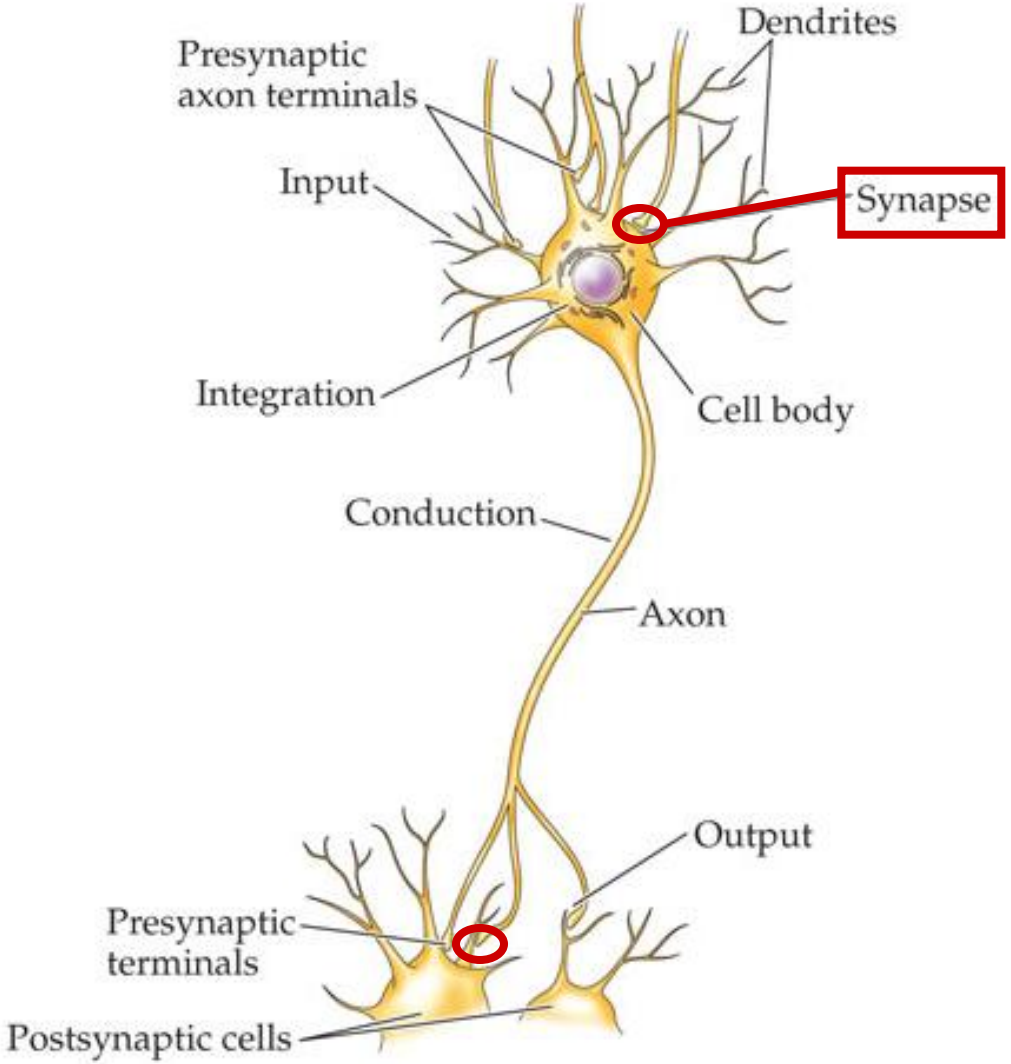
Synapse – site of communication between a nerve cell and 1) another nerve cell, 2) an effector cell, or 3) a sensory cell



