

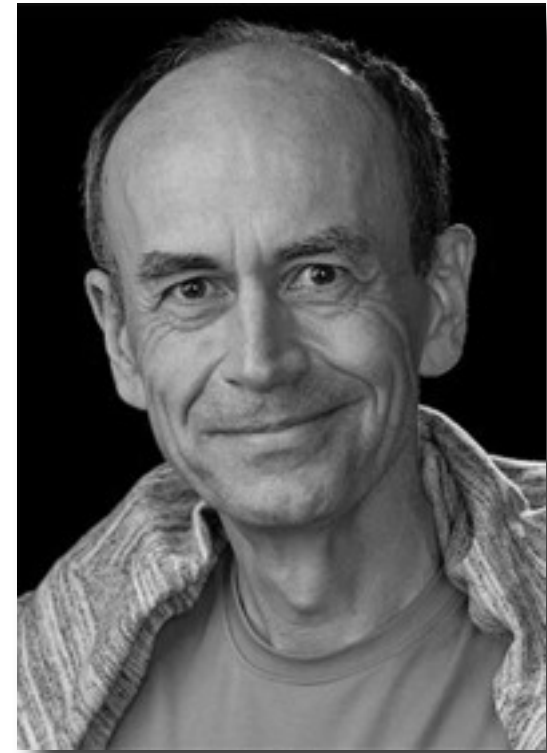
Golgiho aparát a vezikulárny transport



Randy W. Schekman



James E. Rothman

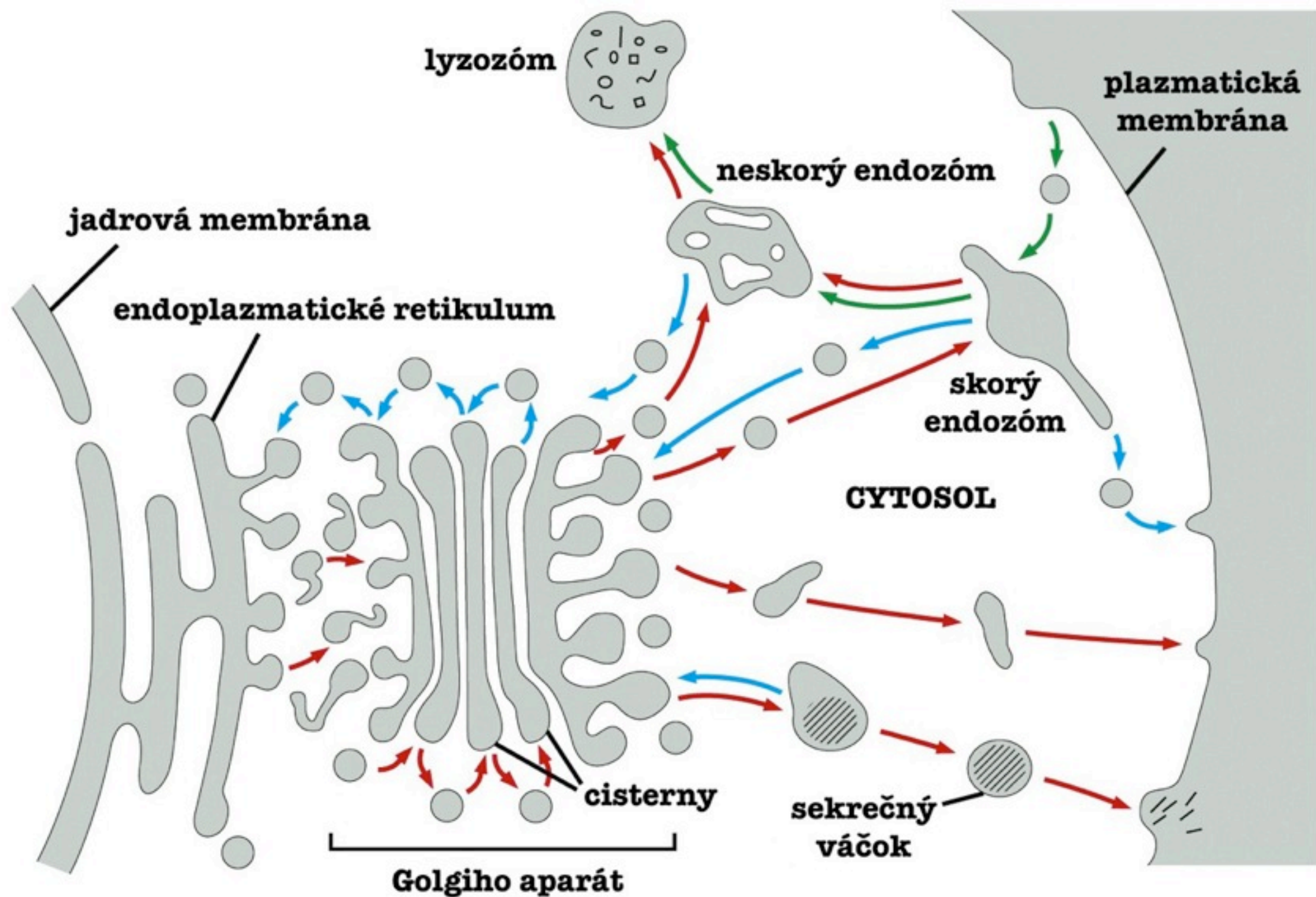


Thomas C. Südhof

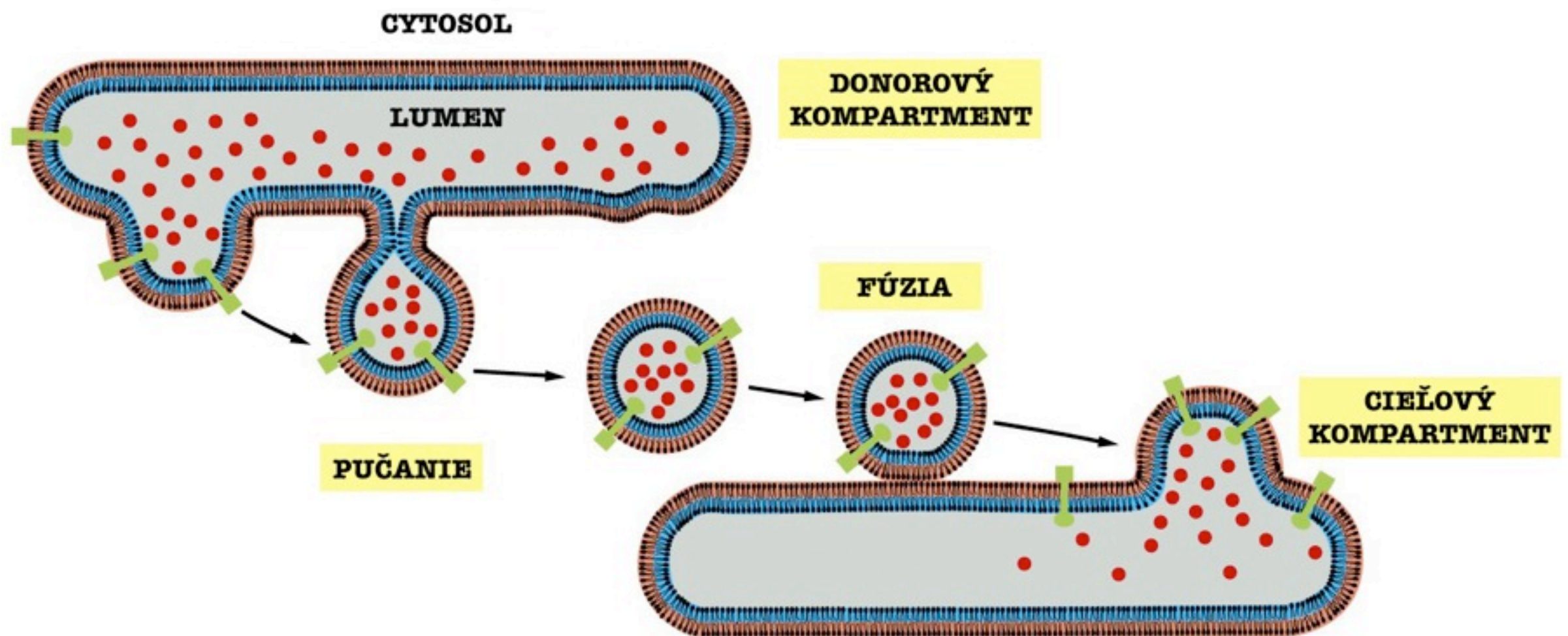
Nobelová cena 2013

"for their discoveries of machinery regulating vesicle traffic, a major transport system in our cells"

