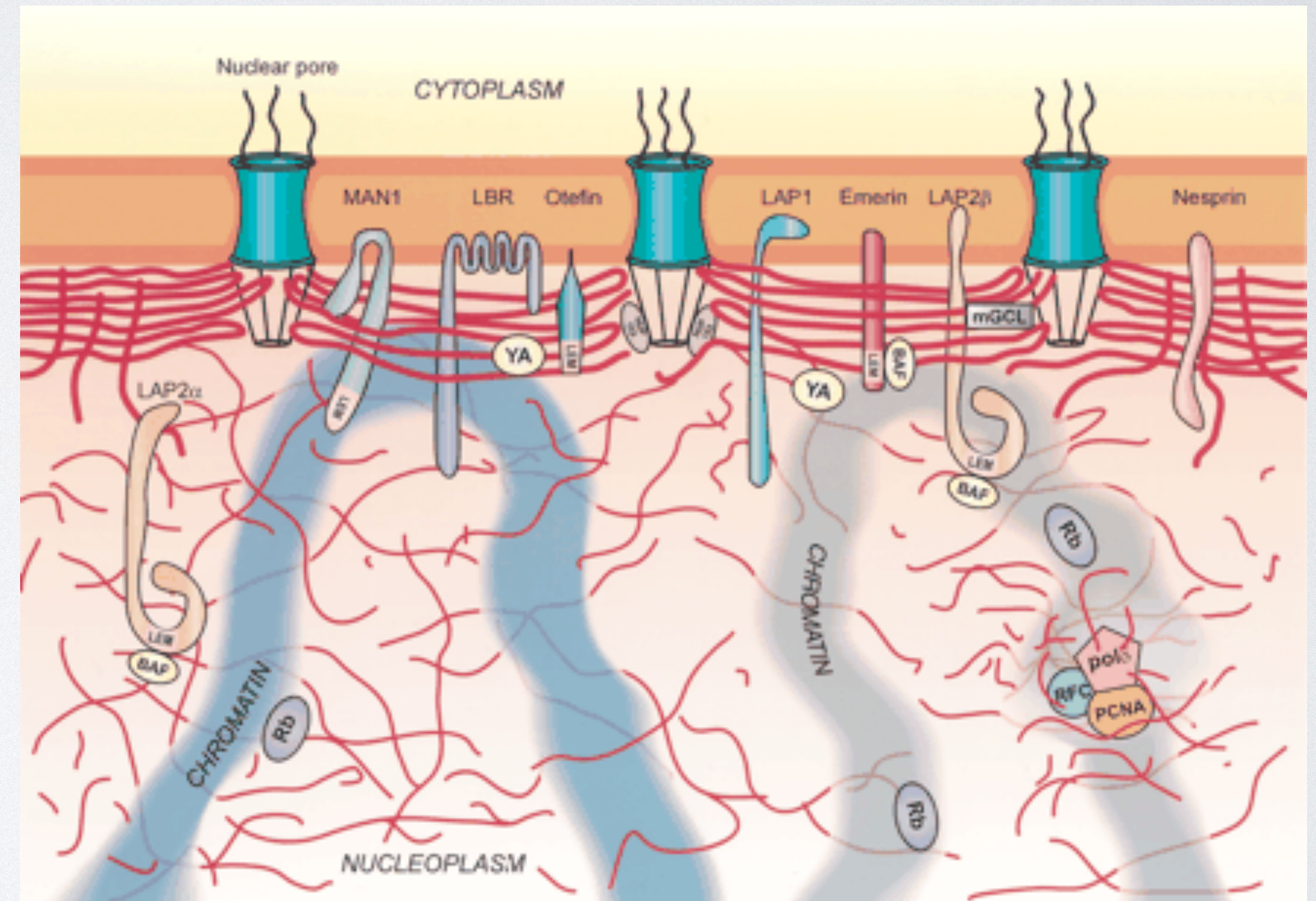
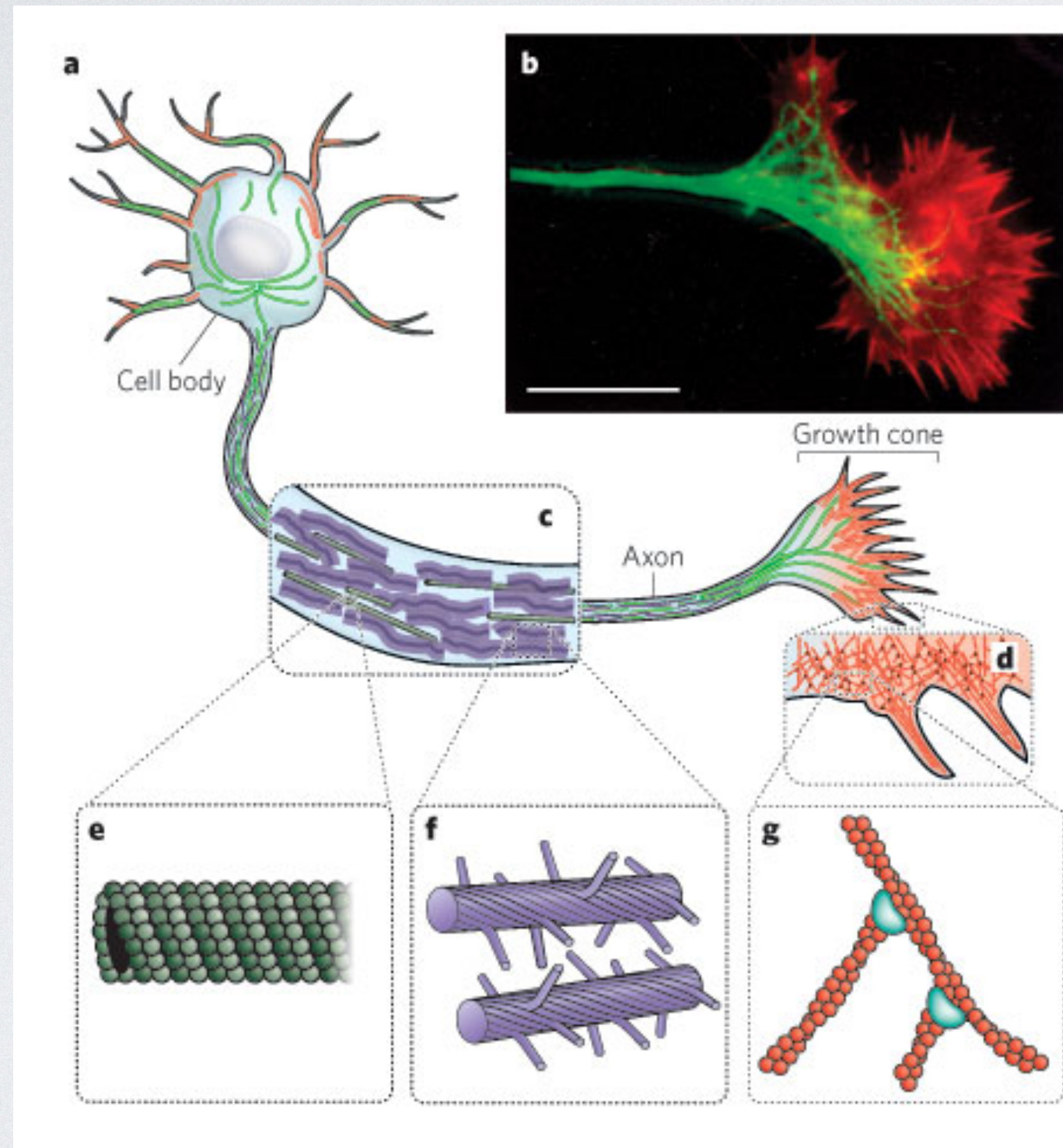
A célula eucariota: características comuns

Citoesqueleto: filamentos intermedios



A célula eucariota: características comuns

Citoesqueleto: filamentos intermedios

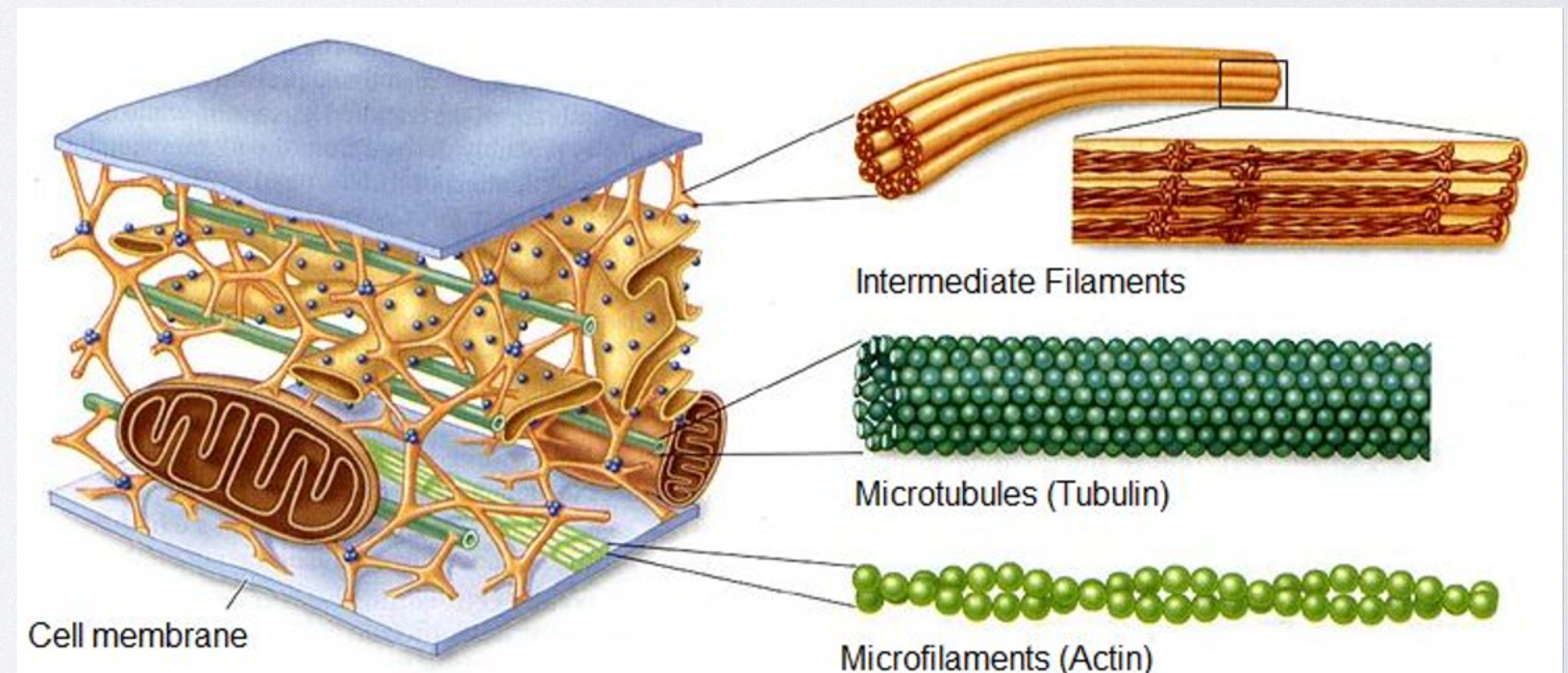
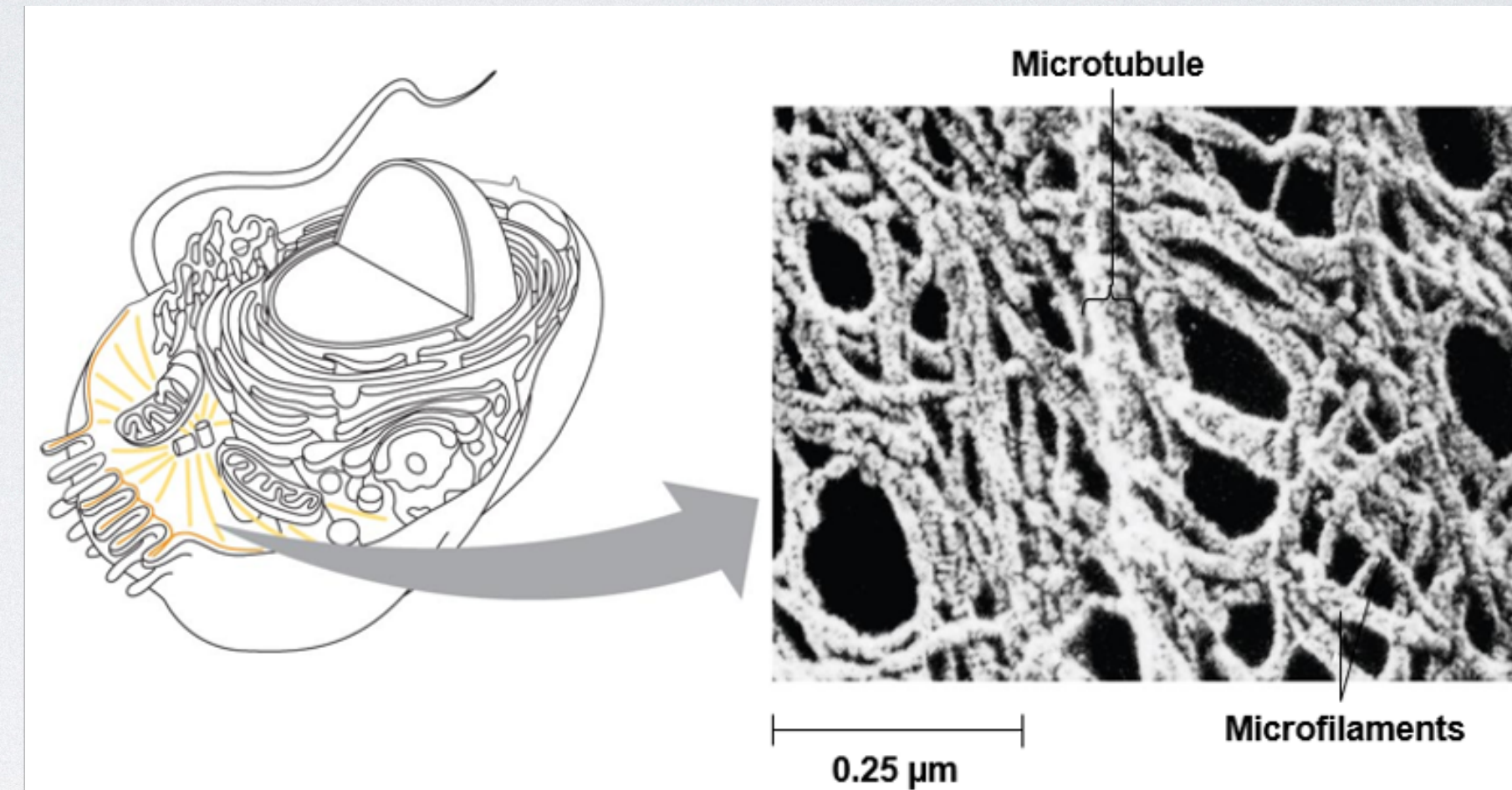


Citoesqueleto

Funcións:

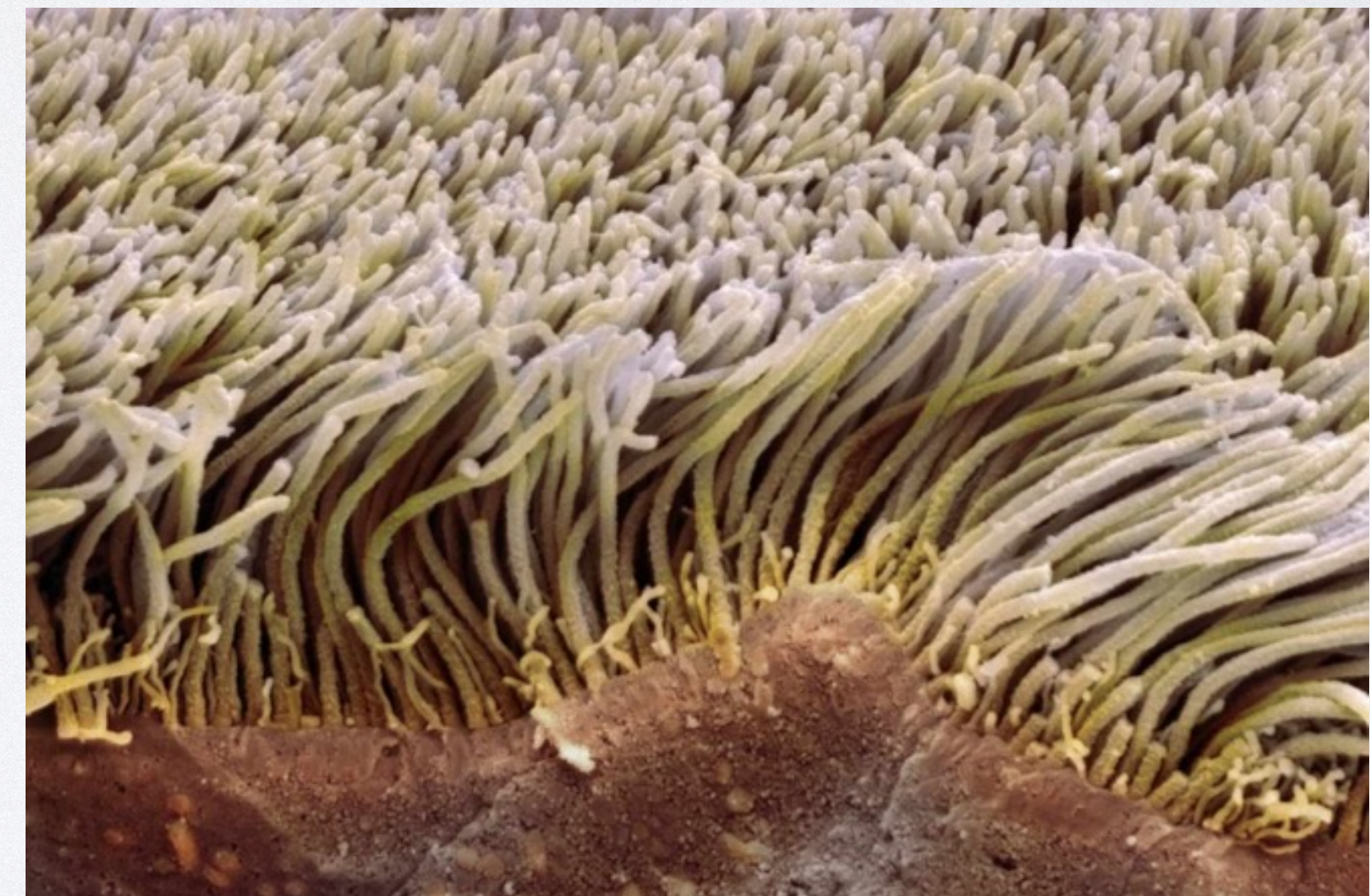
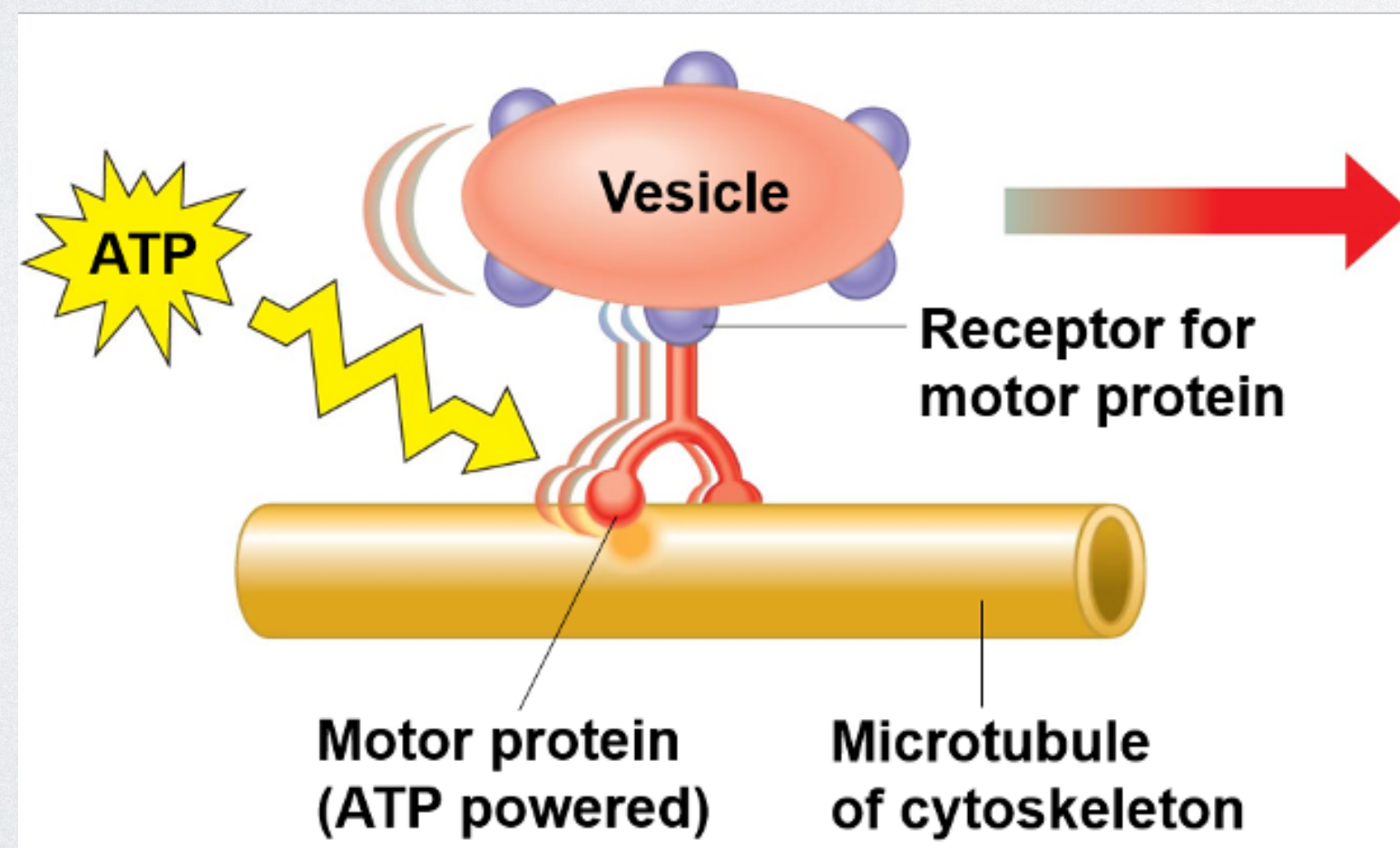
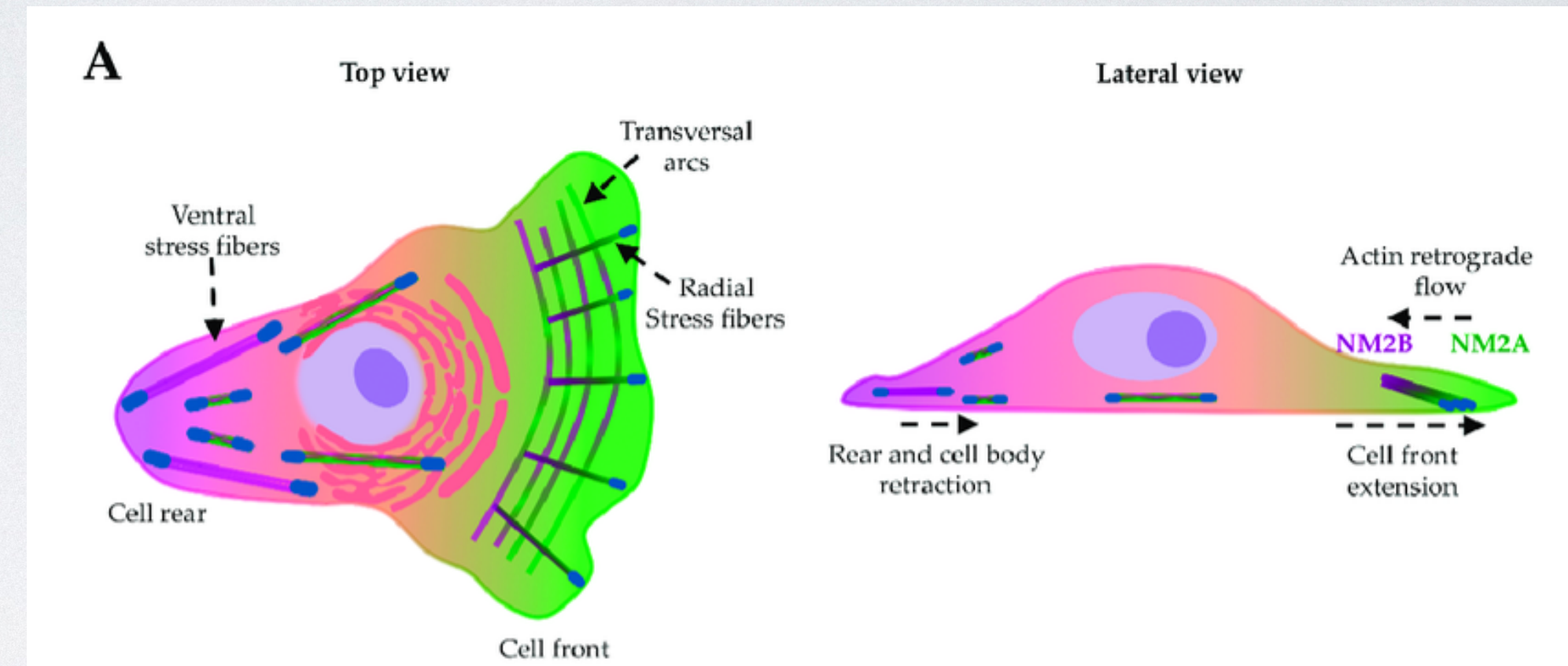
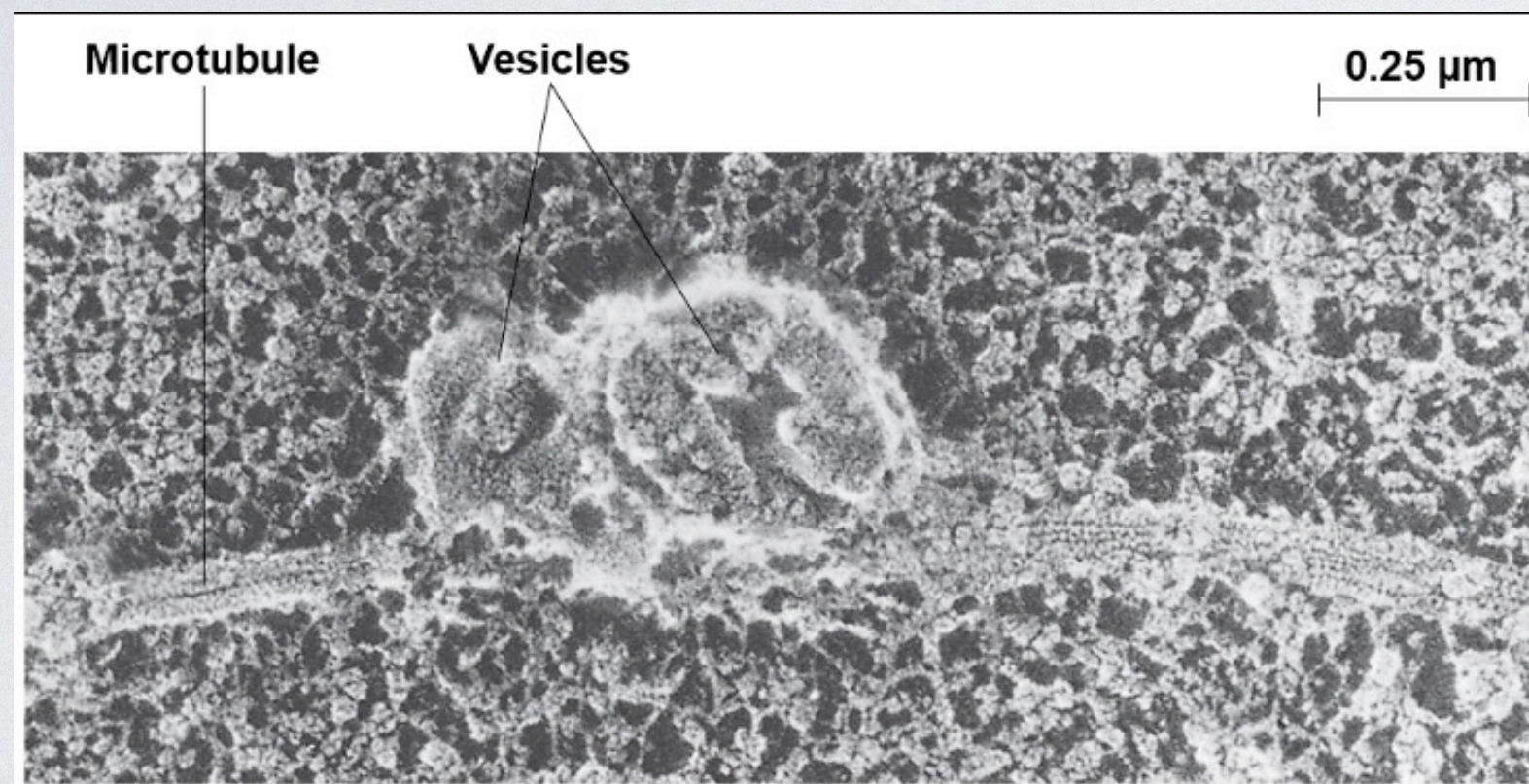
- Estrutura e soporte
- Transporte
- Motilidade
- Organización espacial

