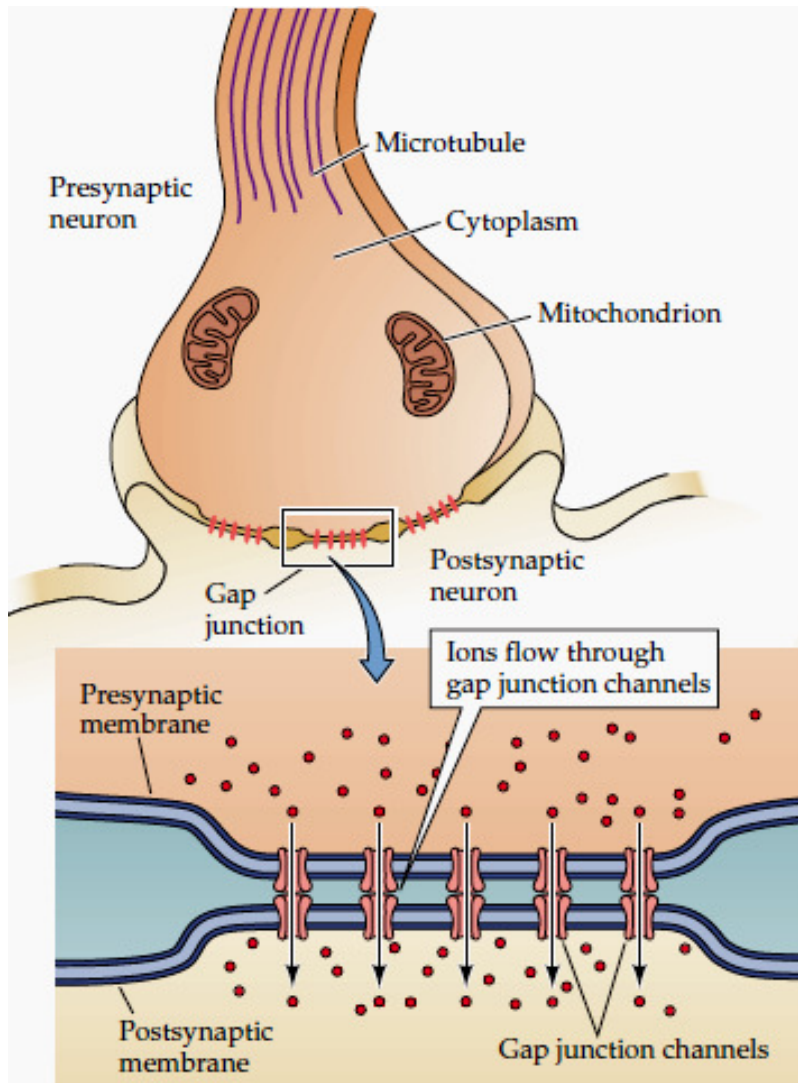


Neurotransmisión

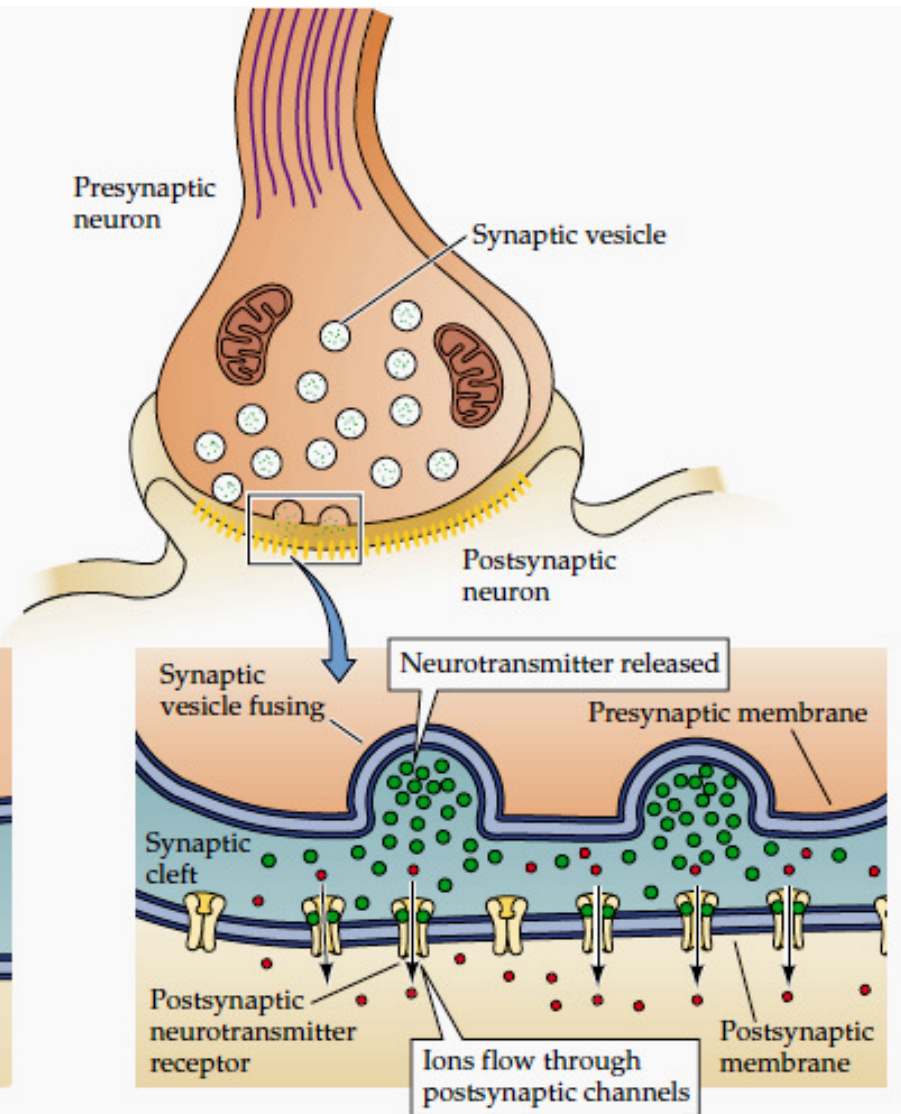


SINAPSIS: ZONA DE CONTACTO FUNCIONAL ENTRE DOS CÉLULAS EXCITABLES

Eléctrica

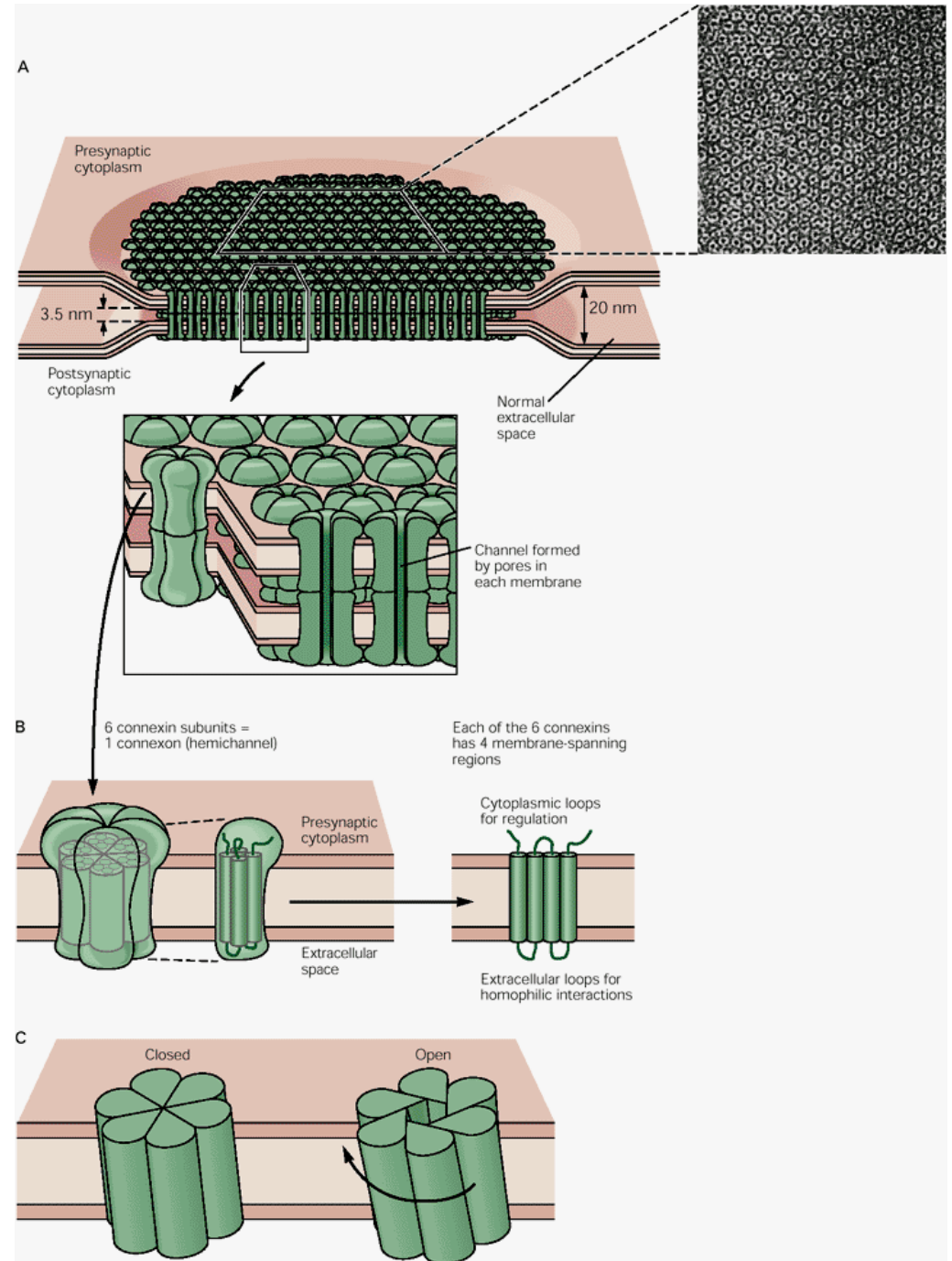
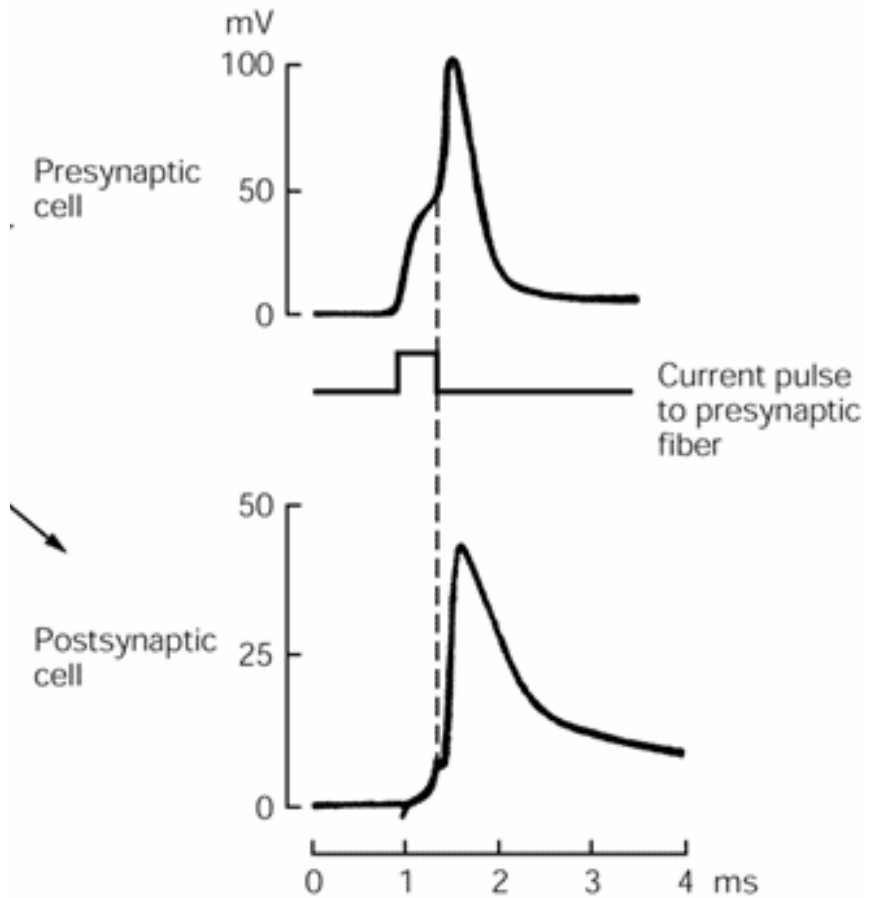


