

NST 1B Experimental Psychology
Practical 1

Introduction to Neurobiology
(and general introduction
to the practical course)

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*Thu 7/Fri 8 October 2004
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On the web...

www.psychol.cam.ac.uk

- General information and course booklets (→ Undergraduate Teaching)
- Timetables and handouts (→ Teaching Resources)
- Exam information (with past papers) (→ Teaching Resources → Examination Detail)

pobox.com/~rudolf/psychology

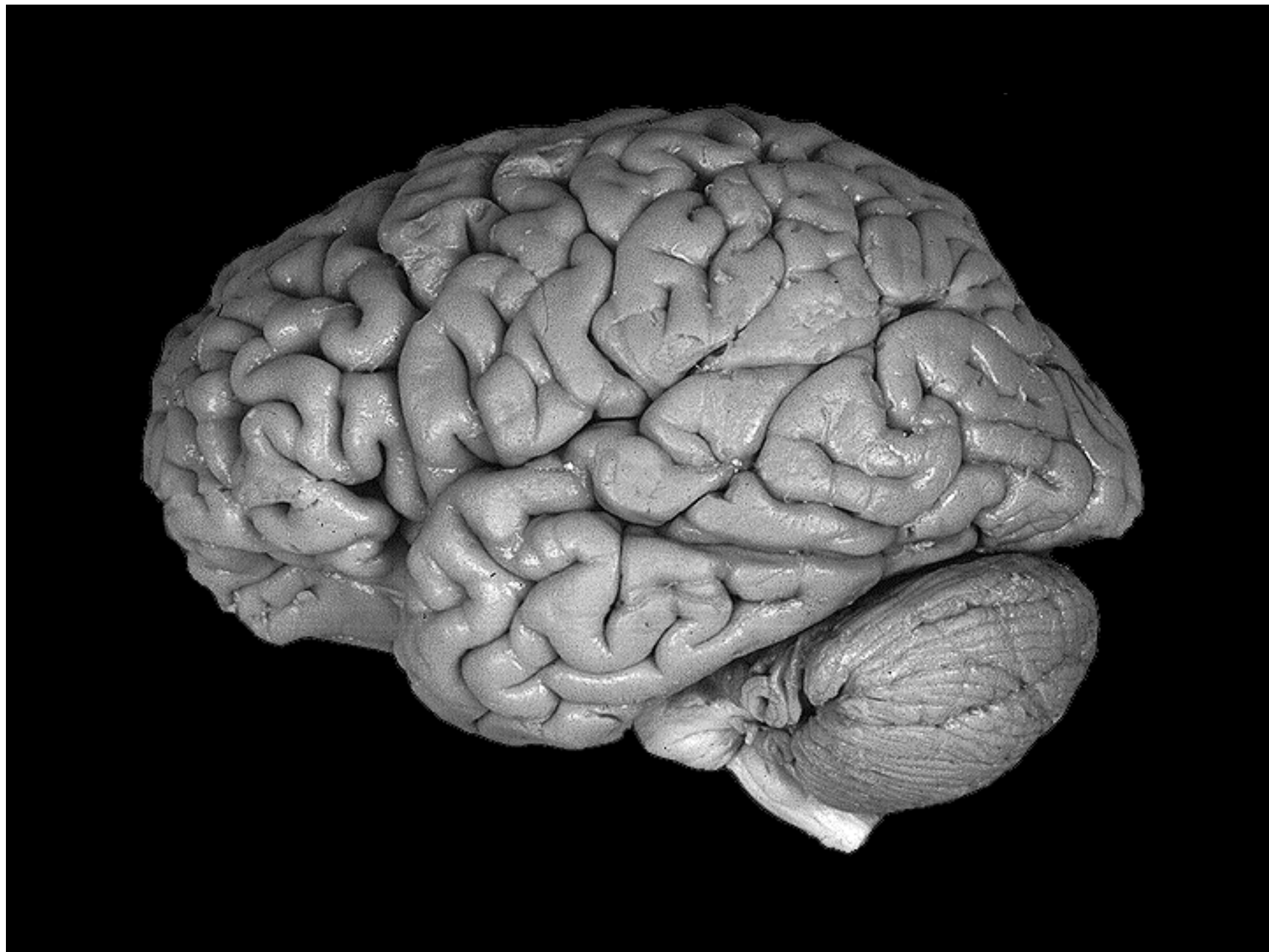
- My handouts/slides (also linked from main page)

About the practical course

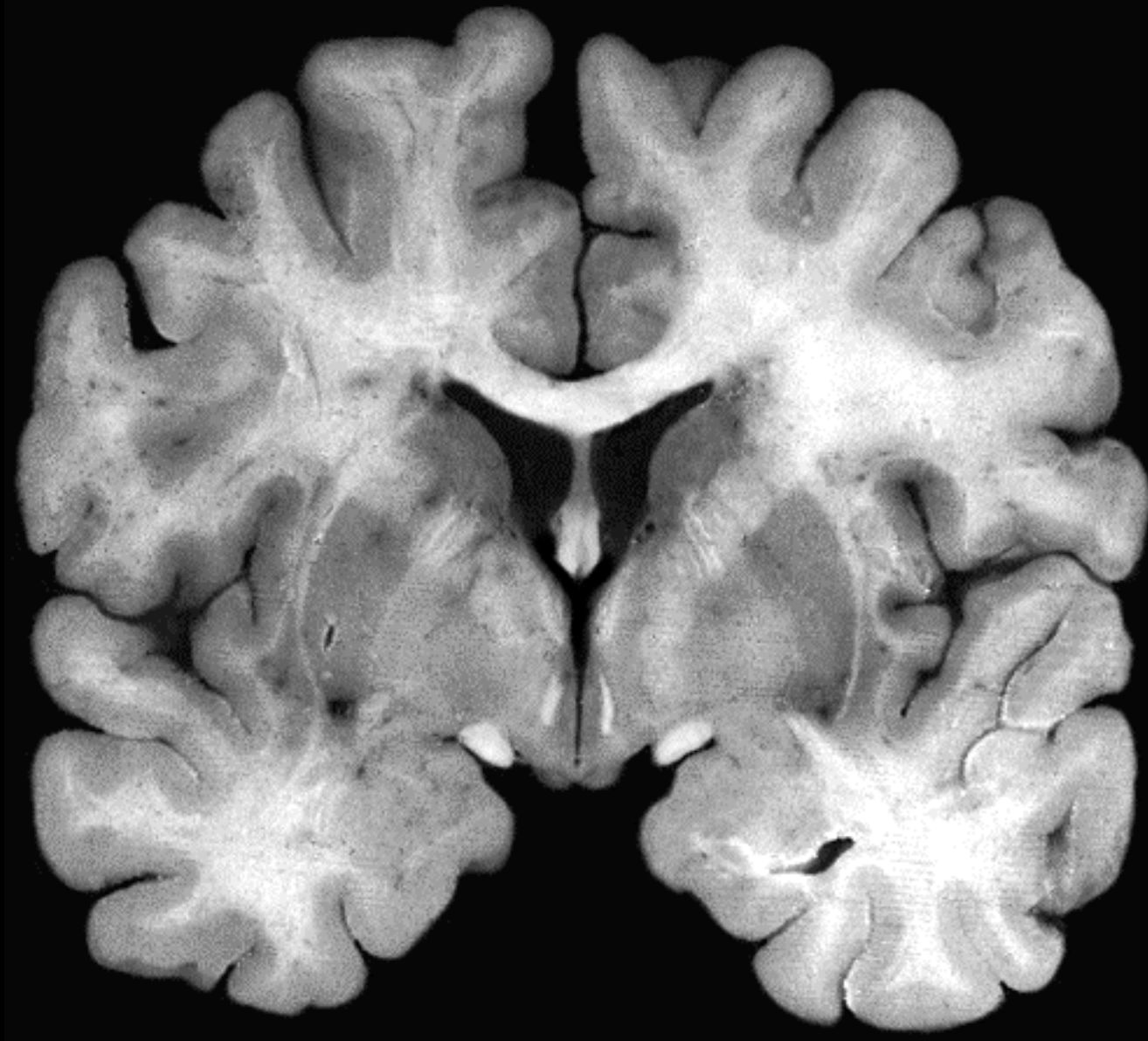
- *'Real' practicals*
- *Practical reports; assessment (~10% of the course)*
- *Statistics practicals (boo, hiss)*
- *Statistics and experimental design in the exams. Compulsory; numerical stats (no choice of question), and experimental design (with choice of question).*

Two handouts:

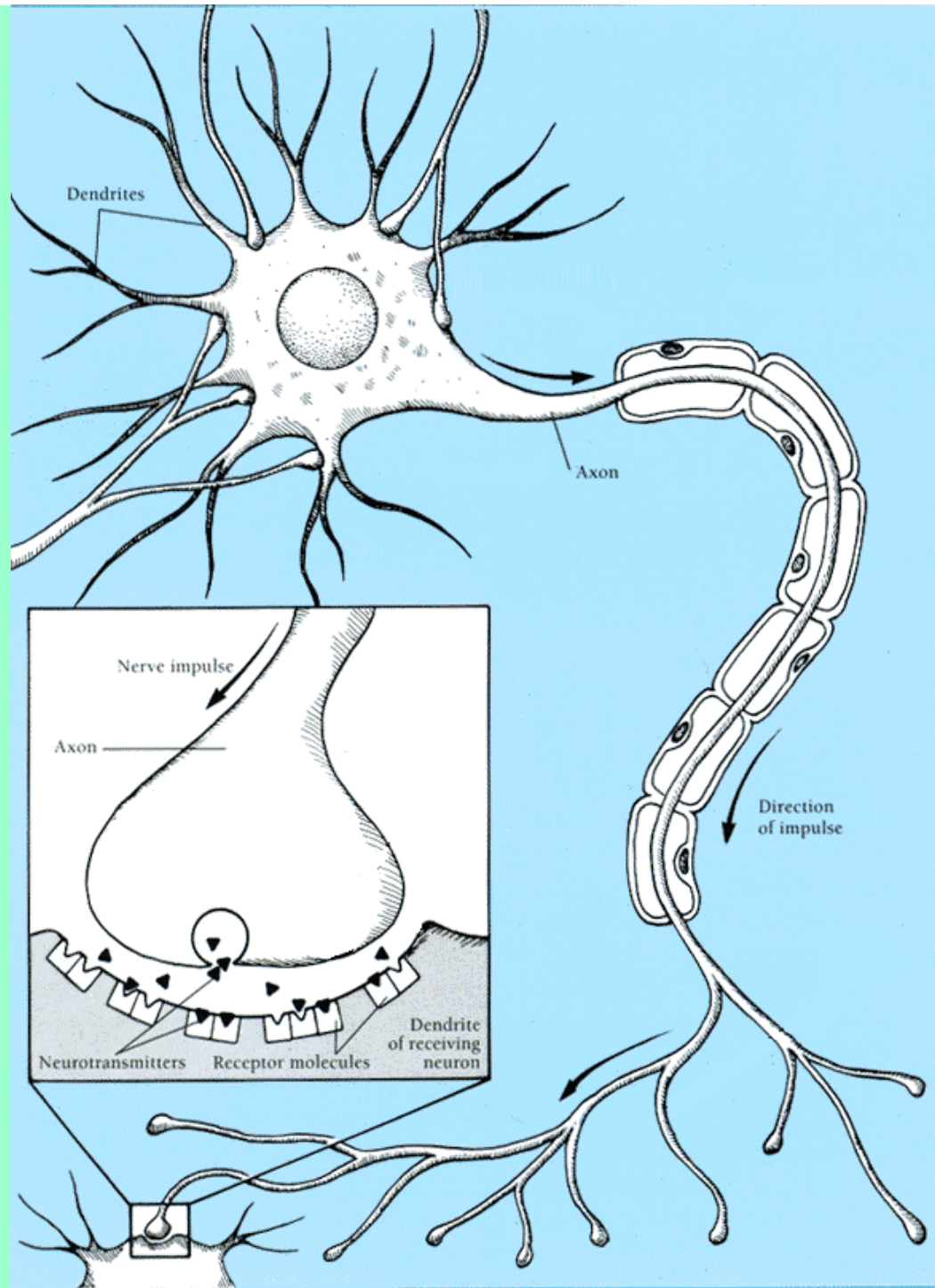
- *Introduction to Neurobiology* (for today)
- *Statistics booklet*
 - don't panic! Boring, maybe, but not scary.
 - about the statistics course...
 - learning experimental design... as you go, plus booklet sections 1 & 9
 - correction (p1): stats practical 2 is on *Wed* 1 Dec, not *Fri* 1 Dec
 - please read section 1 (Background) before the first stats practical. Note that *wavy line* bits can be skipped!
 - bring booklet/calculator*/data along

