

Kuliah 8

Komunikasi Sel (Sel Sinyaling)

Evolusi untuk sel sinyaling

- Evolusi dari uniseluler ke multiseluler perlu waktu 2.5 trilyun tahun disebabkan sulitnya menyusun proses sel sinyaling untuk berkomunikasi satu sel dengan yang lainnya

Komunikasi Sel

Cell adhesion
technique

Tight Junction

Gap Junction

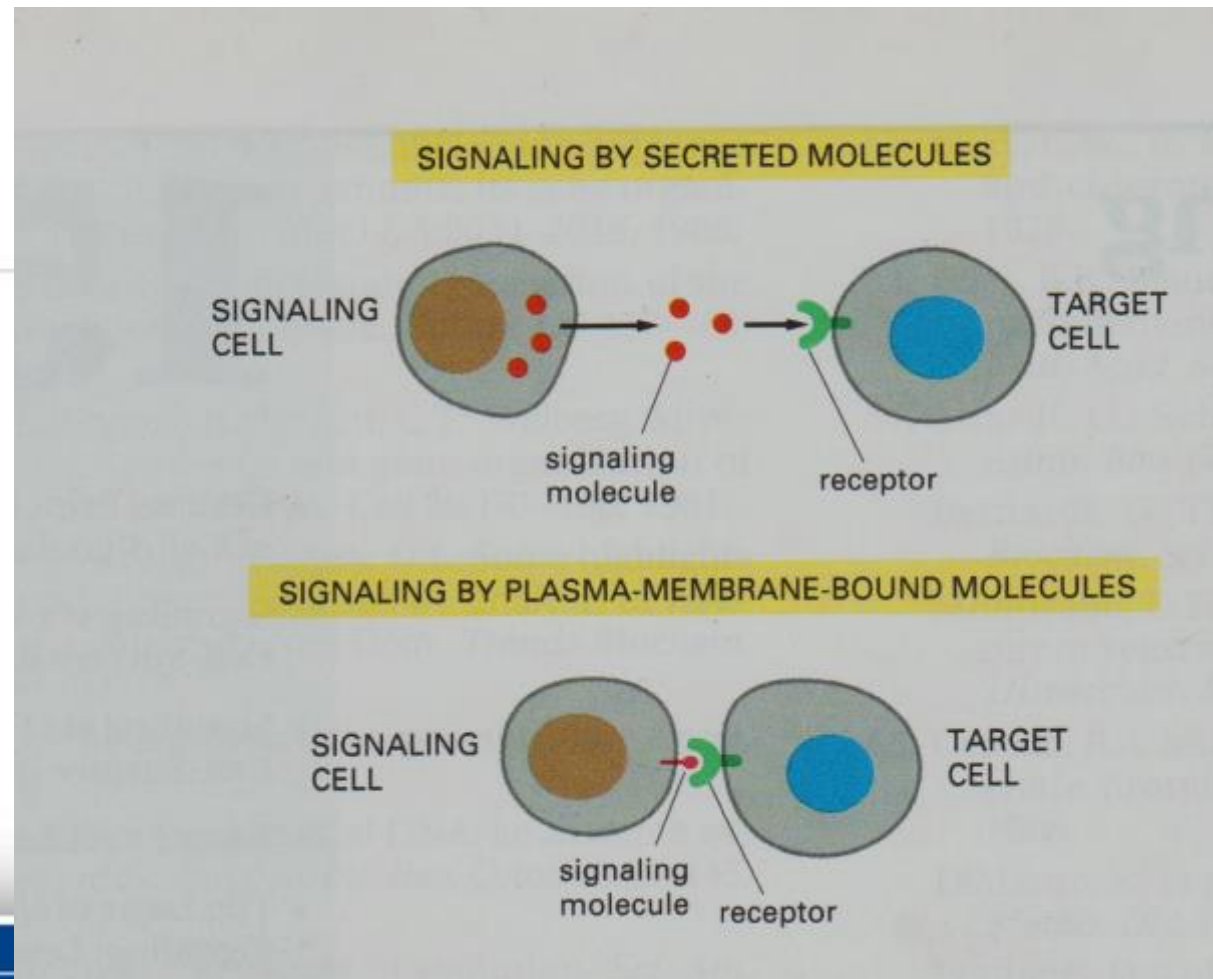
Desmosomes

Signal
Transduction

