MIND & CONSCIOUSNESS

PSY 101 General Psychology

Instructor: Aimee Kim

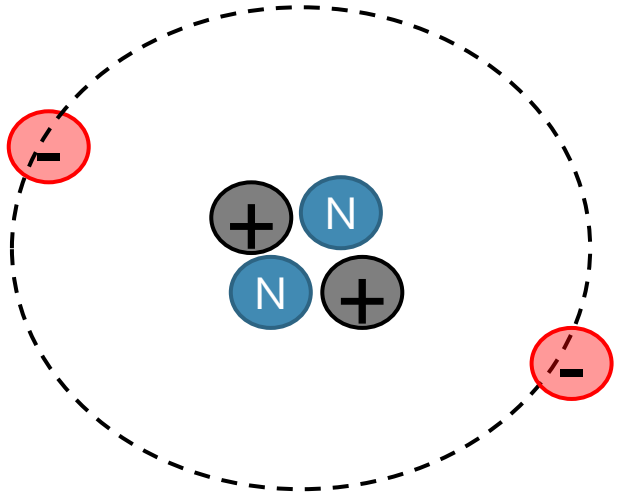
Drexel University

Neurons communicate with each other electrochemically

- chemical signals (neurotransmitters) between neurons
- electrical signal within a neuron

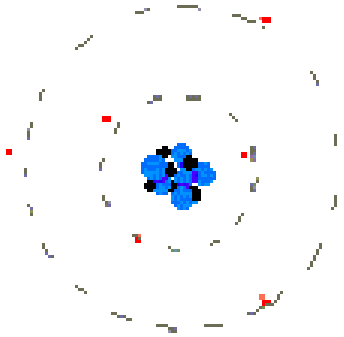
Chemicals have electrical charges (ions)

Atom



This Atom is Neutral

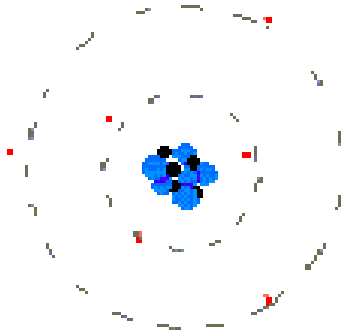
Same number of protons and electrons



- 6 Protons
- 6 Neutrons
- 6 Electrons

This Atom is Negatively Charged

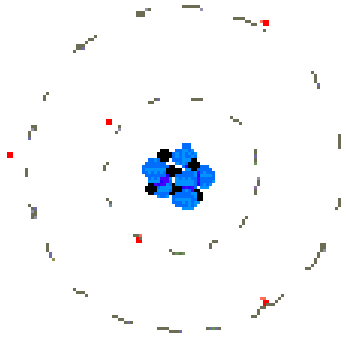
More electrons than protons



- 5 Protons
- 6 Neutrons
- 6 Electrons

This Atom is Positively Charged

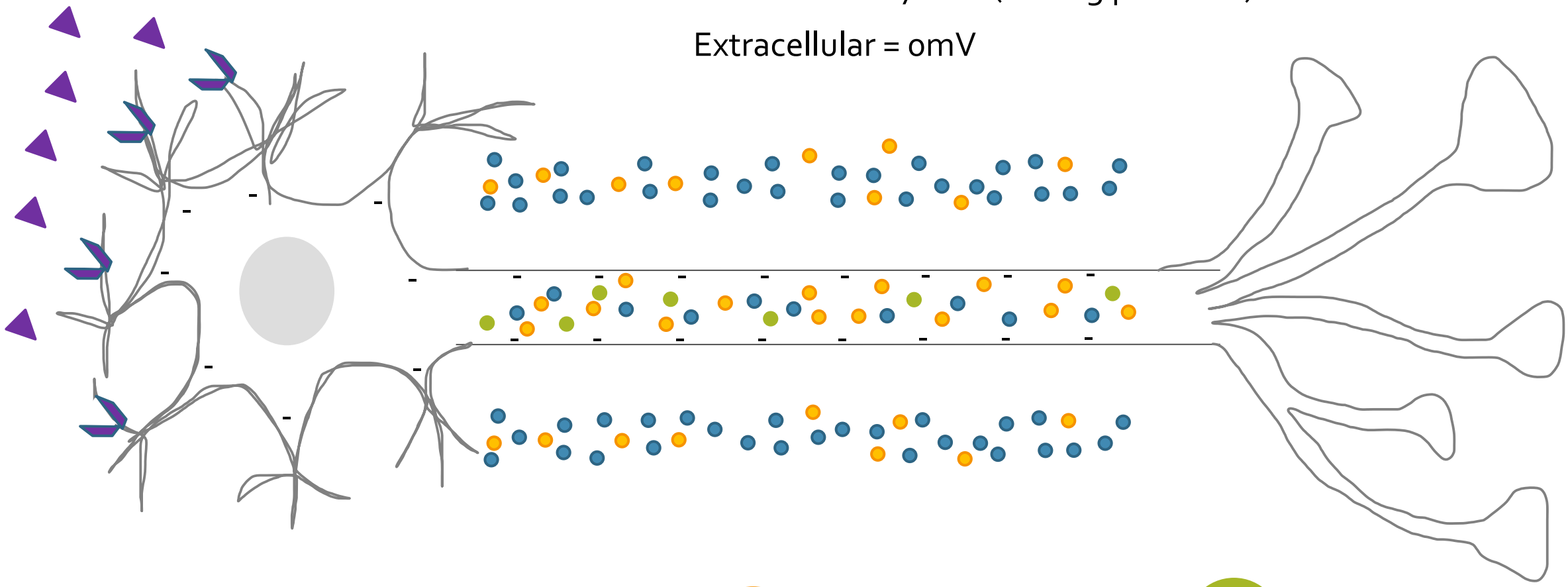
More protons than electrons



- 6 Protons
- 6 Neutrons
- 5 Electrons

Intracellular = -70mV (resting potential)

Extracellular = 0mV



Na+

sodium ions (+)

K+

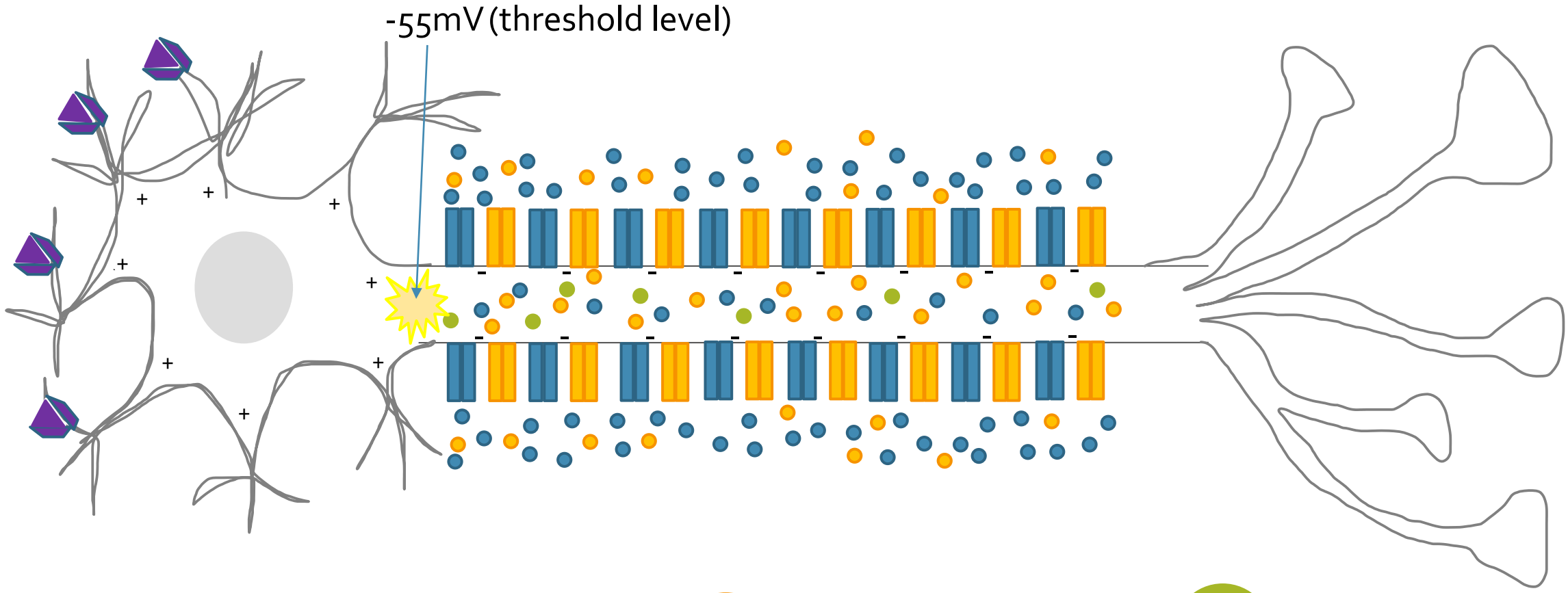
potassium ions (+)