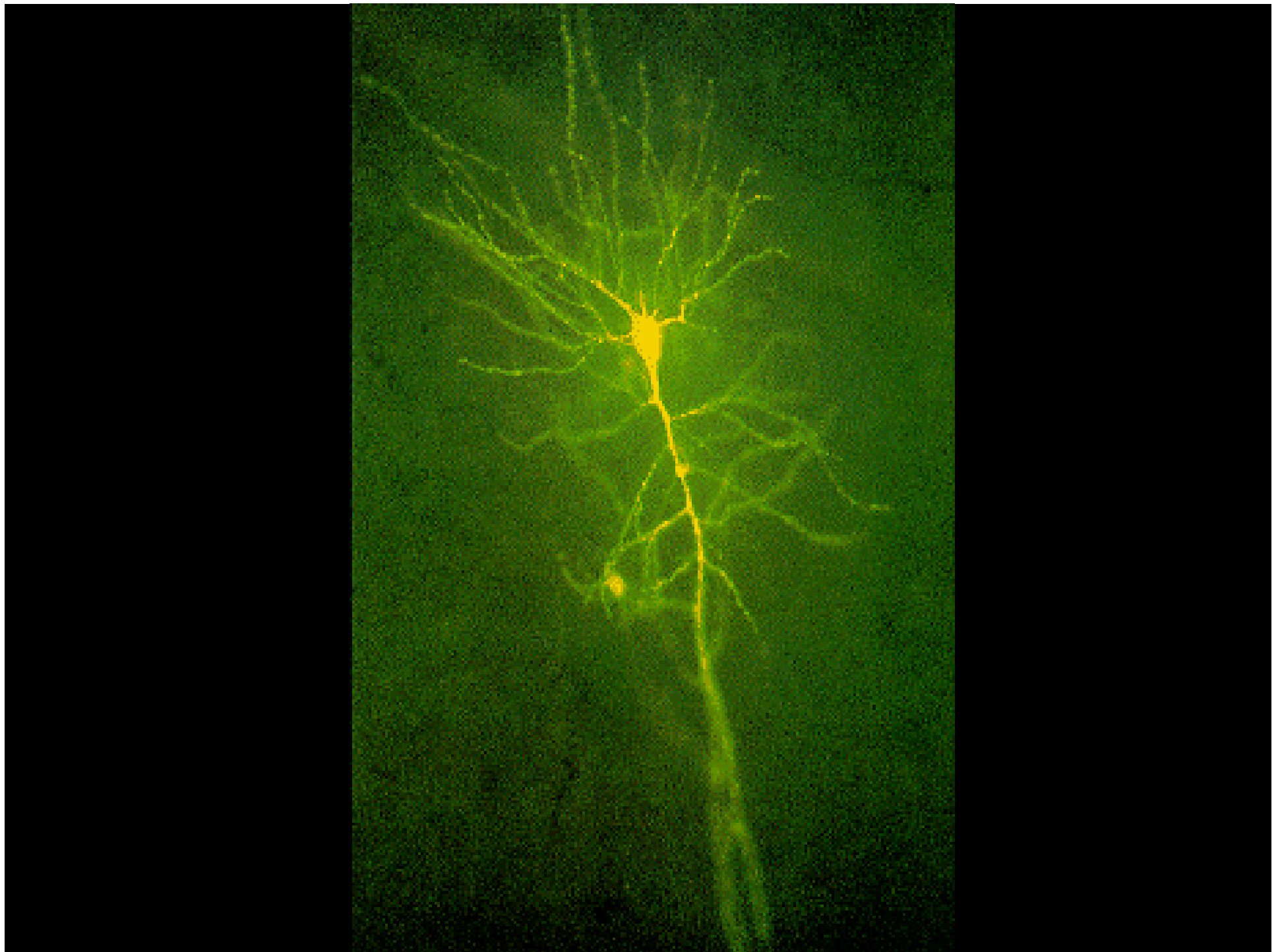


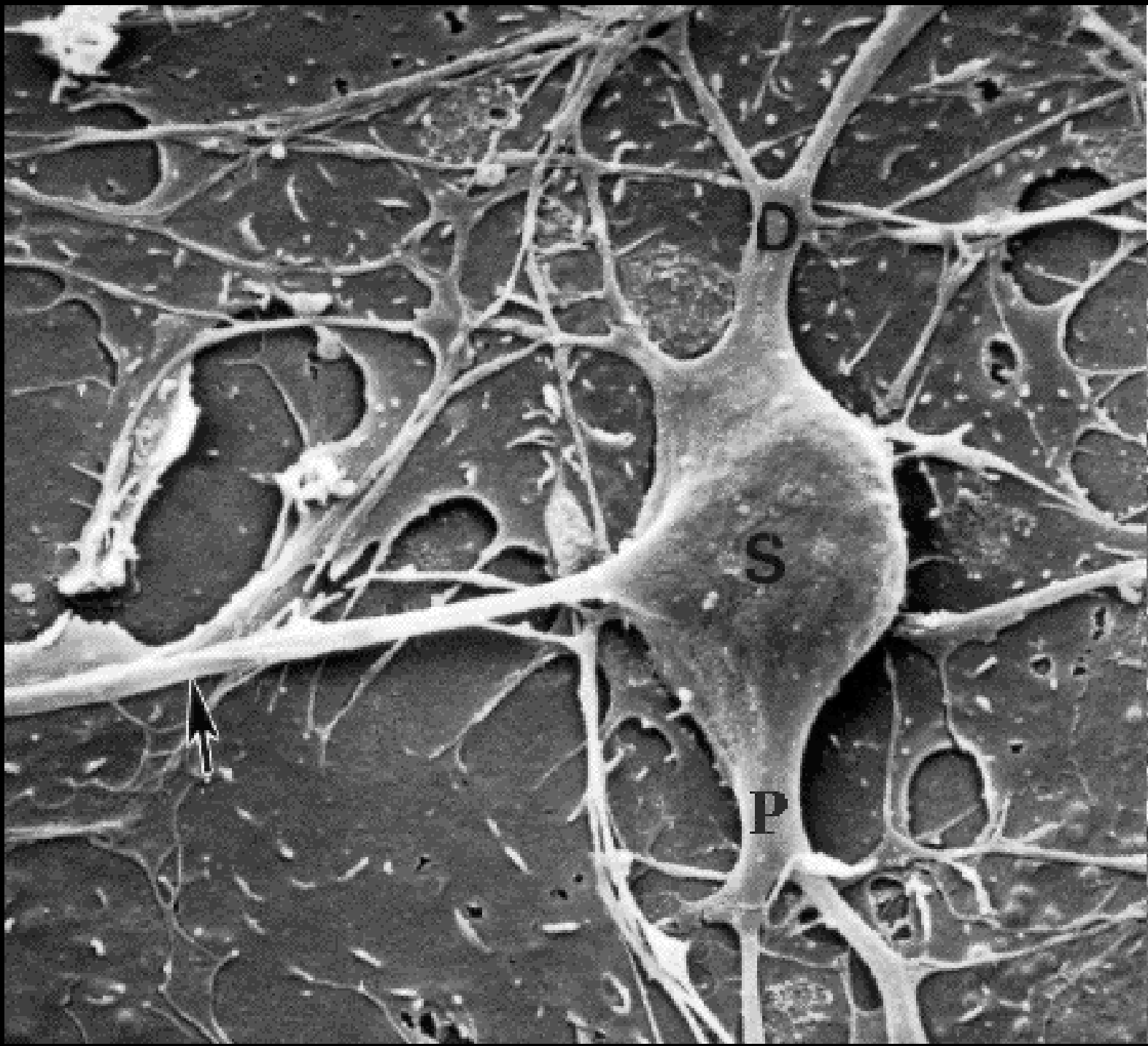














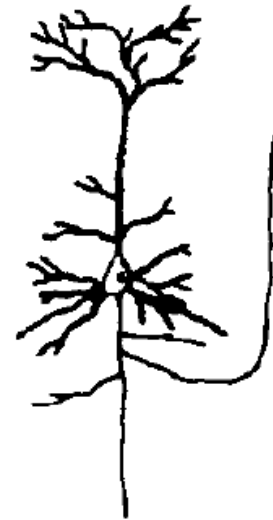
Dorsal
root
ganglion



Retinal
bipolar
cell



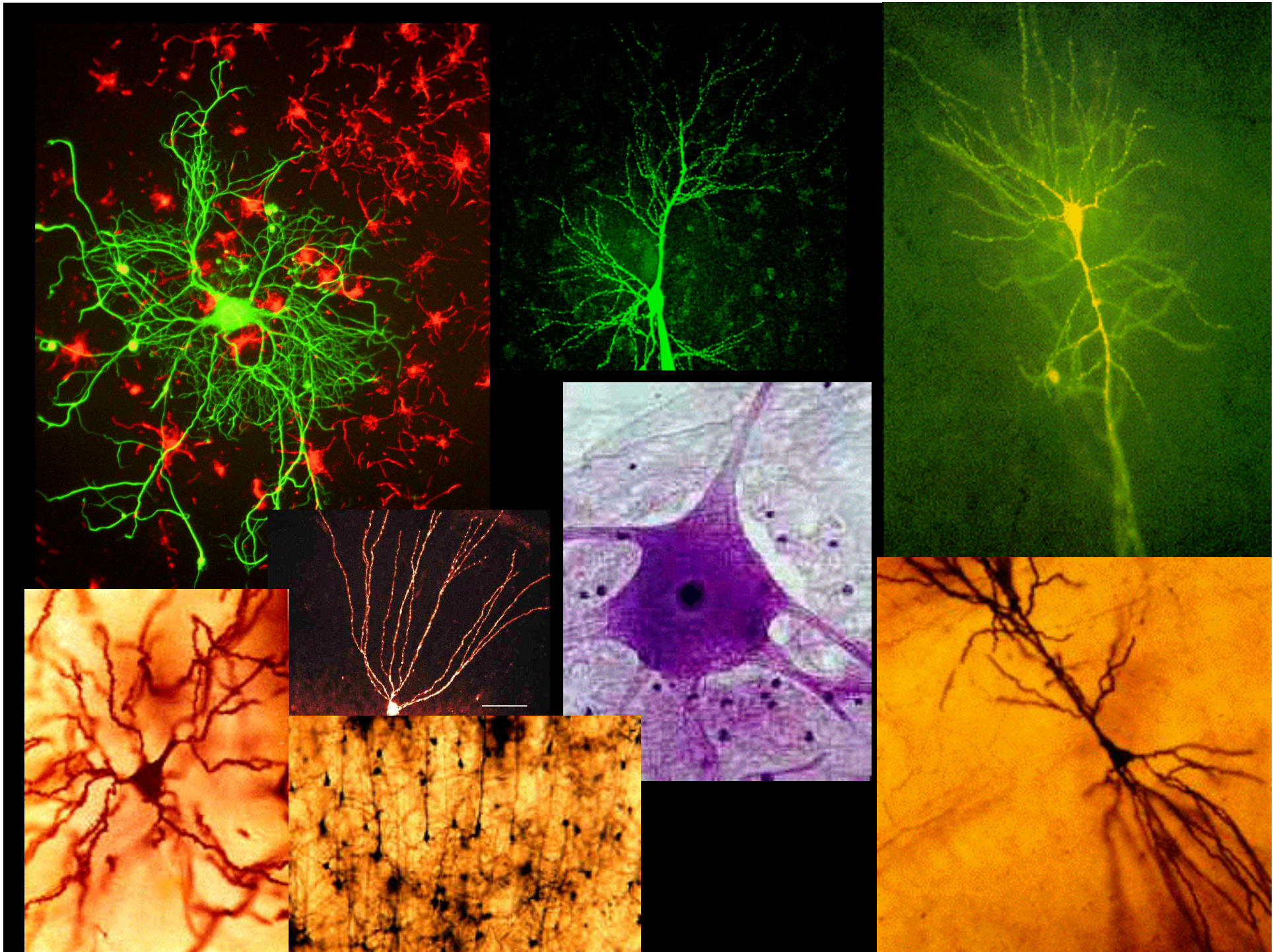
Spinal
motor
neuron

