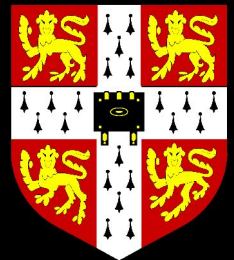


NST 1B Experimental Psychology
Practical 1
Introduction to Neurobiology

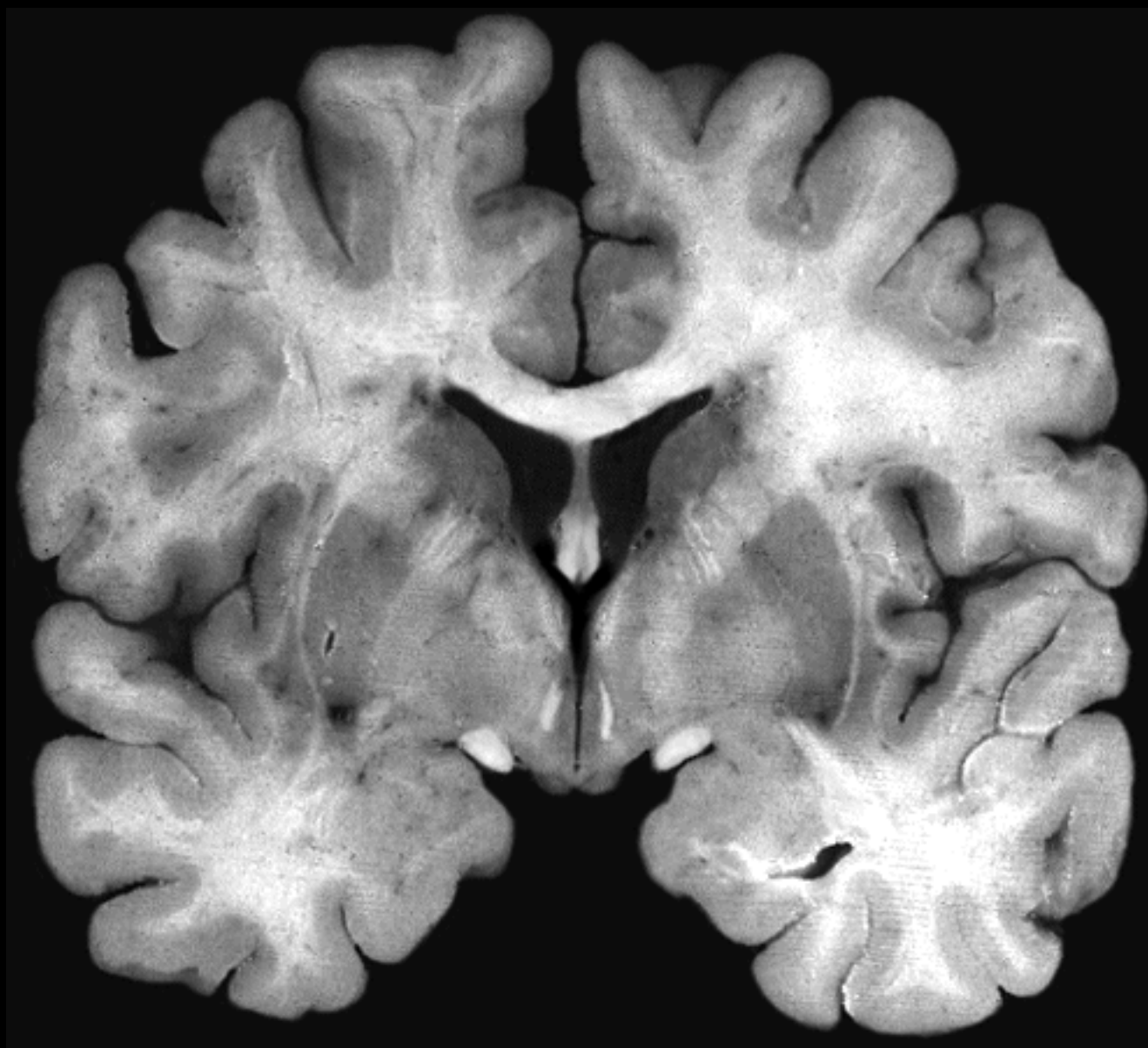
Rudolf Cardinal

*10/11 October 2002
Department of Experimental Psychology
University of Cambridge*