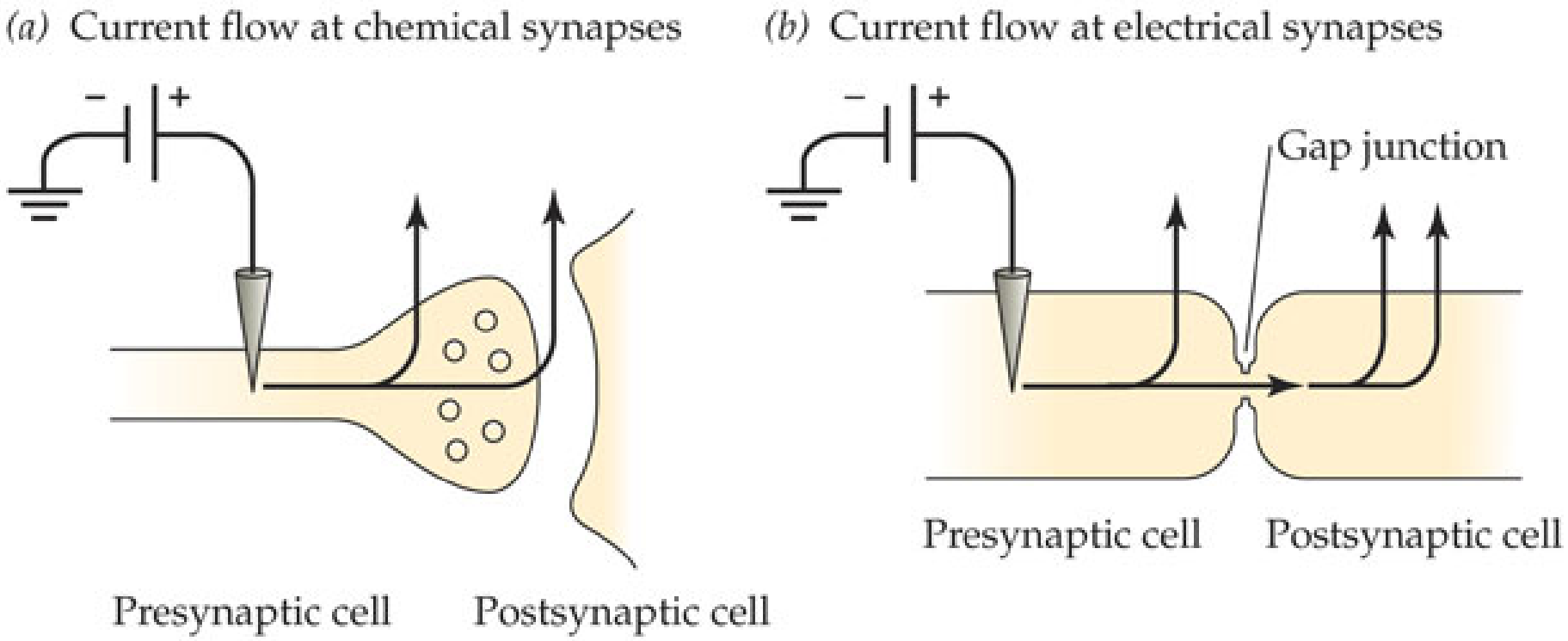
Two types of synapse

Chemical

Cells separated by synaptic cleft
electrical-chemical-electrical
Permits flexibility in response

