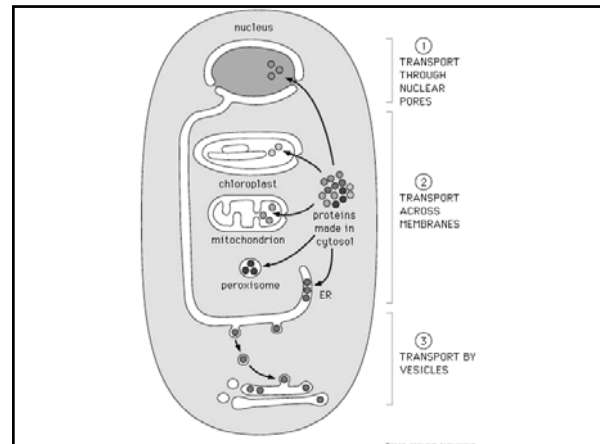
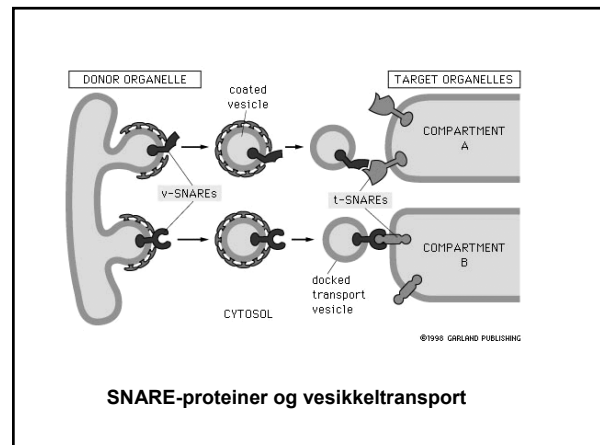
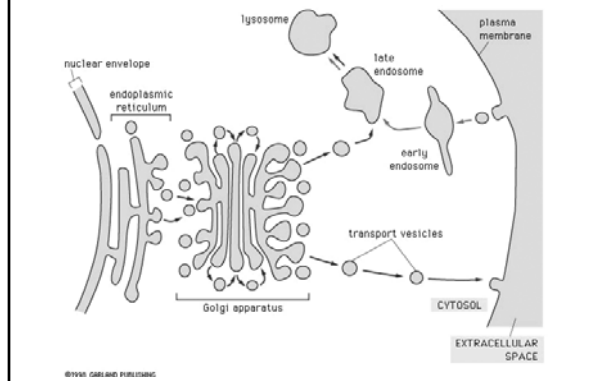


Noen viktige funksjoner av endocytose

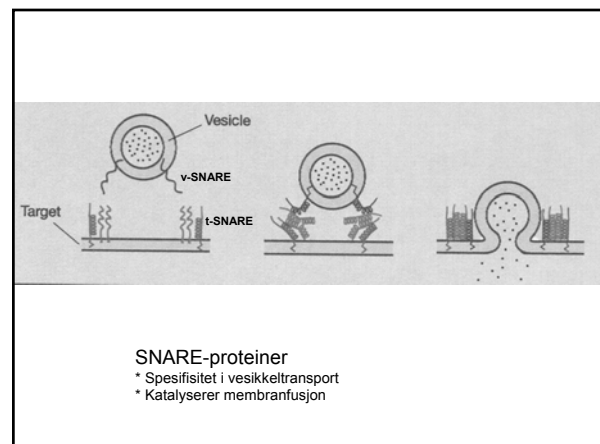
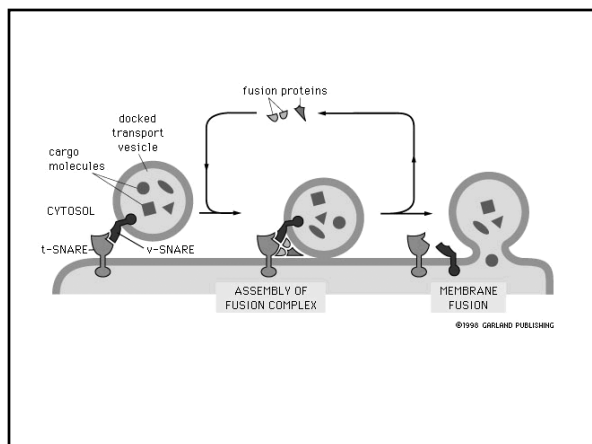
- * Opptak av lipoproteiner (eks. LDL)
- * Opptak av Fe^{3+} (bundet til transferrin)
- * Nedregulering av overflatereseptorer
- * Opptak av vitamin A og D (bundet til proteiner)
- * Opptak av vitamin B_{12} (bundet til "intrinsic factor" eller transcobalamin)
- * Gjendannelse av synaptiske vesikler
- * Opptak av proteintoksiner (eks. difteritoksin, tetanustoksin)
- * Opptak av enkelte virus (eks. influensavirus)