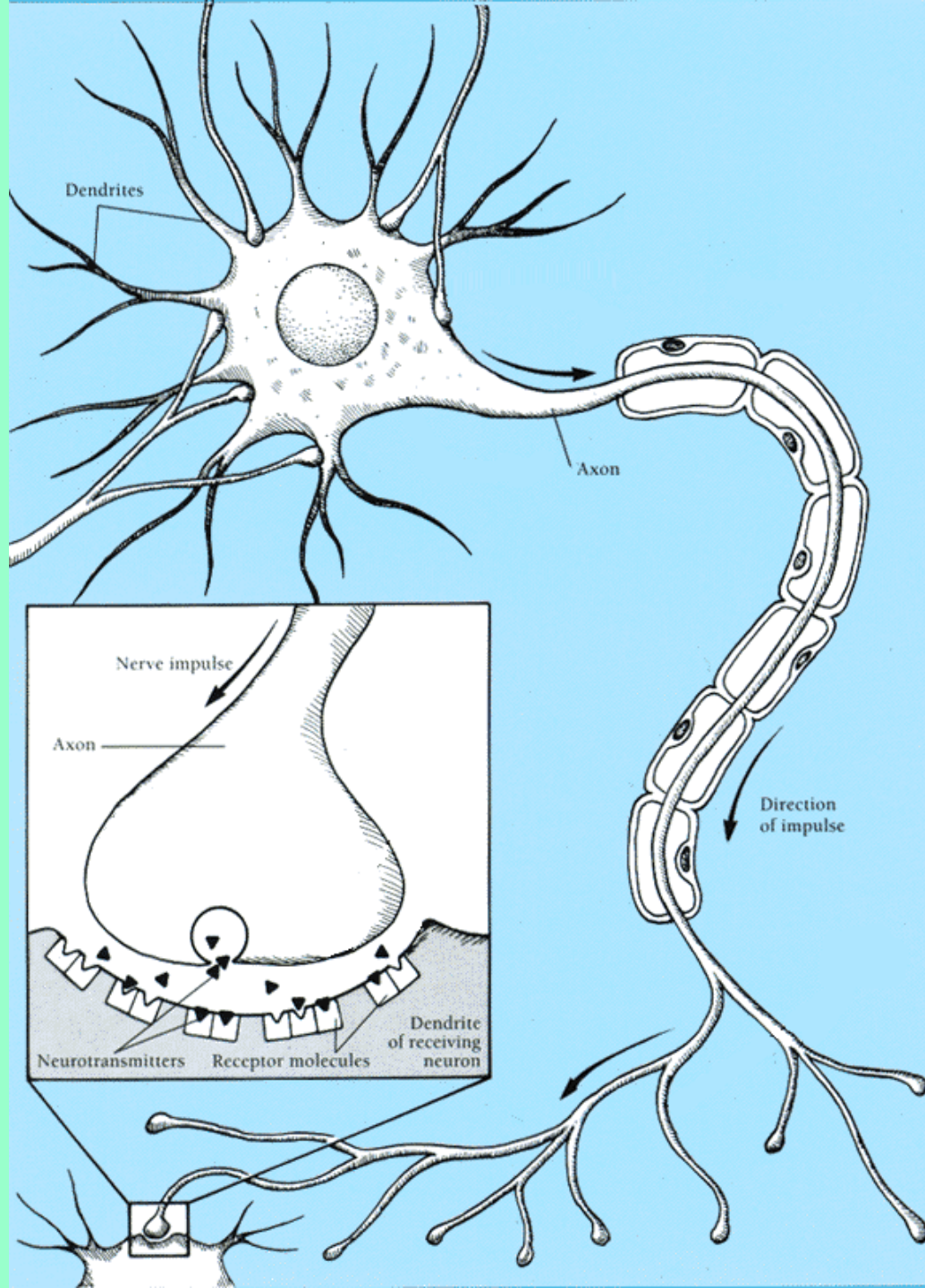


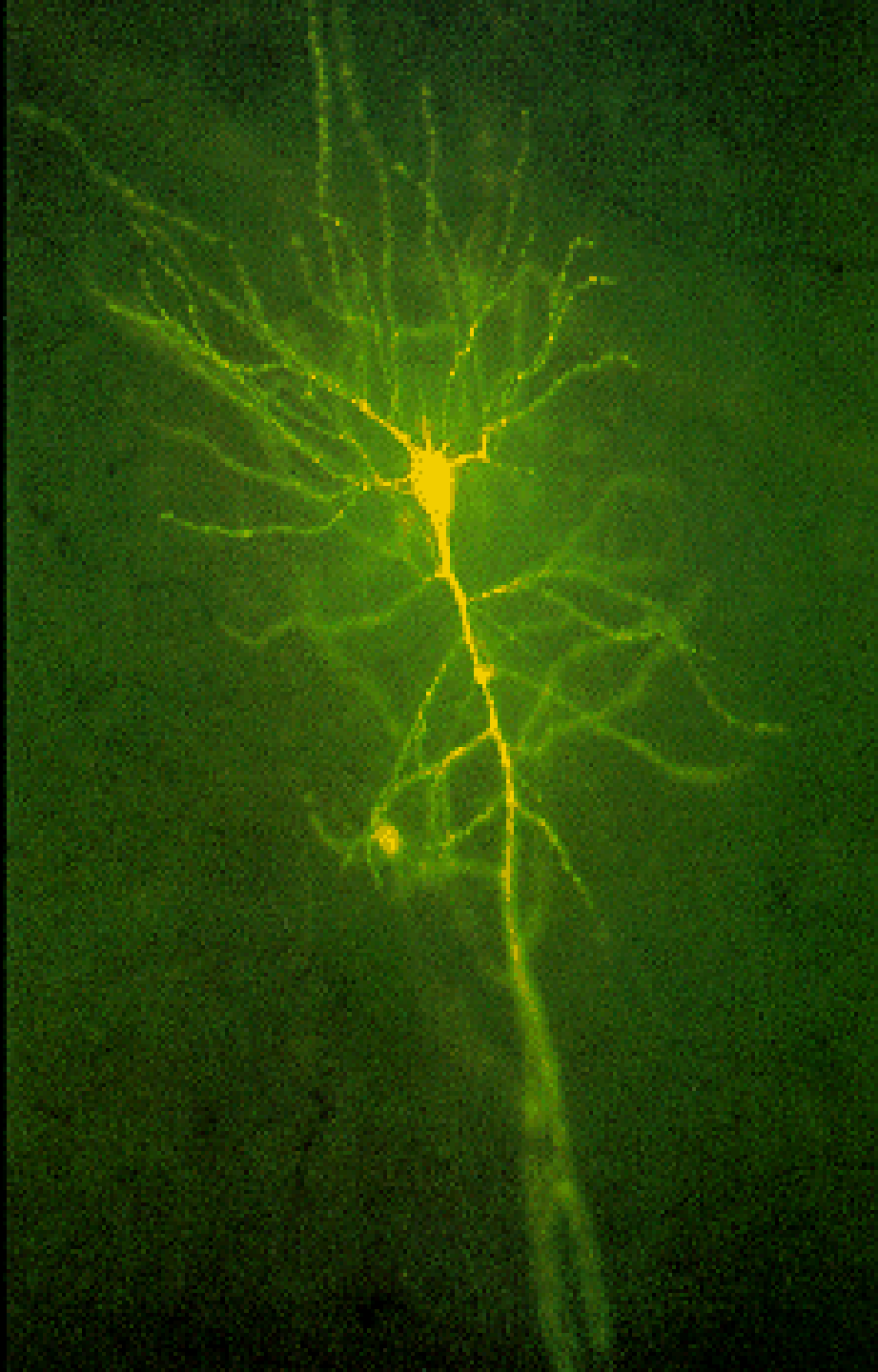


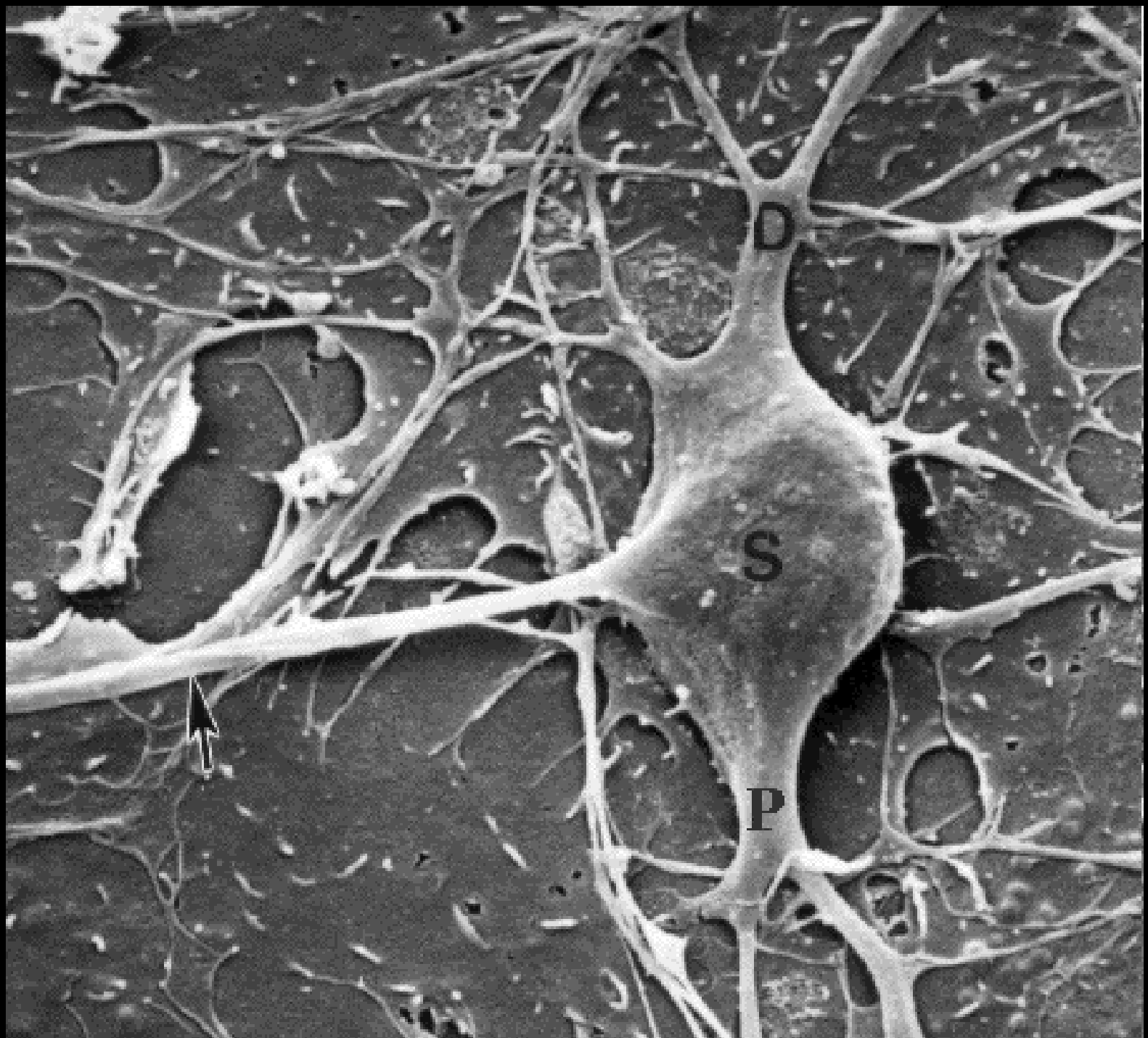














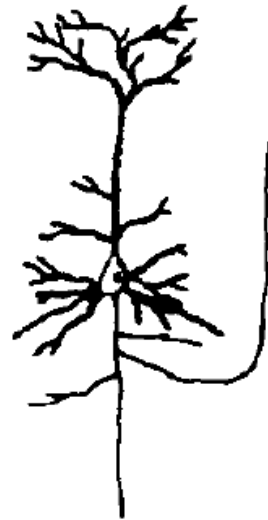
Dorsal
root
ganglion



Retinal
bipolar
cell



