



Proteinfaltung Protein-Targeting



Proteinfaltung

Faltung
Chapreone
Proteasom
Fehlfaltung



Proteinfaltung

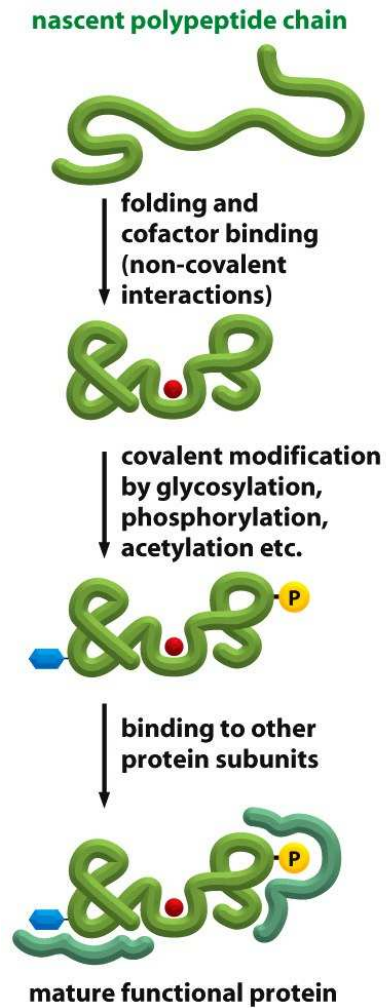
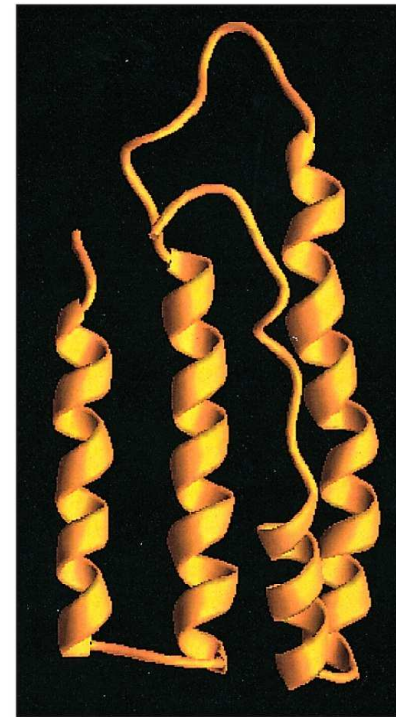


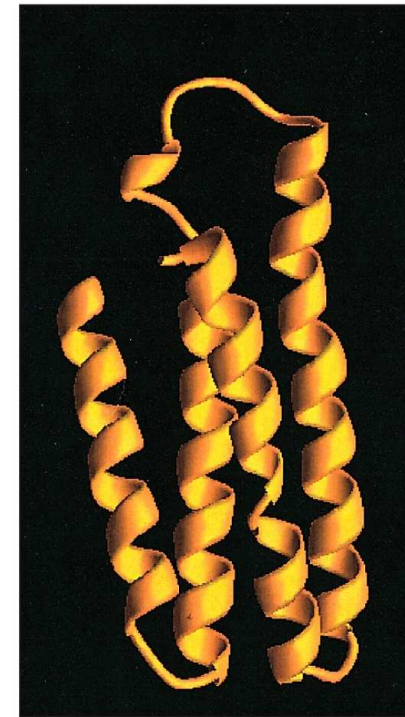
Figure 6-82 Molecular Biology of the Cell 5/e (© Garland Science 2008)



(A)

Figure 6-83 Molecular Biology of the Cell 5/e (© Garland Science 2008)

Cytochrom b_{562}
„molten globule“



(B)

natives Protein



Cotranslationale Proteinfaltung

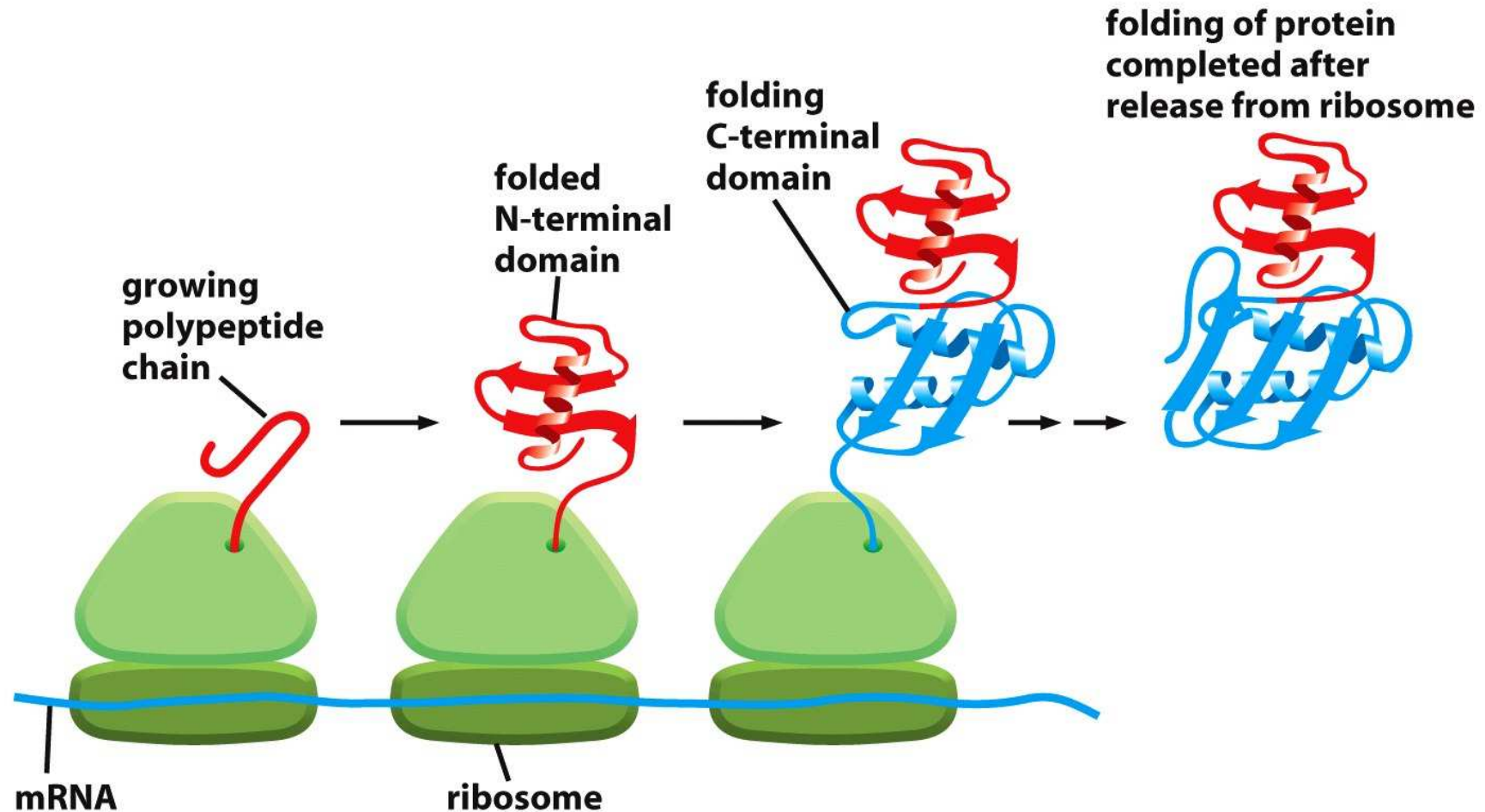
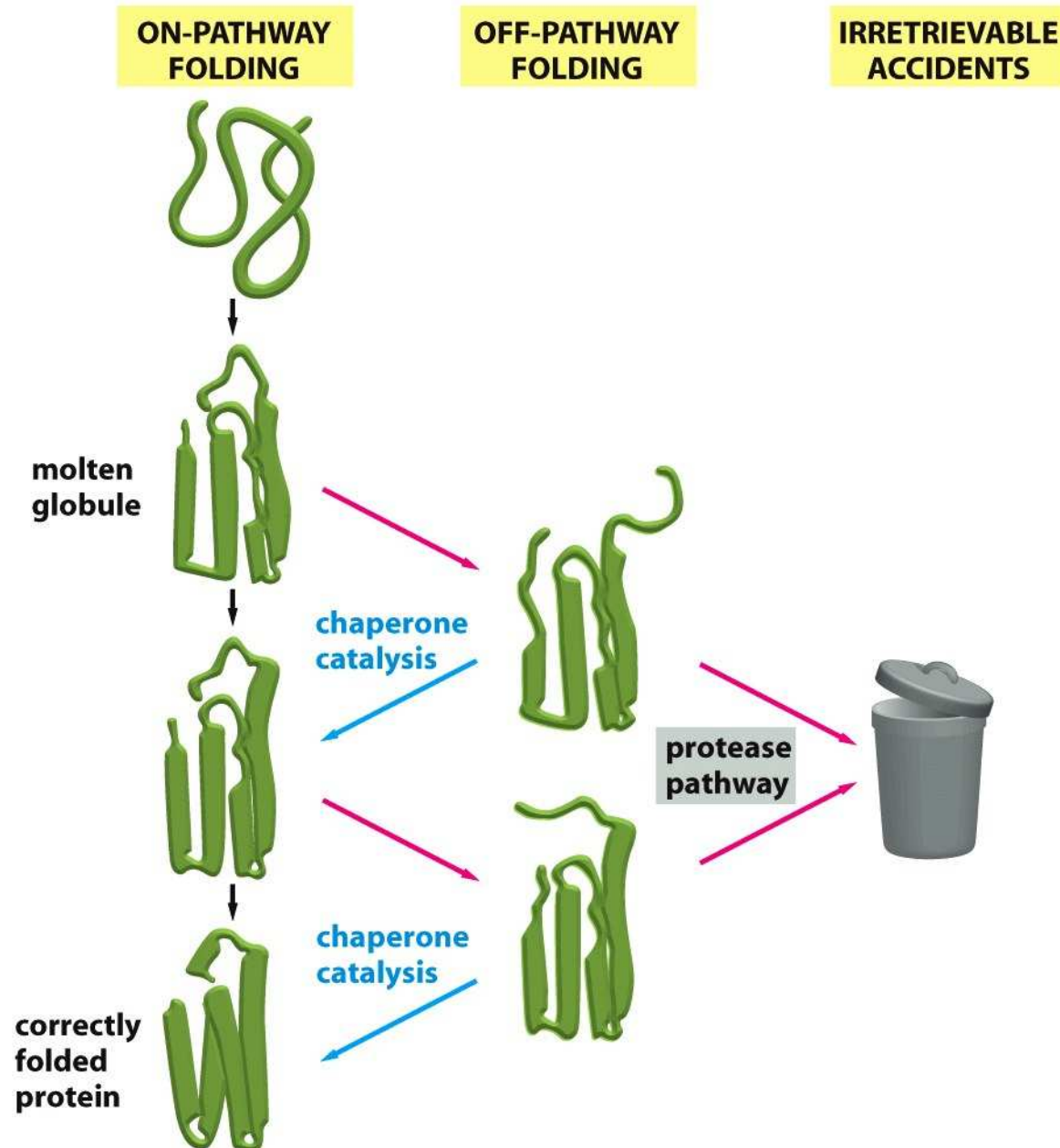


Figure 6-84 Molecular Biology of the Cell 5/e (© Garland Science 2008)



Proteinfaltung: Fehlerkorrektur





Hsp70-Chaperone

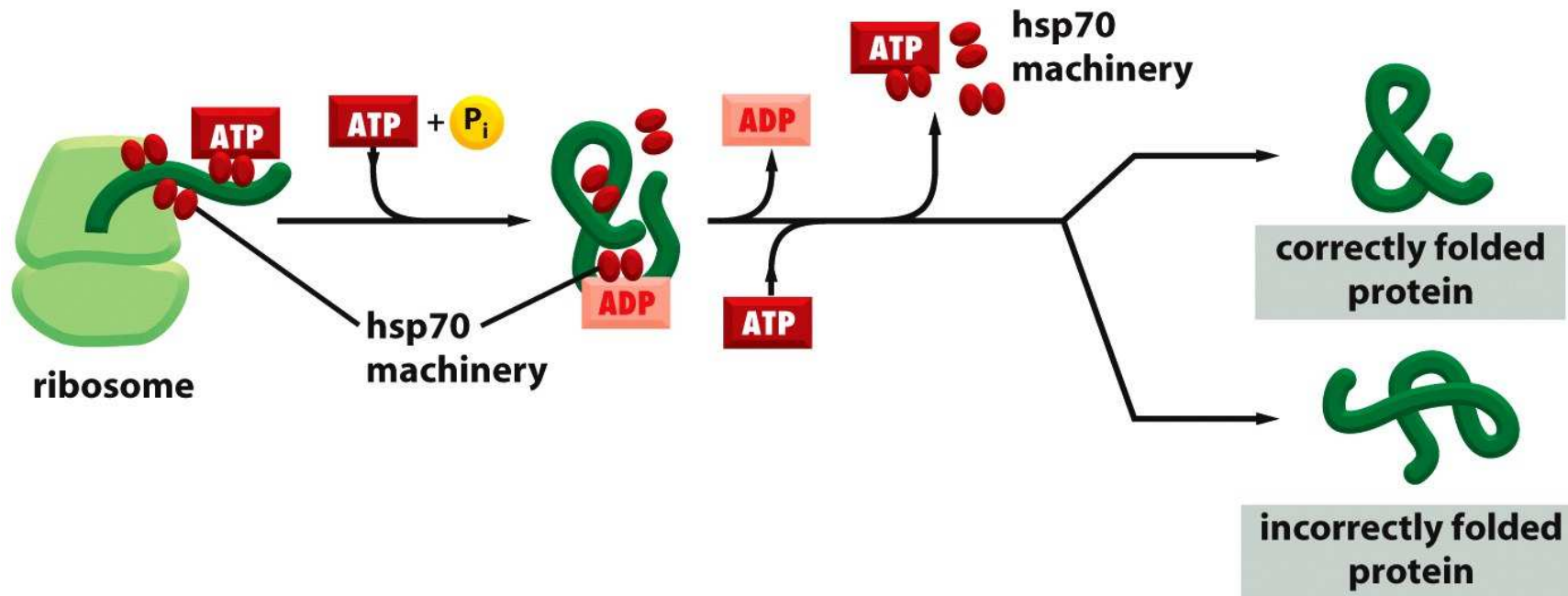


Figure 6-86 Molecular Biology of the Cell 5/e (© Garland Science 2008)