Cascade Effect

RECEPTION
TRANSDUCTION
RESPONSE

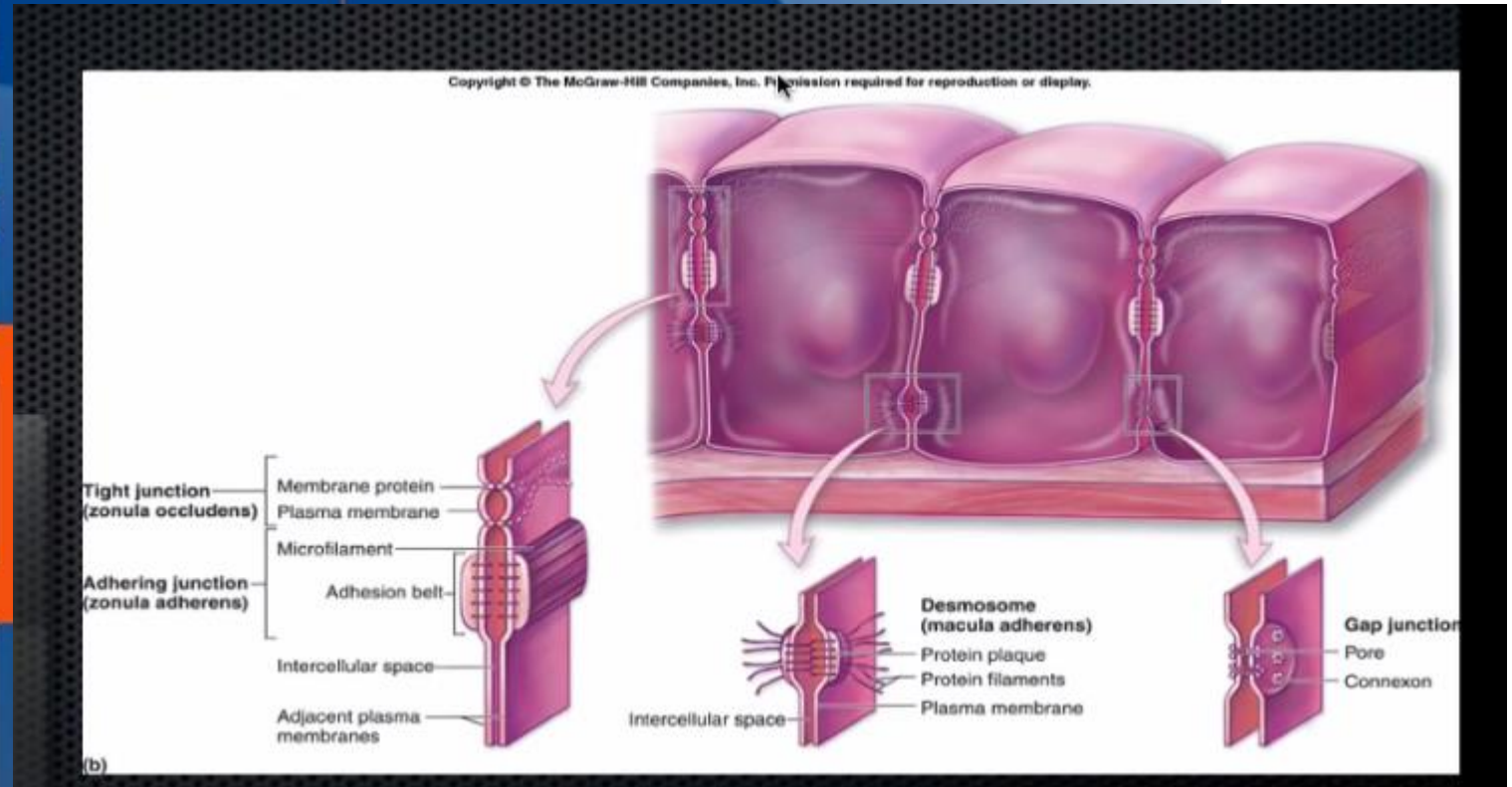
Komunikasi antar sel



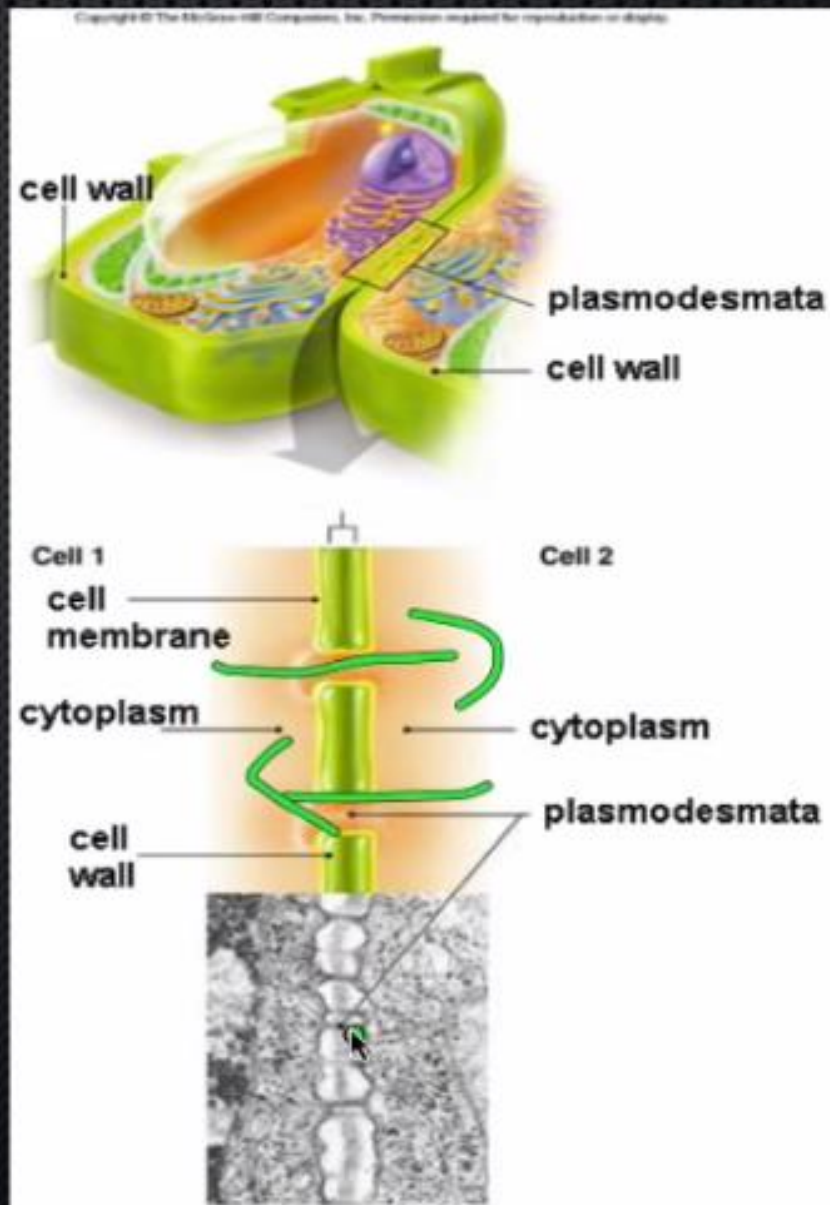
Menyerupai ikat pinggang yang mengitari organ untuk mencegah kebocoran di dalam dan di luar.

Mencegah urin keluar dari kandung kemih.

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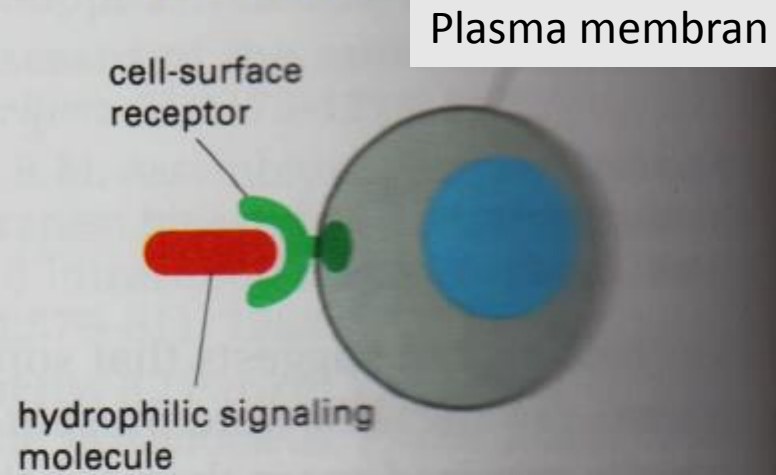