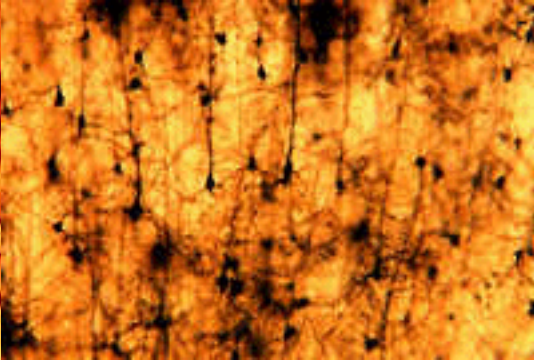
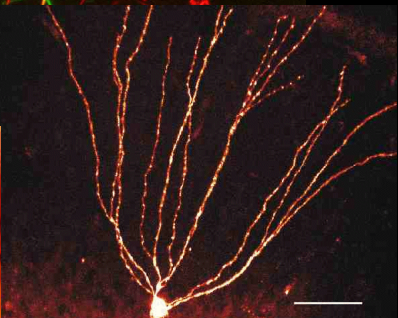
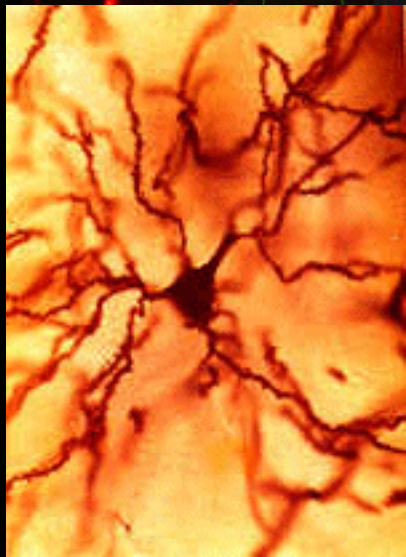
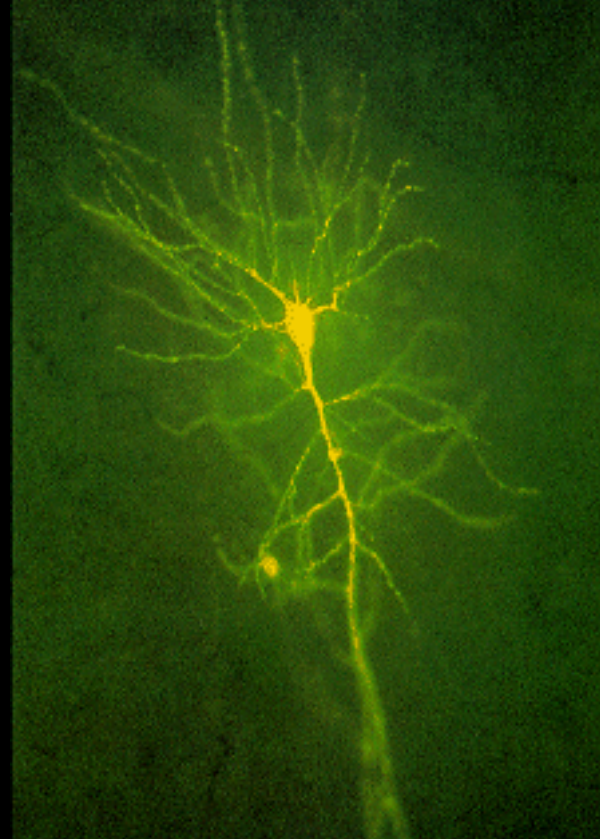
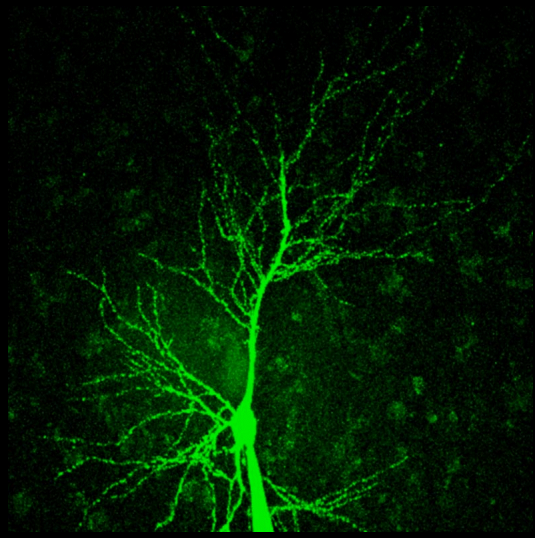
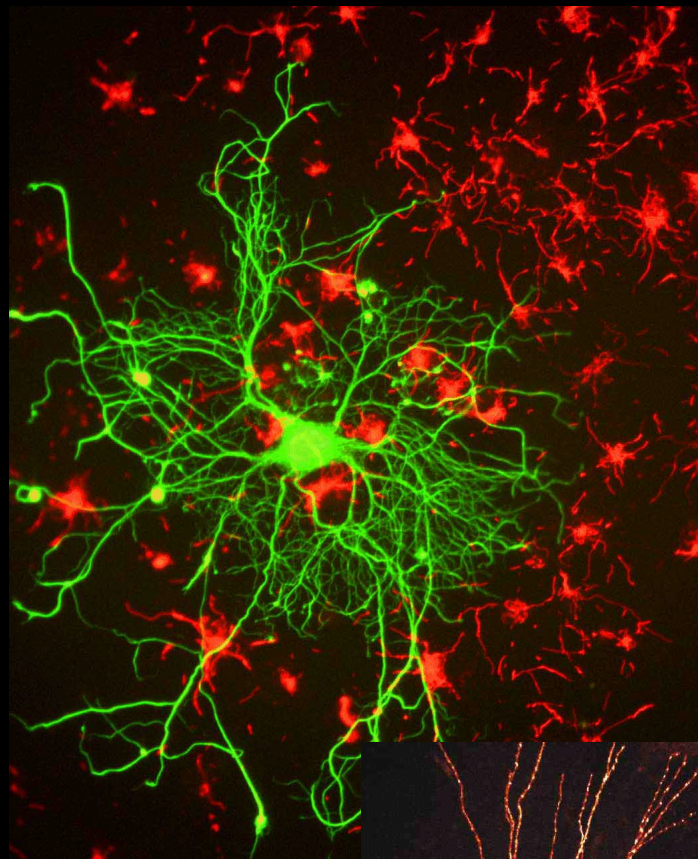
Spinal
motor
neuron