Química

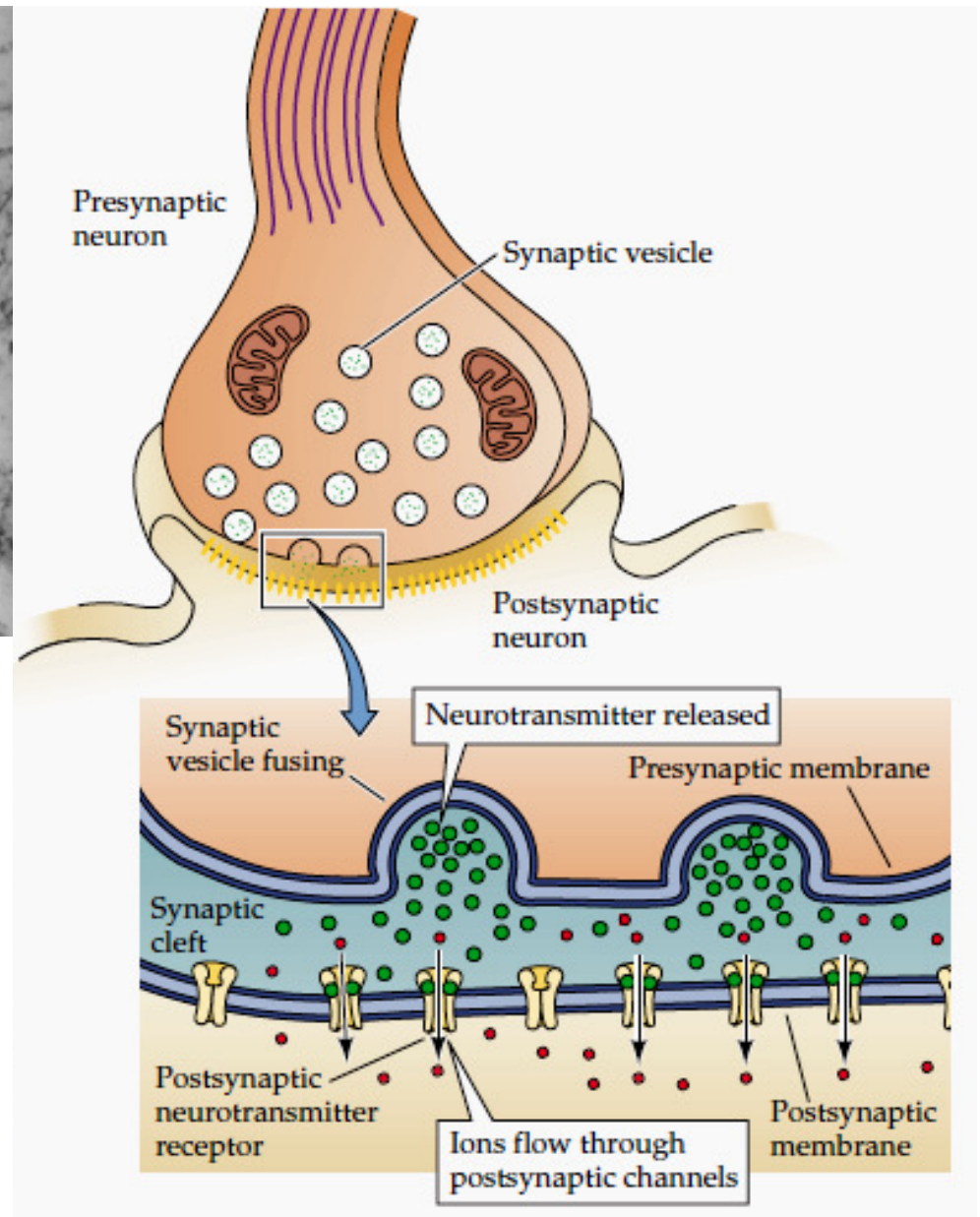
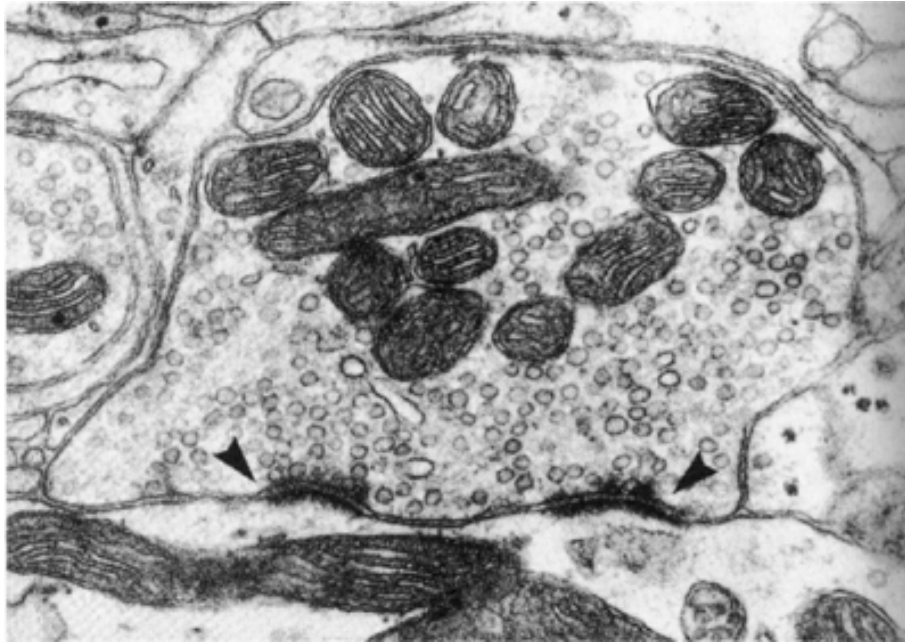


SINAPSIS ELÉCTRICA

B Stimulation of presynaptic fiber

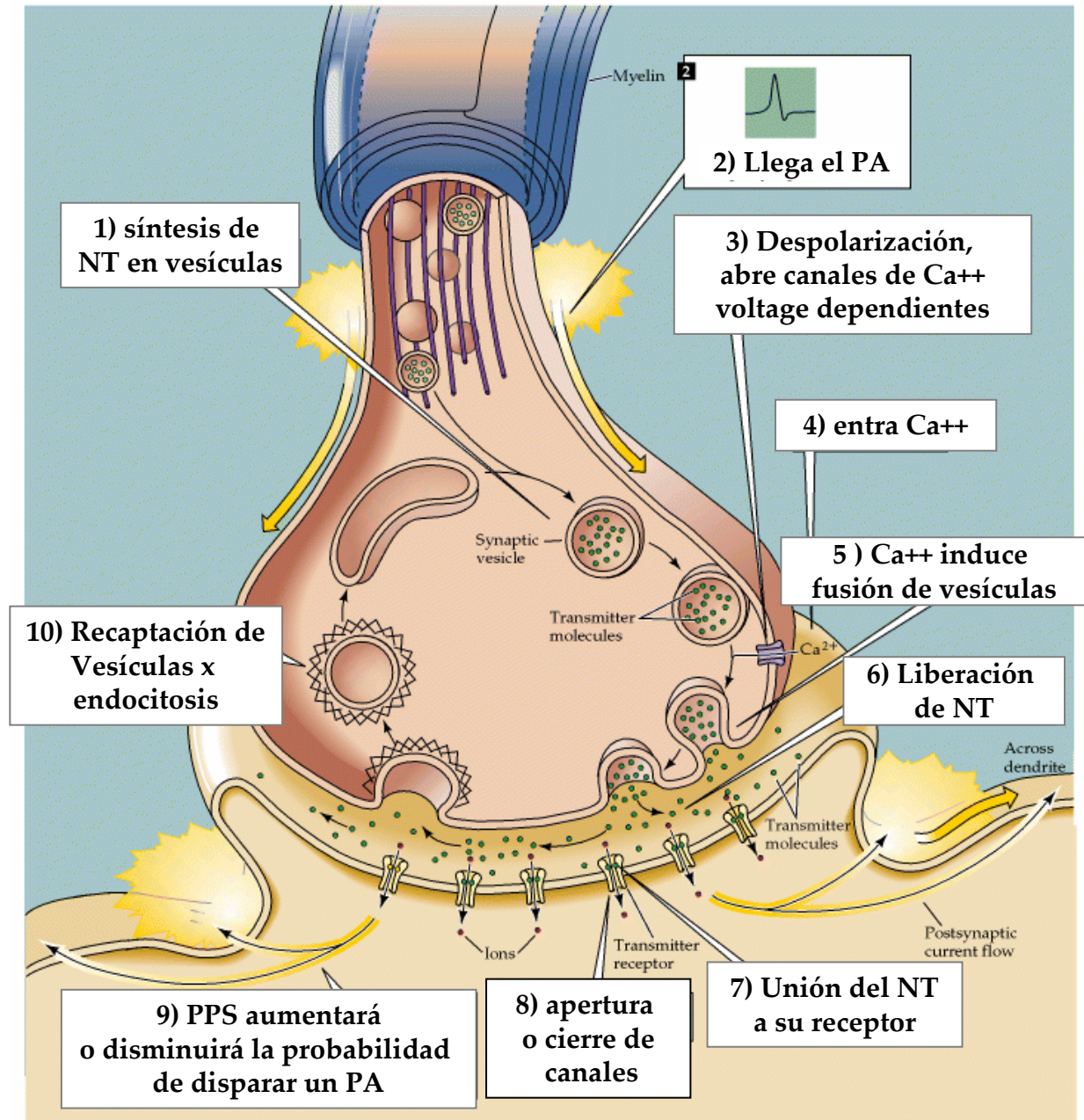


SINAPSIS QUÍMICA



	ELÉCTRICA	QUÍMICA
Agente transmisor	Corriente iónica	Químico (neurotransmisor)
Distancia	3,5 nm	30-50 nm
Continuidad citoplasmática	Sí	No
Componentes	Gap junctions (conexones)	Presinapsis: vesículas sinápticas Postsinapsis: receptores
Retraso sináptico	Insignificante (0,1 mseg)	1-5 mseg. (o más)
Dirección de la transmisión	Bidireccional	Unidireccional