Hsp60-Chaperone: GroES/GroEL

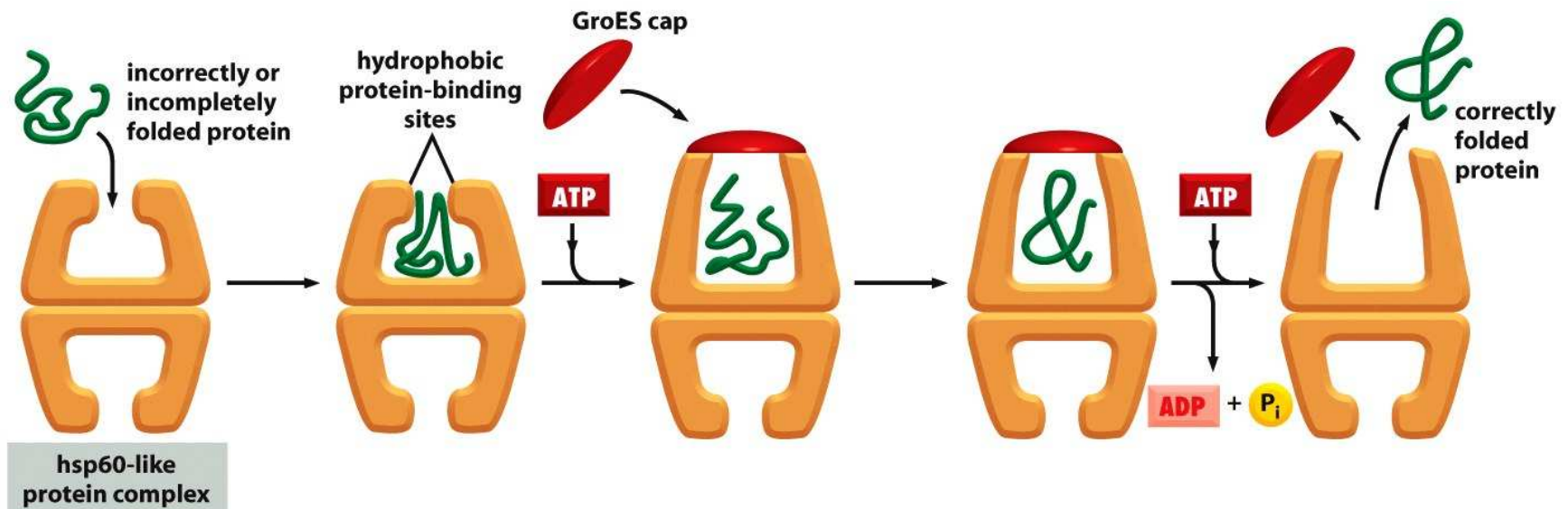


Figure 6-87a Molecular Biology of the Cell 5/e (© Garland Science 2008)



Qualitätskontrolle der Proteinsynthese

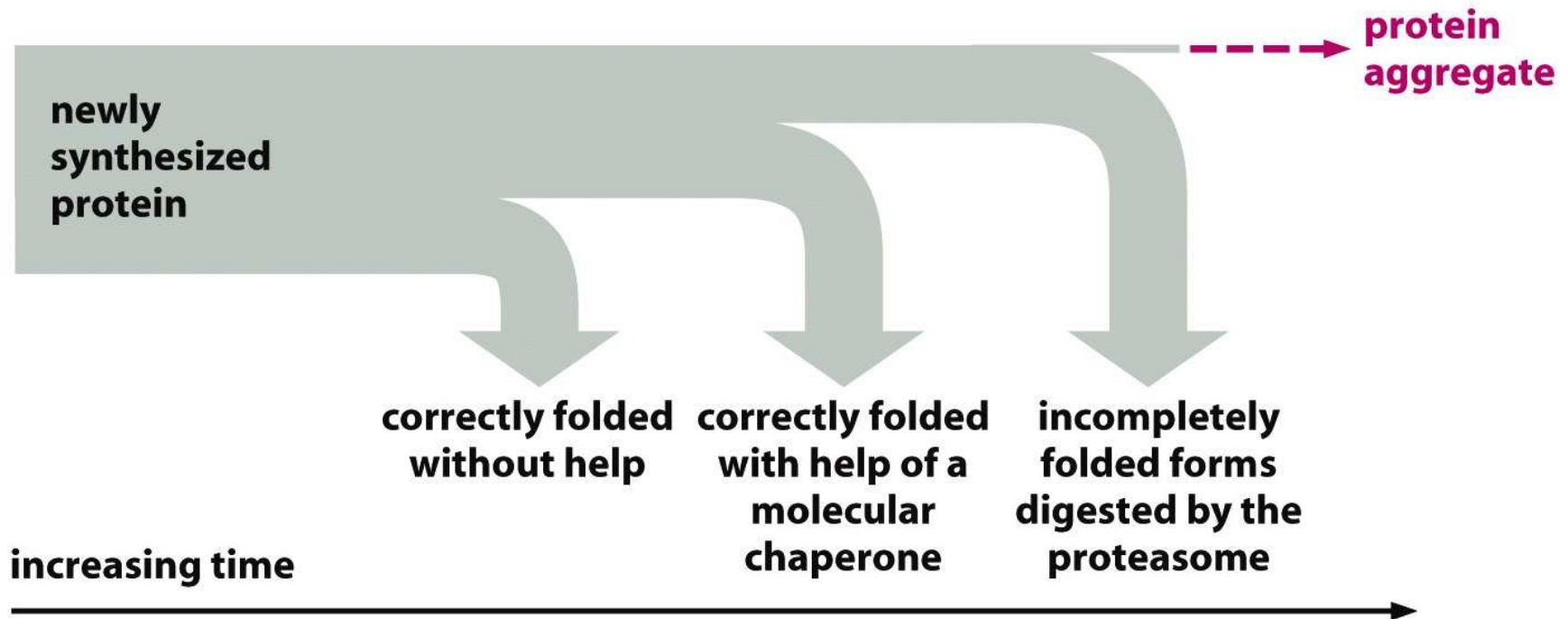


Figure 6-88 Molecular Biology of the Cell 5/e (© Garland Science 2008)



Proteasom

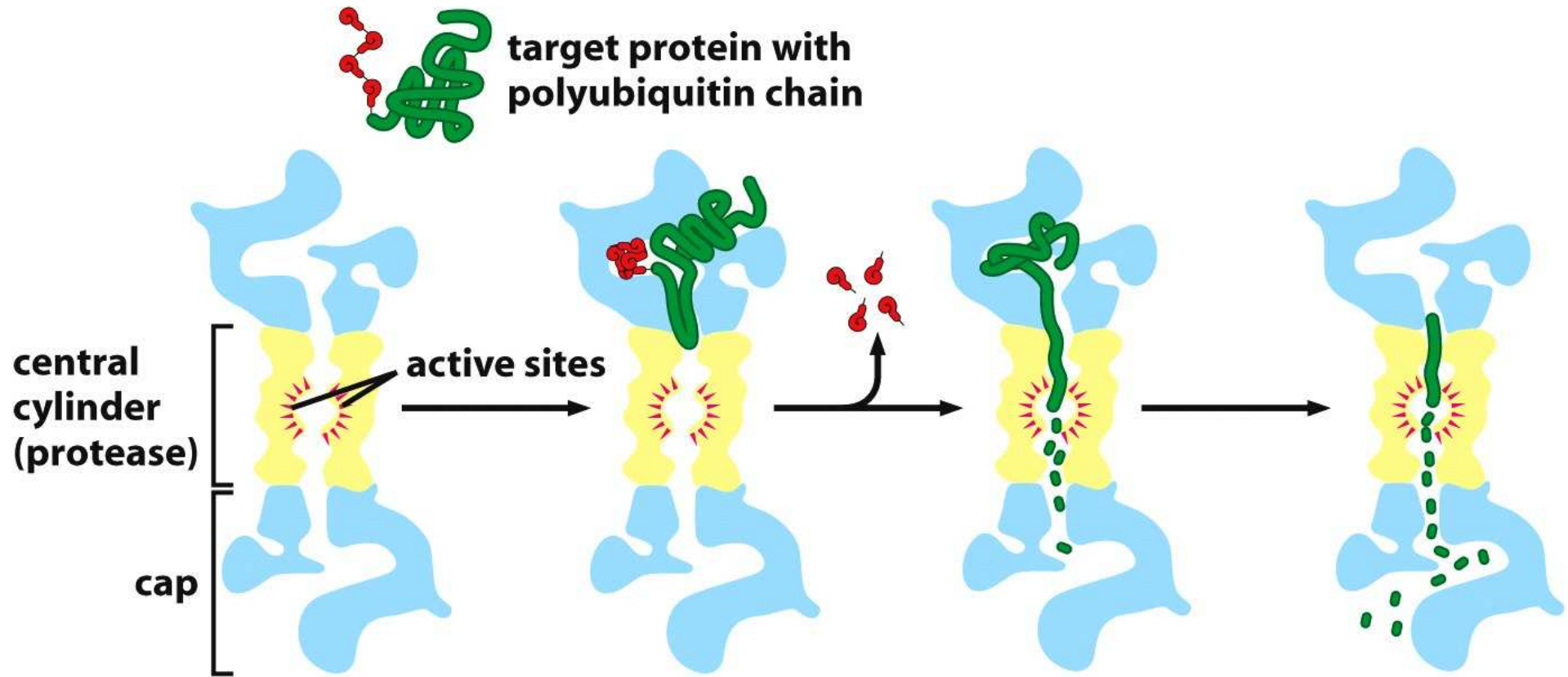


Figure 6-90 Molecular Biology of the Cell 5/e (© Garland Science 2008)



Ubiquitin

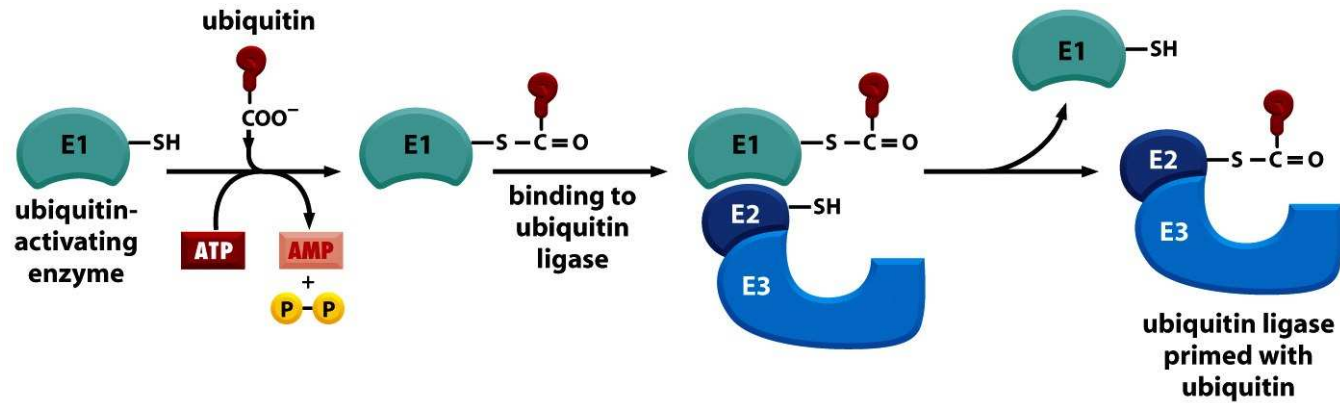


Figure 6-92b Molecular Biology of the Cell 5/e (© Garland Science 2008)

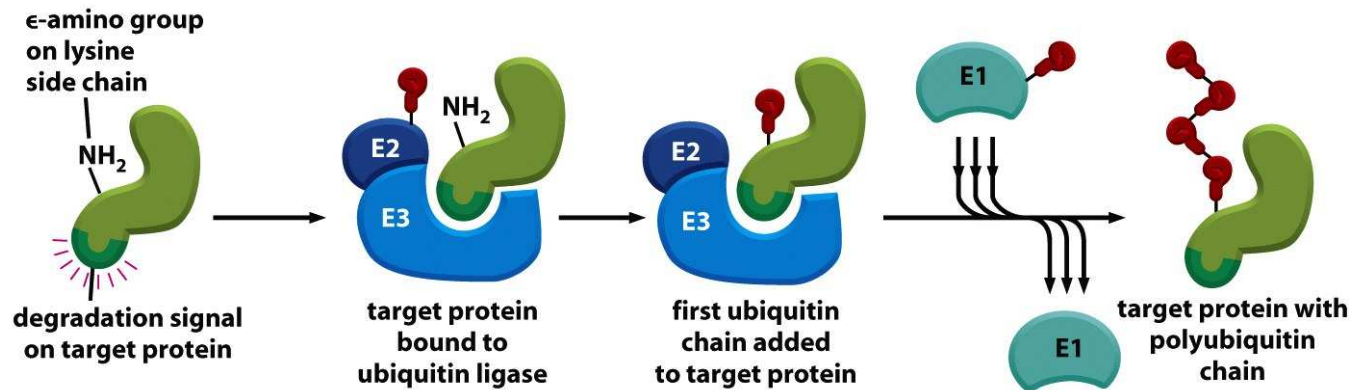


Figure 6-92c Molecular Biology of the Cell 5/e (© Garland Science 2008)

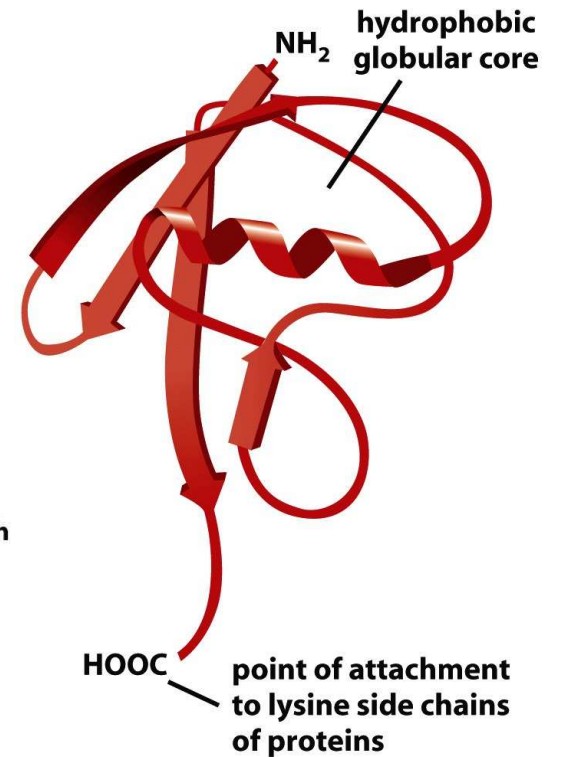
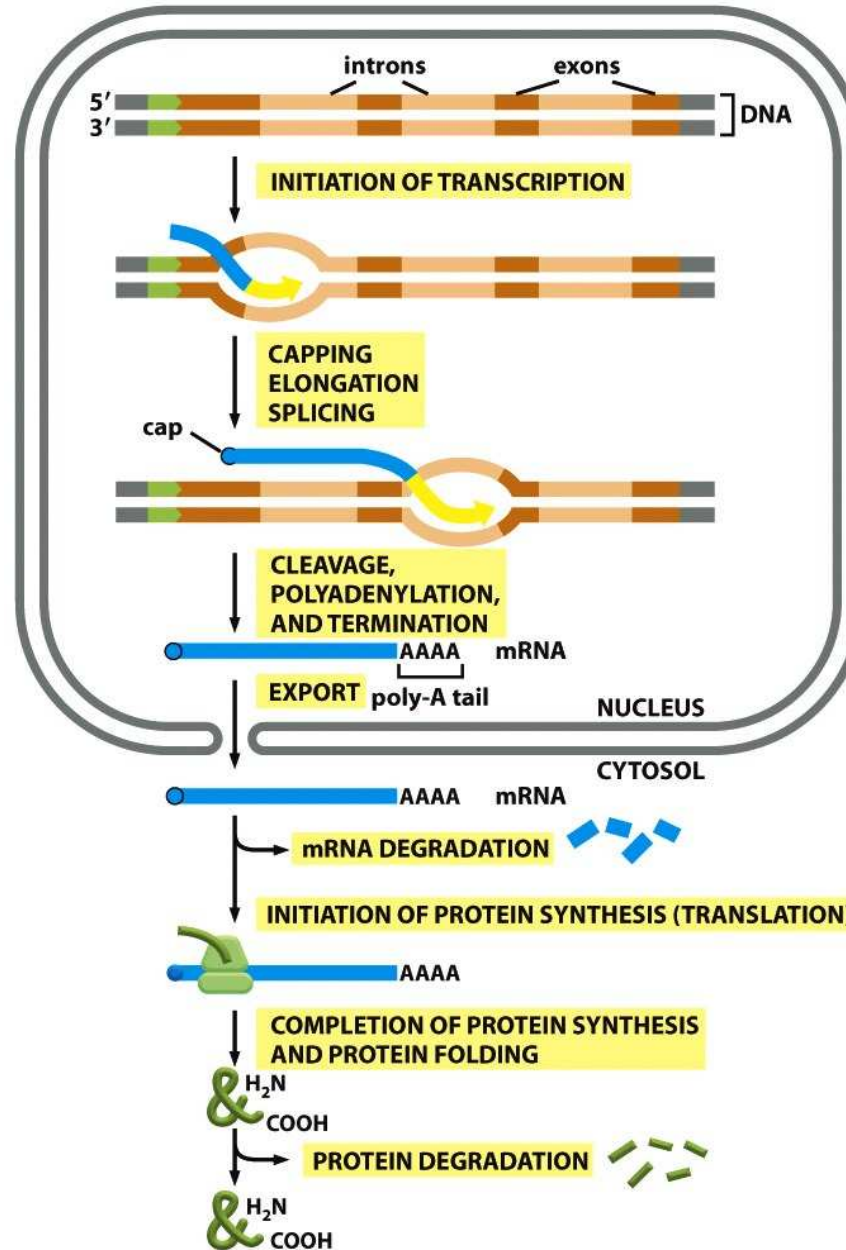