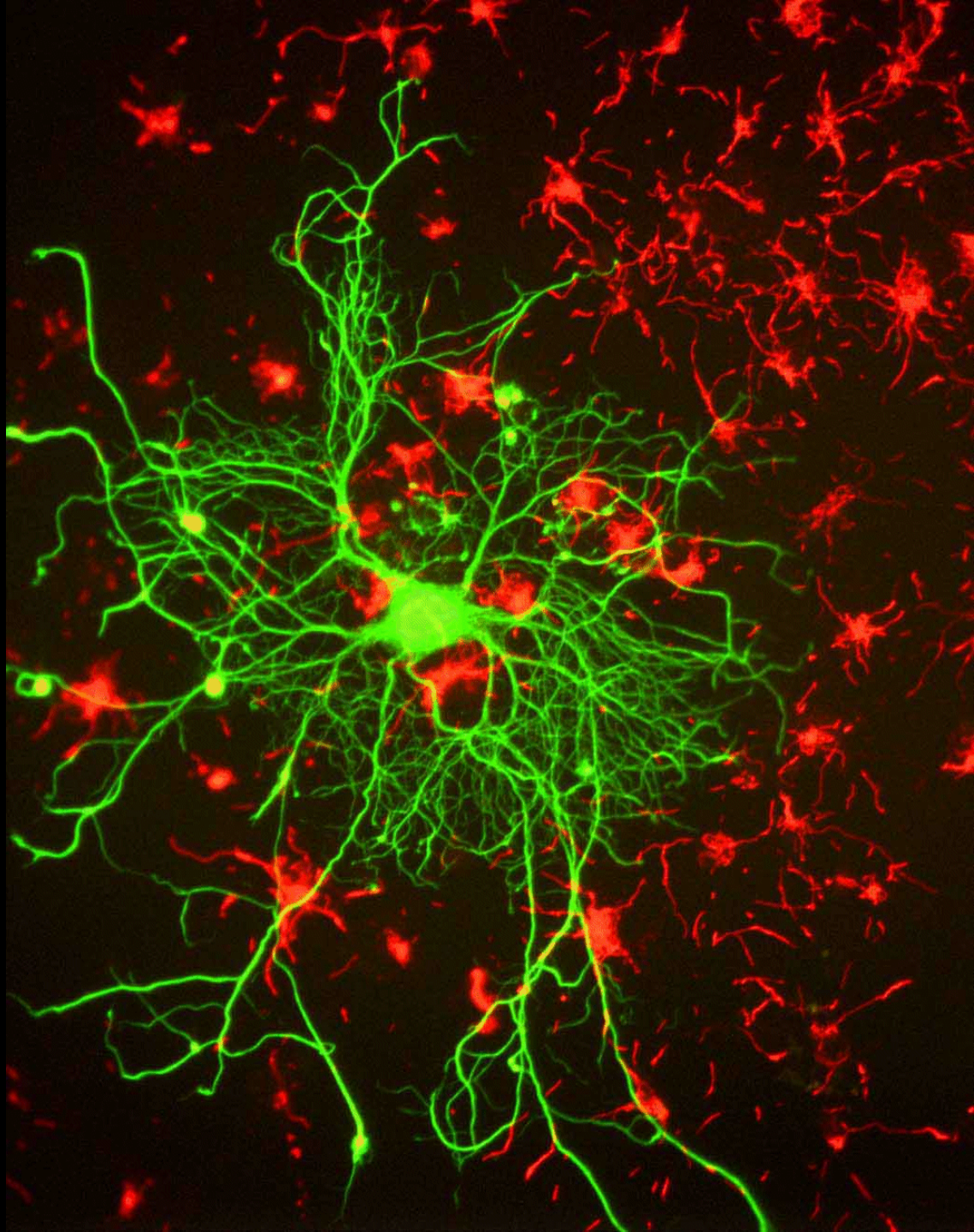


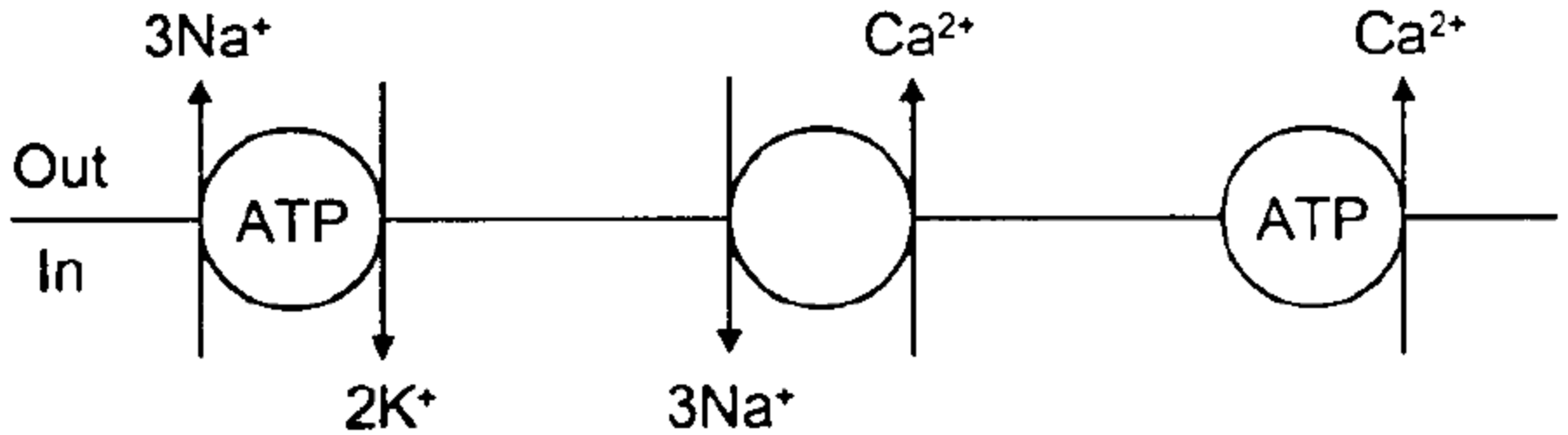
Hippocampal
pyramidal
cell



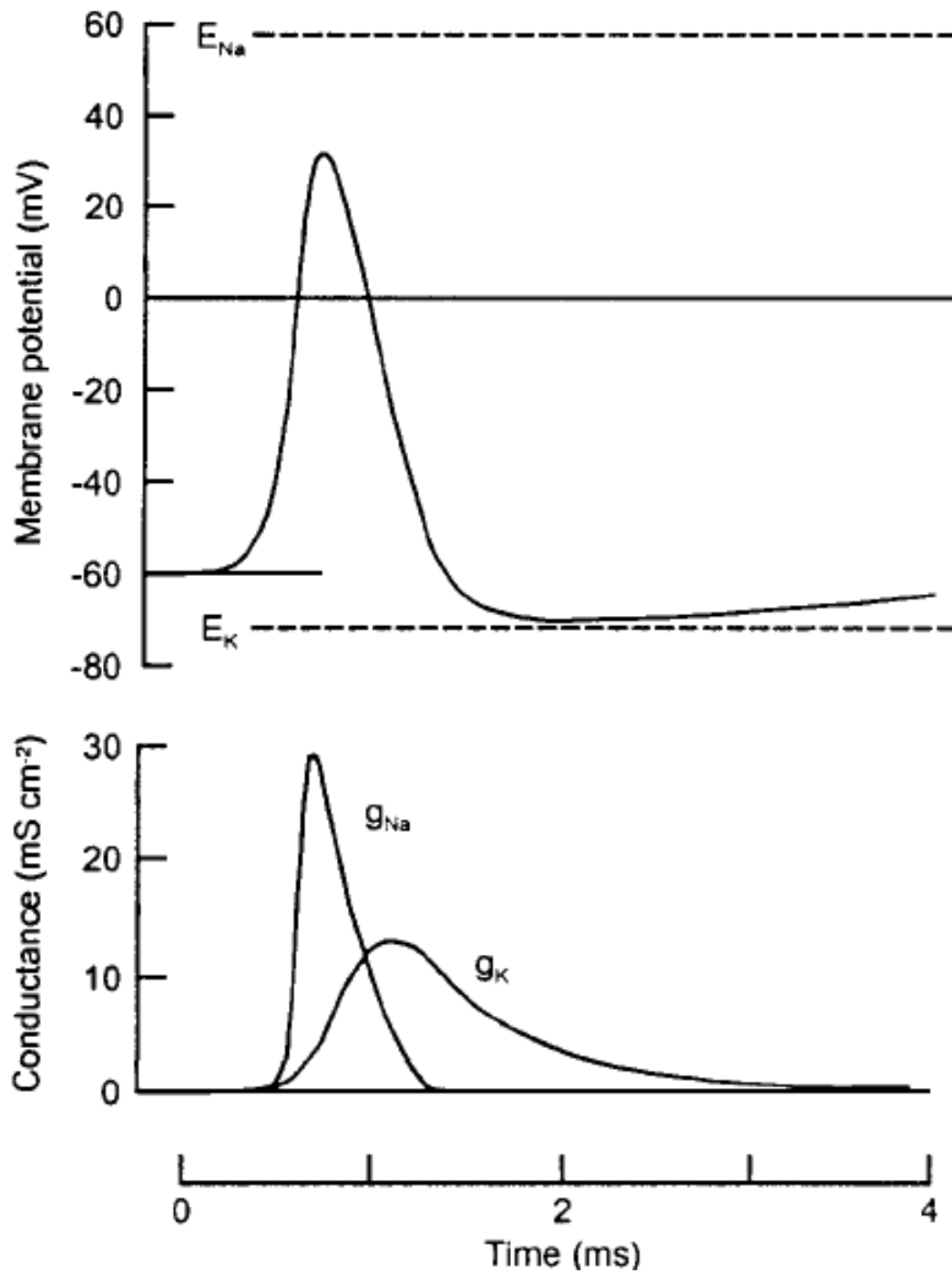
Cerebellar
Purkinje
cell

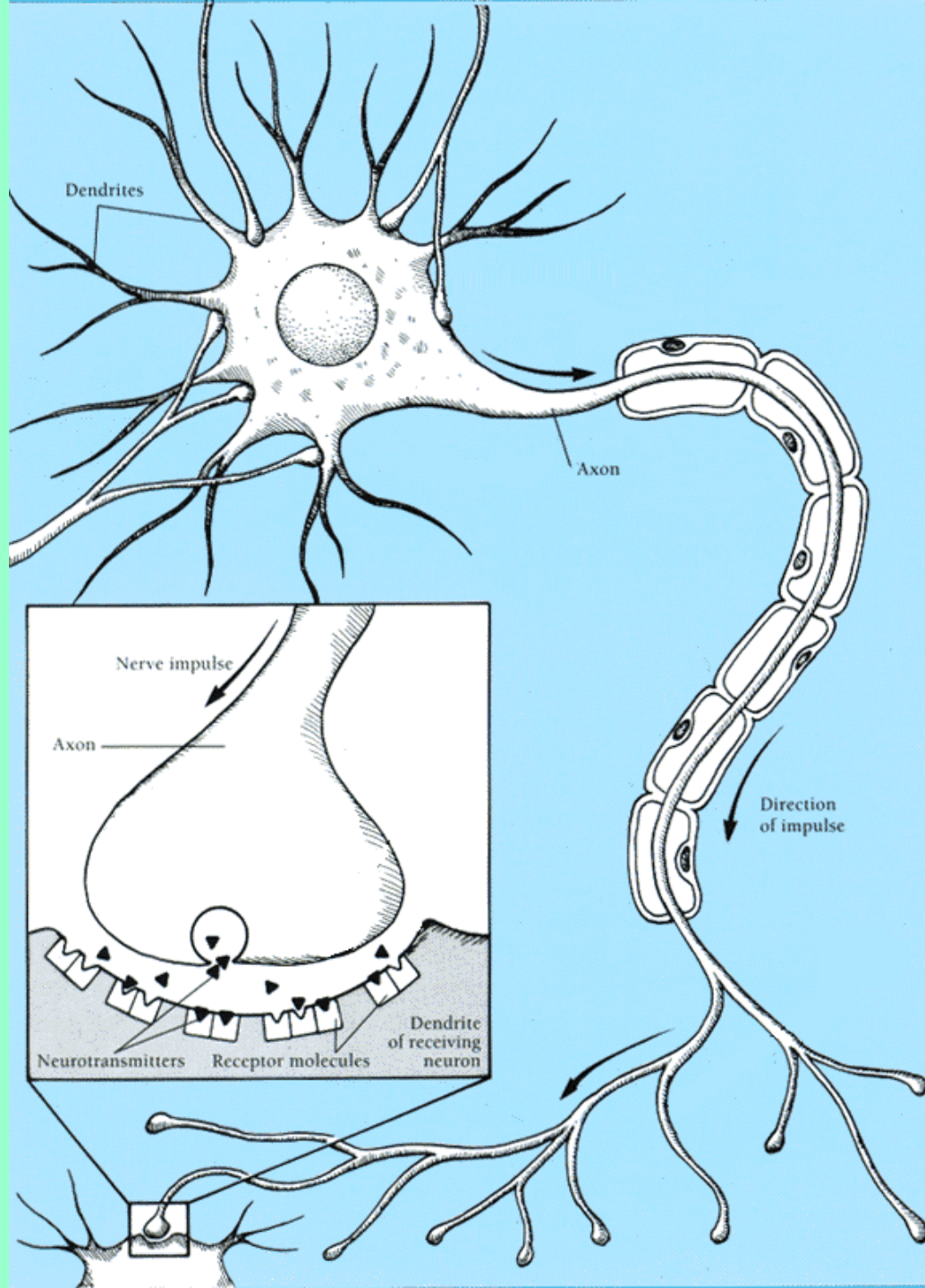






Ion	Internal concentration	External concentration	Valence (z)	Equilibrium potential
Na^+	15 mM	150 mM	+1	+62 mV
K^+	150 mM	5.5 mM	+1	-89 mV
Cl^-	9 mM	125 mM	-1	-71 mV
Ca^{2+}	10^{-4} mM	1 mM	+2	+124 mV





terminal branch of axon

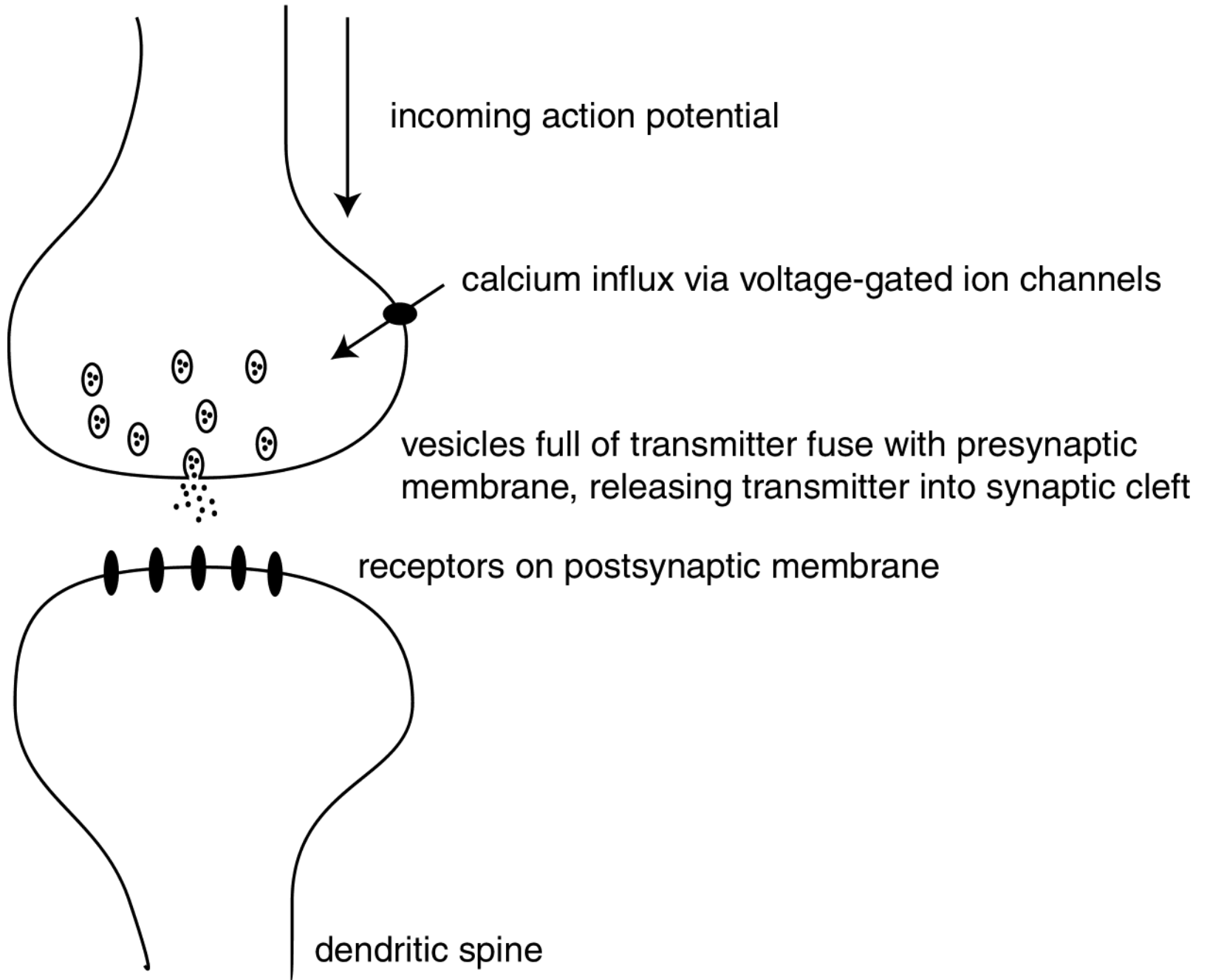
incoming action potential

calcium influx via voltage-gated ion channels

vesicles full of transmitter fuse with presynaptic membrane, releasing transmitter into synaptic cleft