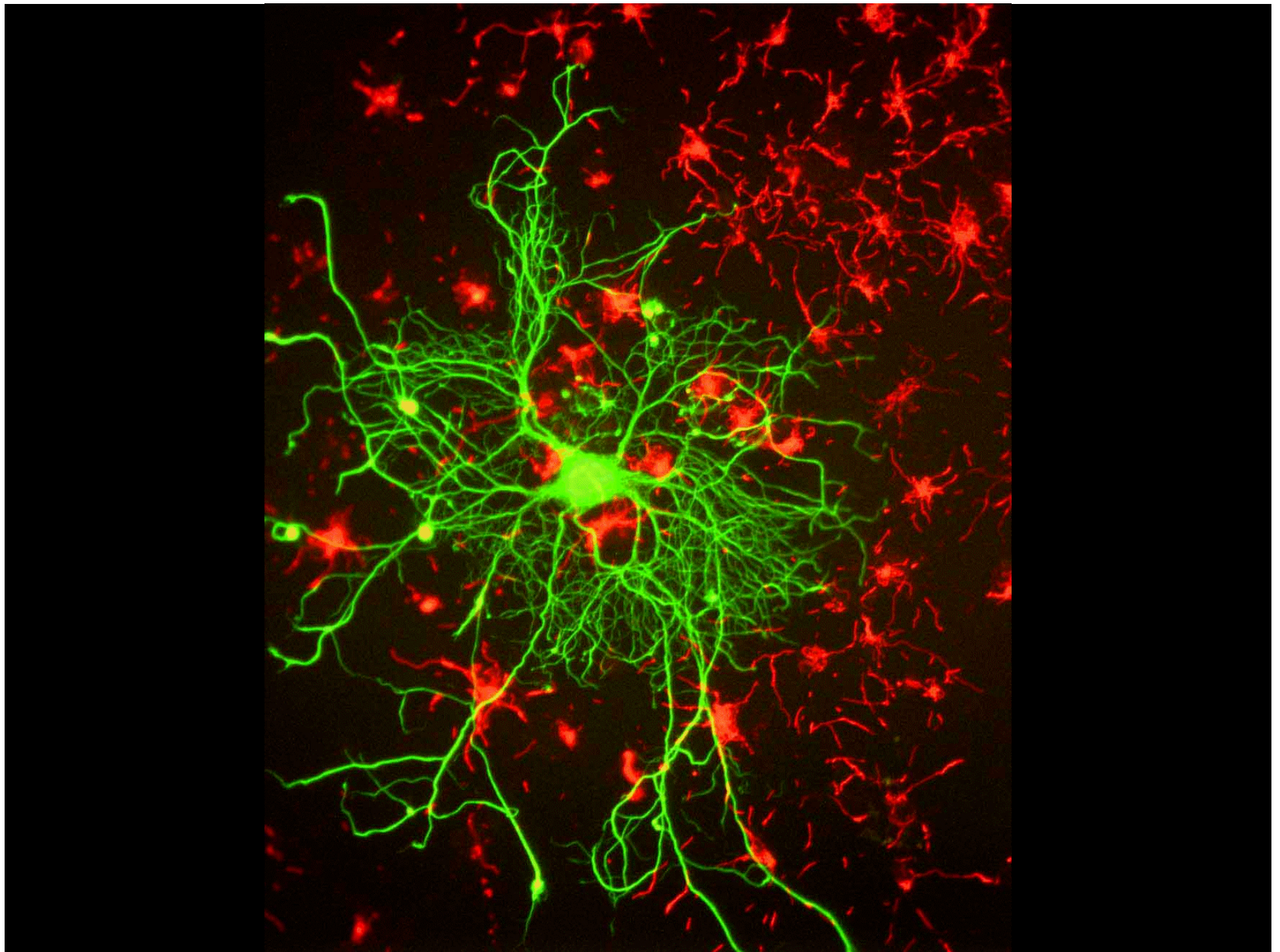


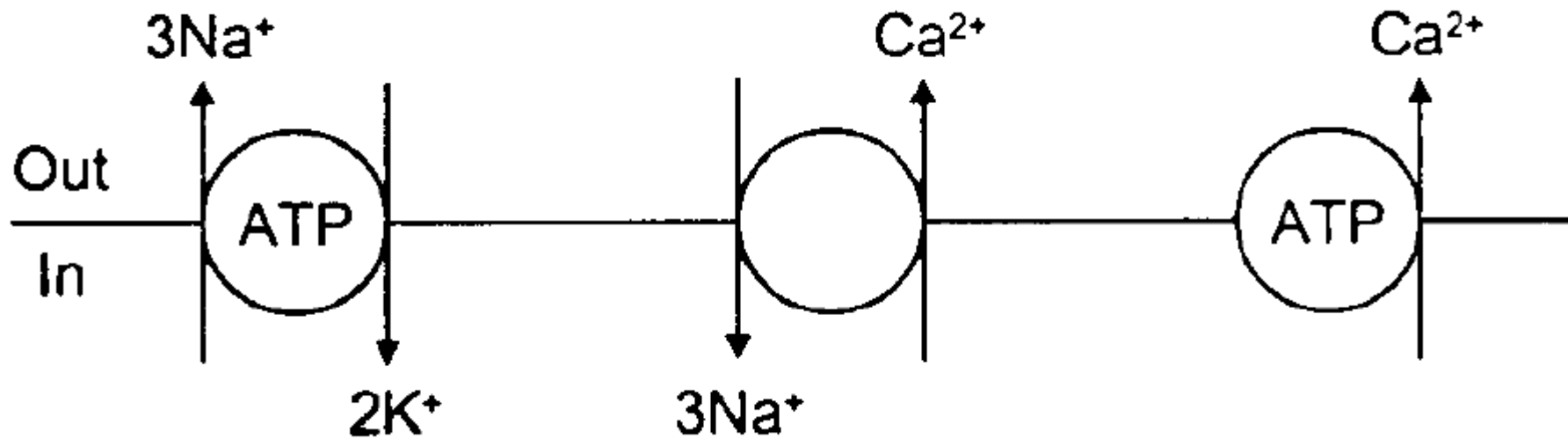
Hippocampal
pyramidal
cell



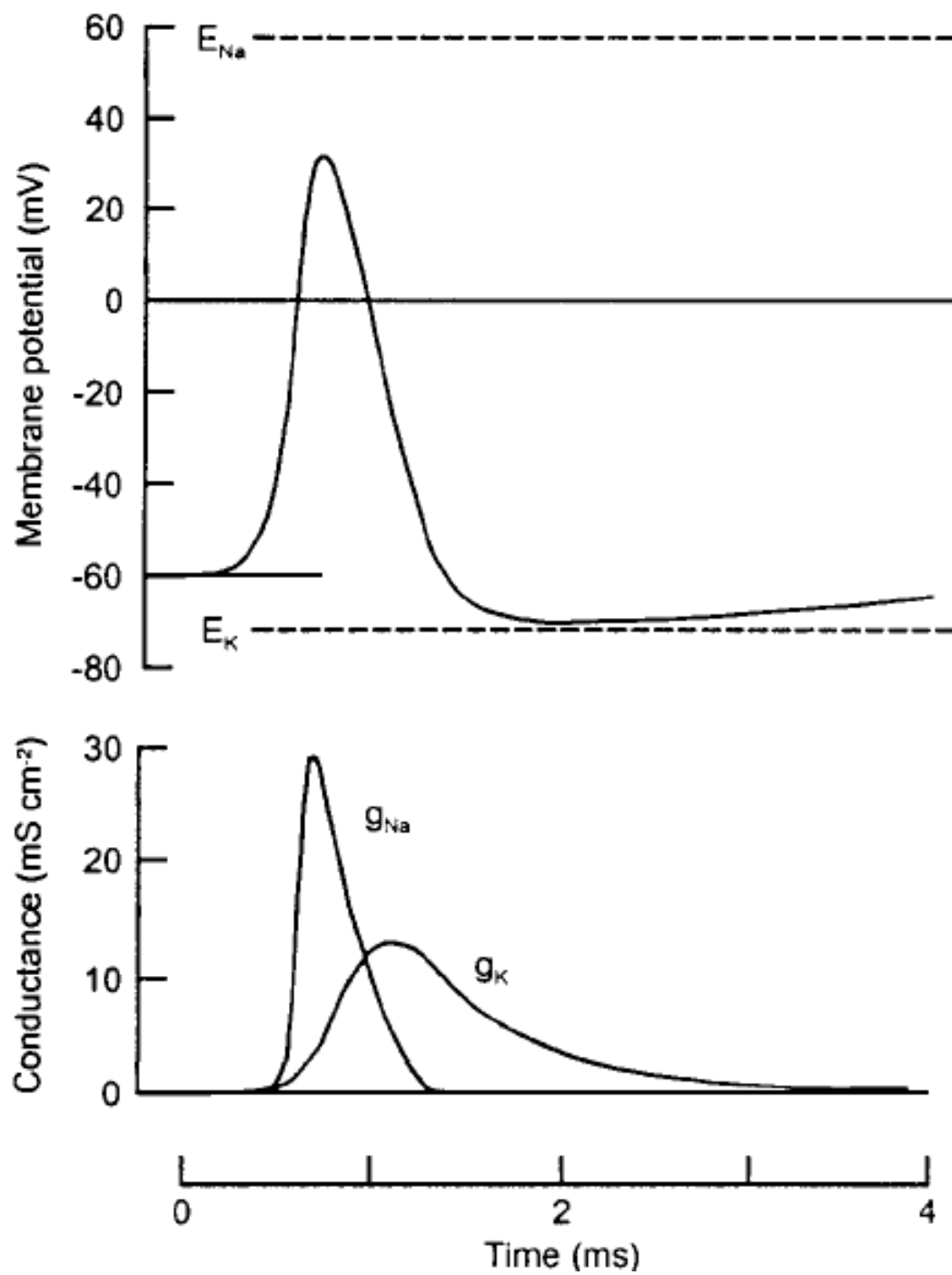
Cerebellar
Purkinje
cell

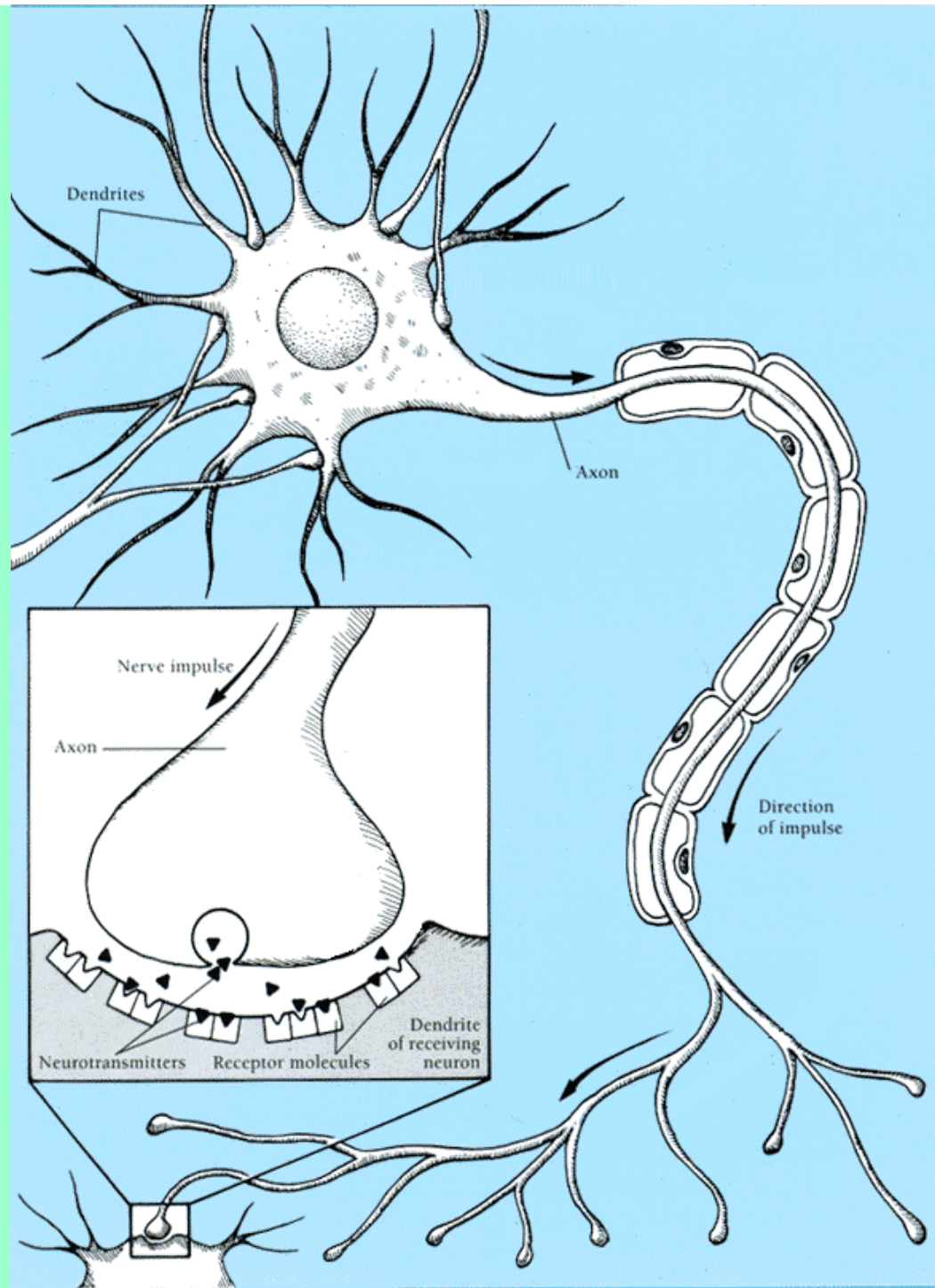


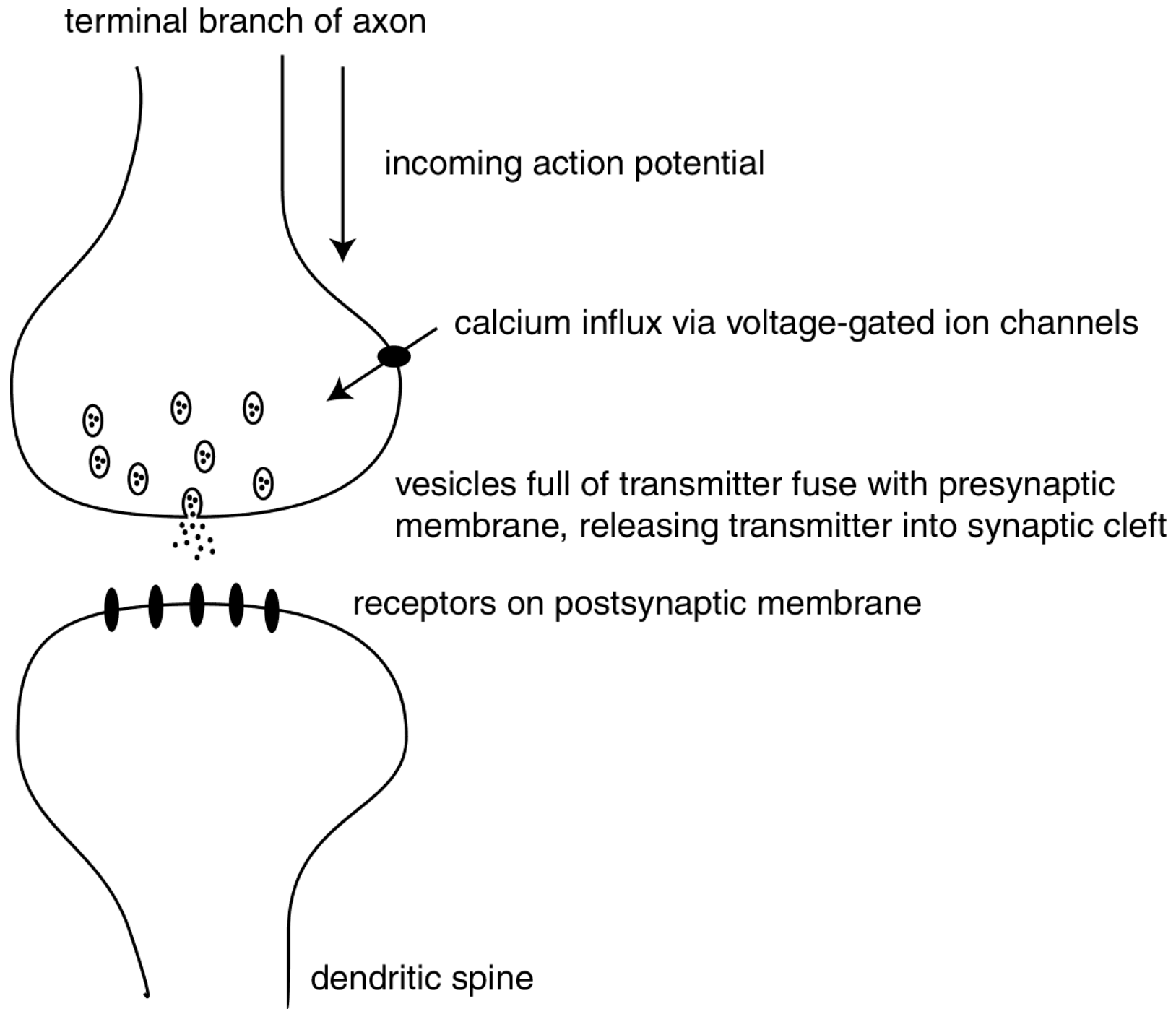