Figure 6-92a Molecular Biology of the Cell 5/e (© Garland Science 2008)



Reglung der Proteinmenge: Möglichkeiten





Fehlfaltungen von Proteinen

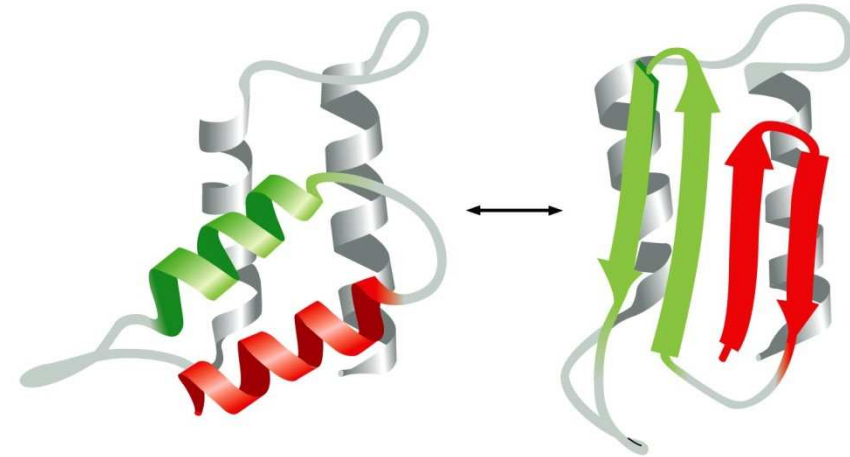


Figure 6-95d Molecular Biology of the Cell 5/e (© Garland Science 2008)



(B) **infectious seeding of amyloid fiber formation**

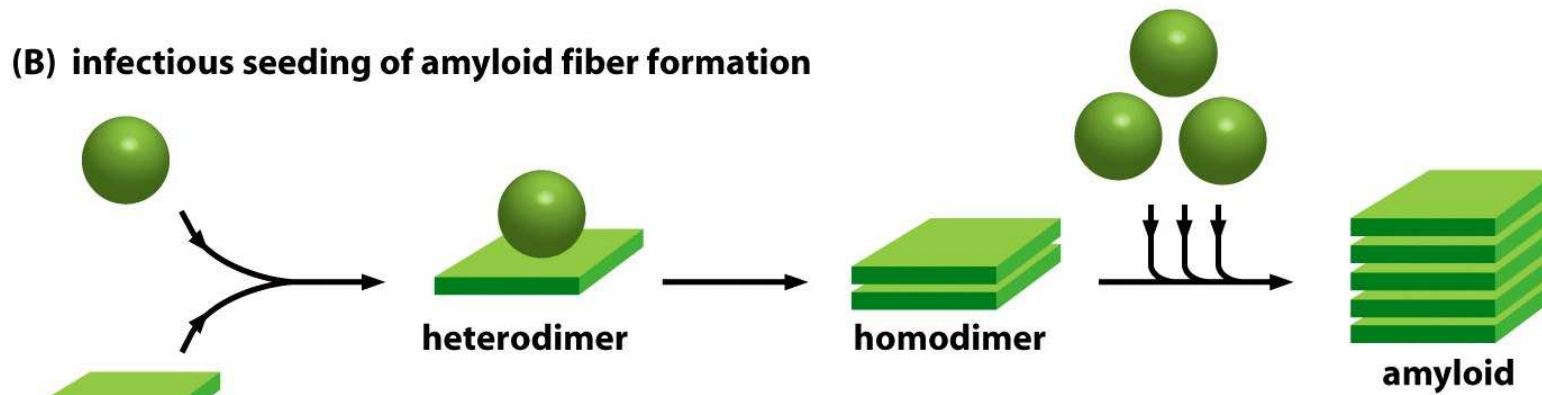


Figure 6-95ab Molecular Biology of the Cell 5/e (© Garland Science 2008)

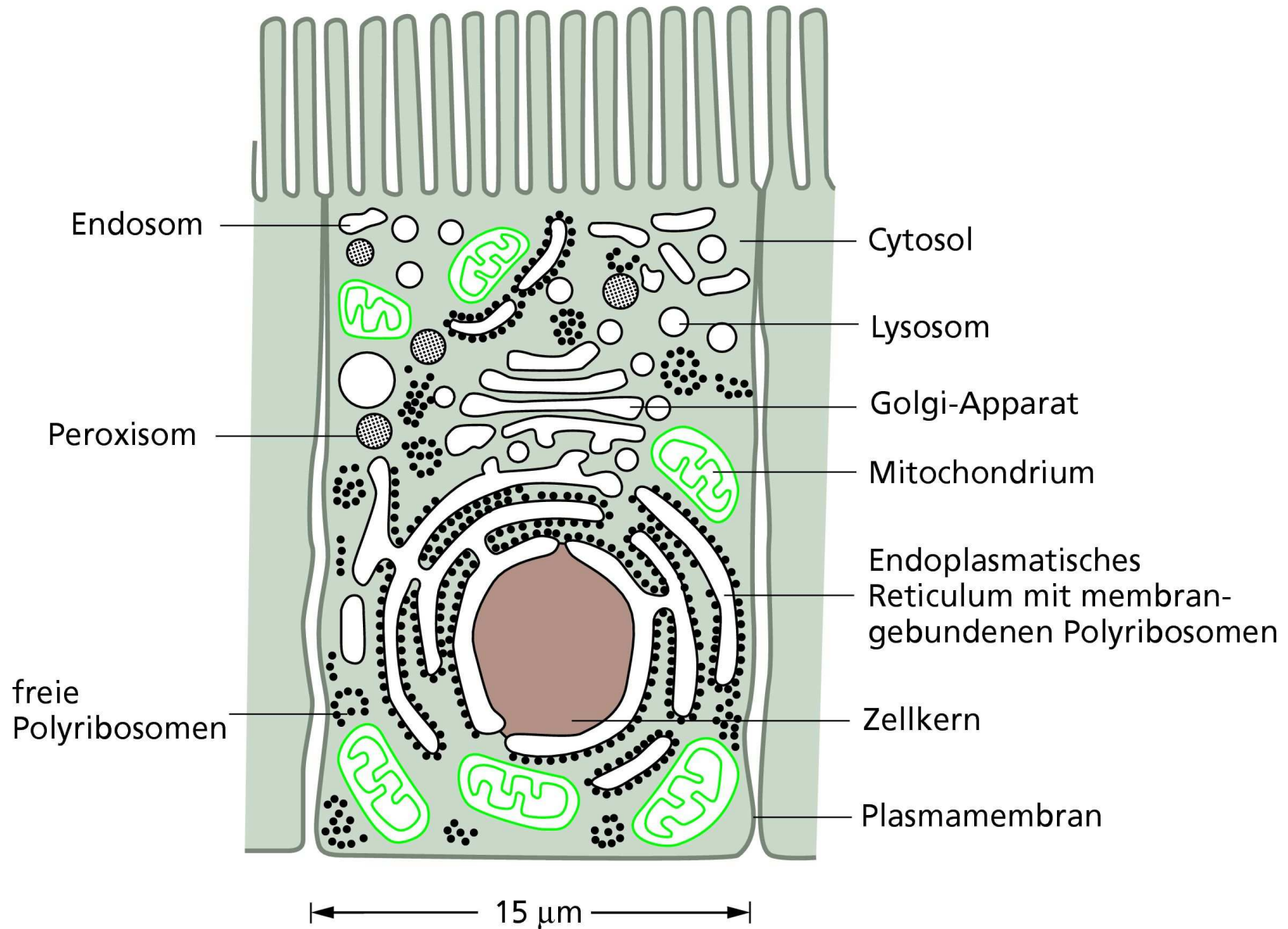


Protein-Targeting

Zellkompartimentierung
Transport ins ER
Transport ins Mitochondrium
Kerntransport

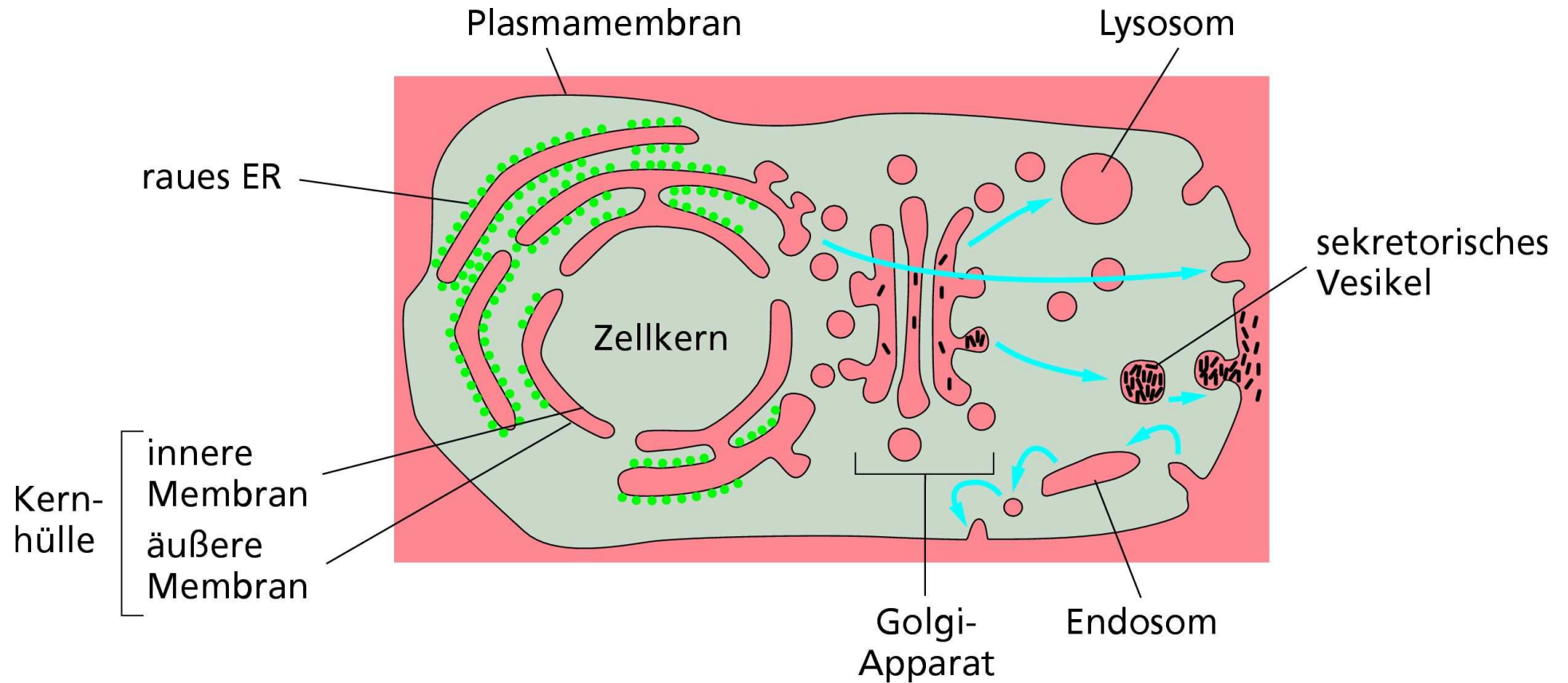


Kompartimente tierischer Zellen

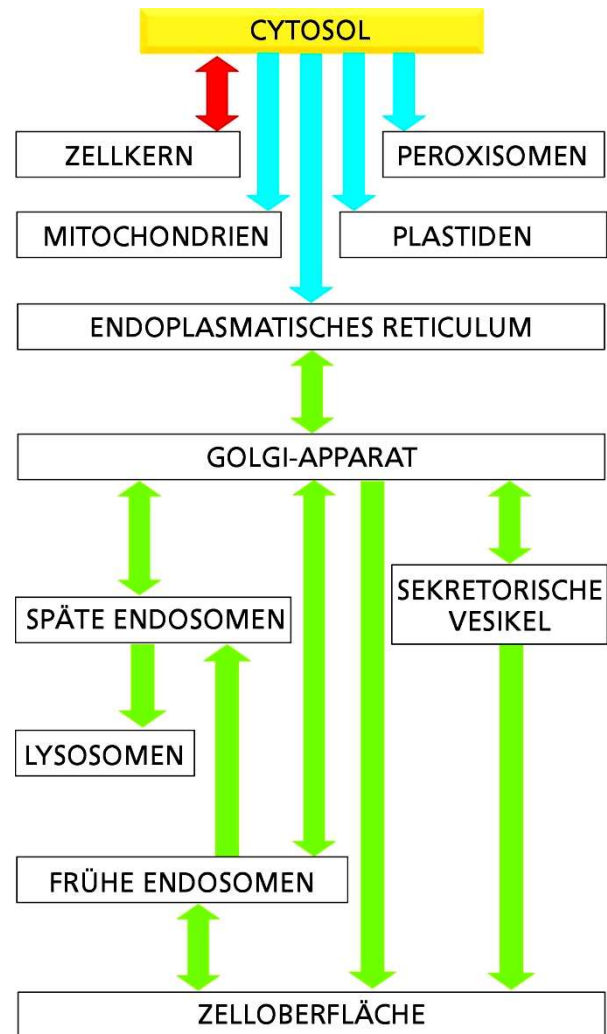




Topologie der Kompartimente



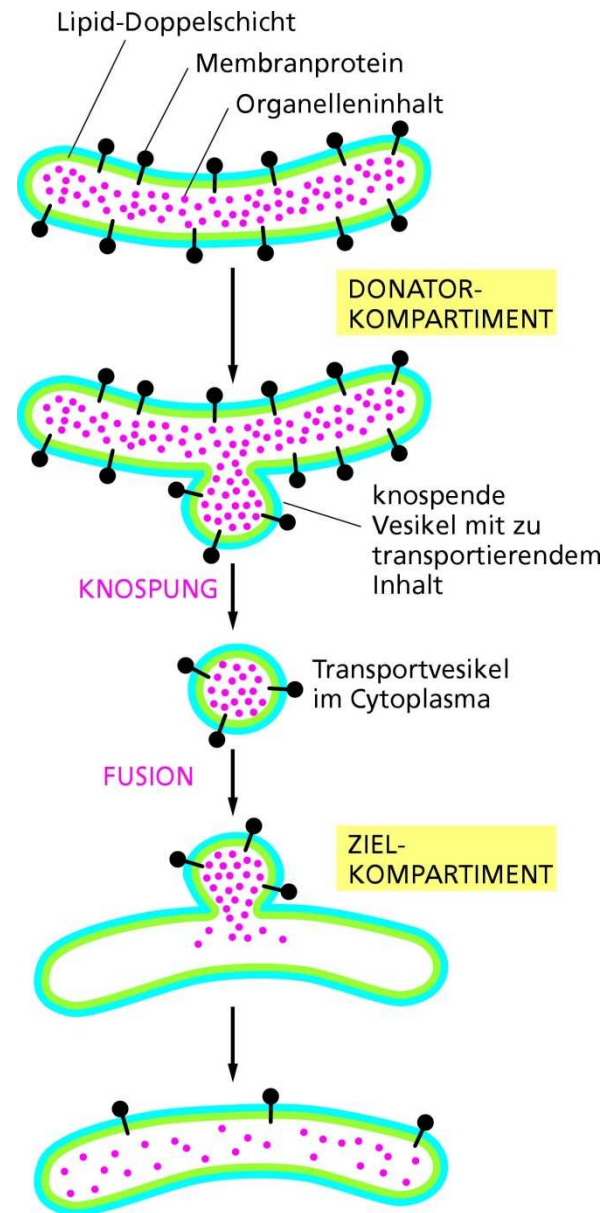
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LEGENDE:  = gerichteter Transport
 = Transmembrantransport
 = vesikulärer Transport