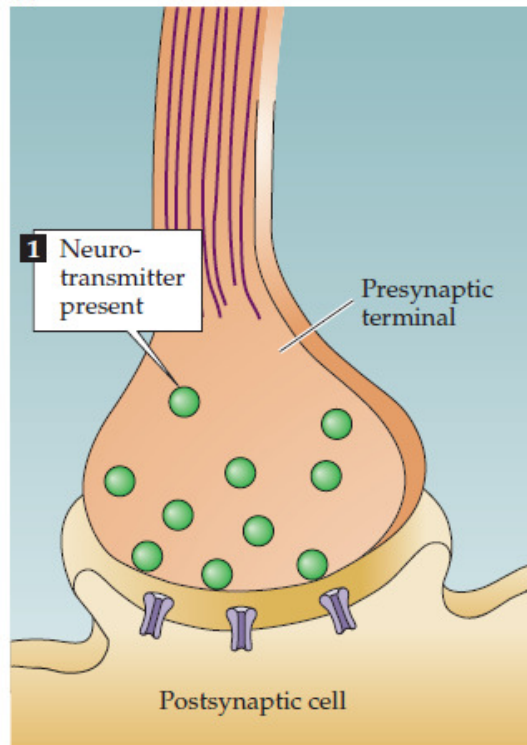
Neurotransmisión química



NEUROTRANSMISORES CLÁSICOS

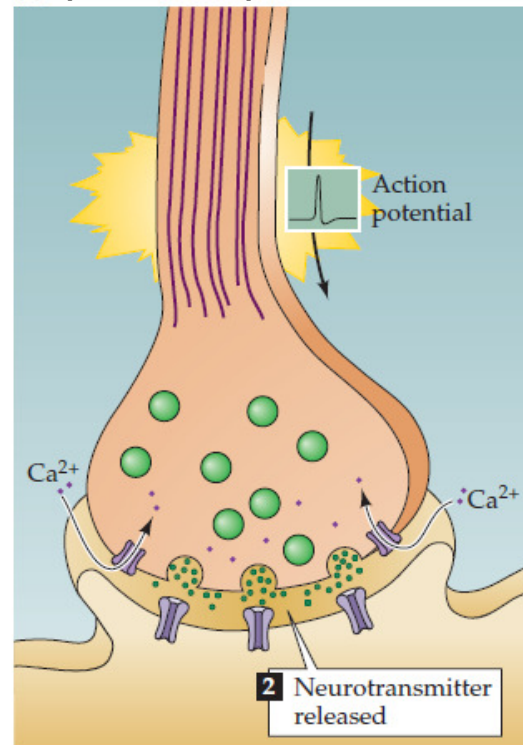
Síntesis y
almacenamiento
presinápticos

(1)



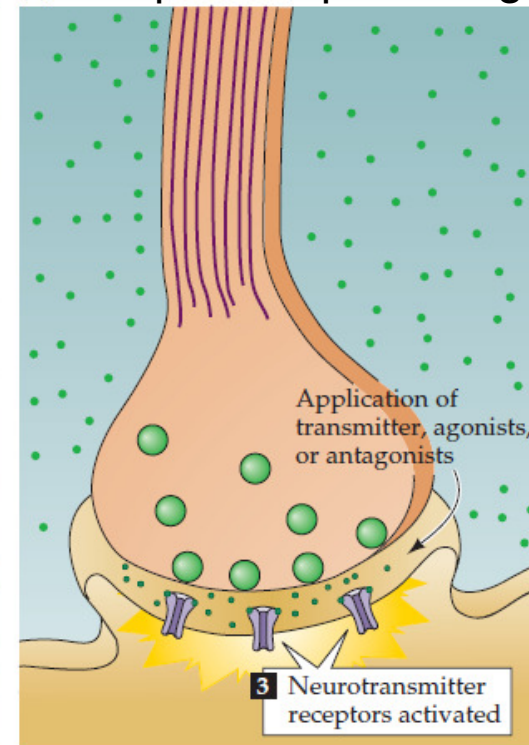
Liberación e
interacción con
postsinapsis

(2)



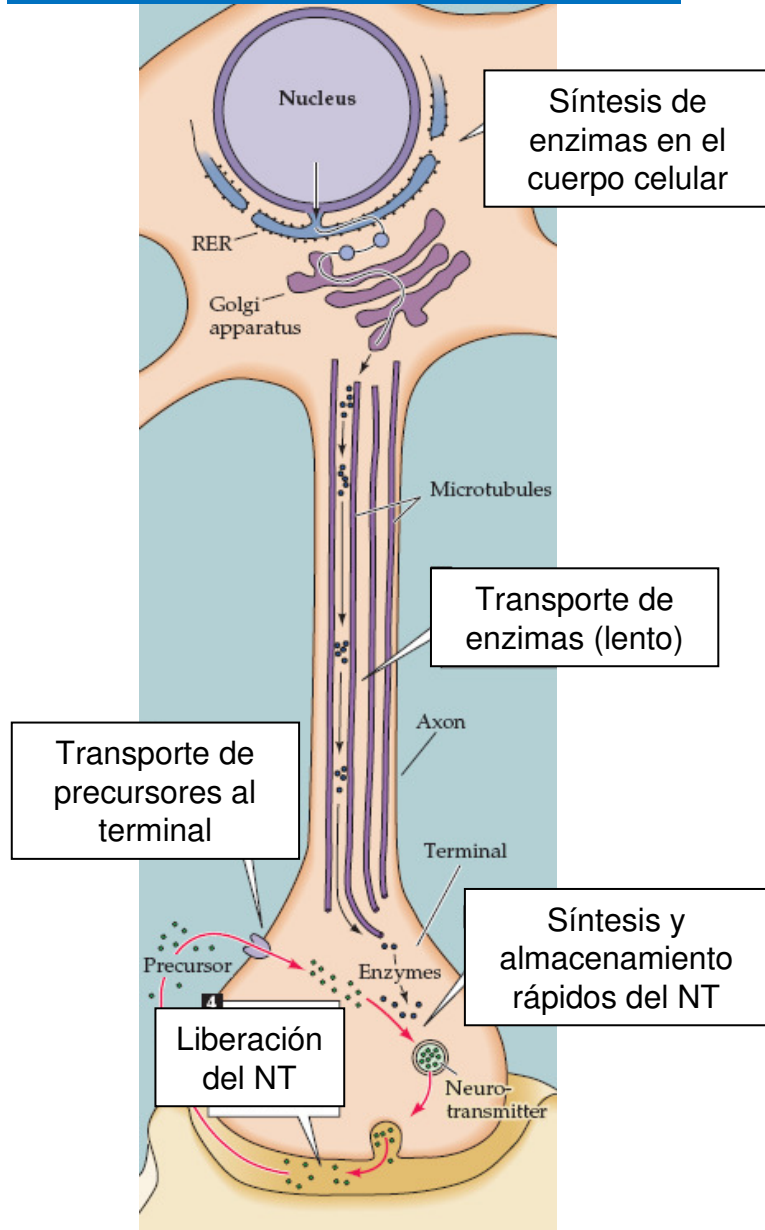
Mecanismos de
terminación;
Bloqueable por antagonistas

(3)