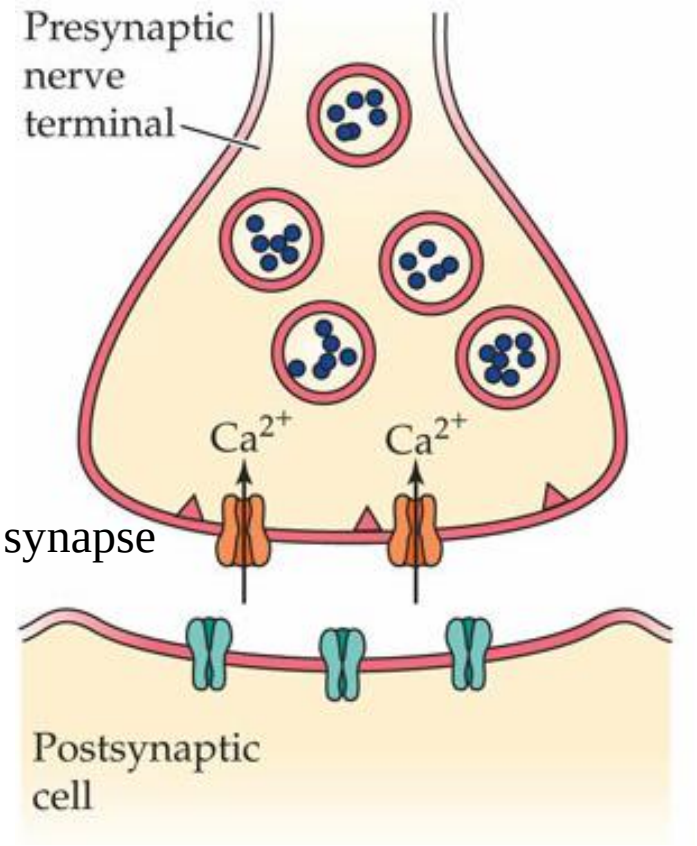
Electrical

Cells are "hard-wired"
Very rapid response

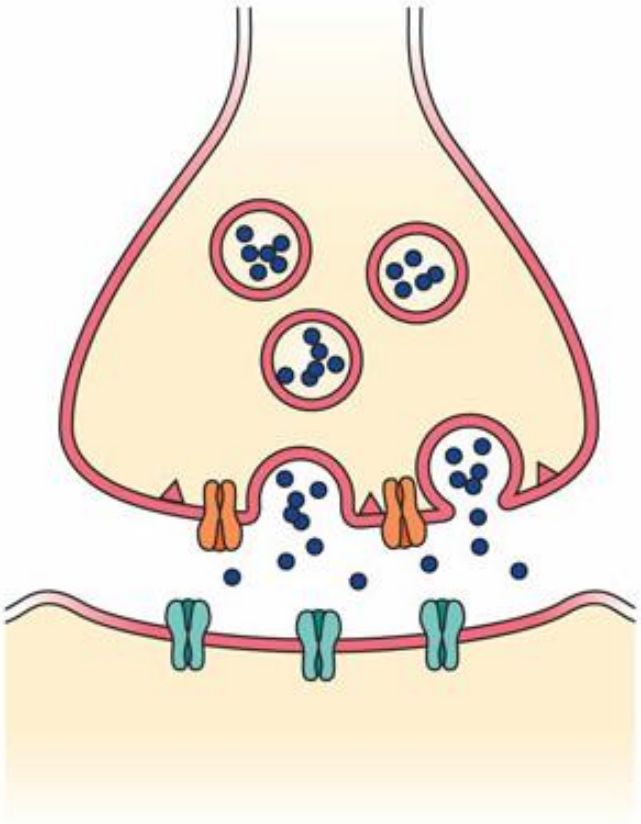


Signal transmission at a chemical synapses

Release of neurotransmitter from presynaptic cell



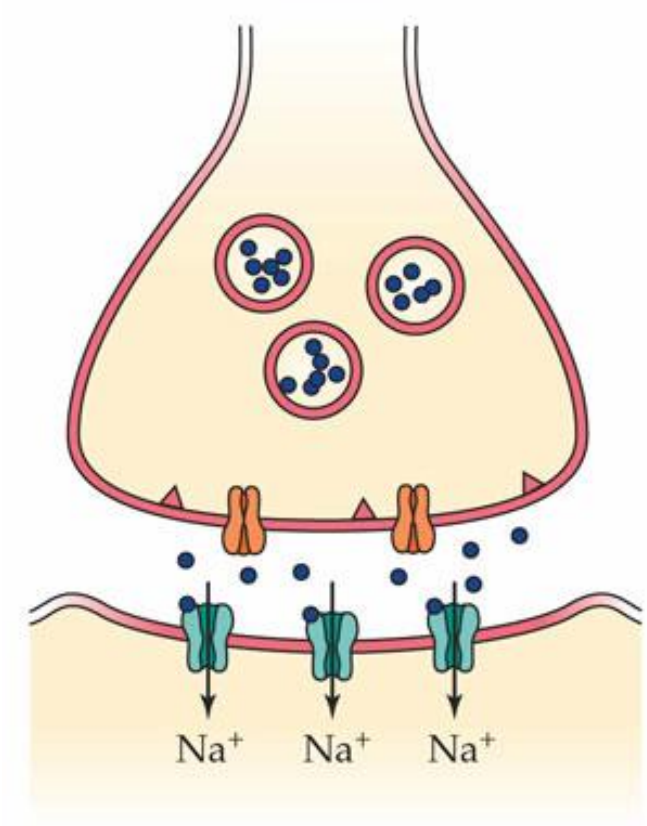
Arrival of AP triggers opening of voltage-gated Ca^{2+} channels