Vesikulärer Transport





Signalsequenzen

Table 12–3 Some Typical Signal Sequences

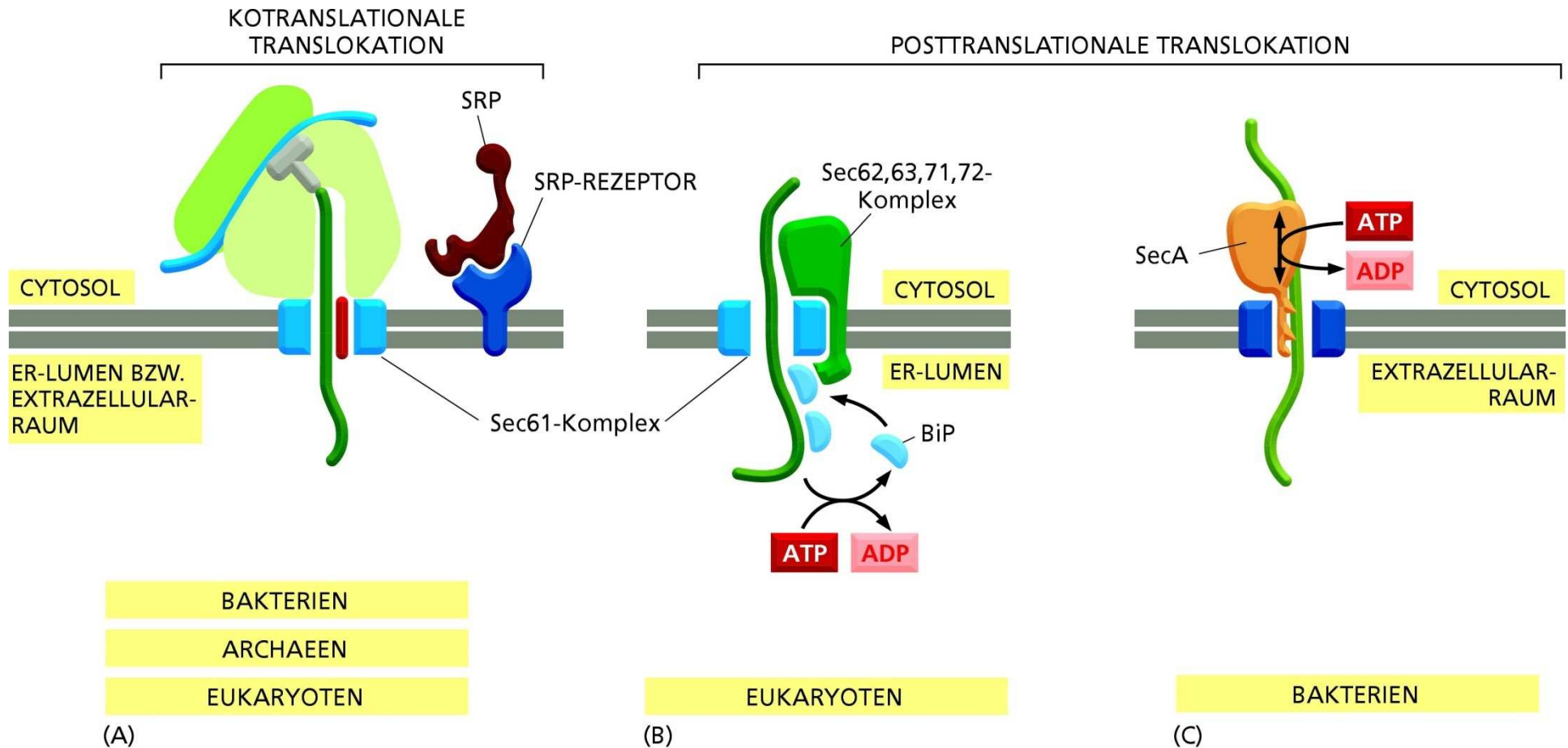
FUNCTION OF SIGNAL SEQUENCE	EXAMPLE OF SIGNAL SEQUENCE
Import into nucleus	-Pro-Pro- Lys-Lys-Lys-Arg-Lys -Val-
Export from nucleus	-Leu-Ala-Leu-Lys-Leu-Ala-Gly-Leu-Asp-Ile-
Import into mitochondria	+H ₃ N-Met-Leu-Ser-Leu- Arg -Gln-Ser-Ile- Arg -Phe-Phe- Lys -Pro-Ala-Thr- Arg -Thr-Leu-Cys-Ser-Ser- Arg -Tyr-Leu-Leu-
Import into plastid	+H ₃ N-Met-Val-Ala-Met-Ala-Met-Ala- Ser -Leu-Gln- Ser-Ser -Met- Ser-Ser -Leu- Ser-Leu-Ser-Ser -Asn- Ser -Phe-Leu-Gly-Gln-Pro-Leu- Ser -Pro-Ile- Thr -Leu- Ser -Pro-Phe-Leu-Gln-Gly-
Import into peroxisomes	- Ser-Lys -Leu-COO ⁻
Import into ER	+H ₃ N-Met-Met-Ser-Phe-Val-Ser-Leu-Leu-Leu-Val-Gly-Ile-Leu-Phe-Trp-Ala-Thr- Glu-Ala-Glu -Gln-Leu-Thr- Lys -Cys- Glu -Val-Phe-Gln-
Return to ER	- Lys-Asp-Glu -Leu-COO ⁻

Some characteristic features of the different classes of signal sequences are highlighted in color. Where they are known to be important for the function of the signal sequence, positively charged amino acids are shown in *red* and negatively charged amino acids are shown in *green*. Similarly, important hydrophobic amino acids are shown in *white* and hydroxylated amino acids are shown in *blue*. +H₃N indicates the N-terminus of a protein; COO⁻ indicates the C-terminus.

Table 12-3 Molecular Biology of the Cell 5/e (© Garland Science 2008)

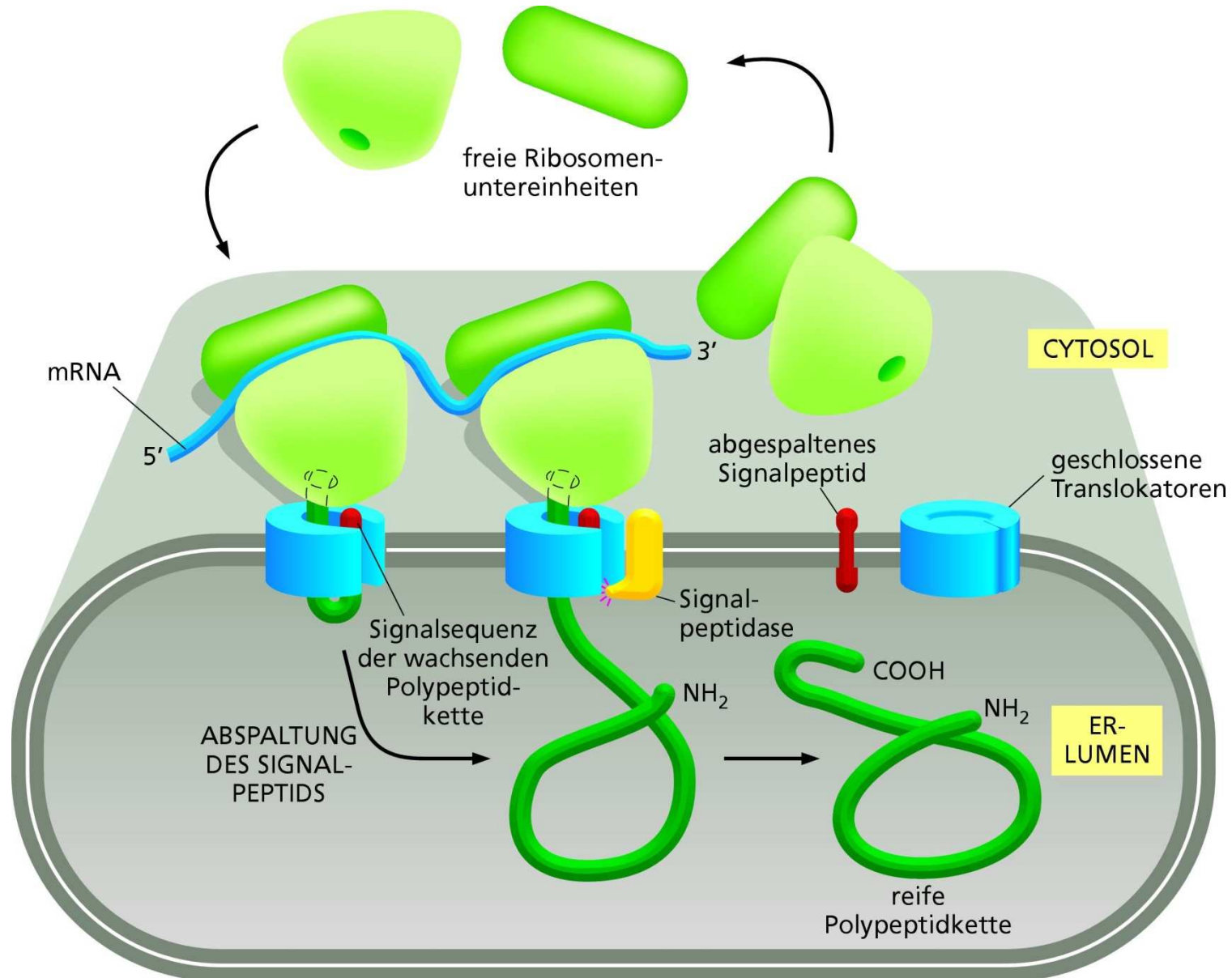


Transportmöglichkeiten zum ER



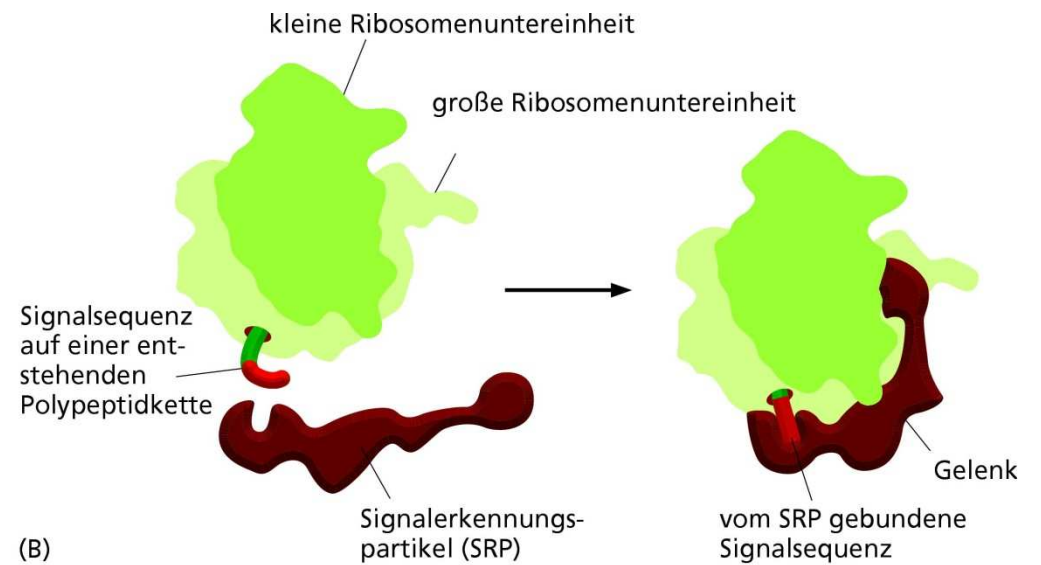
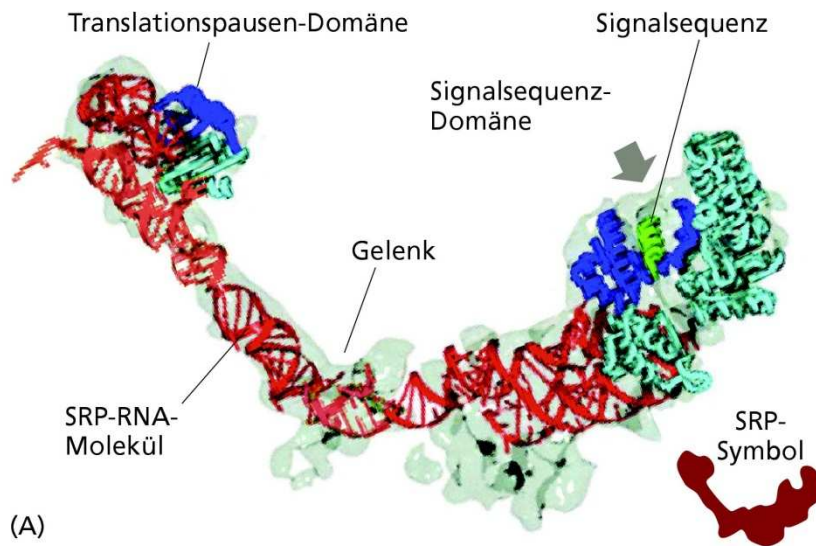