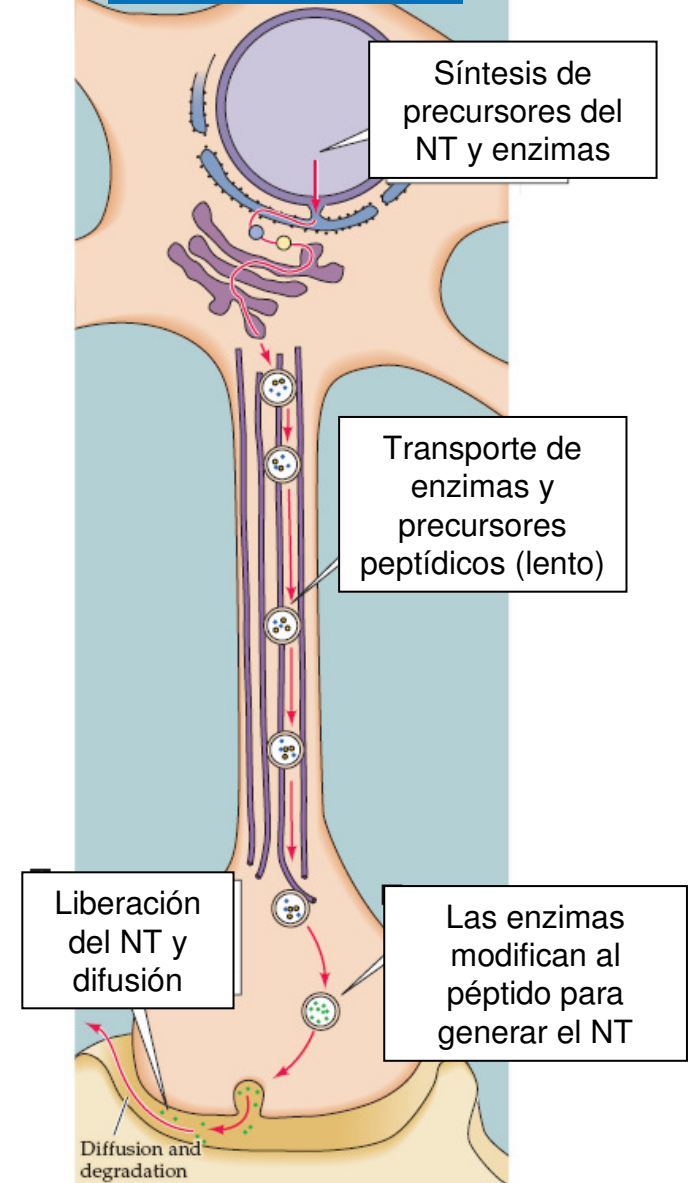


SÍNTESIS

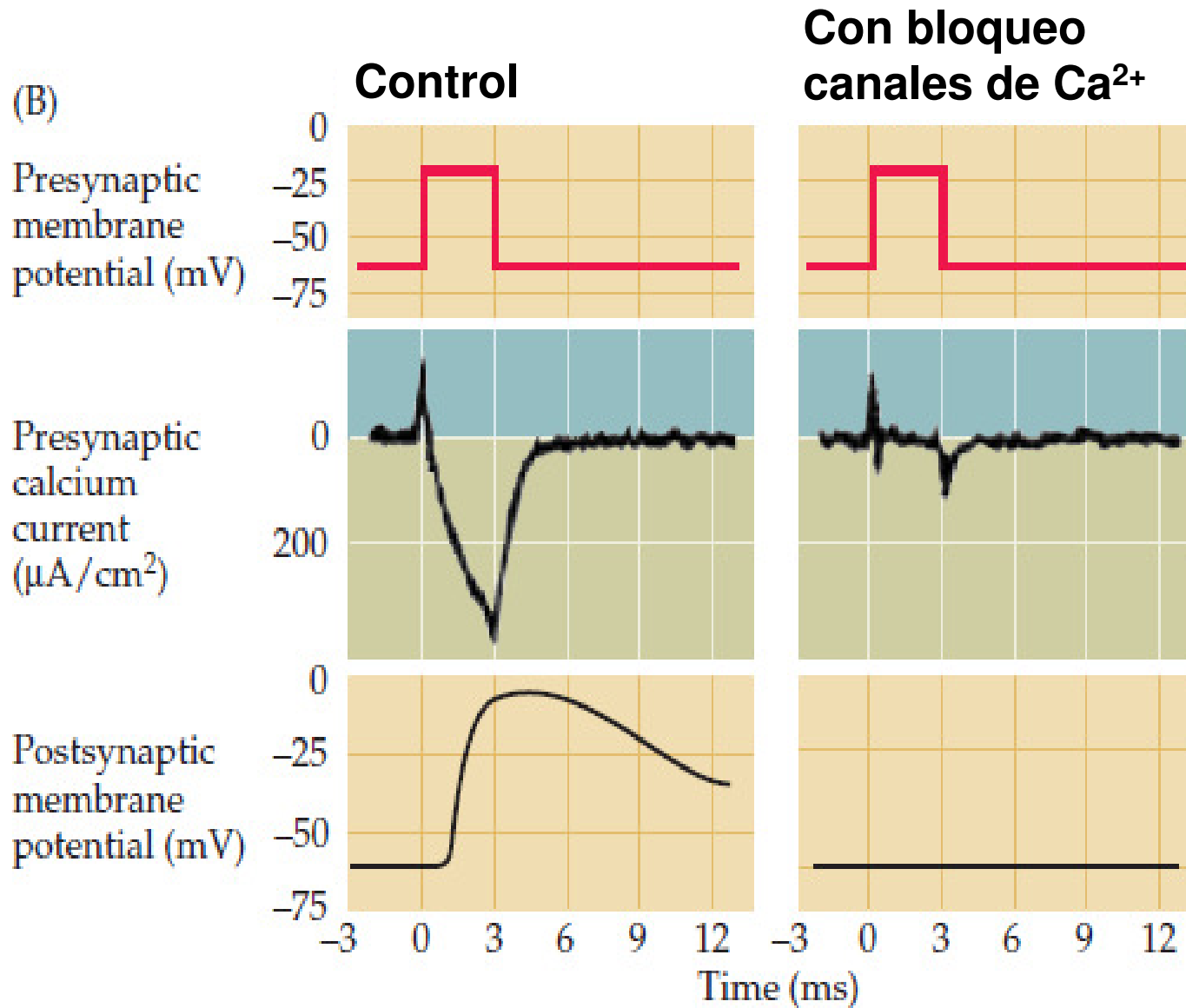
Neurotransmisores pequeños



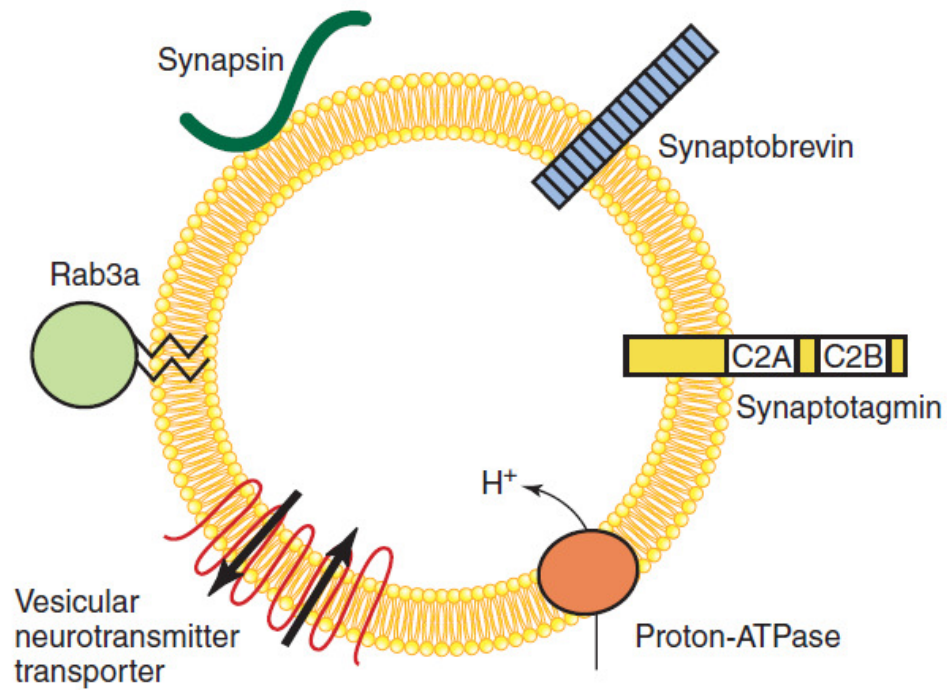
(c) Neuropéptidos



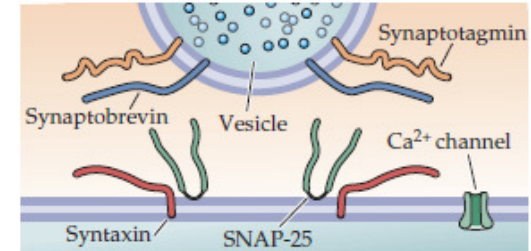
El ingreso de Ca^{2+} en la presinapsis es necesario para liberar el neurotransmisor



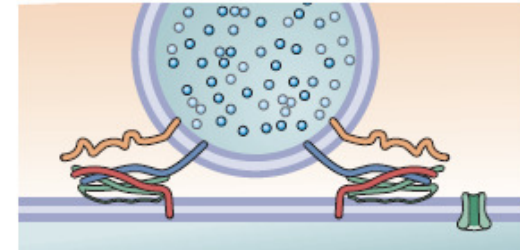
Liberación de neurotransmisor



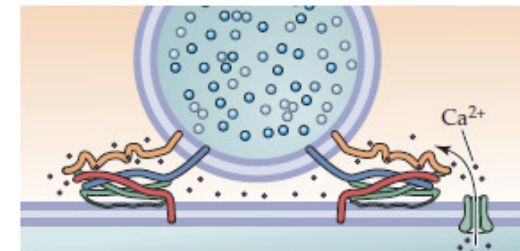
(B) (1) Vesicle docks



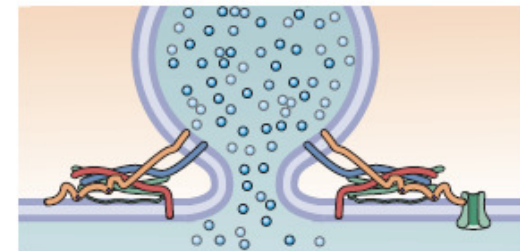
(2) SNARE complexes form to pull membranes together



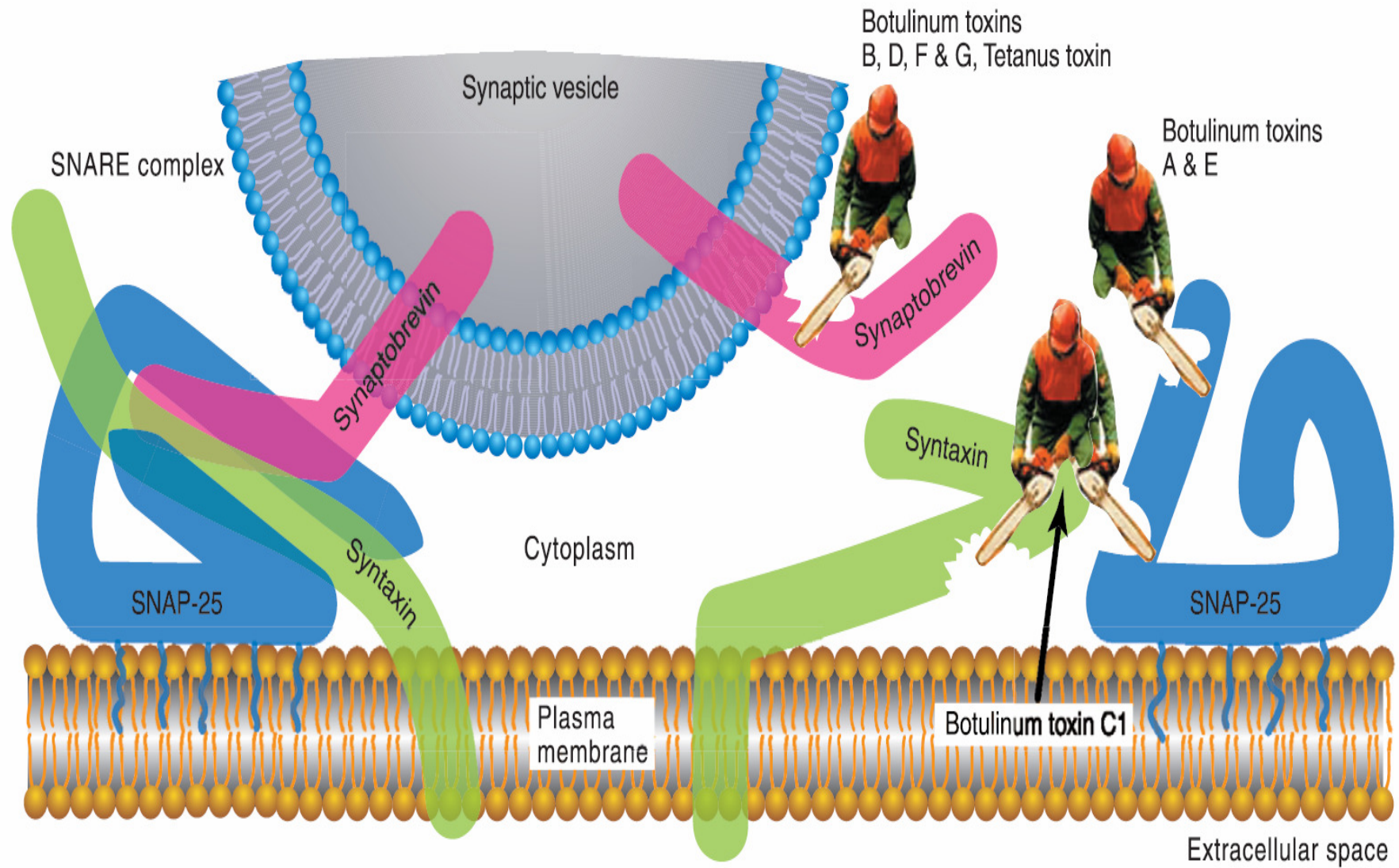
(3) Entering Ca²⁺ binds to synaptotagmin