Vesikkeltransport



SNARE-proteiner og vesikkeltransport



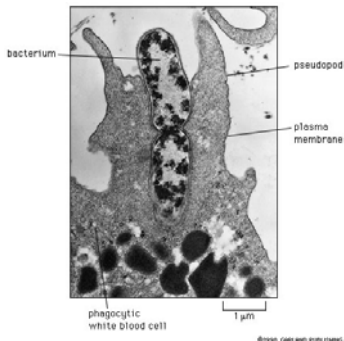
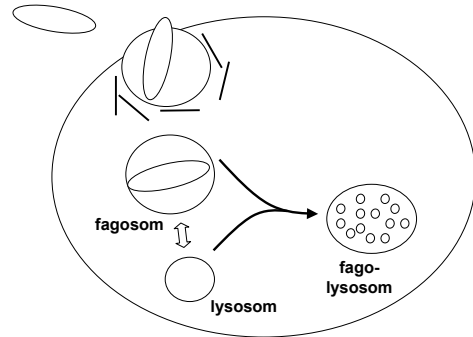
- SNARE-proteiner**
- * Spesifisitet i vesikkeltransport
 - * Katalyserer membranfusjon

Fagocytose

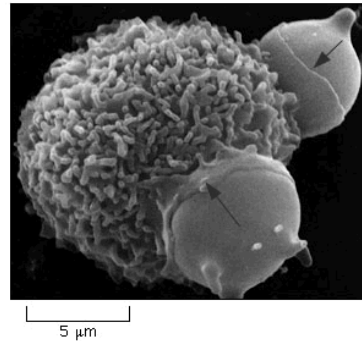
*Opptak av store partikler (0.3 - 5 μm)
(f.eks. bakterier, døde celler)

* Aktin-avhengig

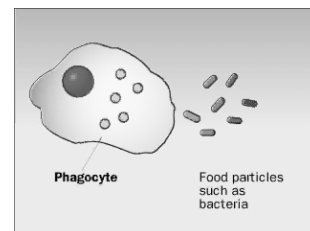
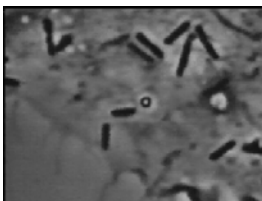
Fagocytose



Fagocytose



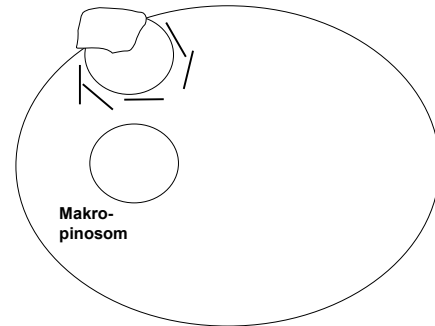
Fagocytose av Listeria



Makropinocytose:

- * Aktin-avhengig avsnøring av store deler av plasmamembranen
- * Induseres av visse vekstfaktorer og bakterier