Gap Junction pada tanaman

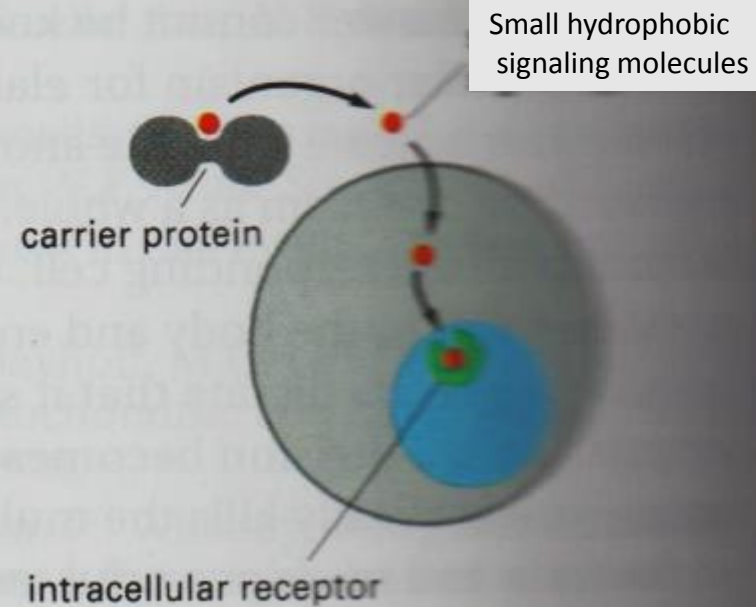


Sel sinyaling

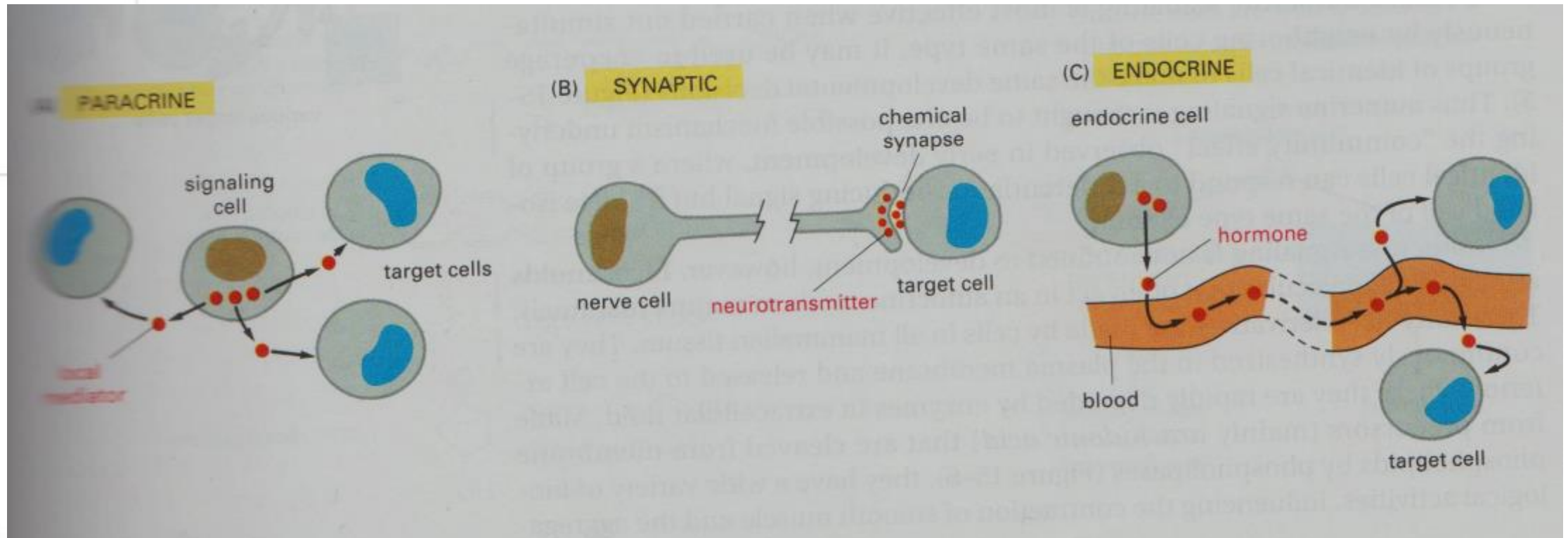
Cell Surface Receptors



Intracellular Receptors

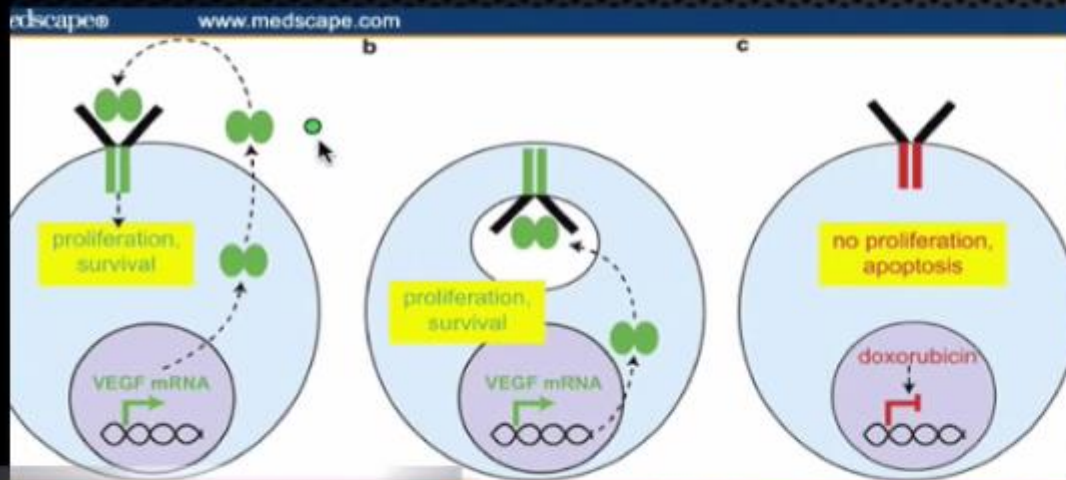


Sekresi molekuler

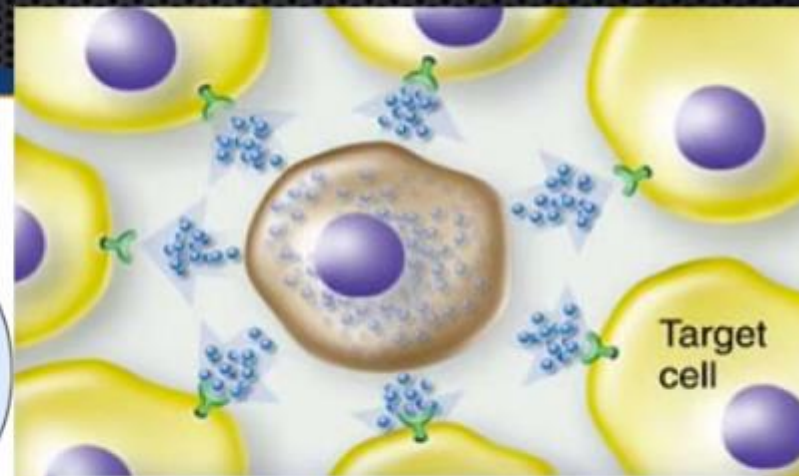