(4) Ca²⁺-bound synaptotagmin catalyzes membrane fusion

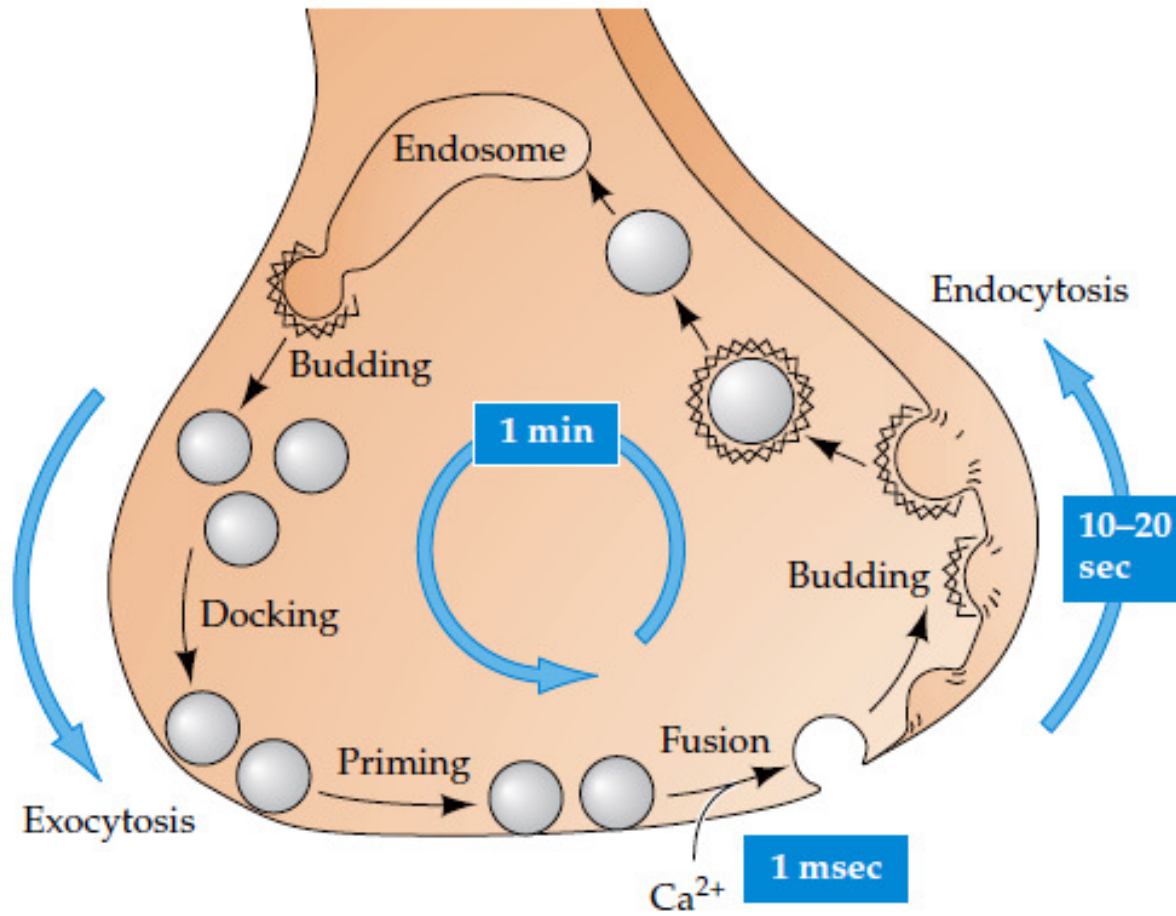


Liberación de neurotransmisor



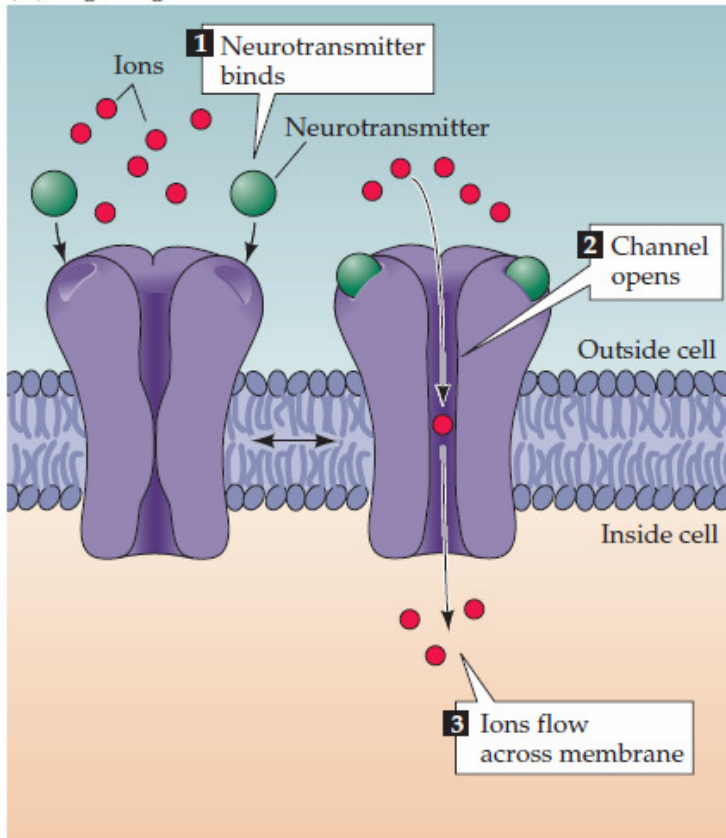
Liberación de neurotransmisor

(E)

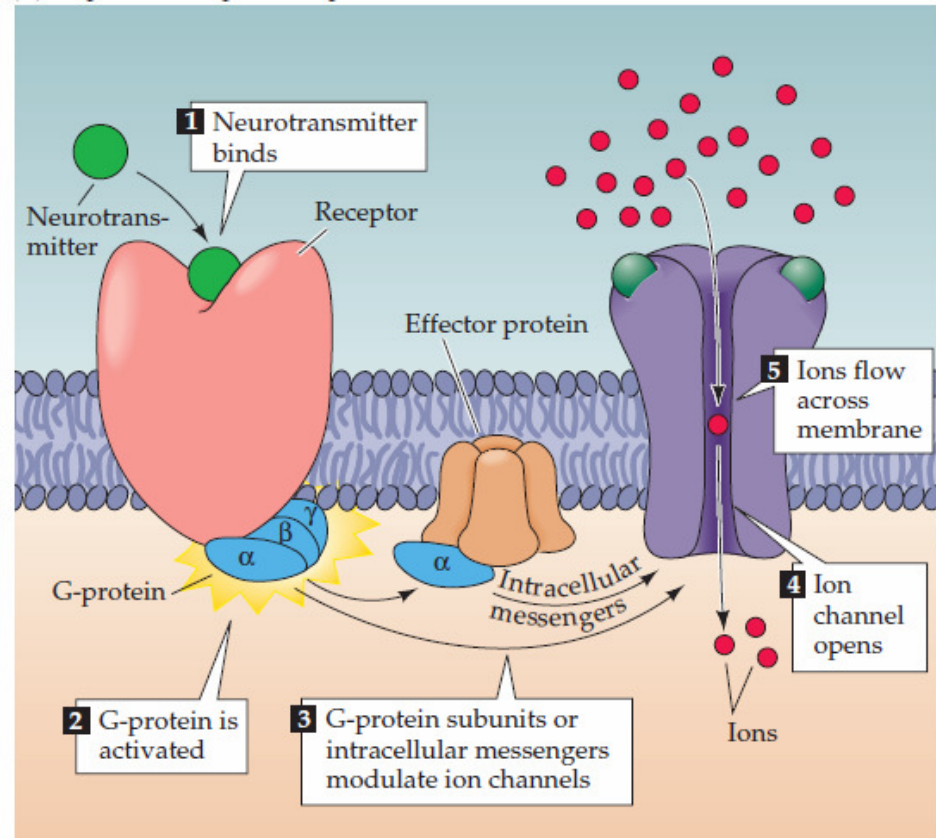


Receptores postsinápticos

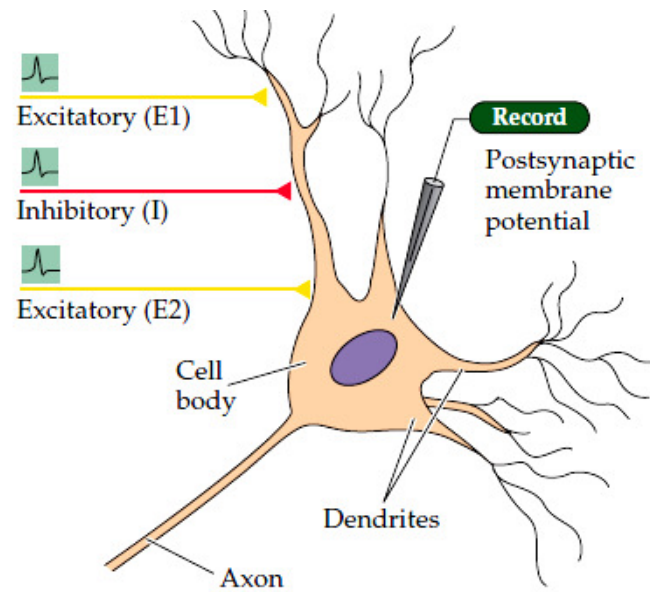
(A) Ligand-gated ion channels



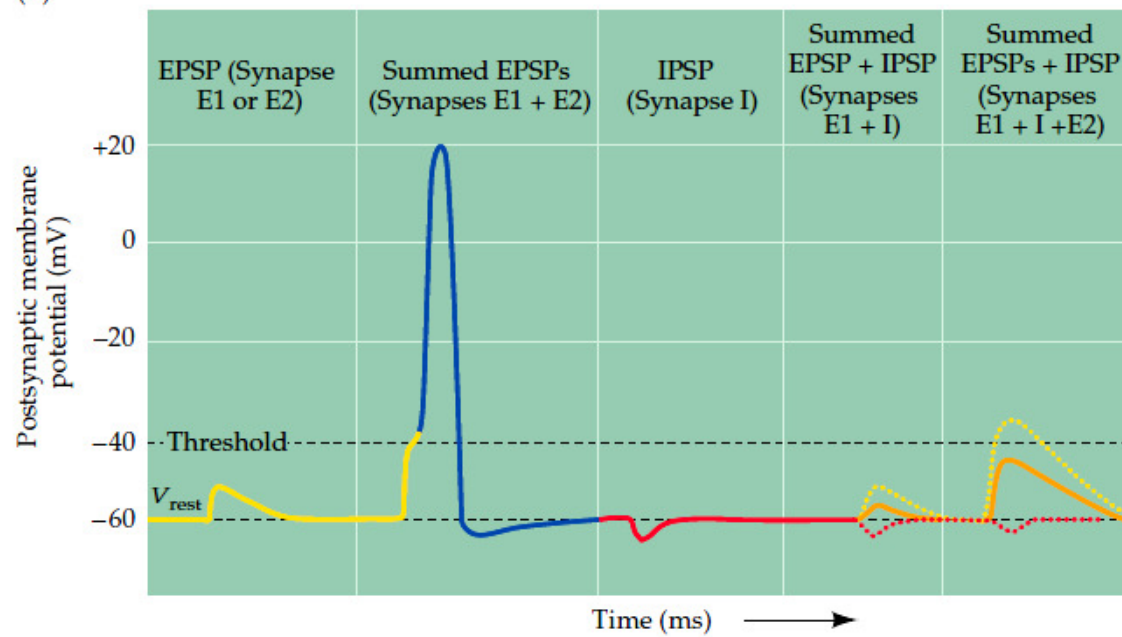
(B) G-protein-coupled receptors



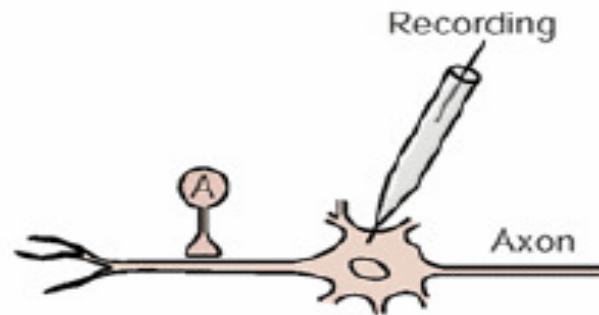
Respuestas postsinápticas



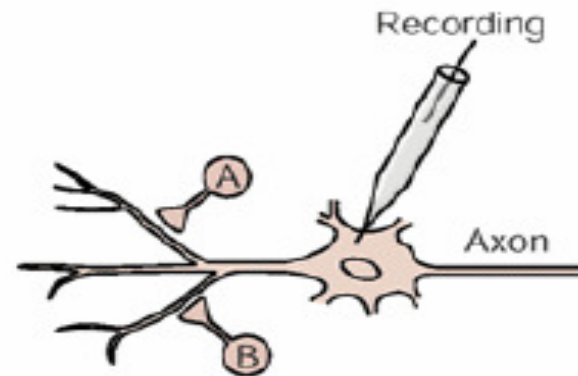
(B)



A Temporal summation



B Spatial summation



Synaptic current

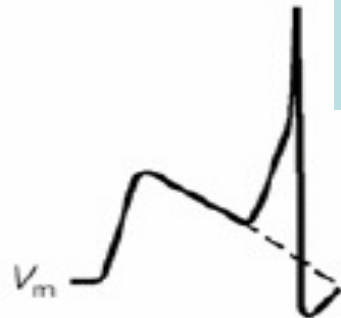


Constante de tiempo: tiempo que tarda la variación del V_m en llegar al 63% de su valor final

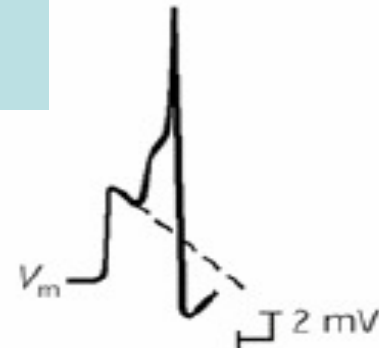


Constante de espacio: distancia a la que cae el 37% del V_m inicial

Synaptic potential



Long length constant (1 mm)



Long time constant (100 ms)