A célula eucariota: características comúns



A célula eucariota: características comuns

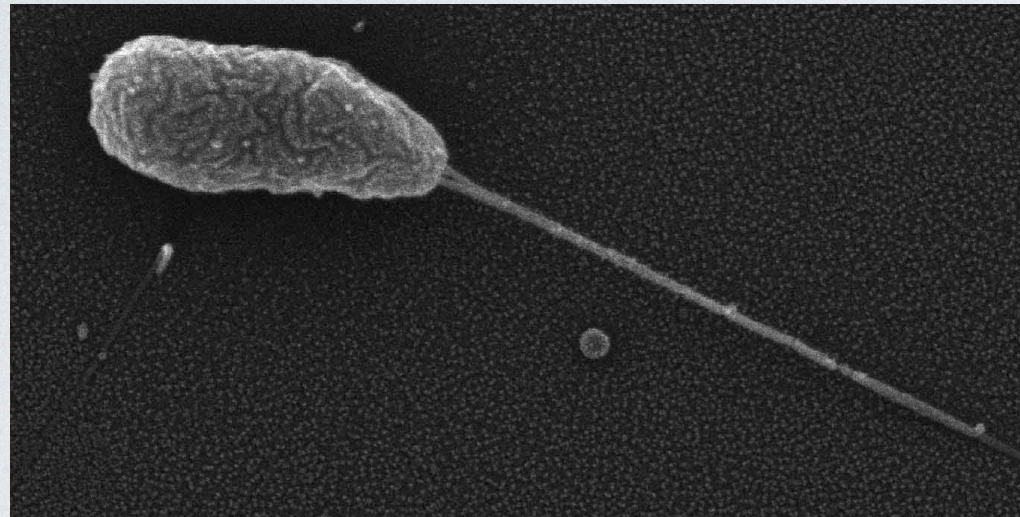
Citoesqueleto: funções



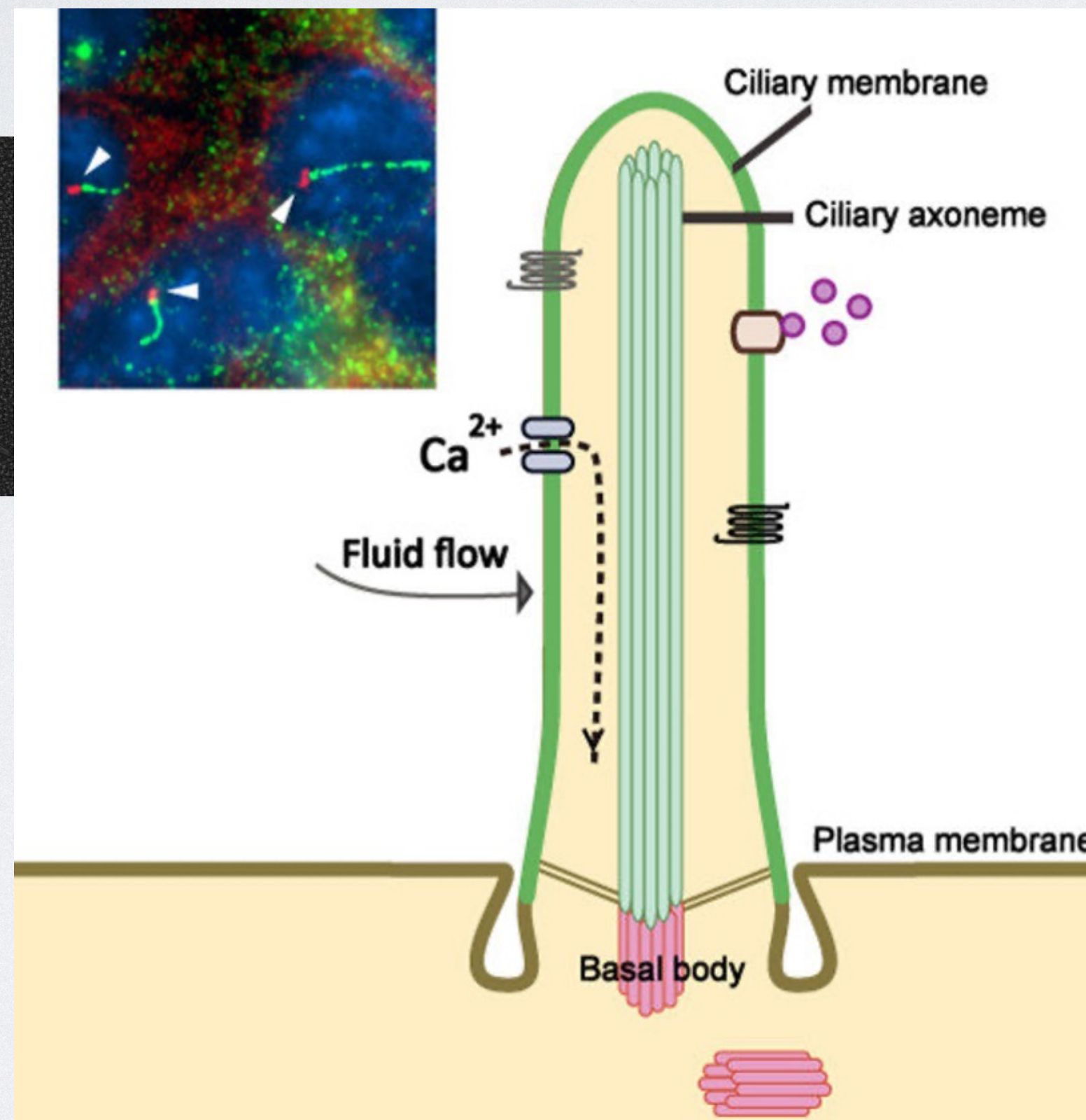
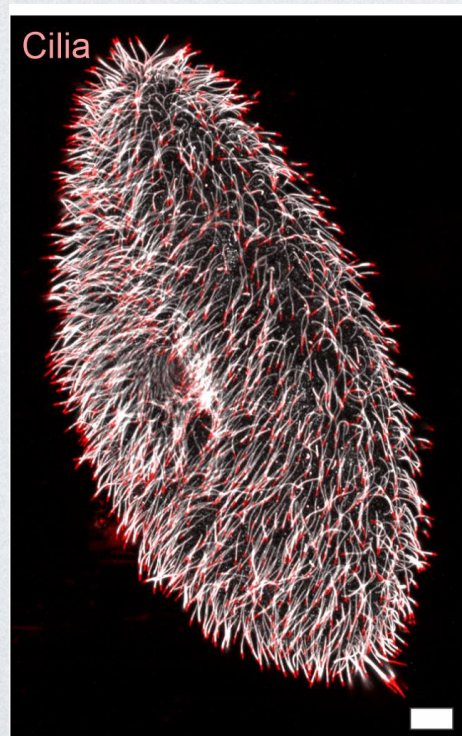
A célula eucariota: características comuns

Citoesqueleto: funções

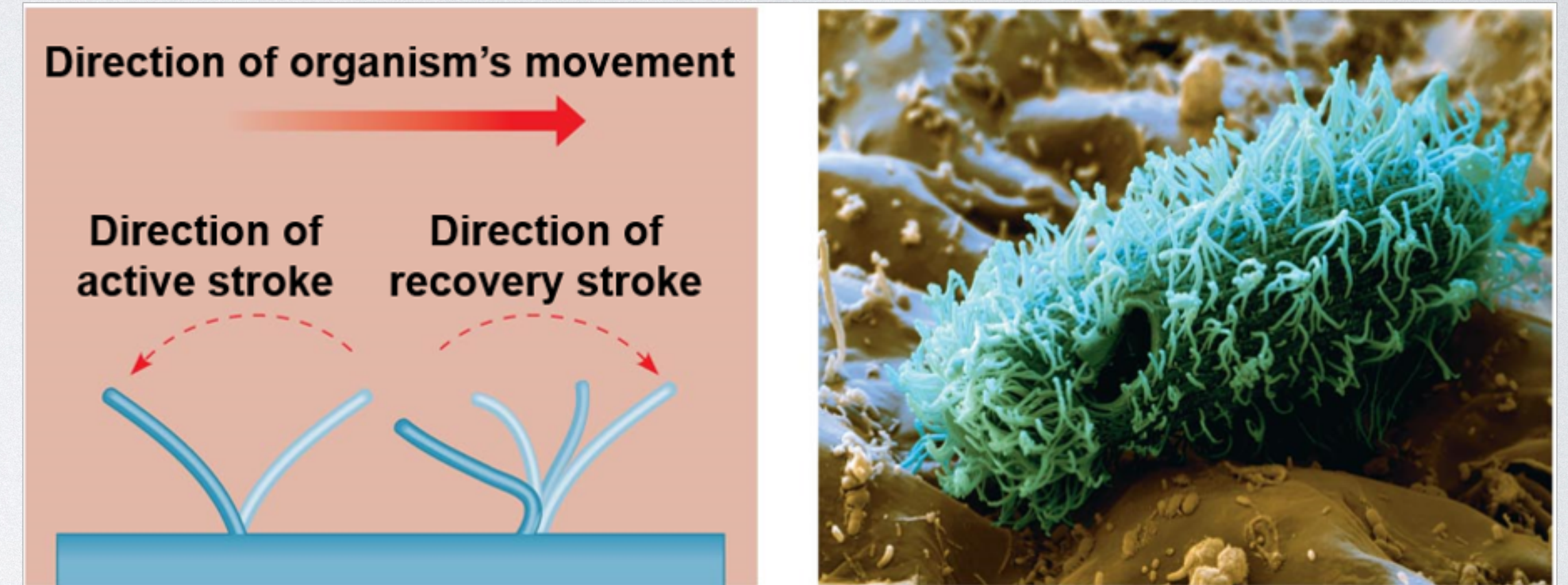
Flaxelos



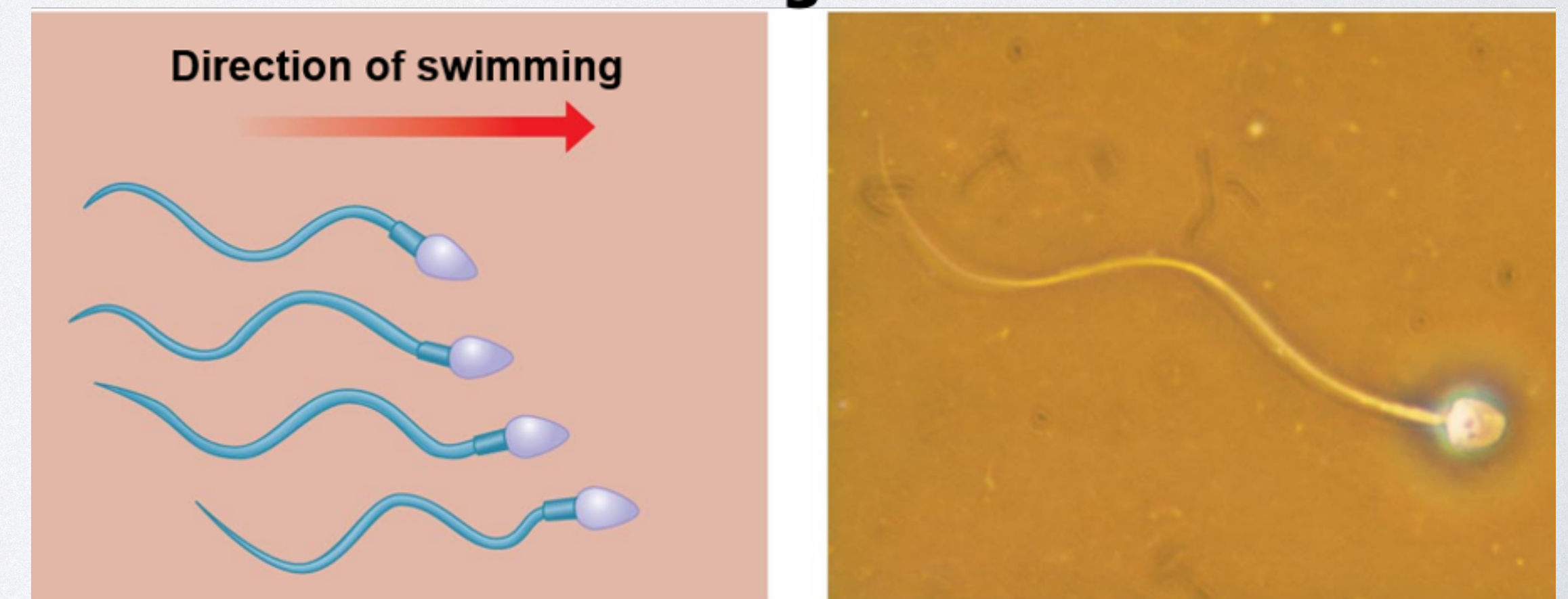
Cilios



Cilios

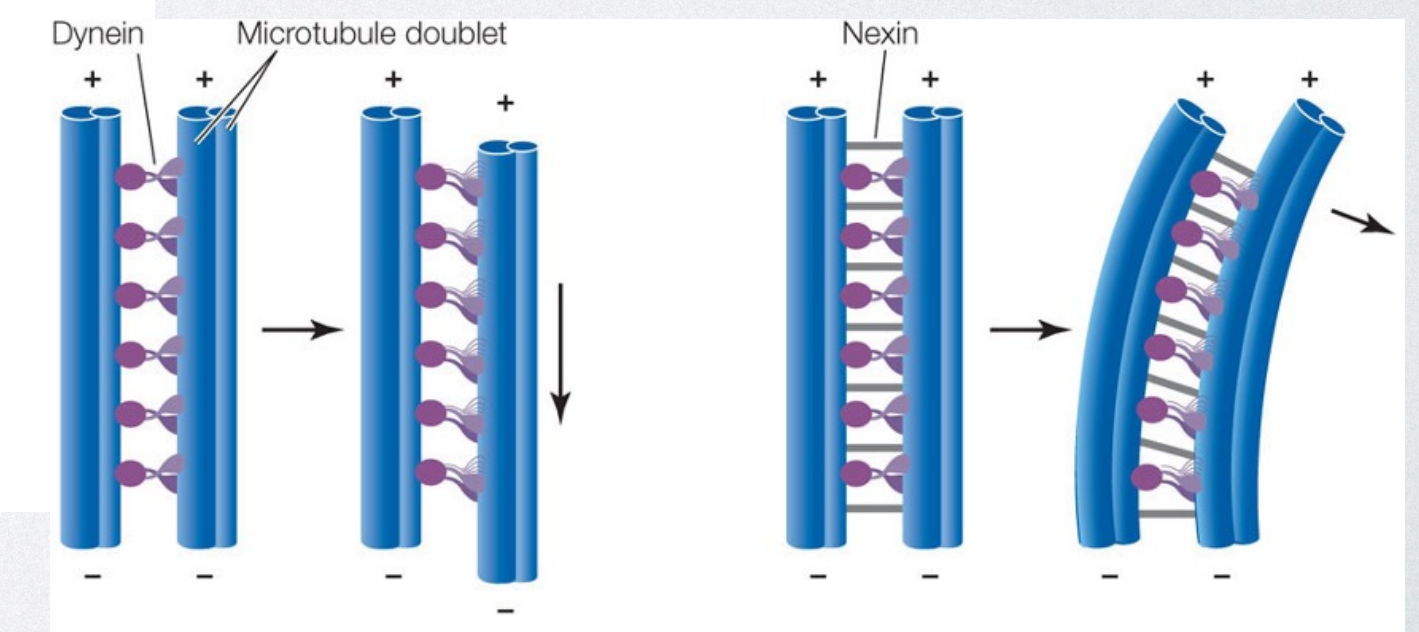
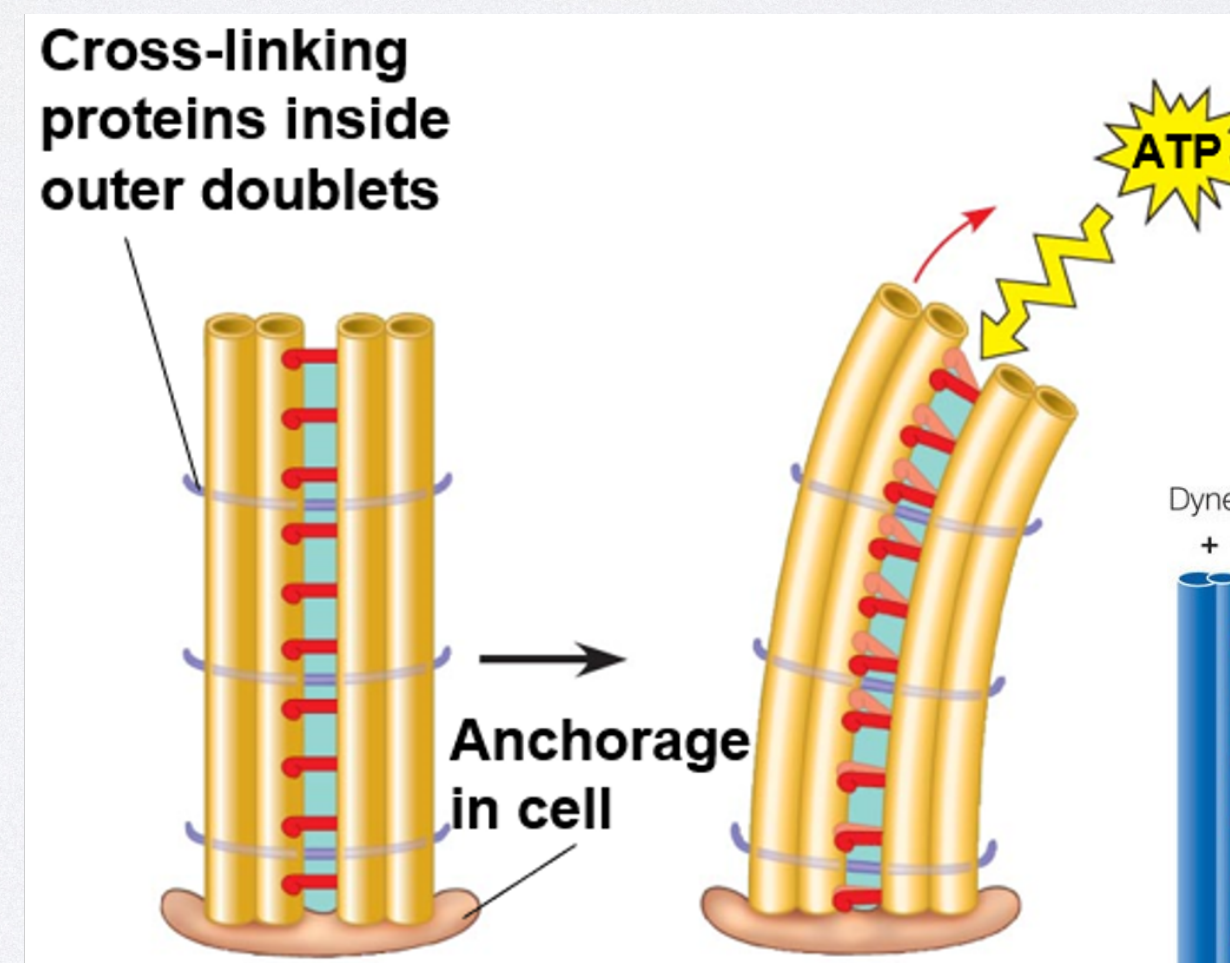
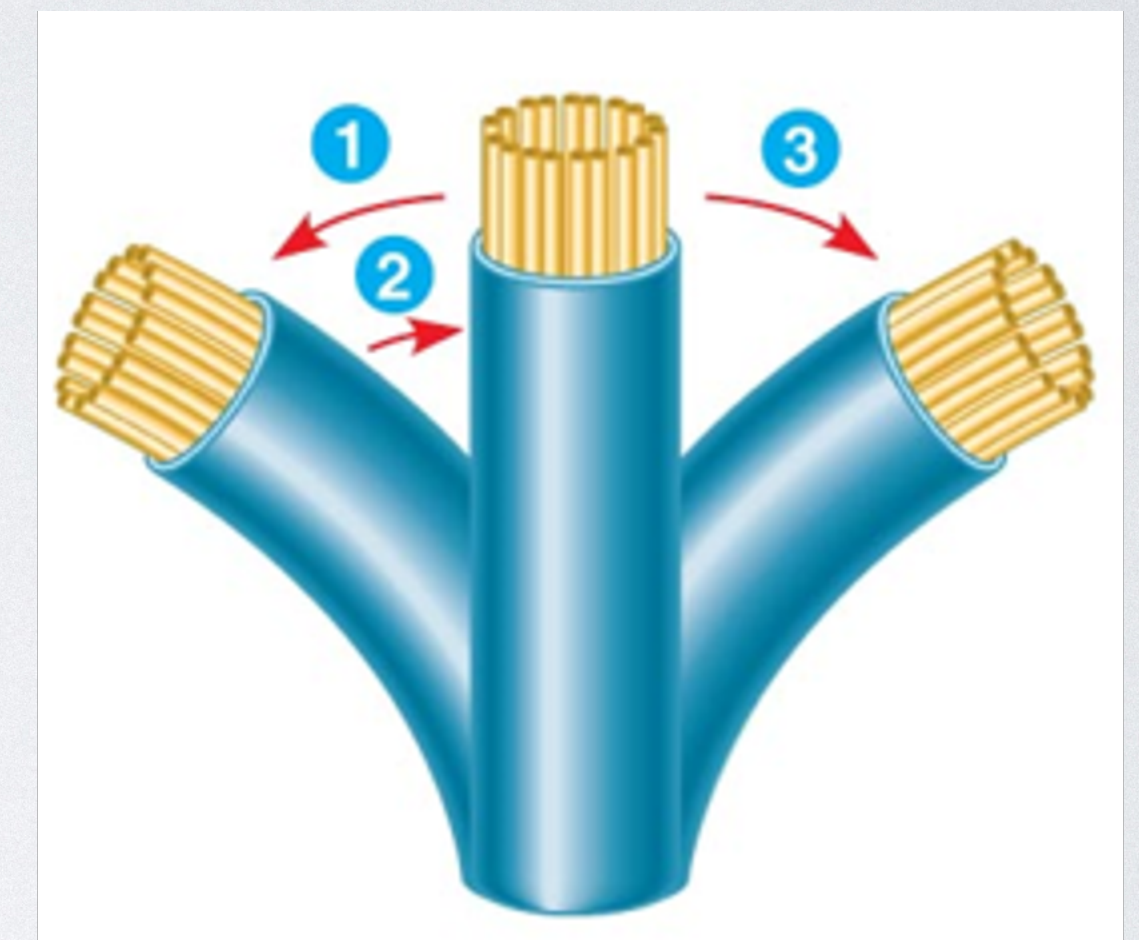
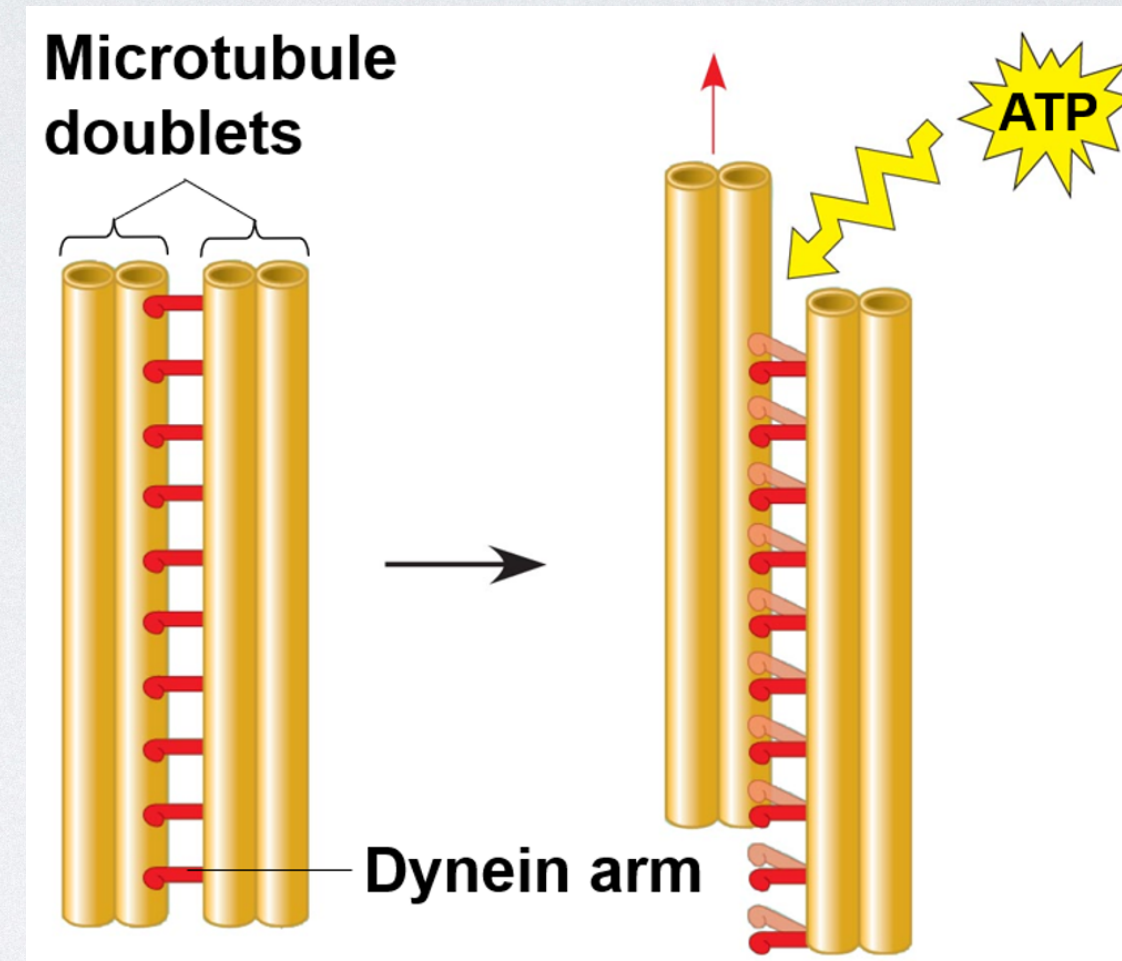
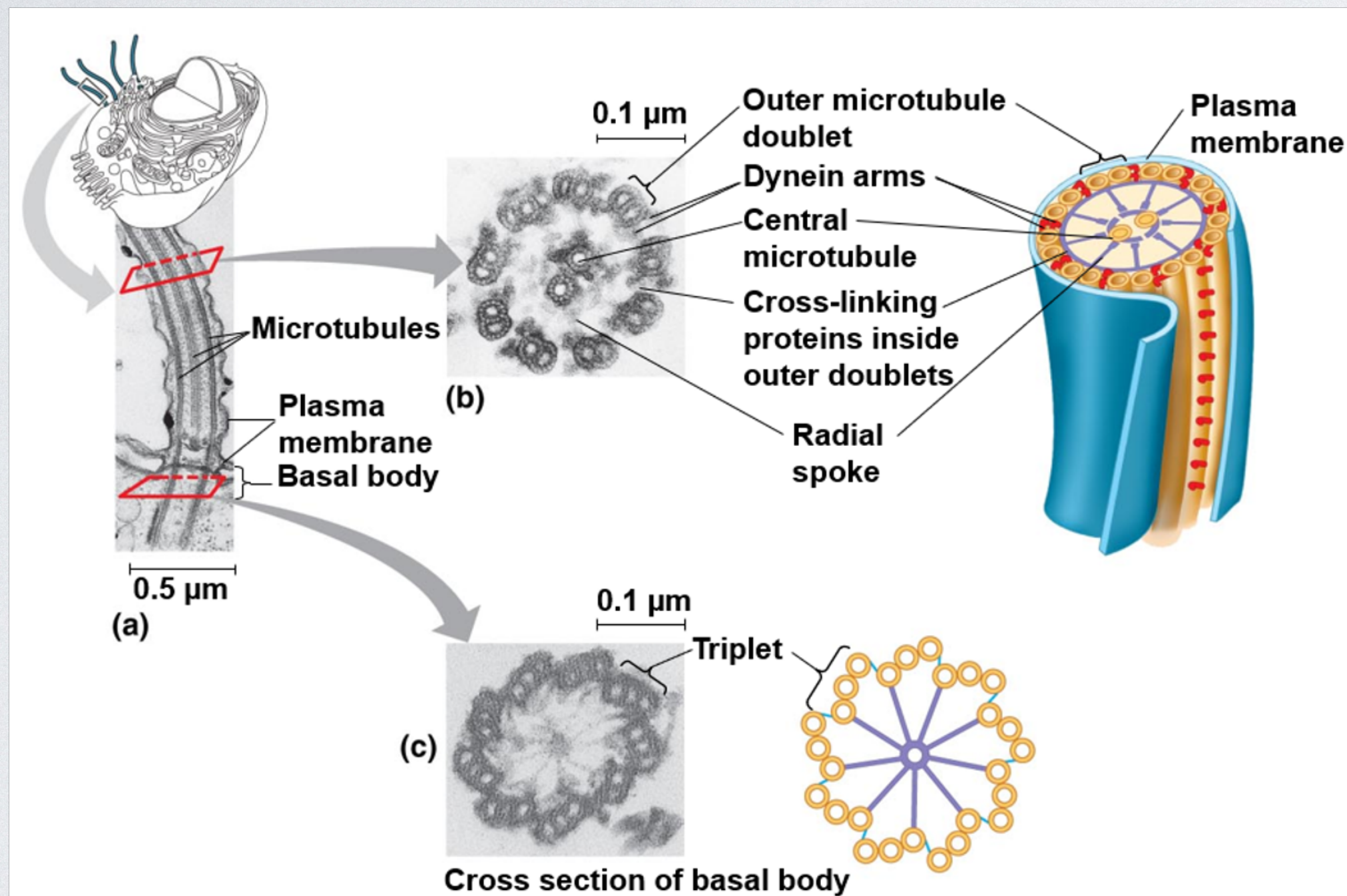