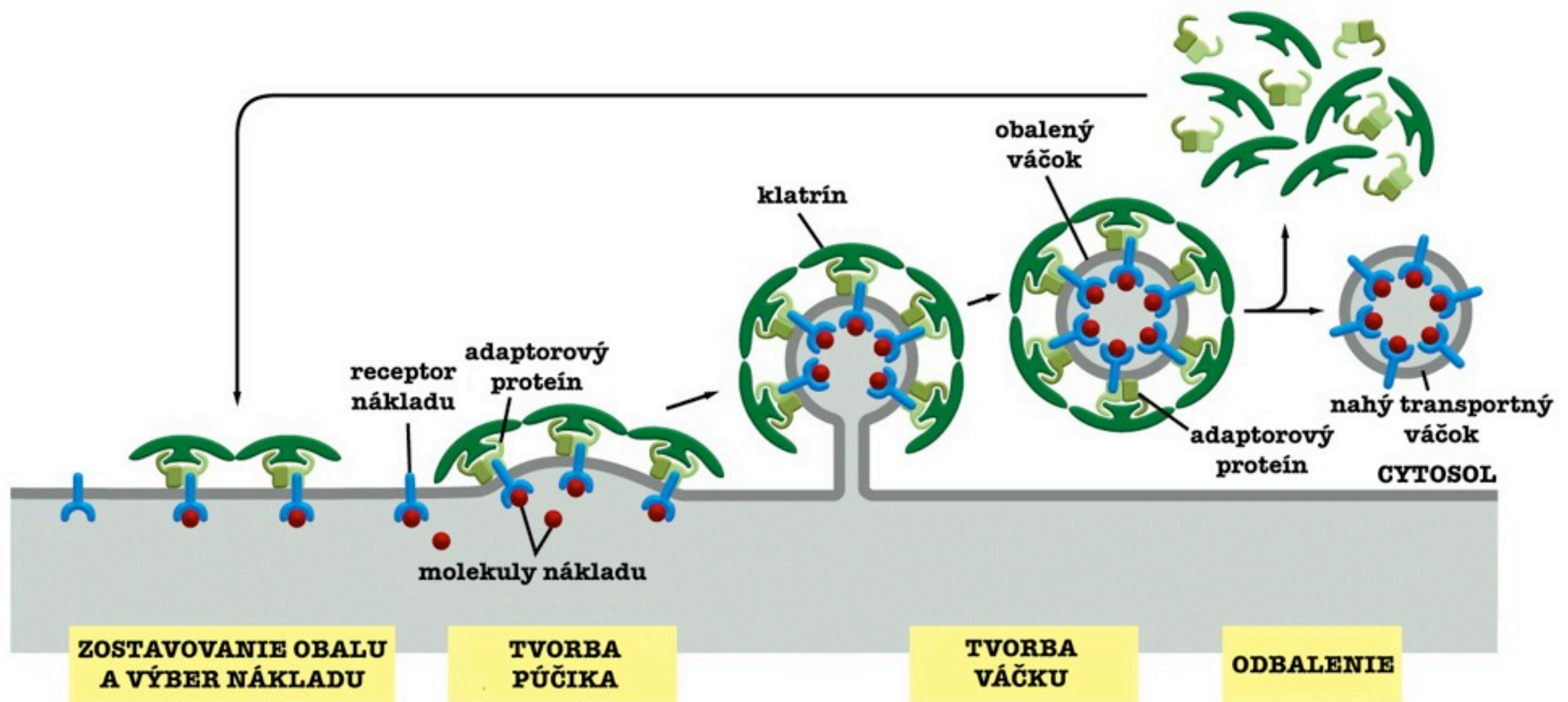
Vezikulární transport



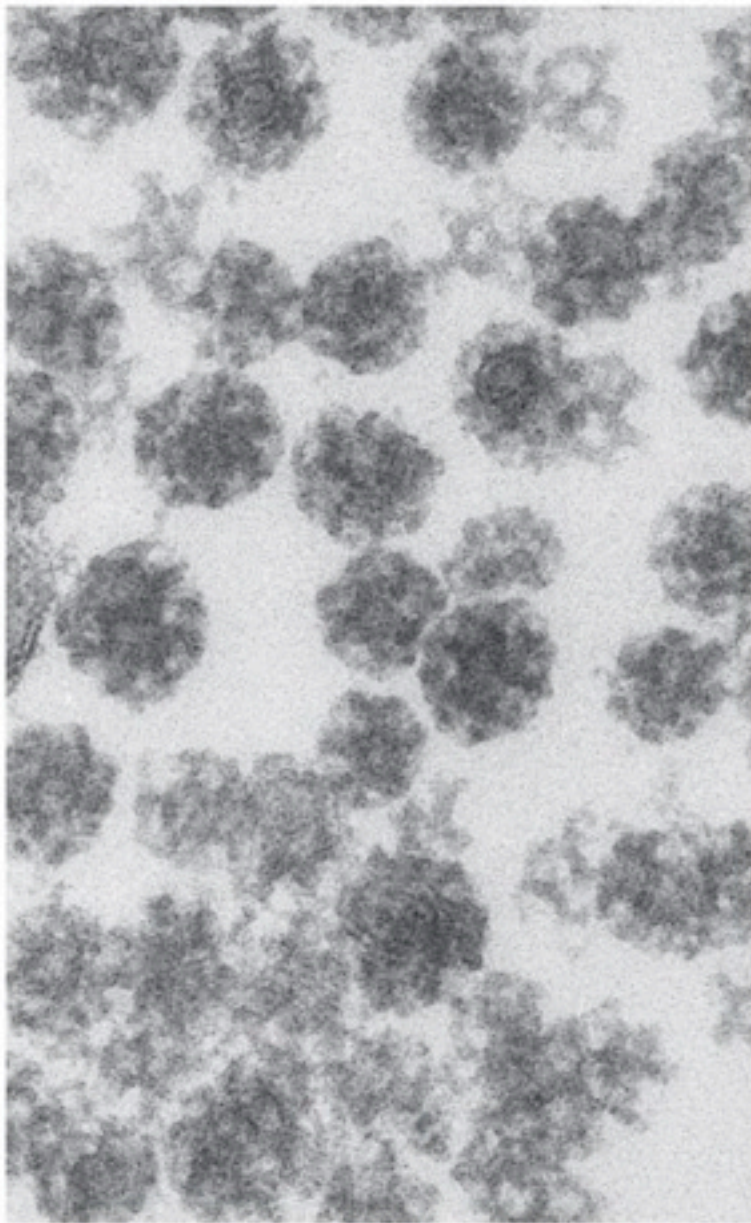
Vezikulárny transport



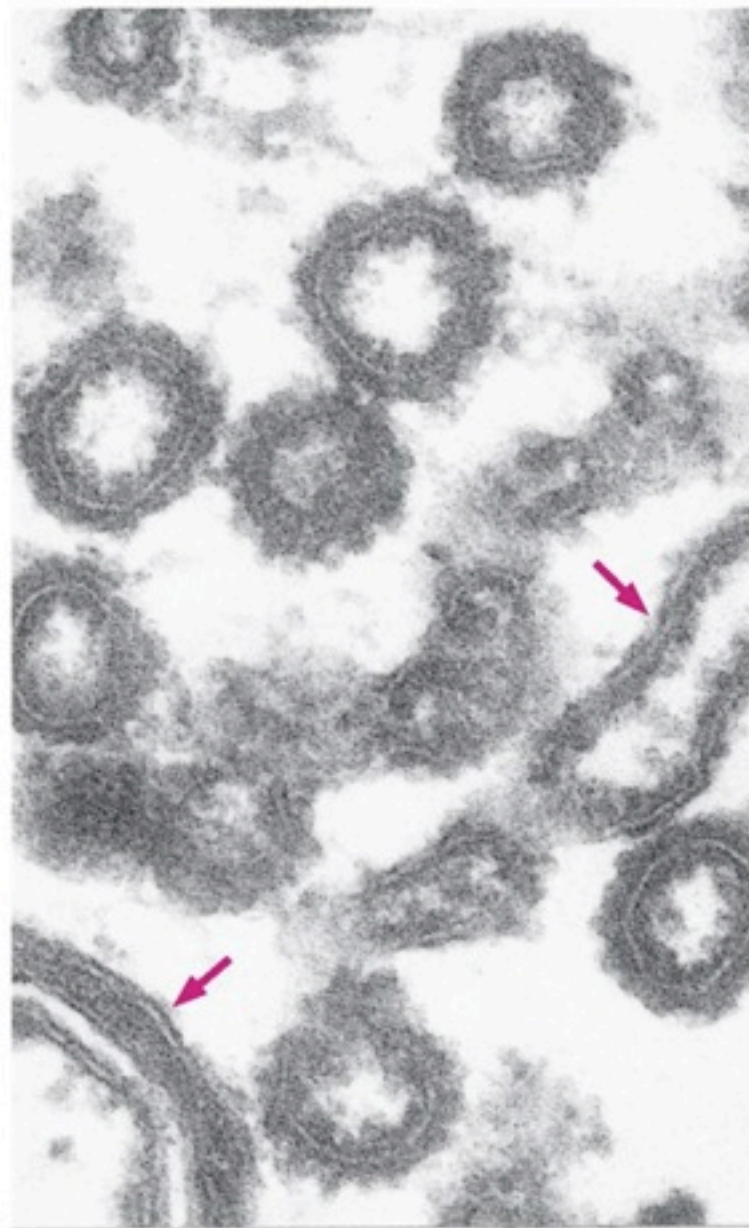
Tvorba transportných váčkov



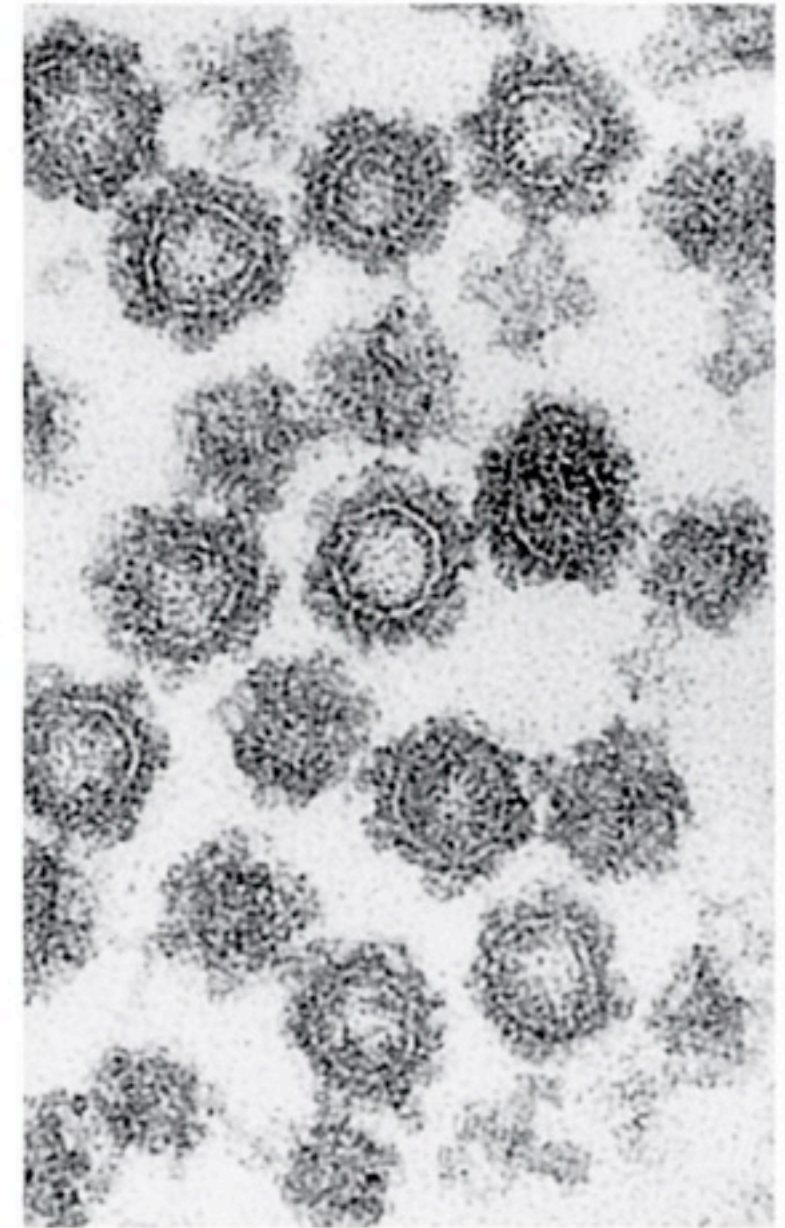
Transportné váčky



klatrín



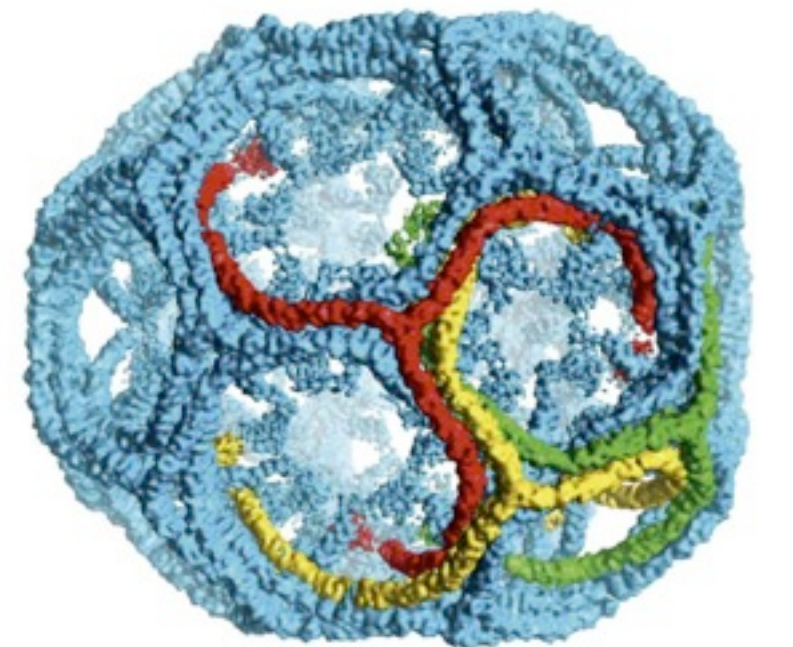
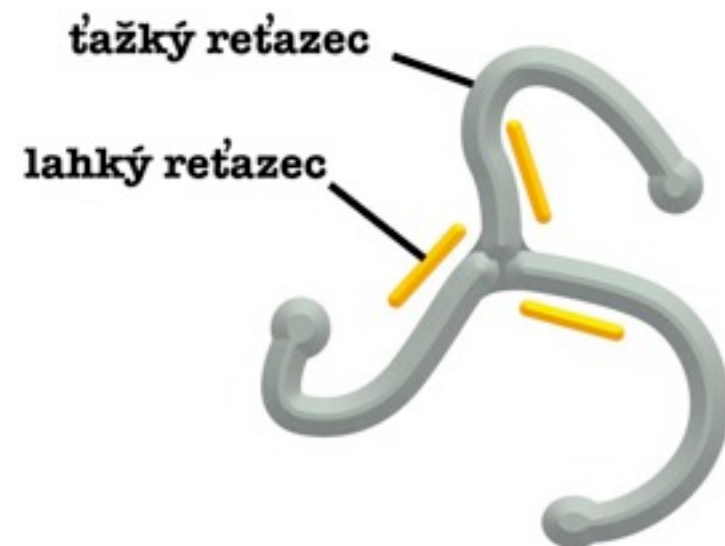
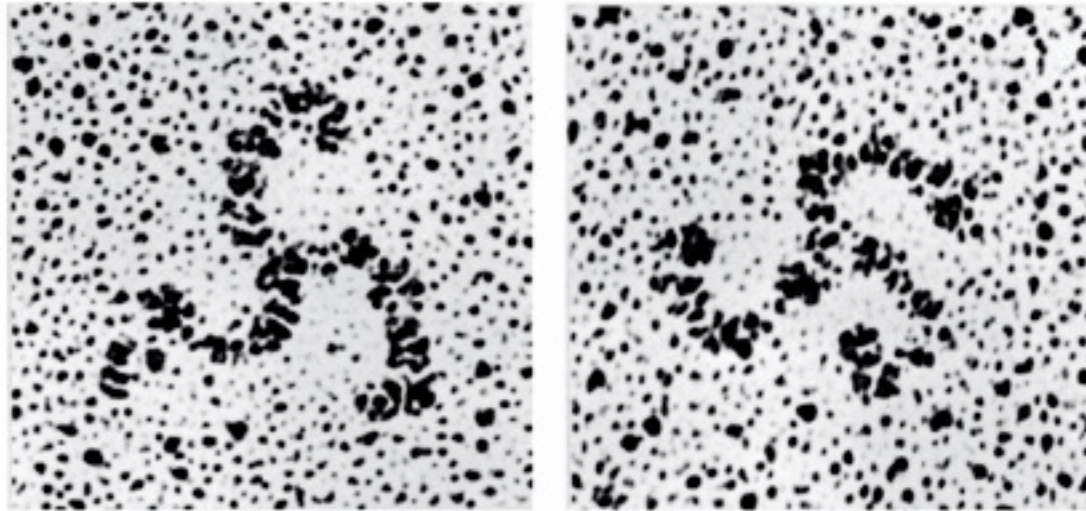
COPI



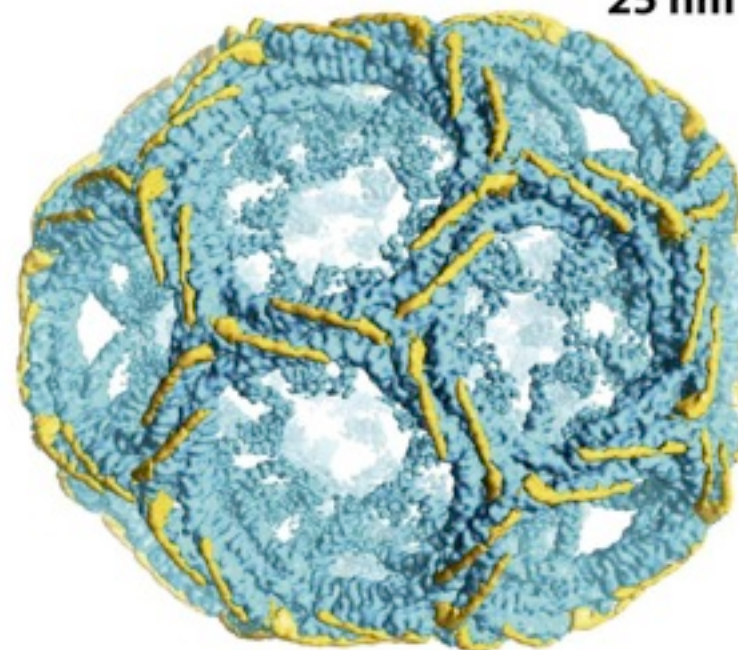
COPII

100 nm

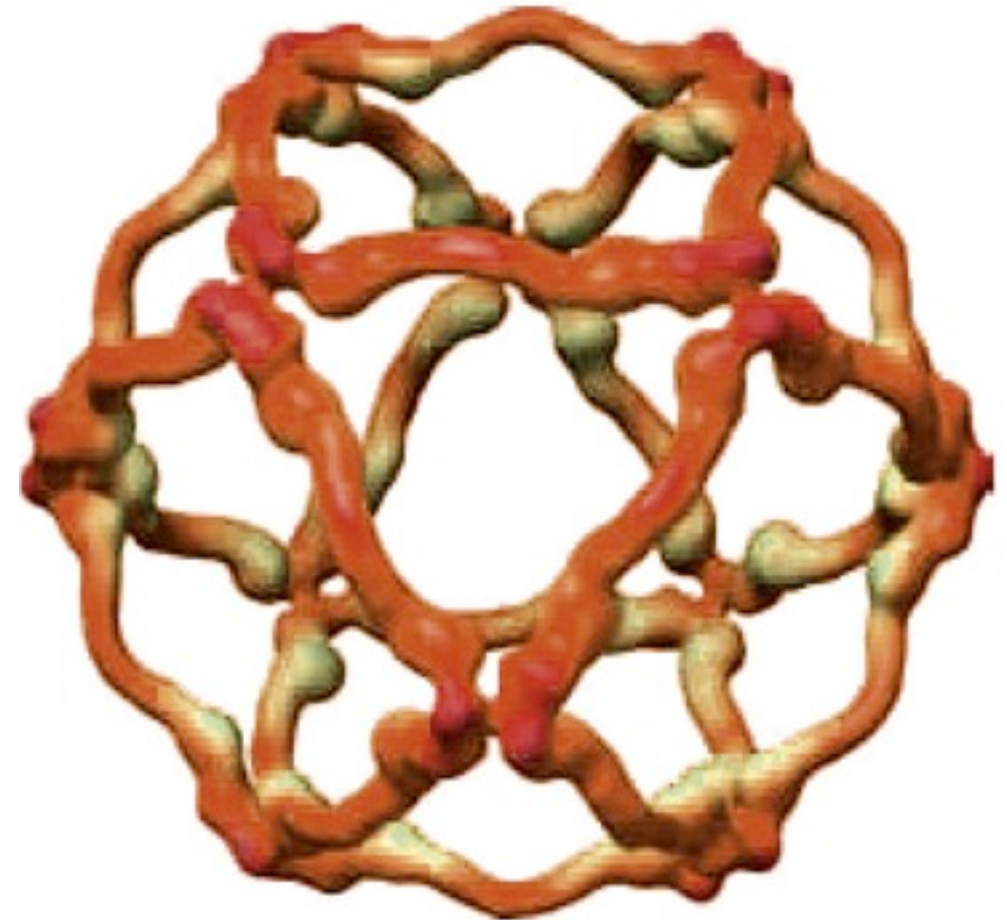
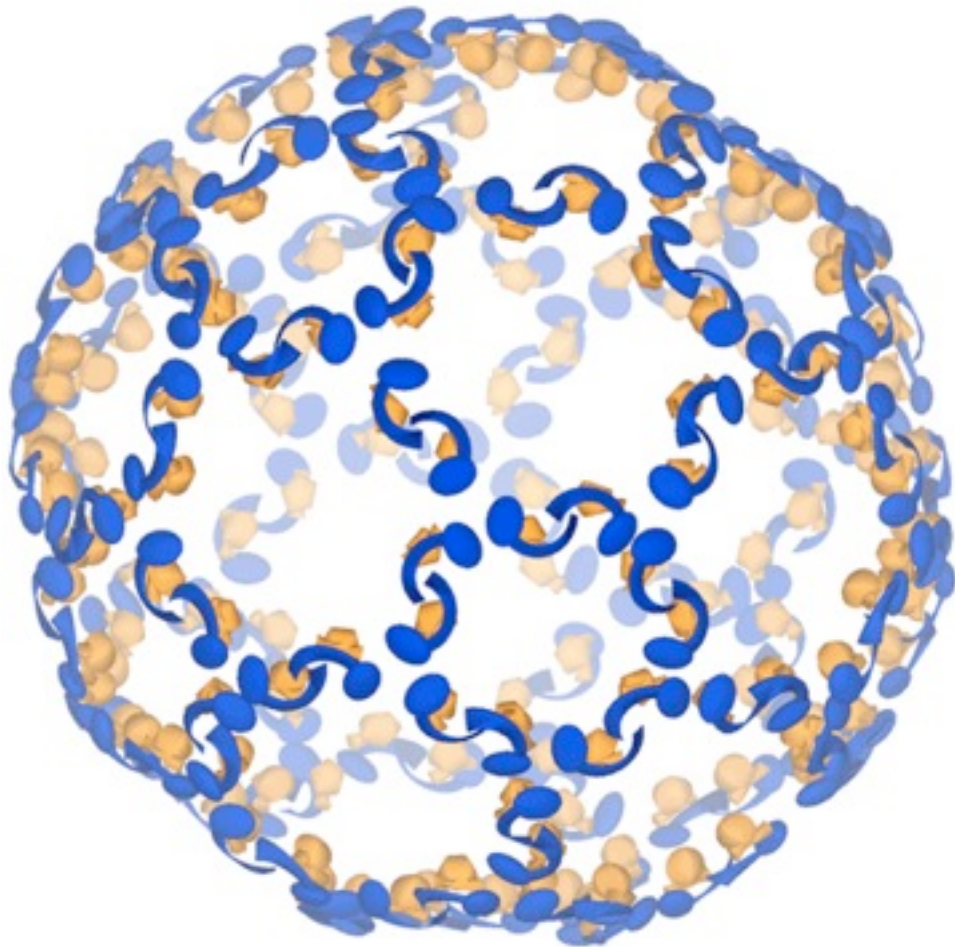
Klatrínom obalené váčky



25 nm

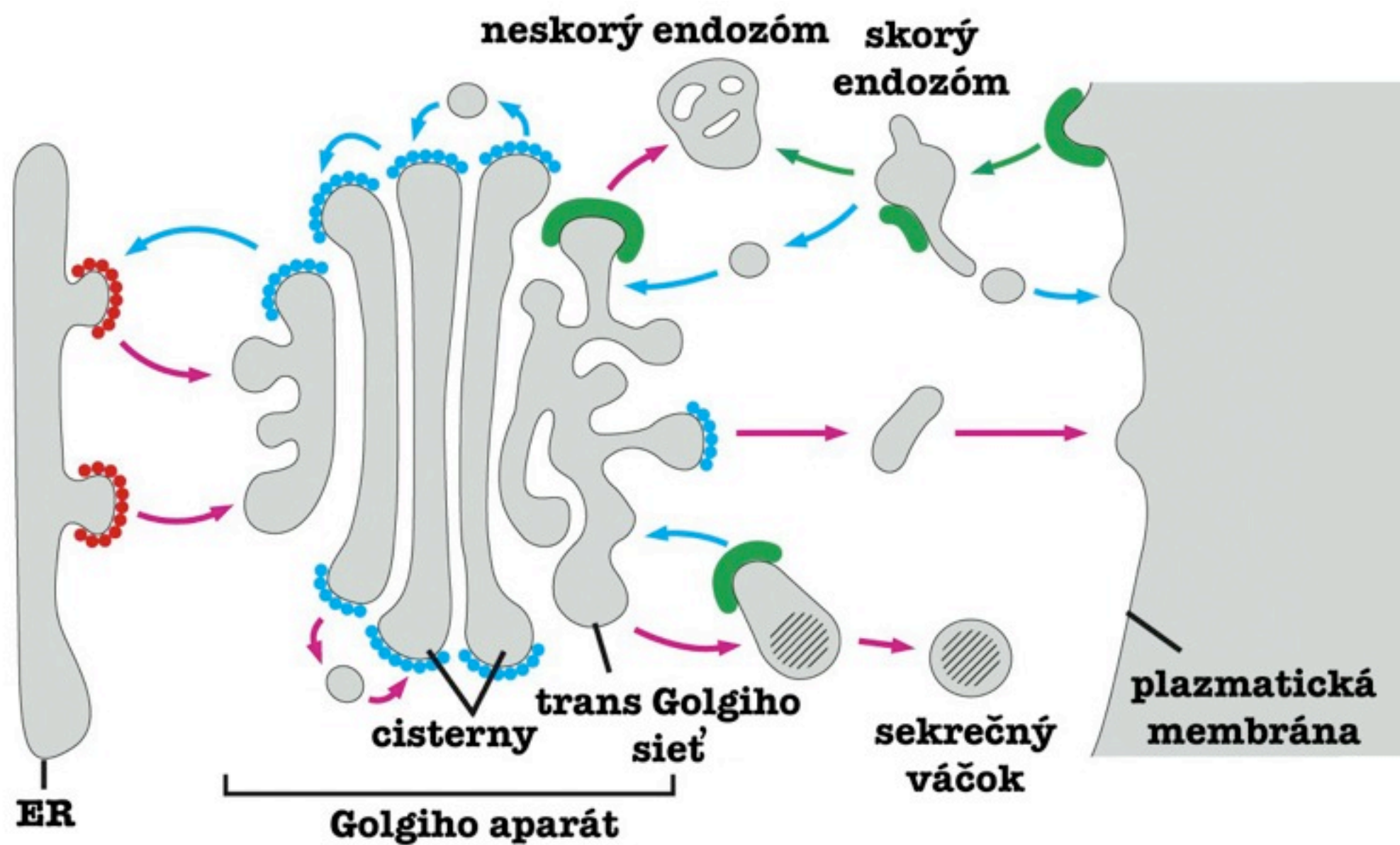
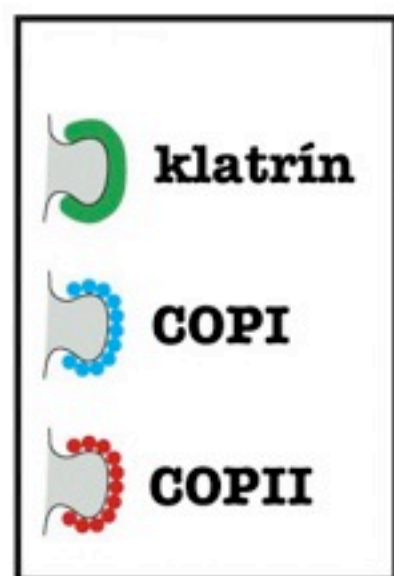