-

various negative ions (-)

Intracellular = -70mV (resting potential)

Extracellular = 0mV



Na+

sodium ions (+)

K+

potassium ions (+)

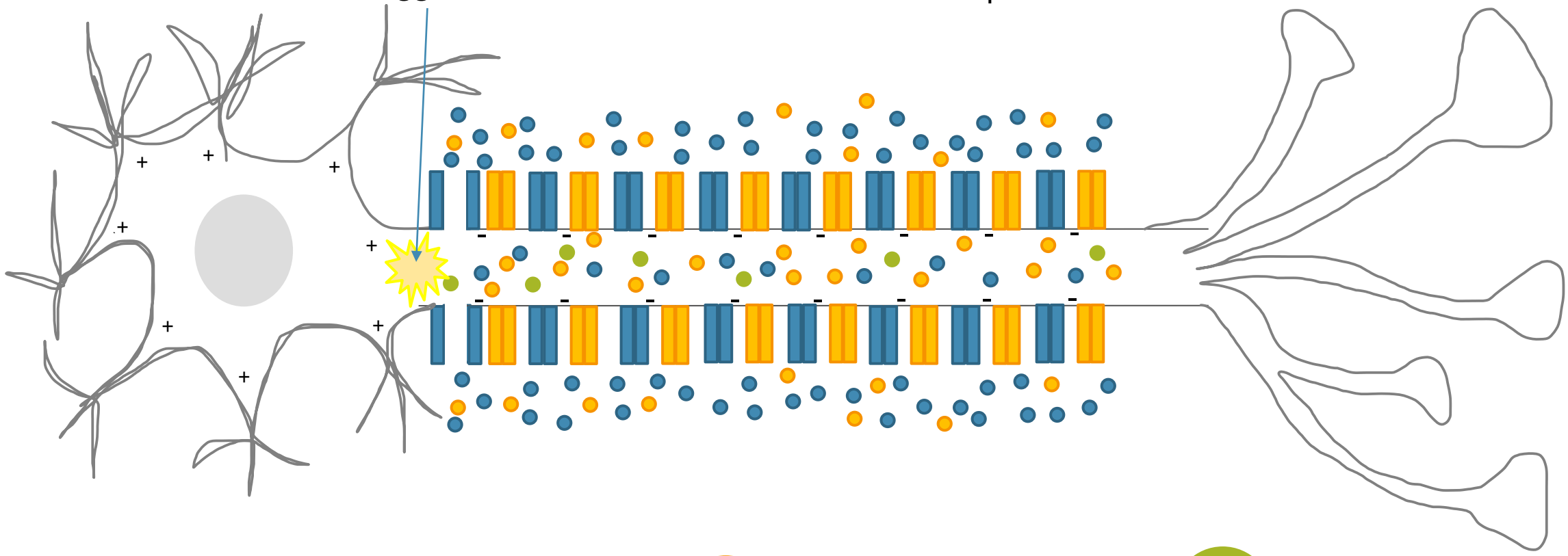
-

various negative ions (-)

Intracellular = -70mV (resting potential)

Extracellular = 0mV

-55mV (threshold level) = fires an action potential



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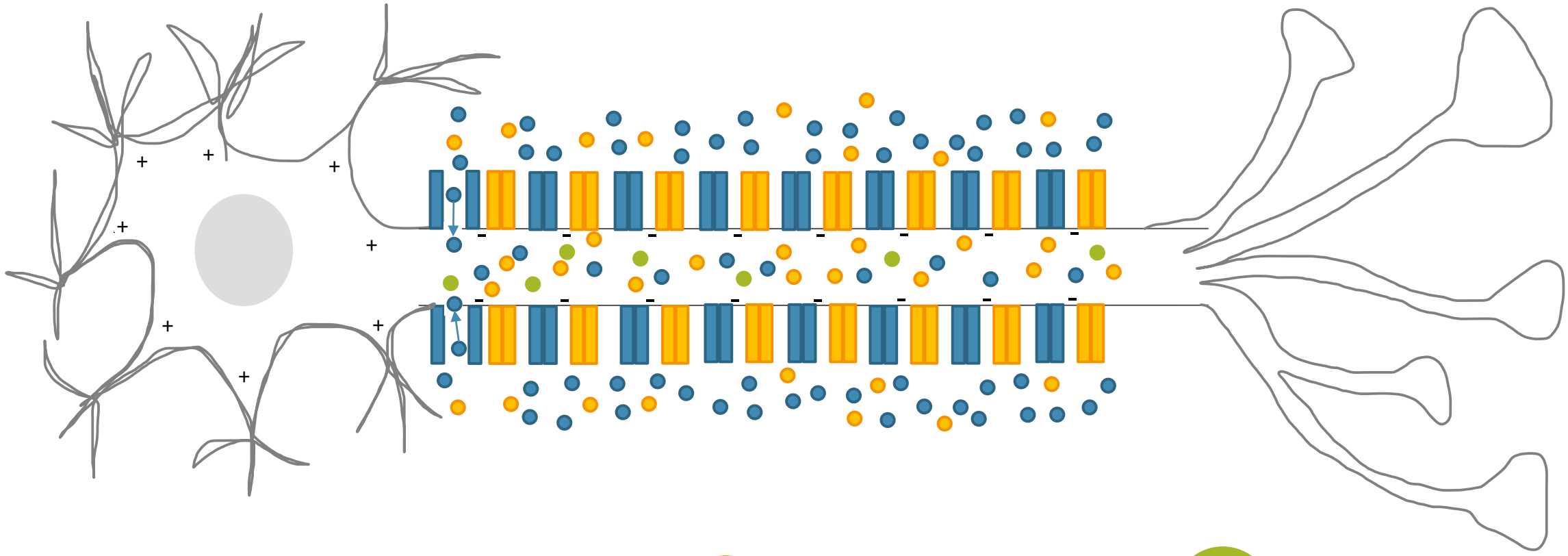


Na+

sodium ions (+)

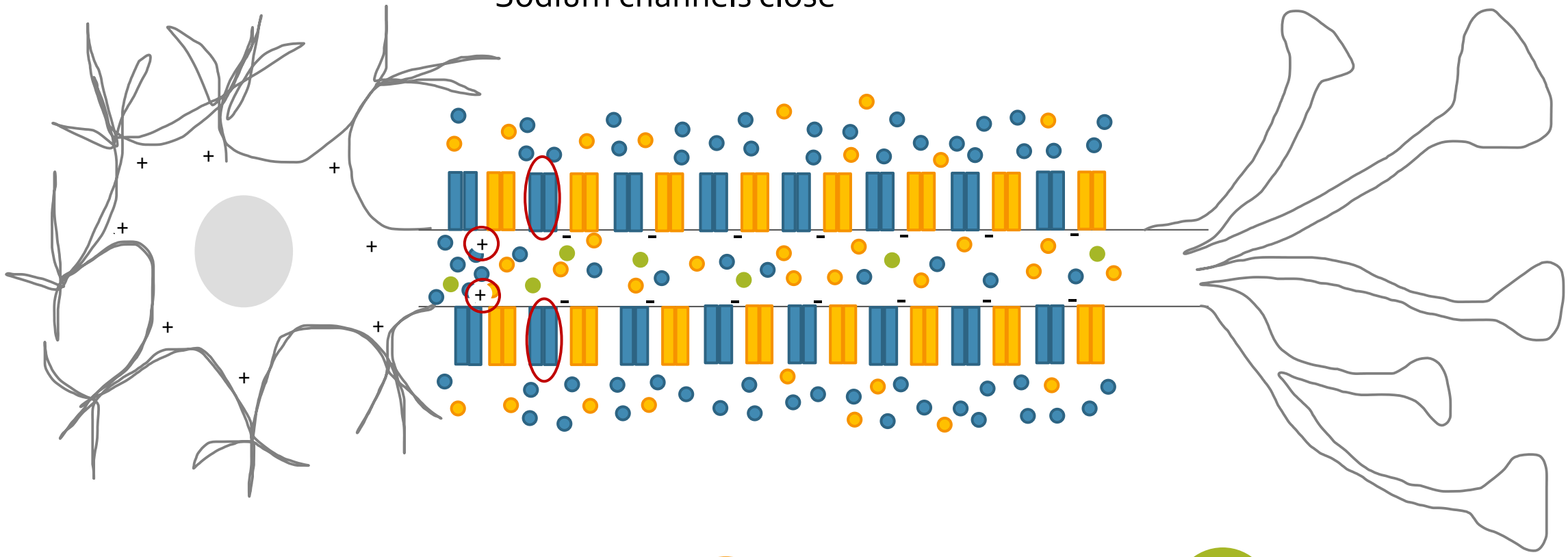
K+

potassium ions (+)