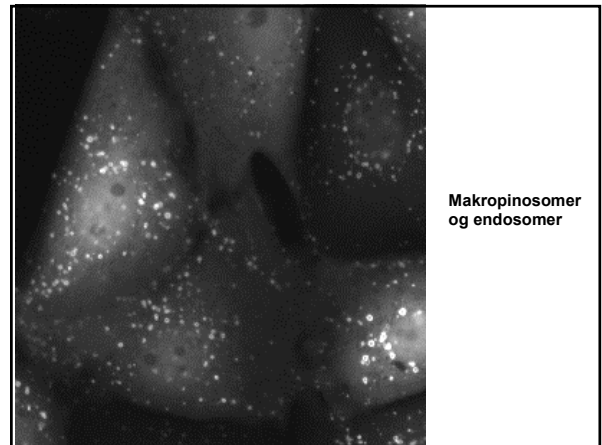
Makropinocytose



Makropinocytose



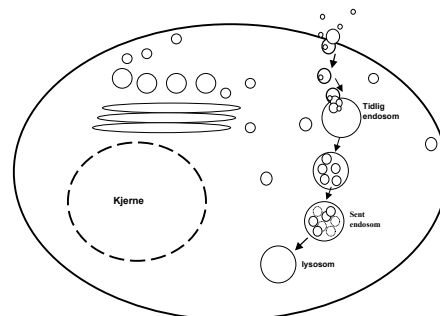
Makropinosomer og endosomer

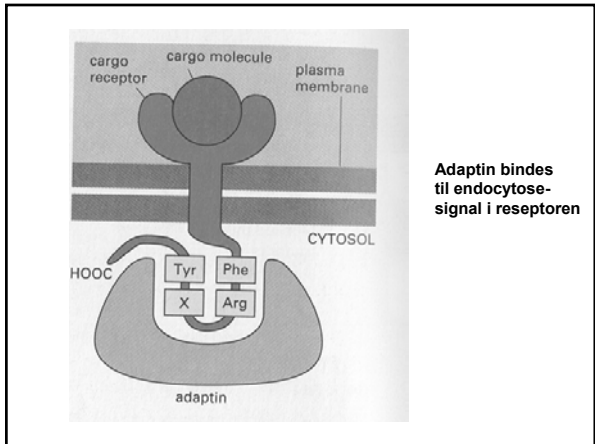