Flagelos



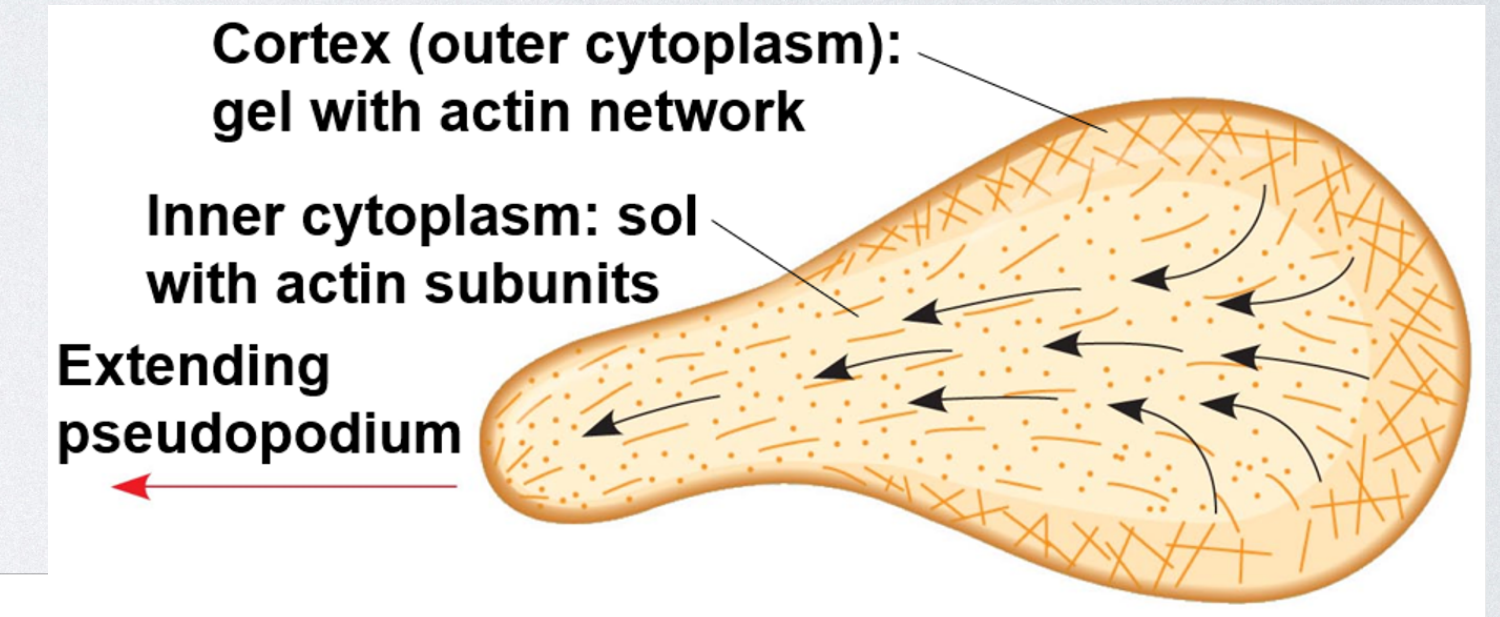
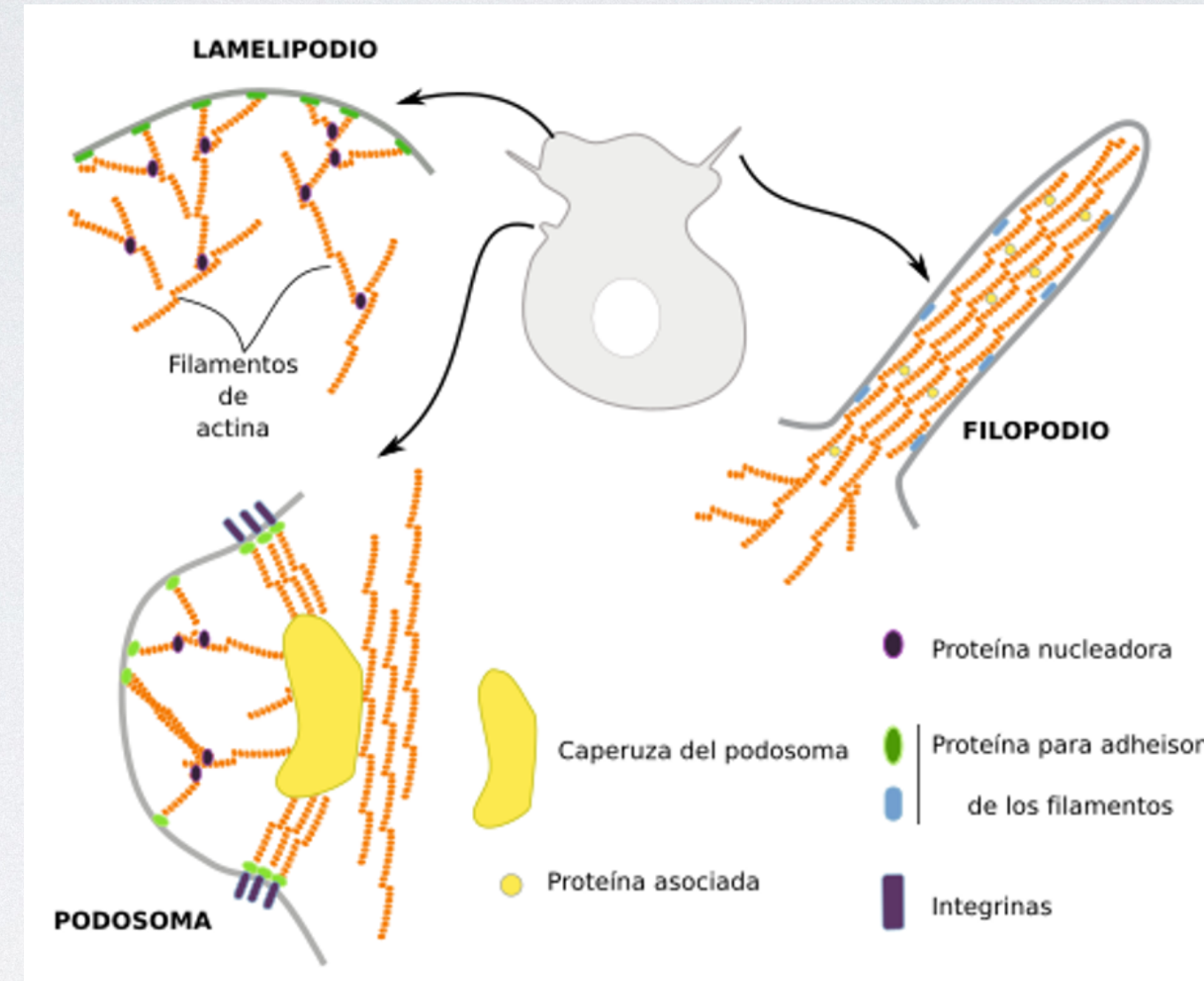
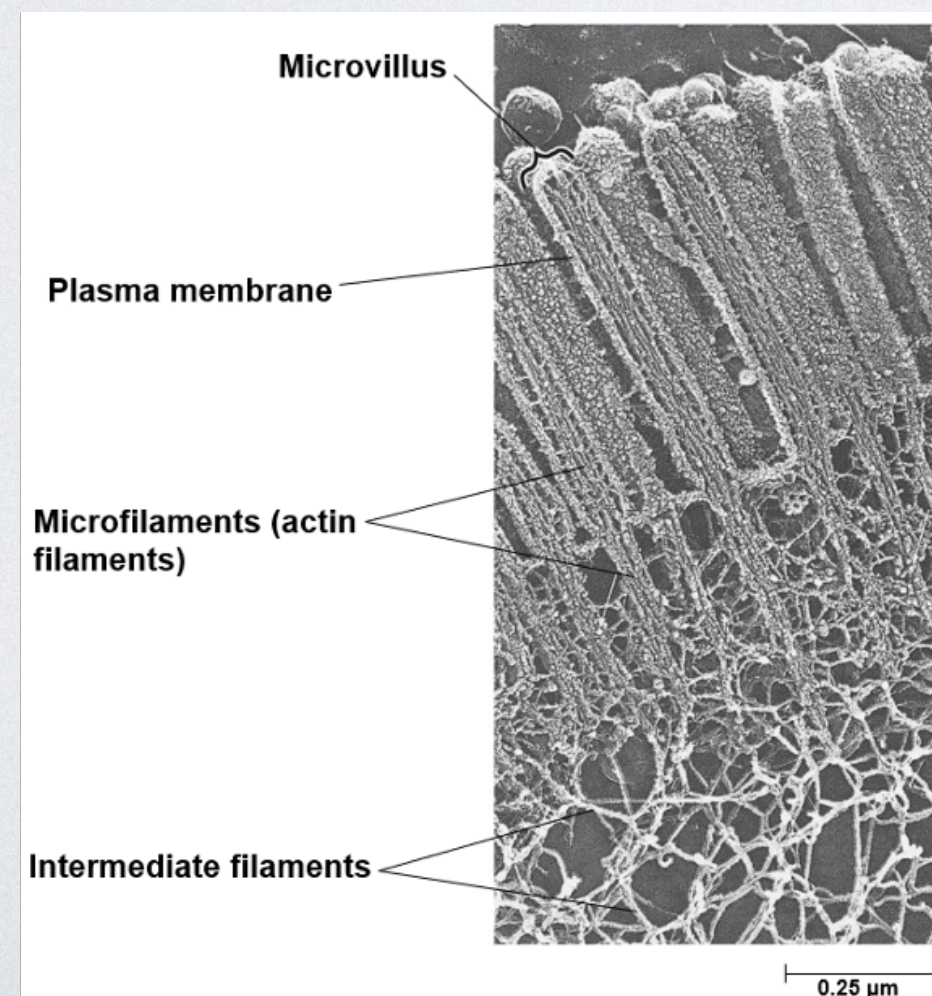
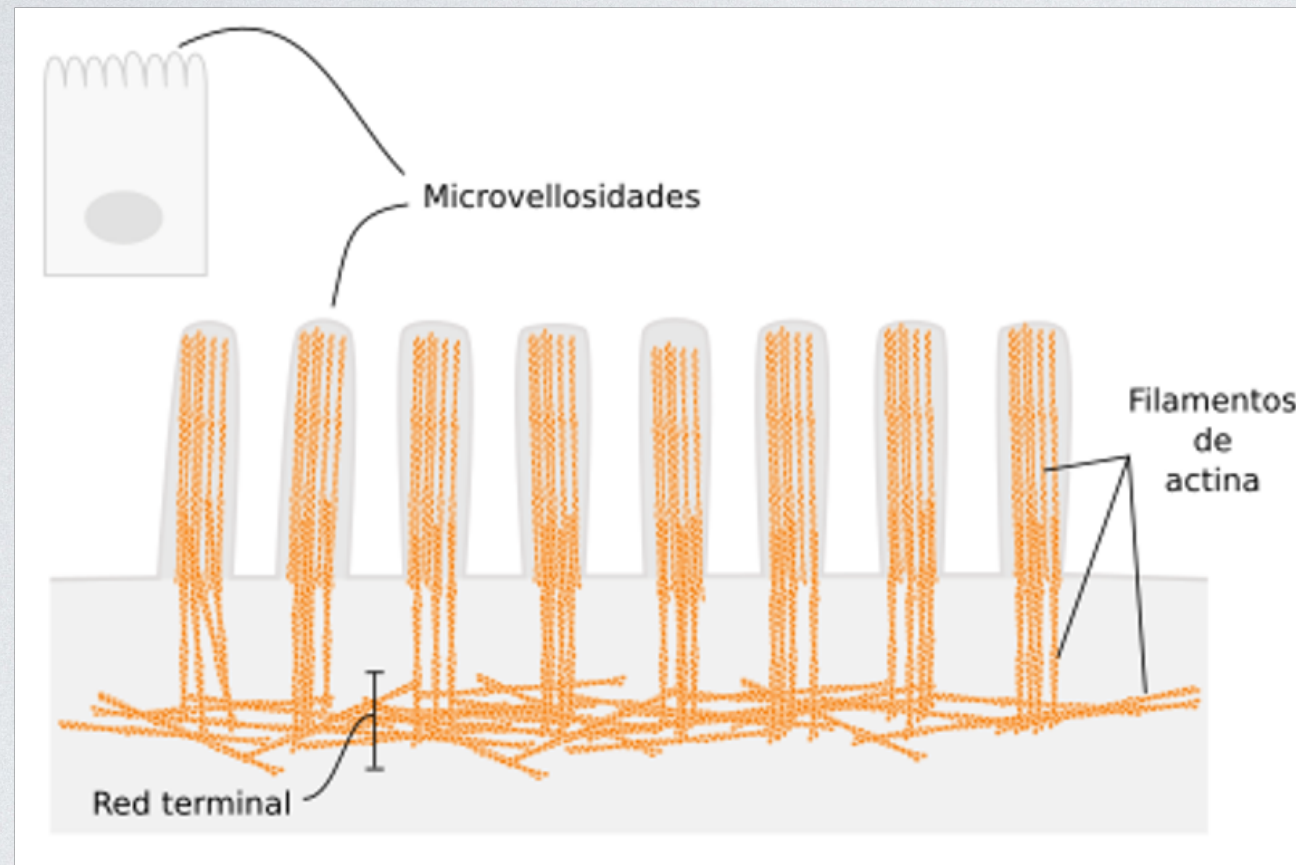
A célula eucariota: características comuns