-

various negative ions (-)

+30mV
Sodium channels close



Na+

sodium ions (+)

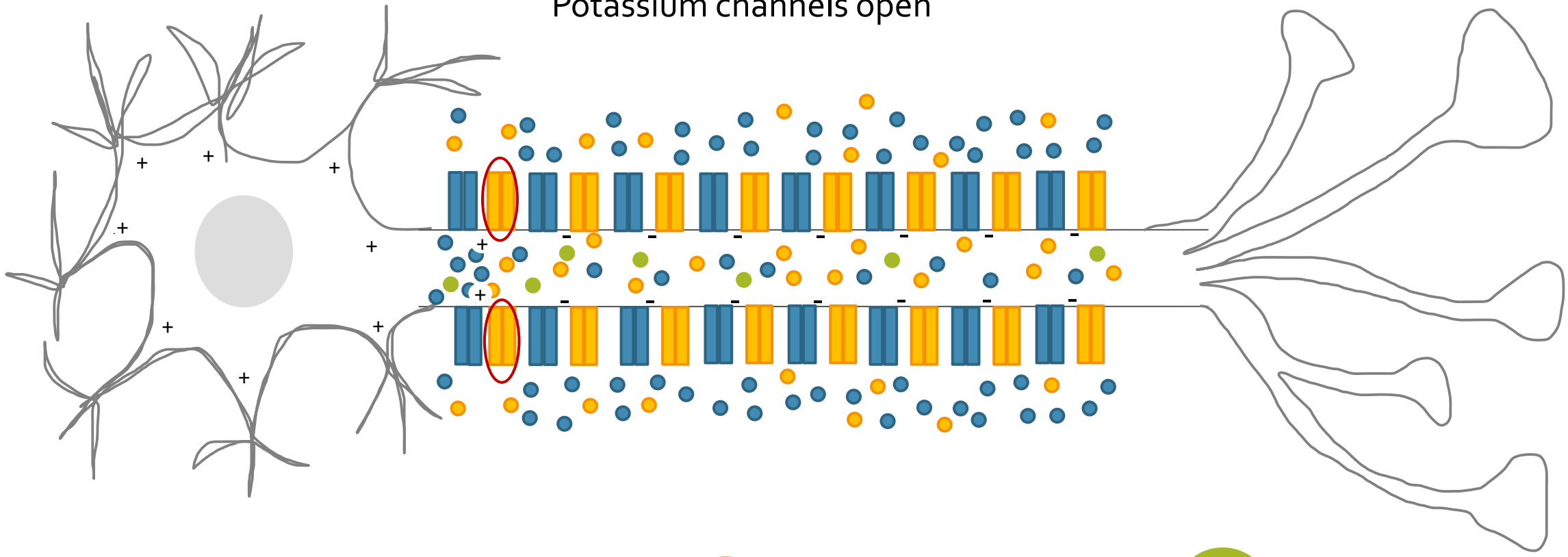
K+

potassium ions (+)

-

various negative ions (-)

+30mV
Sodium channels close
Potassium channels open



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sodium ions (+)

K+

potassium ions (+)

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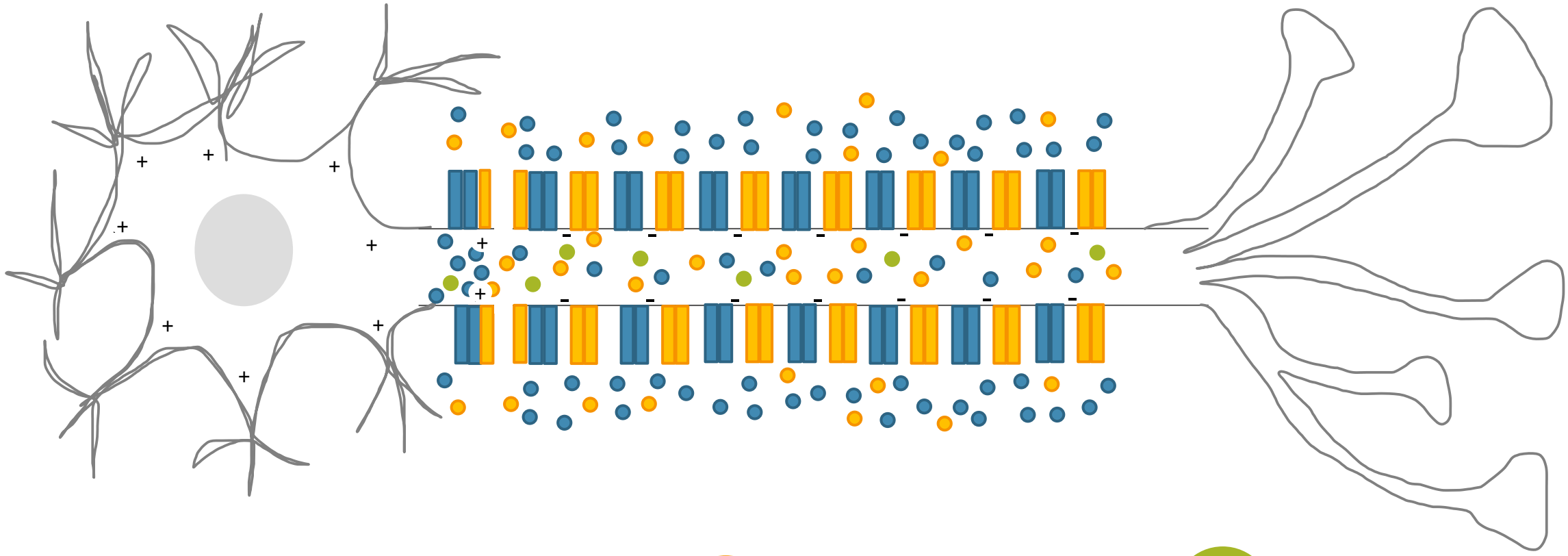
various negative ions (-)



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potassium ions (+)

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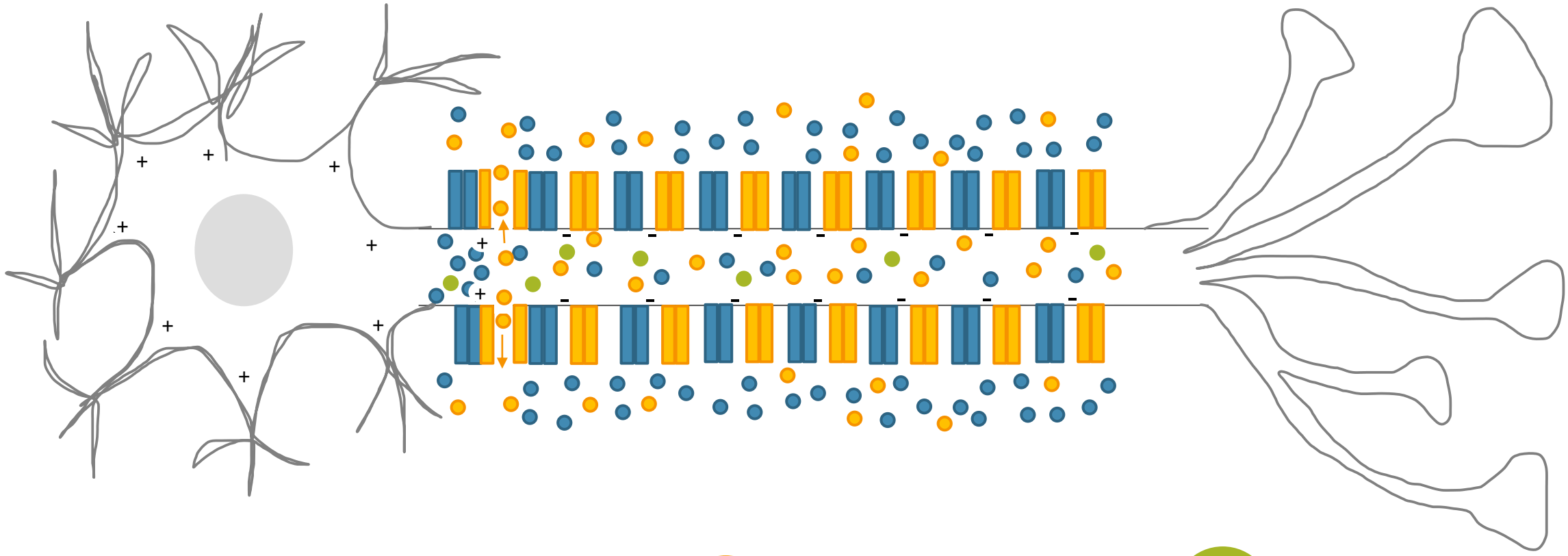
various negative ions (-)