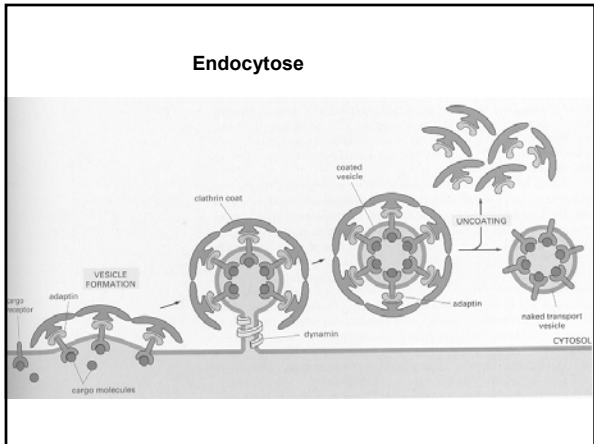
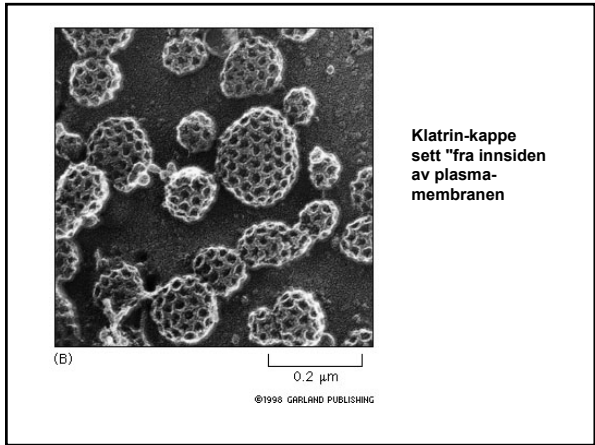
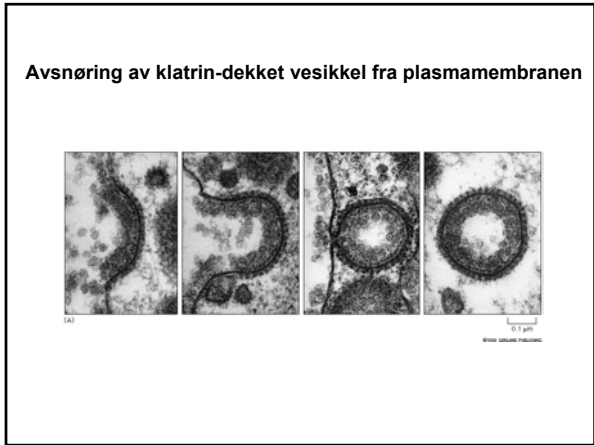
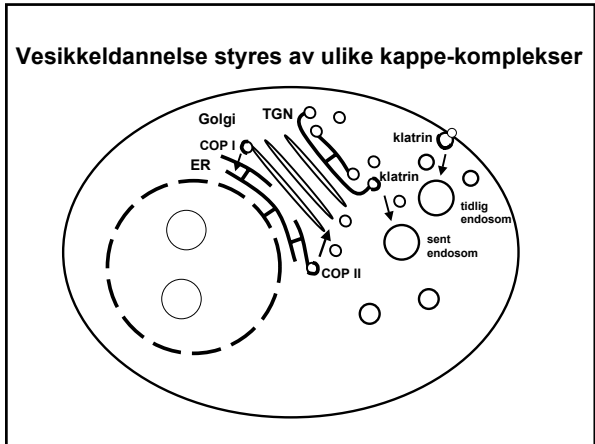
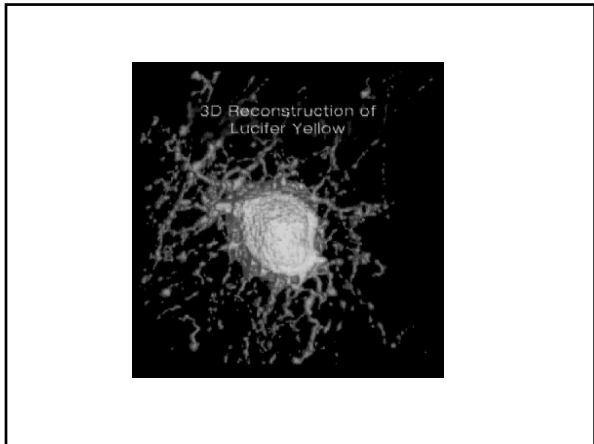