Autocrine, Paracrine

Signal transduction

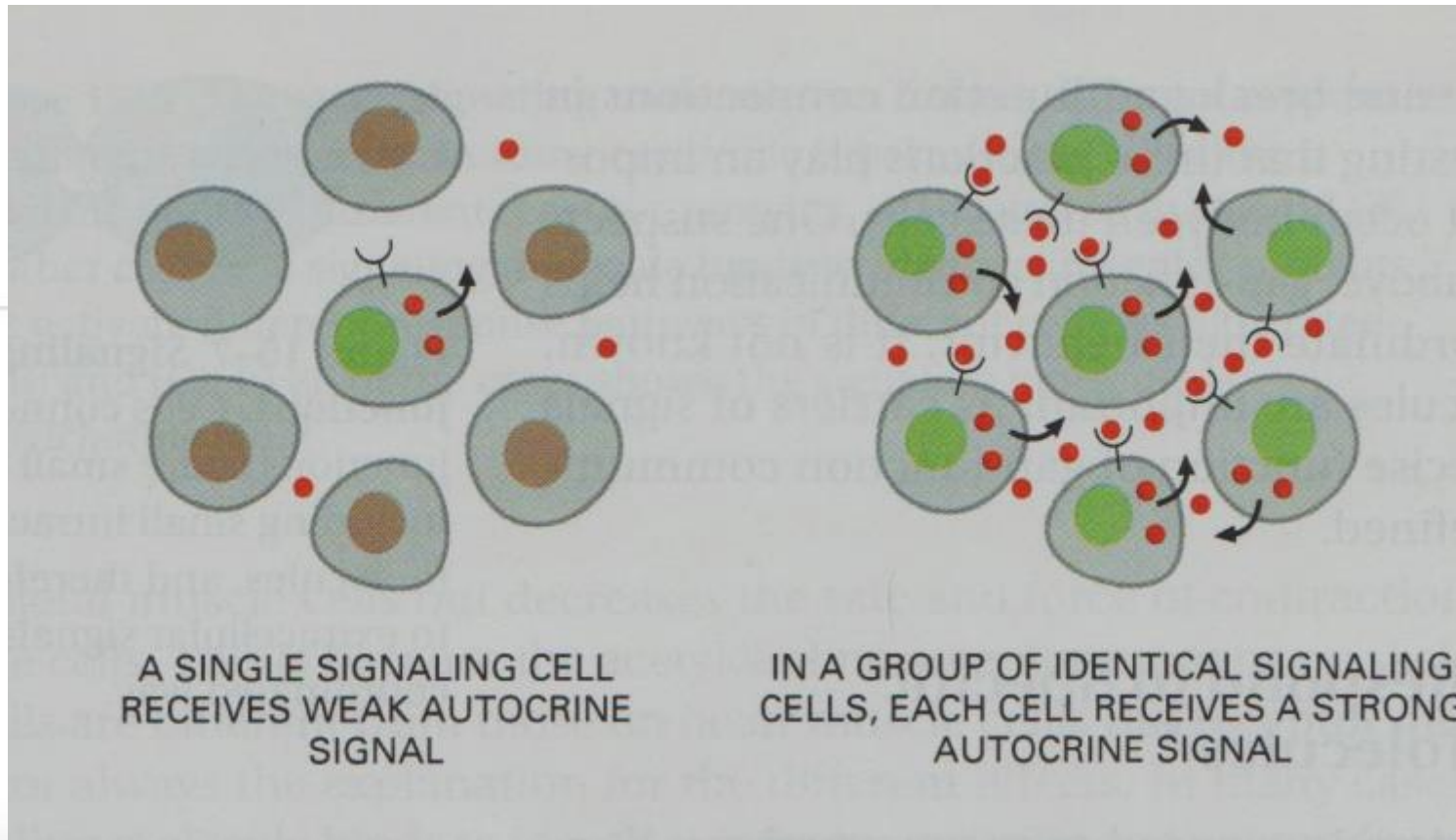


autocrine signaling



Paracrine signaling: Cells release signals that affect nearby target cells.

Autocrine



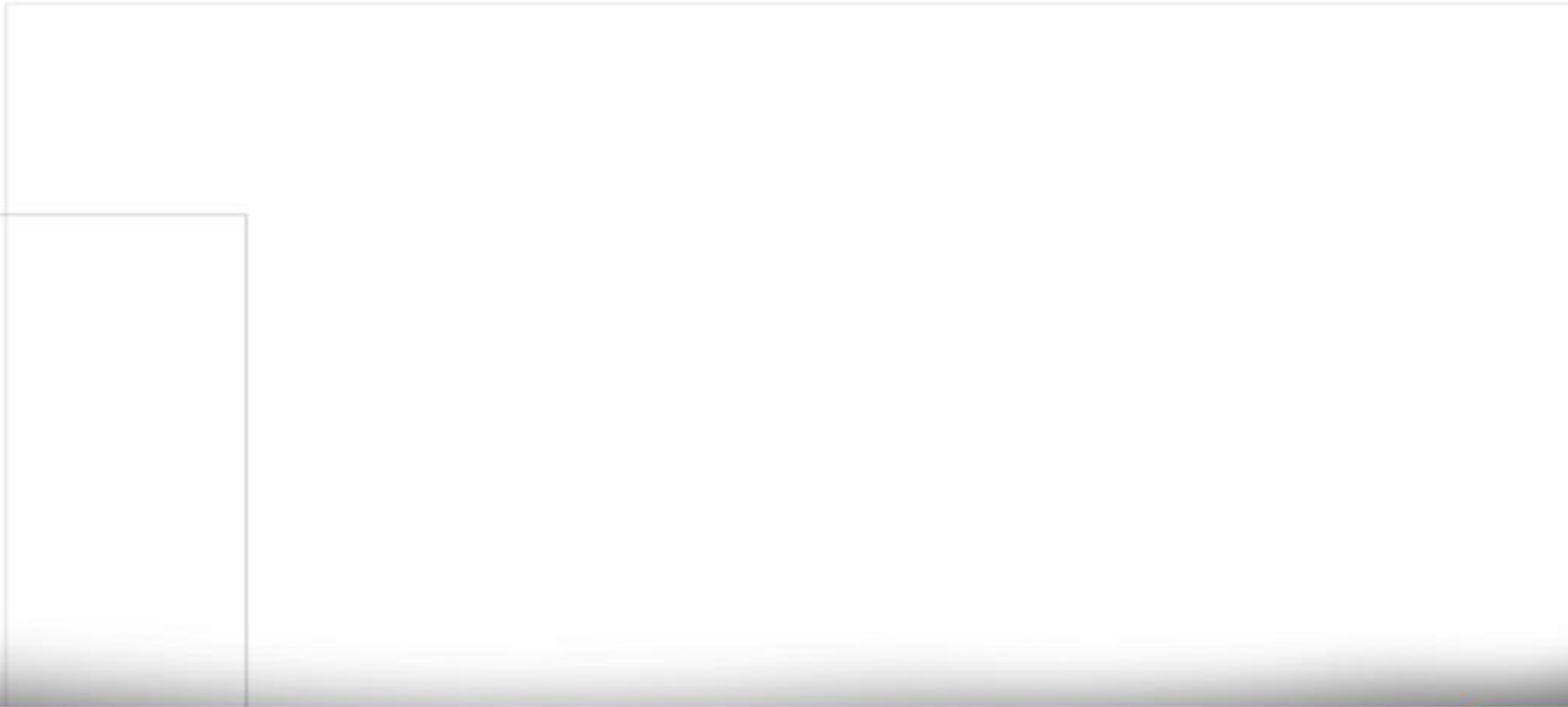
Contoh:

VEGF

Eicosanoids

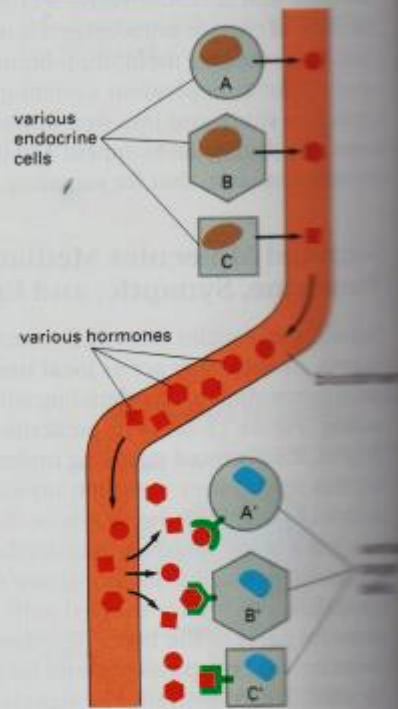
(Prostaglandins, prostacyclins,
Thromboxanes)

VIDEO

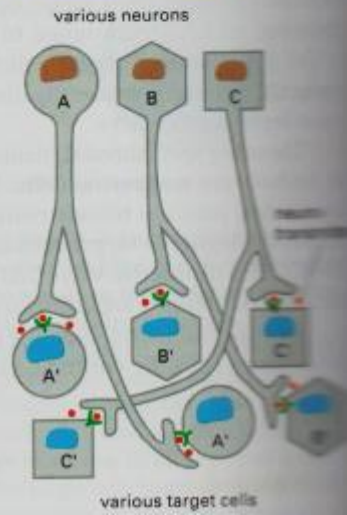


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Smart, Creative and
Endocrine,
synaptic