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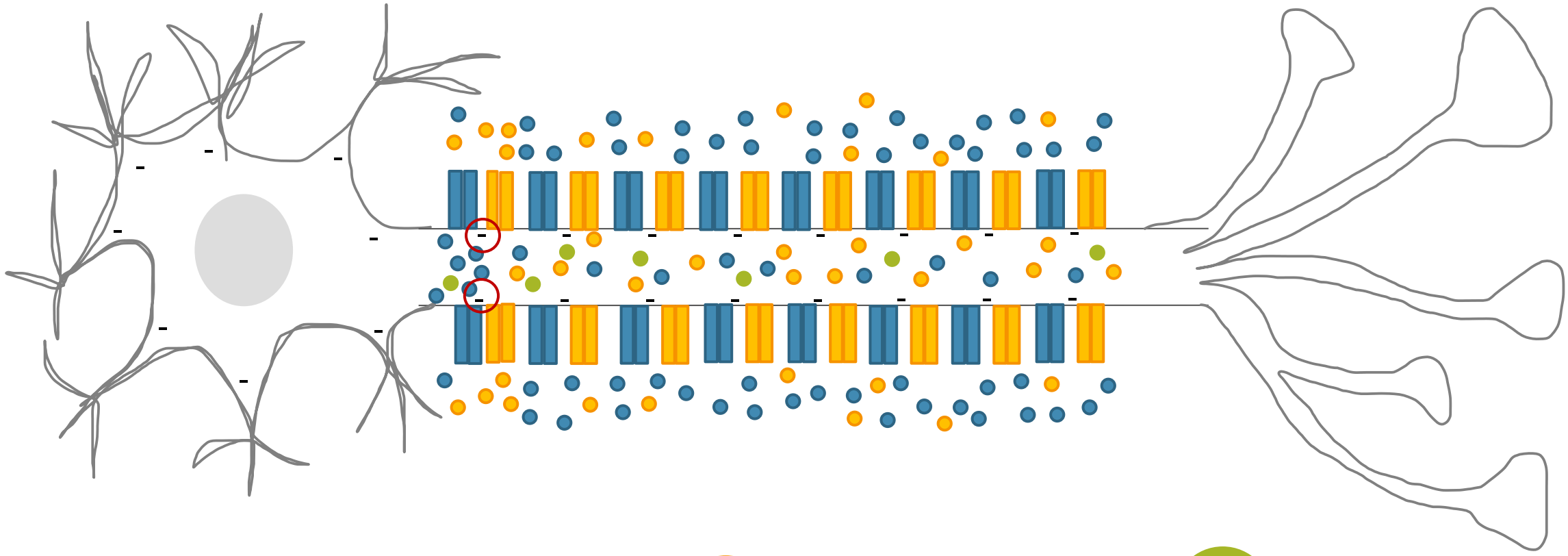

sodium ions (+)

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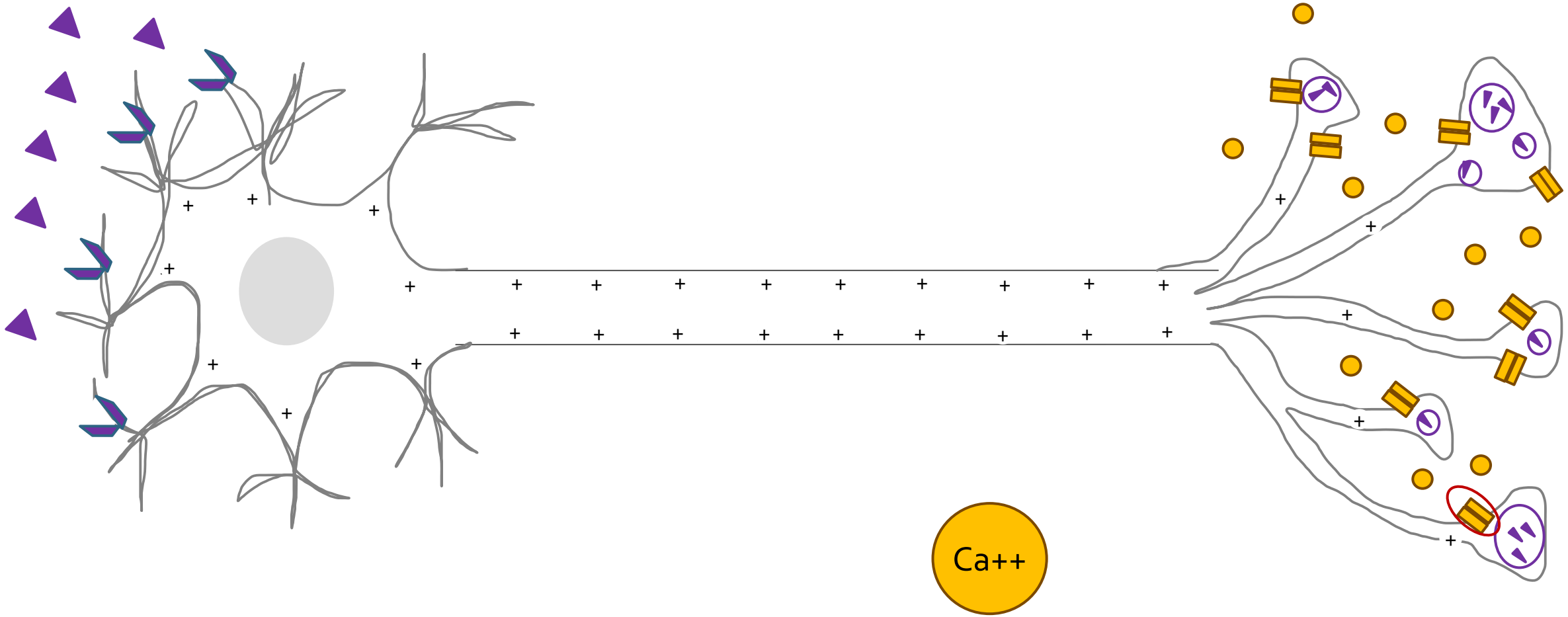
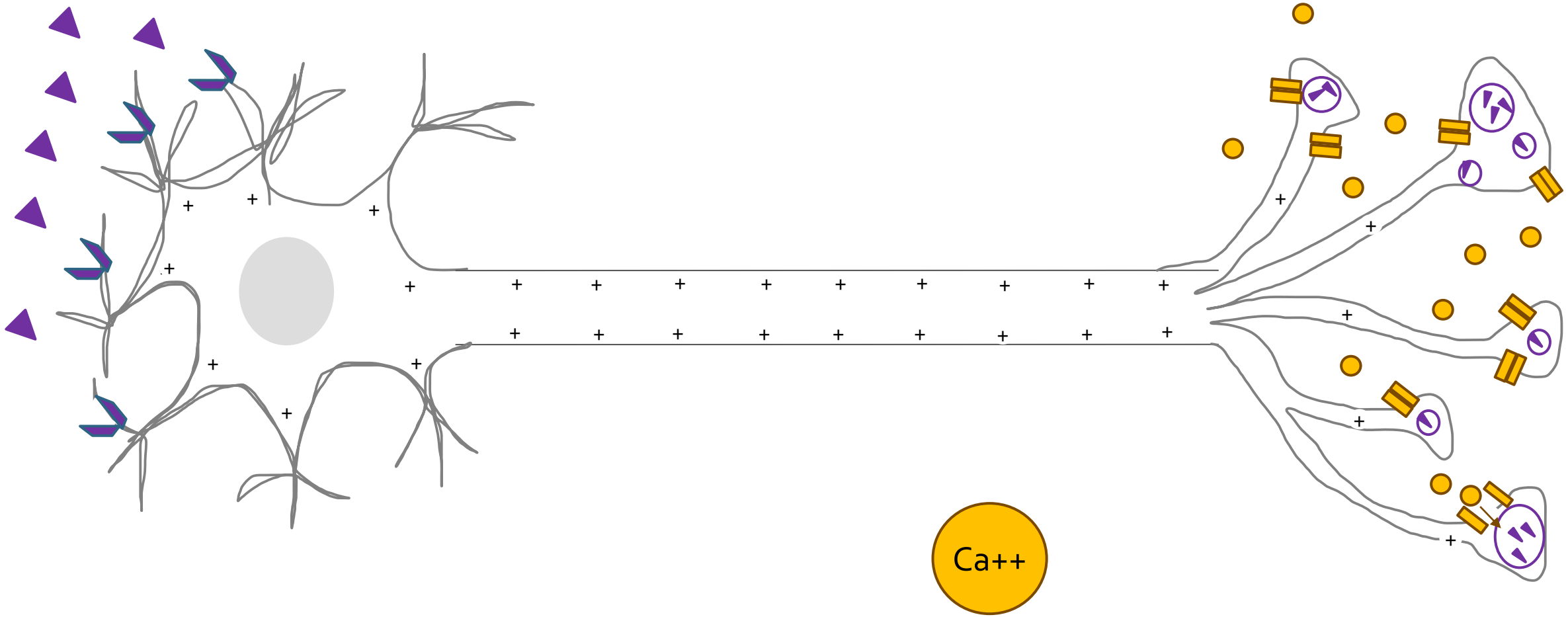