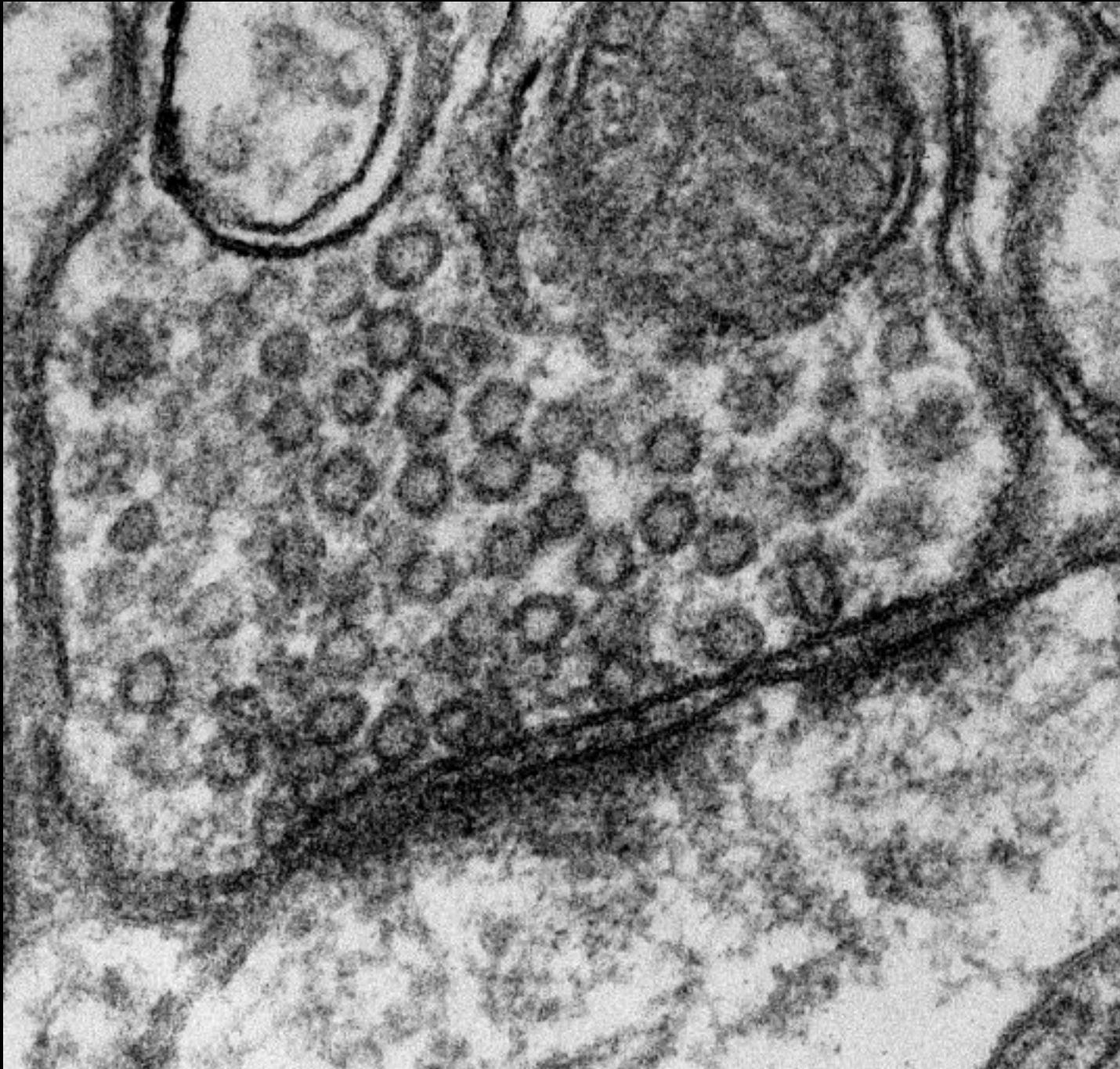


Ion	Internal concentration	External concentration	Valence (z)	Equilibrium potential
Na ⁺	15 mM	150 mM	+1	+62 mV
K ⁺	150 mM	5.5 mM	+1	-89 mV
Cl ⁻	9 mM	125 mM	-1	-71 mV
Ca ²⁺	10 ⁻⁴ mM	1 mM	+2	+124 mV