COPI a COPII obalené váčky

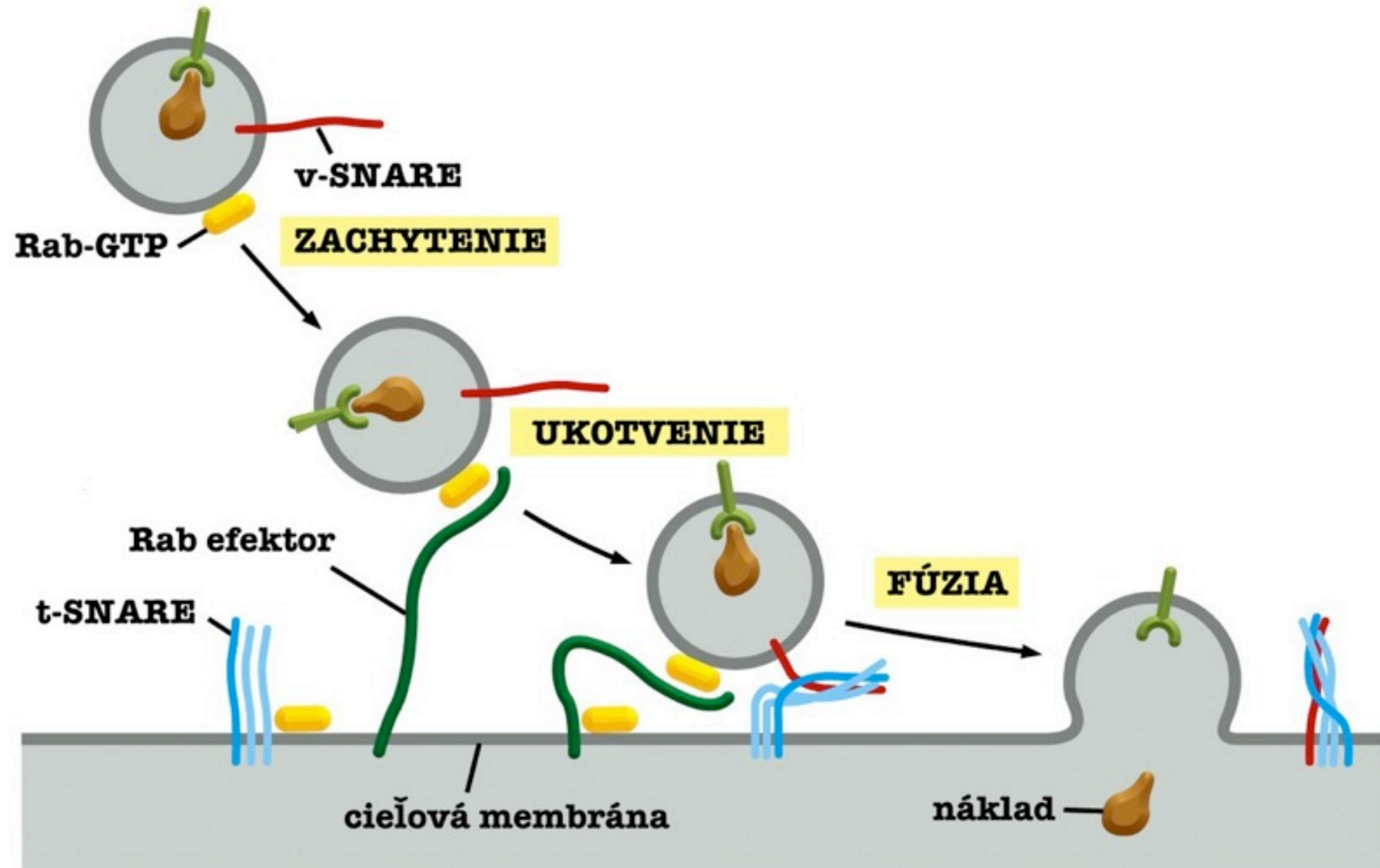


25 nm

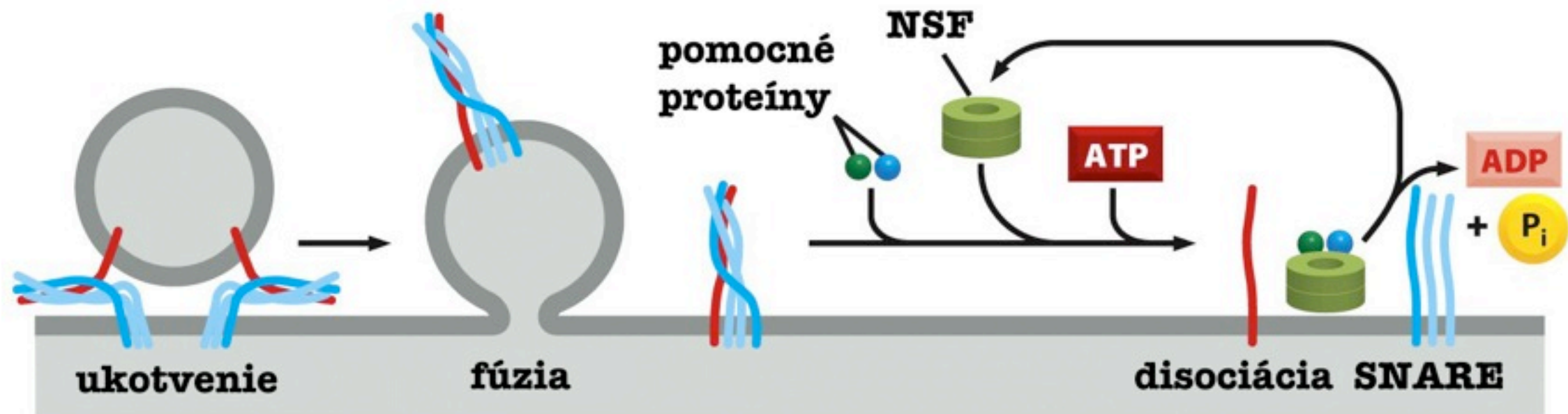
COP - Coat protein



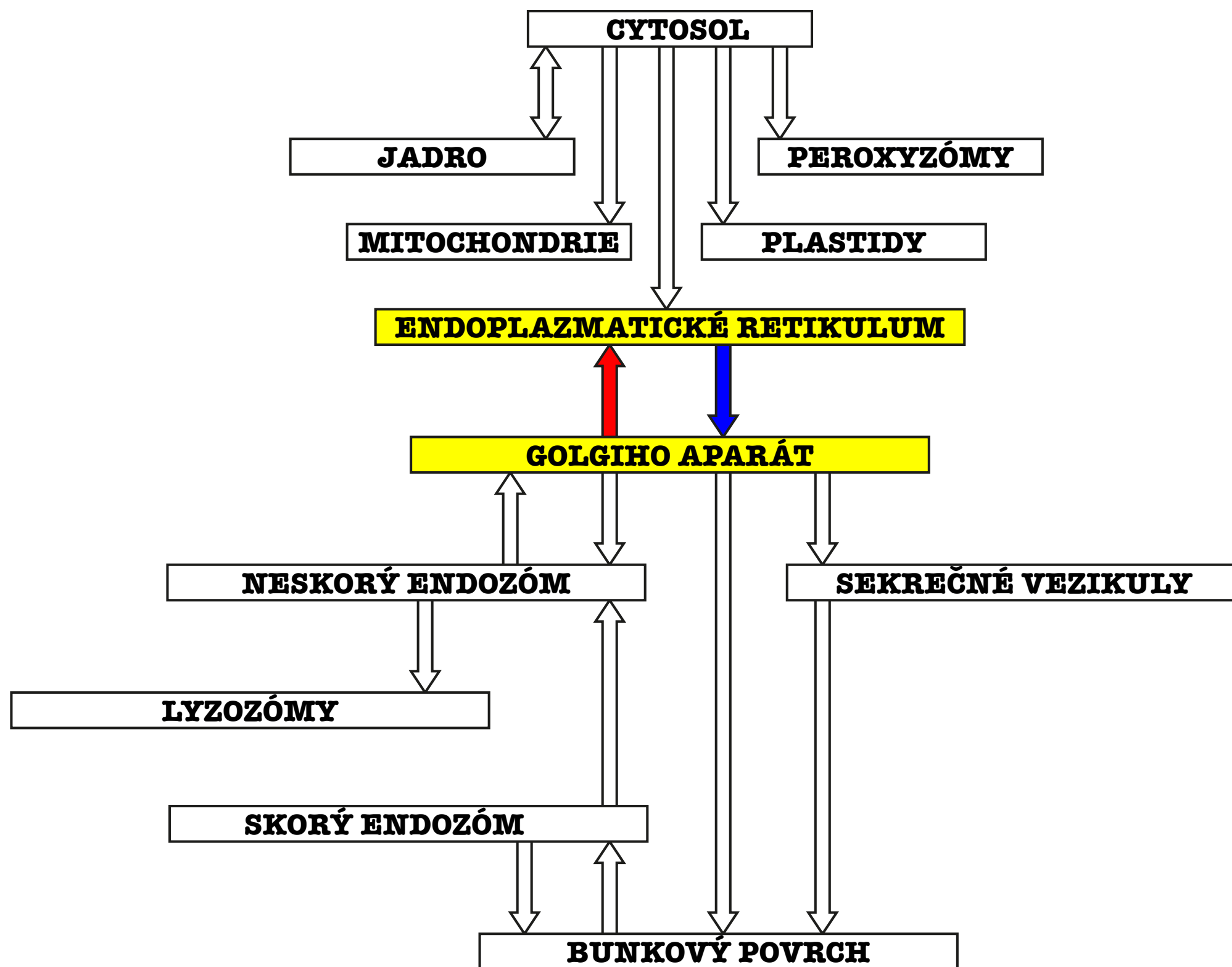
Fúzia váčkov s cieľovou membránou



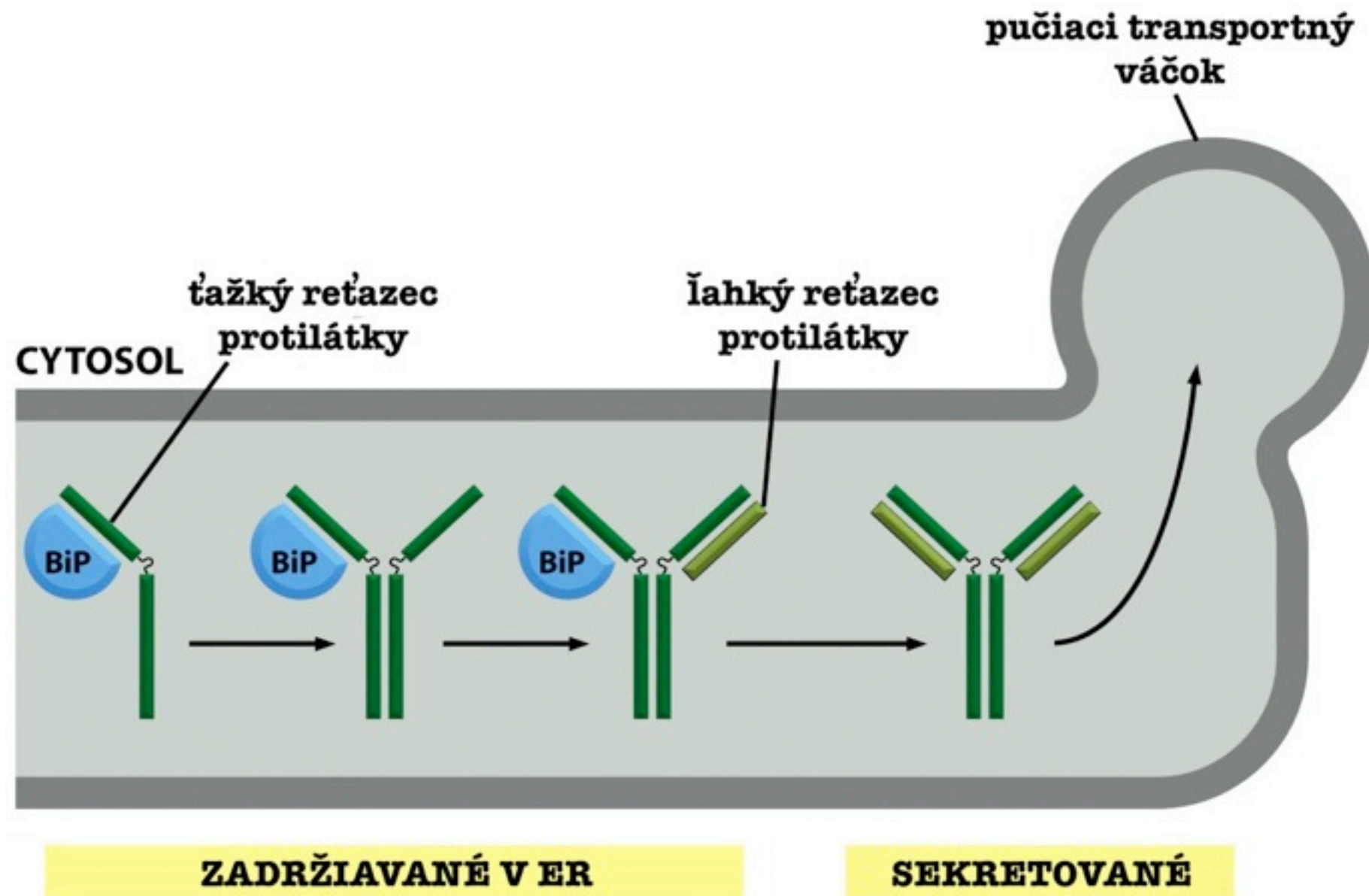
Fúzia váčkov s cieľovou membránou



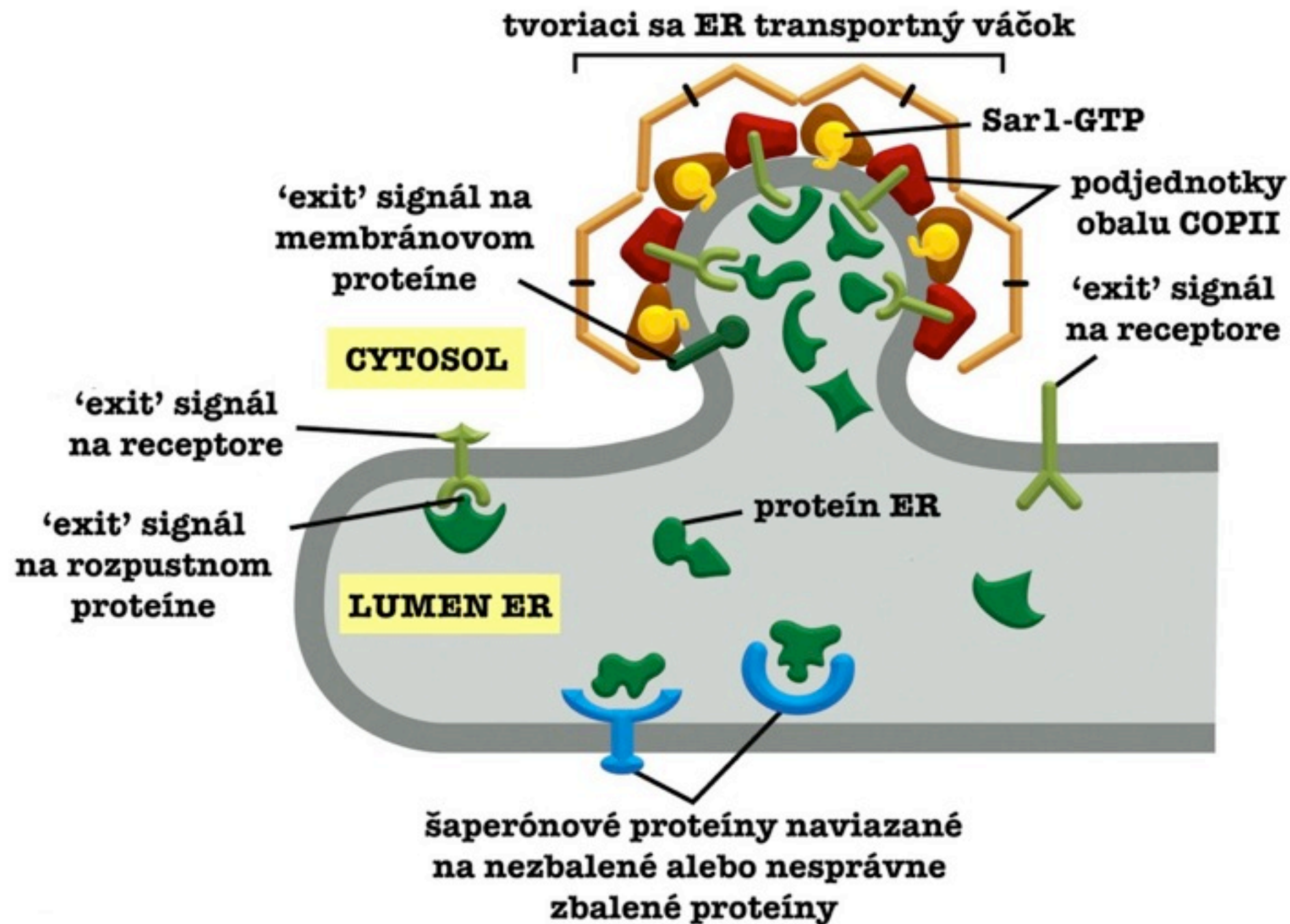
NSF - **N**-ethylmaleimide **s**ensitive **f**usion protein



