

Electrical synapses would be faster than chemical

Electrical synapses are rare

Physical channels as if continuous membrane

Vagus nerve slows the heart rate

Quantal chemical connection

Synaptic vesicles contain neurotransmitters

NT do not enter postsynaptic cell, just respond to their presence

Large, localized Ca^{2+} influx

EPSP \rightarrow Glutamate

IPSP

CF flows, hyperpolarization, GABA

Summation at axon hillock

Learning \Rightarrow adjusting weights of connections, in the brain

Ionotropic

NT attach to receptor on ion channel

Metabotropic

NT attach to receptor that activates G-protein

Long-term potentiation \Rightarrow Memory
(LTP)

Glutamate

common form ionotropic excitatory

AMPA \rightarrow translates info

NMDA \rightarrow changes weight of synapse
Allows Ca^{2+} to flow

Will not conduct with Glutamate alone

AMPA depolarizes every time

NMDA only depolarizes when V_m gets positive because Mg^{2+} gets displaced
 Mg^{2+} naturally blocks NMDA channels

AMPAR

STDP

If there is a postsynaptic response immediately following a presynaptic pulse \rightarrow strengthen
" presynaptic " postsynaptic pulse \rightarrow weaken

Biologically happens at ~~sooty~~ climbing fibers

GABA

received by GABA_A receptors

Cl^- flows through GABA_A down its [] gradient

Don't need to memorize table, just know that there is variety

NTs can be specific to biological region