receptors on postsynaptic membrane

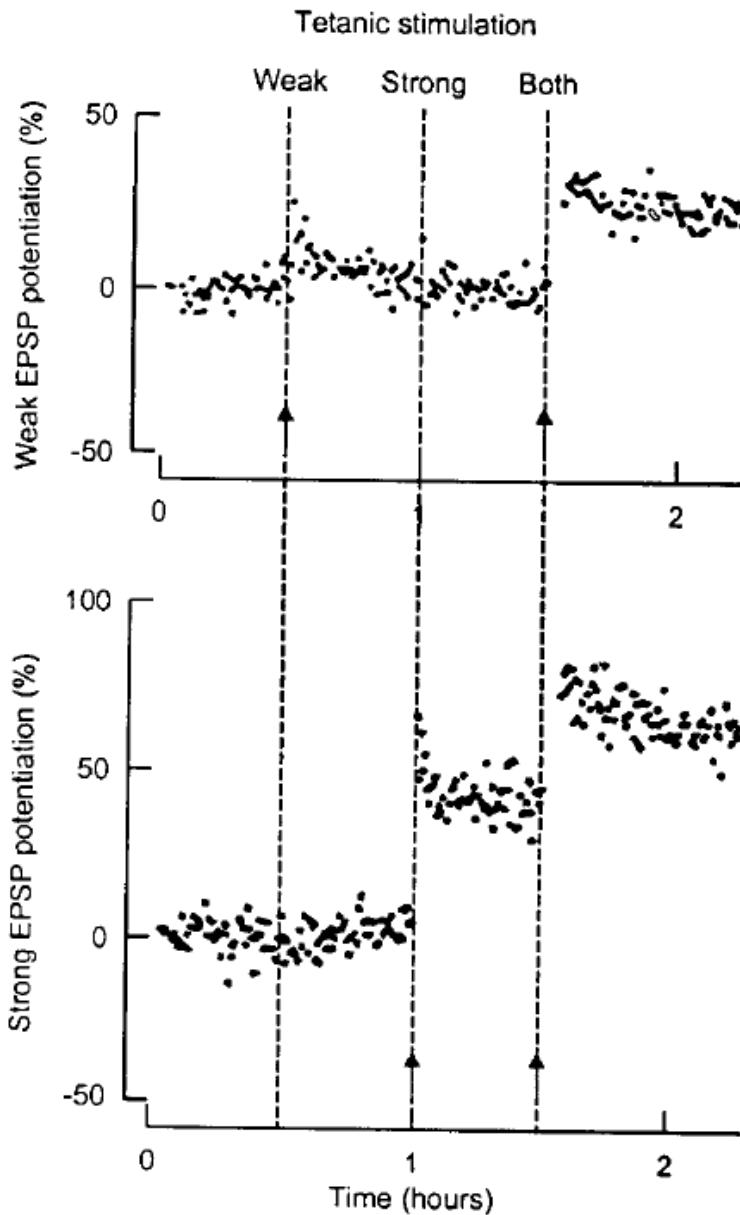
dendritic spine





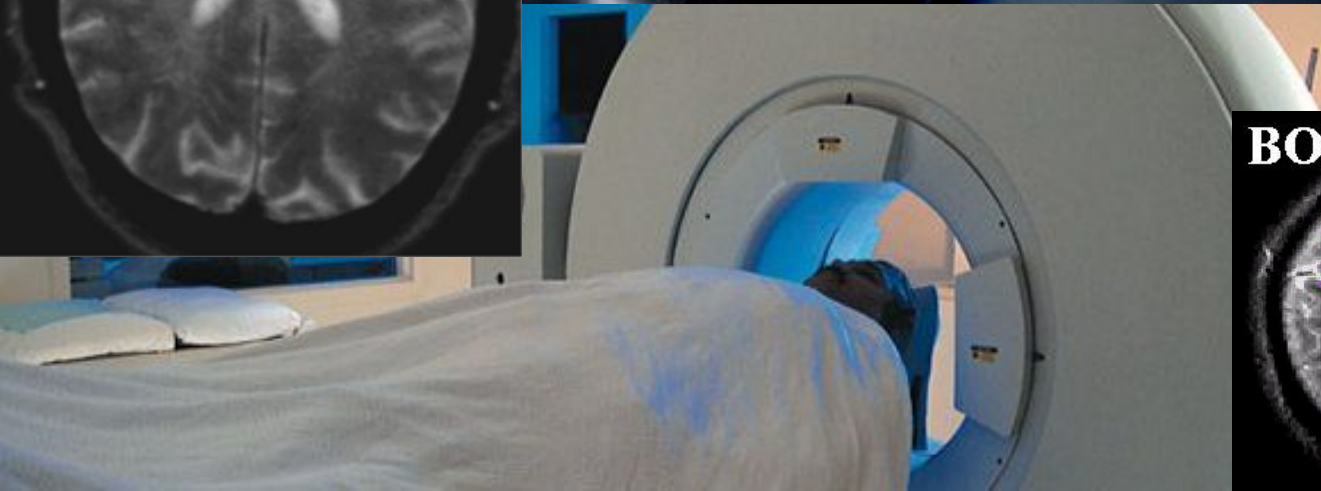
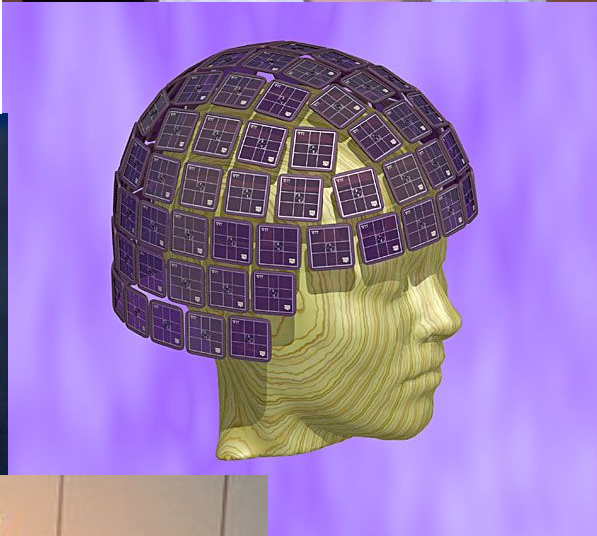
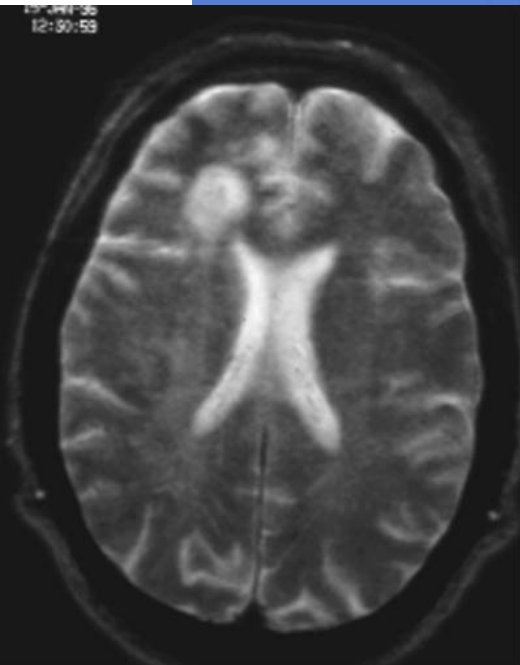
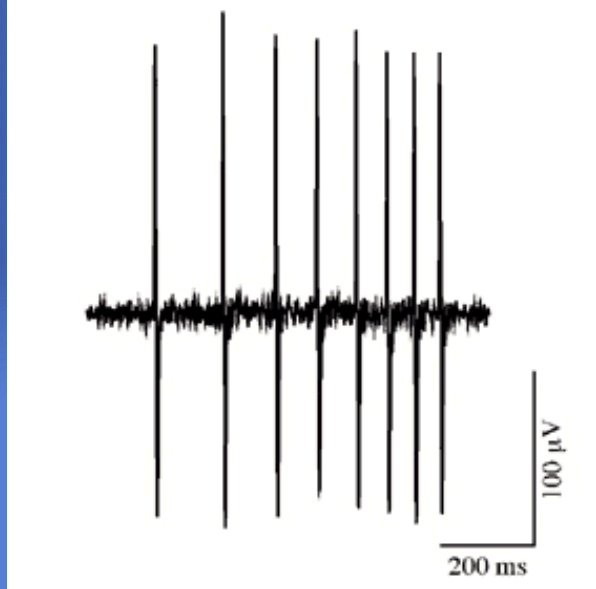
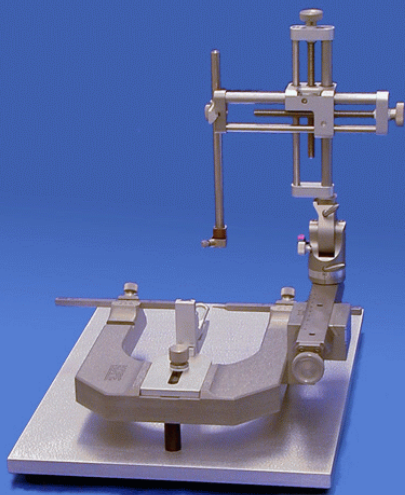
Weak
synapse