Výstupná kontrola v ER



Triedenie proteínov na výstupe z ER



Proteíny ER sú recyklované

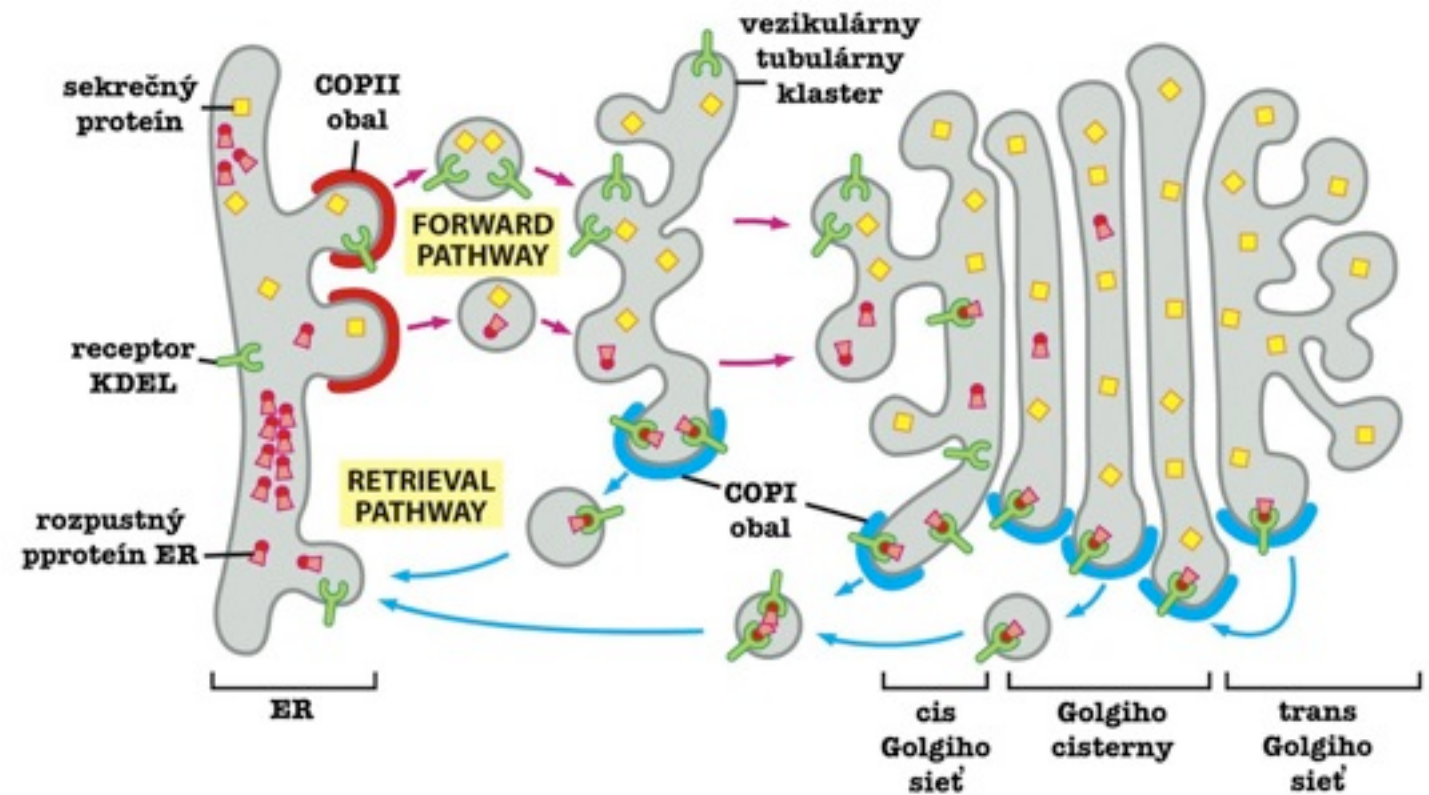
vezikulárny tubulárny klaster
alebo Golgiho aparát

rozpustný
proteín ER

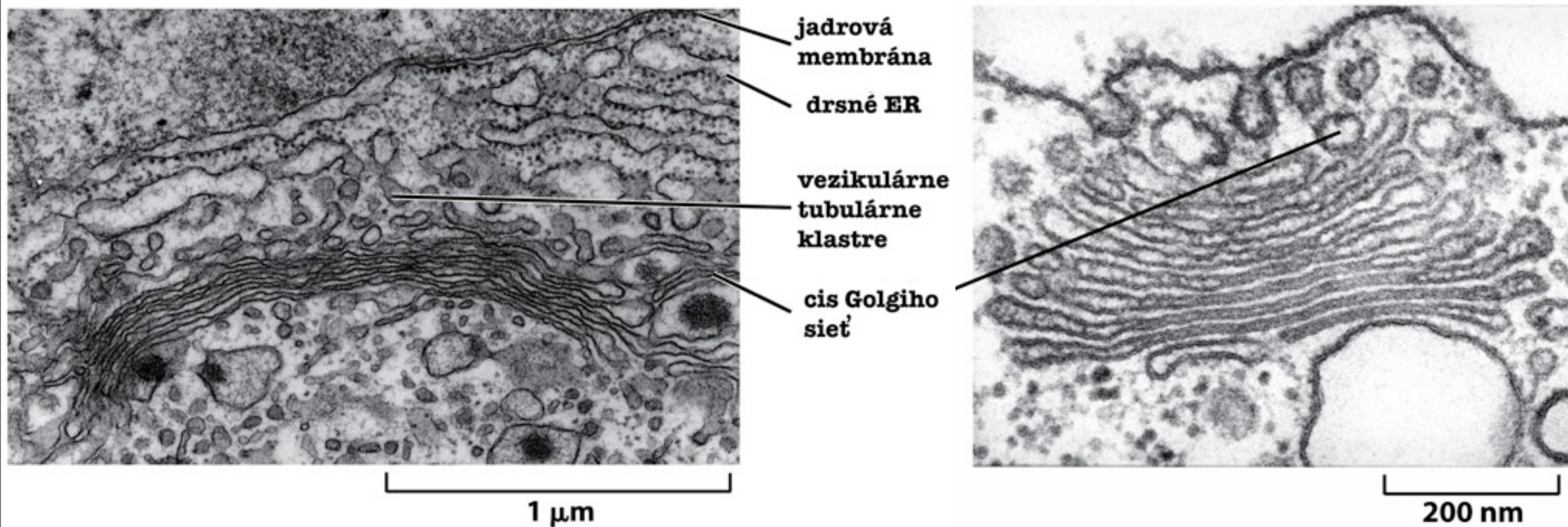
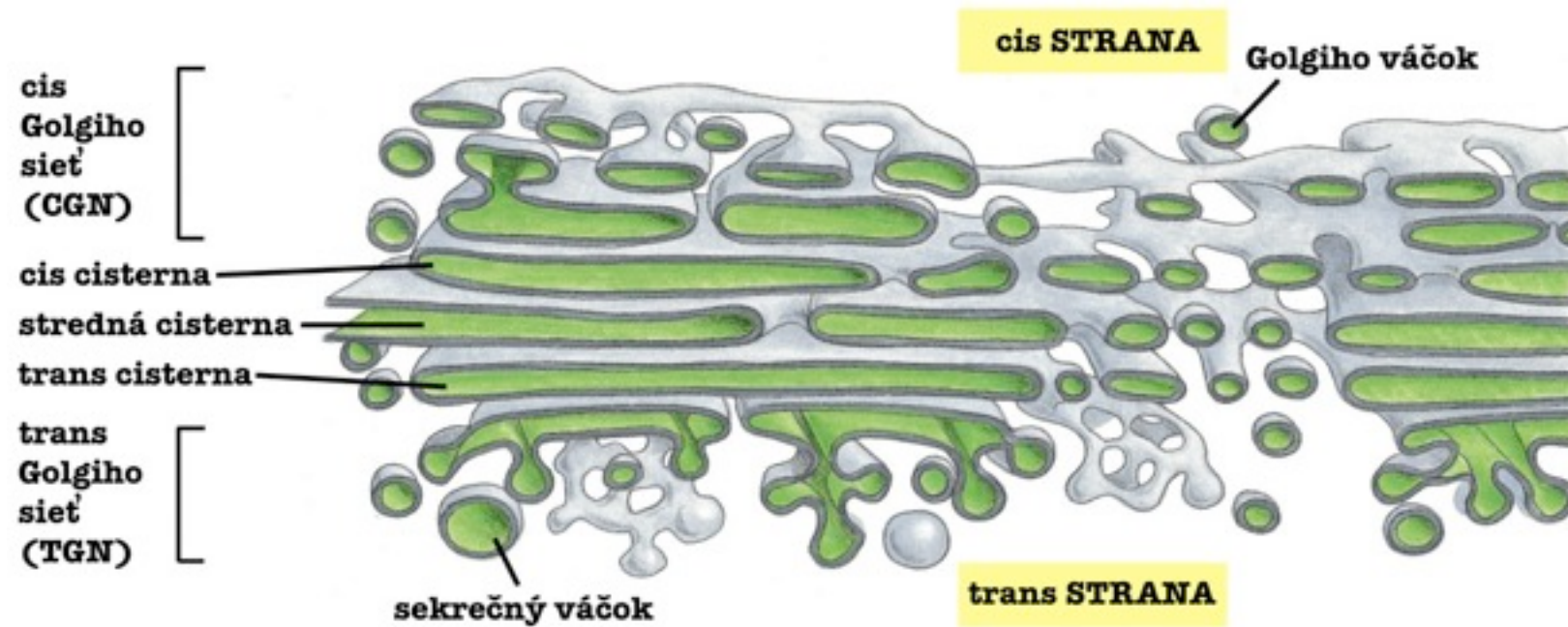
KDEL

prázdny
receptor
KDEL

obal COPI



Golgiho aparát



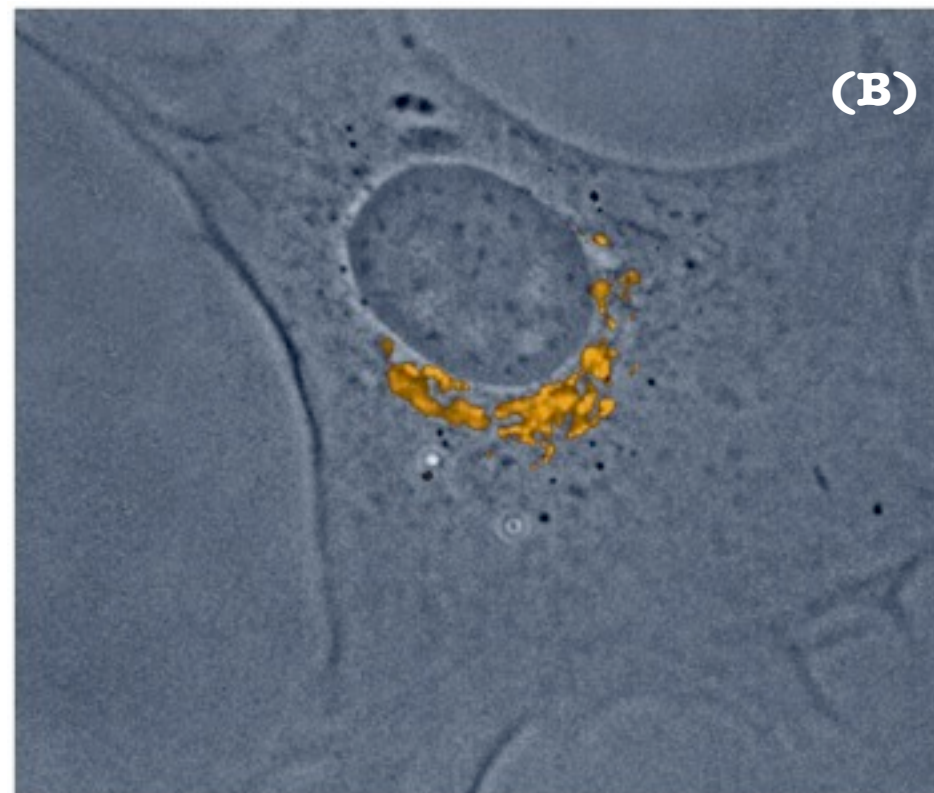
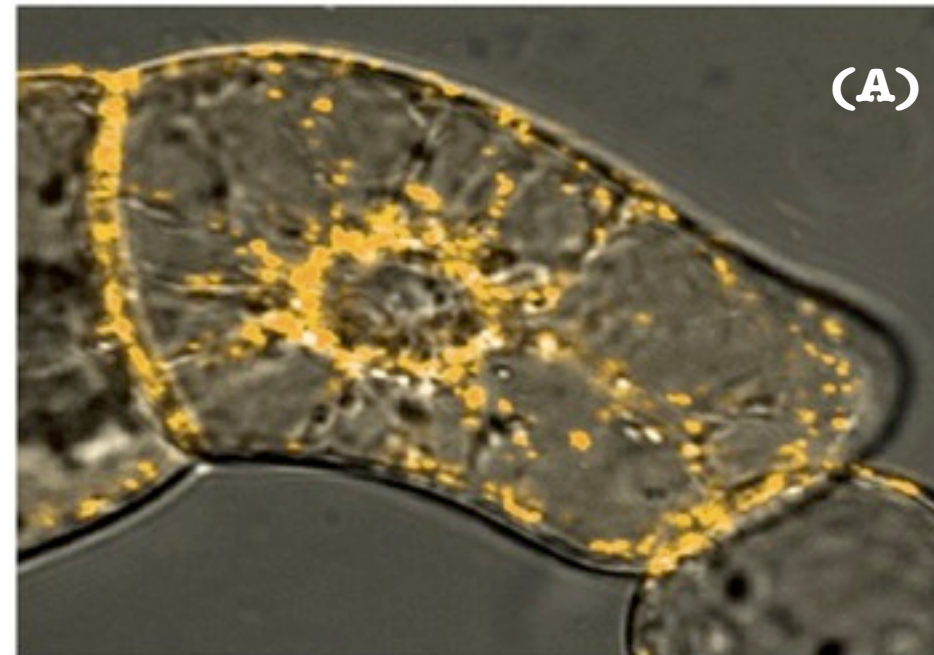
Golgiho aparát



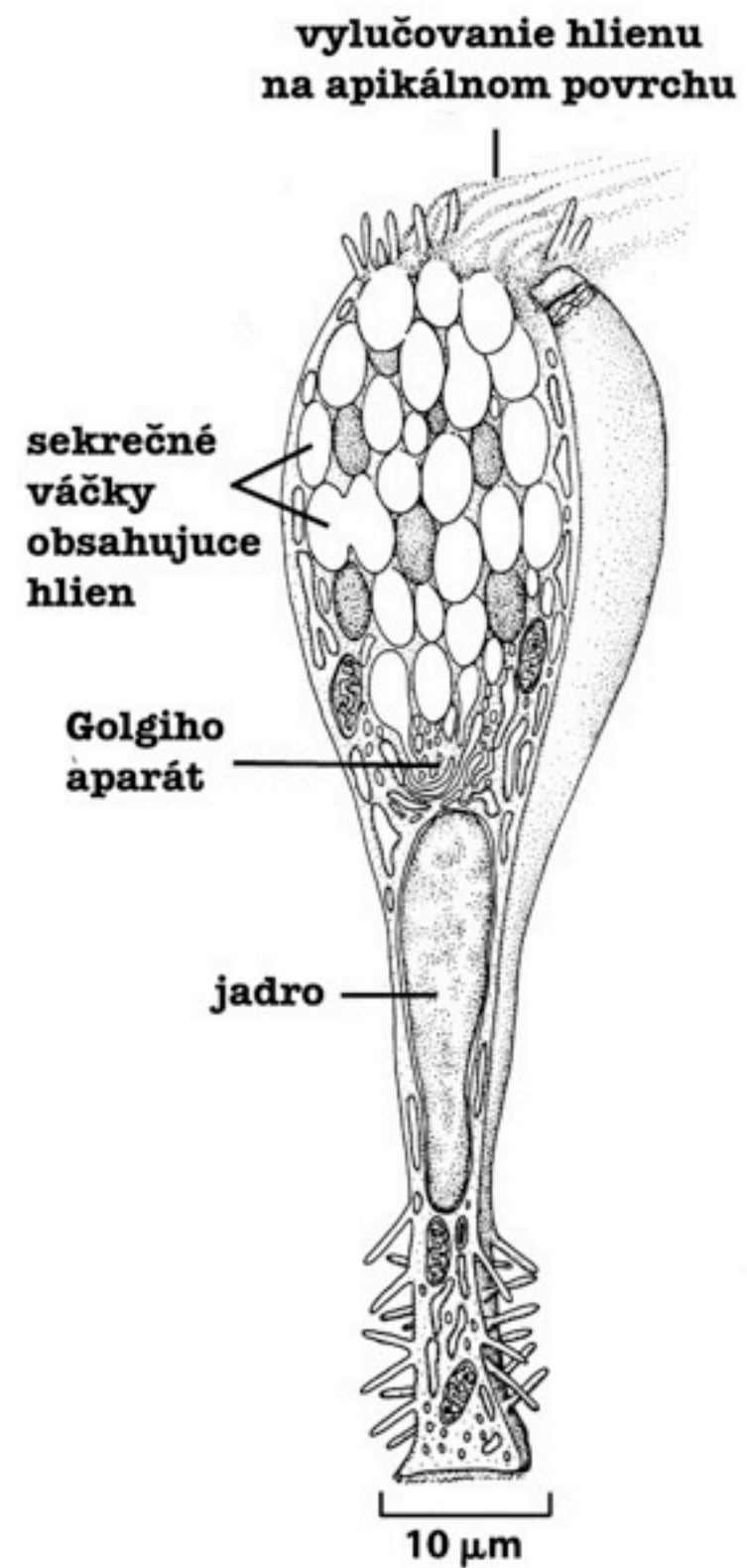
Camillo Golgi
(1843 – 1926)

GA - 1898

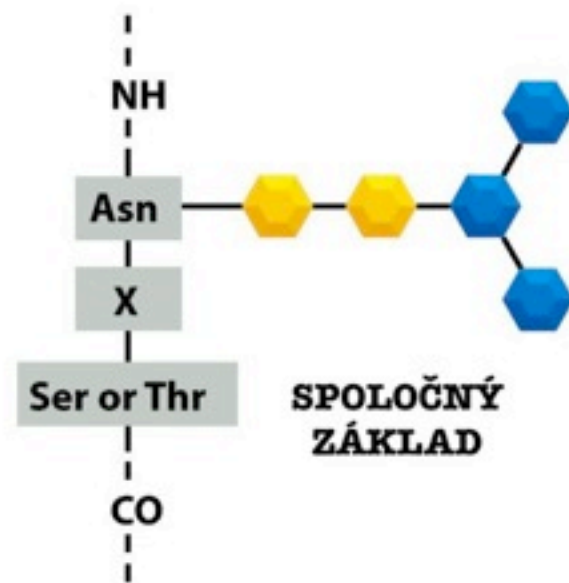
Fluorescenčne značený GA
v (A) rastlinných bunkách a
v (B) bunkách fibroblastov.