Cotranslationaler Export ins ER





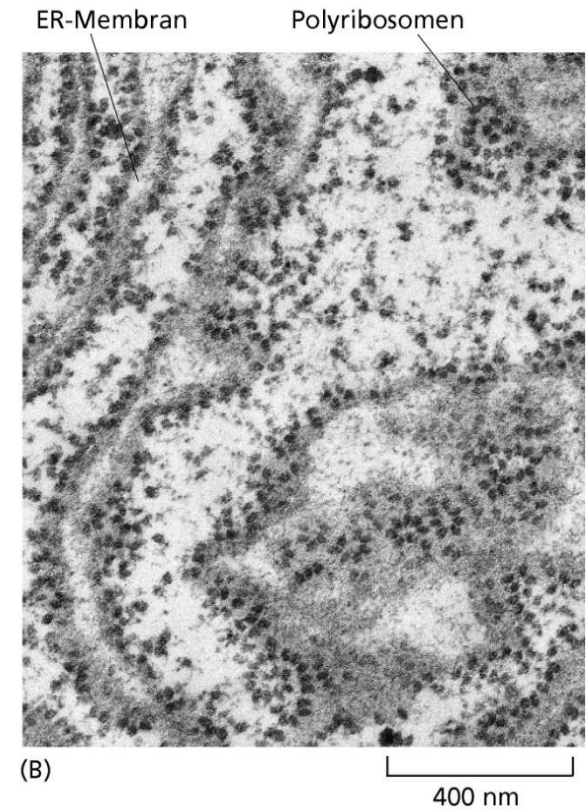
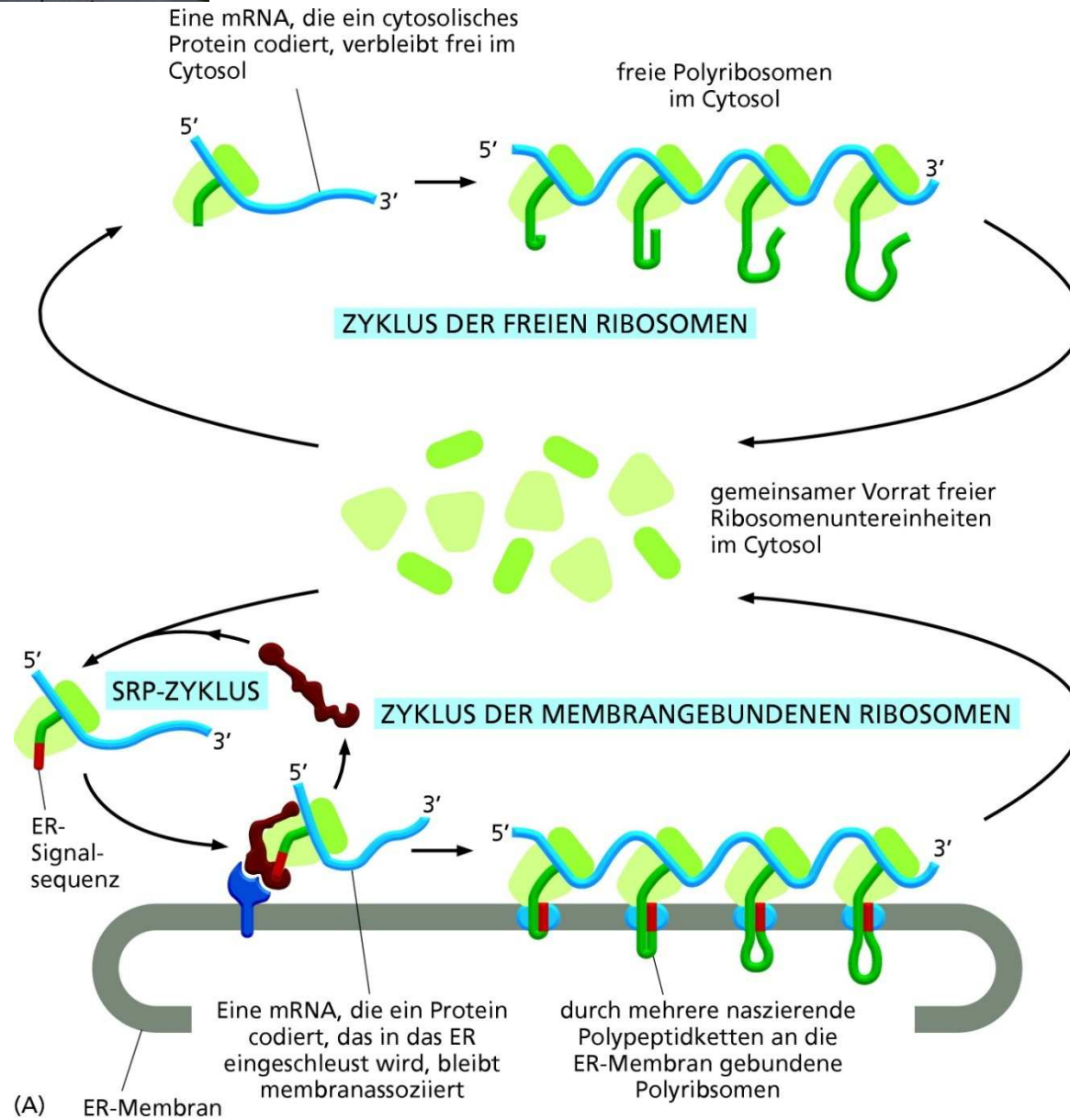
Signal Recognition Particle (SRP)



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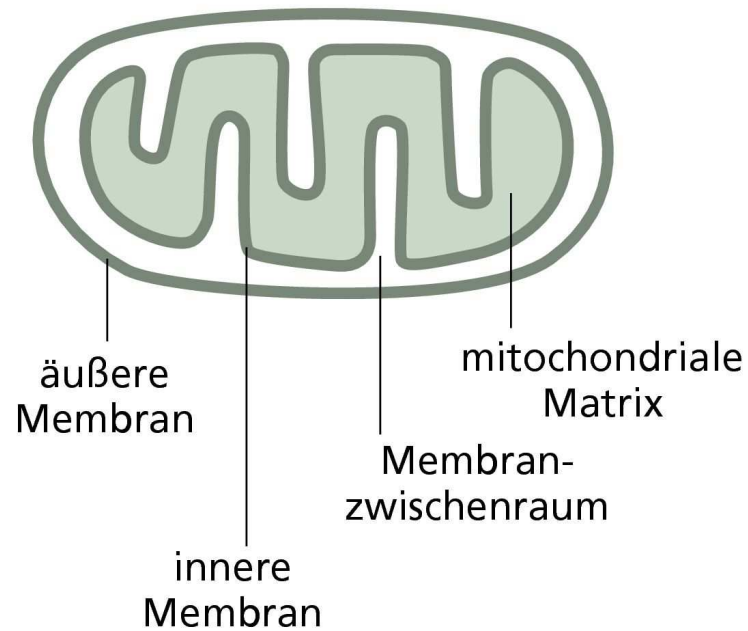
Freie und membrangebundene Ribosomen



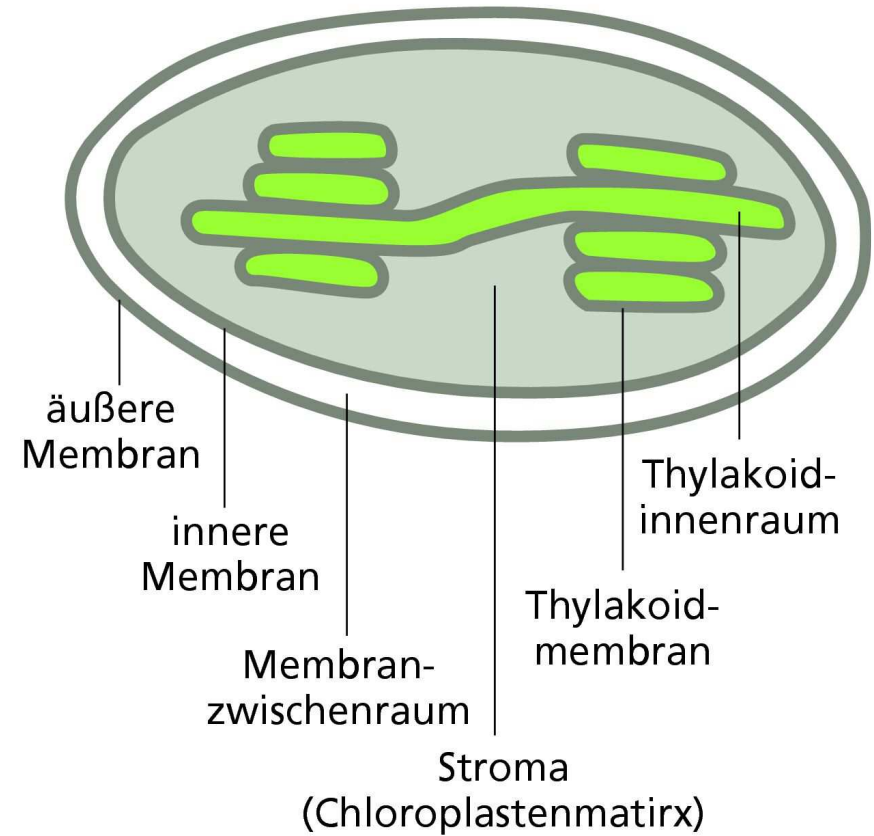


Transport in Mitochondrien

(A) MITOCHONDRIUM

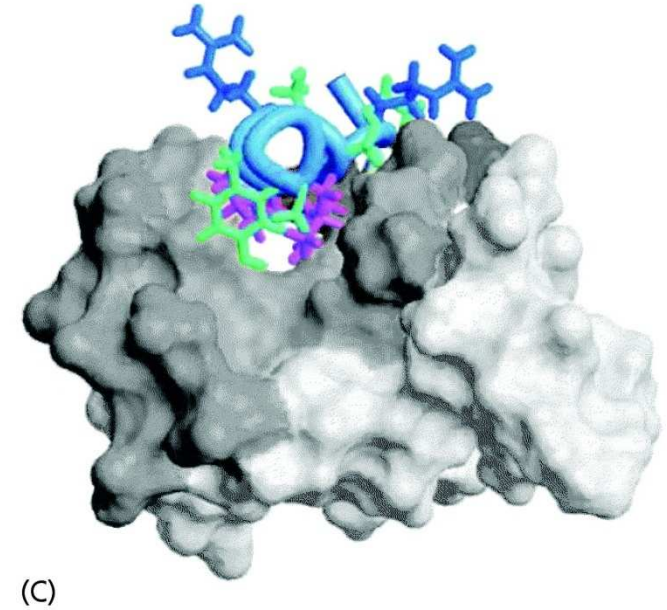
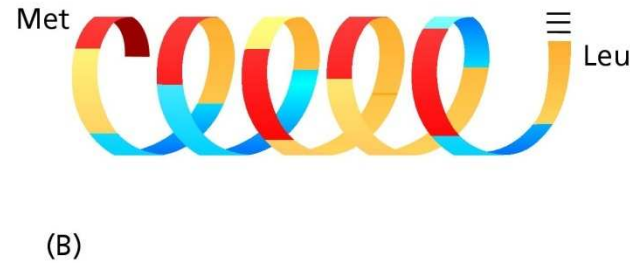
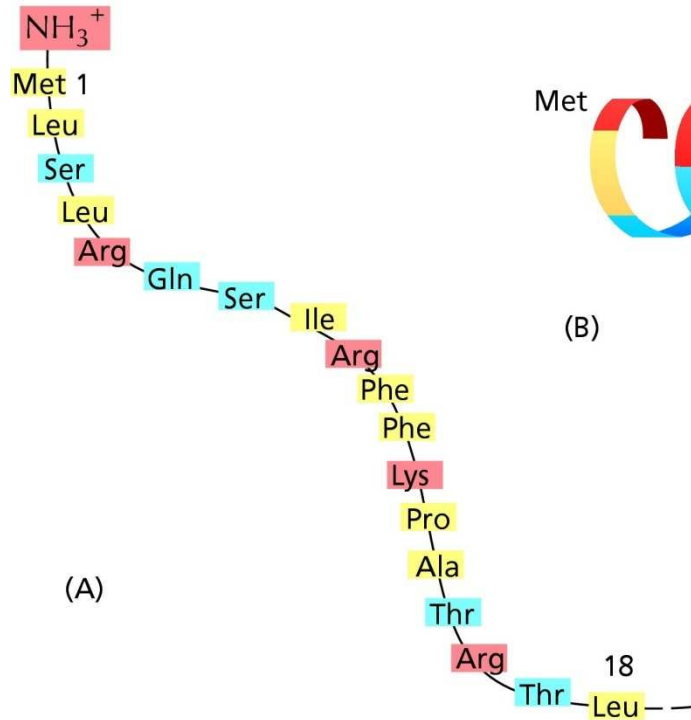


(B) CHLOROPLAST





Mitochondriale Signalsequenz

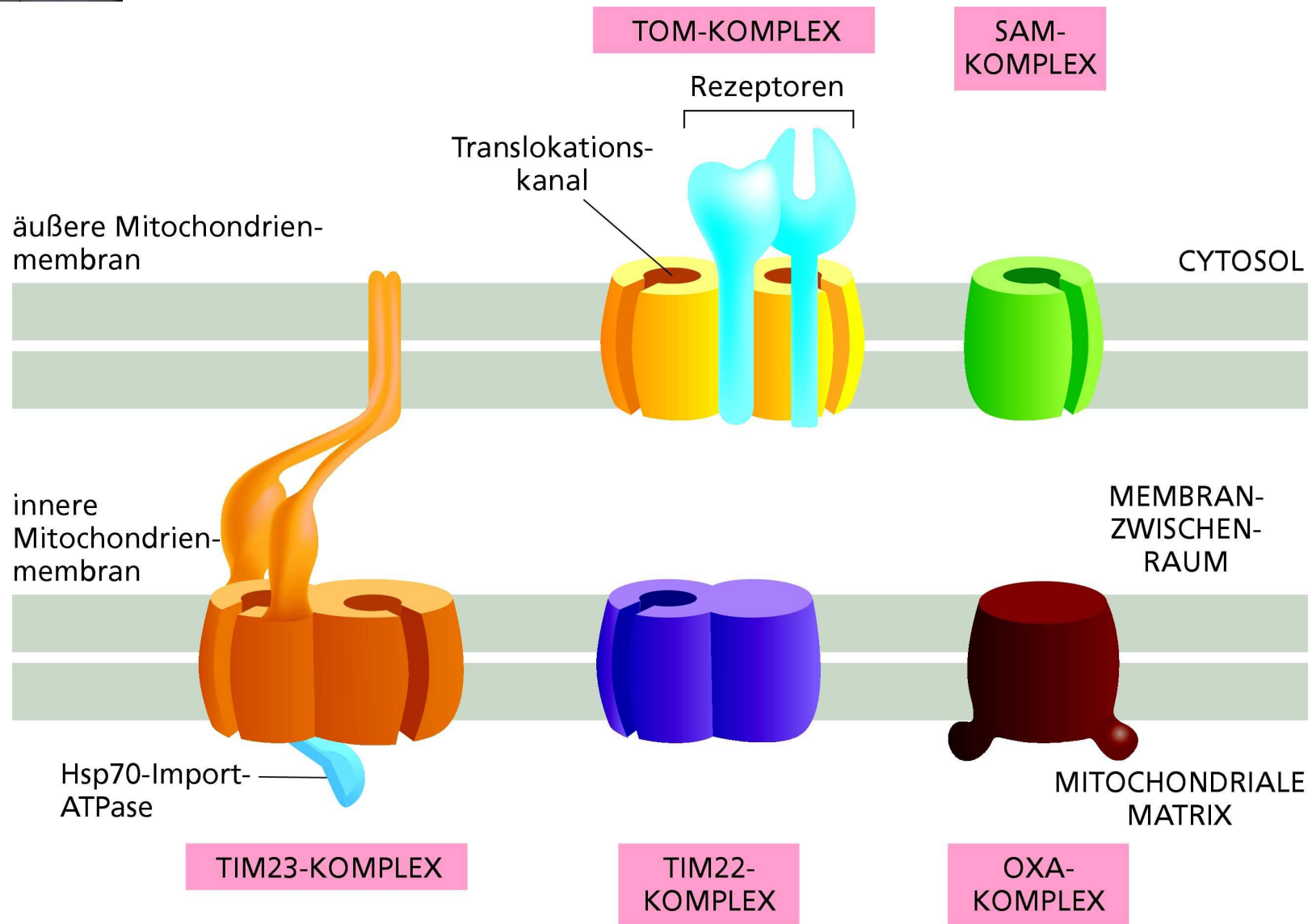


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Hydrophobe Seitenketten sind alle nach innen,
hydrophile nach außen orientiert!