Citoesqueleto: funções

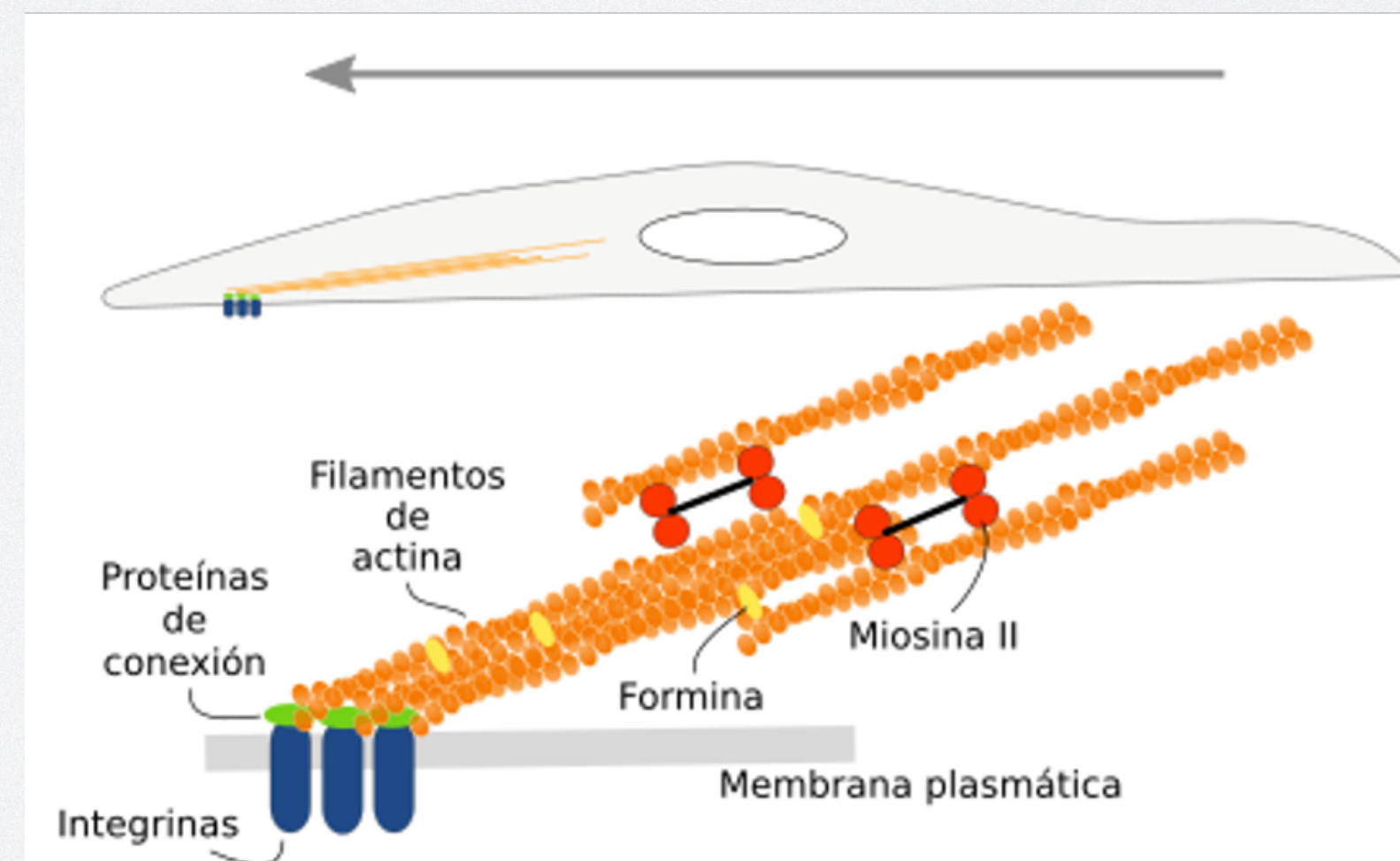


A célula eucariota: características comunes

Citoesqueleto: funciones

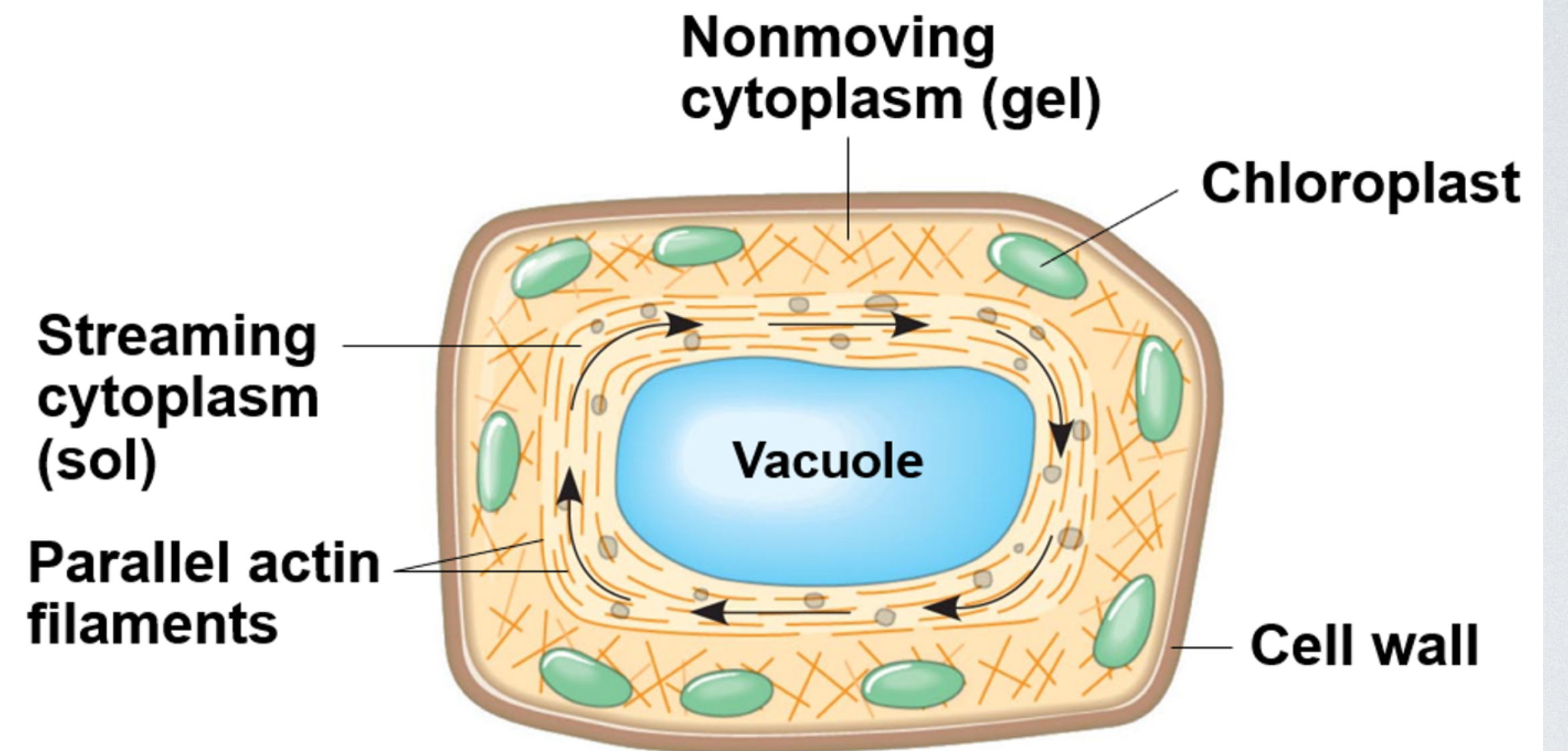
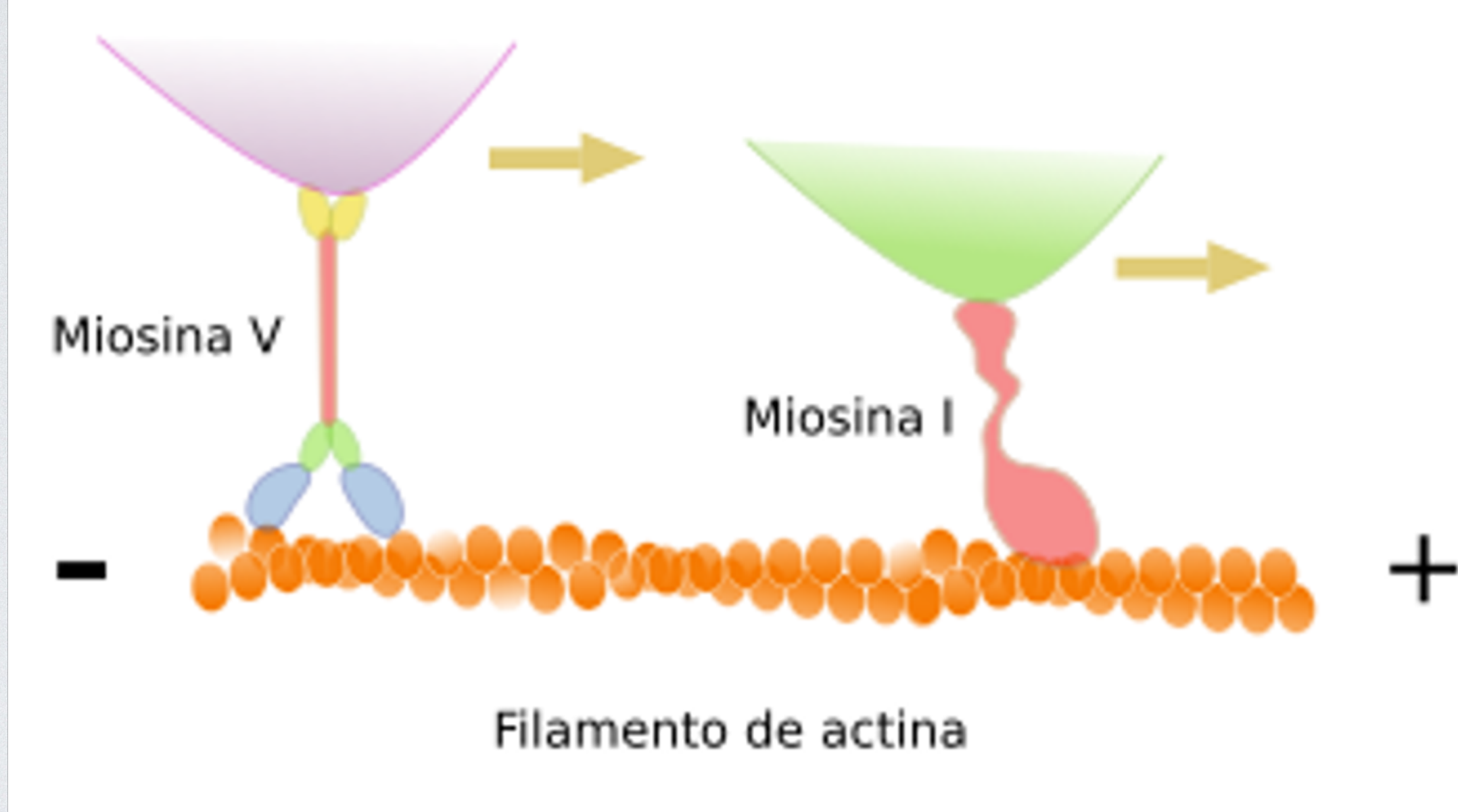


Fibras de estrés



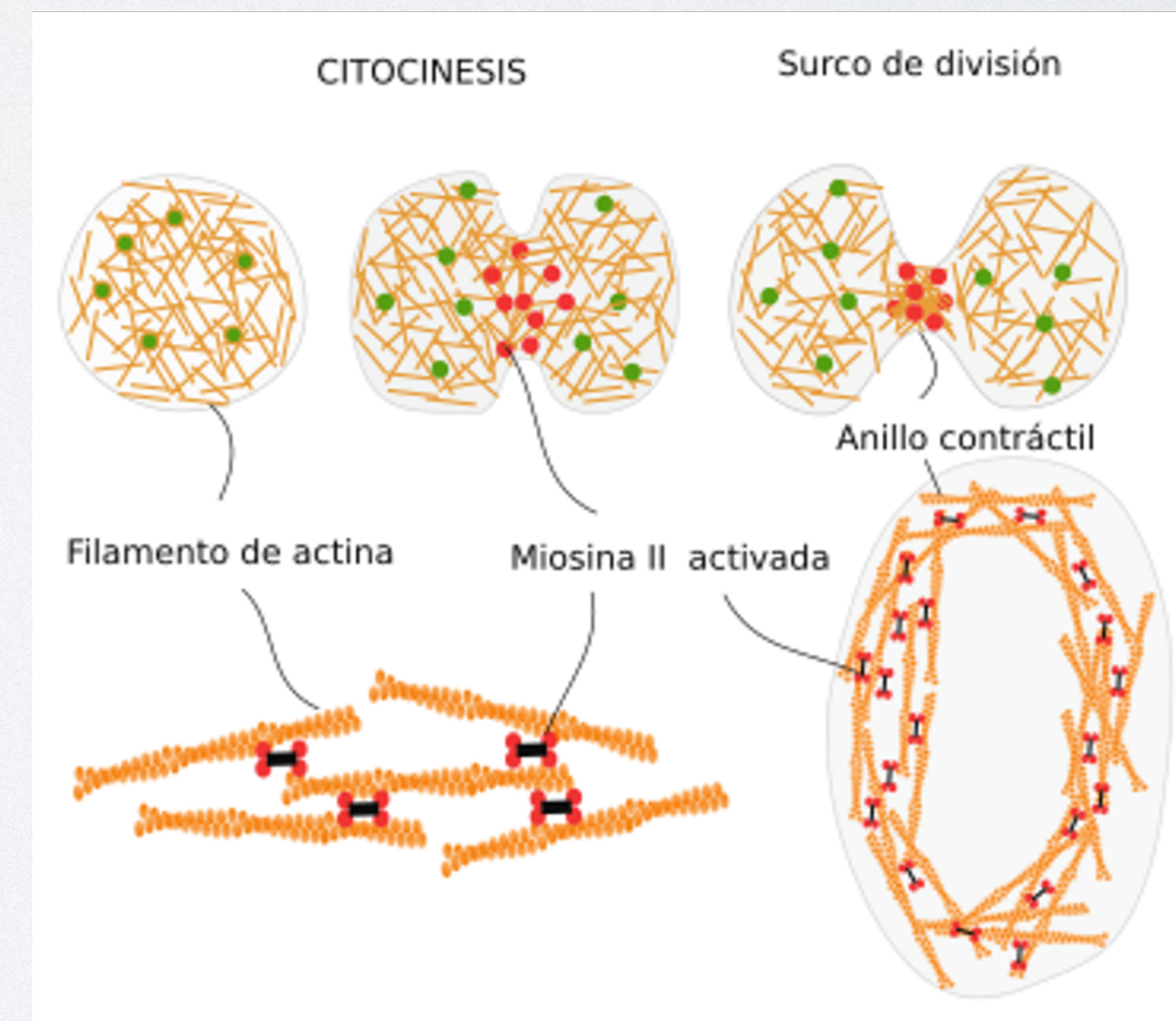
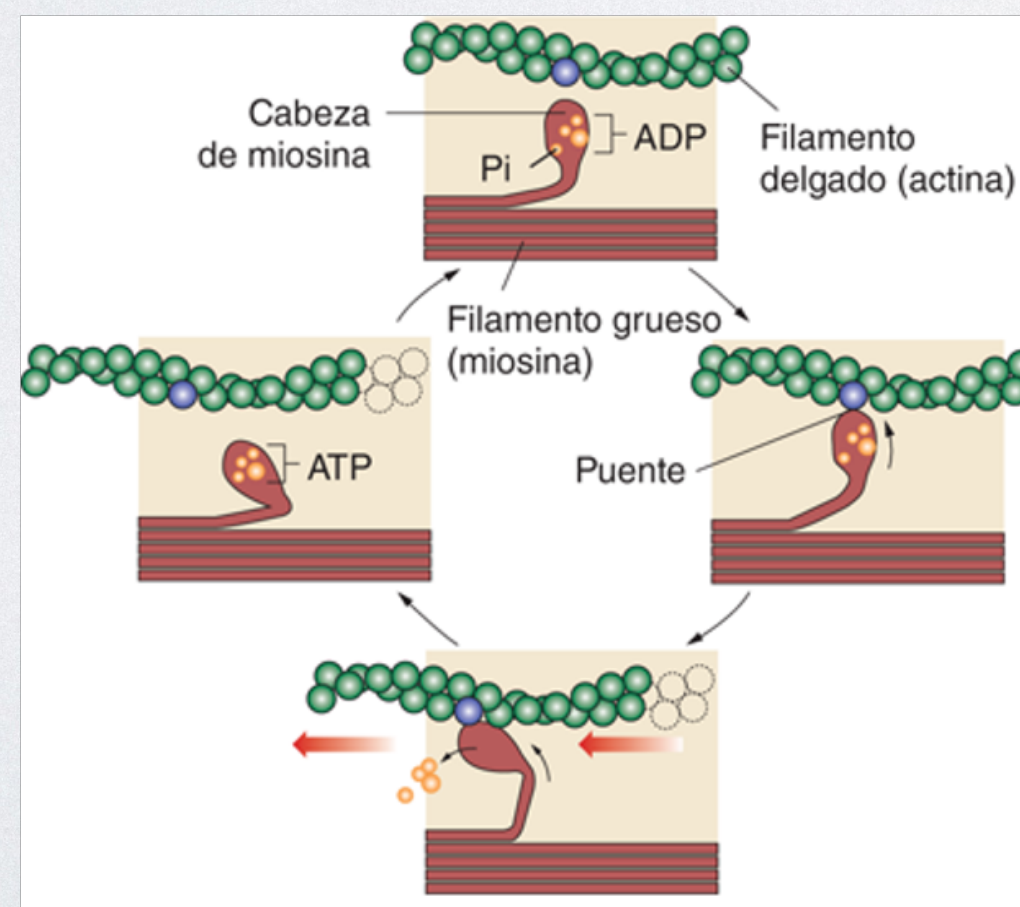
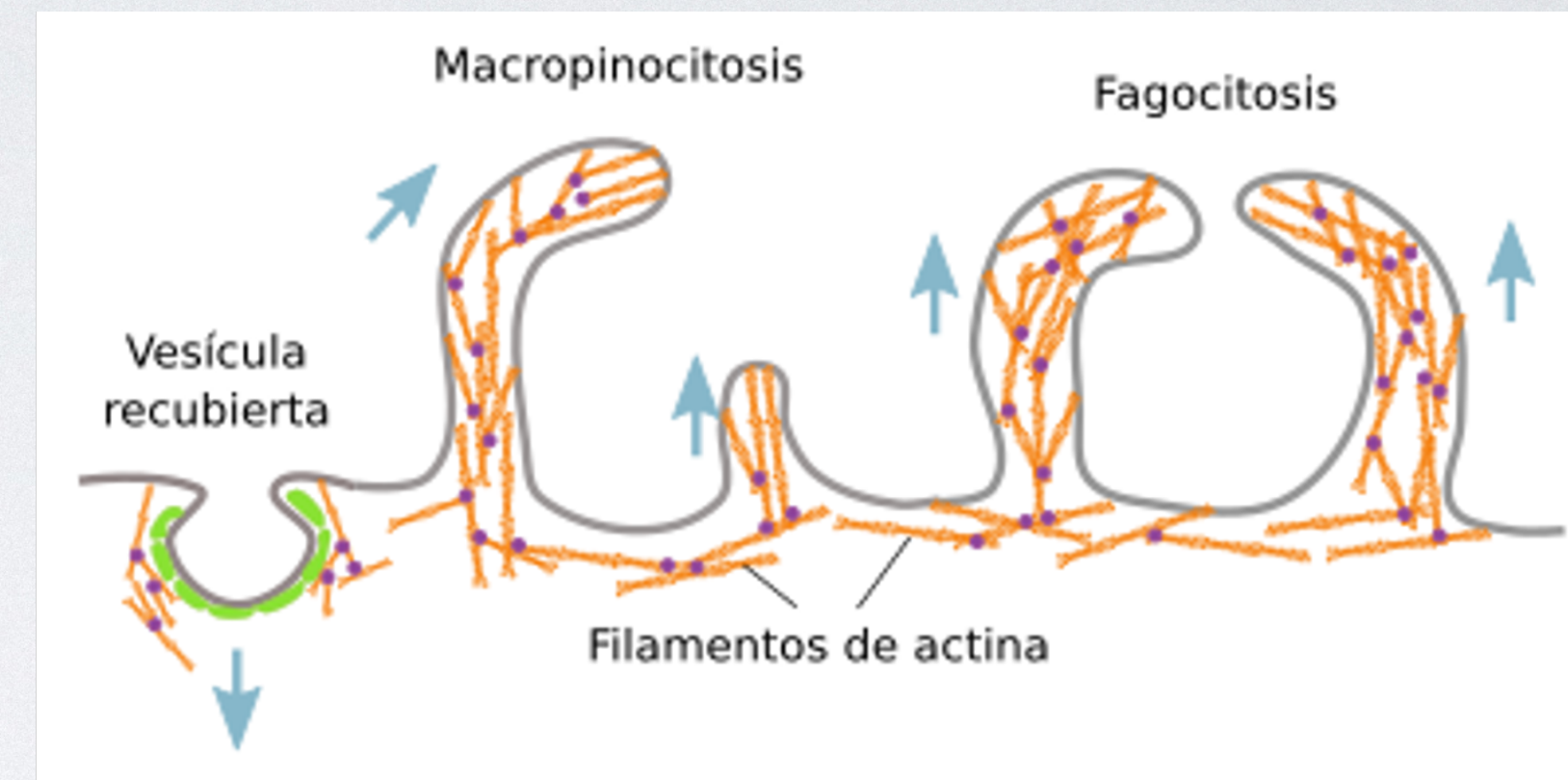
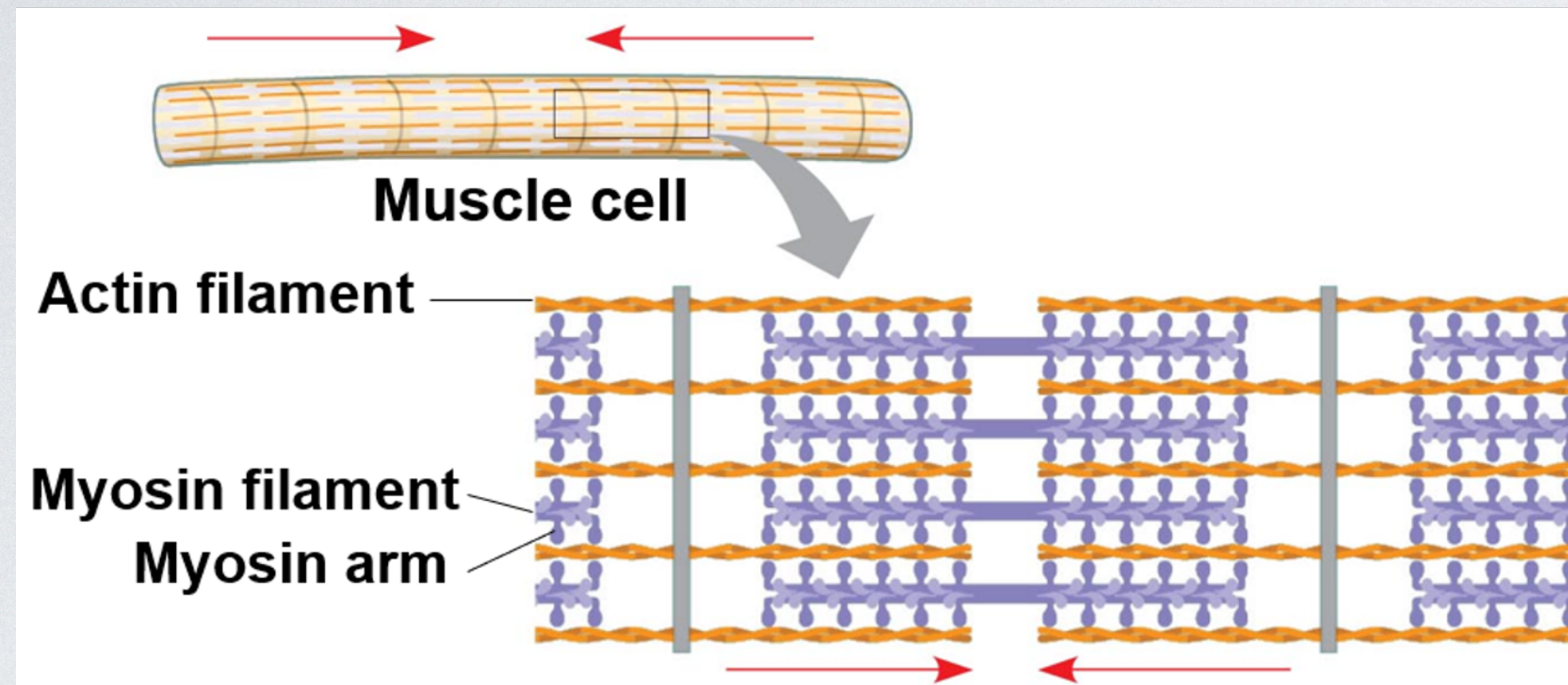
A célula eucariota: características comuns

Citoesqueleto: funções



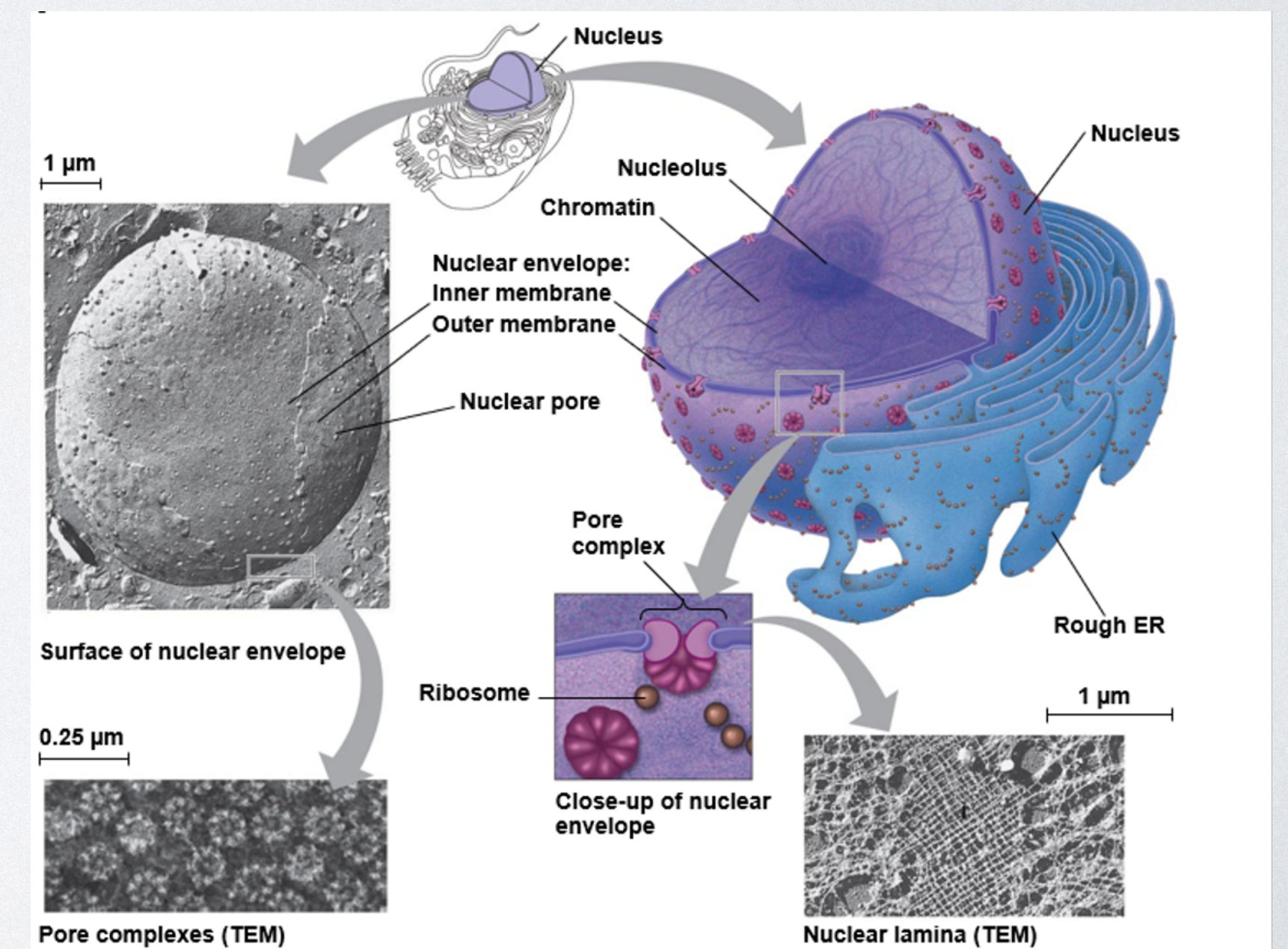
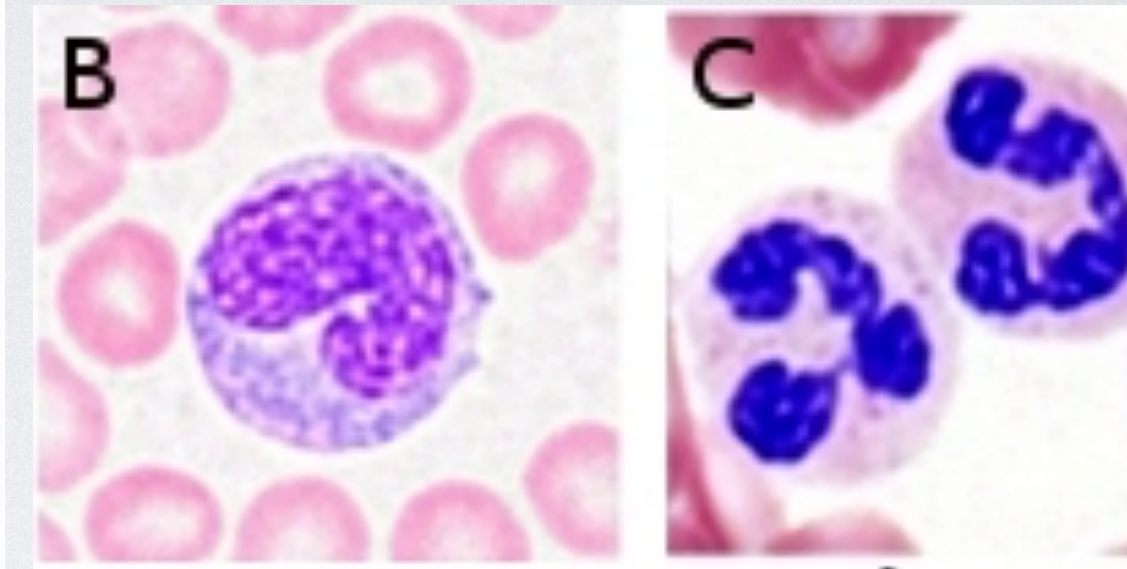
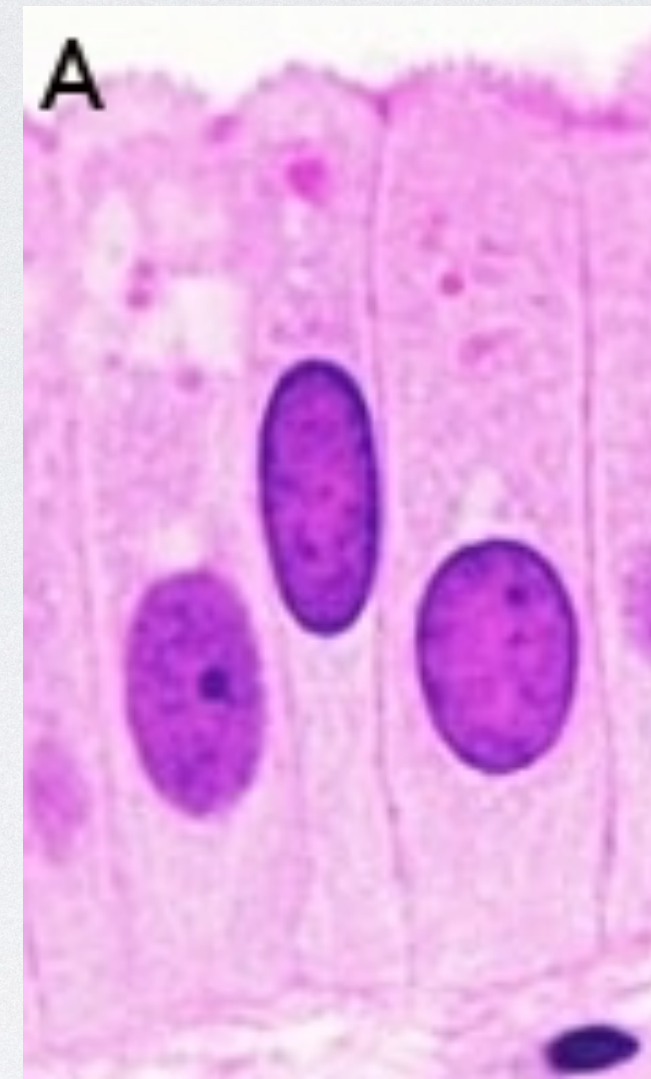
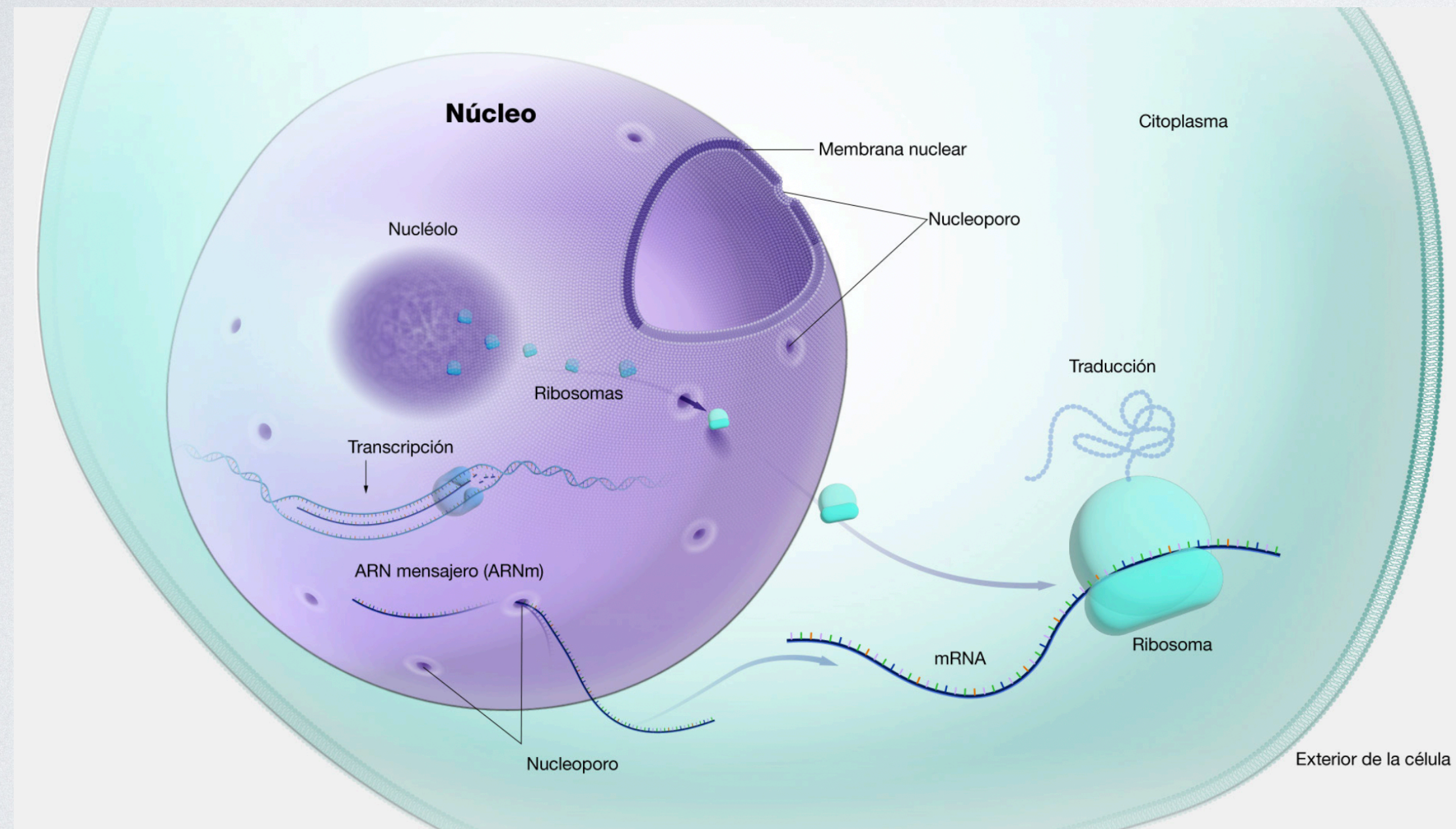
A célula eucariota: características comunes