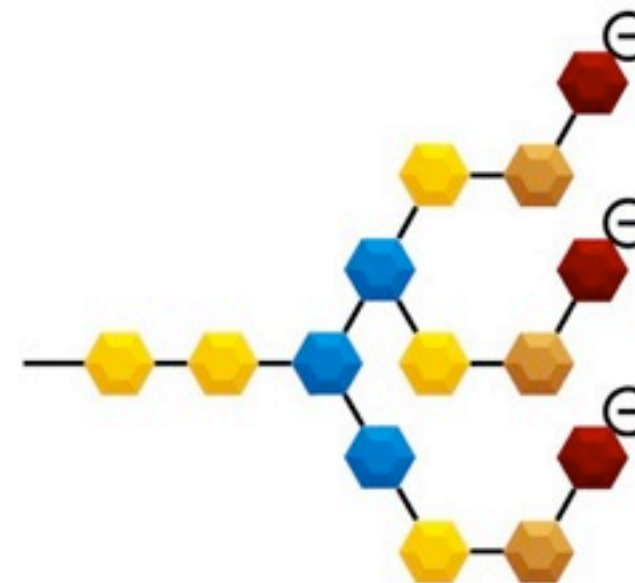
GA a sekrečné váčky v pohárikových
bunkách tenkého čreva



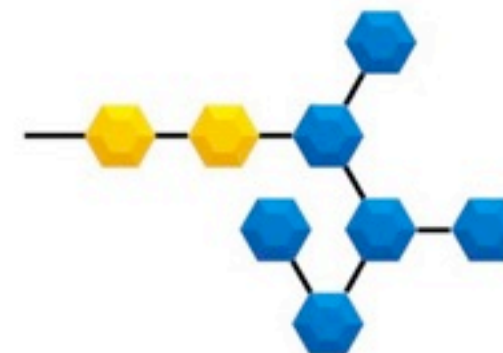
Úpravy sacharidov v GA



-  N-acetylglukozamín (GlcNAc)
-  manóza (Man)
-  galaktóza (Gal)
-  kyselina N-acetylneuraminová (kyselina sialová alebo NANA)

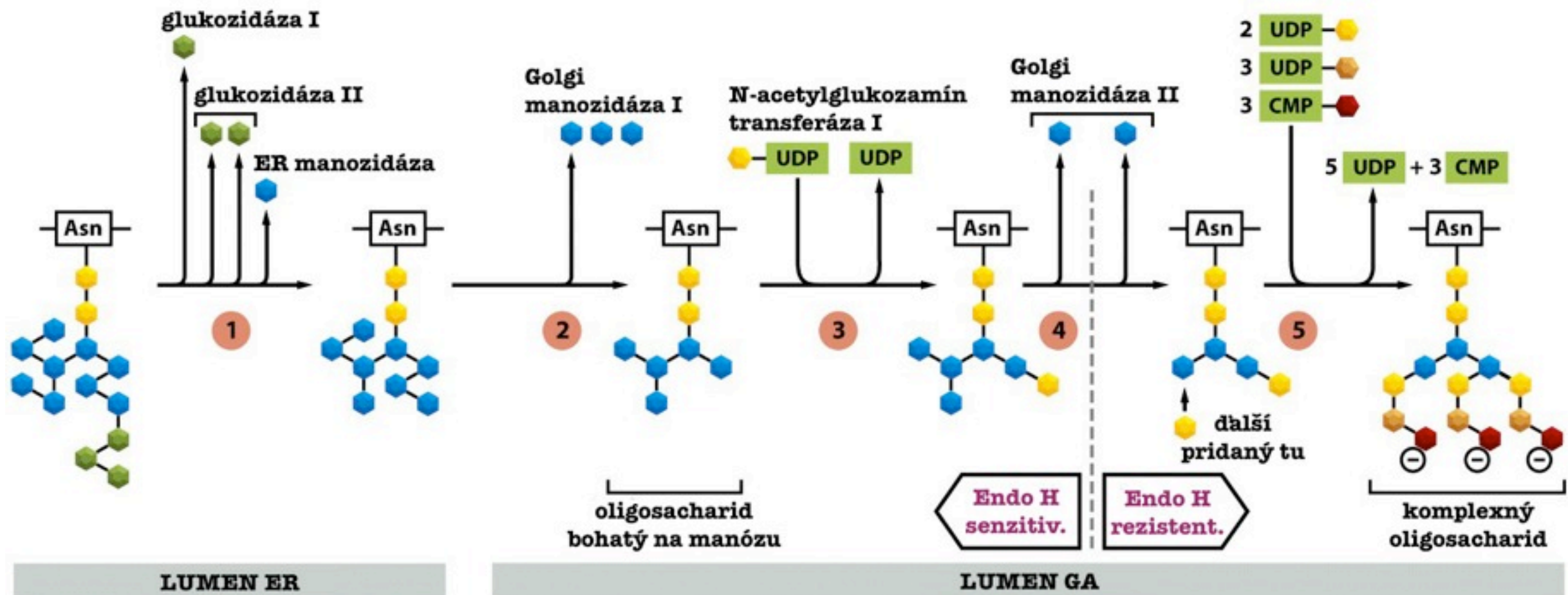


KOMPLEXNÝ OLIGOSACHARID

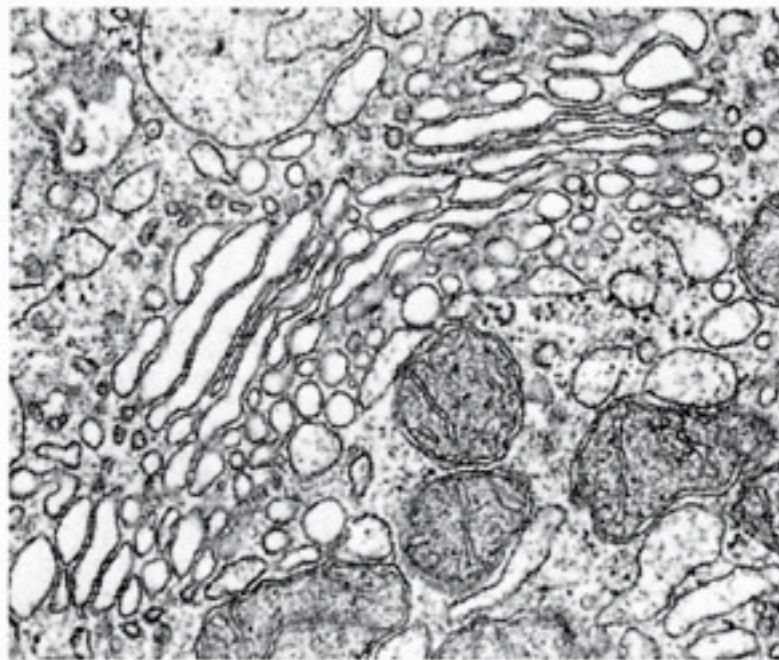


OLIGOSACHARID BOHATÝ
NA MANÓZU

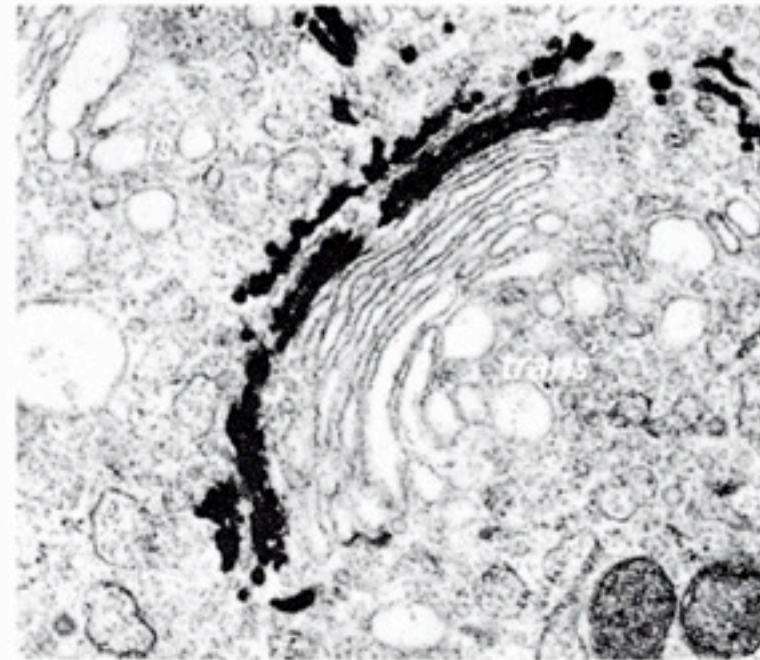
Úpravy sacharidov v GA



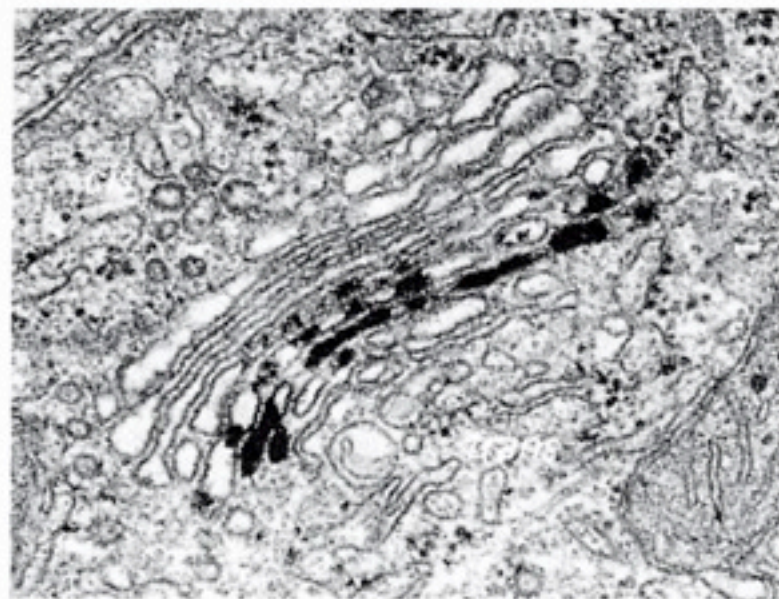
Funkčná kompartmentalizácia GA



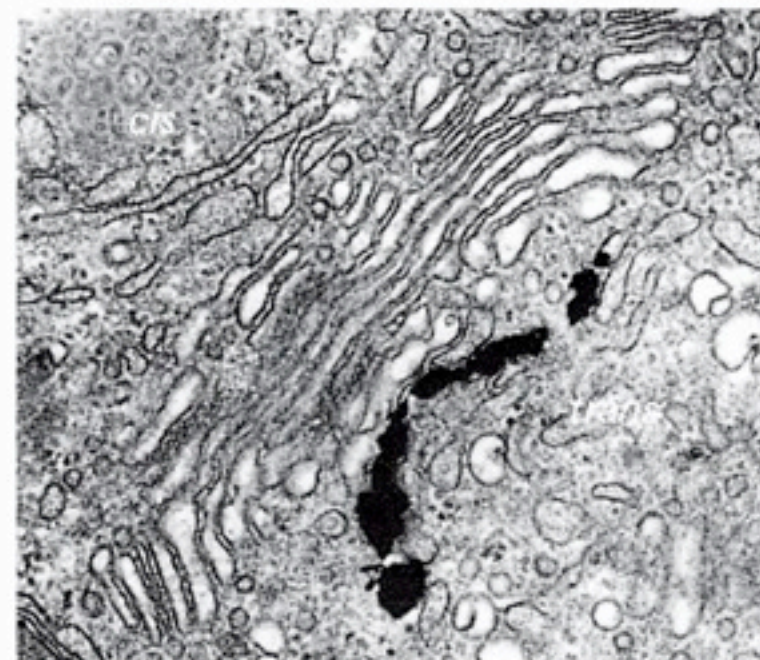
(A)



(B)



(C)

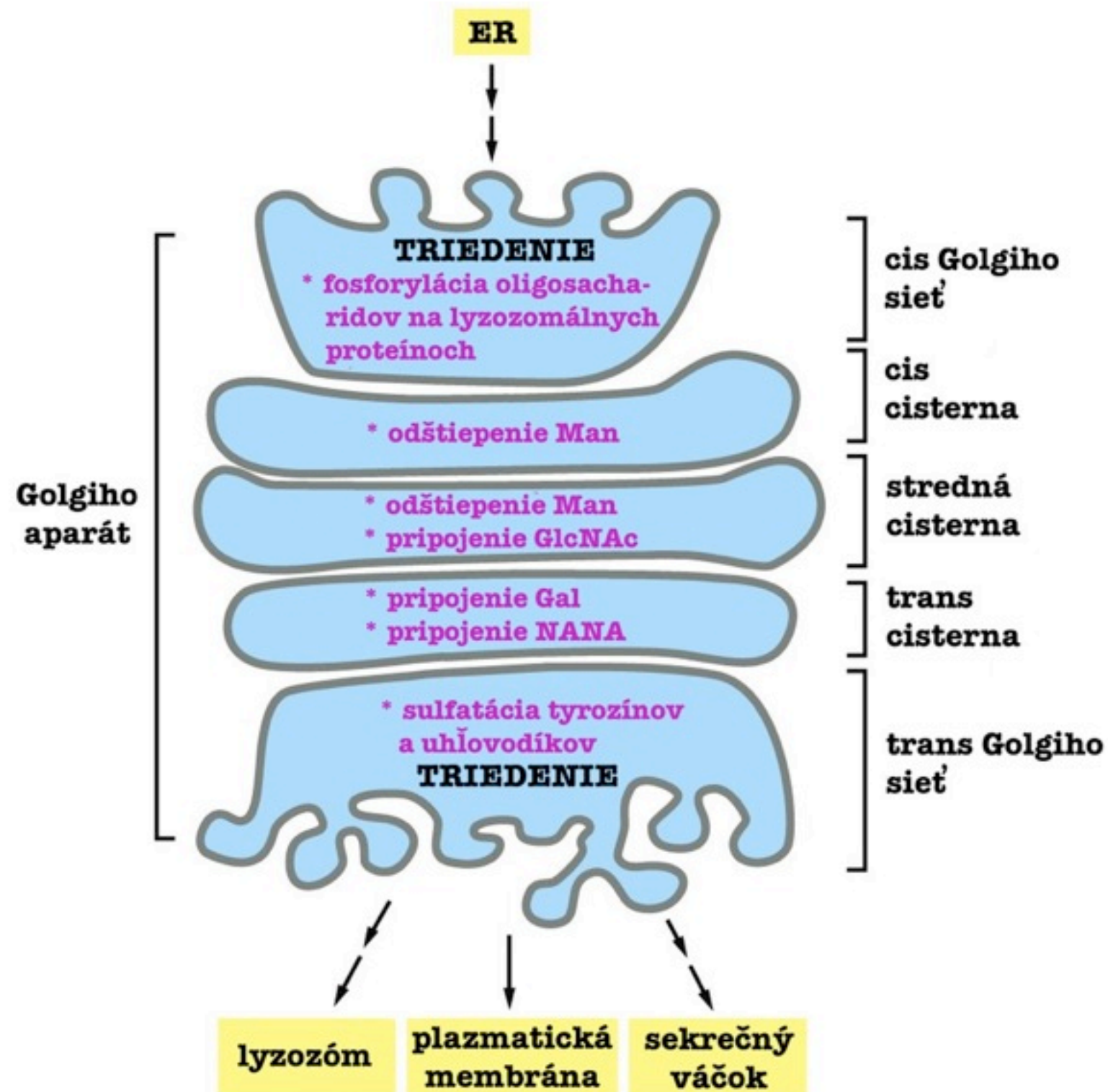


(D)

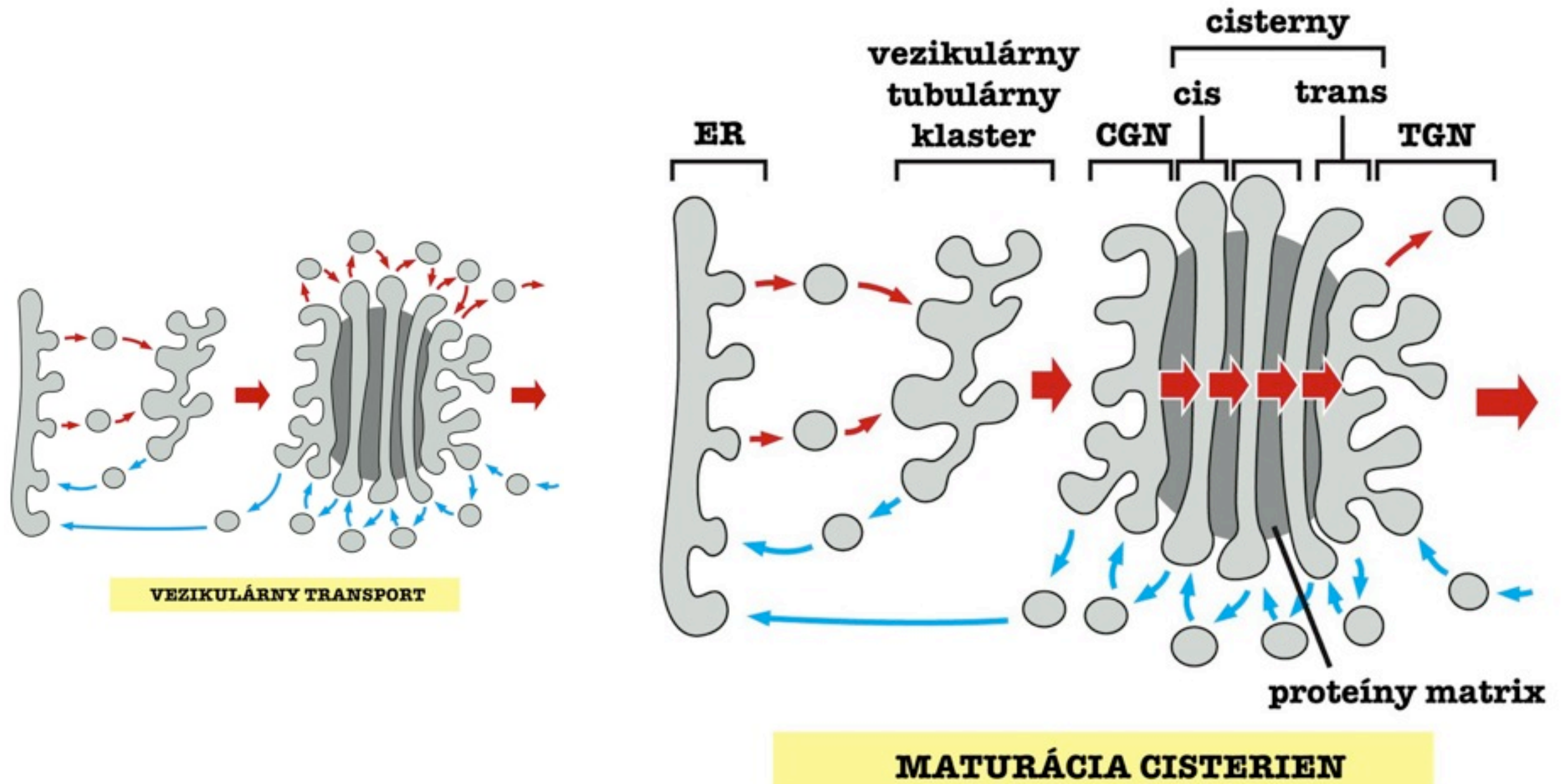
1 μ m

(A) nefarbený, (B) farbený osmiom, (C) nukleoziddifosfatáza a (D) kyslá fosfatáza.