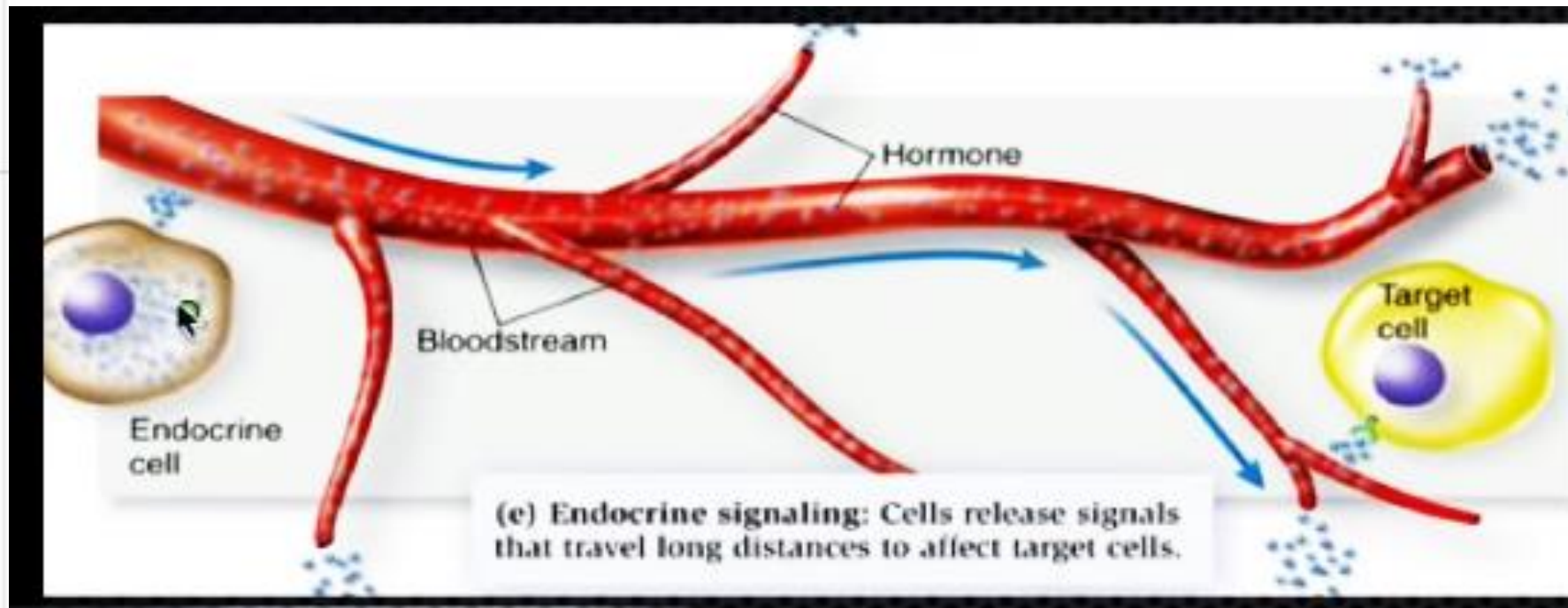
(A) ENDOCRINE SIGNALING



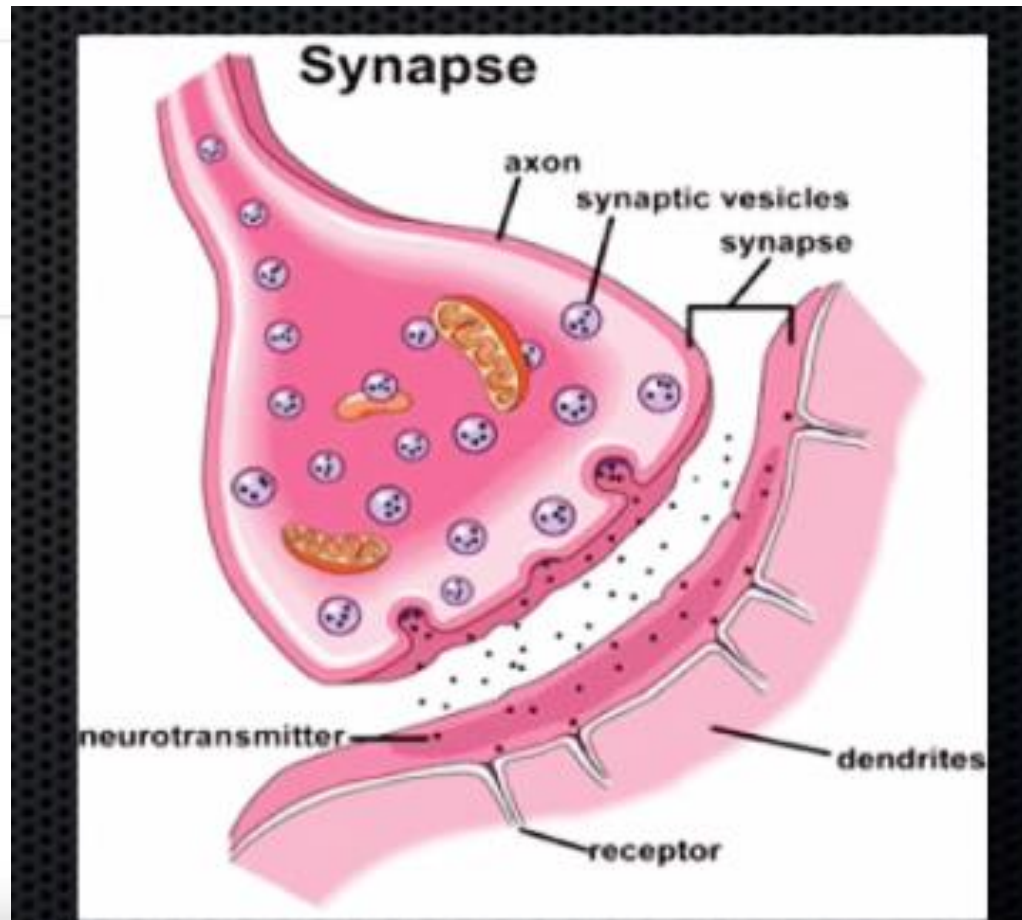
(B) SYNAPTIC SIGNALING



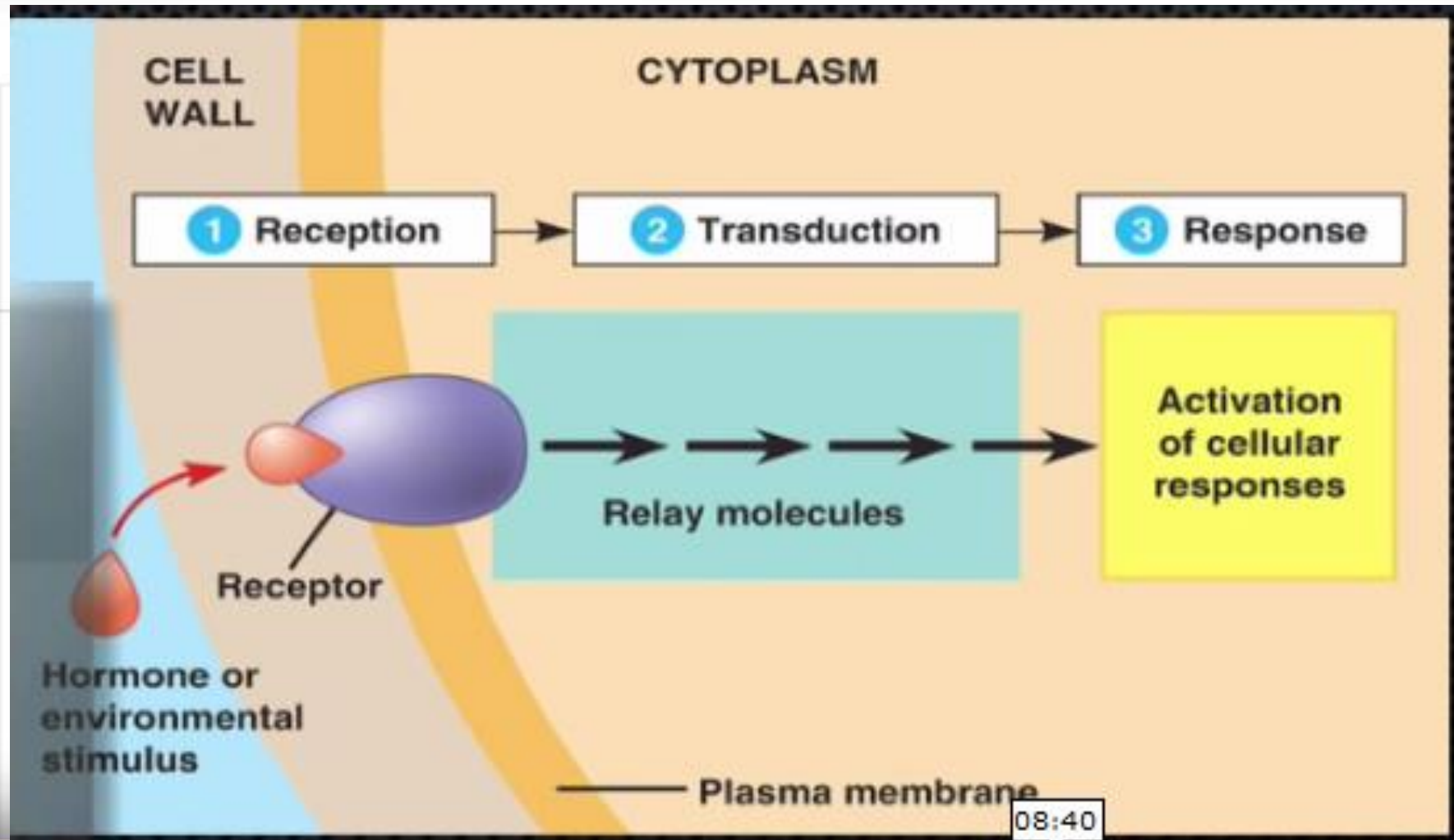
Endocrine



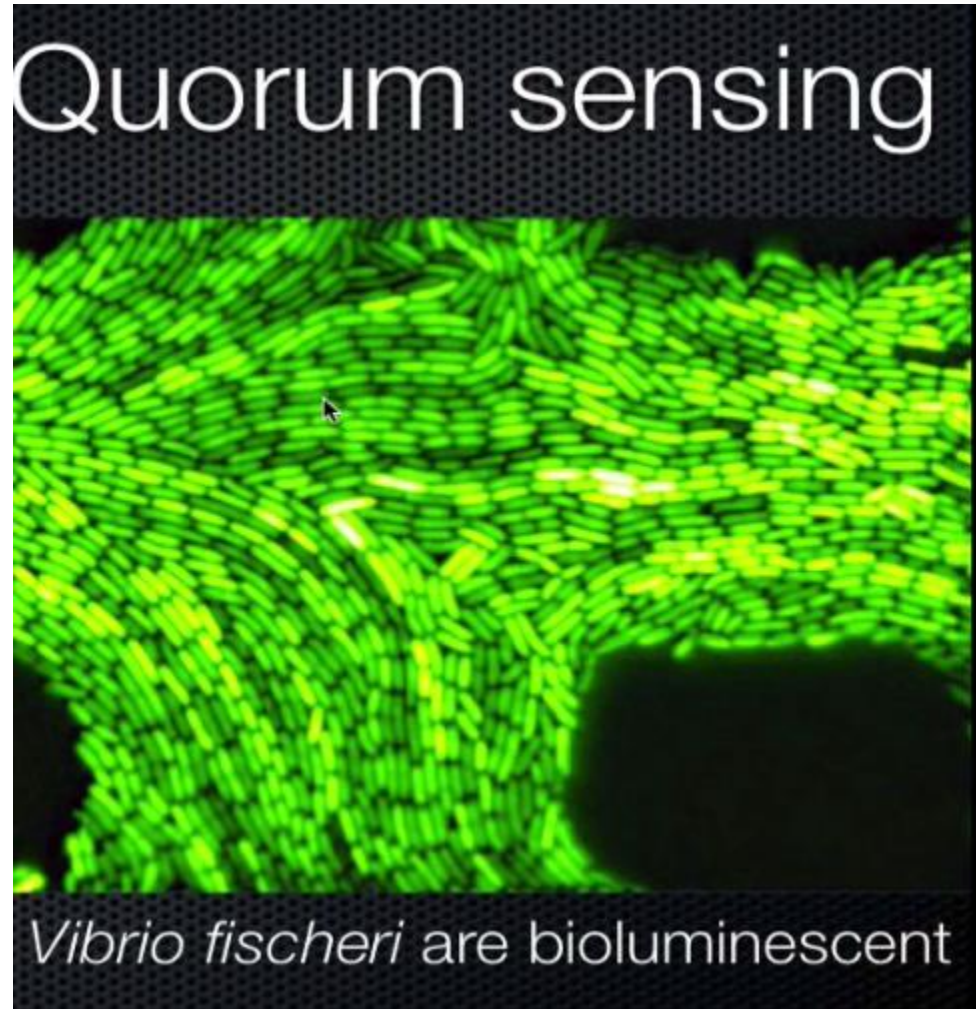
Synaptic



Bagaimana sel menerjemahkan sinyal



Quorum Sensing



Pengaturan ekspresi gen dalam merespon perubahan Kepadatan populasi