Calcium ions (++)



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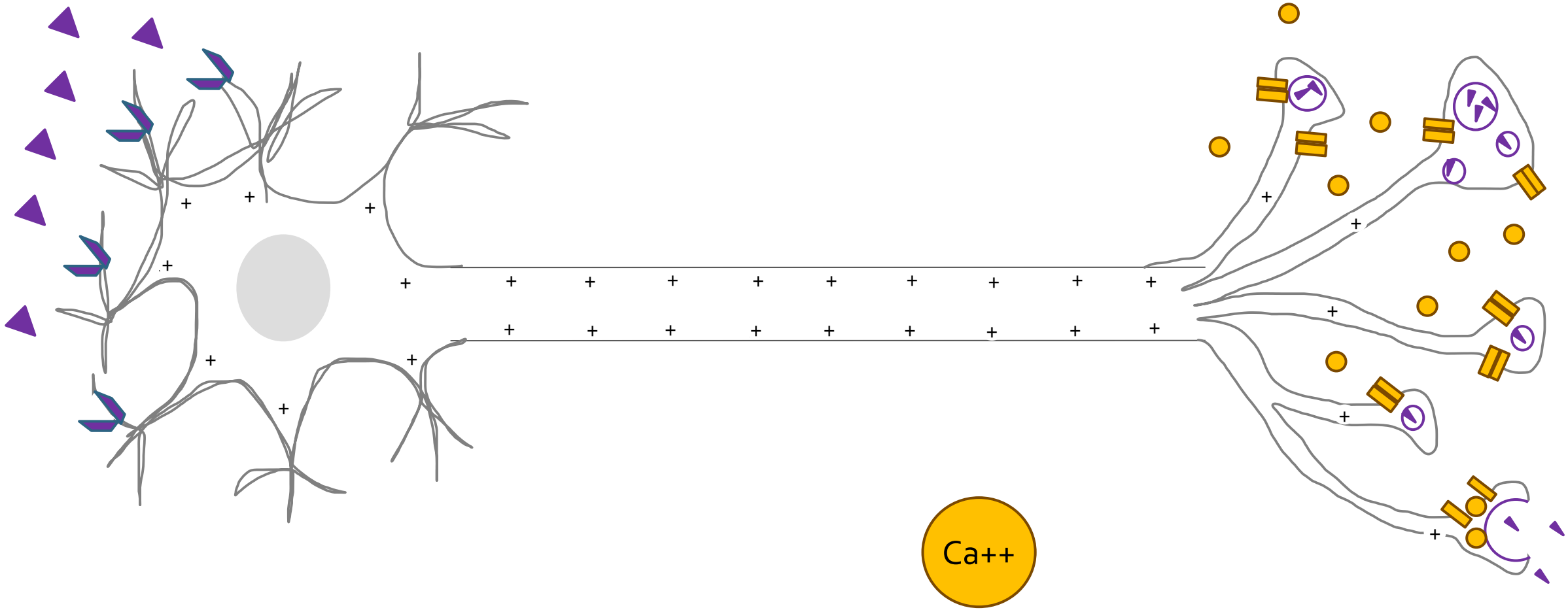

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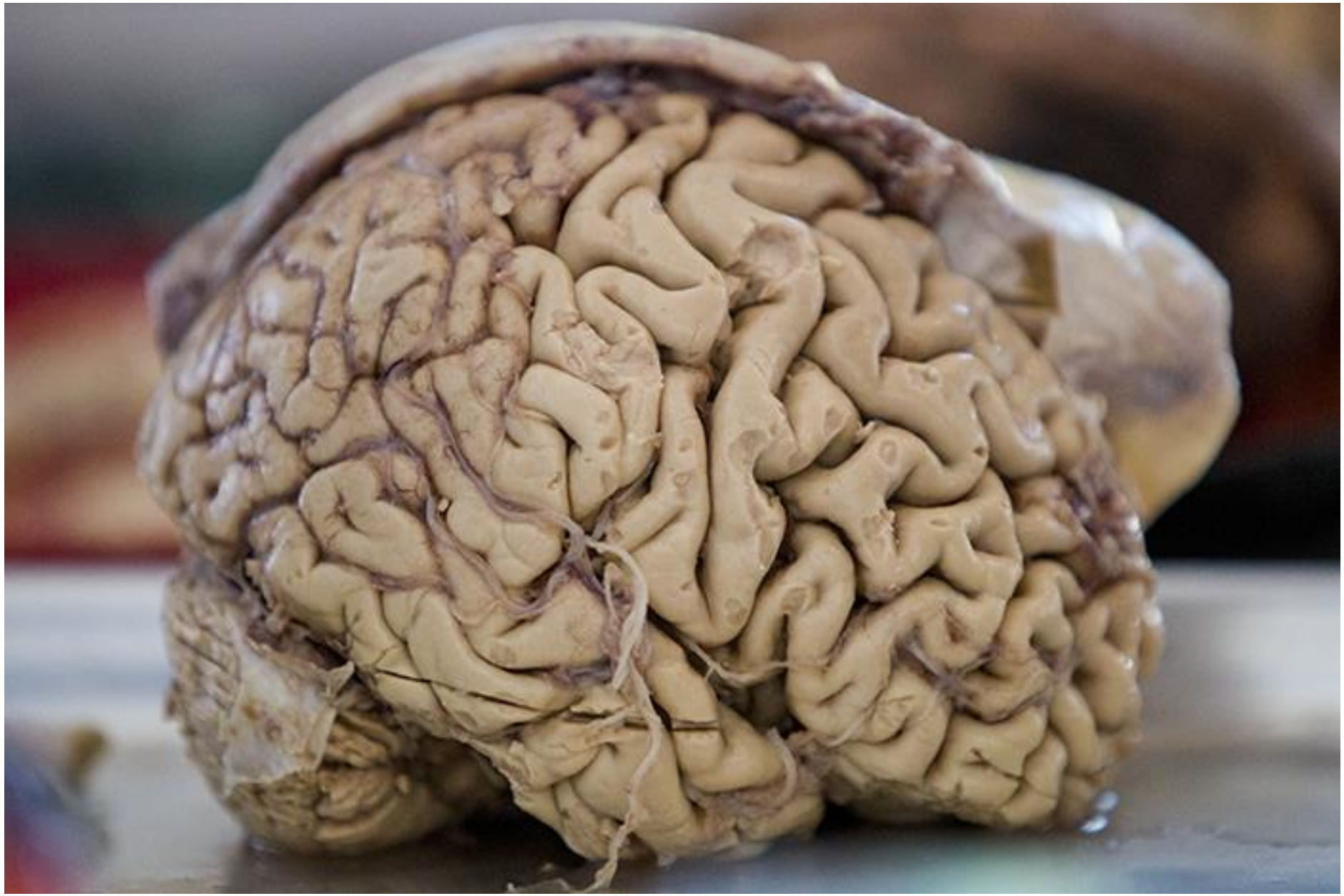
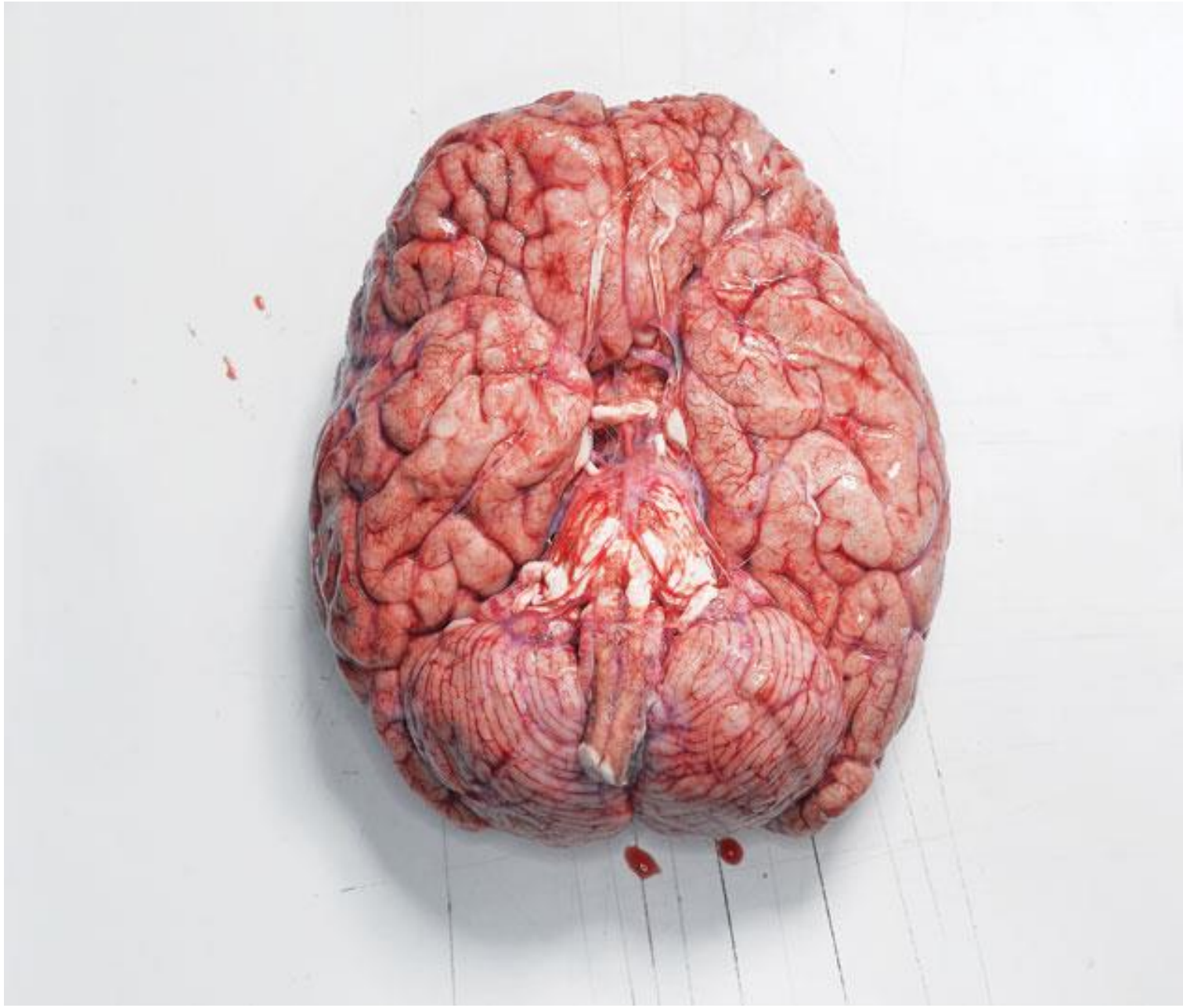