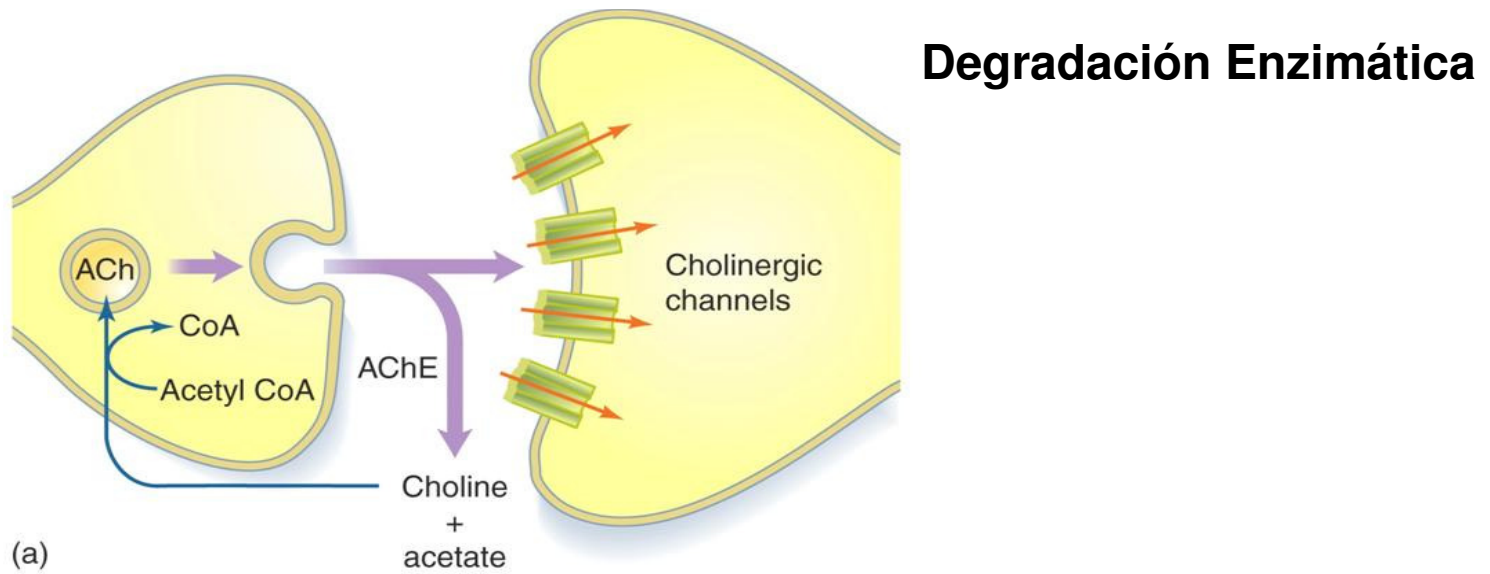
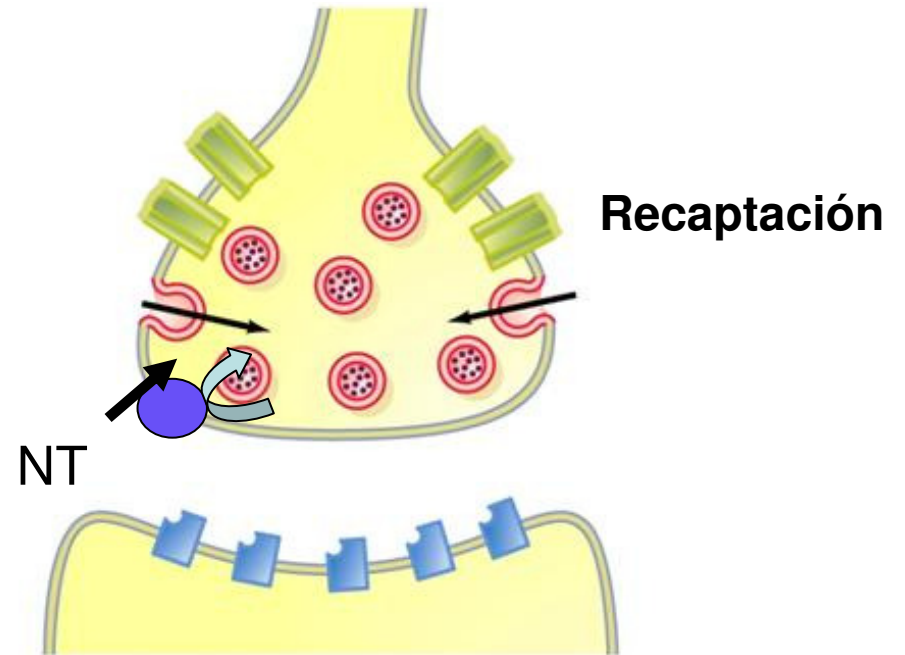
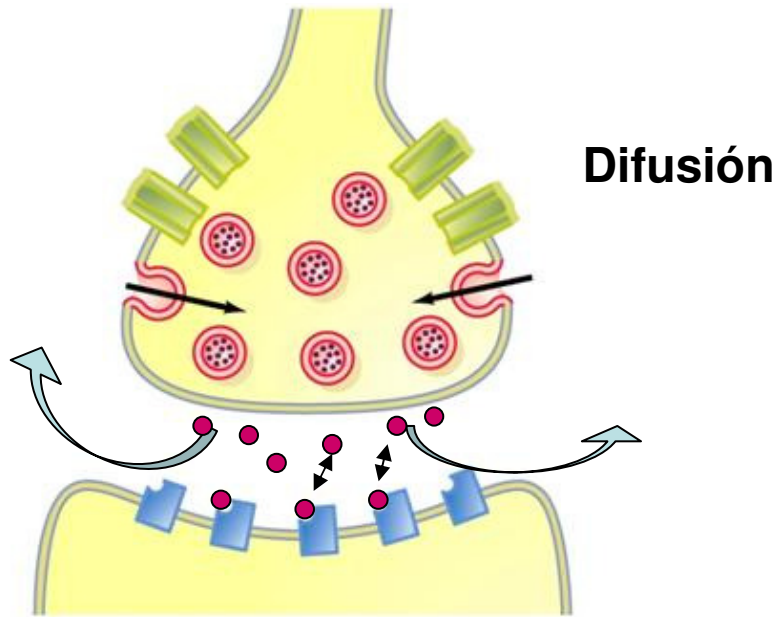
Short time constant (20 ms)



Short length constant (0.33 mm)



Terminación de la señal



RECAPTACION 1 - NEURONAL

RECAPTACION 2 - EXTRANEURONAL

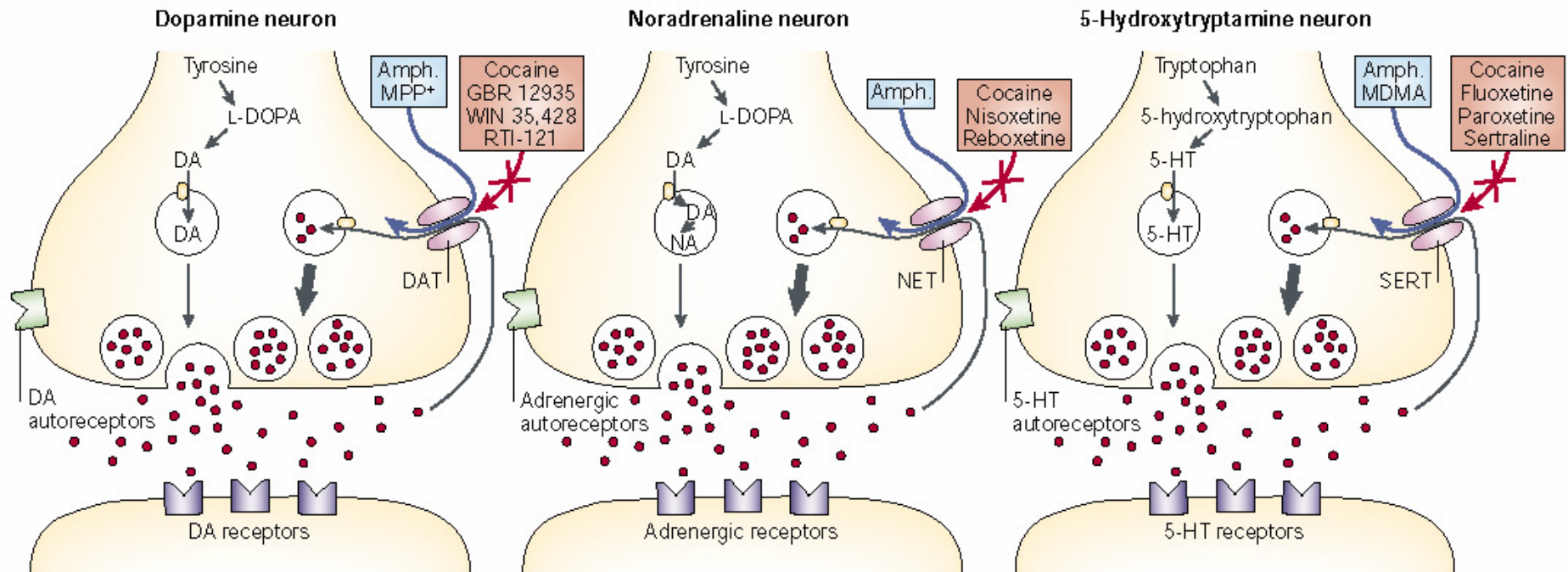
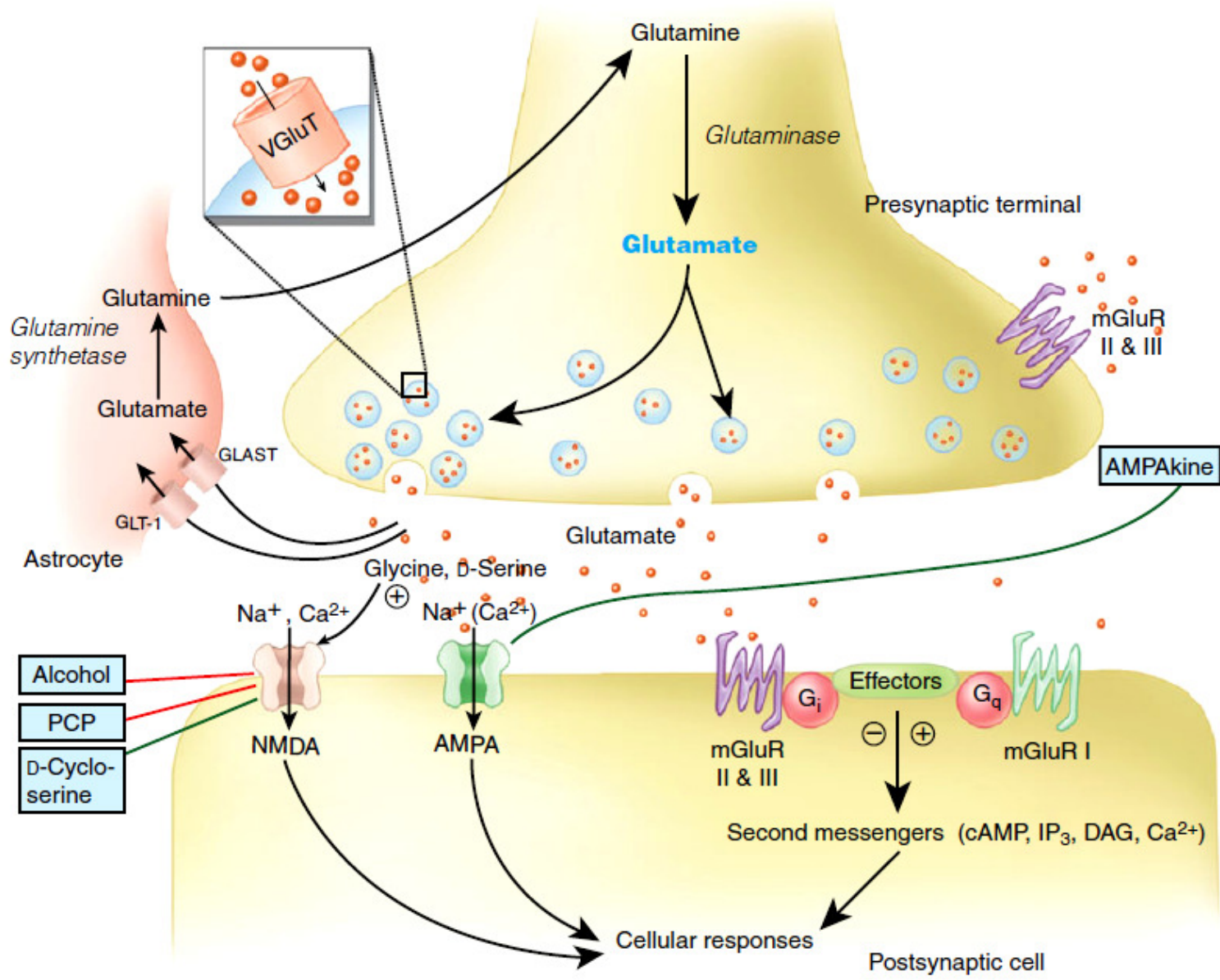


Figure 1 | **Schematic representation of dopamine, noradrenaline and 5-HT synaptic terminals.** Monoamine transporters are localized to perisynaptic sites, where they are crucial for the termination of monoamine transmission and the maintenance of presynaptic monoamine storage. Several selective pharmacological agents acting at each monoamine transporter are shown. Amph., amphetamine; DA, dopamine; DAT, Dopamine transporter; L-DOPA, L-3,4-dihydroxyphenylalanine; 5-HT, 5-hydroxytryptamine; MPP⁺, 1-methyl-4-phenylpyridinium; MDMA, (+)-3,4-methylenedioxymethamphetamine; NA, noradrenaline; NET, noradrenaline transporter; SERT, 5-HT transporter.