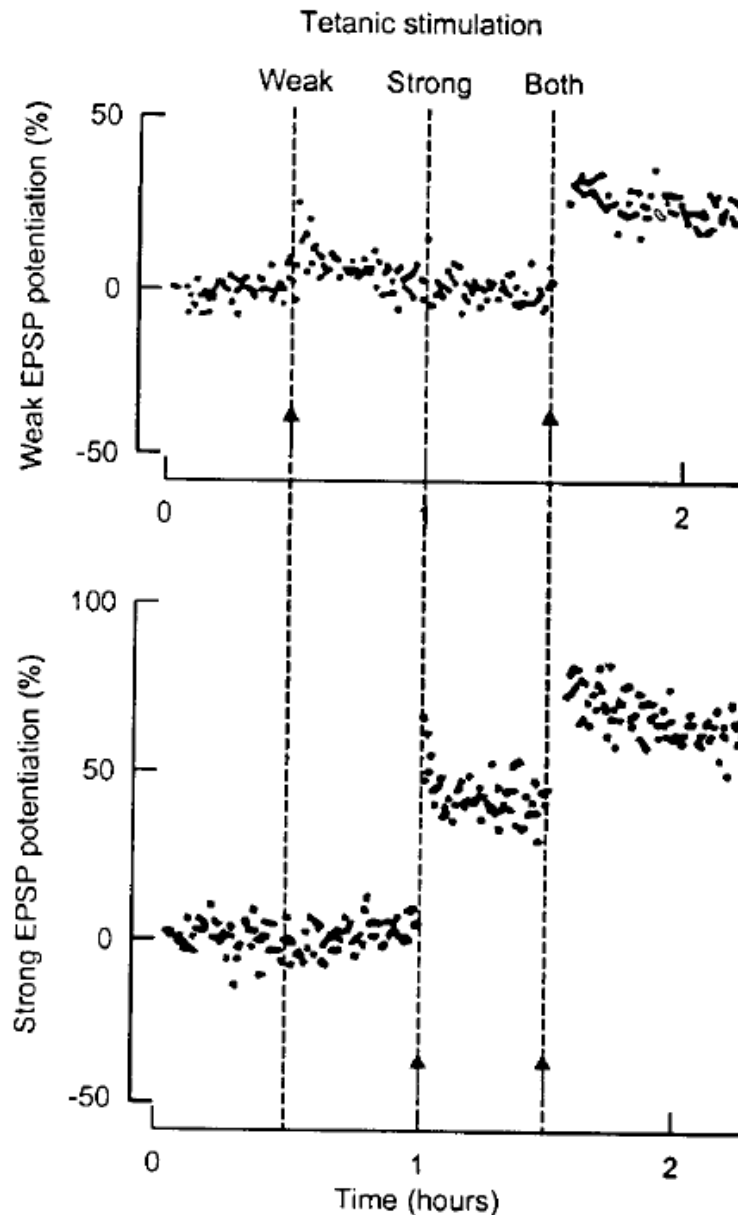






Weak
synapse

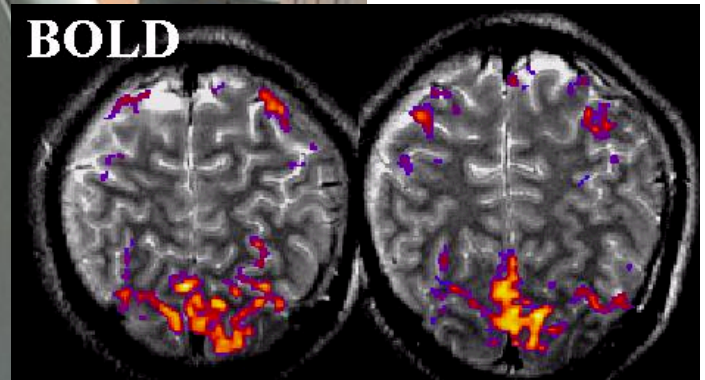
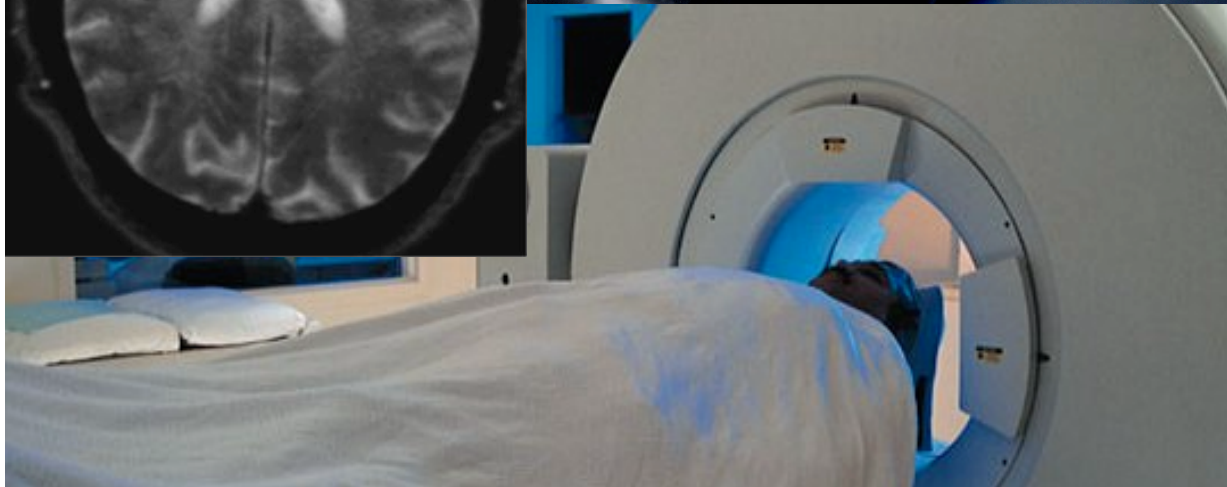
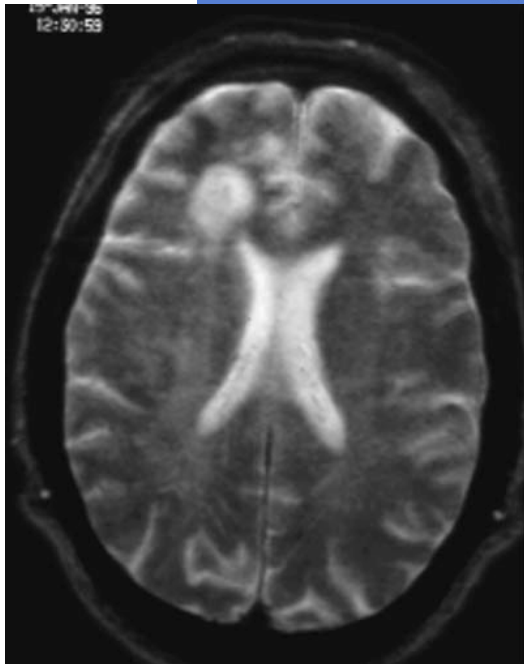
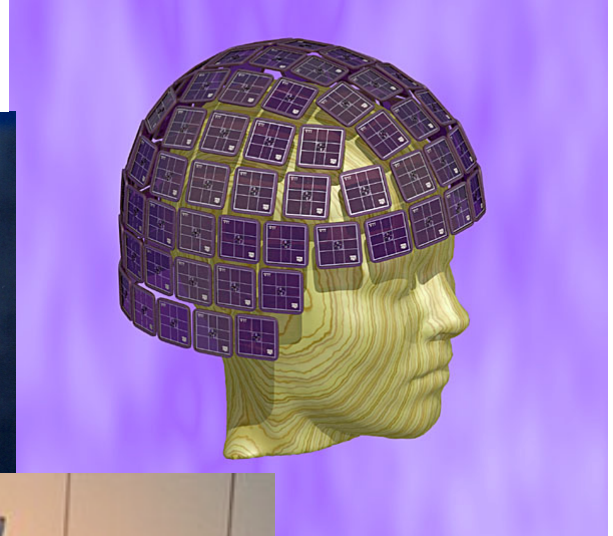
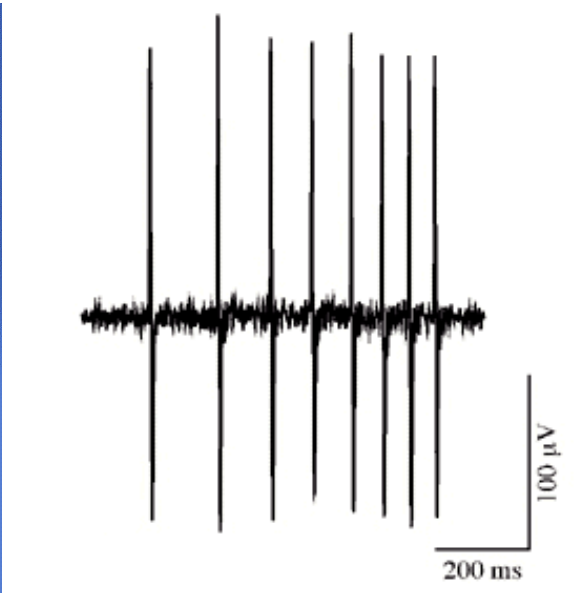
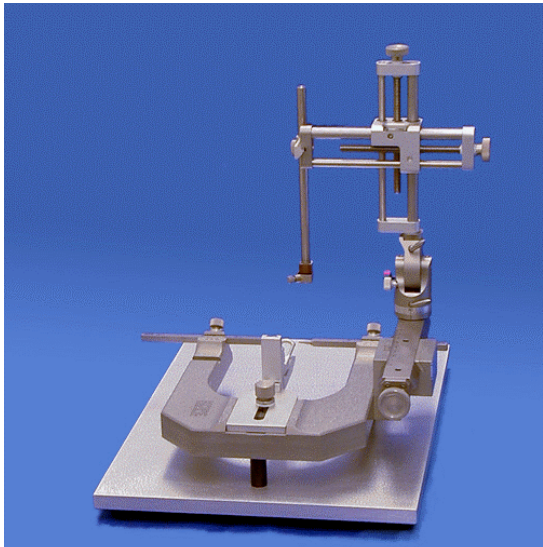
Strong
synapse

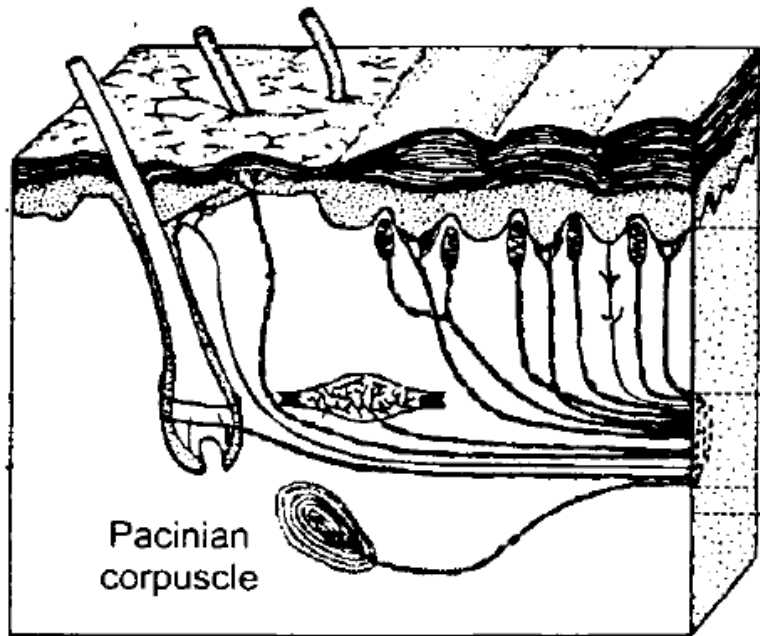


“When an axon of cell A is near enough to excite cell B, or repeatedly or consistently takes part in firing it, some growth process or metabolic change takes place in one or both cells such that A’s efficiency, as one of the cells firing B, is increased.”