Casing

Scalp

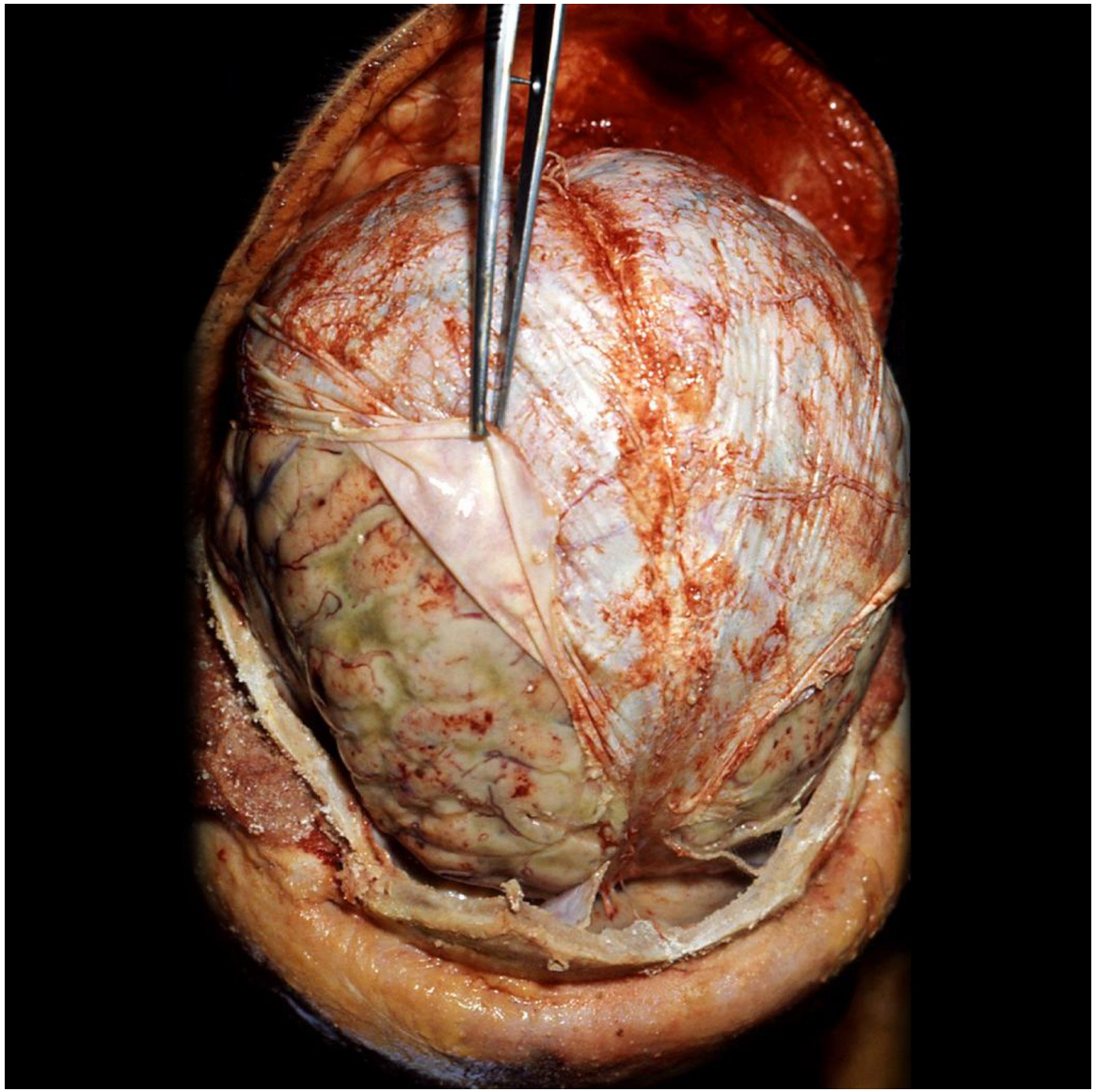
Periosteum (tissue)