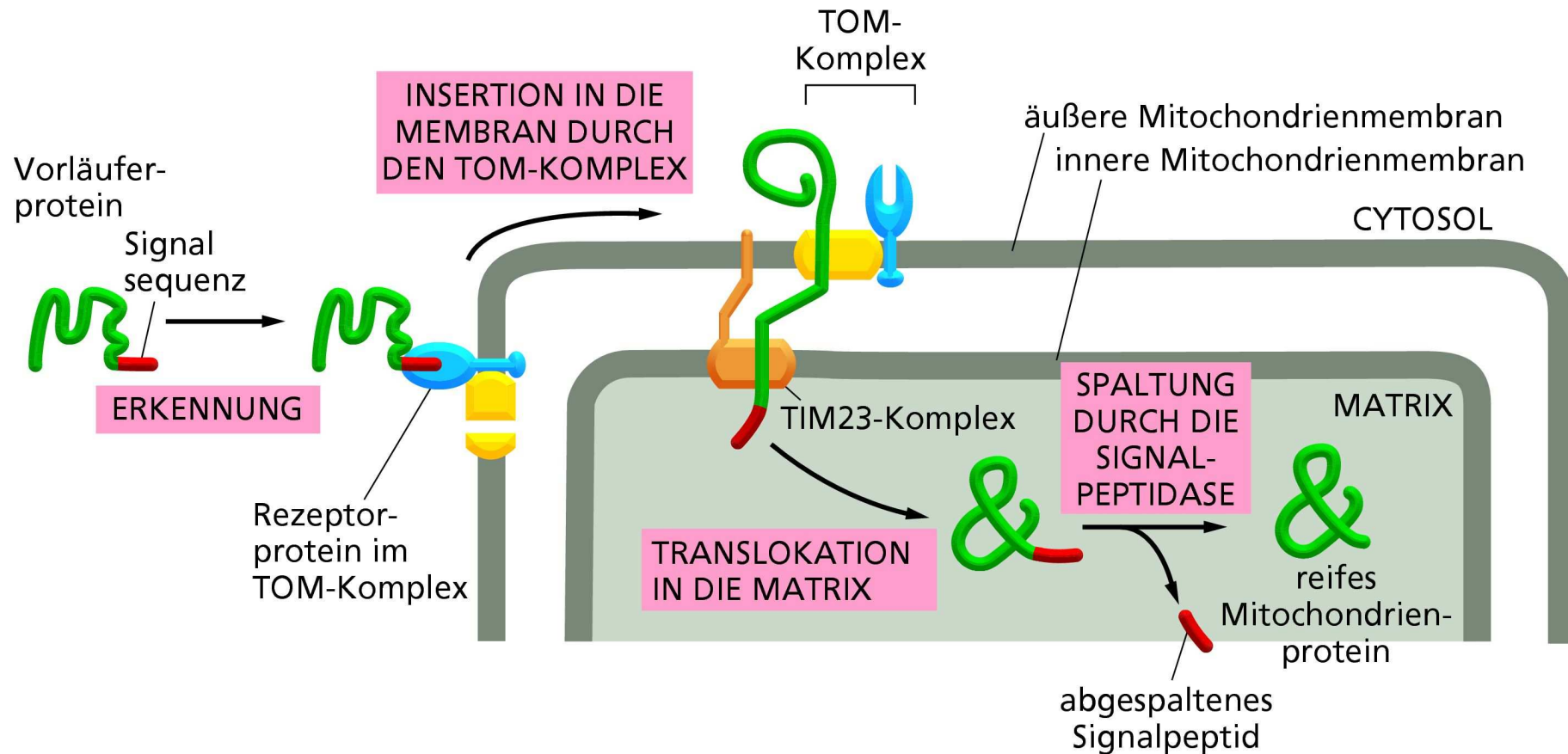


Mitochondriale Translokatoren



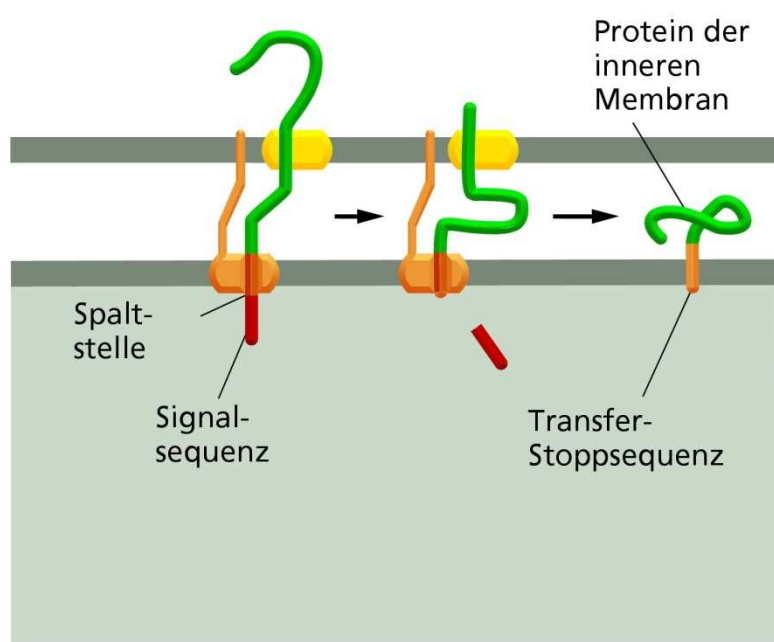


Import ins Mitochondrium

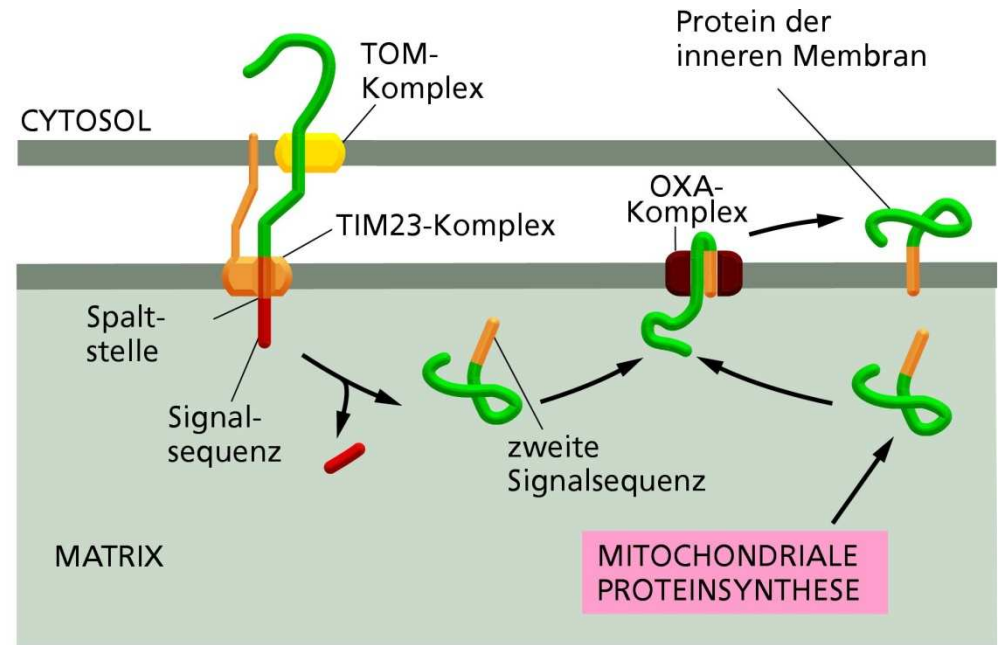




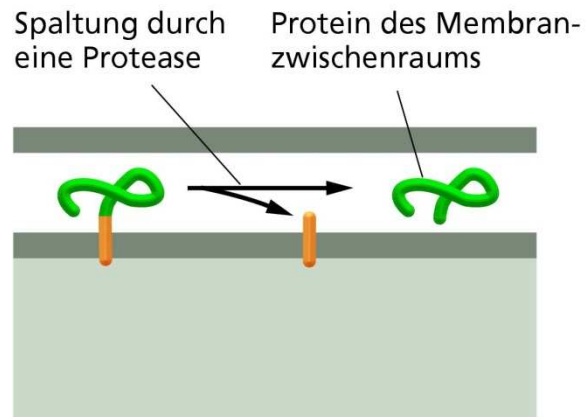
Weitere Importmöglichkeiten



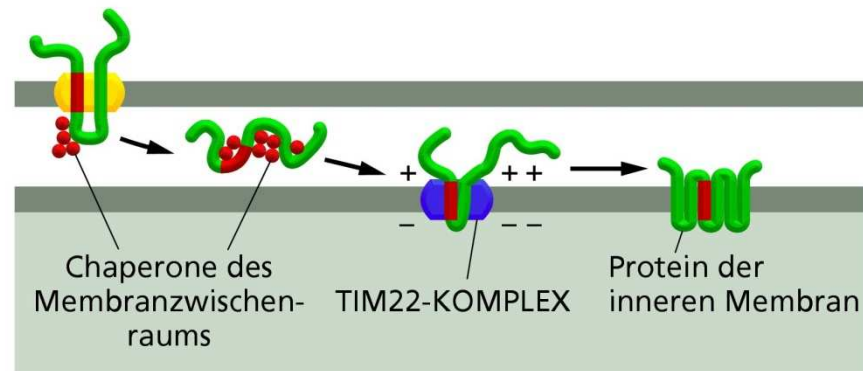
(A)



(B)



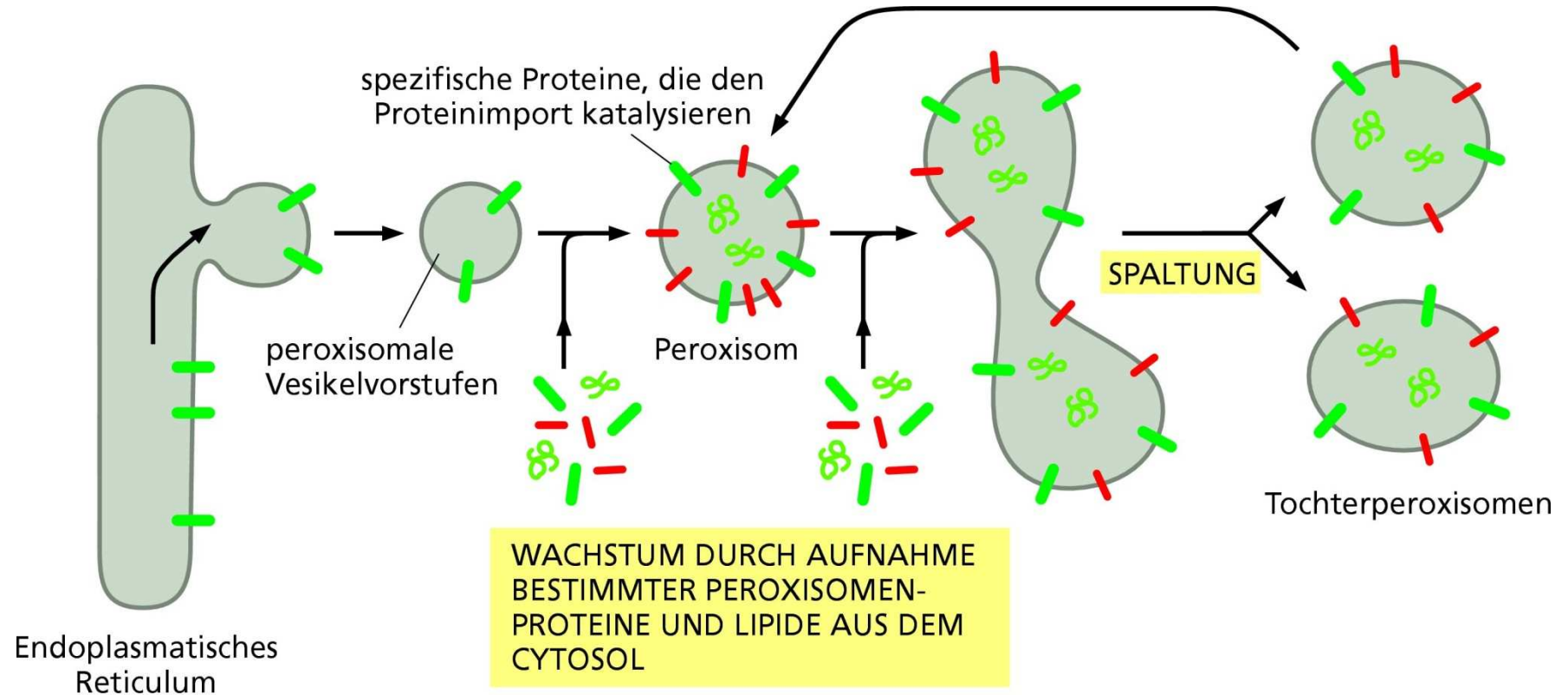
(C)



(D)