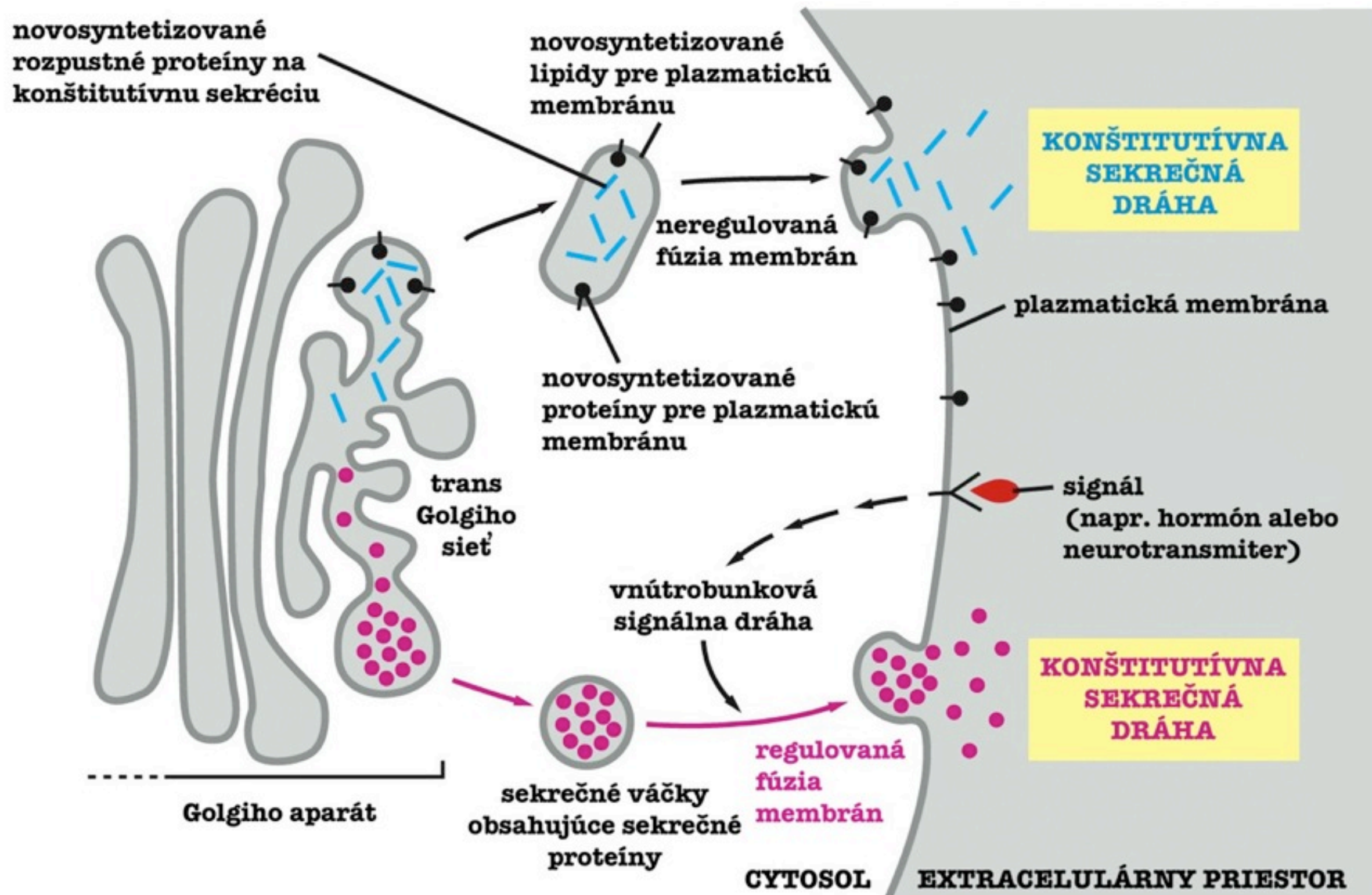
Funkčná kompartmentalizácia GA



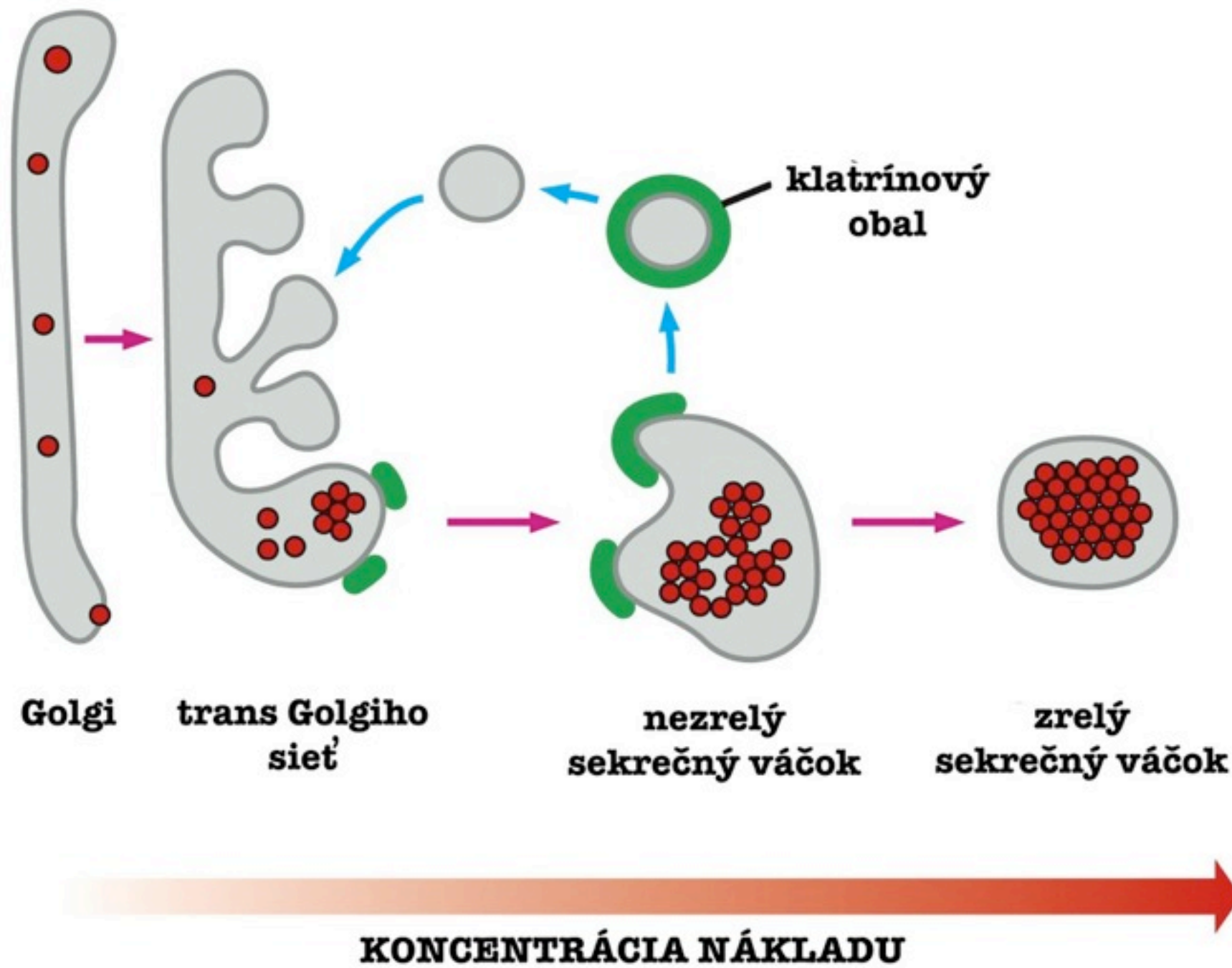
Maturácia cisterien Golgiho aparátu



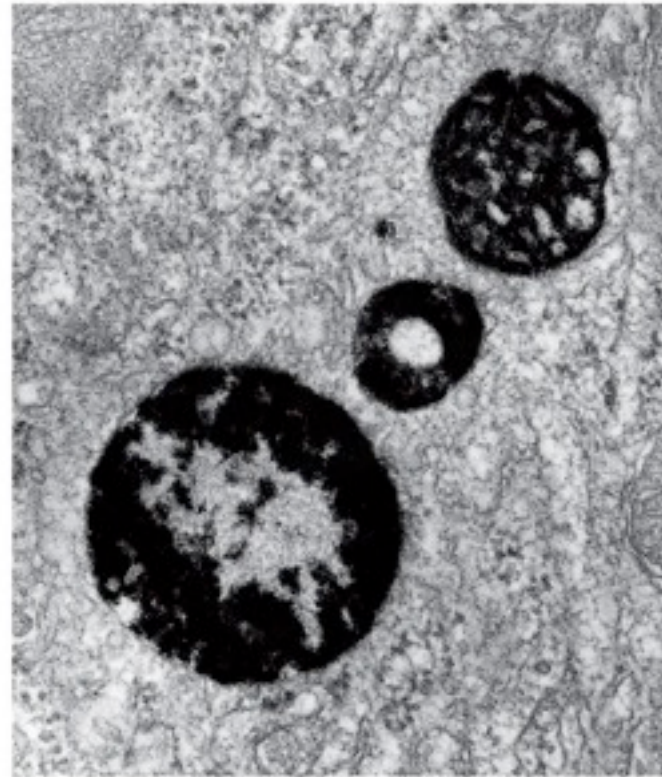
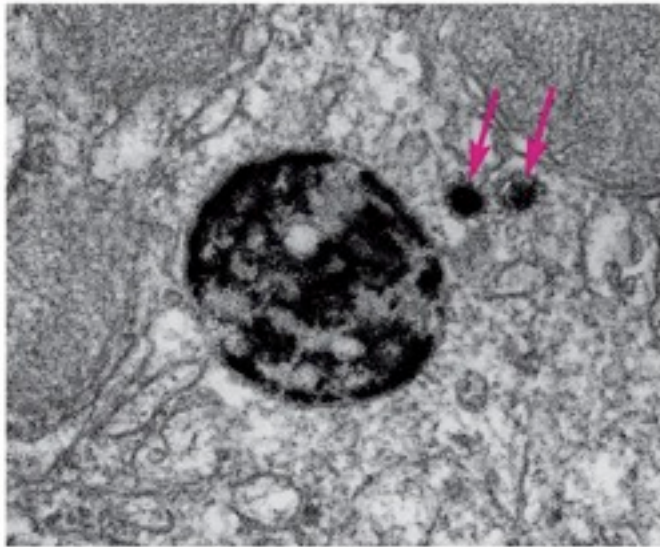
Konštitutívna a regulovaná sekrécia