Cranium

Meninges

- Dura mater
- Subdural space
- Arachnoid mater
- Subarachnoid space
- Pia mater

Brain



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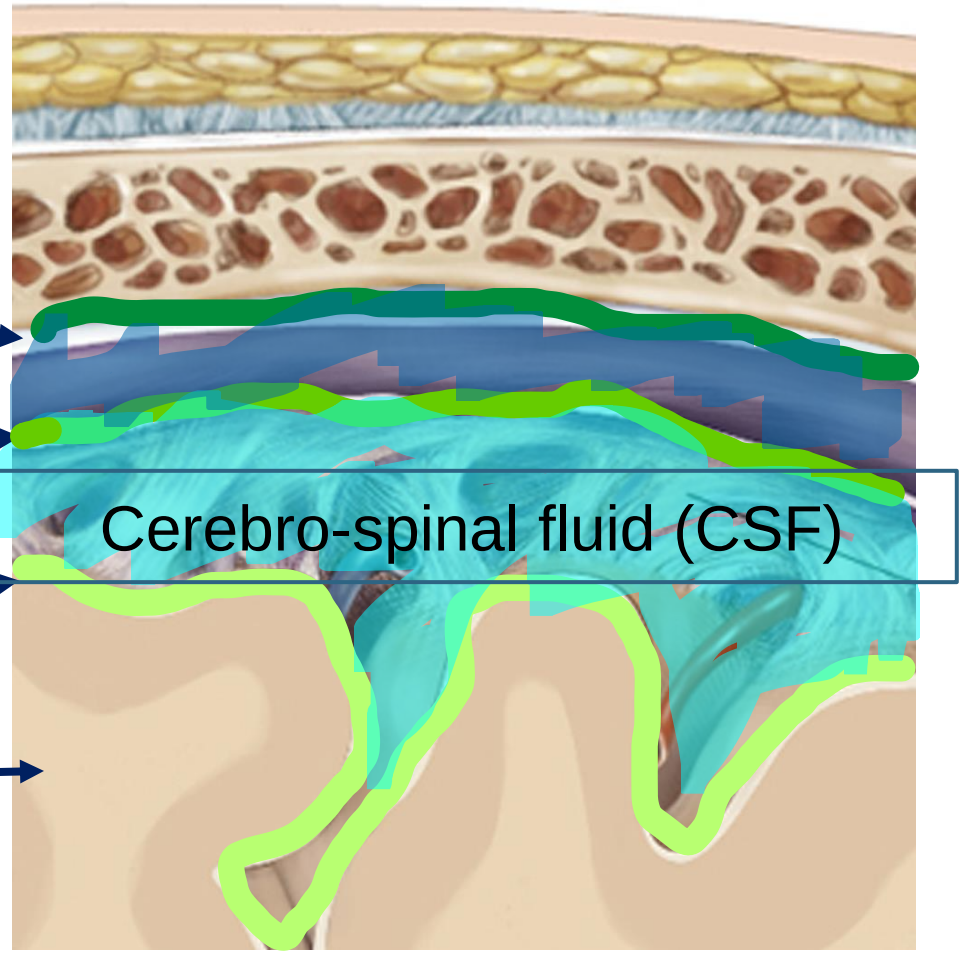
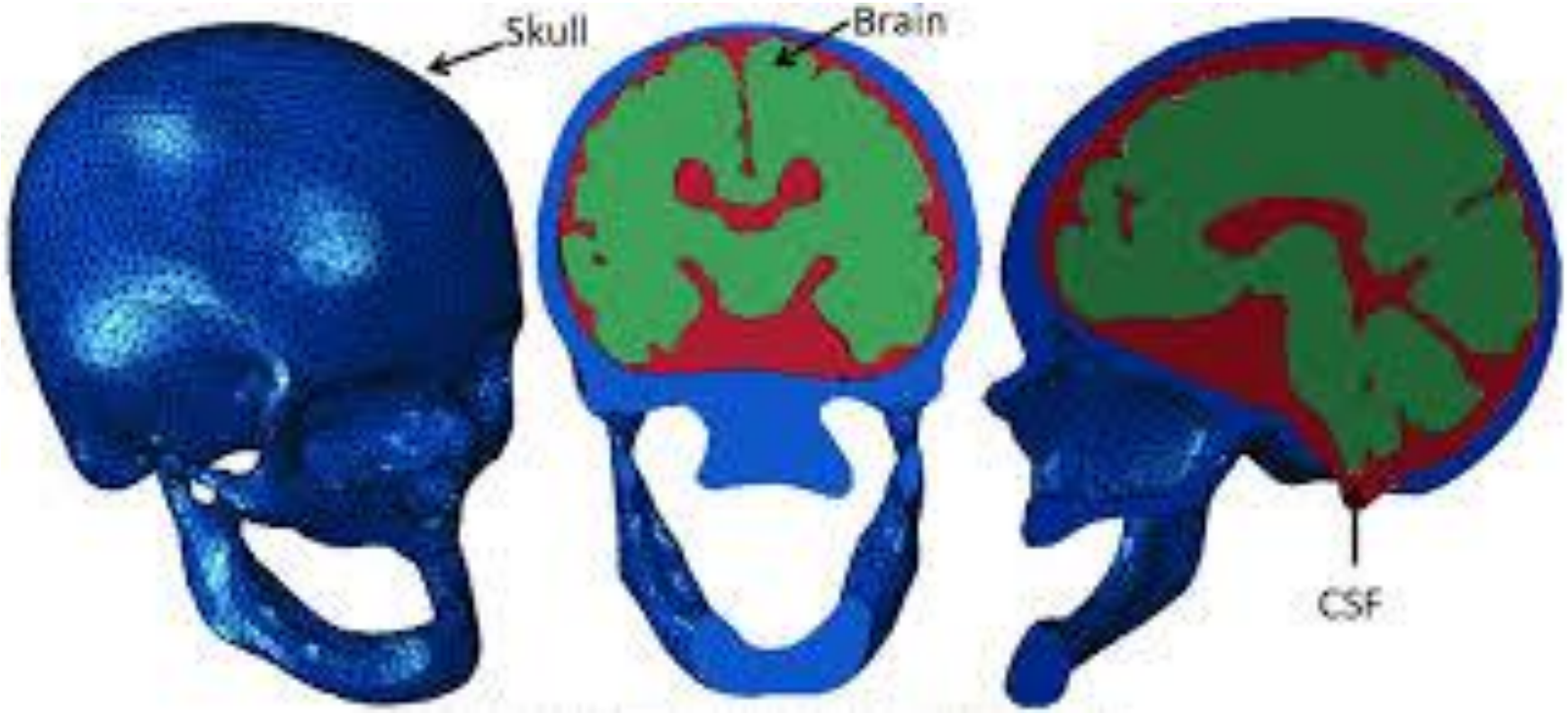
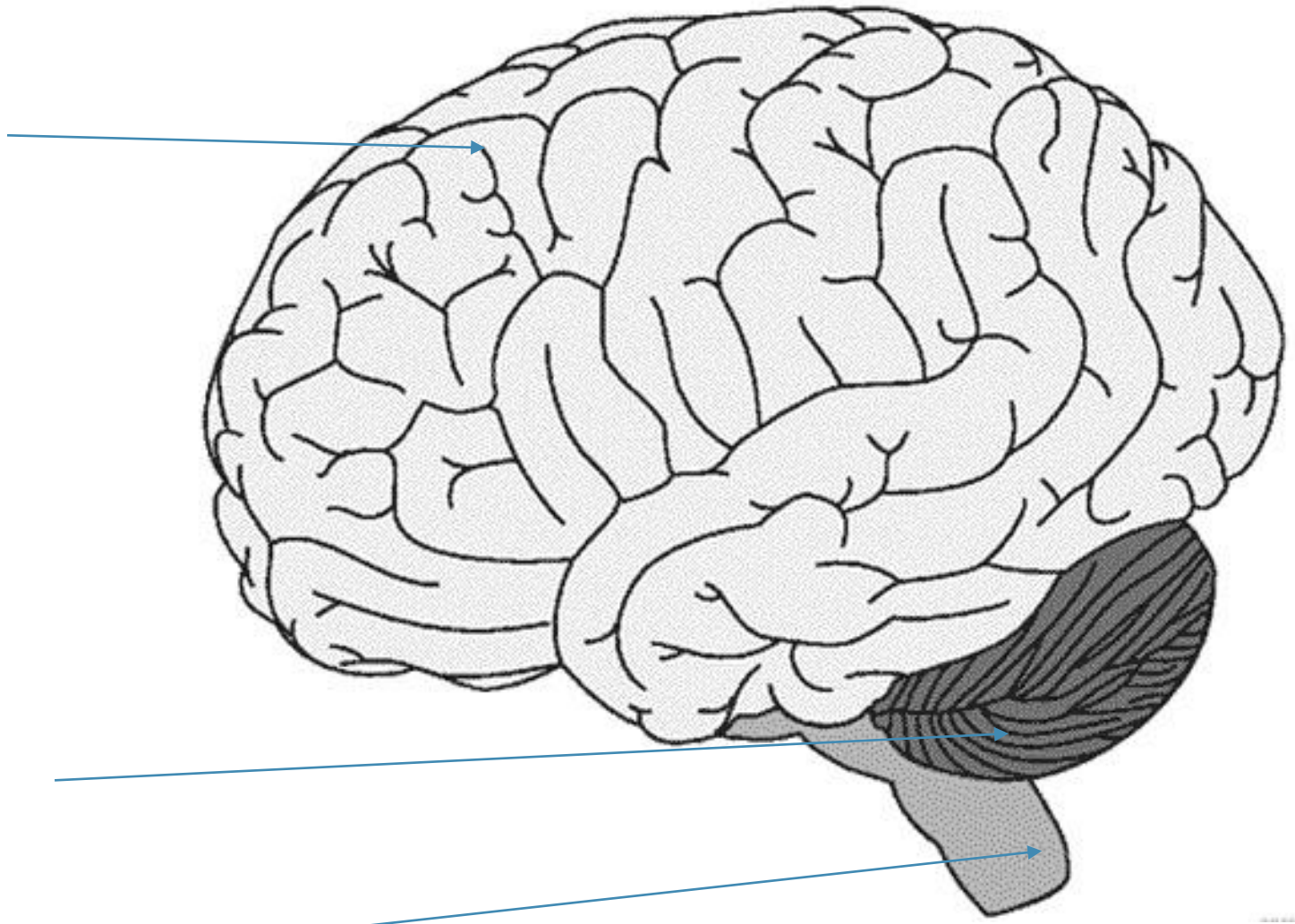