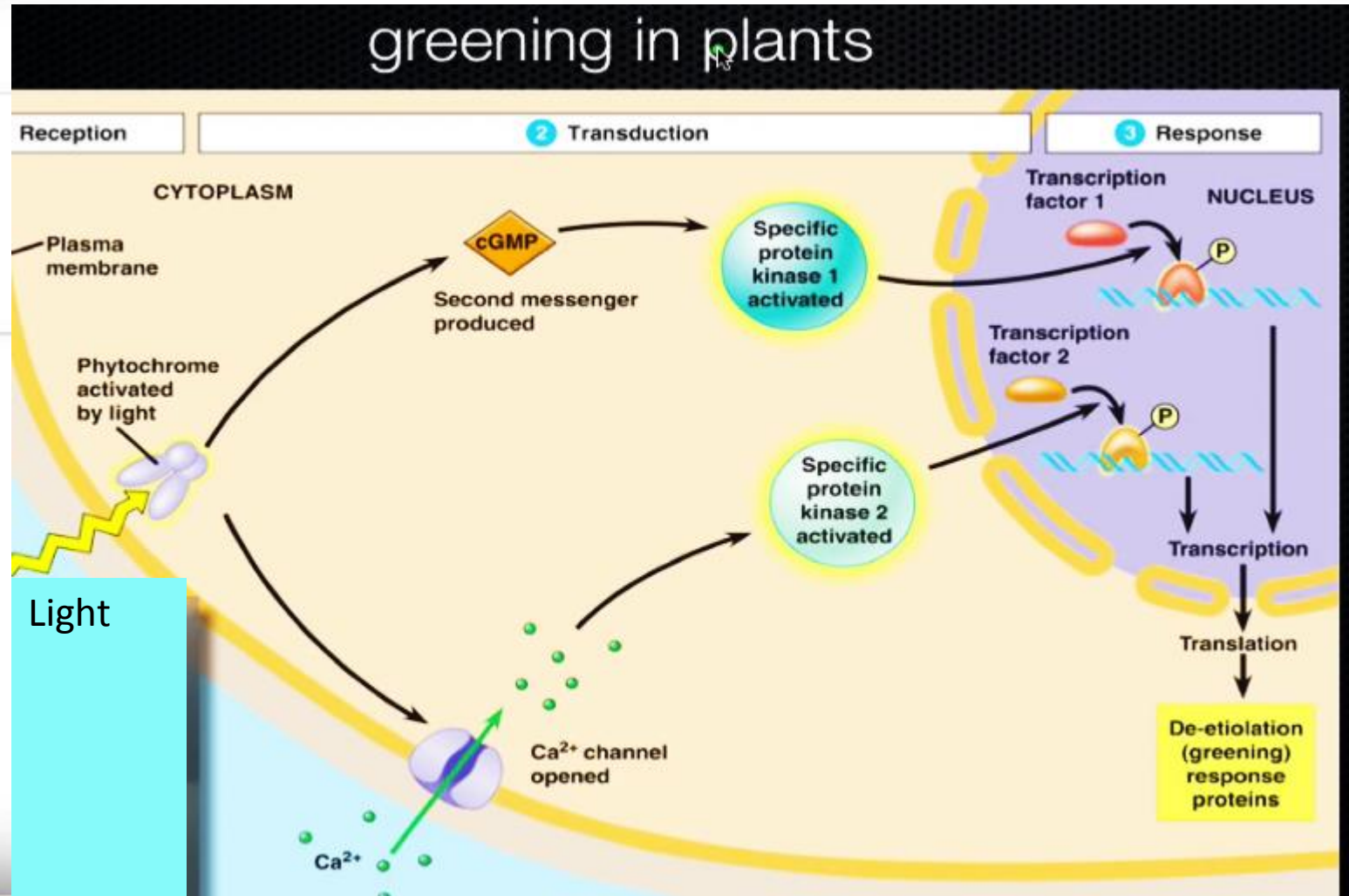
Quorum sensing

Quorum sensing



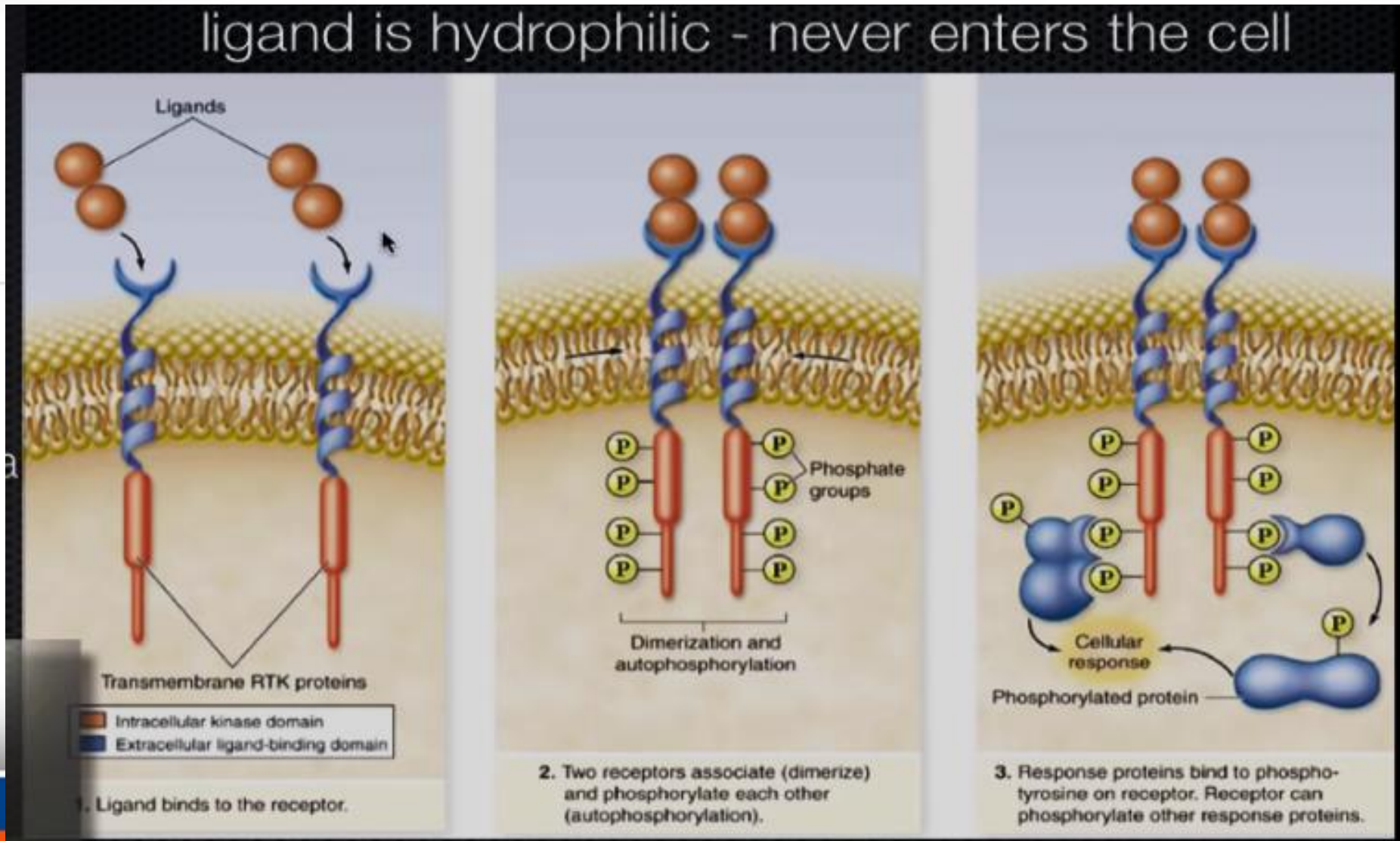
Vibrio fischeri are bioluminescent

Contoh signal transduction



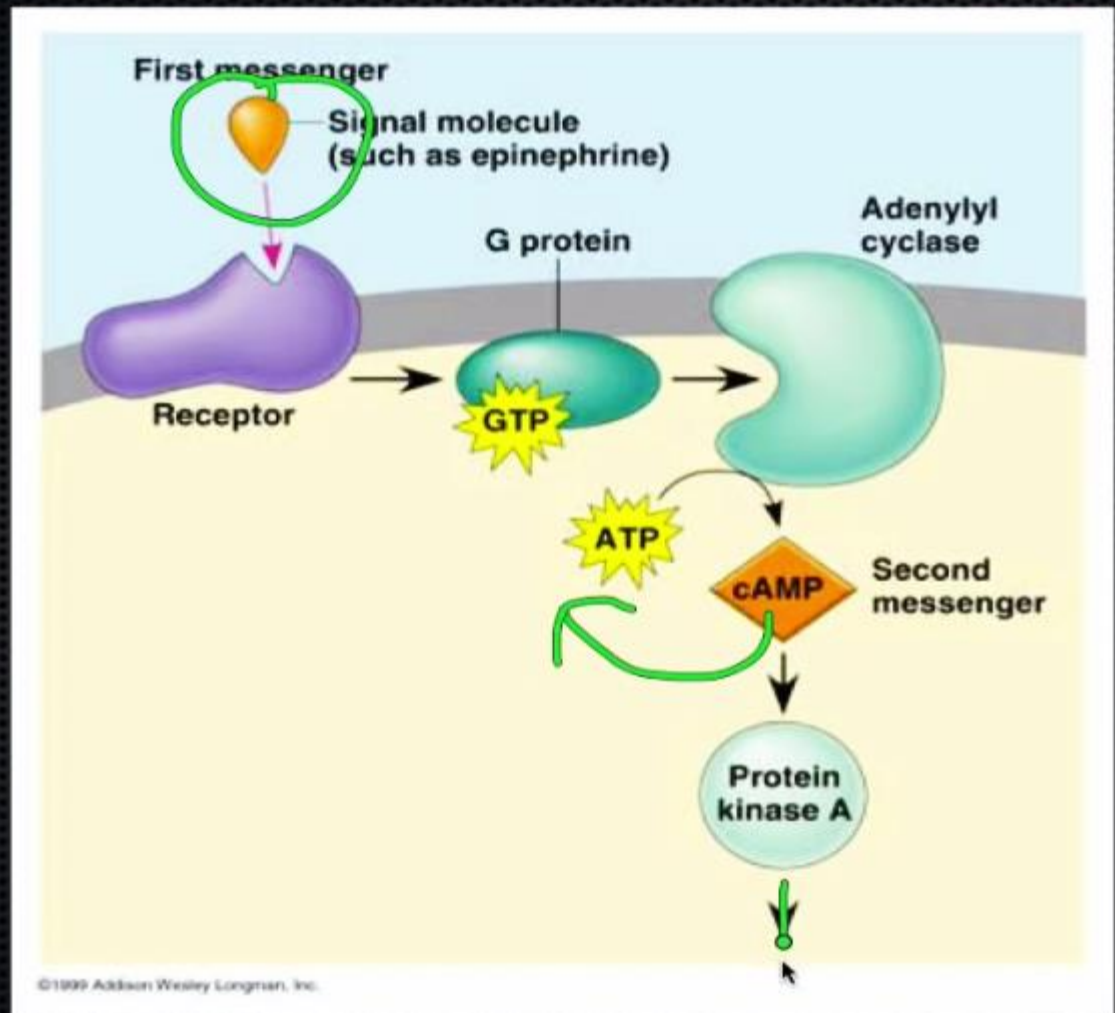
Reseptor pada permukaan sel

ligand is hydrophilic - never enters the cell



Reseptor sitoplasmik

cAMP most common 2nd receptor



Cascade Effect

- multi-step approach provides multiple opportunities for coordination and regulation
- amplifies the signal



Rangkuman

- Secara garis besar bekerjanya sinyaling sel :

SIGNAL ----- TRANSDUCTION ----- RESPONSE

- Spesifik dan sangat teratur
- 1 molekul Membuat **“CASCADE EFFECT”**
- Berlaku di semua kehidupan