Import in Peroxisomen

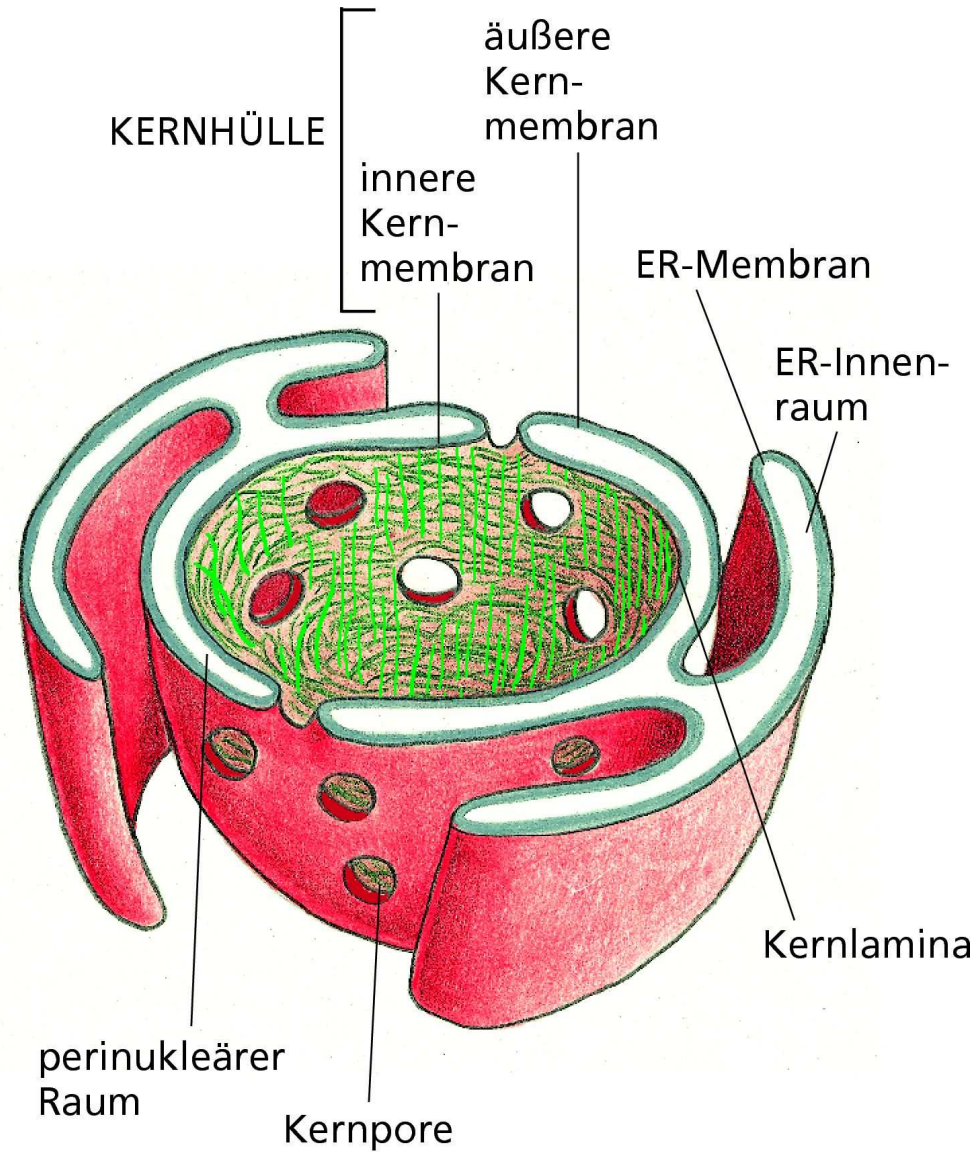


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Kurze Signalsequenz: Ser-Lys-Leu

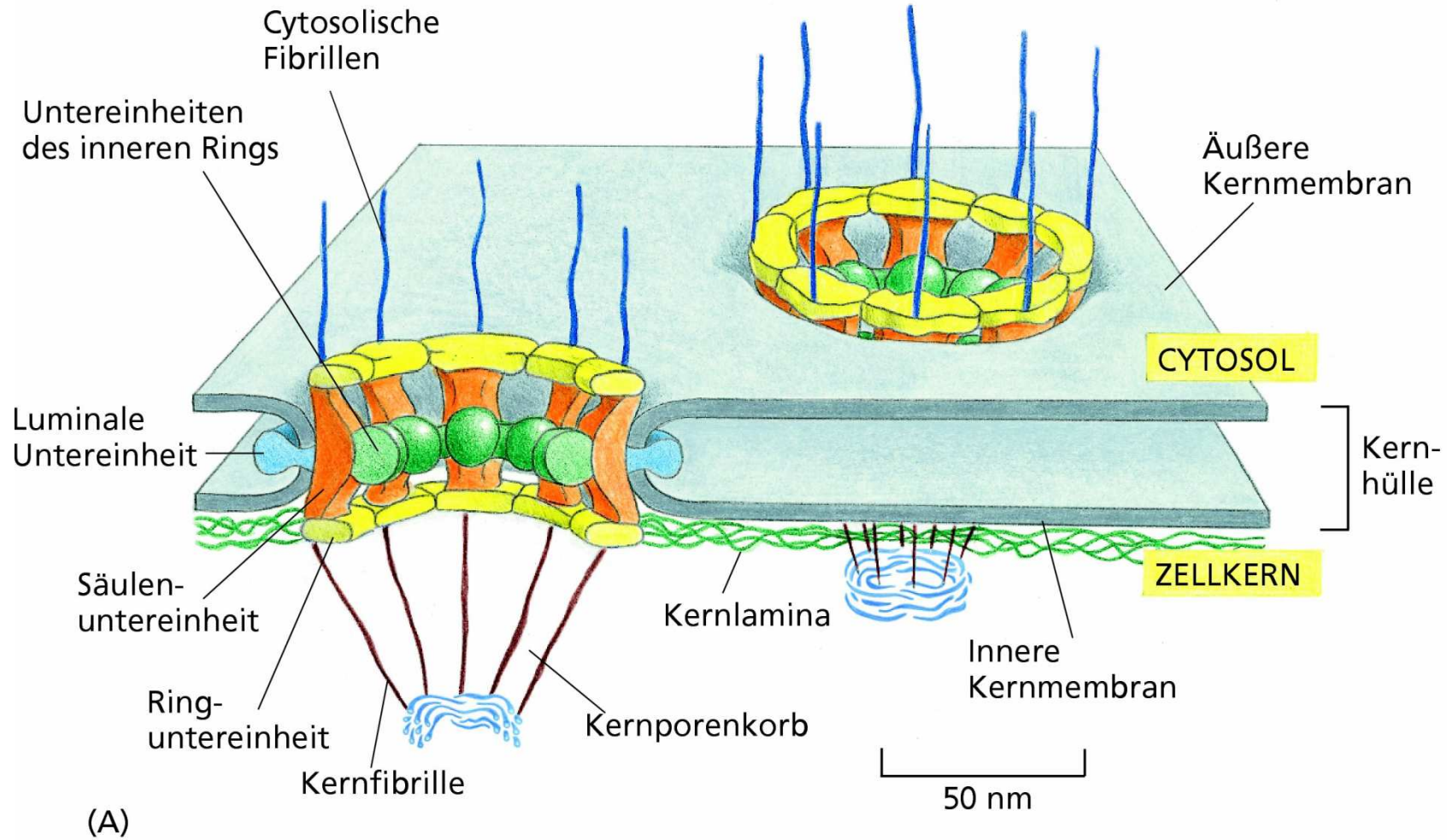


Zellkern



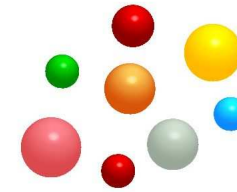
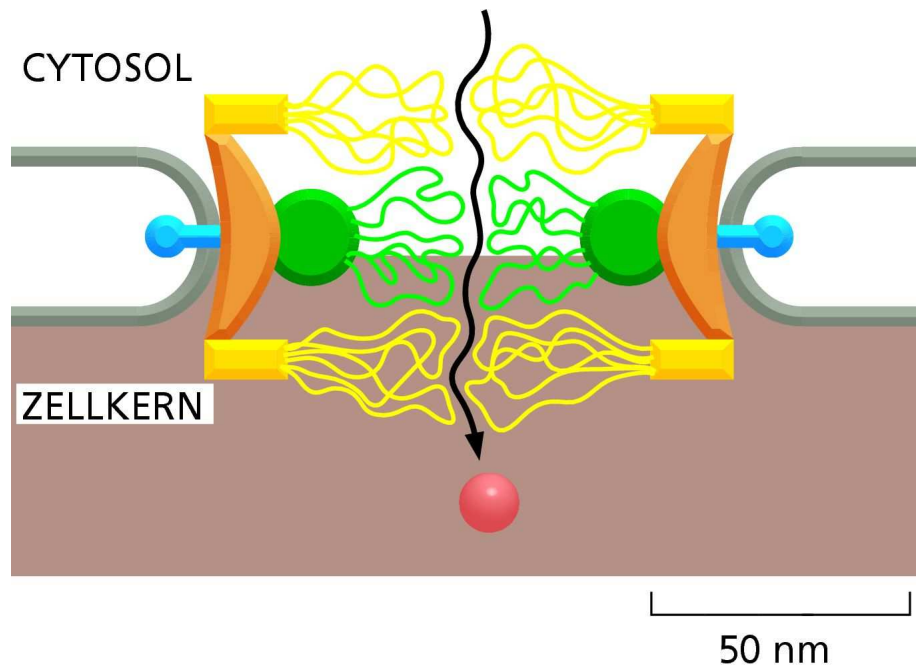


Kernporen

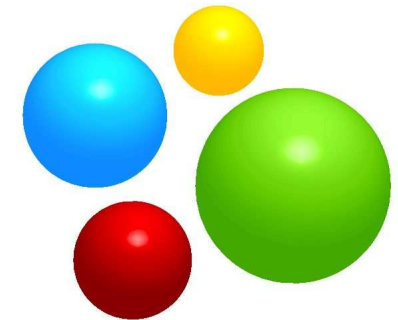




Kernporen: Kontrollierte Diffusionsbarrieren



Größe von Molekülen,
die durch freie Diffusion
in den Kern gelangen



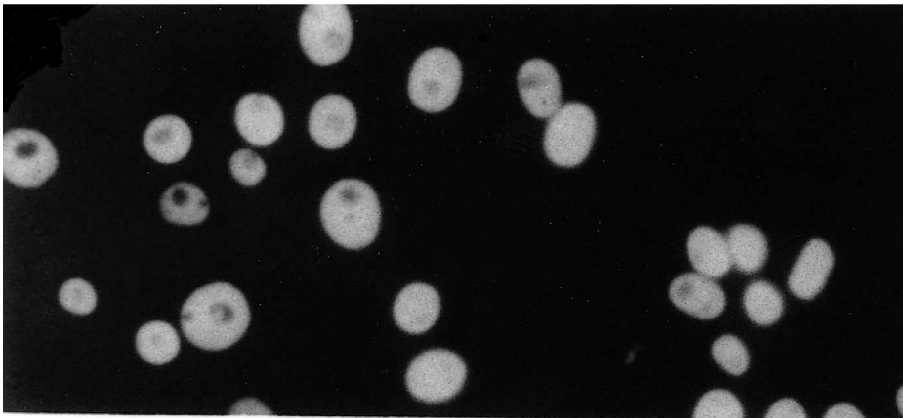
Größe von Makro-
molekülen, die durch
aktiven Transport in
den Kern gelangen



Kernimportsignal

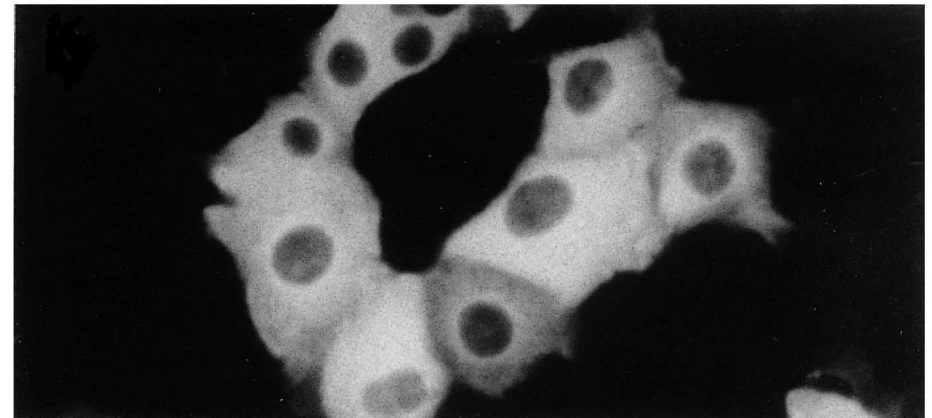
(A) LOKALISATION VON T-ANTIGEN MIT
NORMALEM KERNIMPORTSIGNAL

Pro — Pro — Lys — Lys — Lys — Arg — Lys — Val —



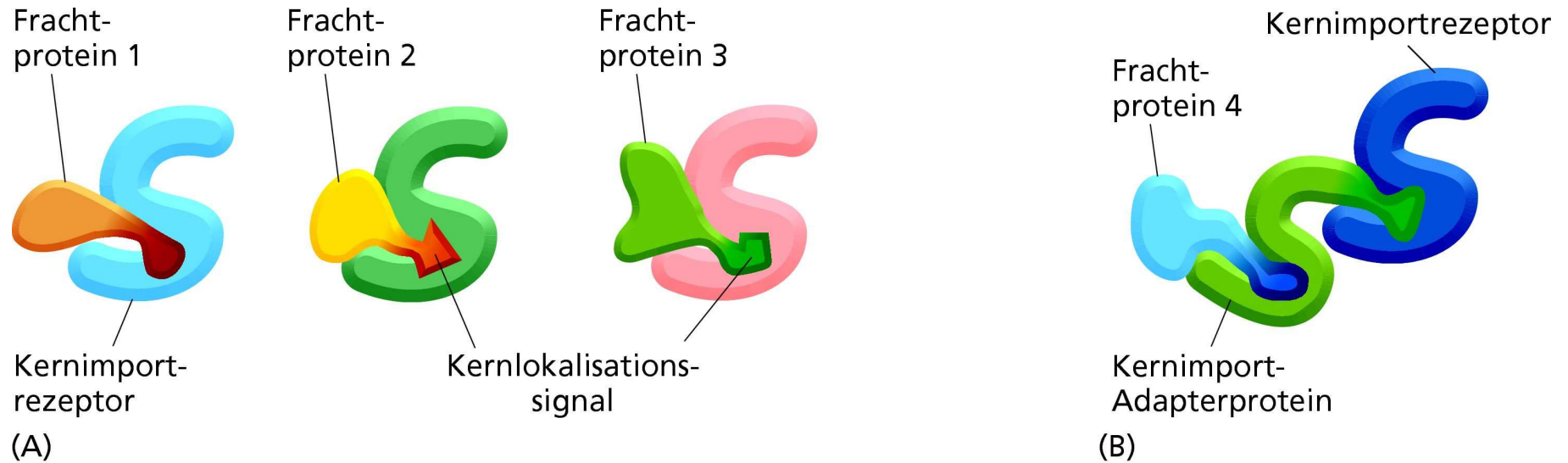
(B) LOKALISATION VON T-ANTIGEN MIT
MUTIERTEM KERNIMPORTSIGNAL