Strong
synapse

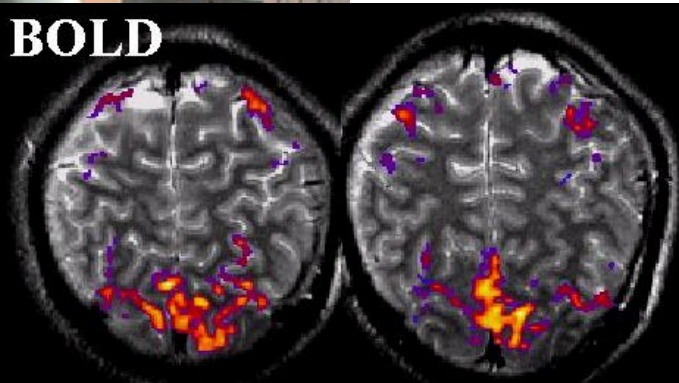


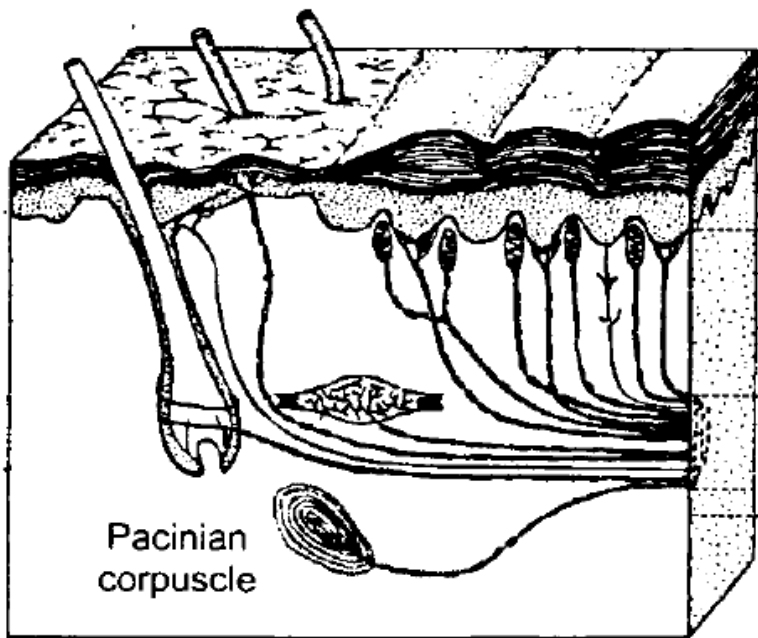
“When an axon of cell A is near enough to excite cell B, or repeatedly or consistently takes part in firing it, some growth process or metabolic change takes place in one or both cells such that A’s efficiency, as one of the cells firing B, is increased.”





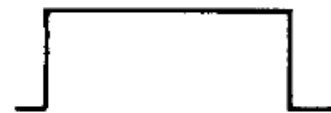
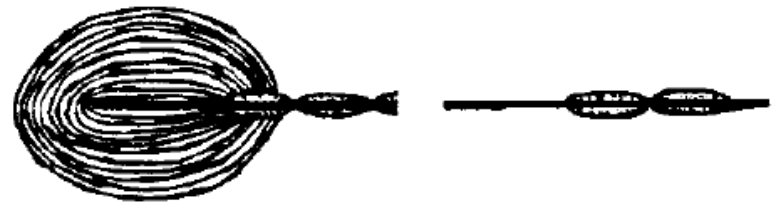
BOLD