Ca^{2+} influx triggers vesicle fusion and release of NT into synaptic cleft

Signal transmission at a chemical synapses

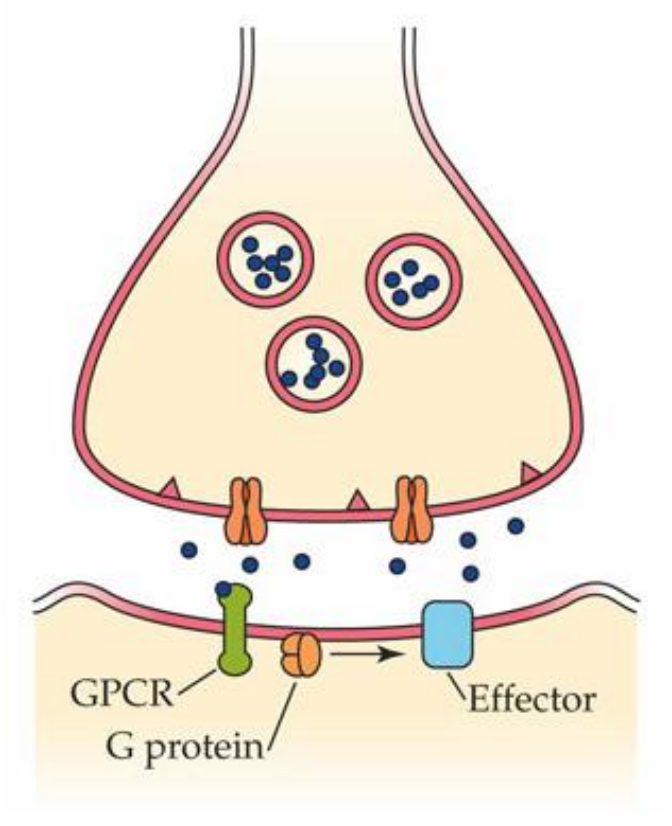
Reception of neurotransmitter at the postsynaptic cell



Ionotropic

Fast

Direct effects on permeability

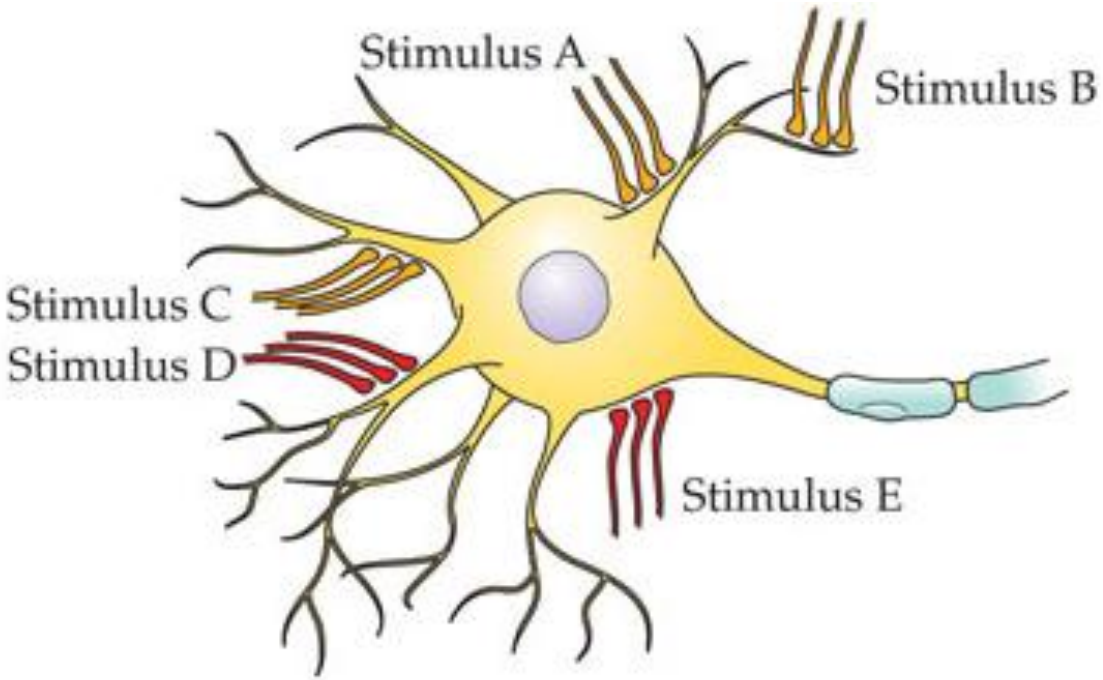


Metabotropic

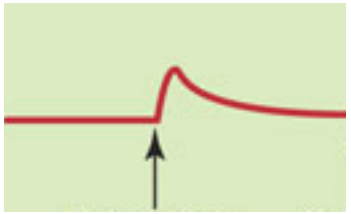
Slow

Indirect effects on permeability

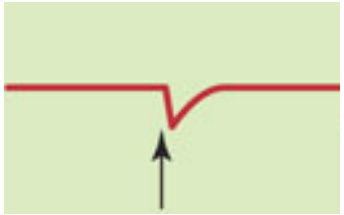
Post-synaptic potentials (PSP) are graded potentials generated in response to reception of NT signal