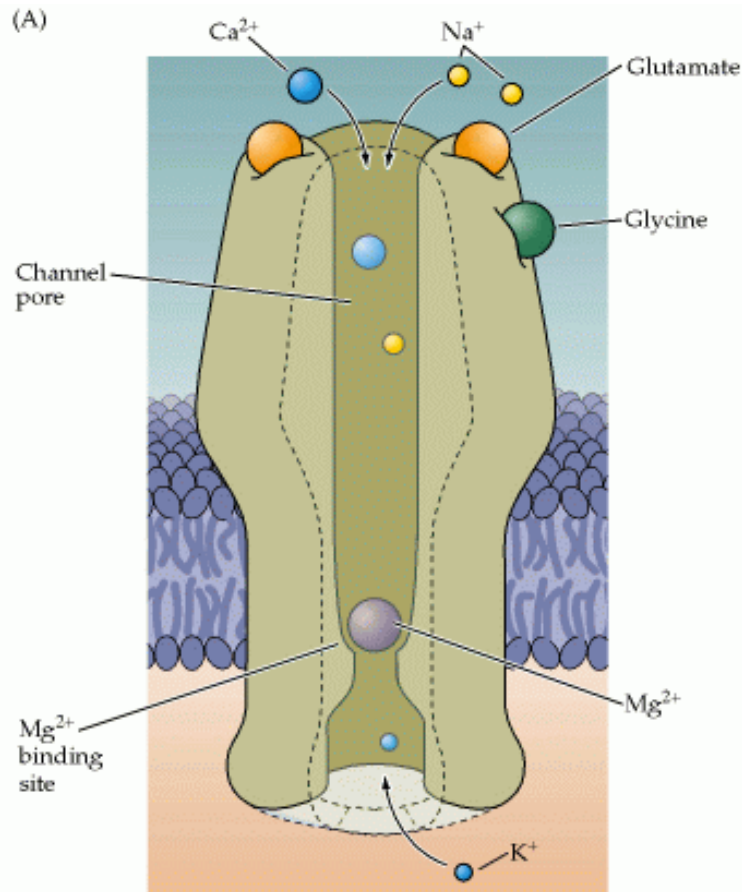
NEUROTRANSMISORES

TIPO	NEUROTRANSMISOR	SÍNTESIS	TERMINACIÓN
AMINOÁCIDOS	Acetilcolina	TERMINAL SINÁPTICO	DEGRADACIÓN RECAPTACIÓN
	Glutamato		
	Aspartato		
	GABA		
	Glicina		
	Taurina		
	Derivados purínicos		
AMINAS BIÓGENAS	Noradrenalina		
	Adrenalina		
	Serotonina		
	Histamina		
	Dopamina		
NEUROPEPTIDOS	Sustancia P	SOMA	DIFUSIÓN
	Endorfinas		
	Neuropéptido Y		
	Etc...		

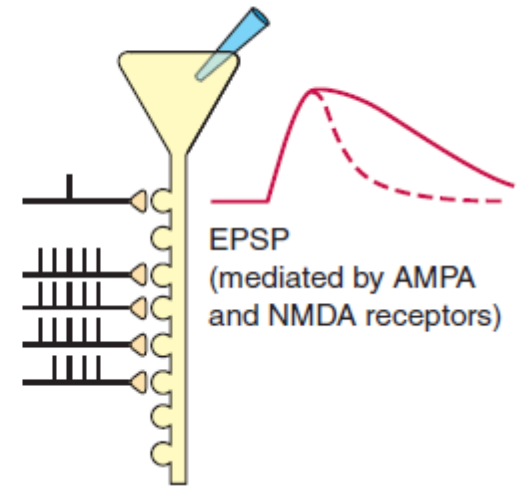
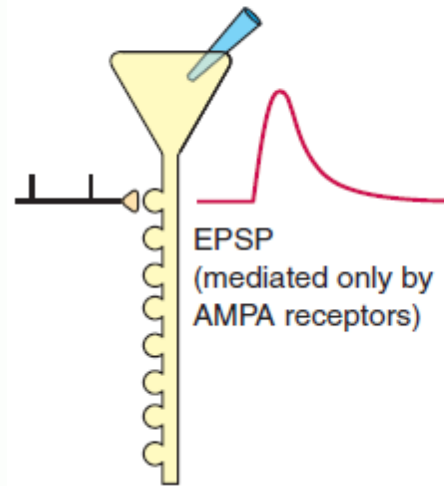
SINAPSIS GLUTAMATÉRGICA



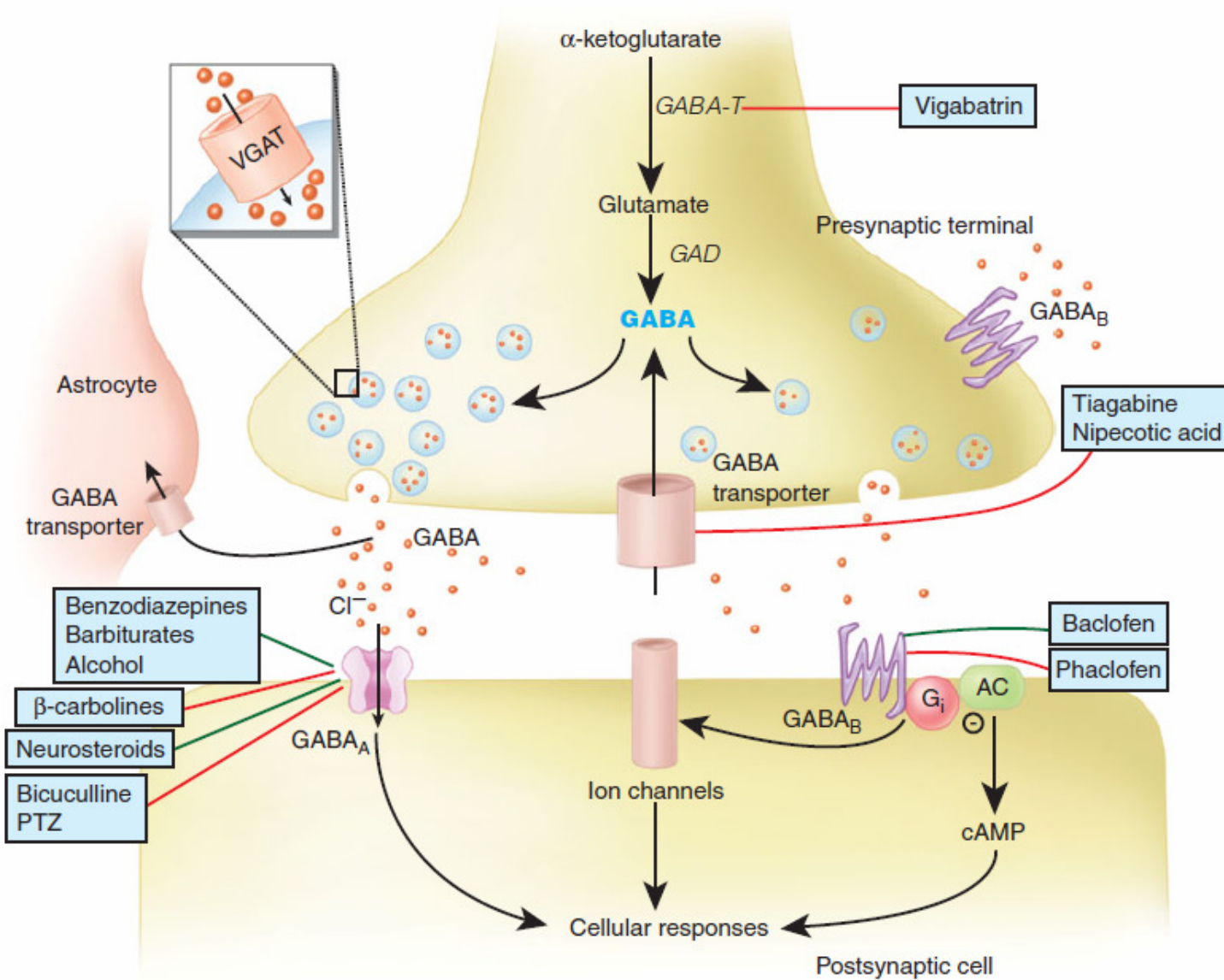
SINAPSIS GLUTAMATÉRGICA



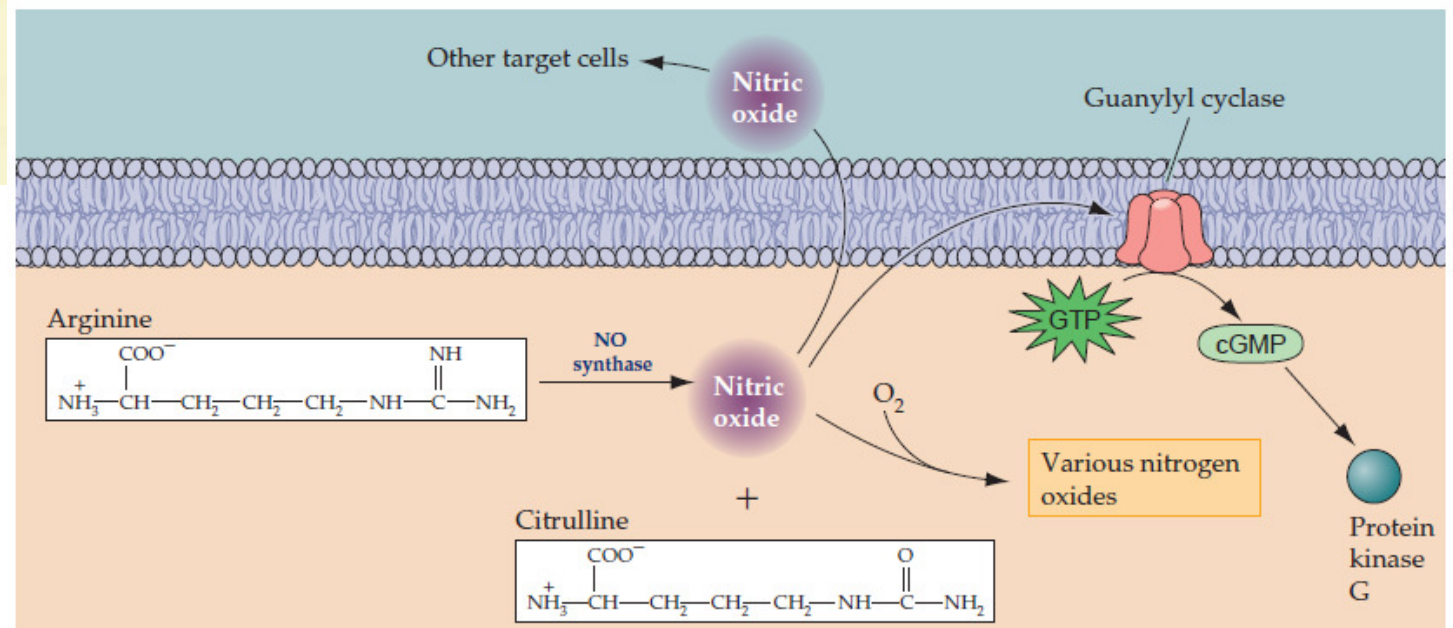
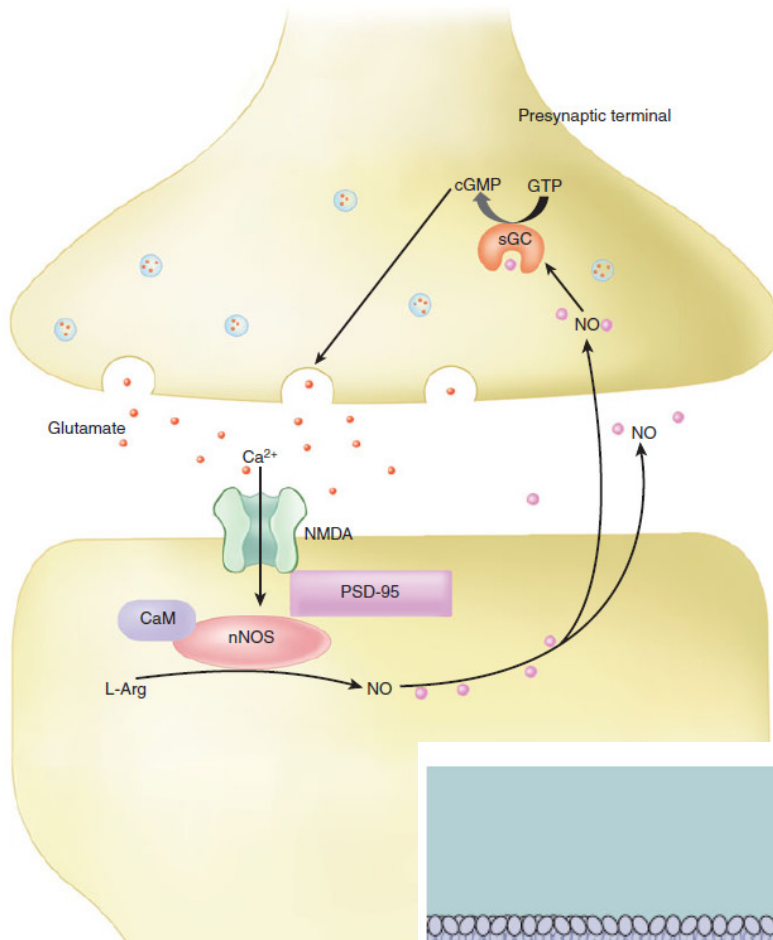
receptor NMDA