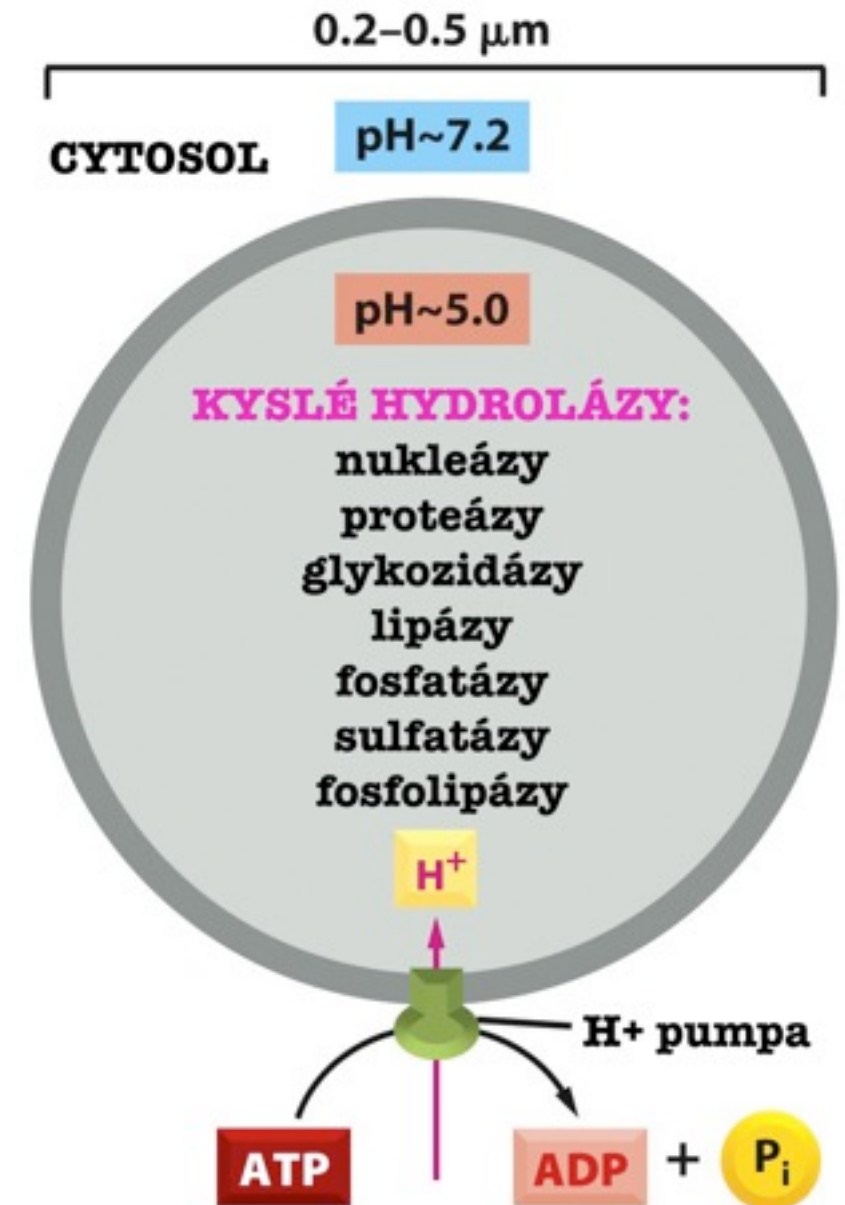
Dozrievanie sekrečných váčkov



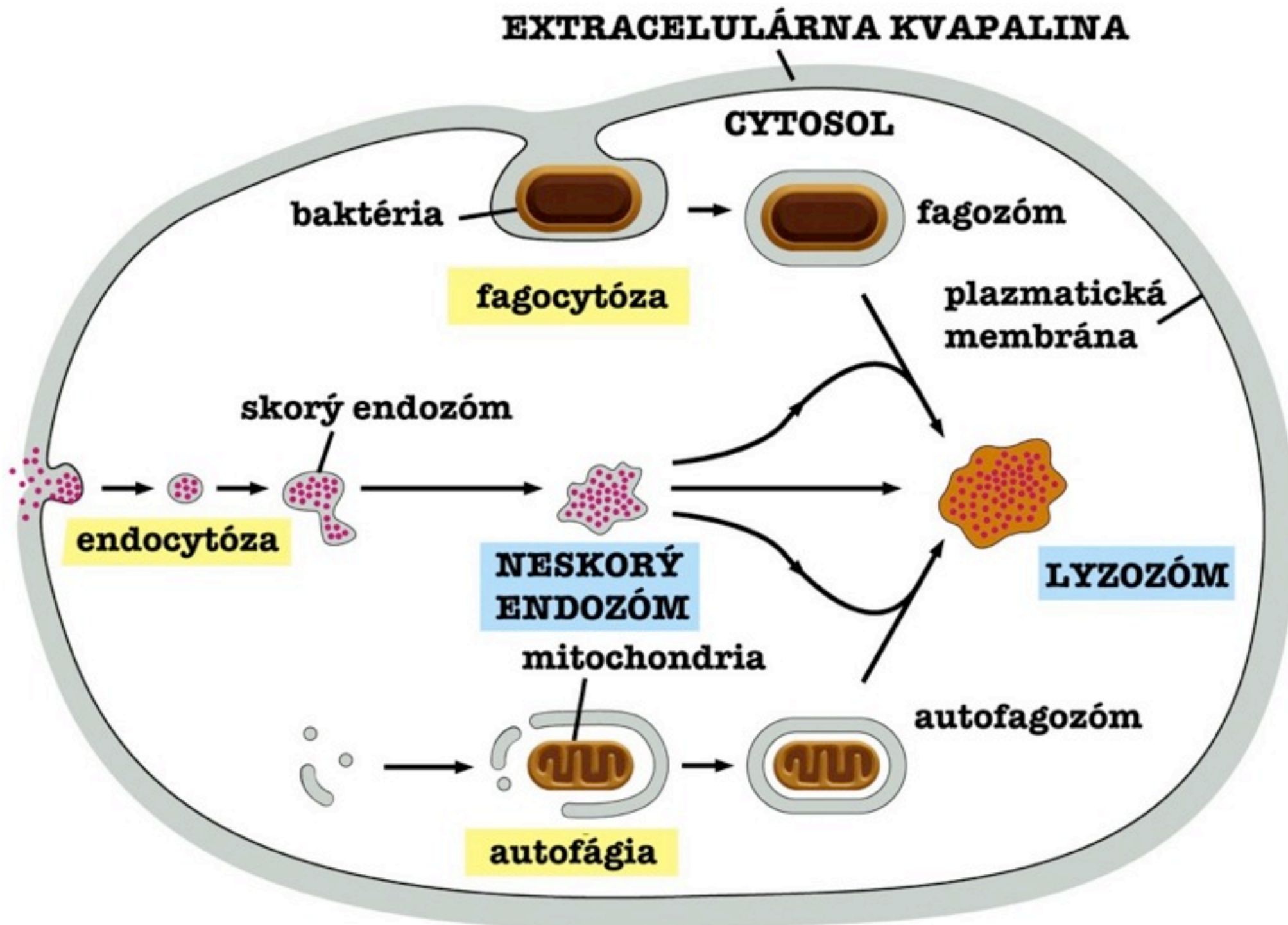
Lyzozómy



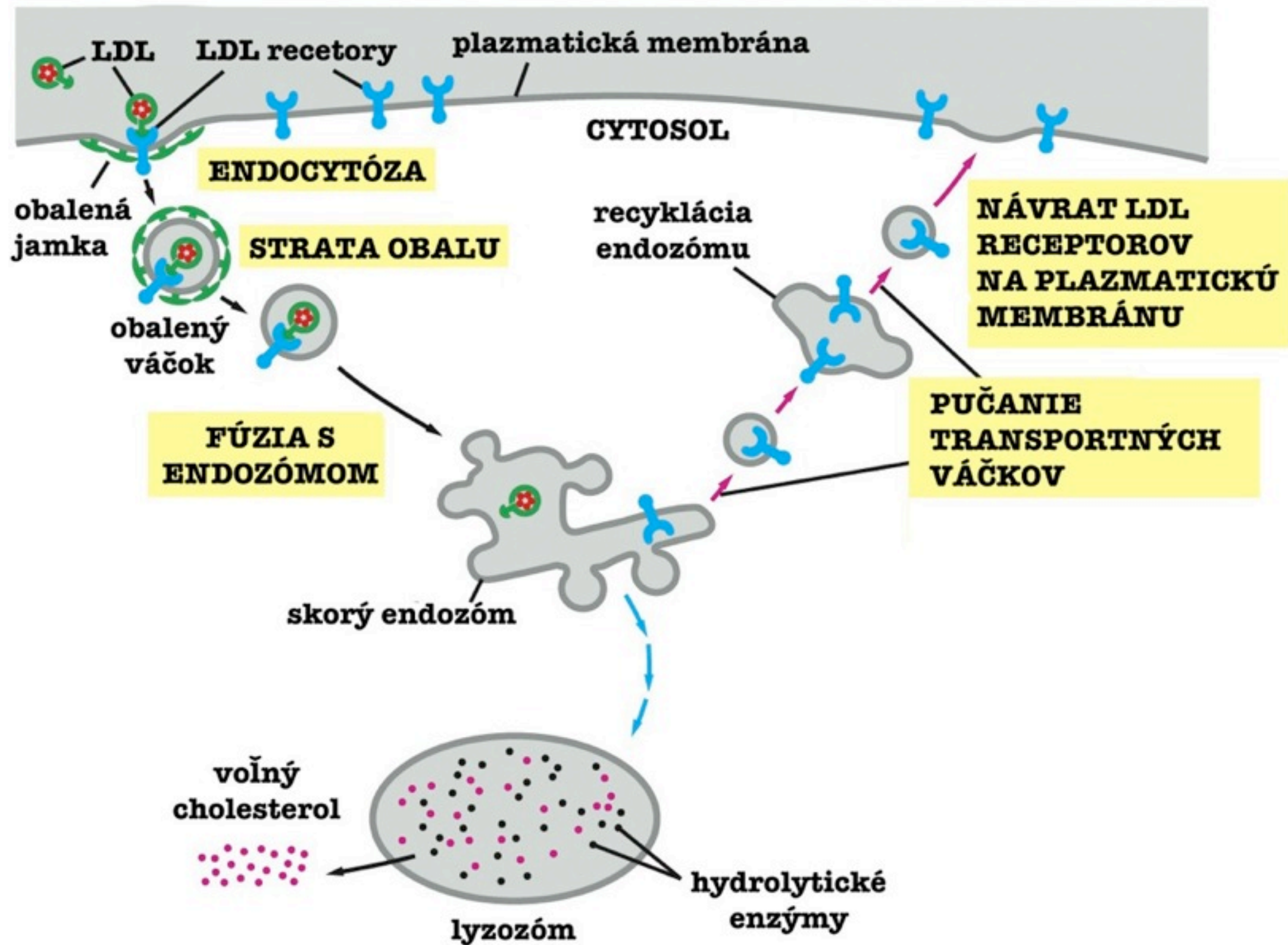
200 nm



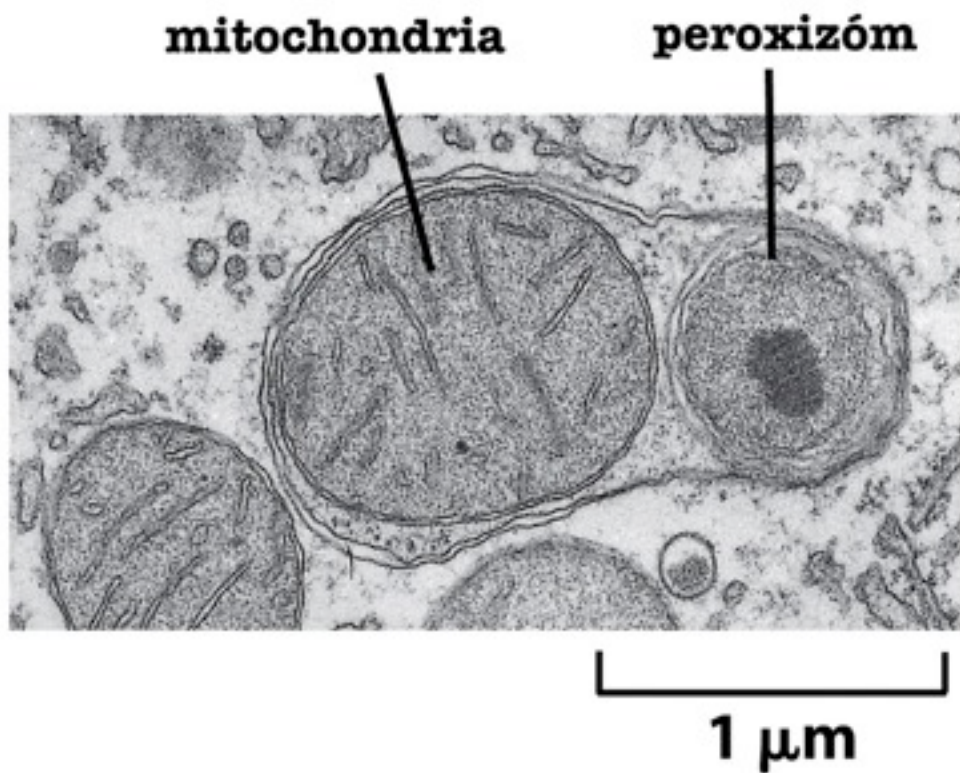
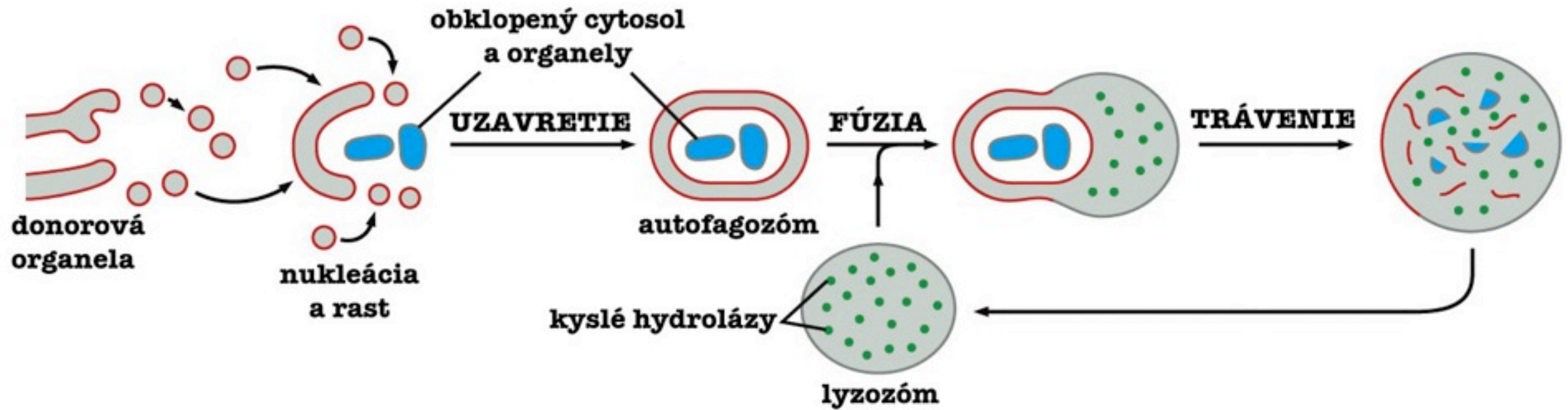
Lysozómy



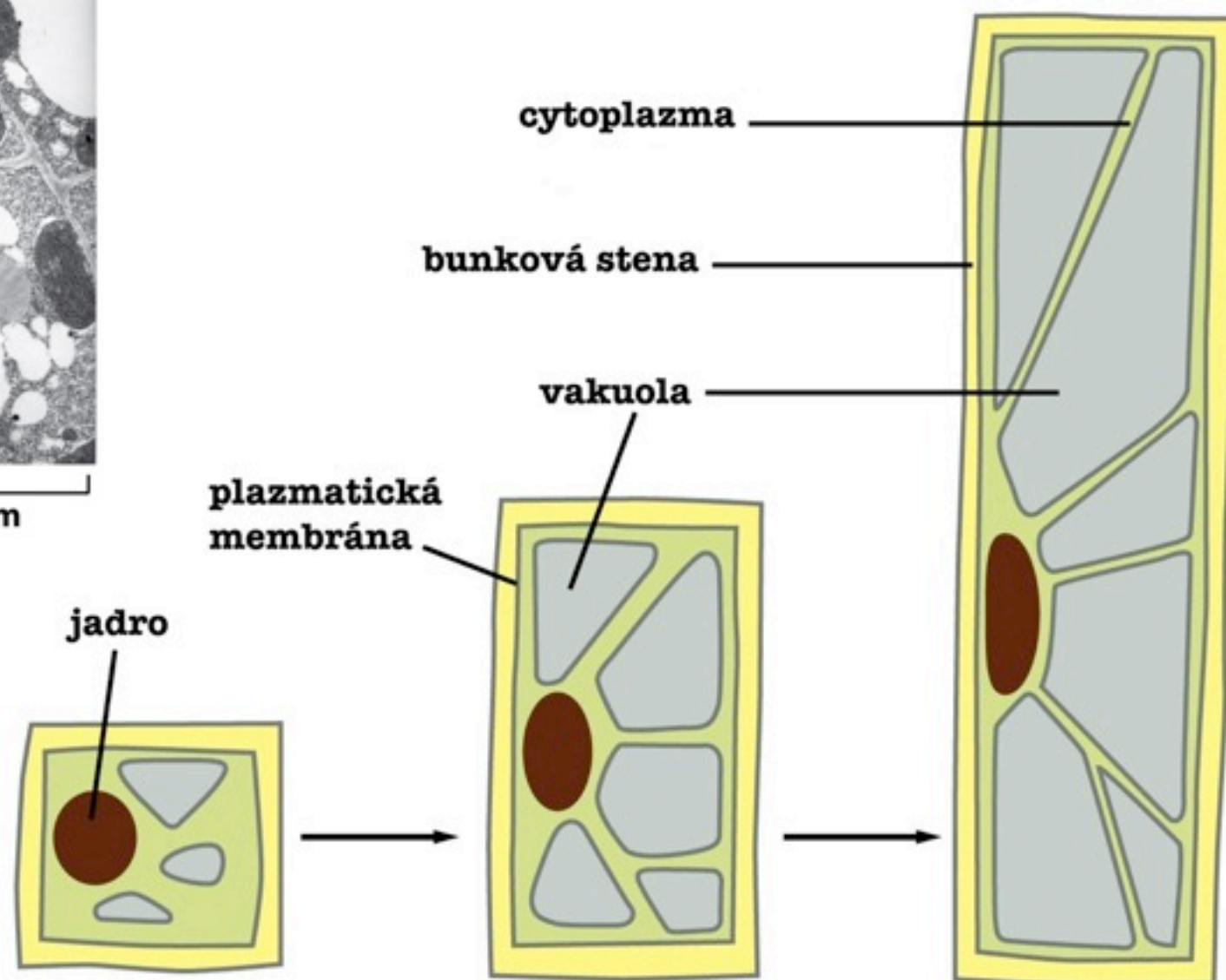
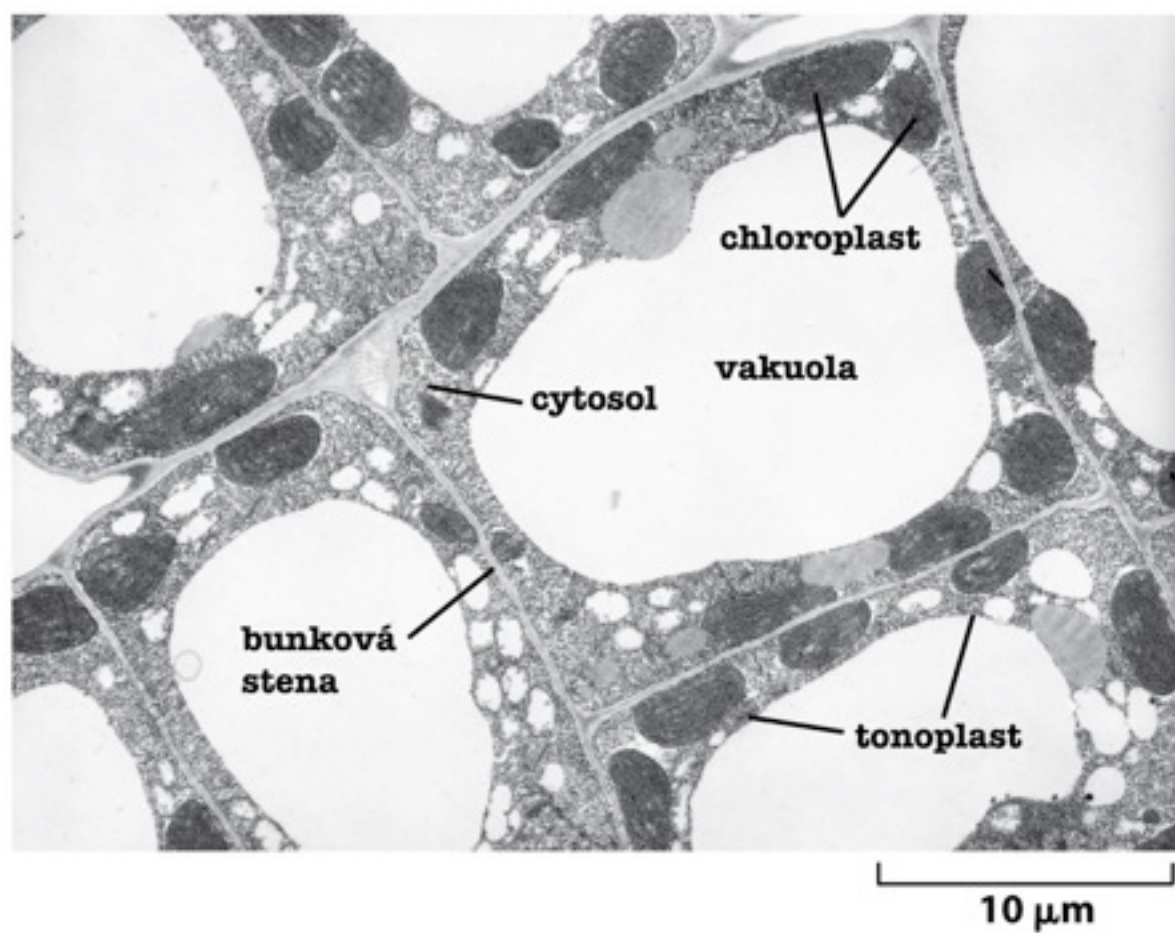
Receptormi sprostredkovaná endocytóza