1) EPSP (excitatory)

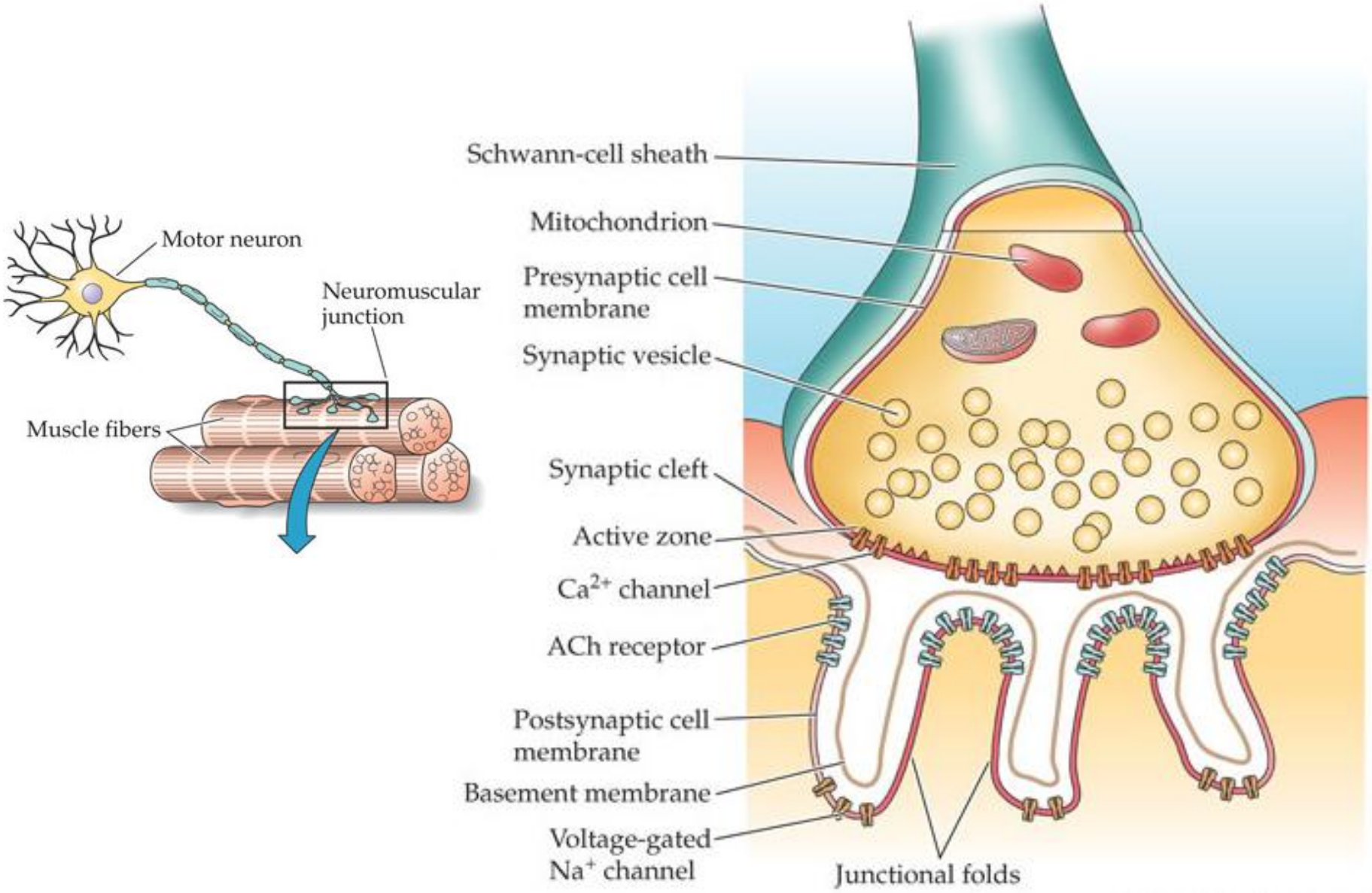


2) IPSP (inhibitory)



Neuromuscular junctions

A model for understanding synapse structure and function



Neuromuscular junctions

A model for understanding synapse structure and function