Pro — Pro — Lys — Thr — Lys — Arg — Lys — Val —





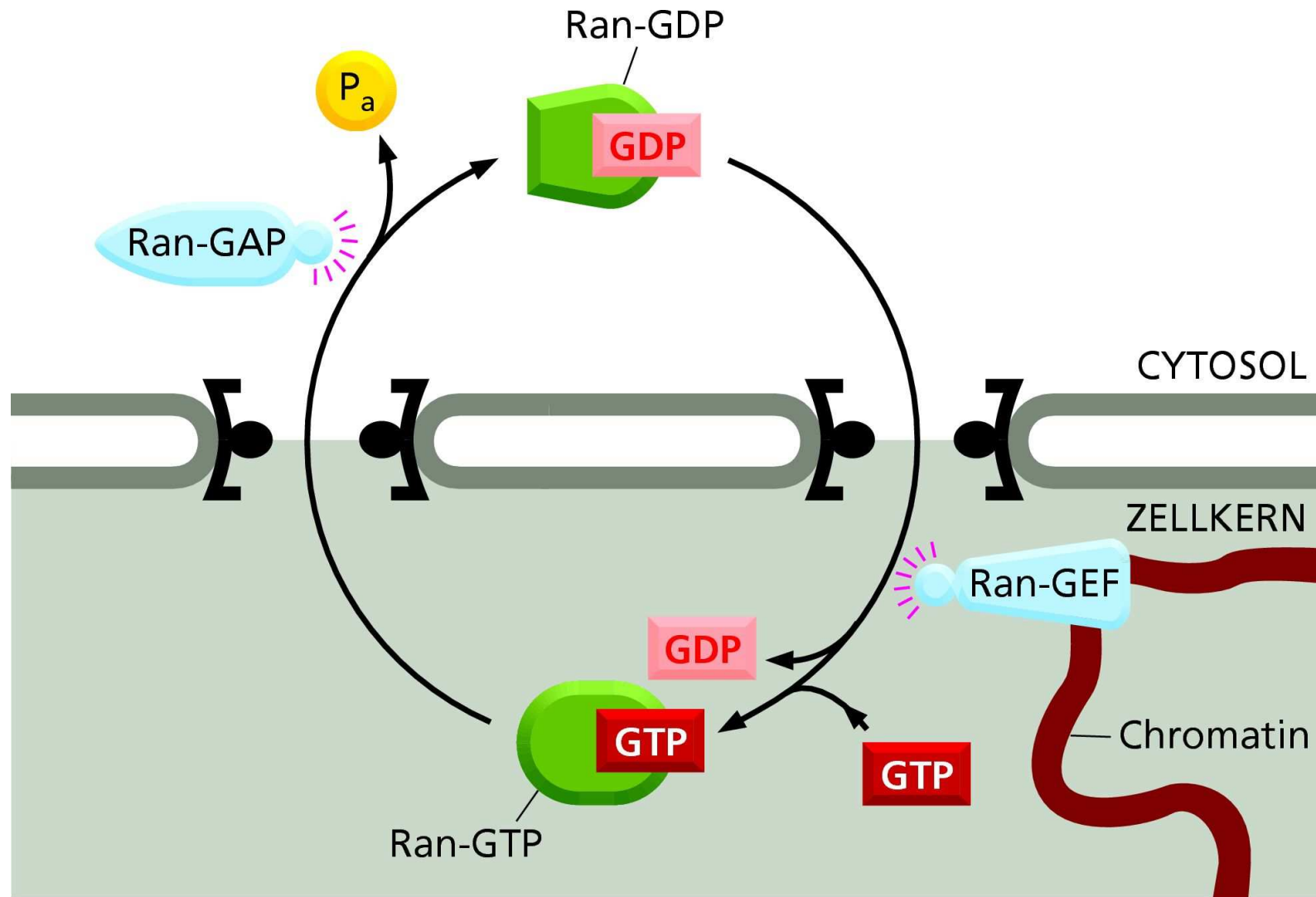
Kernimportrezeptoren



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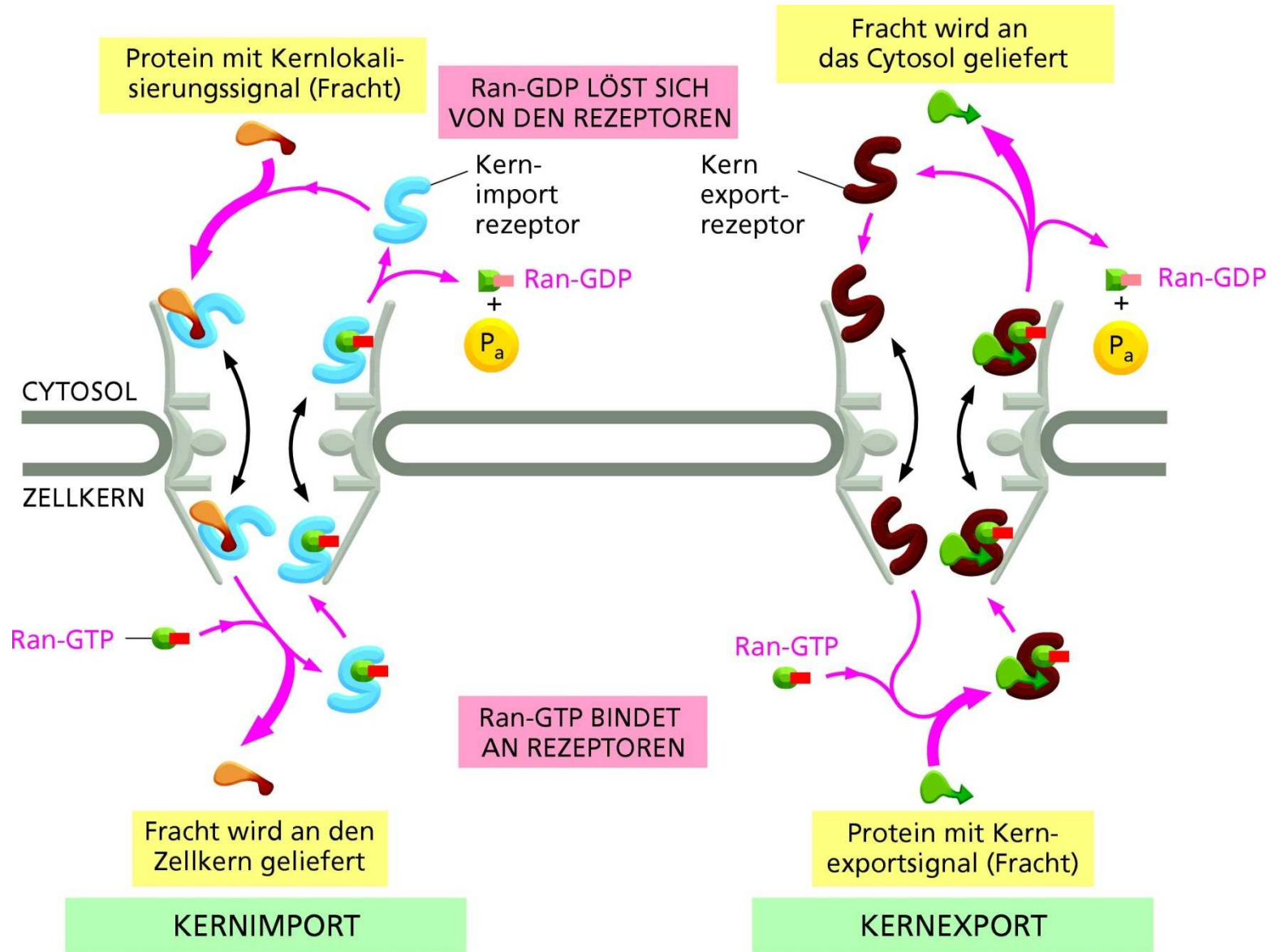


Ran steuert den Kernimport und -export



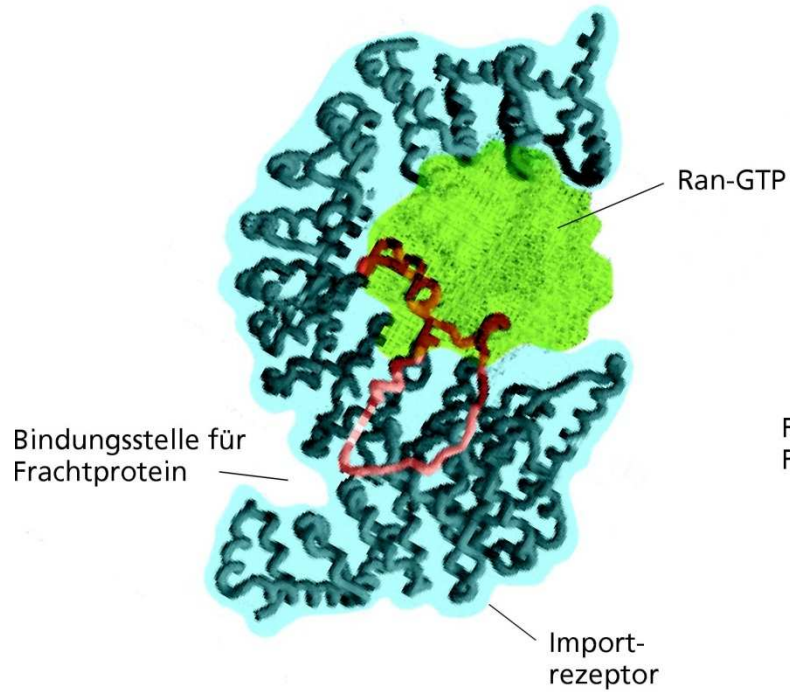


Ran beim Import und Export

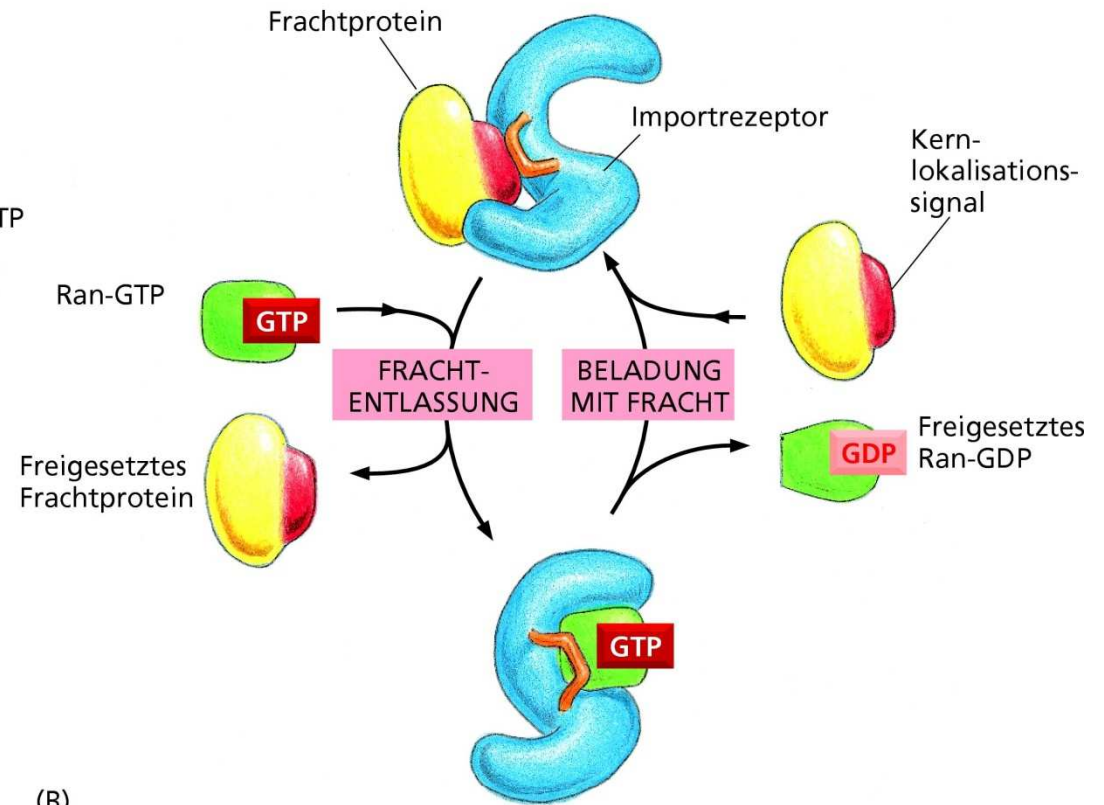




Steuerung des Imports durch Ran



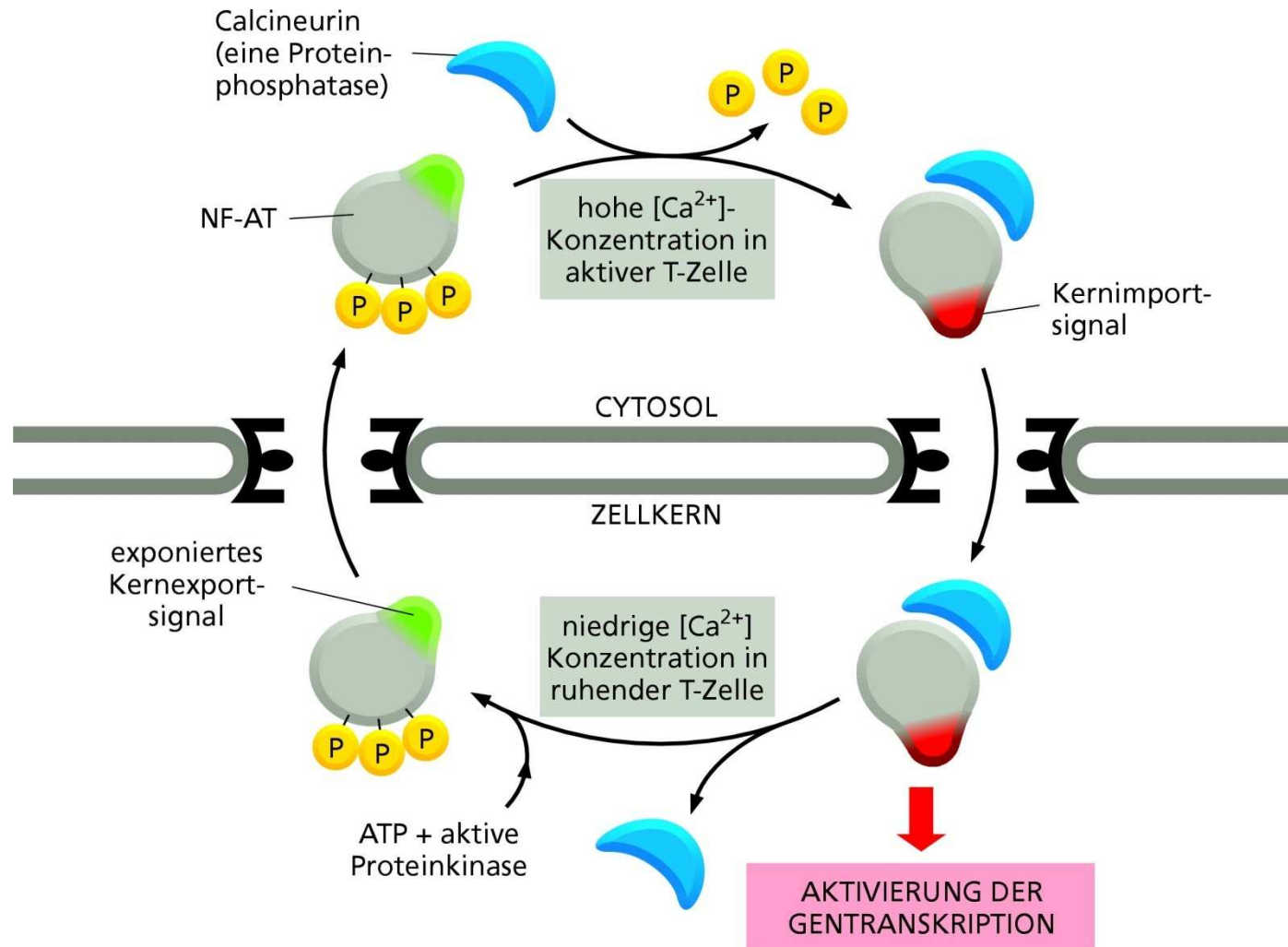
(A)



(B)



Pendelproteine





Zerfall und Neubildung des Kerns bei der Mitose