Hebb, 1949

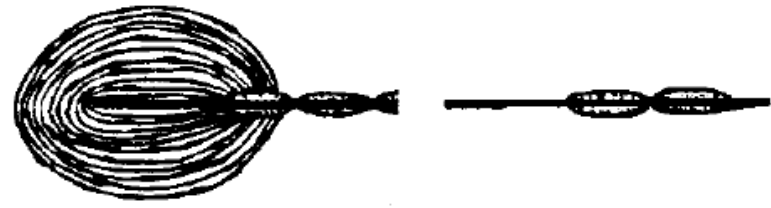




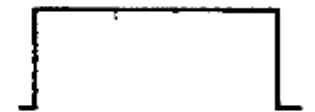


Intact

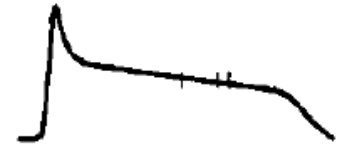
Delamellated



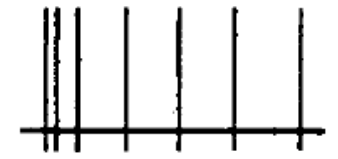
Stimulus

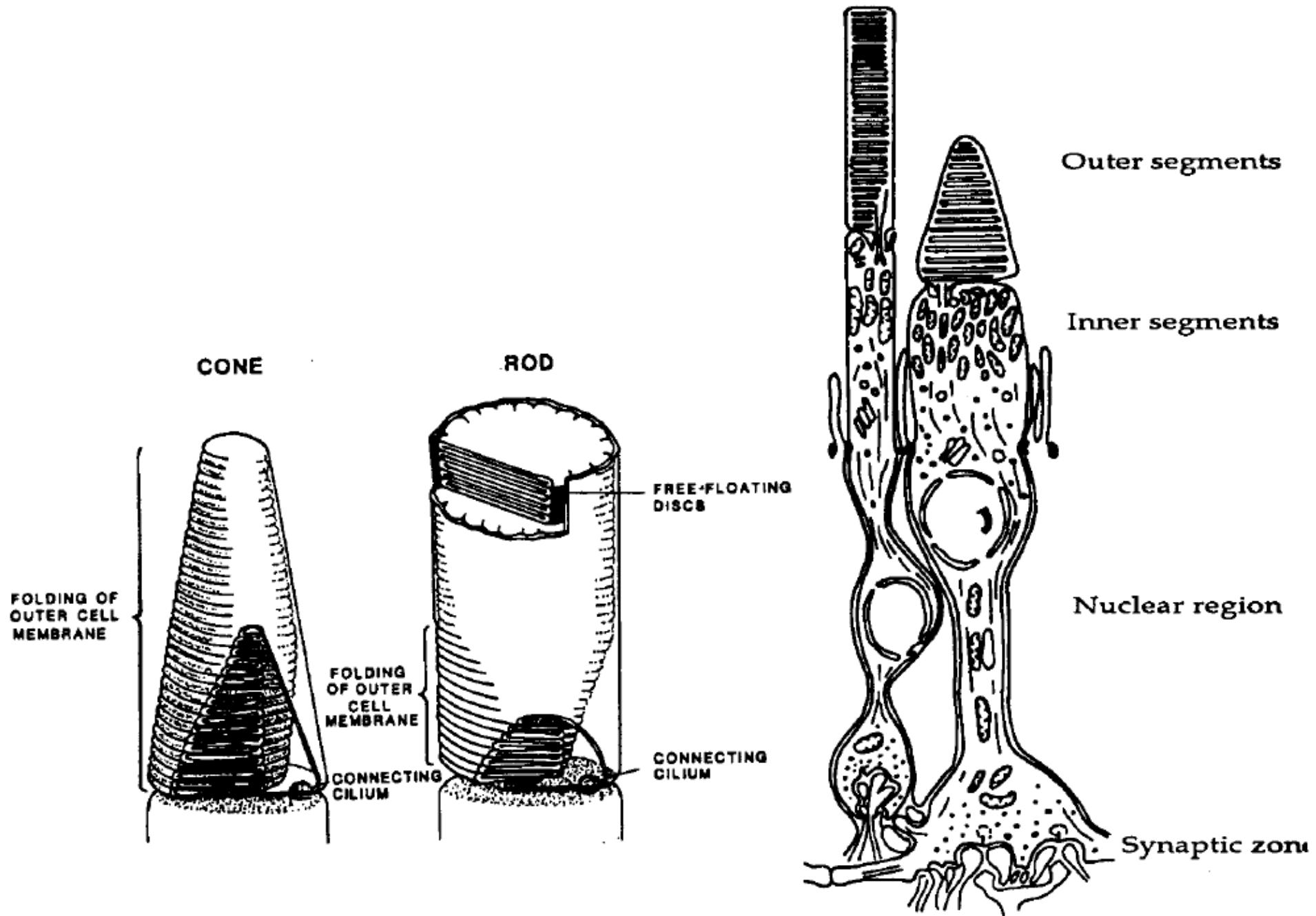