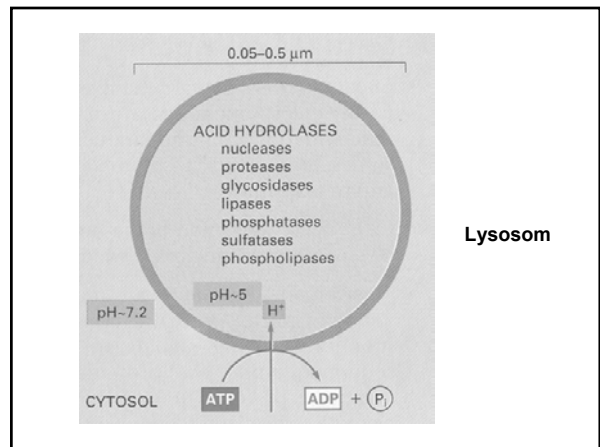
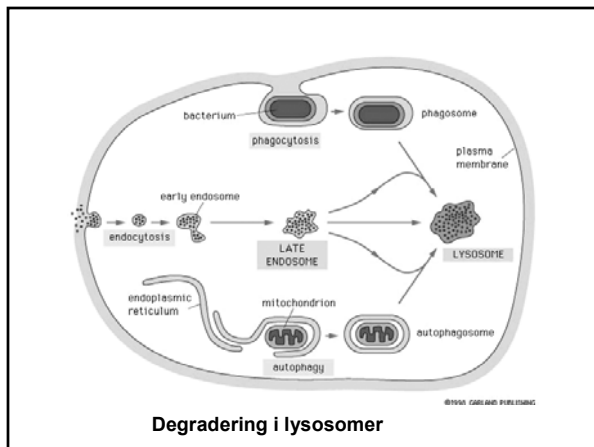
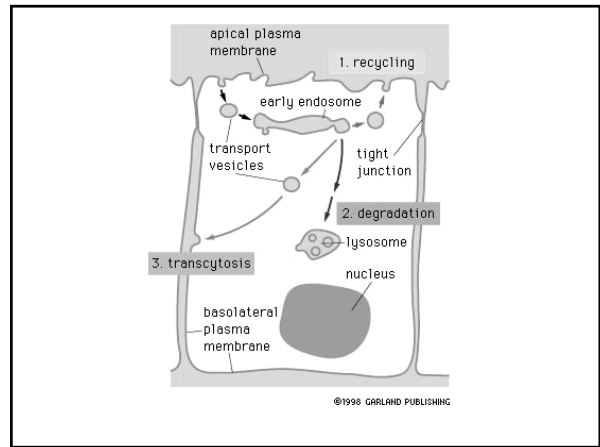
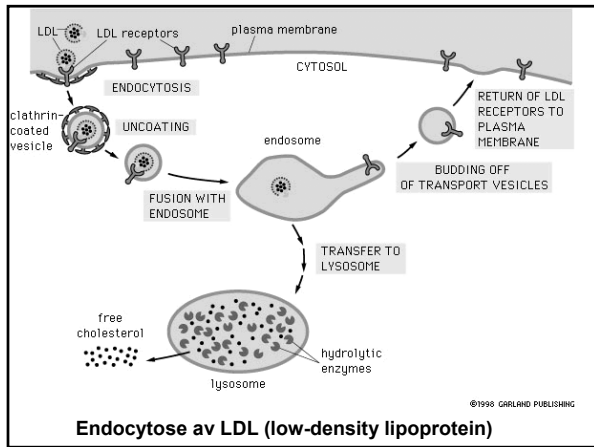
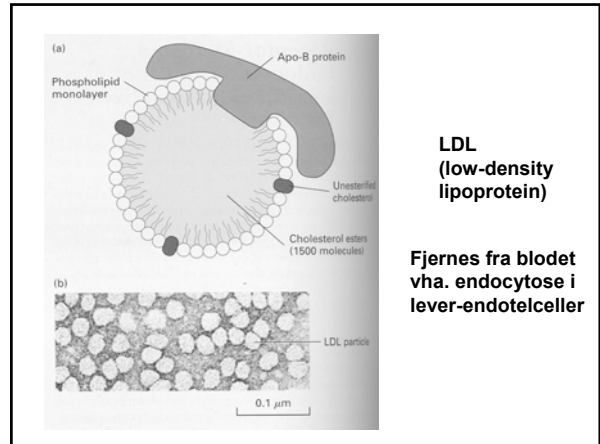
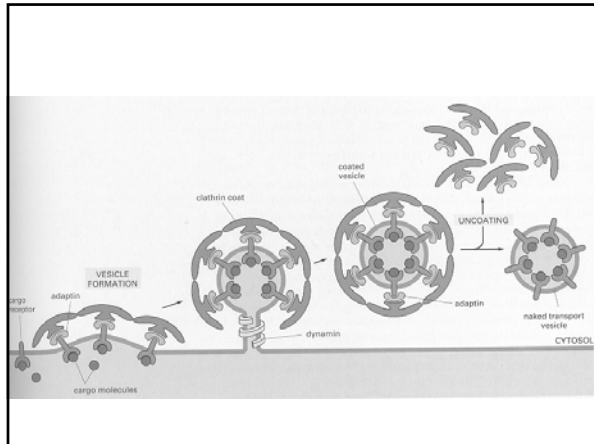
Endocytose