Intact

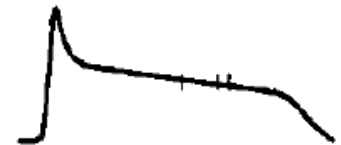
Delamellated



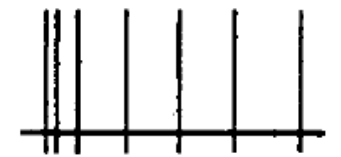
Stimulus

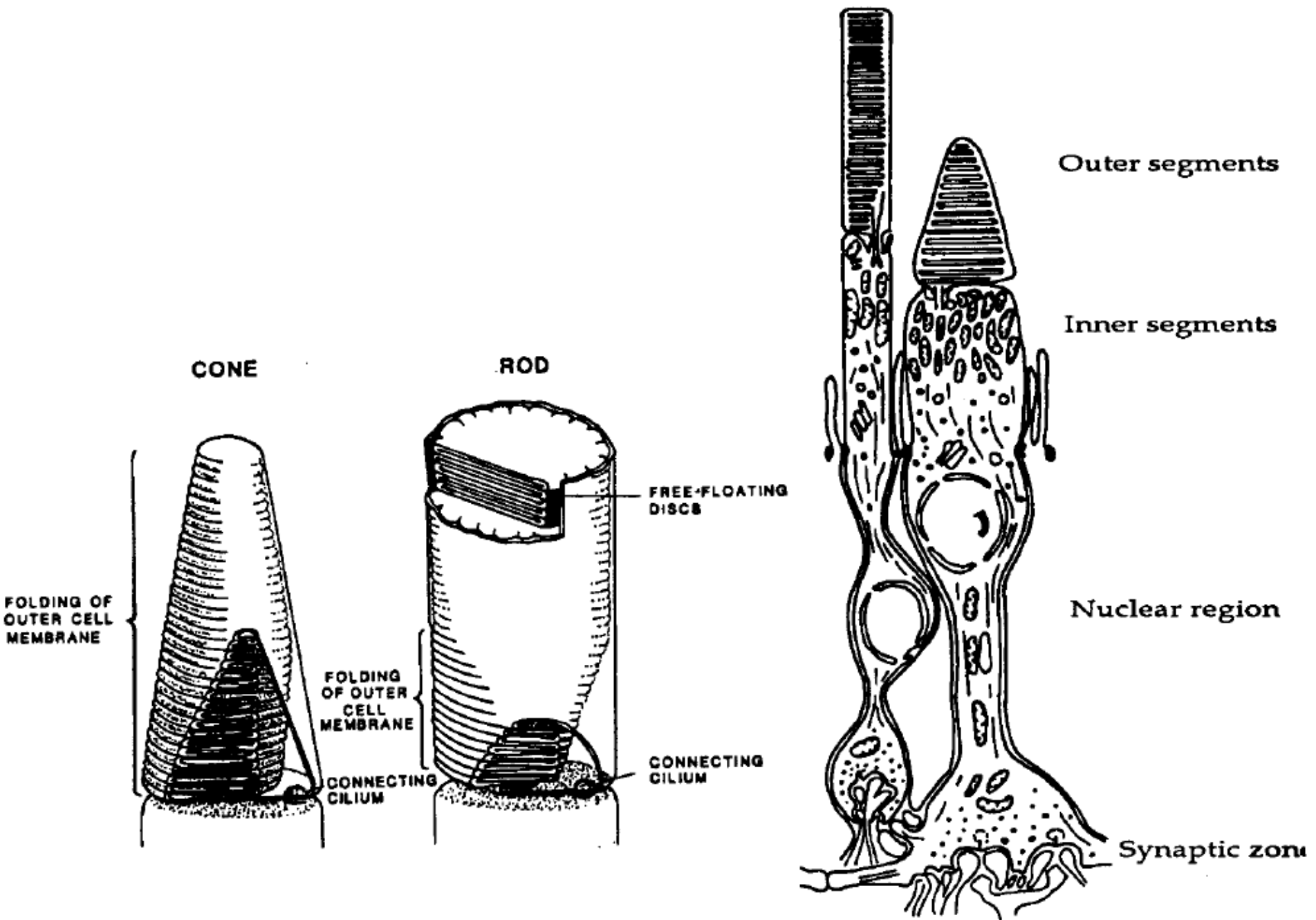


Receptor potential



Spike train

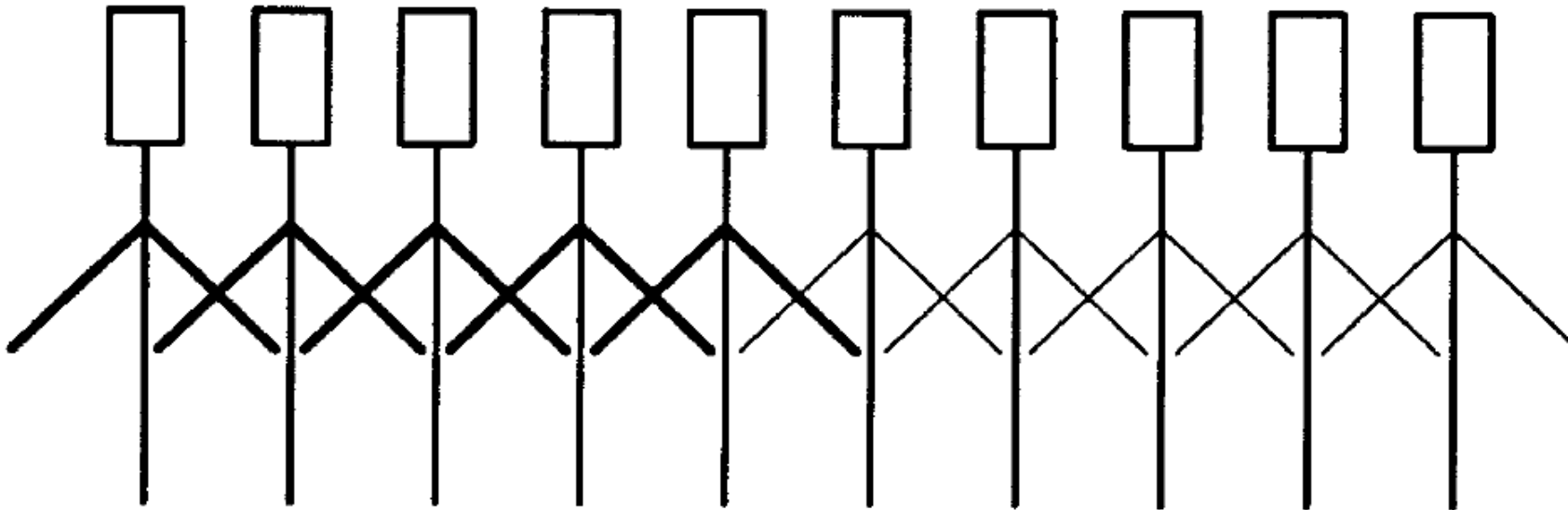




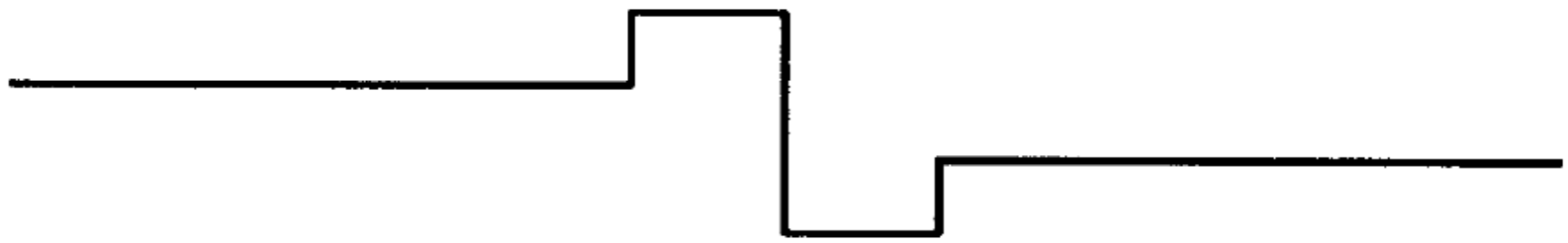