Citoesqueleto: funciones



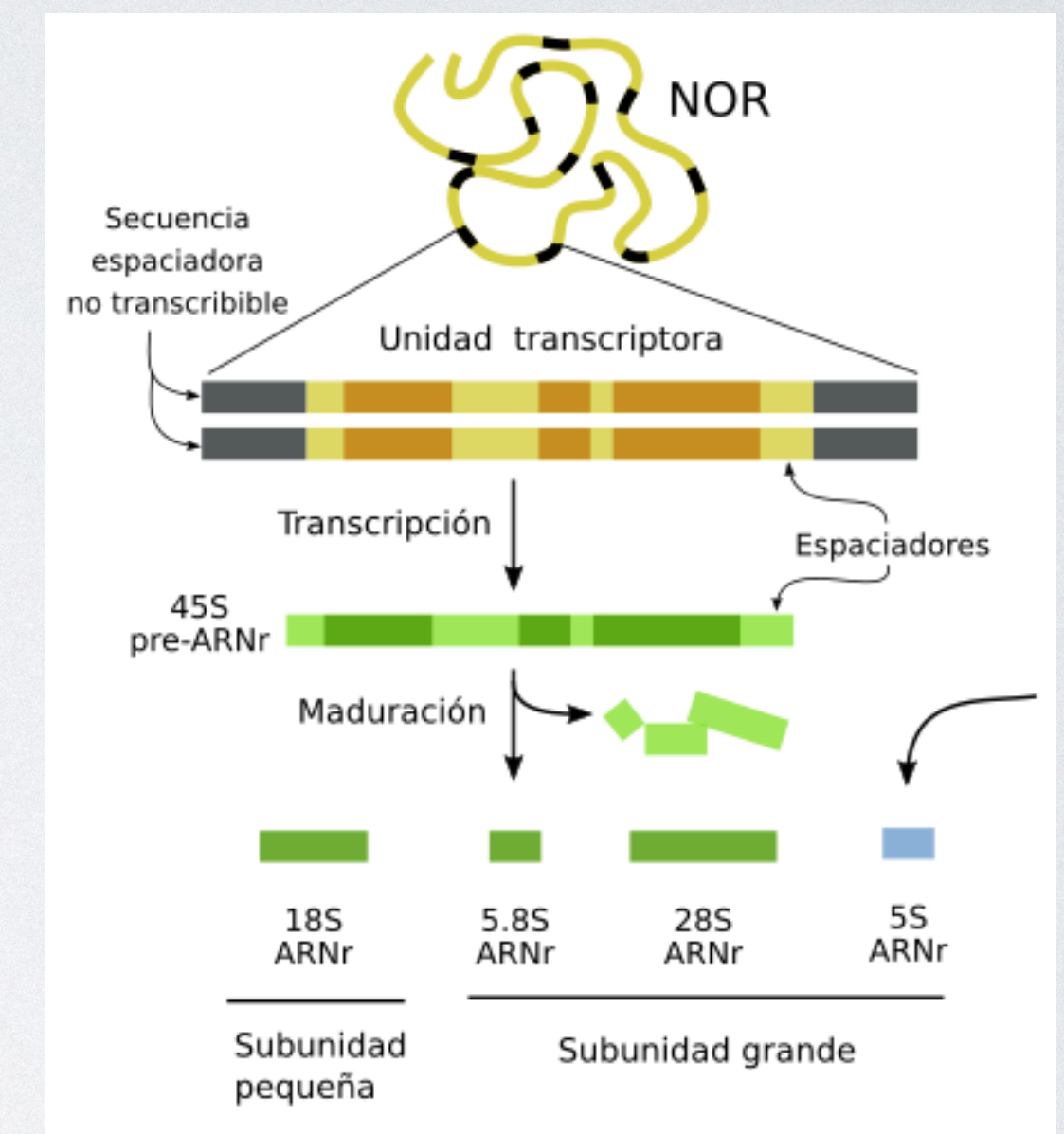
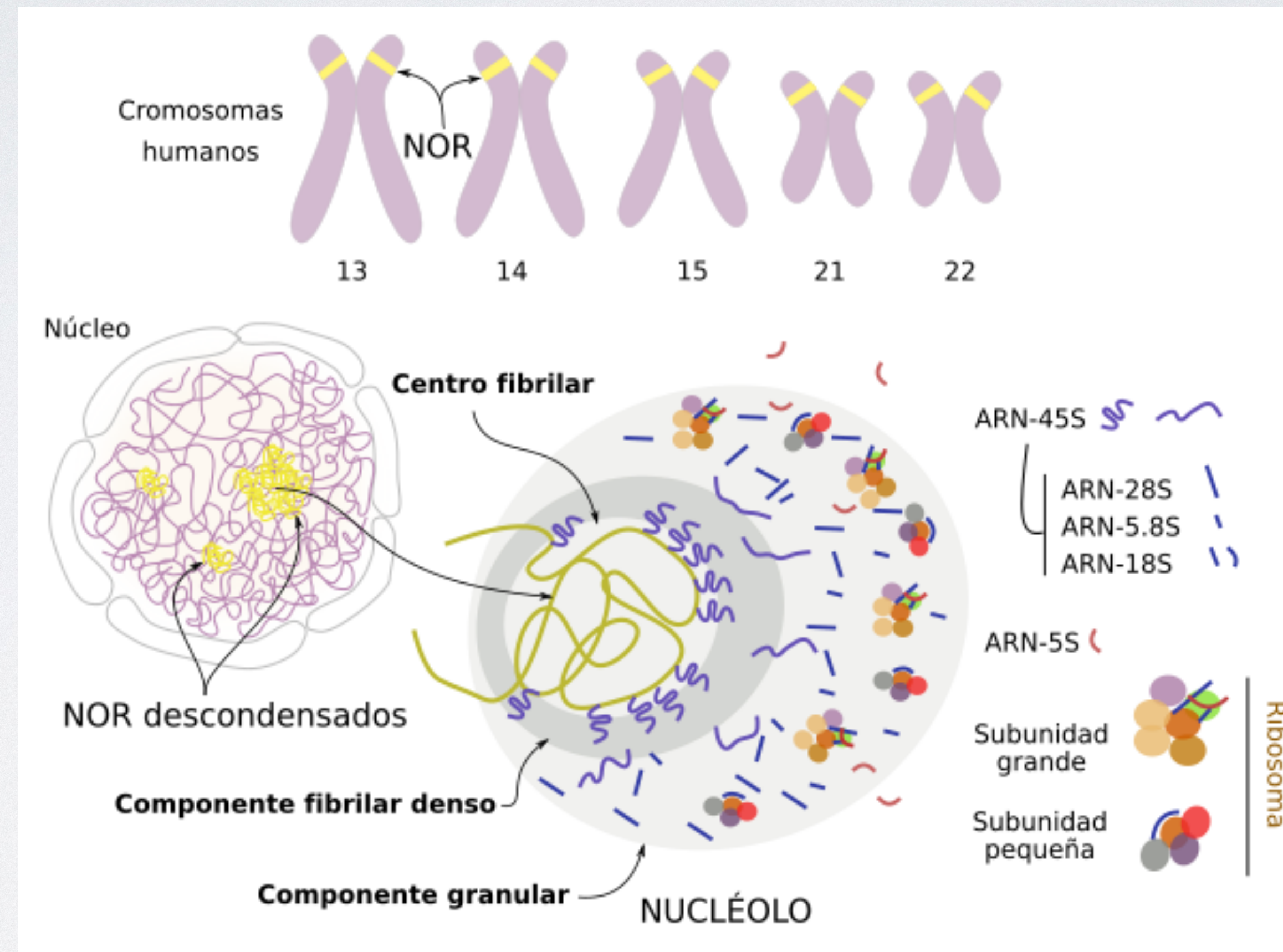
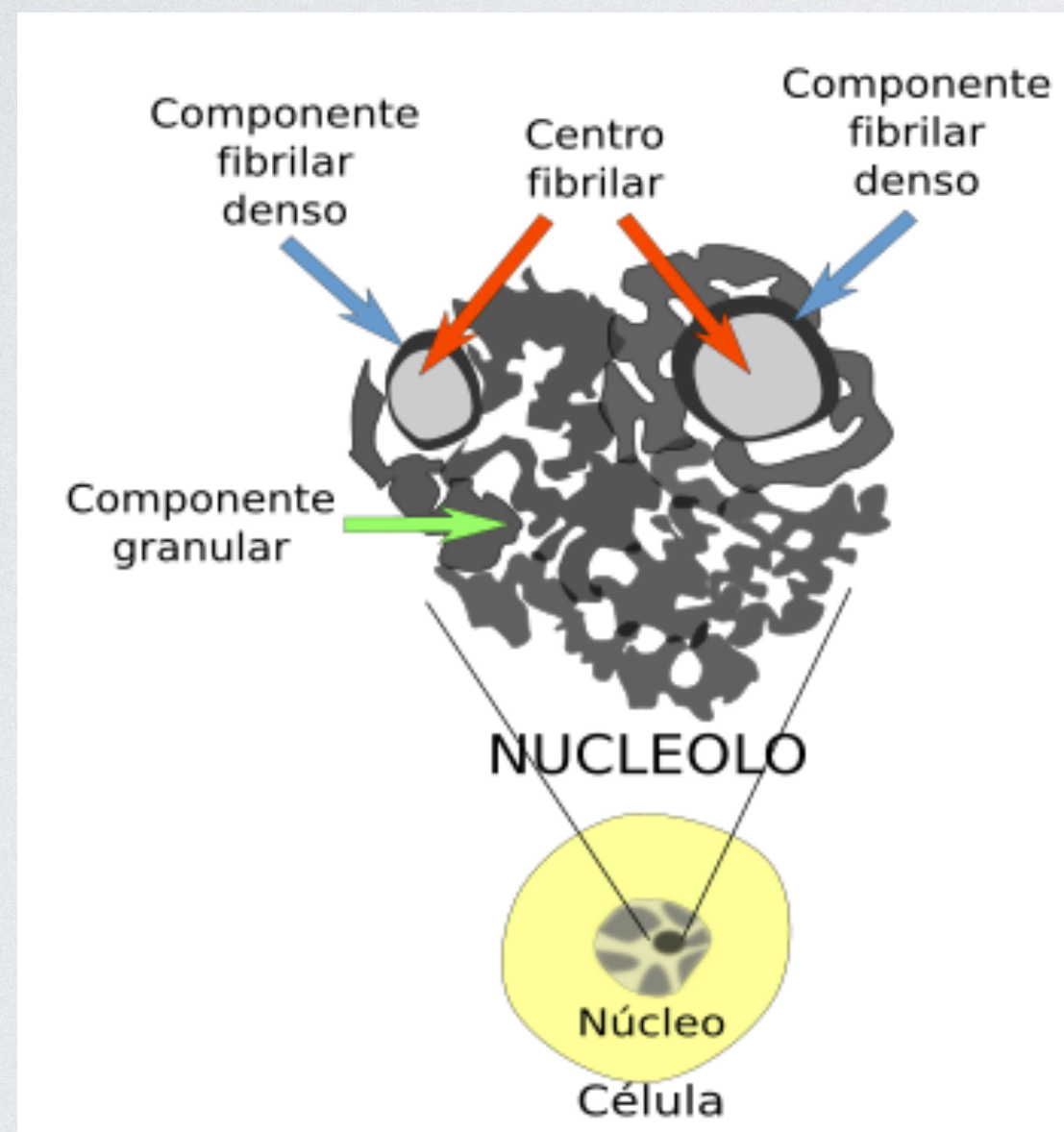
Núcleo

A célula eucariota: características comunes



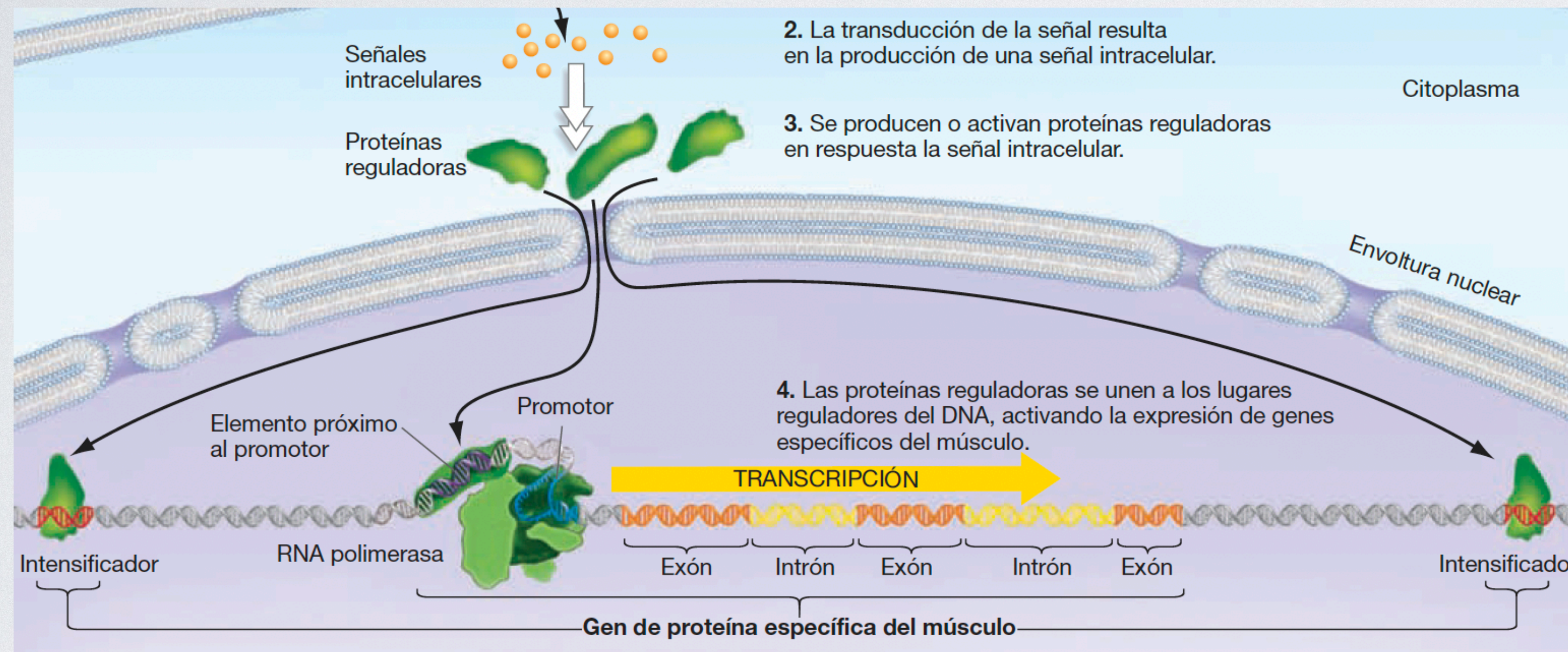
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A célula eucariota: características comunes



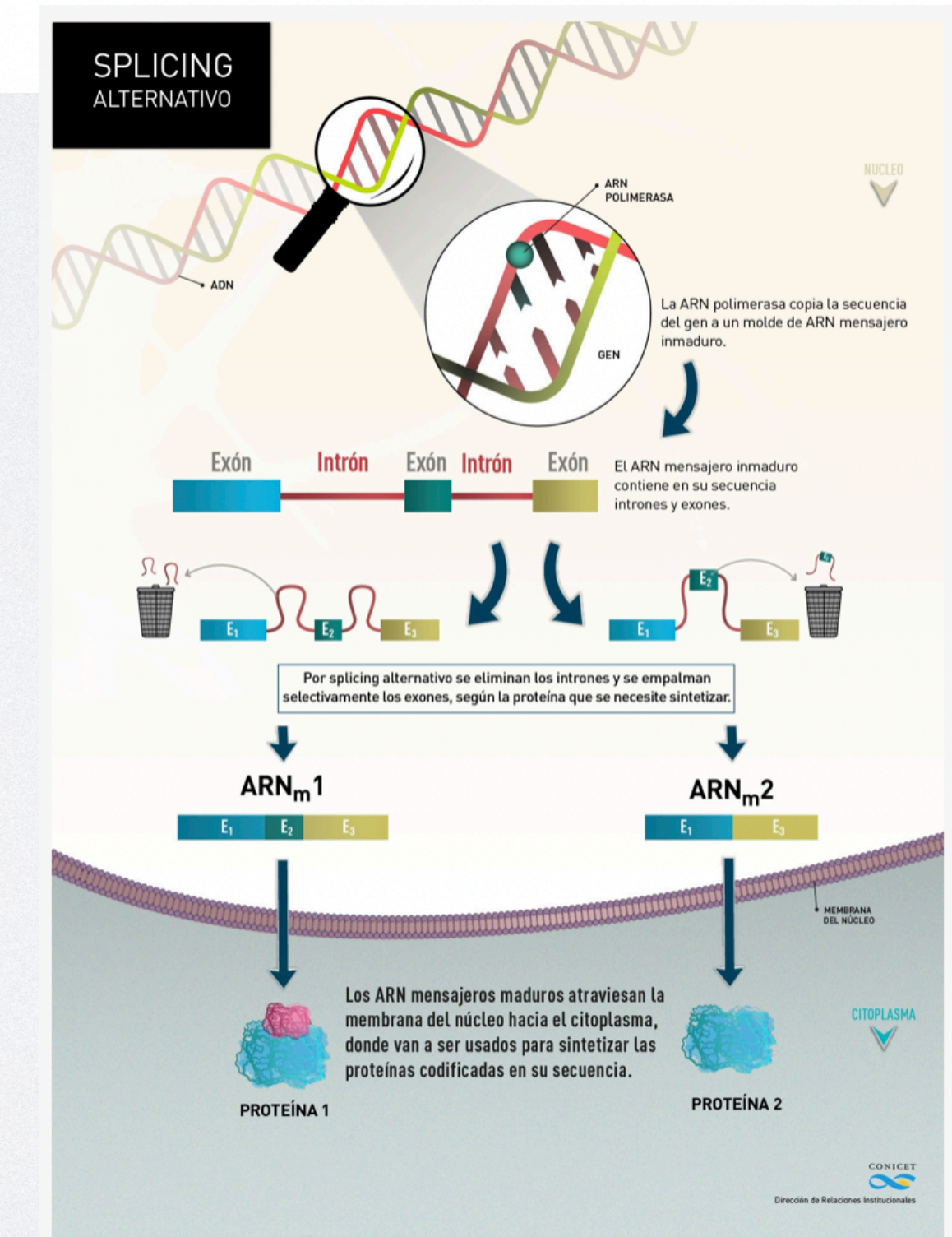
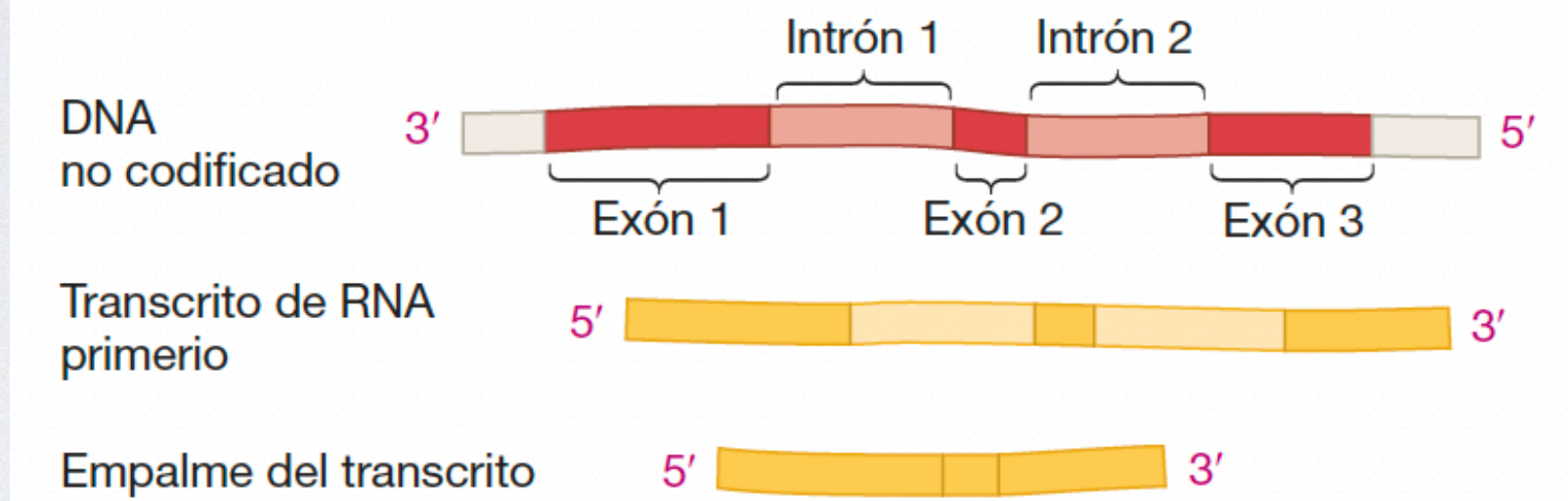
Núcleo

A célula eucariota: características comunes



Protección e estabilidad xénica
 Mayor regulación da expresión dos xenes
 Maduración mRNA

(a) Los intrones deben ser eliminados de los transcritos de RNA.