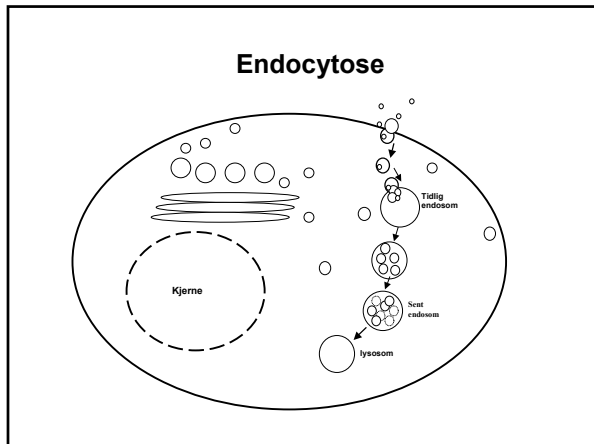
- * Opptak av makromolekyler fra ekstracellulærvæsken (pinocytose)
- * Opptak av reseptor-bundne ligander (reseptor-mediert endocytose)
- * Vanligvis klatrin-avhengig
- * Endocytiske vesikler har en diameter på ca 100 nm

Endocytose



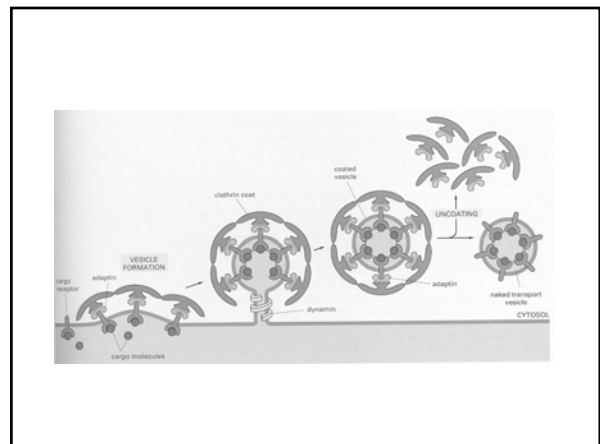
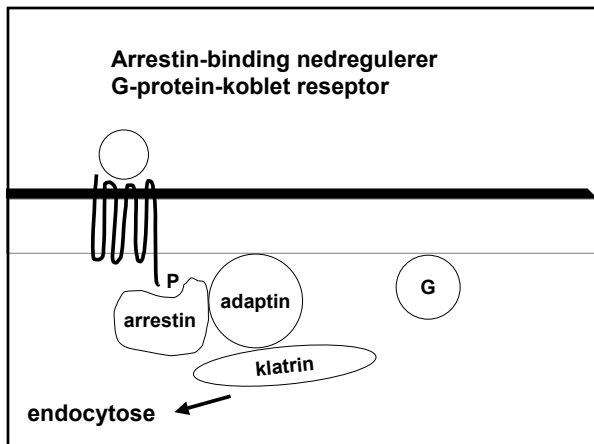
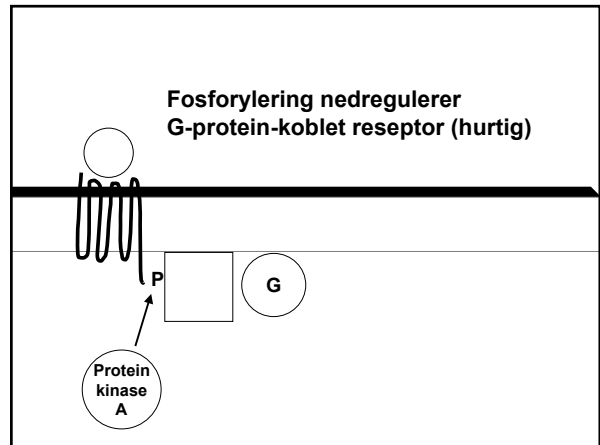
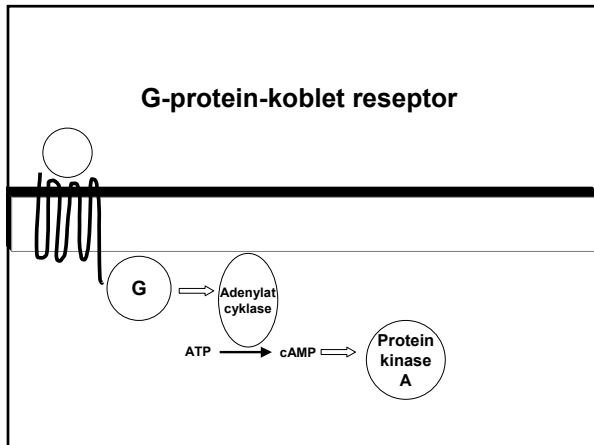