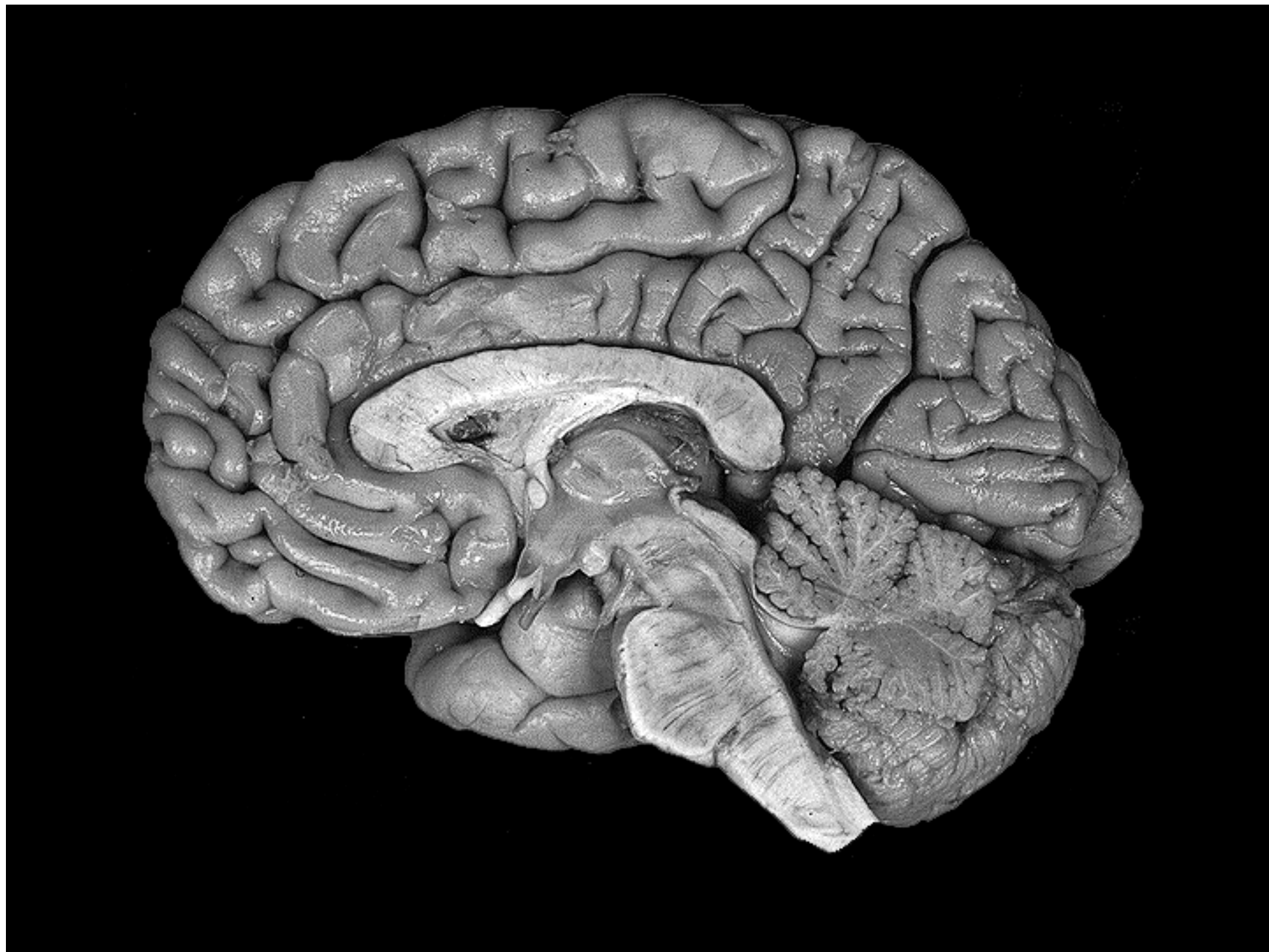
Receptor potential

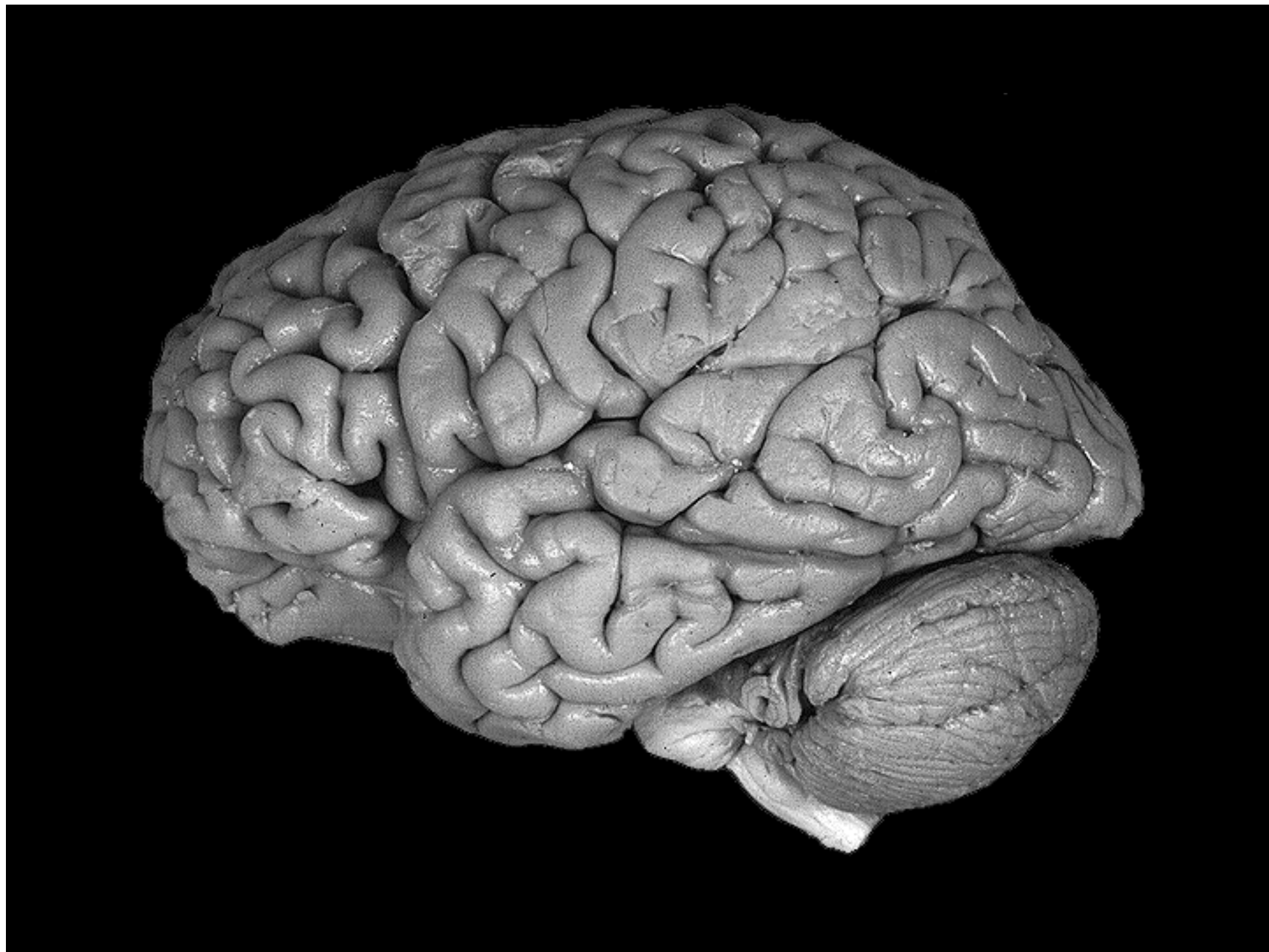


Spike train

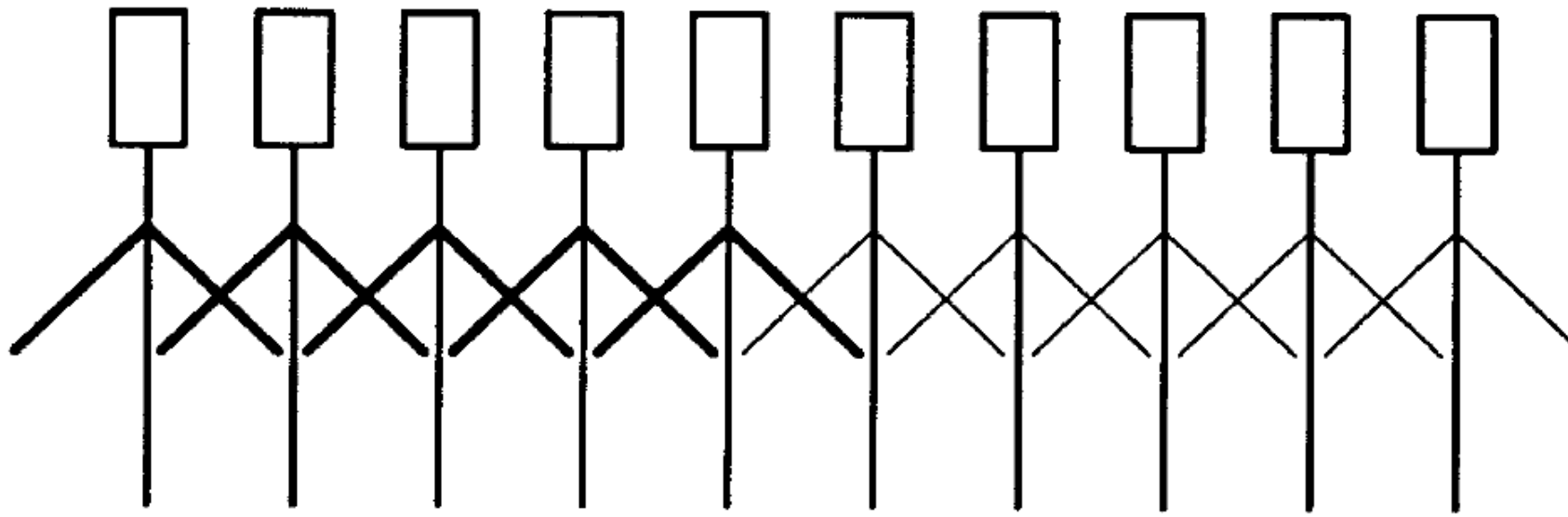




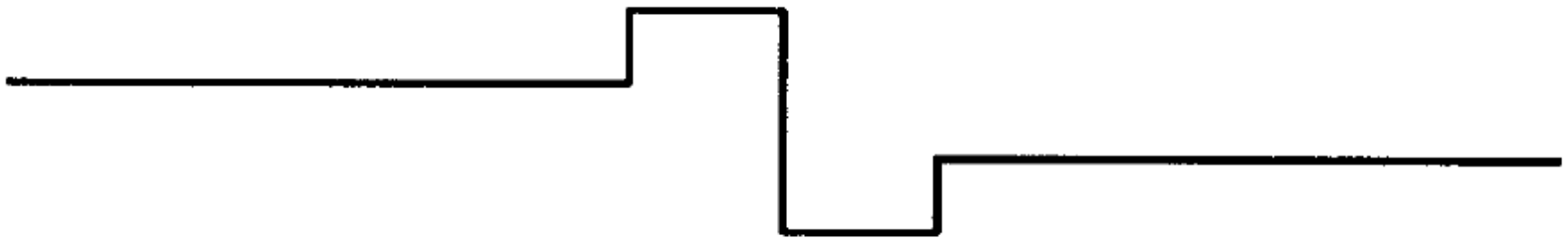


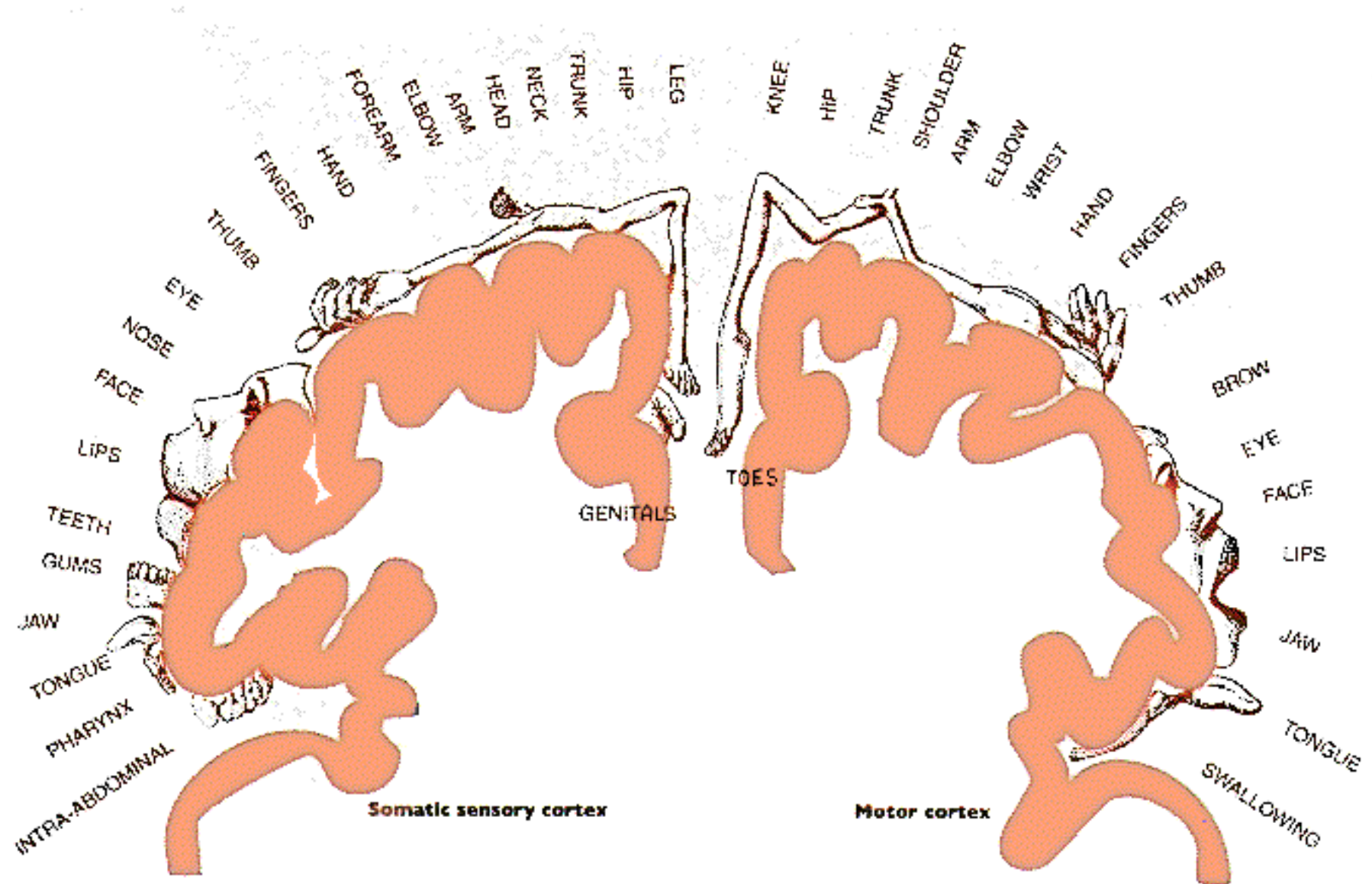


Stimulus