Núcleo

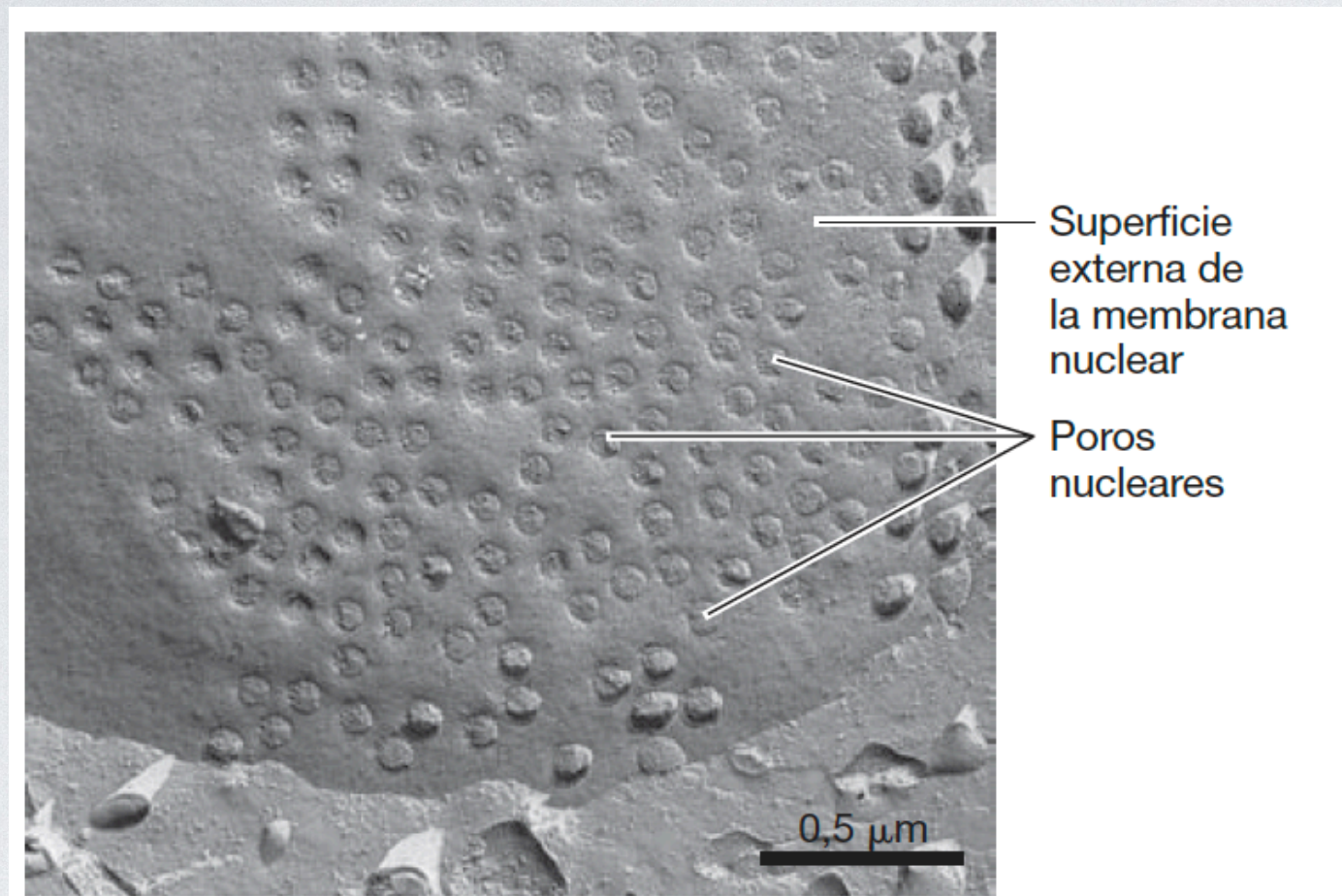
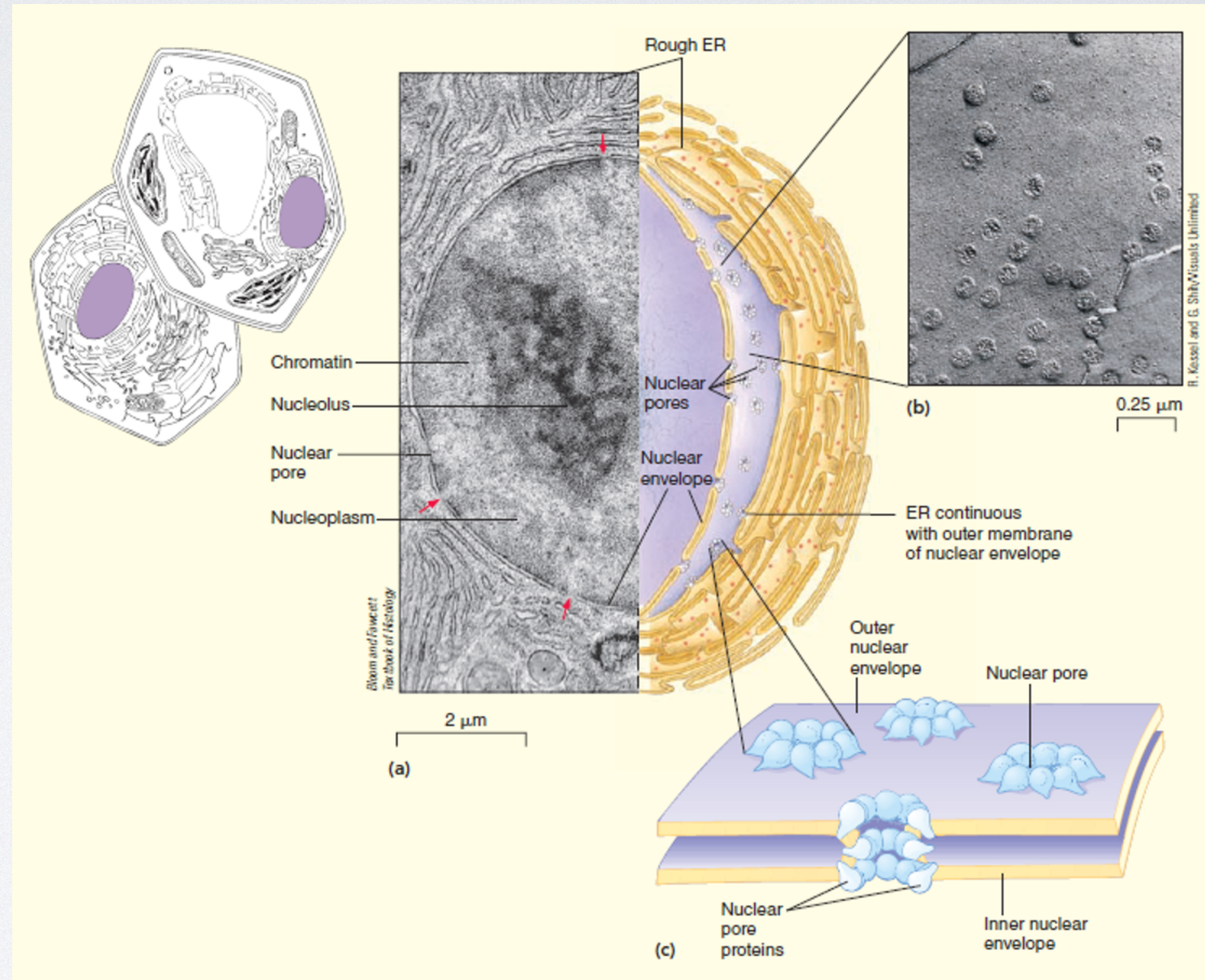
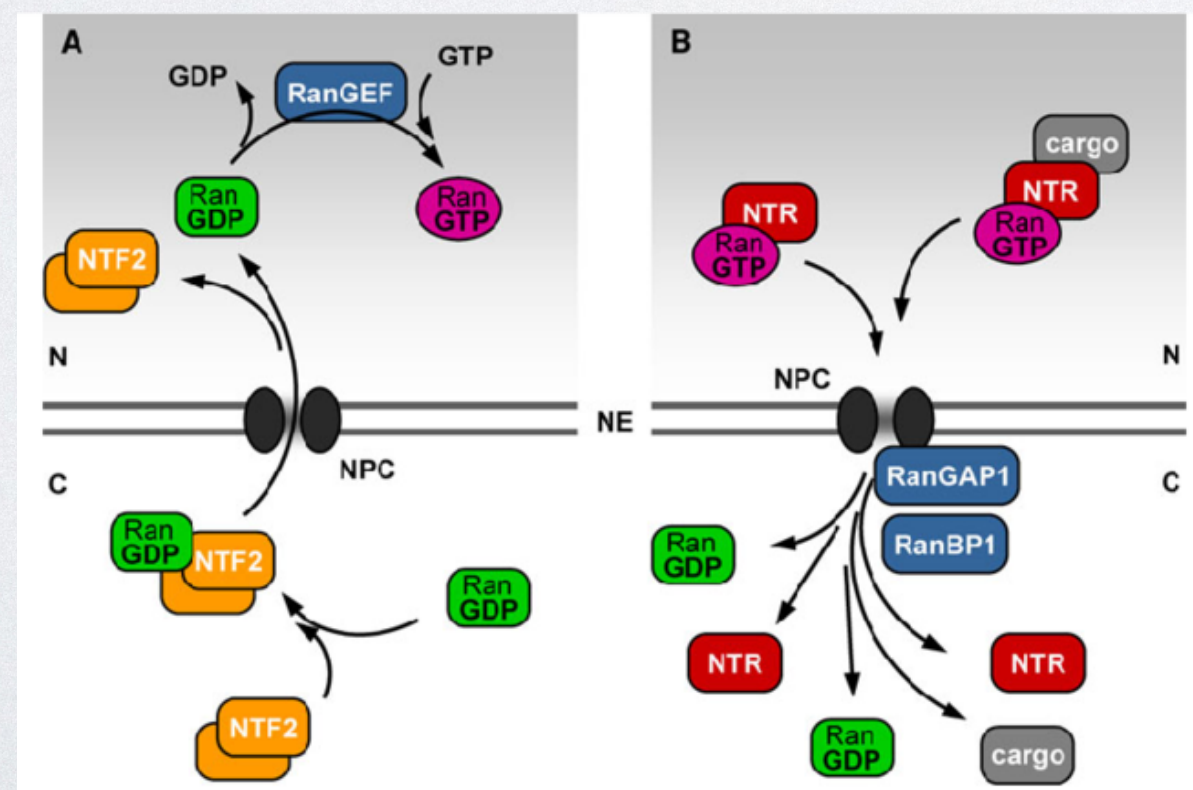


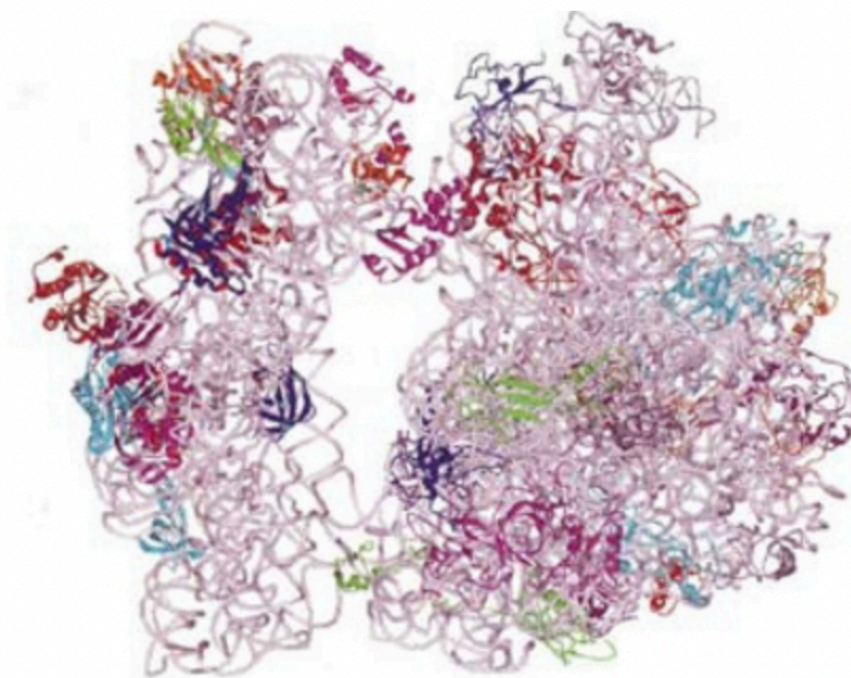
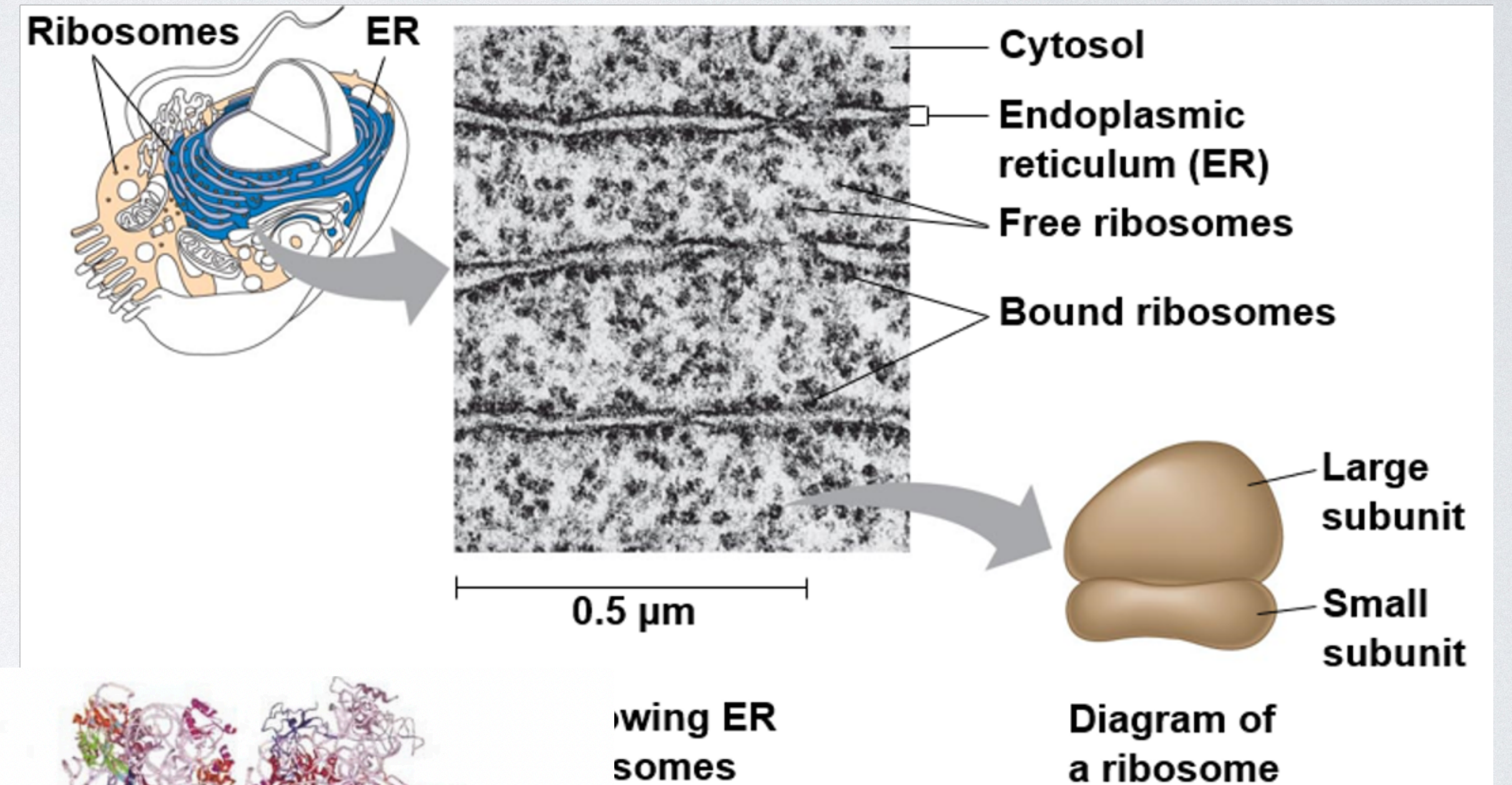
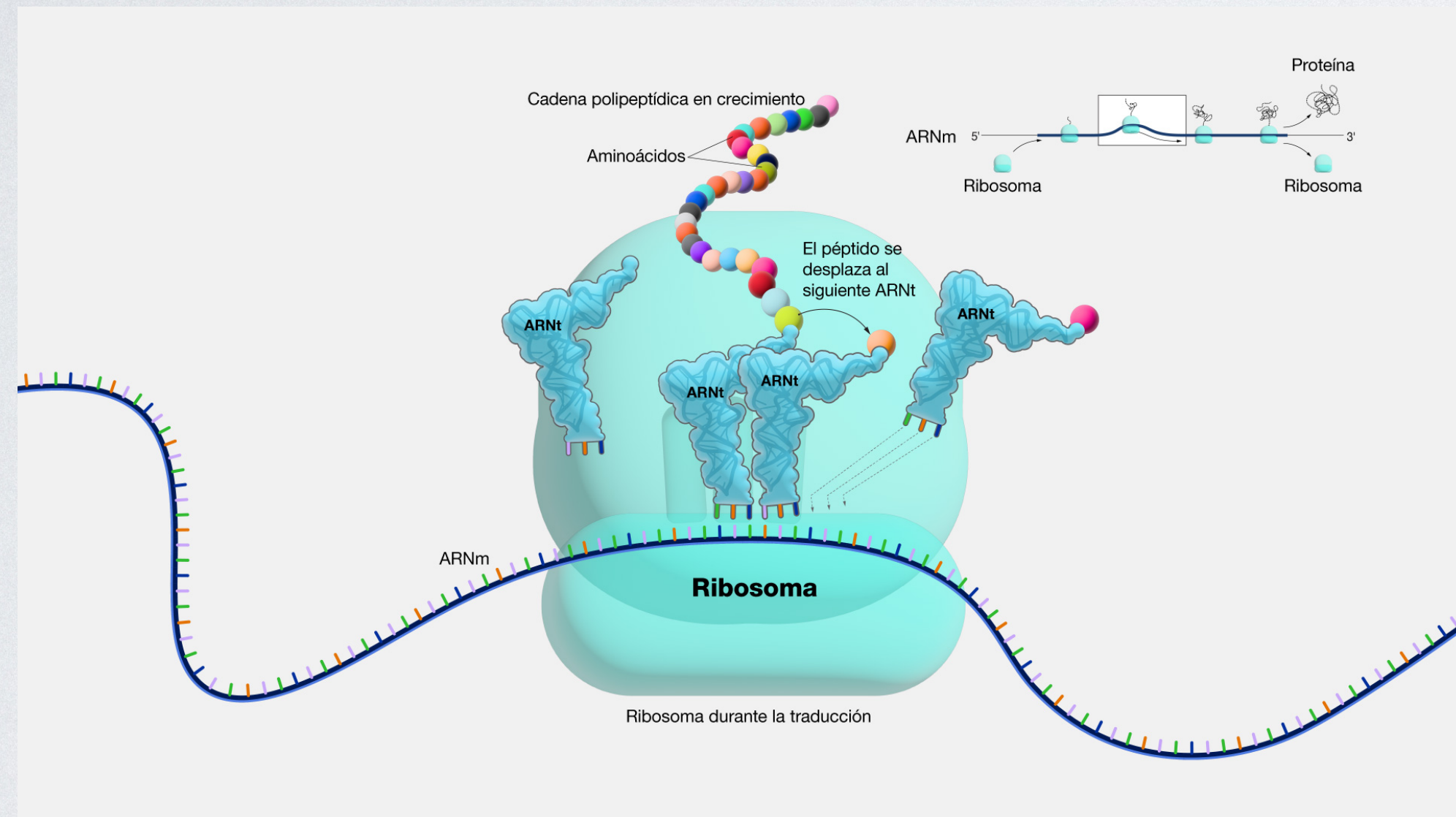
FIGURA 7.23 La membrana nuclear está atravesada por poros.
Microfotografía electrónica de barrido de la superficie de la membrana nuclear.



50 proteínas

Ribosomas

A célula eucariota: características comunes



La estructura tridimensional del ribosoma a nivel atómico fue resuelta en el año 2000.

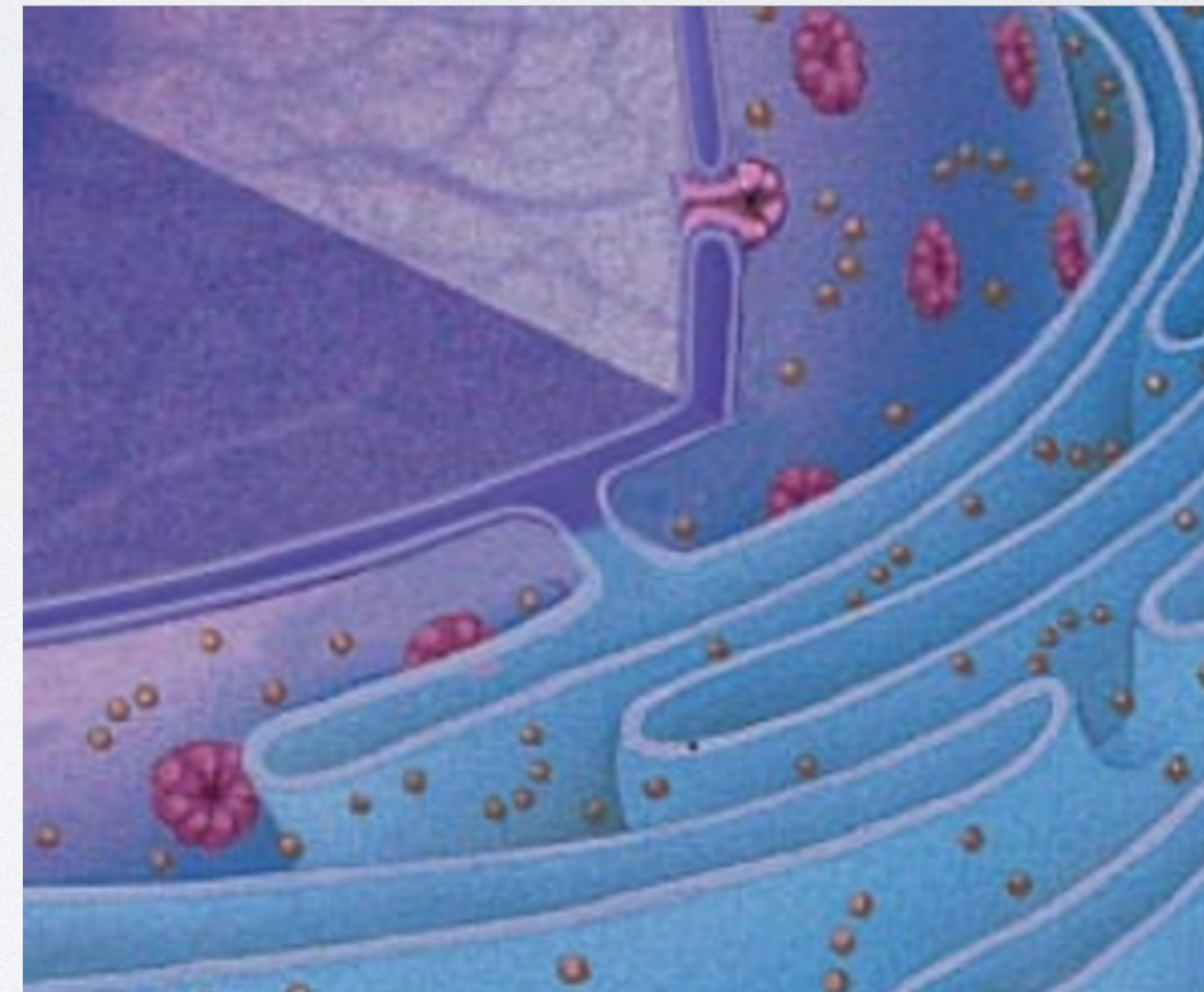
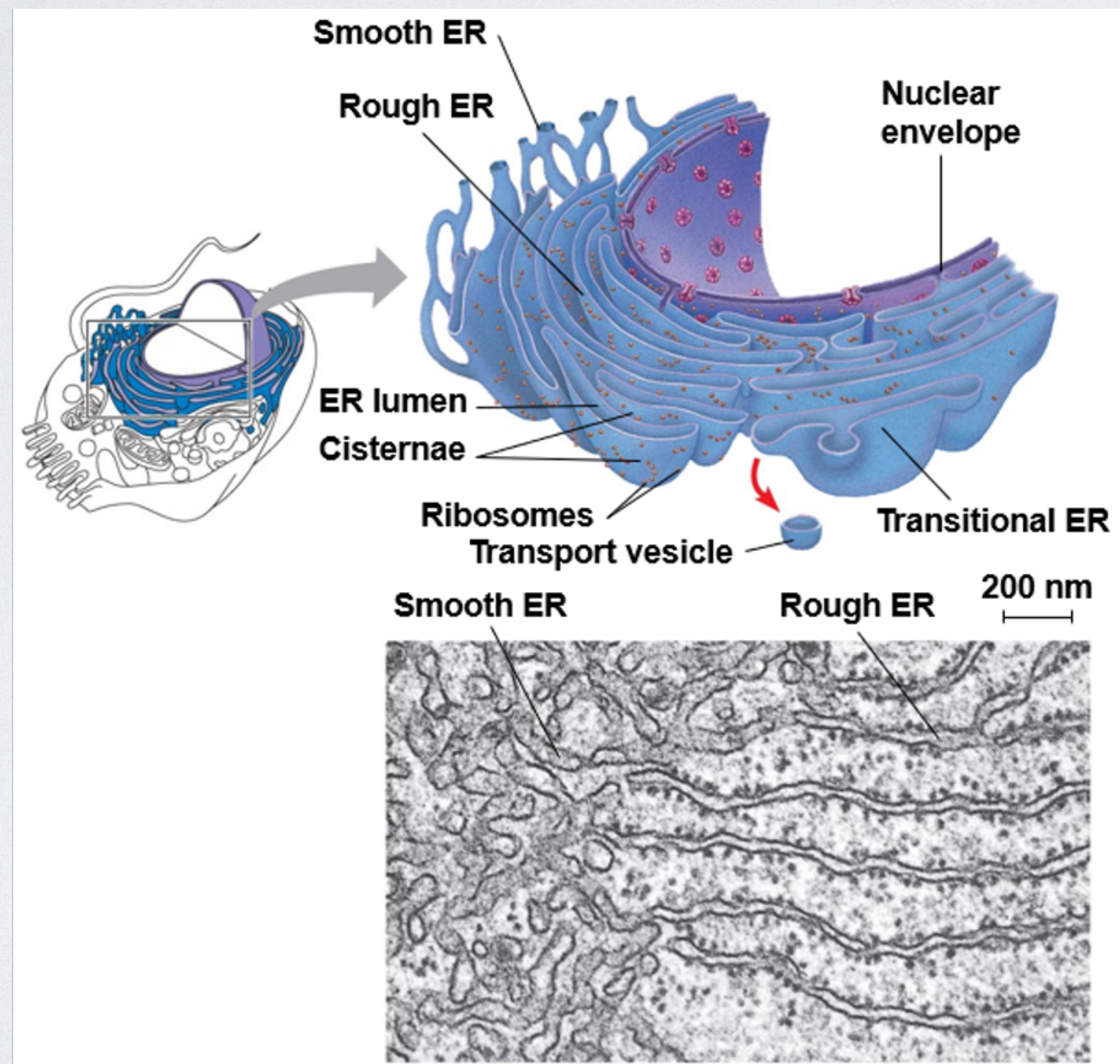
owing ER
somes