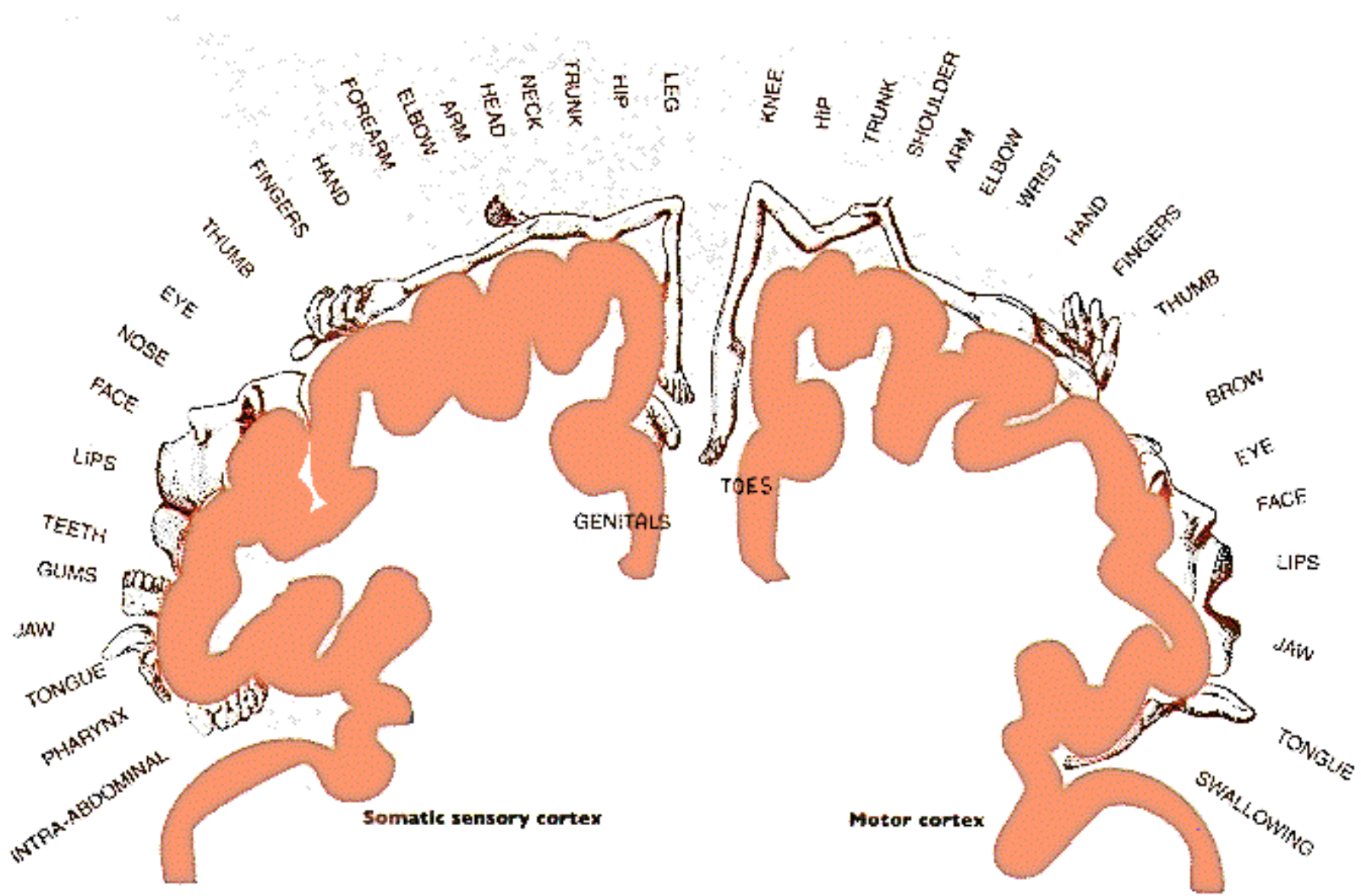


Stimulus



Response

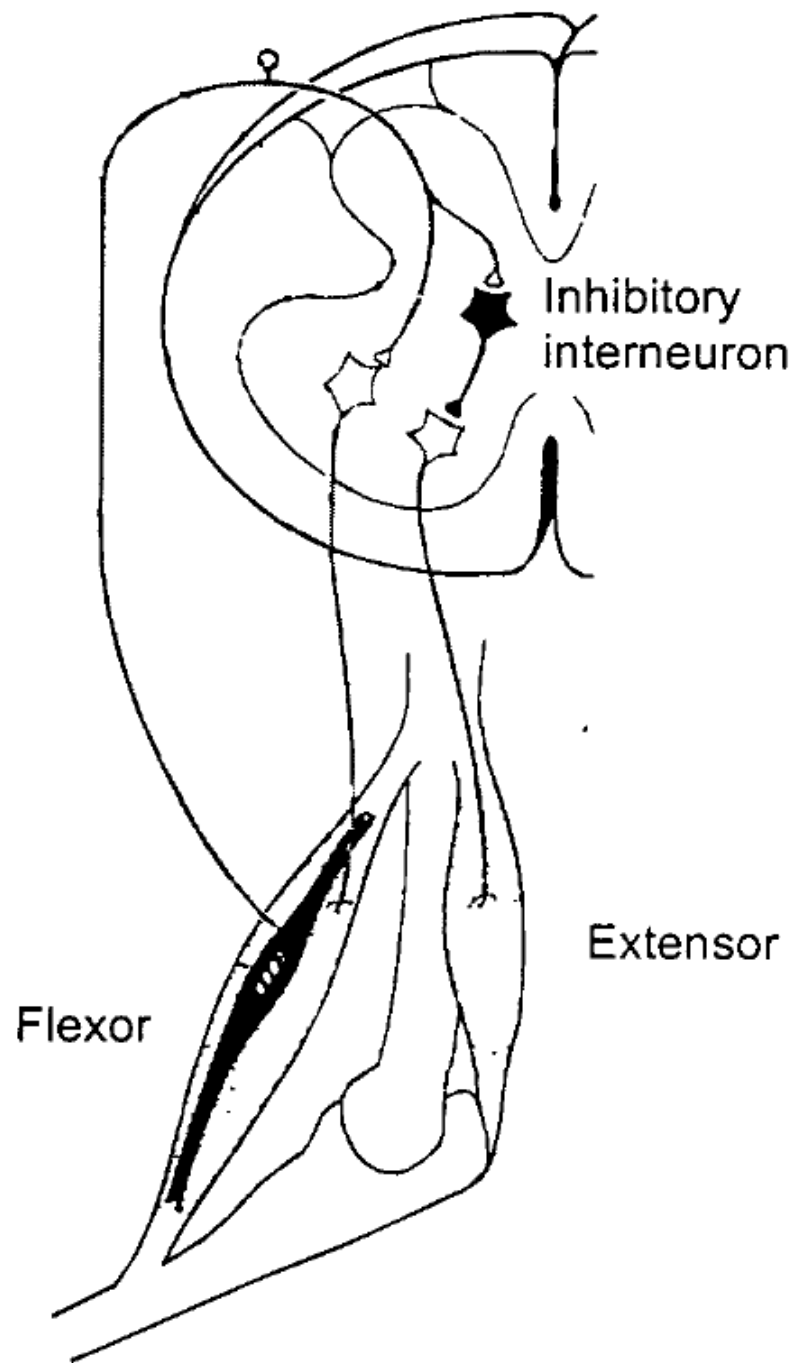


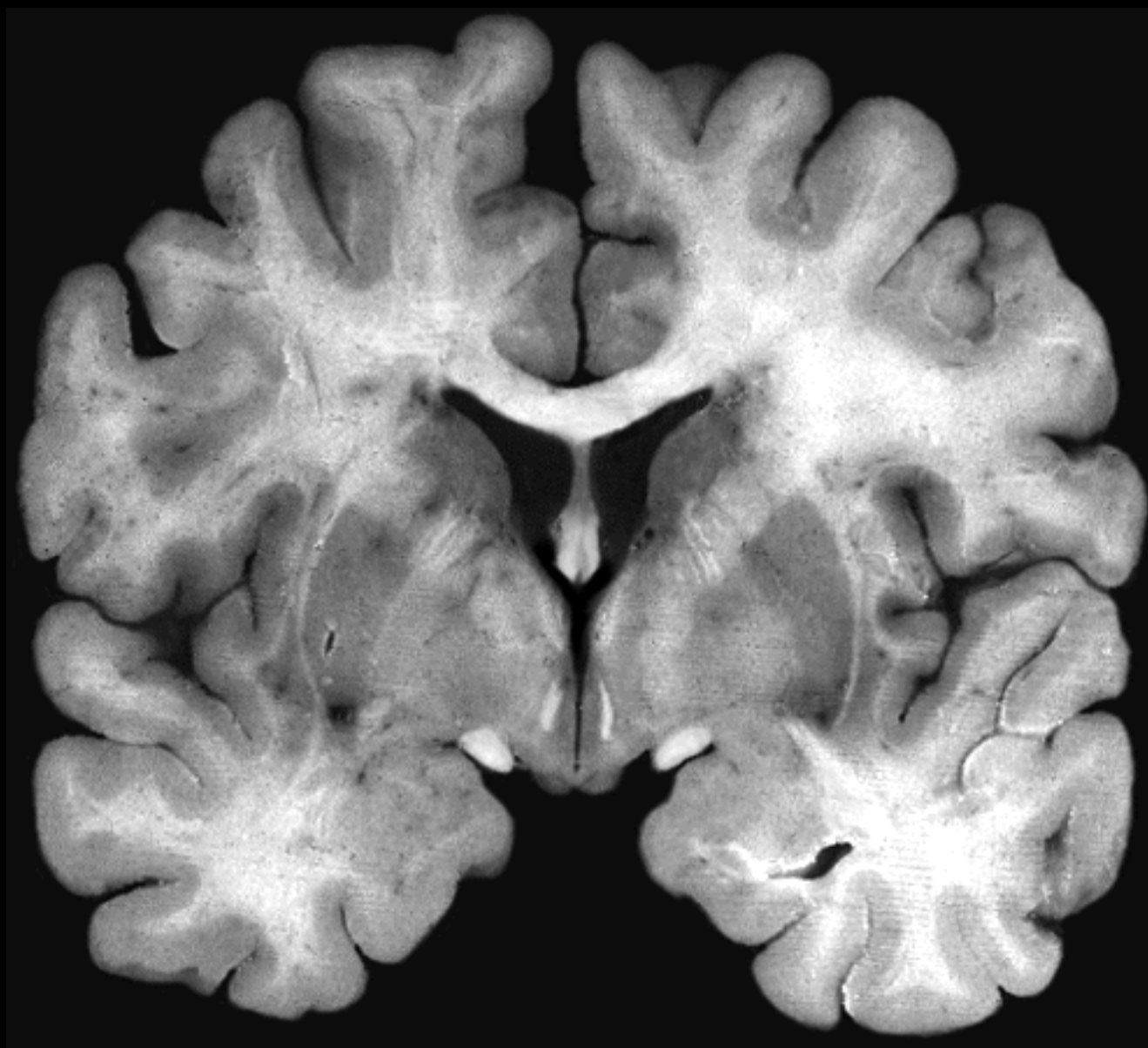


Somatic sensory cortex

Motor cortex







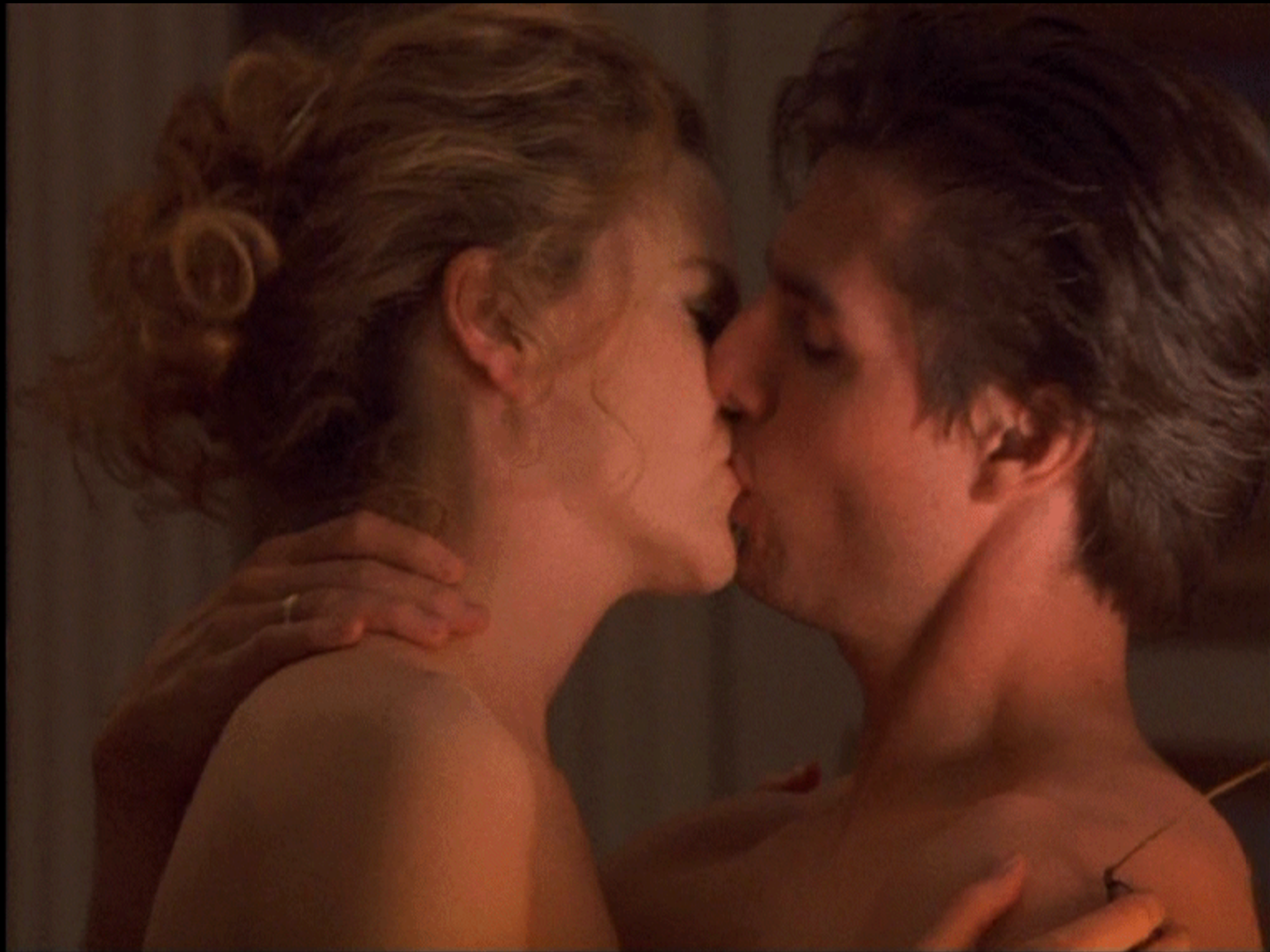


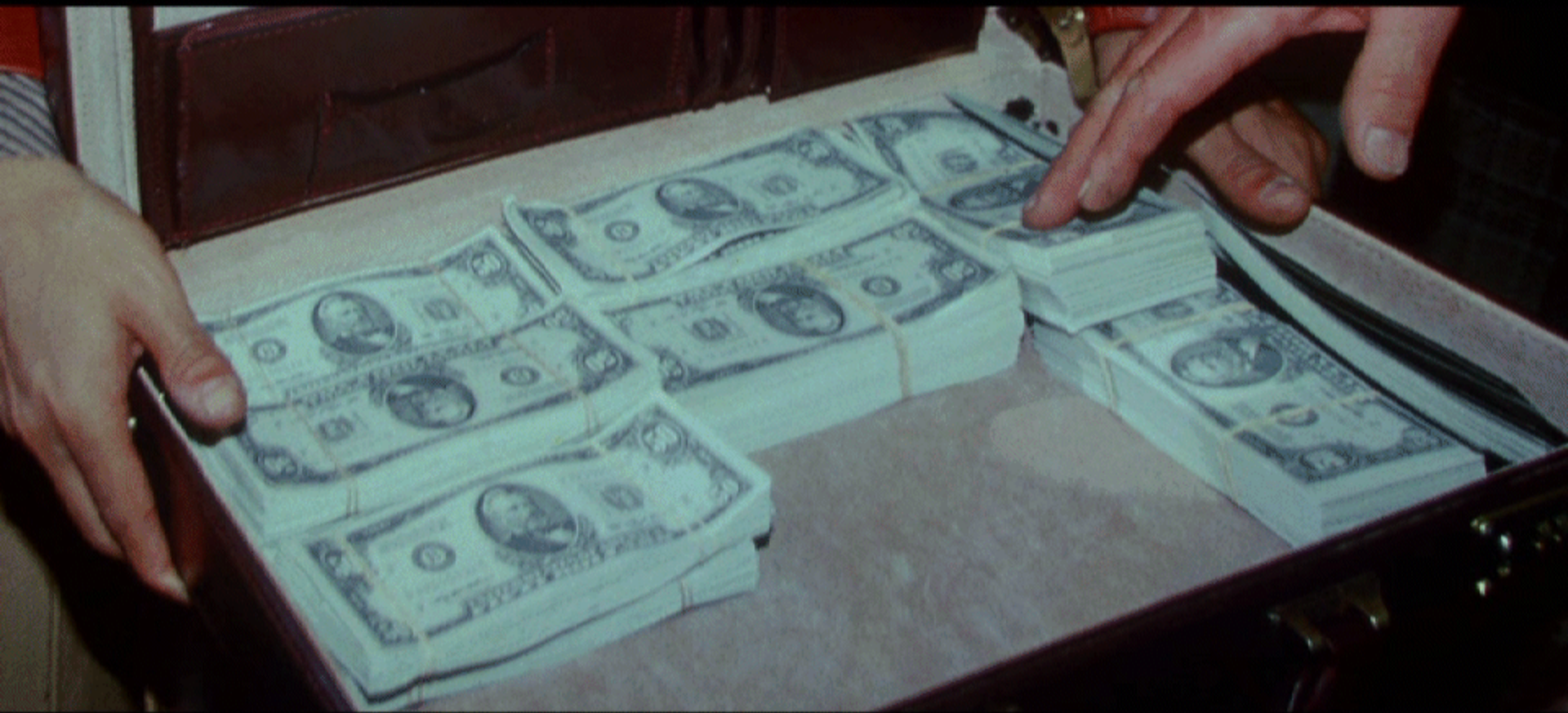


















WARNING