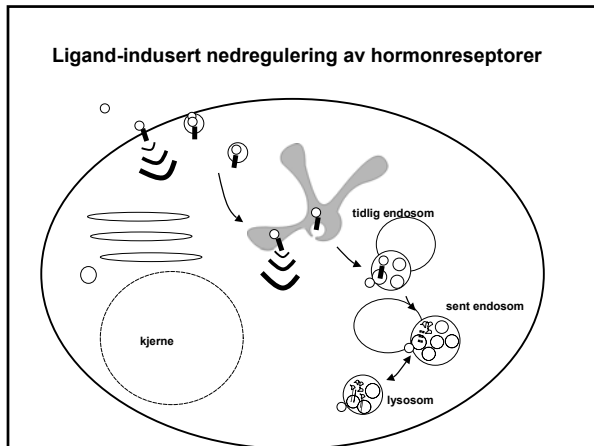




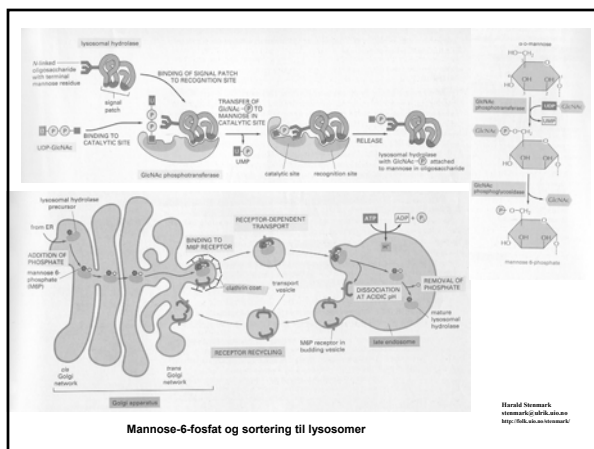
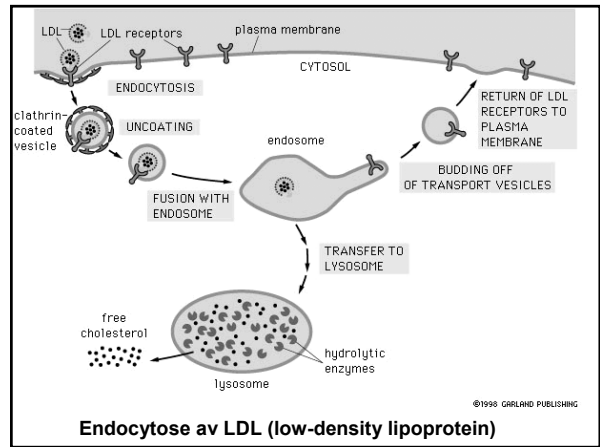
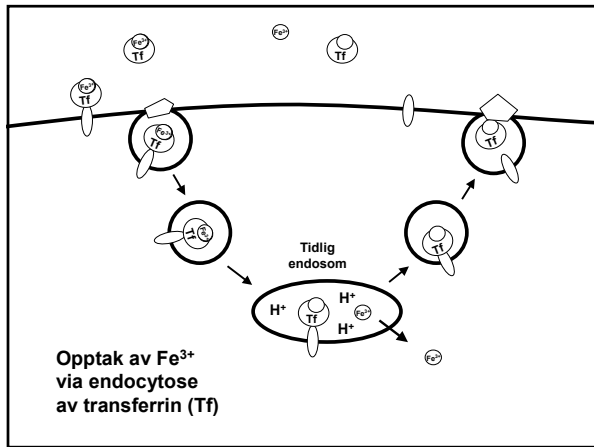
Ligand-indusert nedregulering av reseptorer