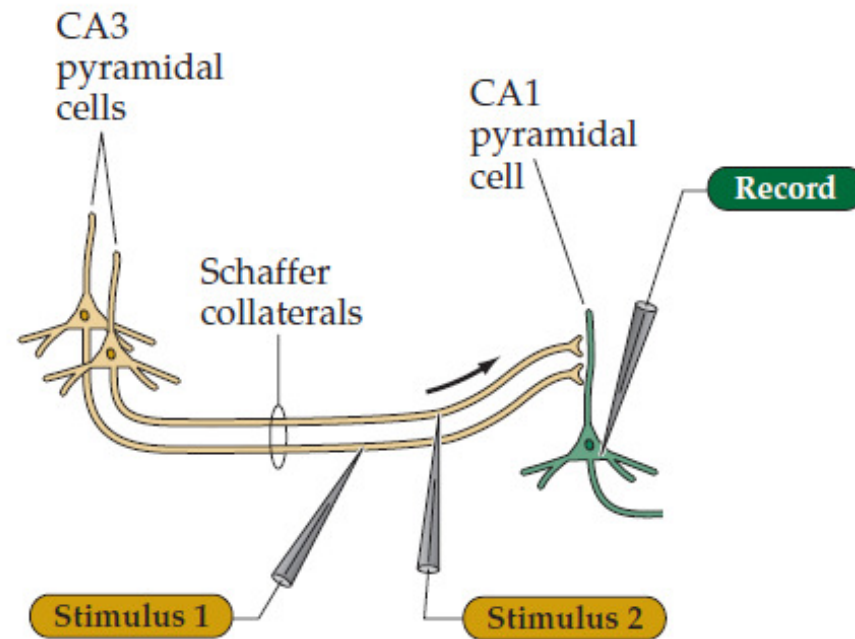
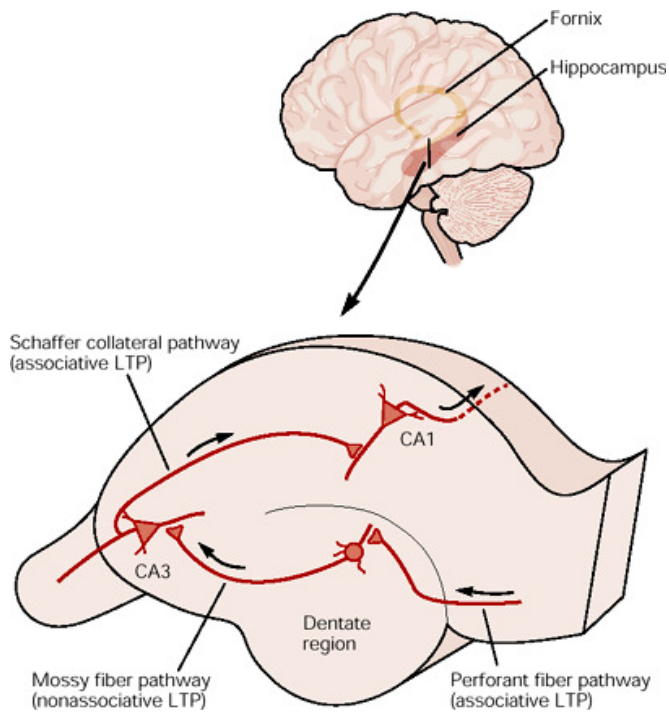
SINAPSIS GABAÉRGICA



Neurotransmisión mediada por gases!!

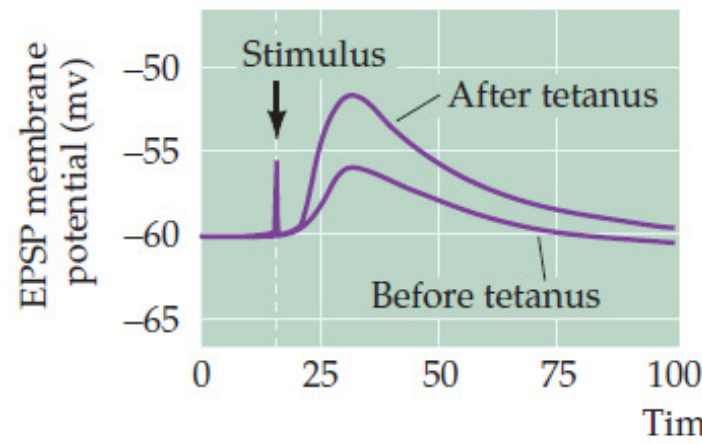


PLASTICIDAD DE LARGA DURACIÓN: POTENCIACIÓN

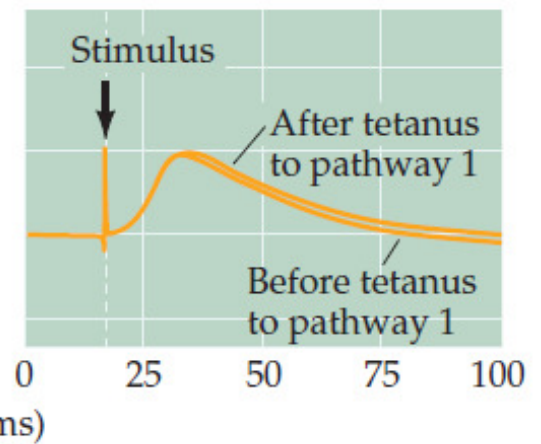


(B)

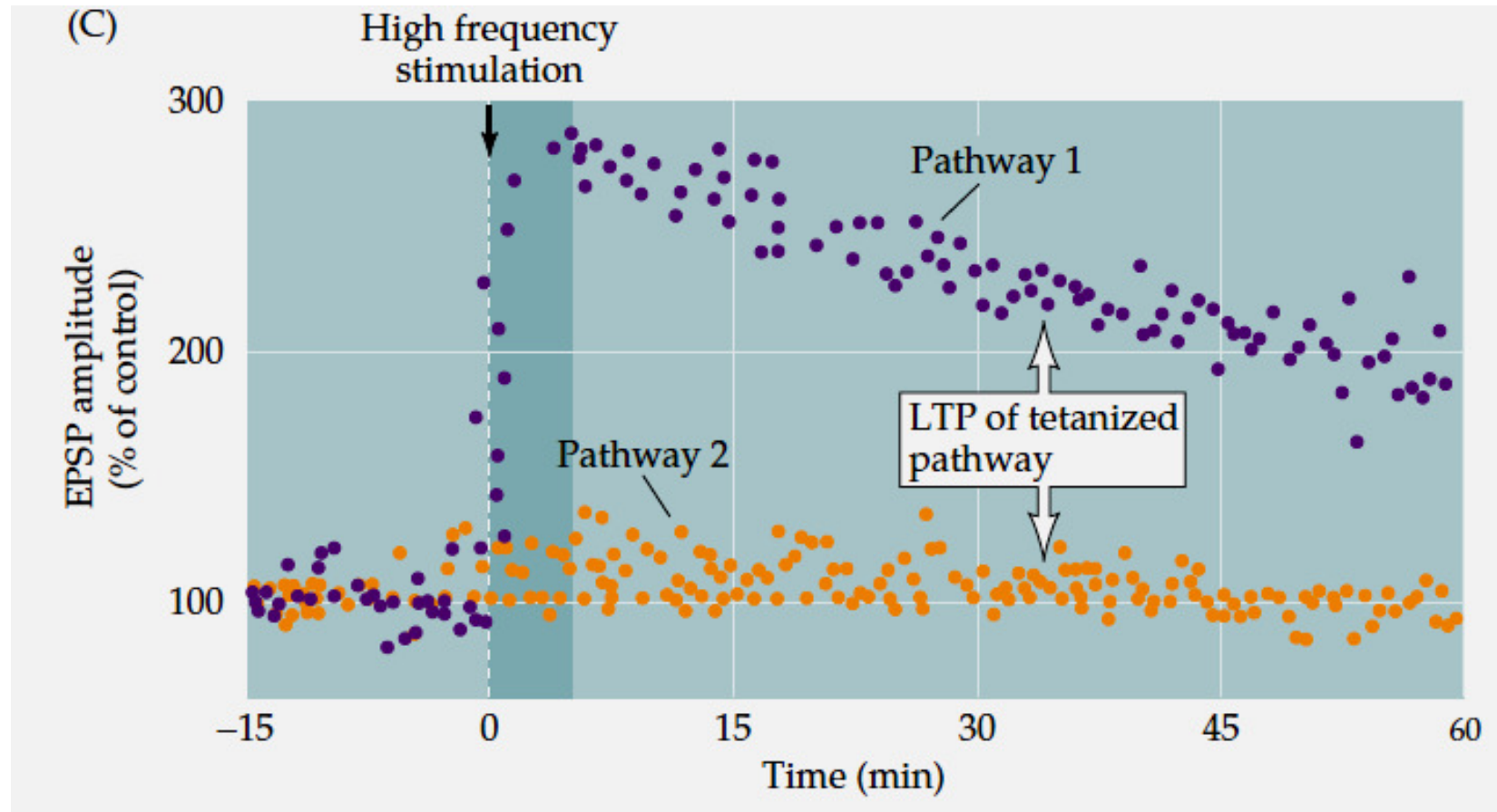
Pathway 1



Pathway 2



PLASTICIDAD DE LARGA DURACIÓN: POTENCIACIÓN



PLASTICIDAD DE LARGA DURACIÓN: POTENCIACIÓN

**Bases celulares del
mecanismo de Potenciación a
Largo Plazo.**

**Etapas tempranas con
modificación de la eficacia
sináptica y tardías con
alteraciones estructurales.**