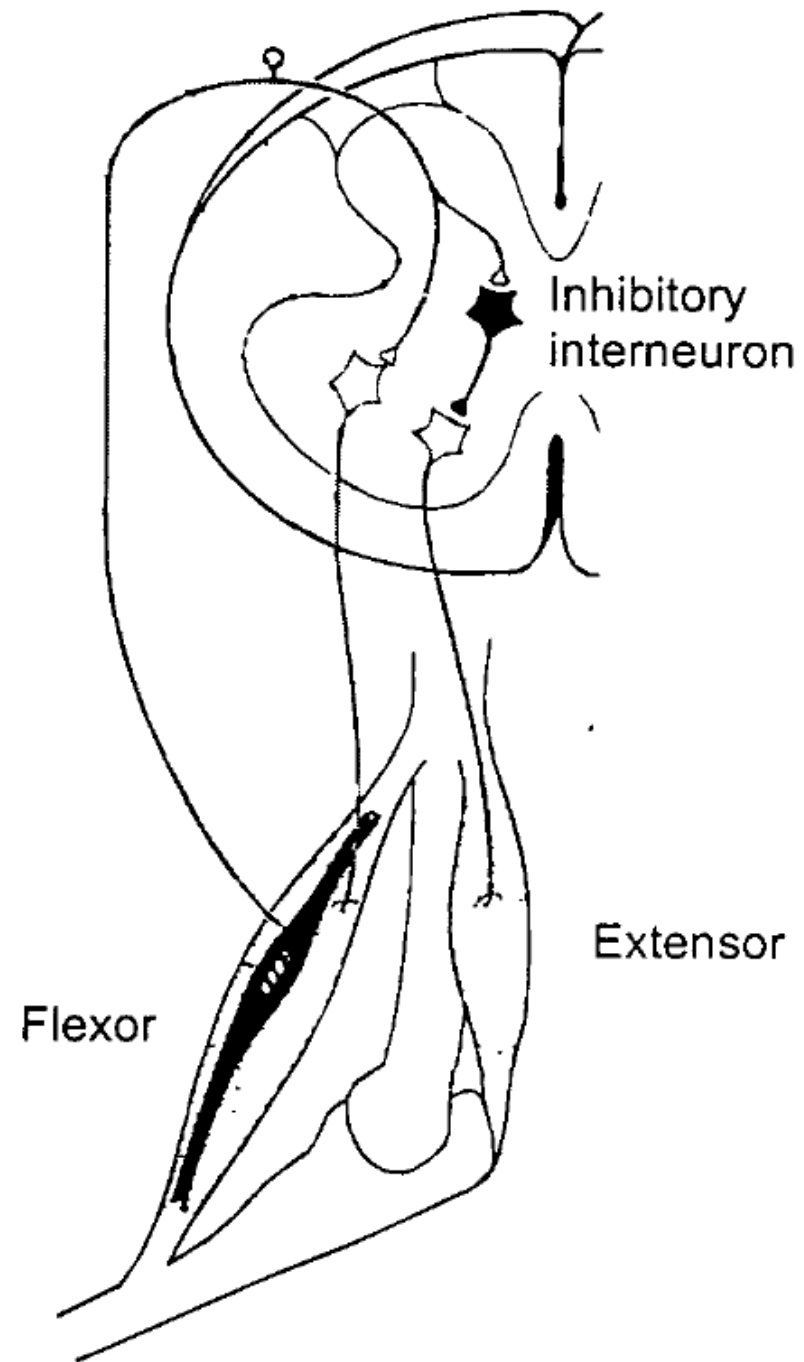


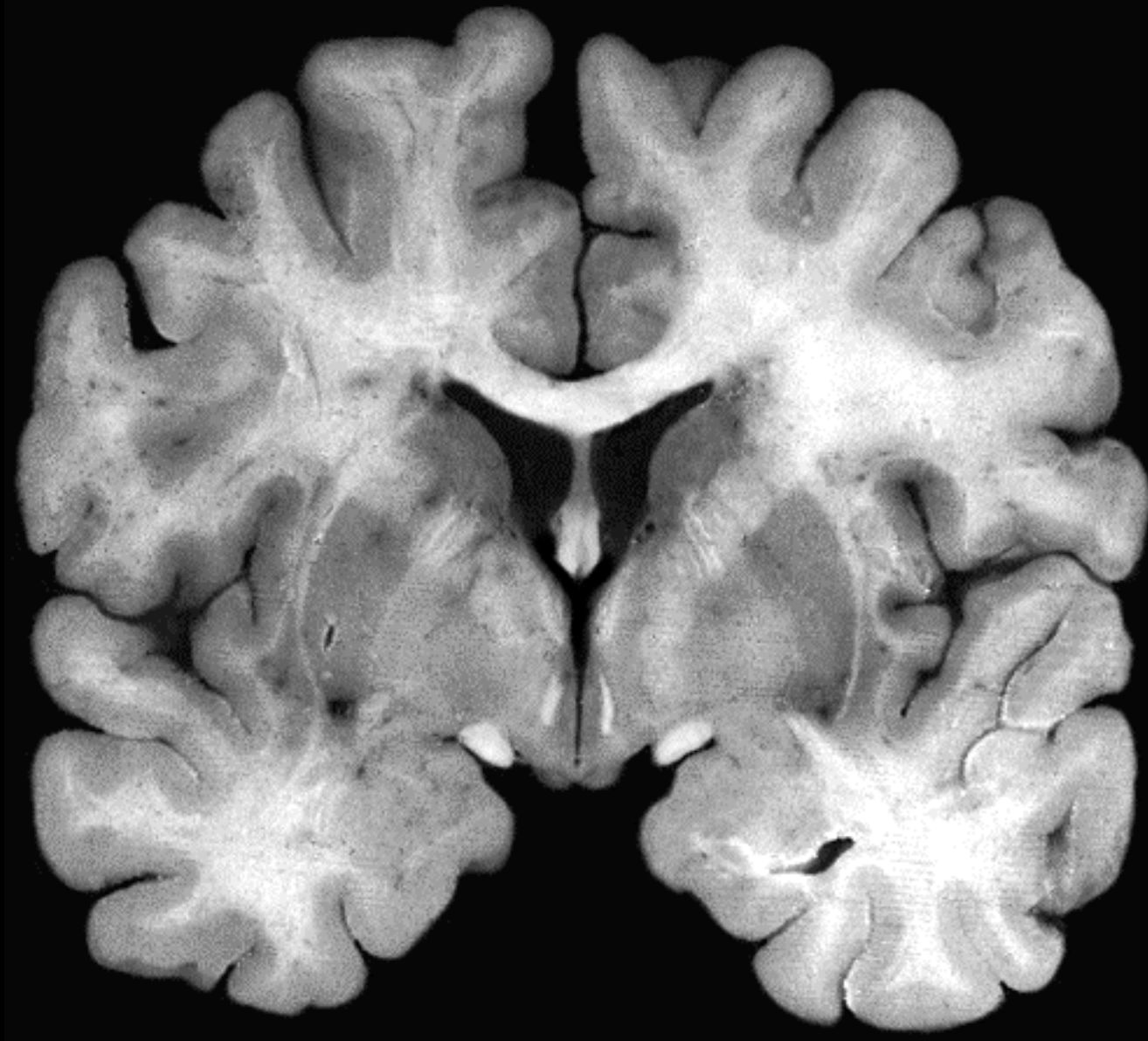
Response

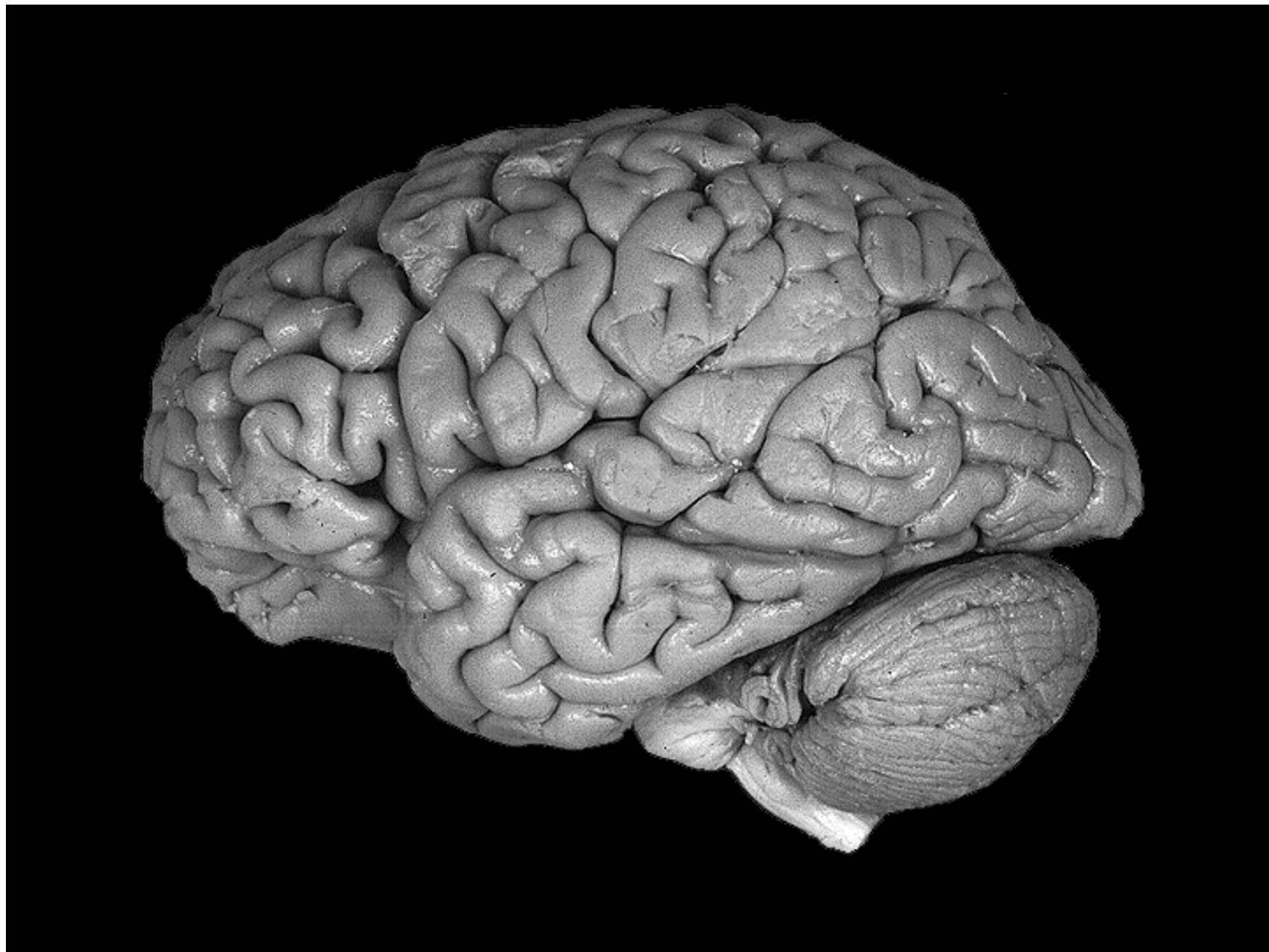




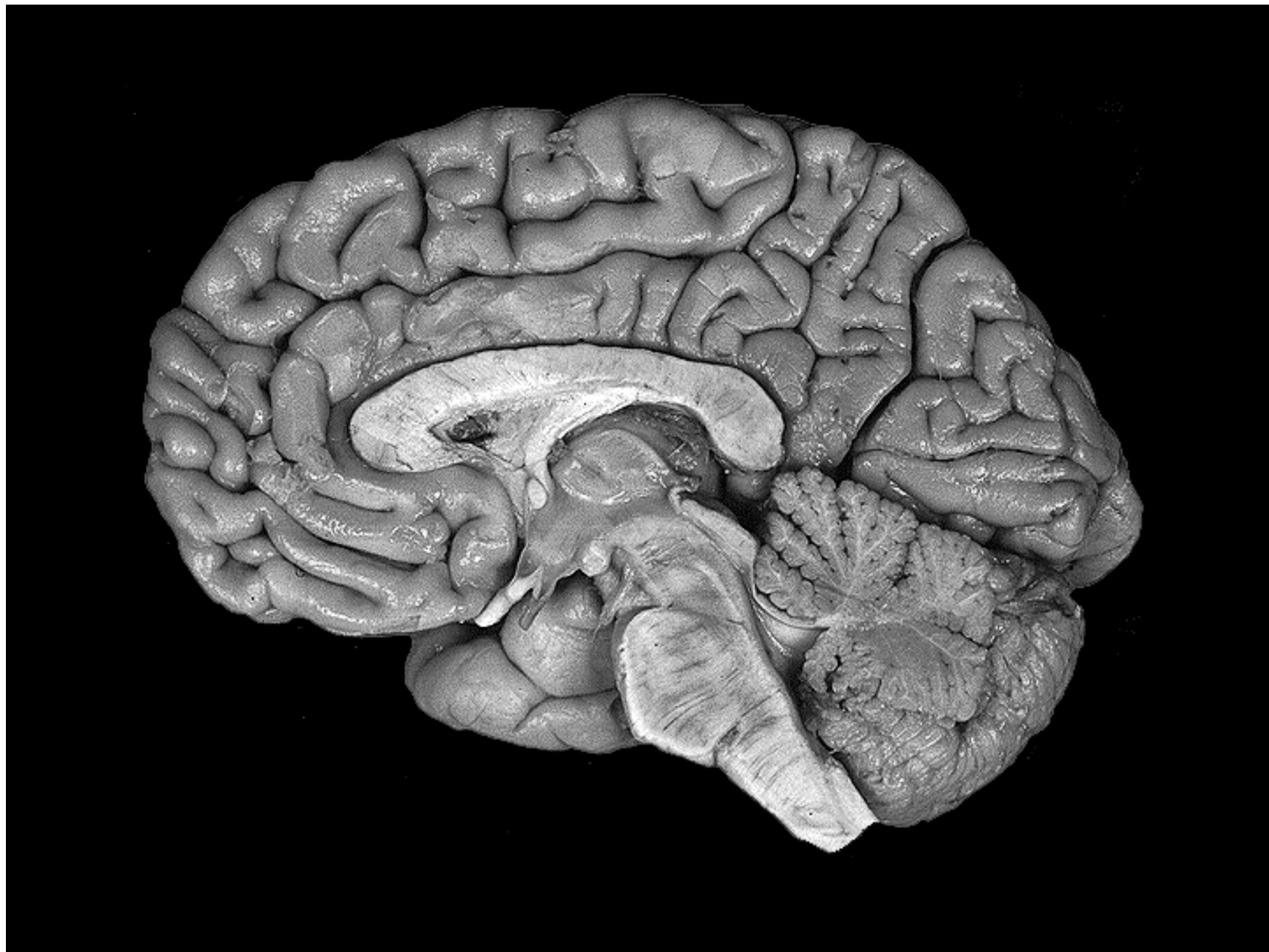






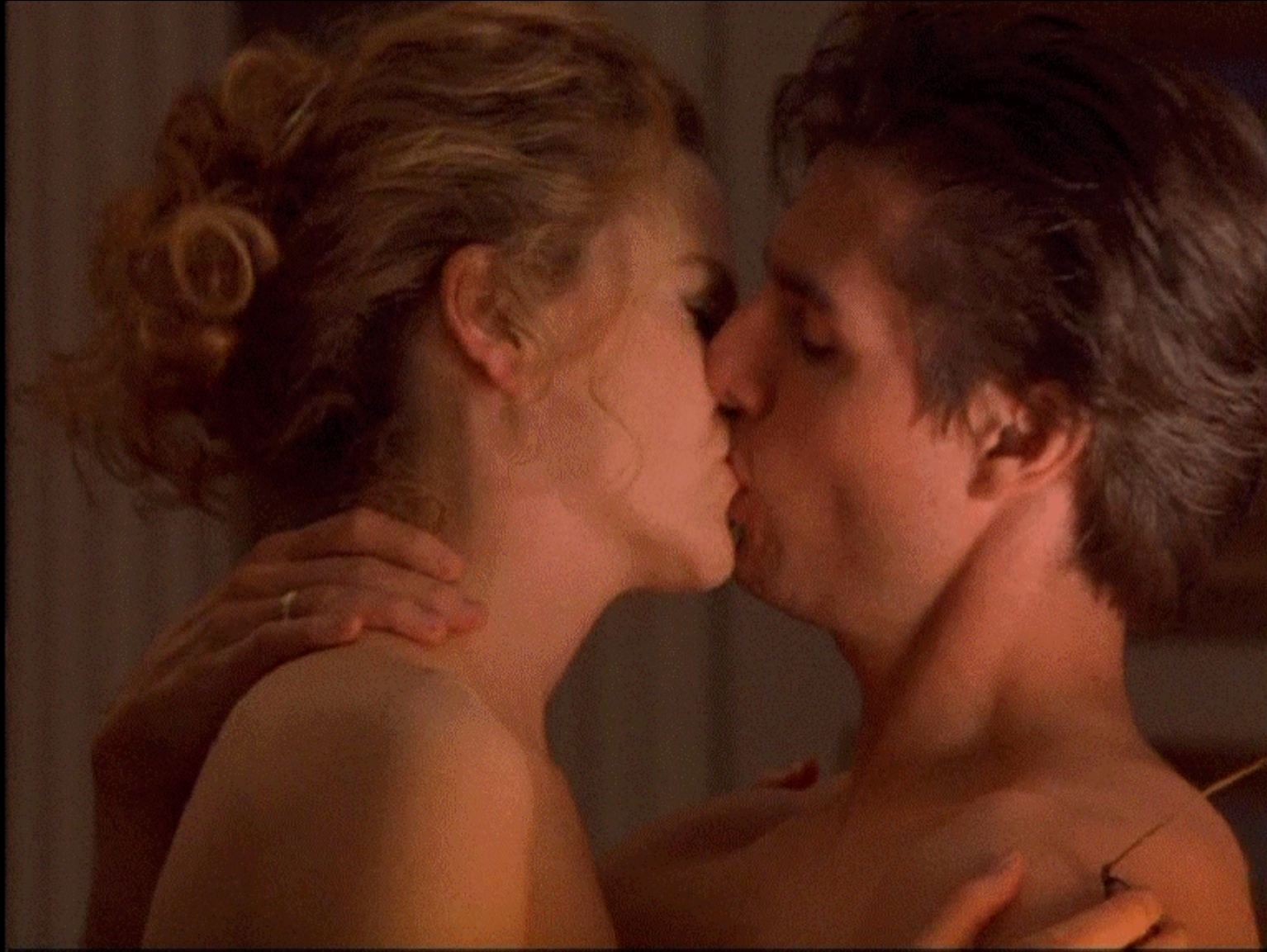




















WARNING