1. Hurtig (minutter) fosforylering
2. Middels (timer) endocytose/degradering
3. Langsom (dager og måneder) regulering av ekspresjon





pH og intracellulær transport



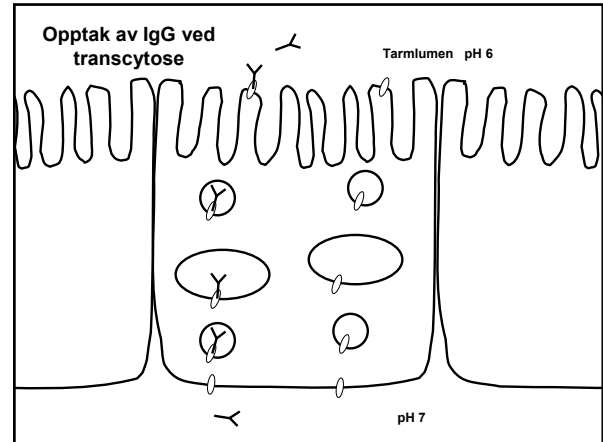
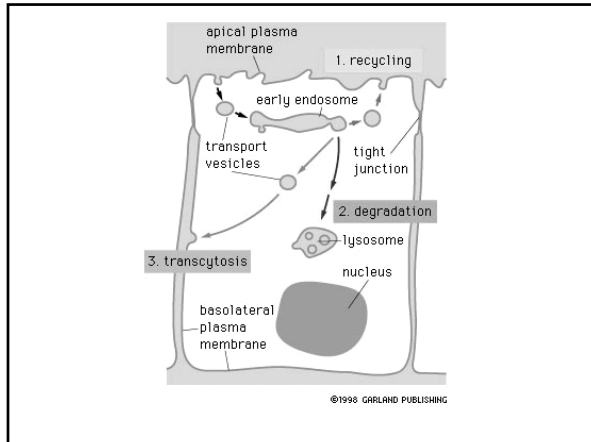
pH

Ekstracellulærvæsken: pH 7.4

Tidlige endosomer: pH 6.0

Sene endosomer: pH 5.0-5.5

Lysosomer: pH 4.0-5.0



Oppsummering

- * Intracellulær transport skjer stort sett via vesikler. SNARE-proteiner er viktige for fusjon av vesikler med korrekt målmembran
- * Fagocytose er aktin-avhengig opptak av store partikler
- * Endocytose er klatrin-avhengig opptak av reseptorer eller væskefase i 100-nm vesikler
- * Lysosomale enzymer har mannose-6-fosfat som "merkelapp"
- * Degradering av fagocyttert/endocyttert materiale skjer i lysosomer

Oppsummering

- * Vesikkeldannelse og reseptor-sortering reguleres av ulike kappe-komplekser (klatrin, COP I, COP II)
- * Makropinocytose innebærer opptak av væskefase i store vesikler
- * Endocytose er viktig for ligand-indusert nedregulering av mange hormonreseptorer
- * Lav pH i endosomer fører til dissosiasjon av mange ligander (mannose 6-P, Fe^{3+} , LDL)
- * Transcytose innebærer transport mellom den apikale og den basolaterale membranen i polariserte epitelceller