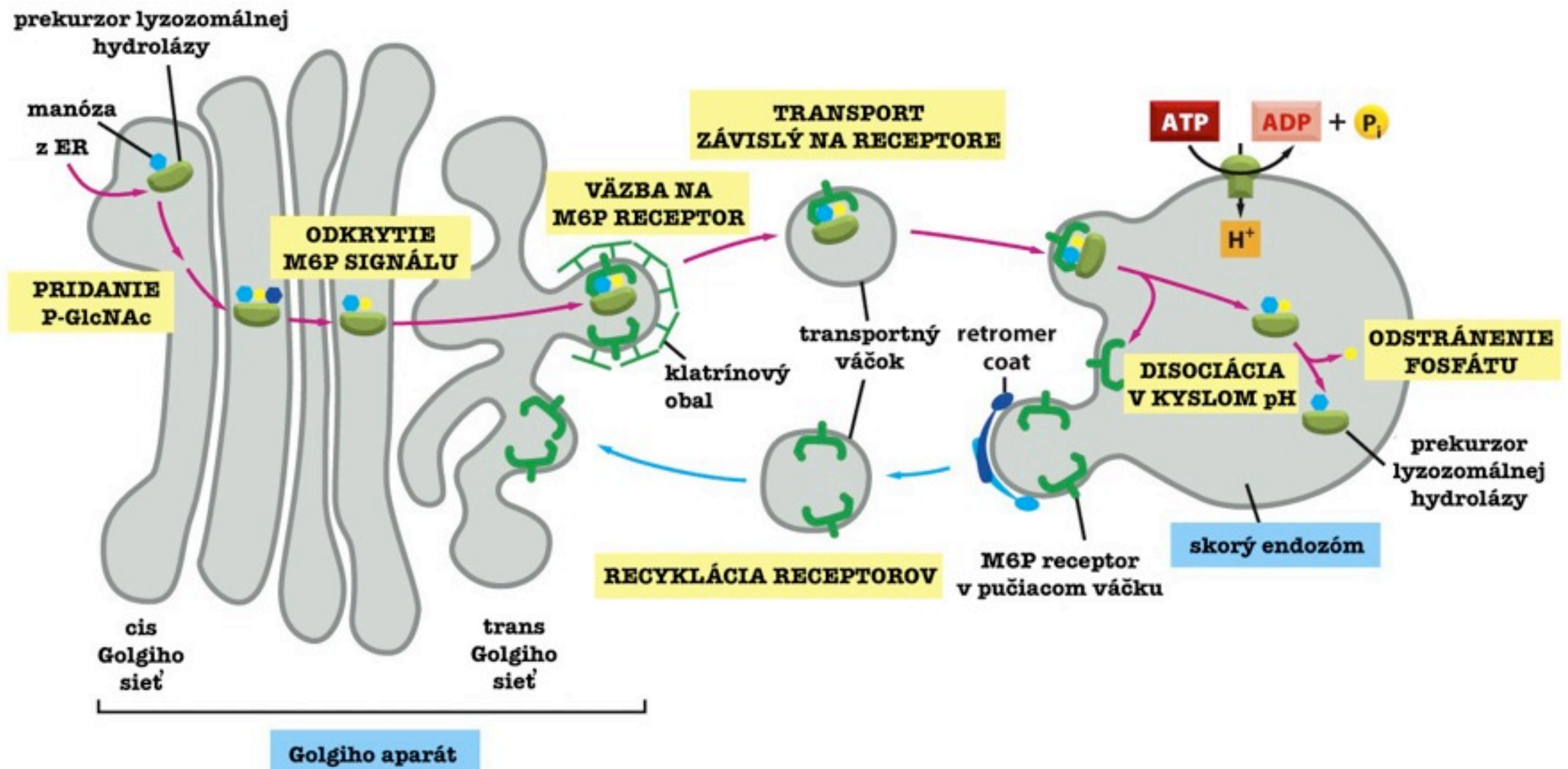
Autofágia



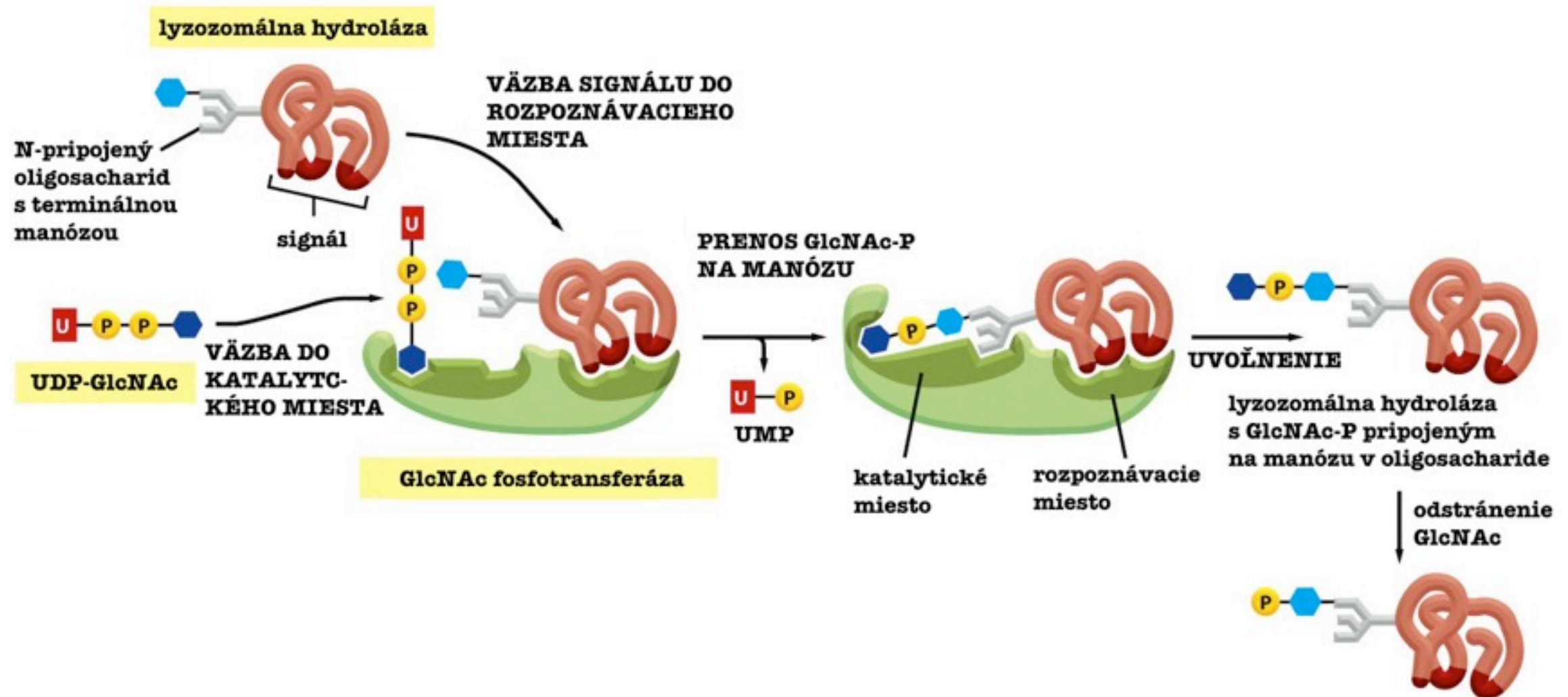
Vakuoly v rastlinách



Triedenie proteínov do lyzozómov

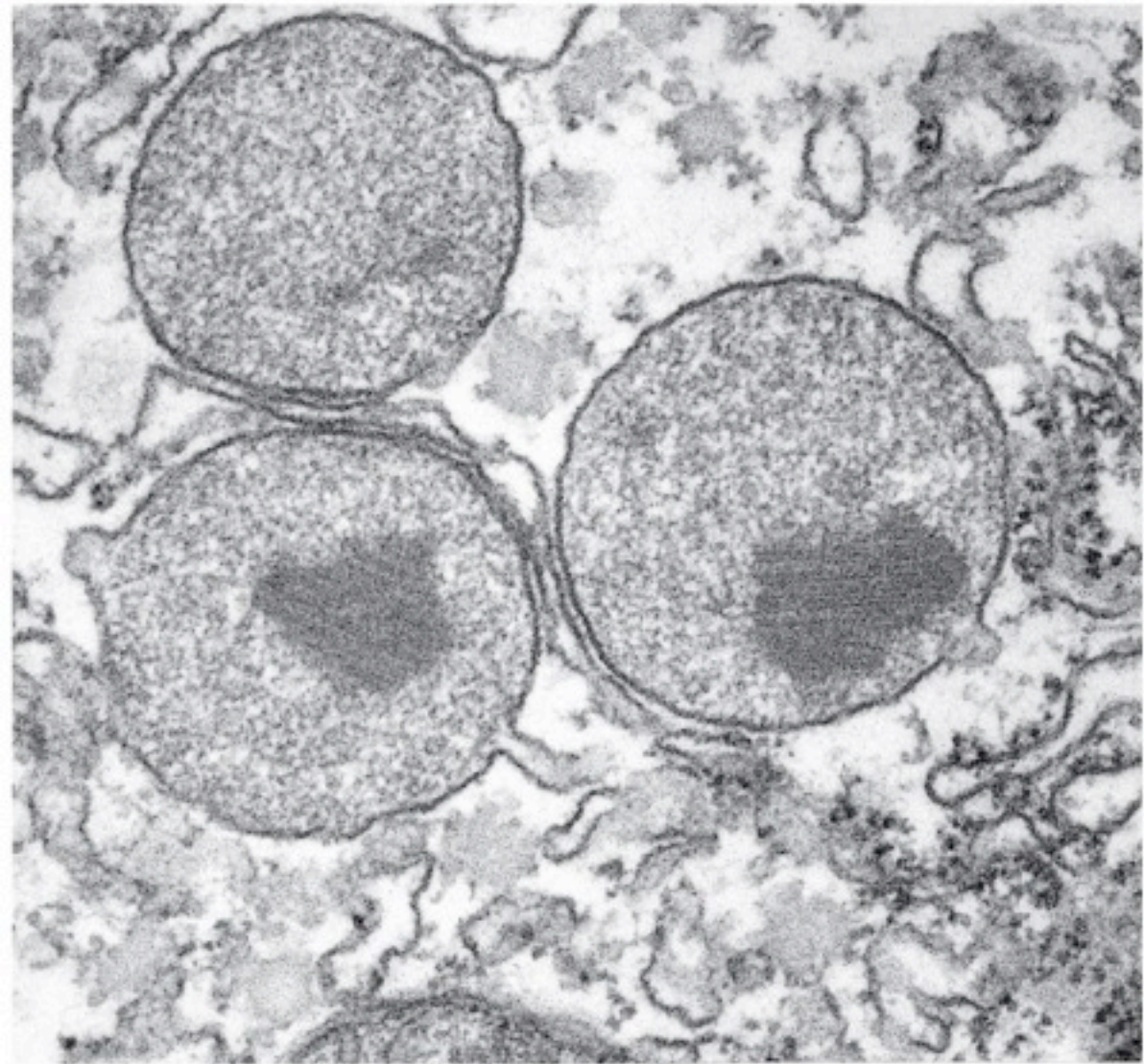


Treiedeníe proteínov do lyzozómov



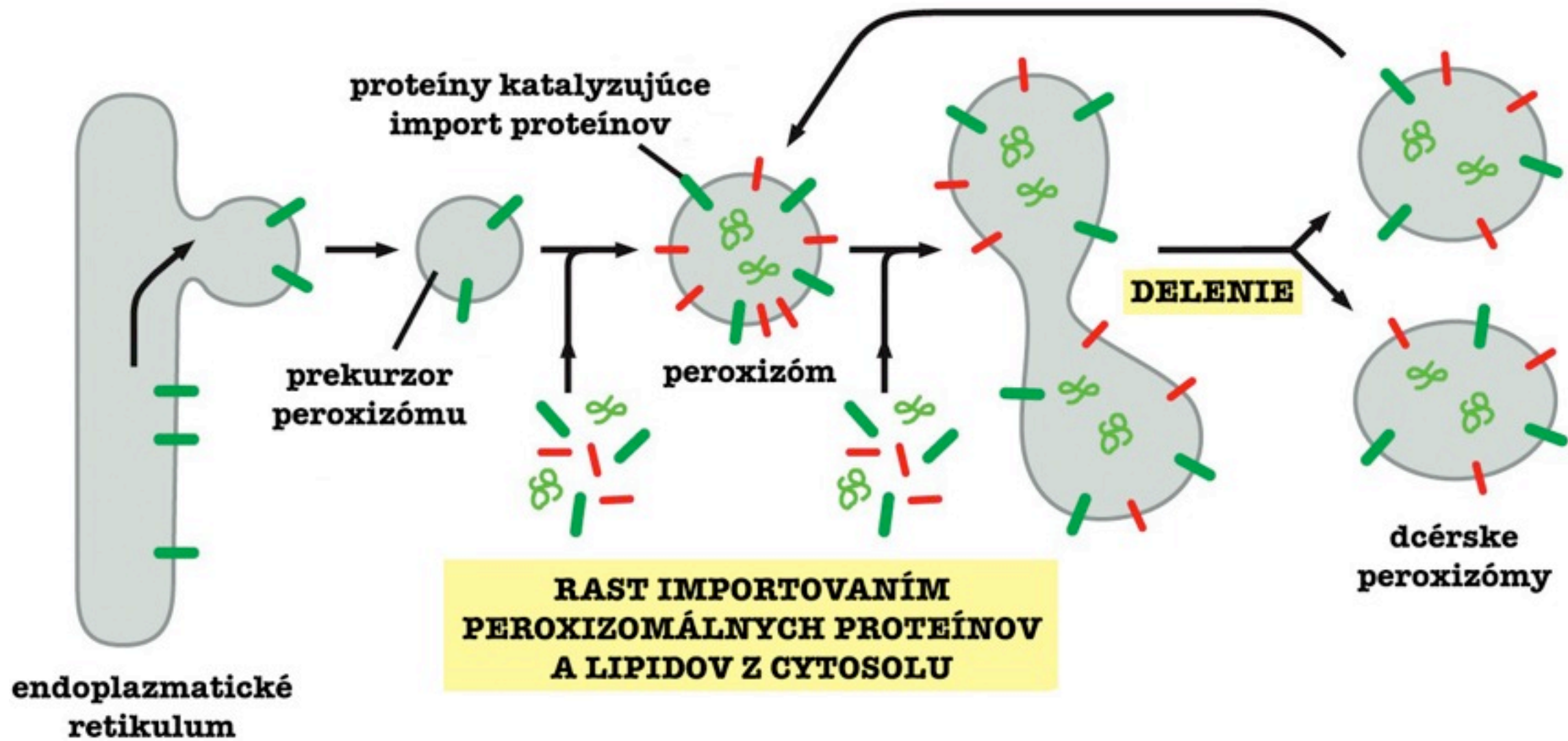
Metabolické funkcie peroxizómov

- oxidácia mastných kyselín
- biosyntéza cholesterolu
- metabolizmus žlčových kyselín
- biosyntéza mastných kyselín
- syntéza plazmalogénov
- detoxifikácia – oxidatívny stres

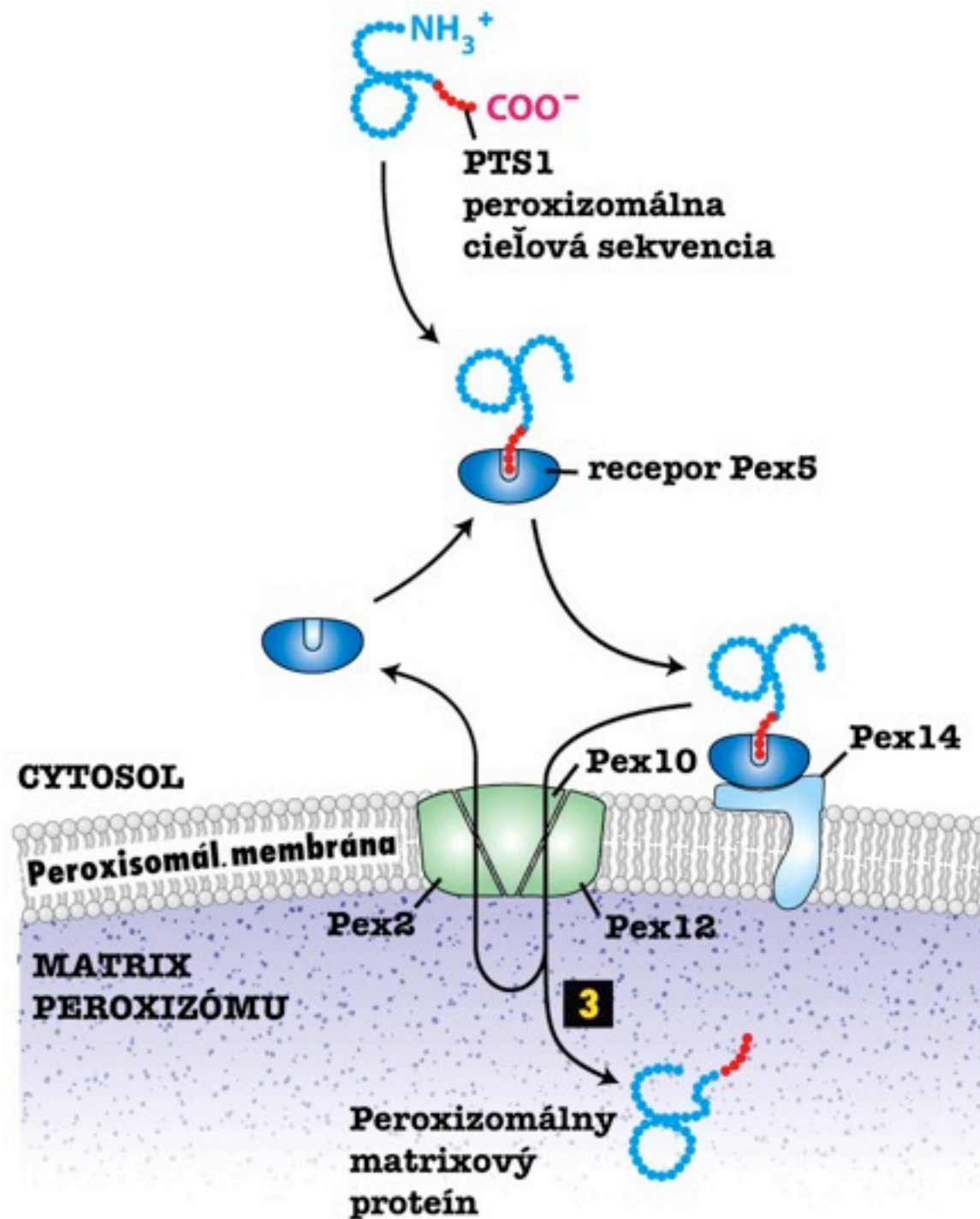


200 nm

Biogenéza peroxizómov

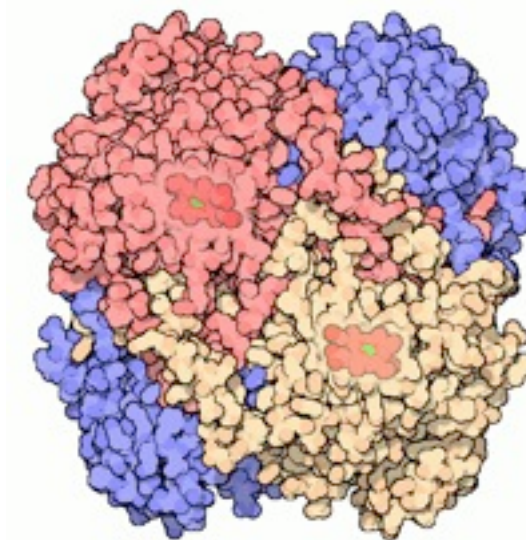


Import proteínov do peroxizómov



PTS1 - SKL (Ser-Lys-Leu)
na C-konci

PTS2 - na N-konci



Kataláza

Zellwegerov syndróm