Diagram of
a ribosome

$$\begin{matrix} 1 + 32 \\ 3 + 46 \end{matrix}$$

A célula eucariota: características comuns

O Retículo Endoplasmático

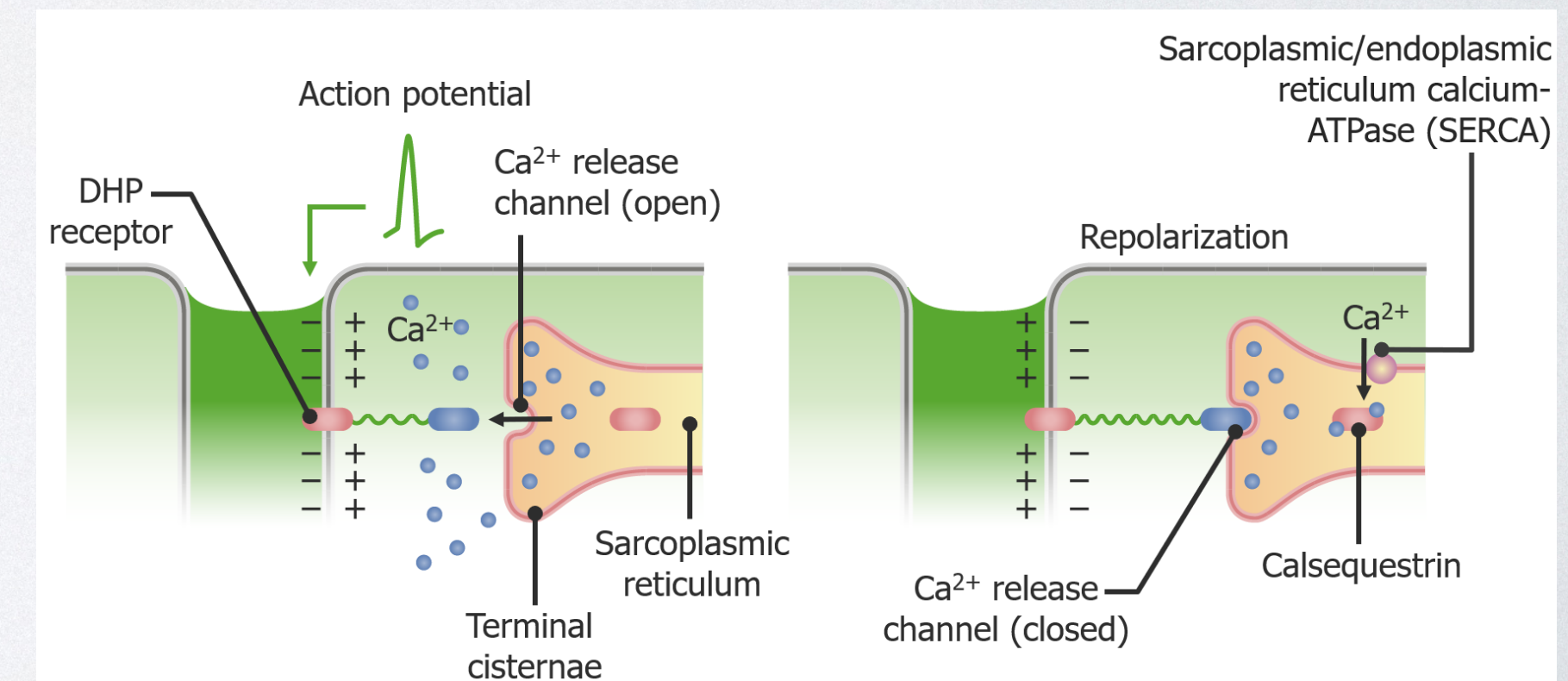
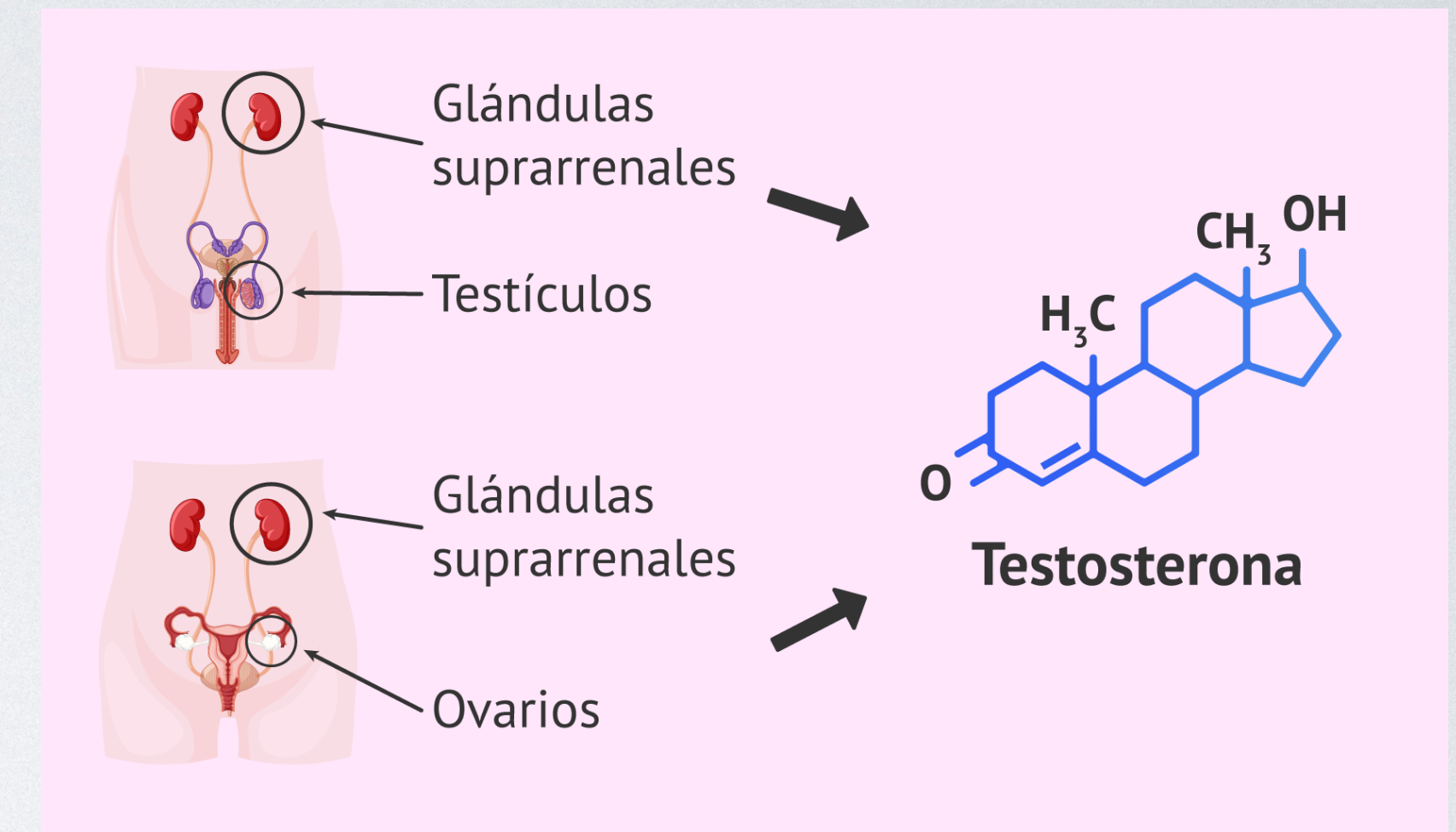
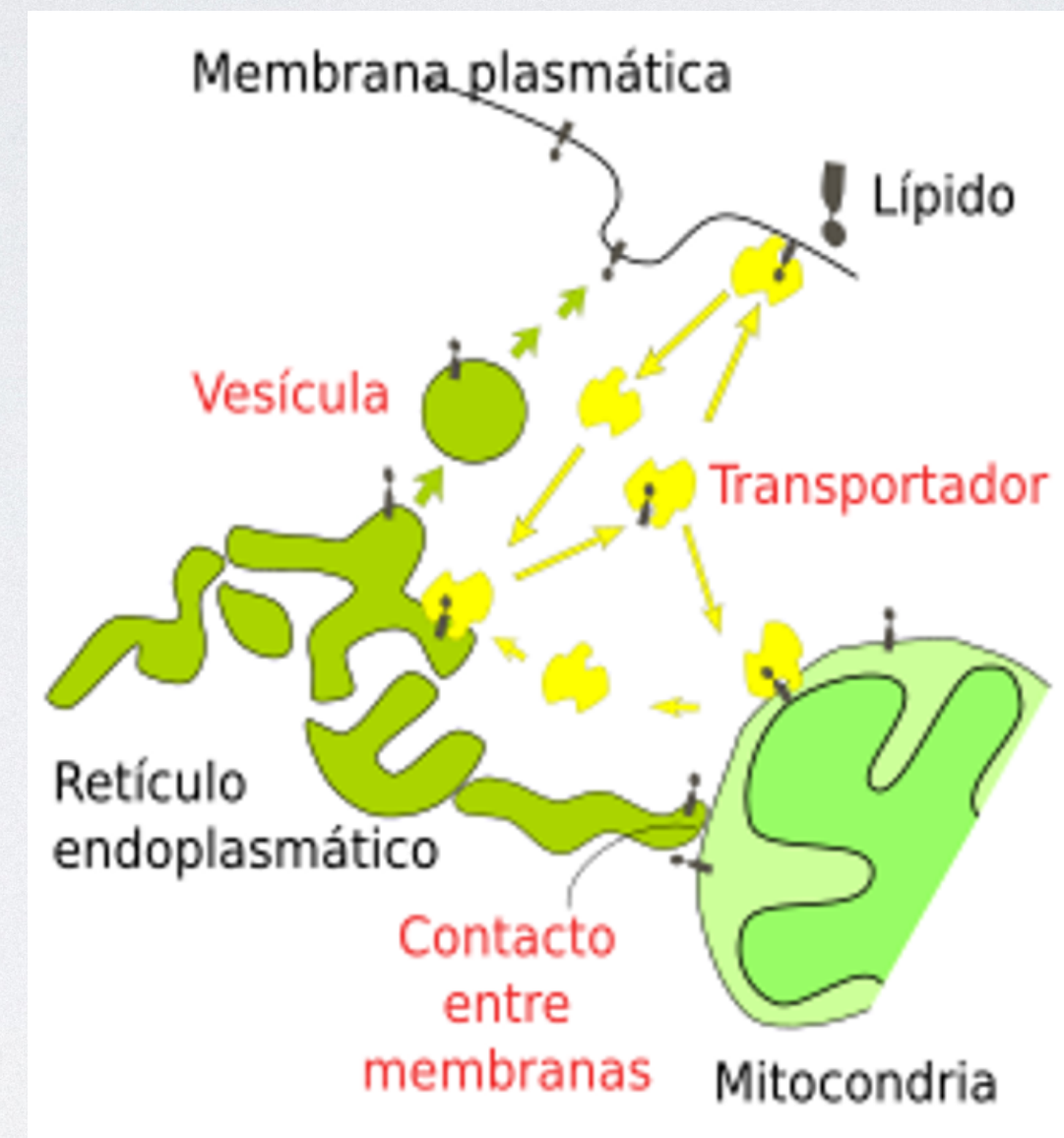


A célula eucariota: características comunes

REL

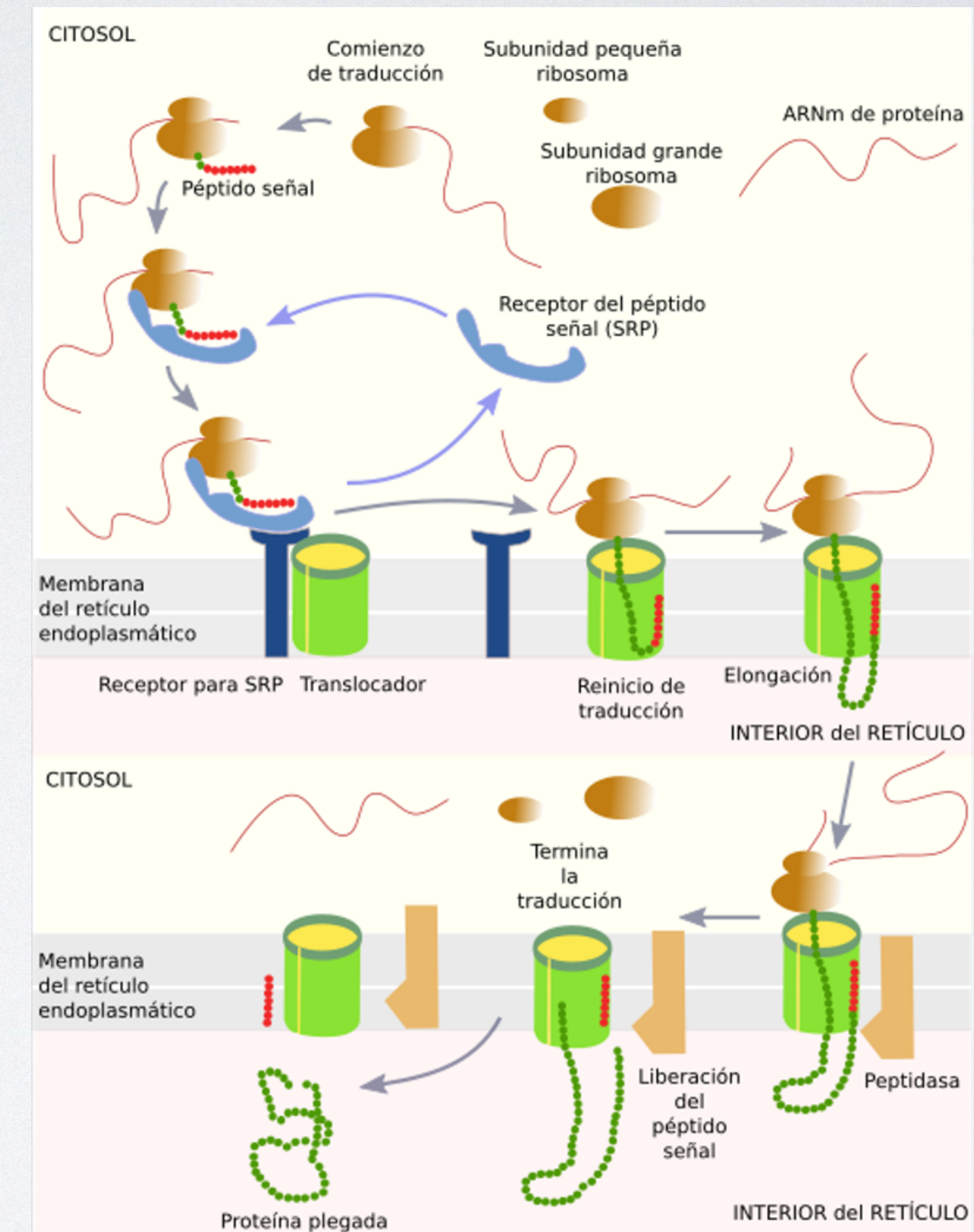
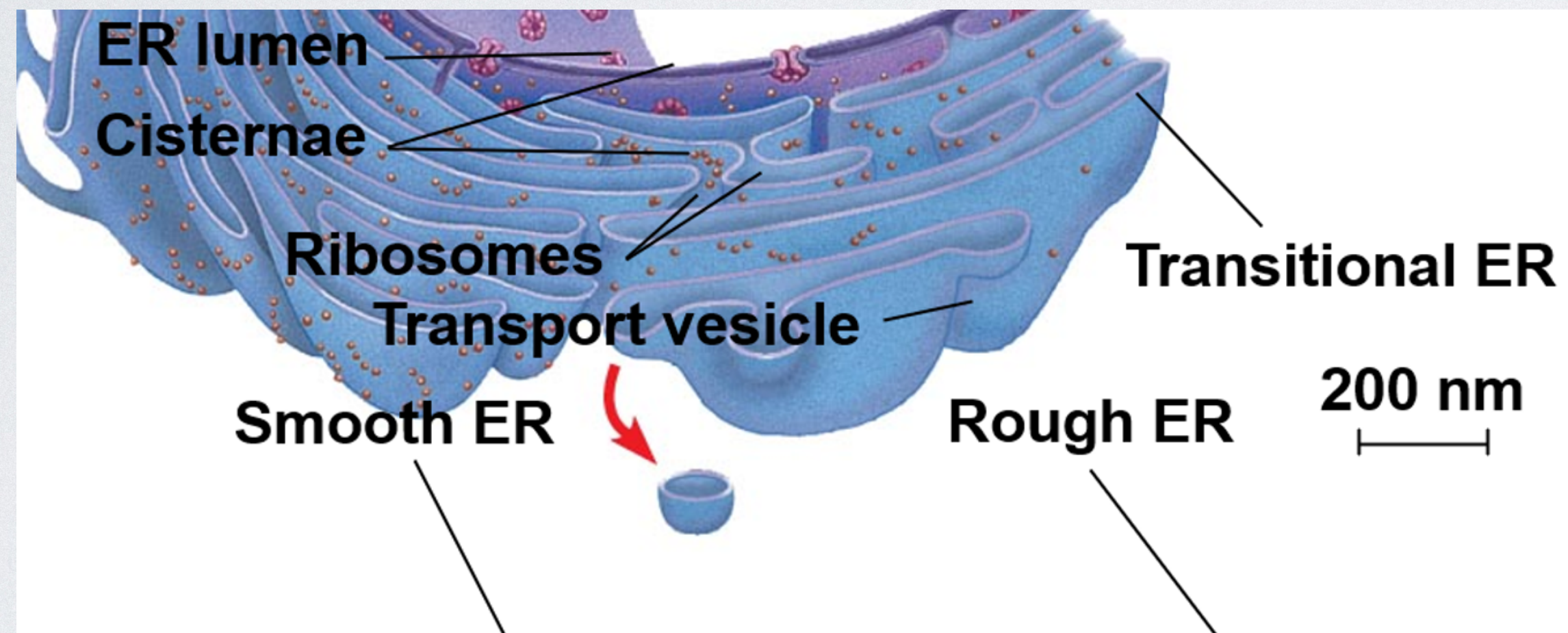
Funciones:

- Metabolismo
- Detoxificación
- Acumulación ións



A célula eucariota: características comunes

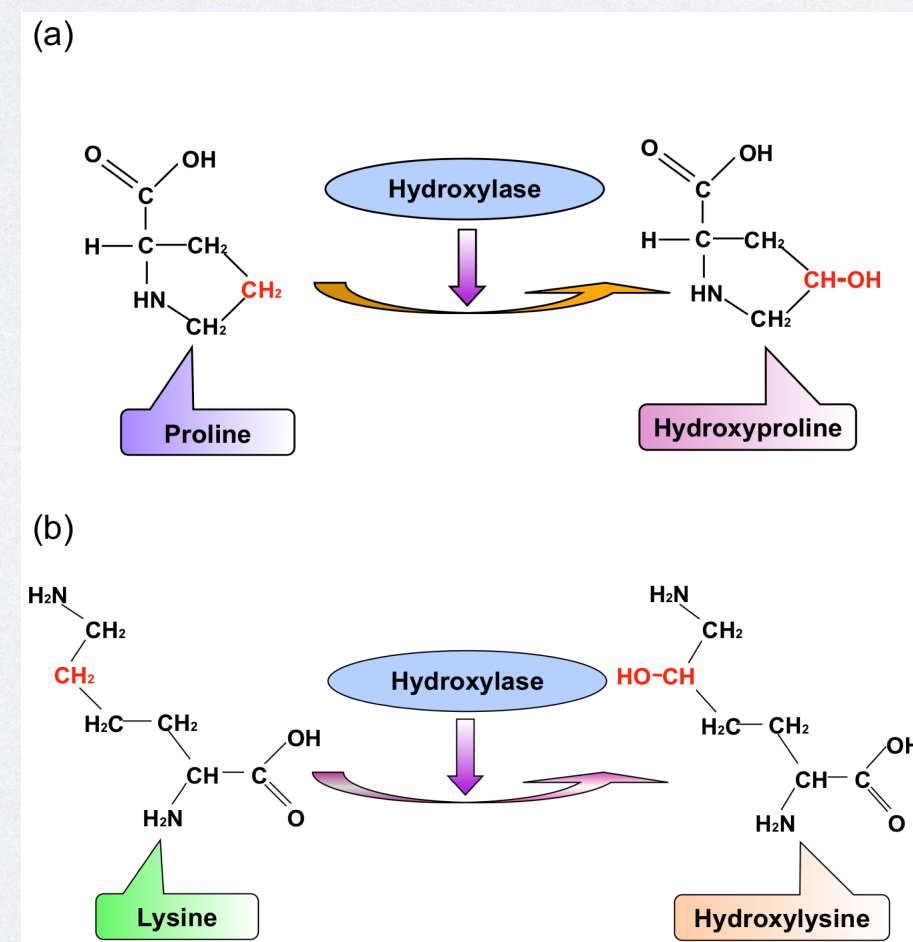
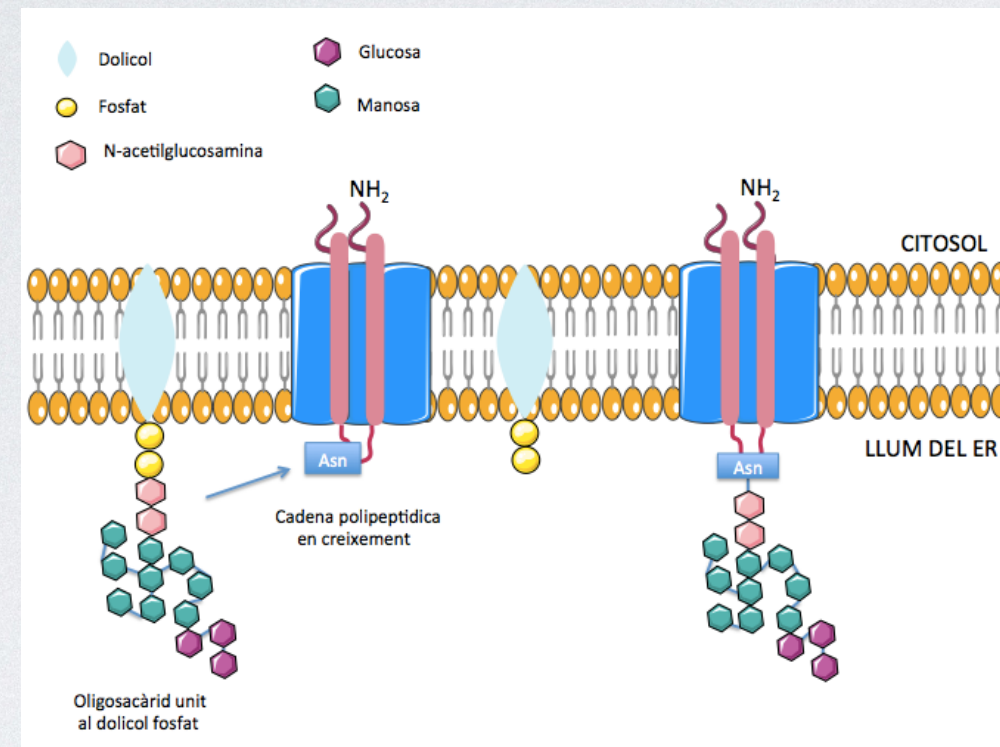
RER



RER

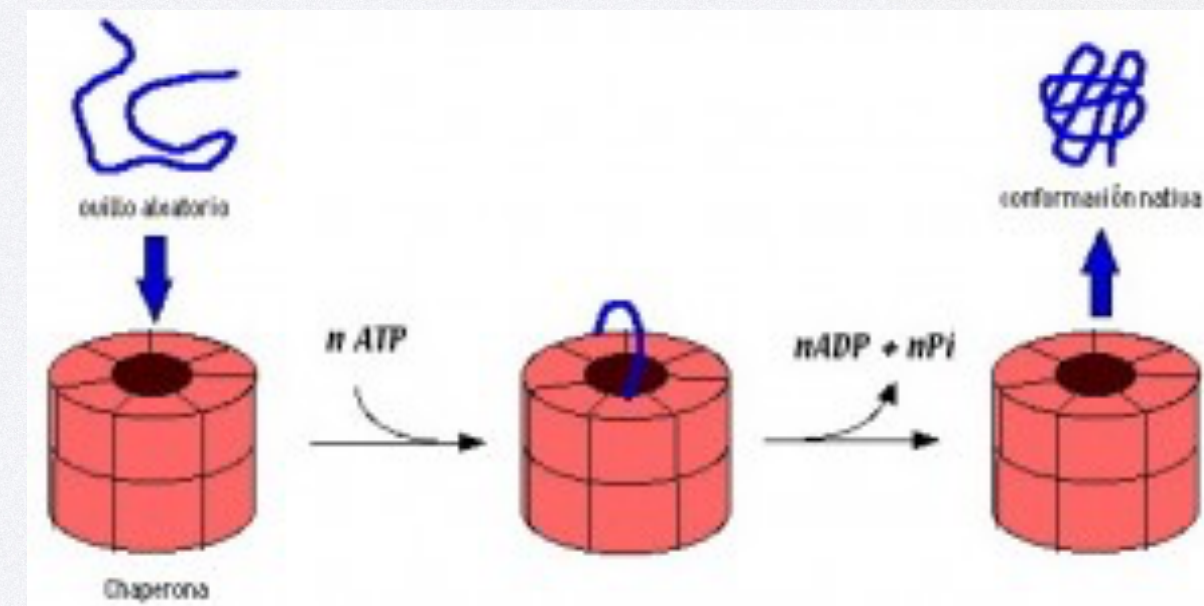
Modificaciones:

- Glicosilación
- Hidroxilación
- Unión a lípidos
- Pontes disulfuro

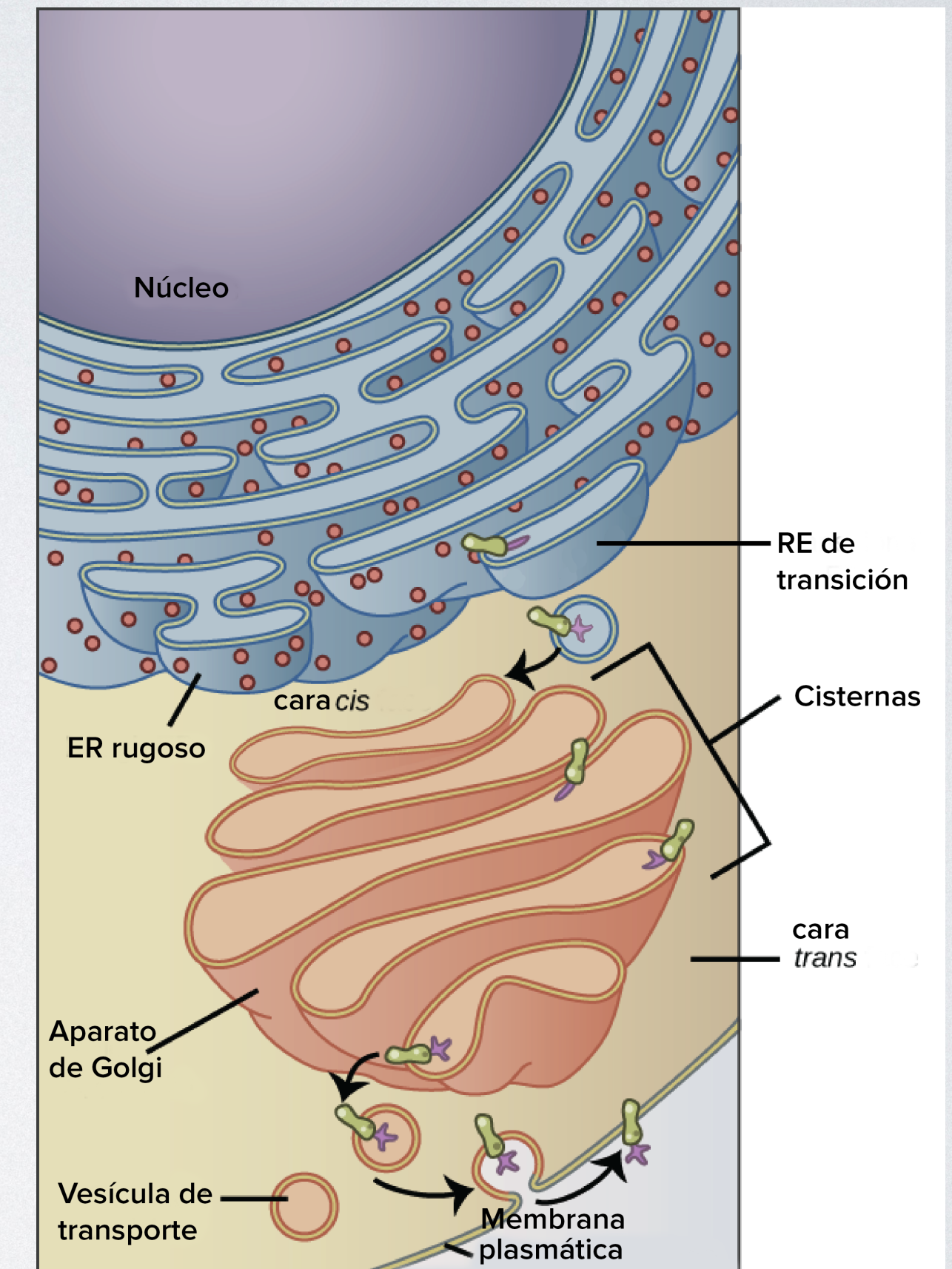


Outras funcións

- Control de calidade
- Síntesis de membranas
 - ❖ Proteínas
 - ❖ Fosfolípidos

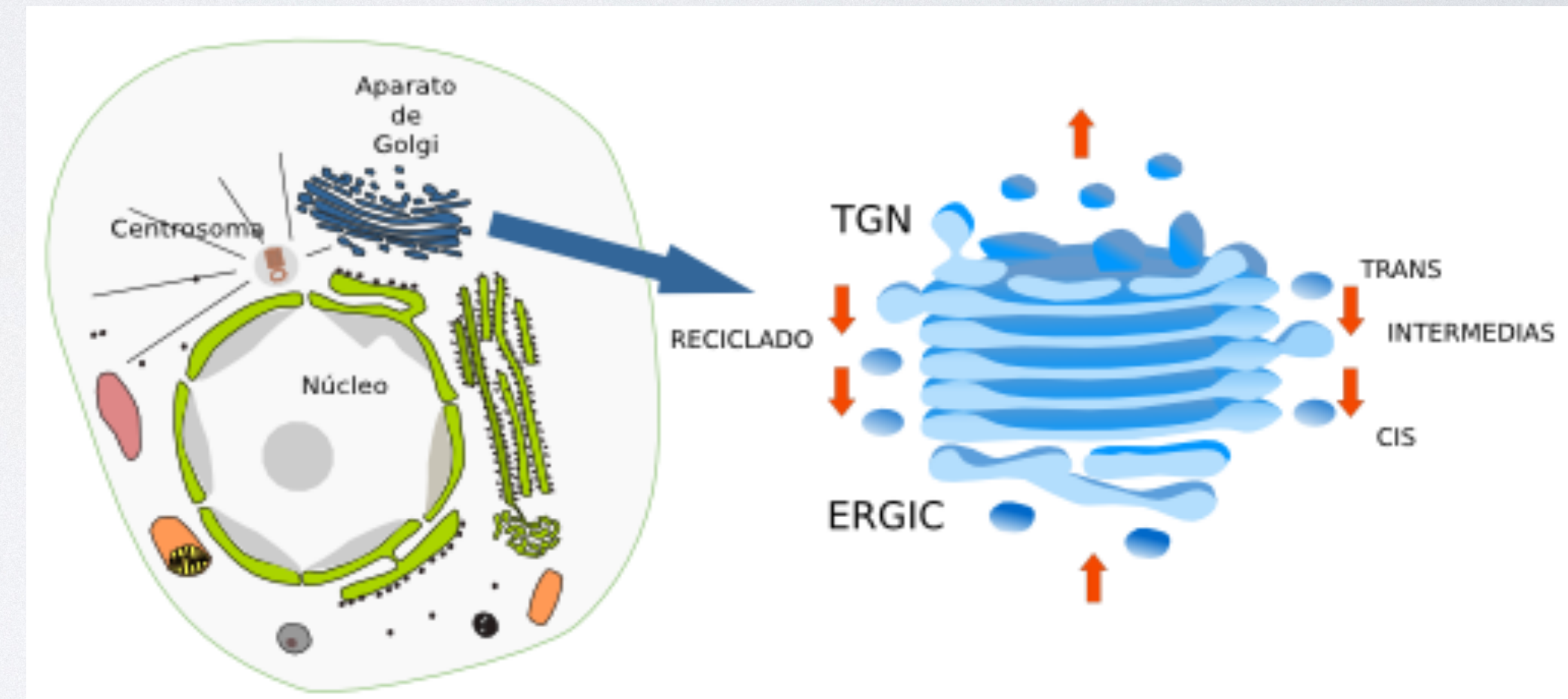
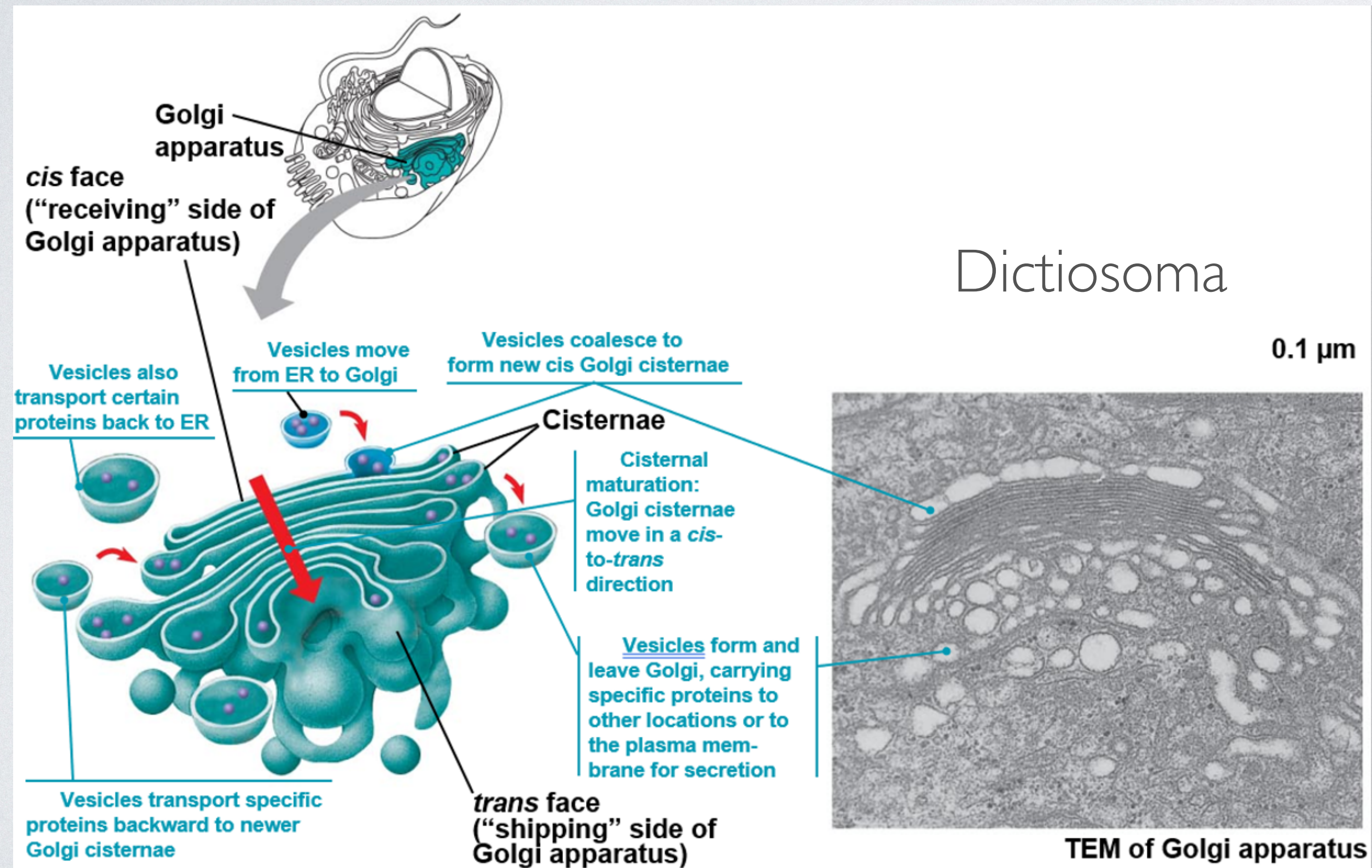


Chaperona



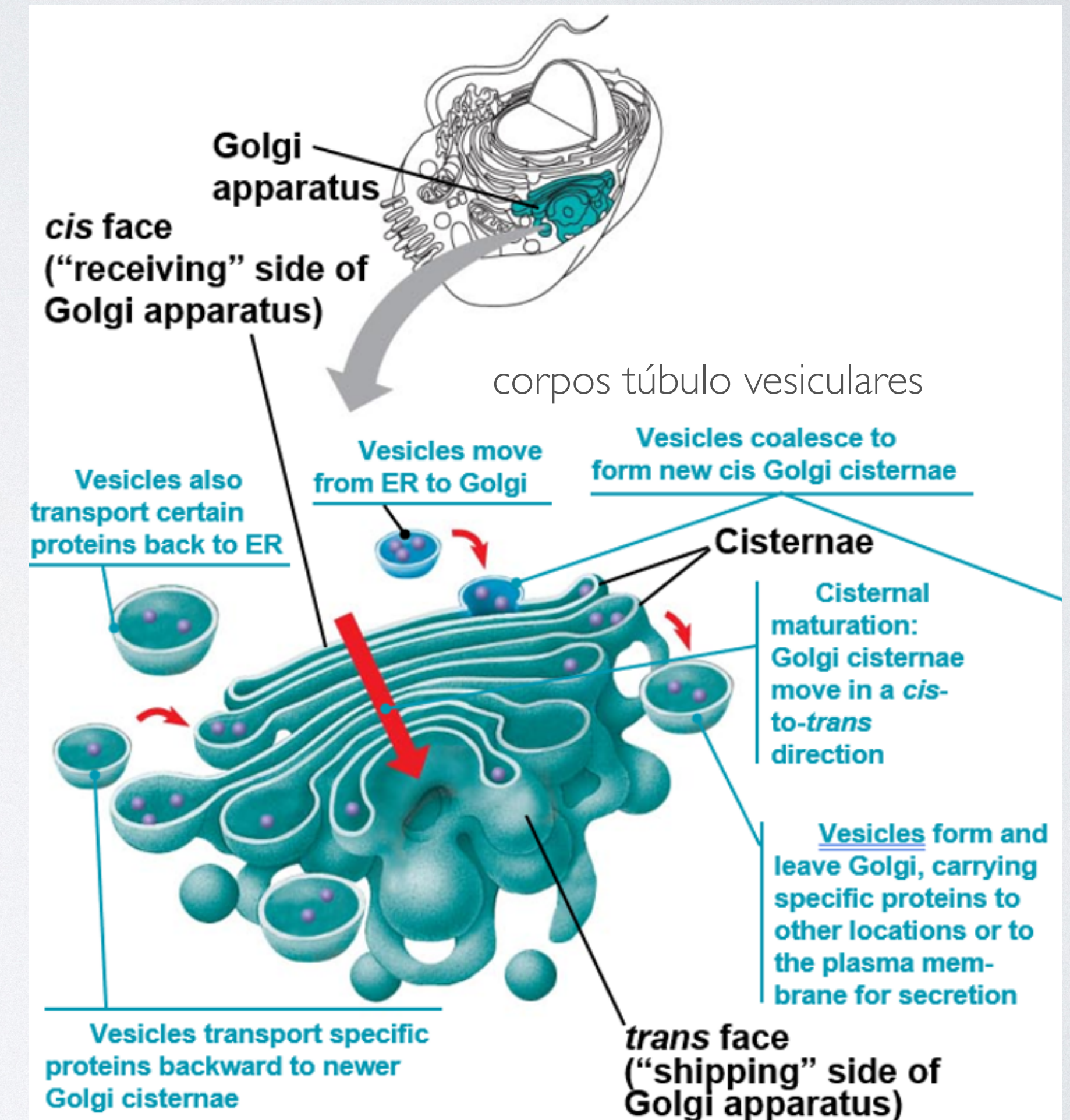
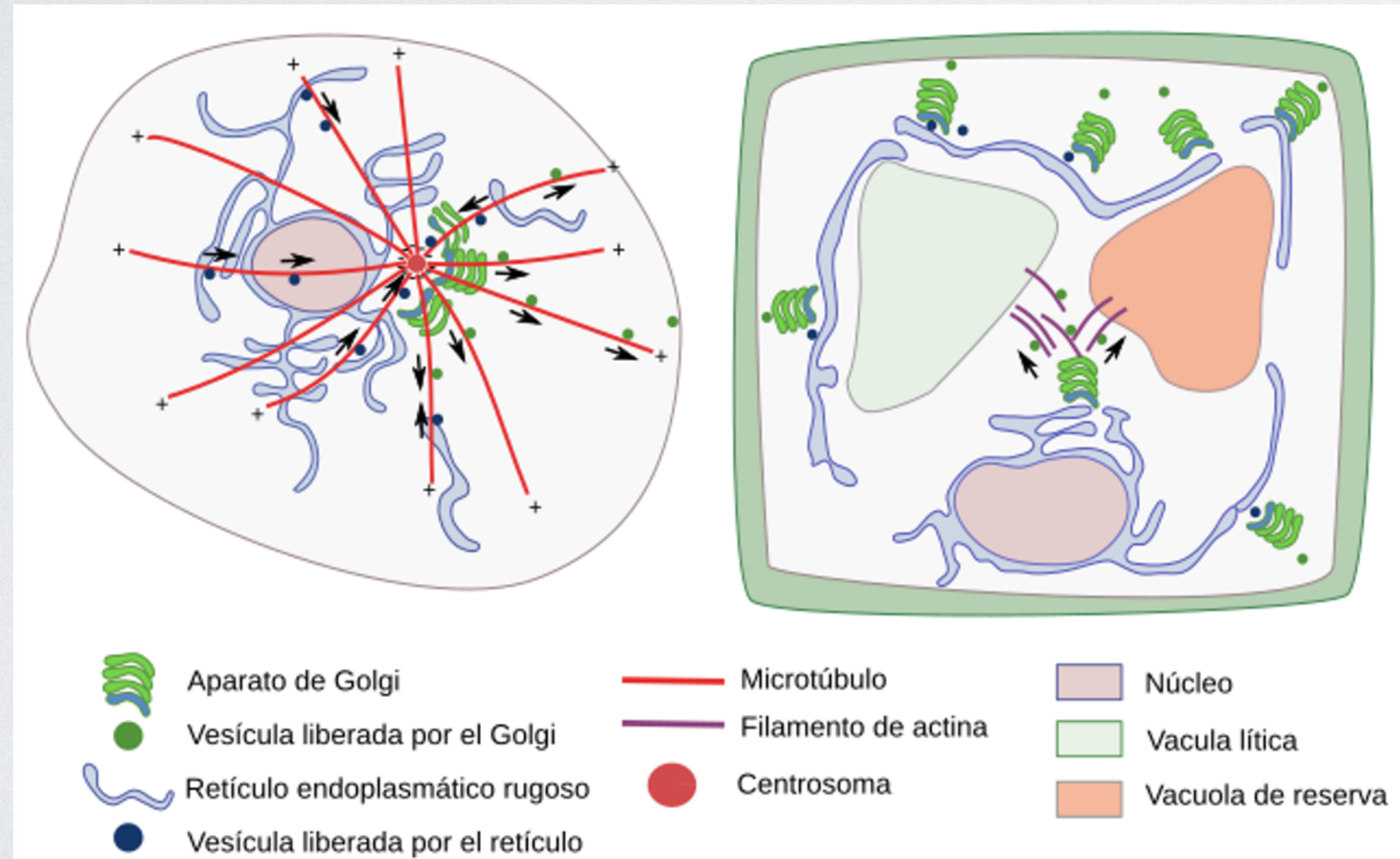
A célula eucariota: características comuns

Aparelho de Golgi



A célula eucariota: características comuns

Aparelho de Golgi



A célula eucariota: características comunes

Aparello de Golgi

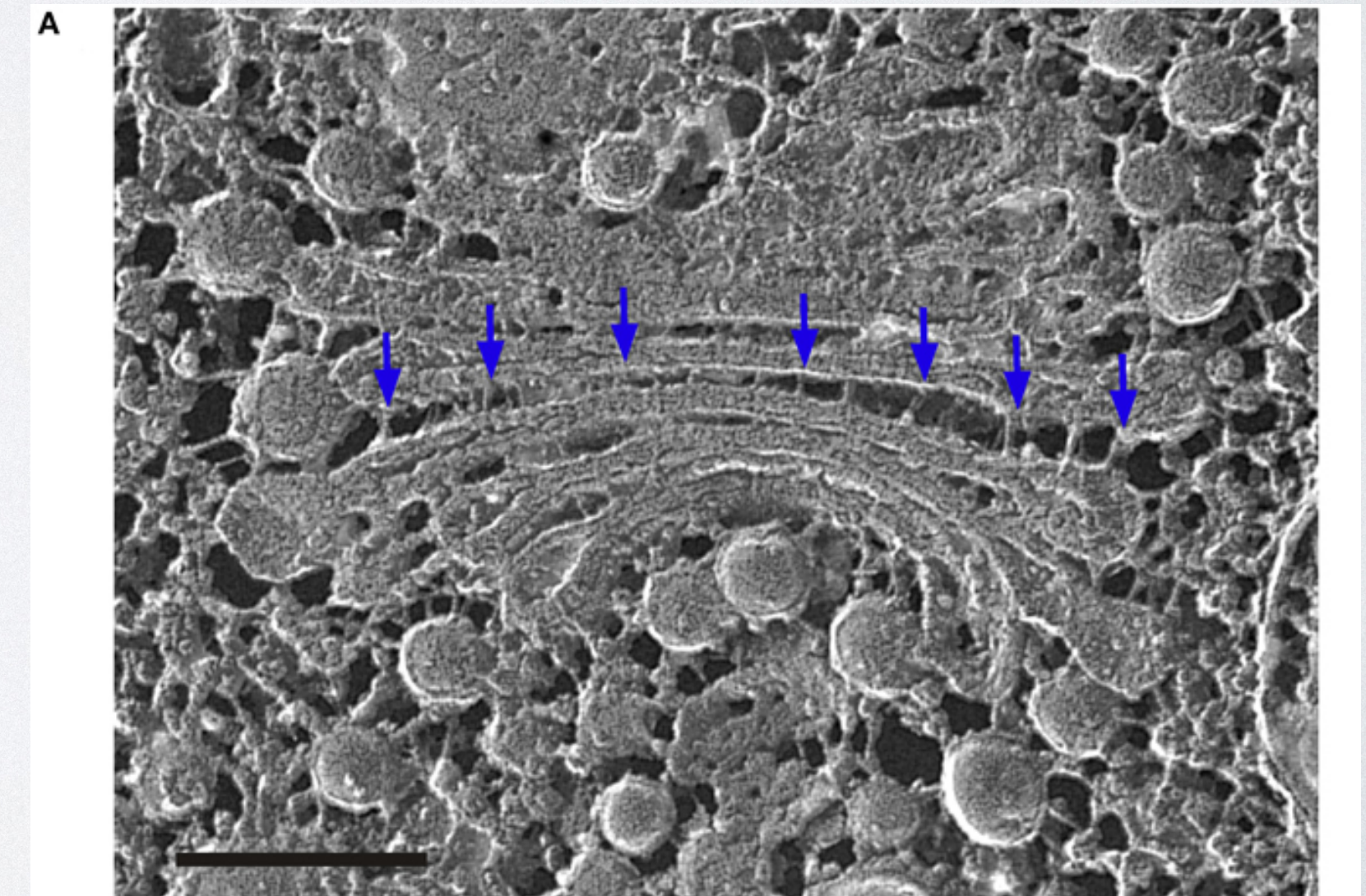
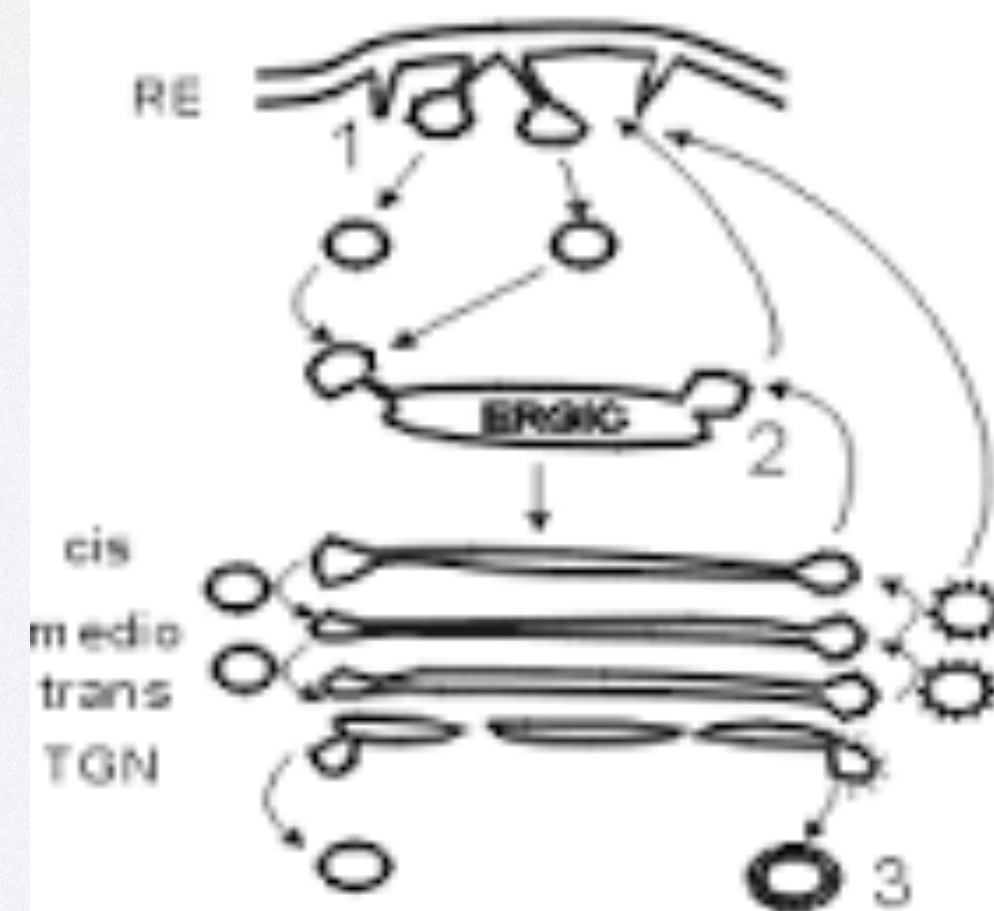
Tres modelos:

- Maduración de cisternas
- Compartimentos estables
- Conexión de túbulos

MODELO DE MADURACIÓN DE CISTERNAS



MODELO VESICULAR



A célula eucariota: características comunes

Aparello de Golgi

Funcións:

- Glicosilación
- Síntesis esfingolípidos