Skull
Brain
CSF

The brain

Cerebrum

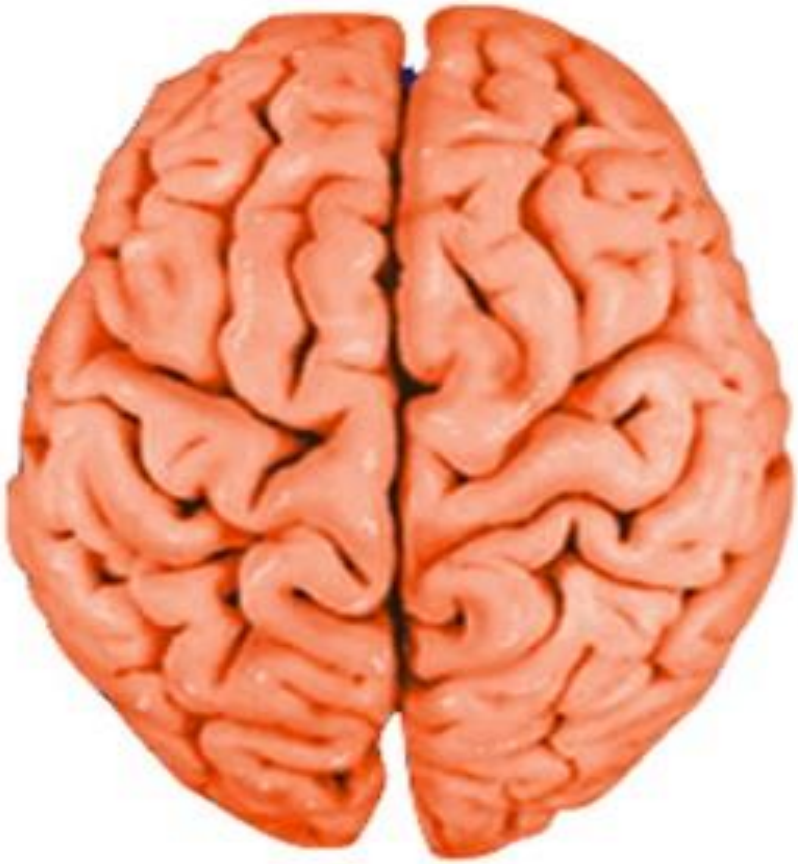


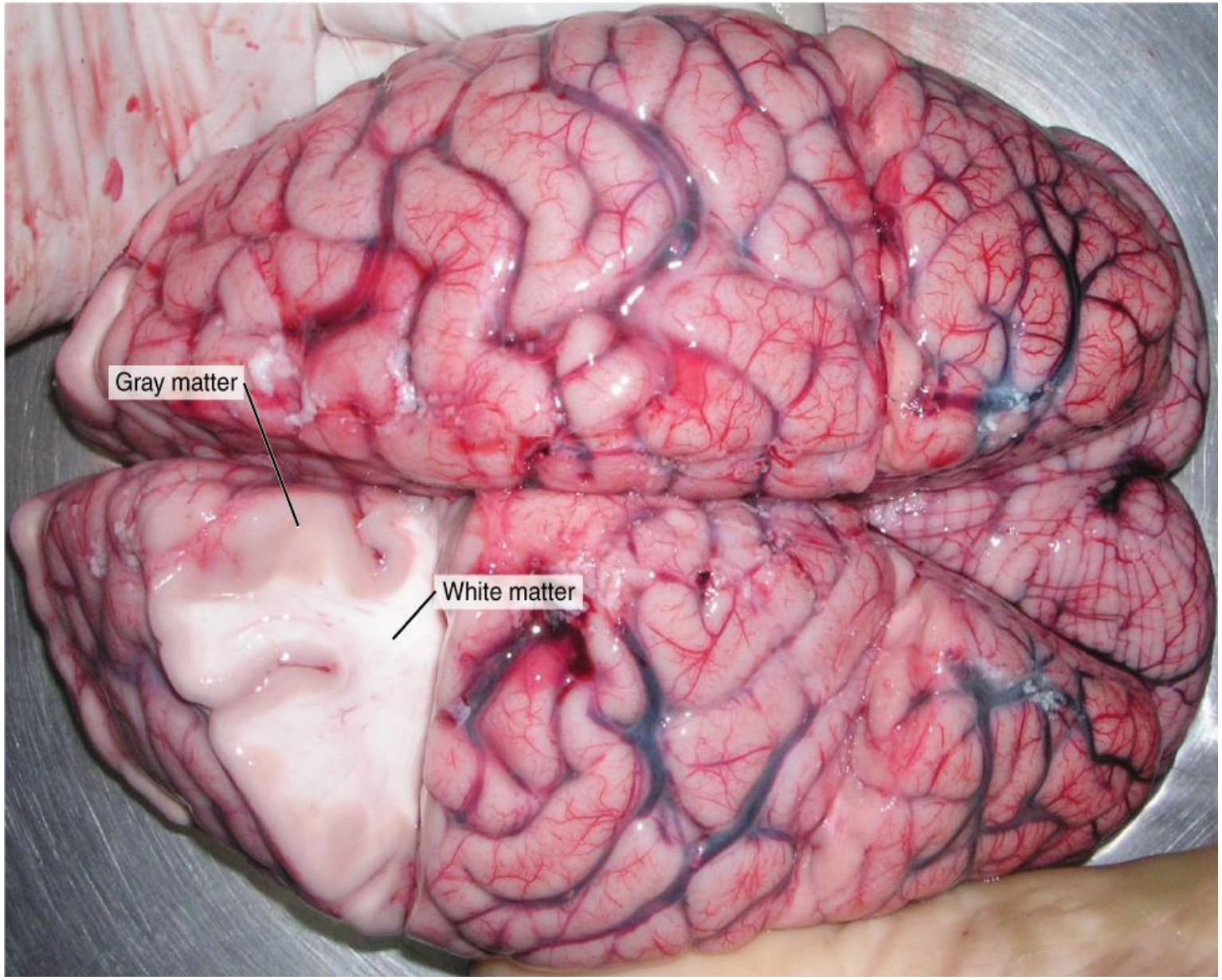
Cerebellum

Brainstem

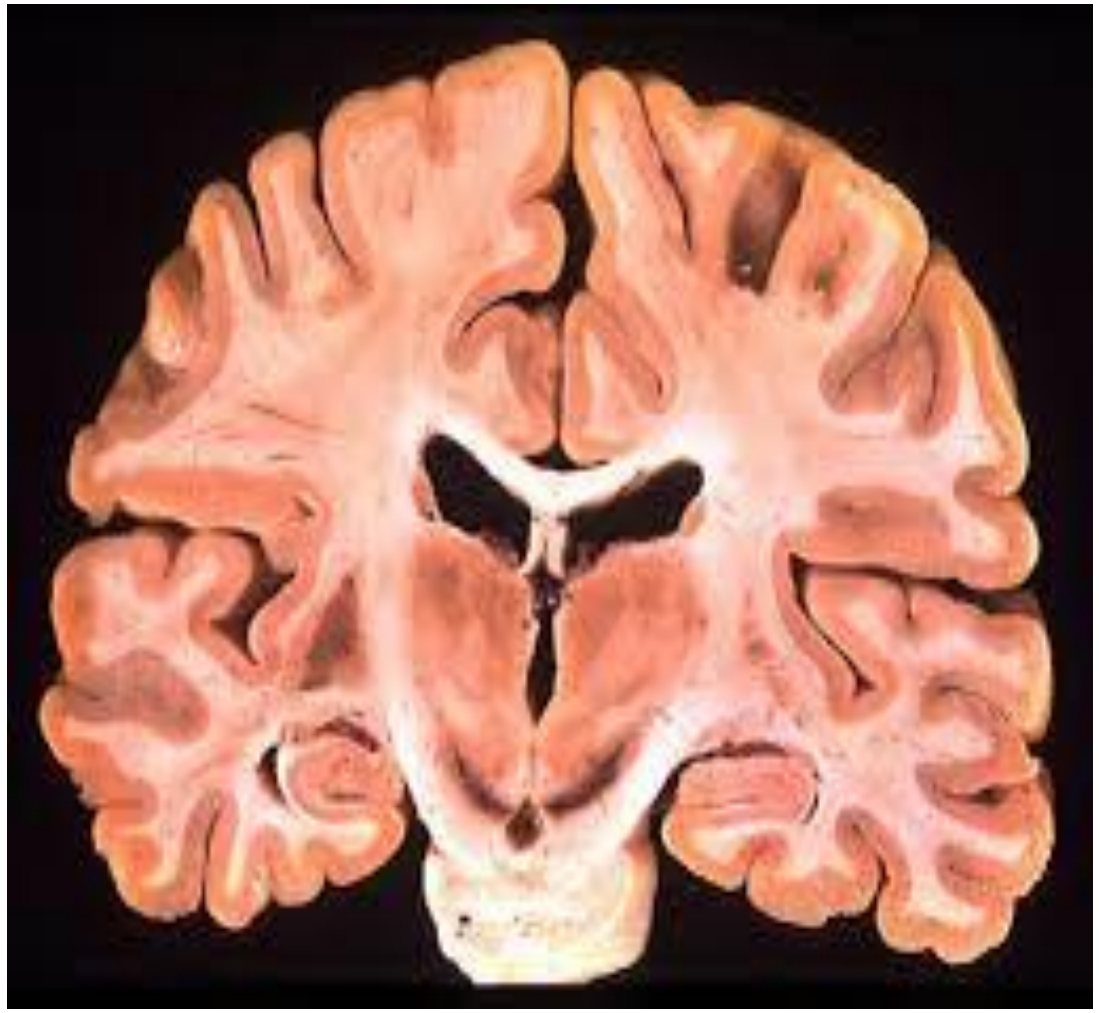
Mouse brain

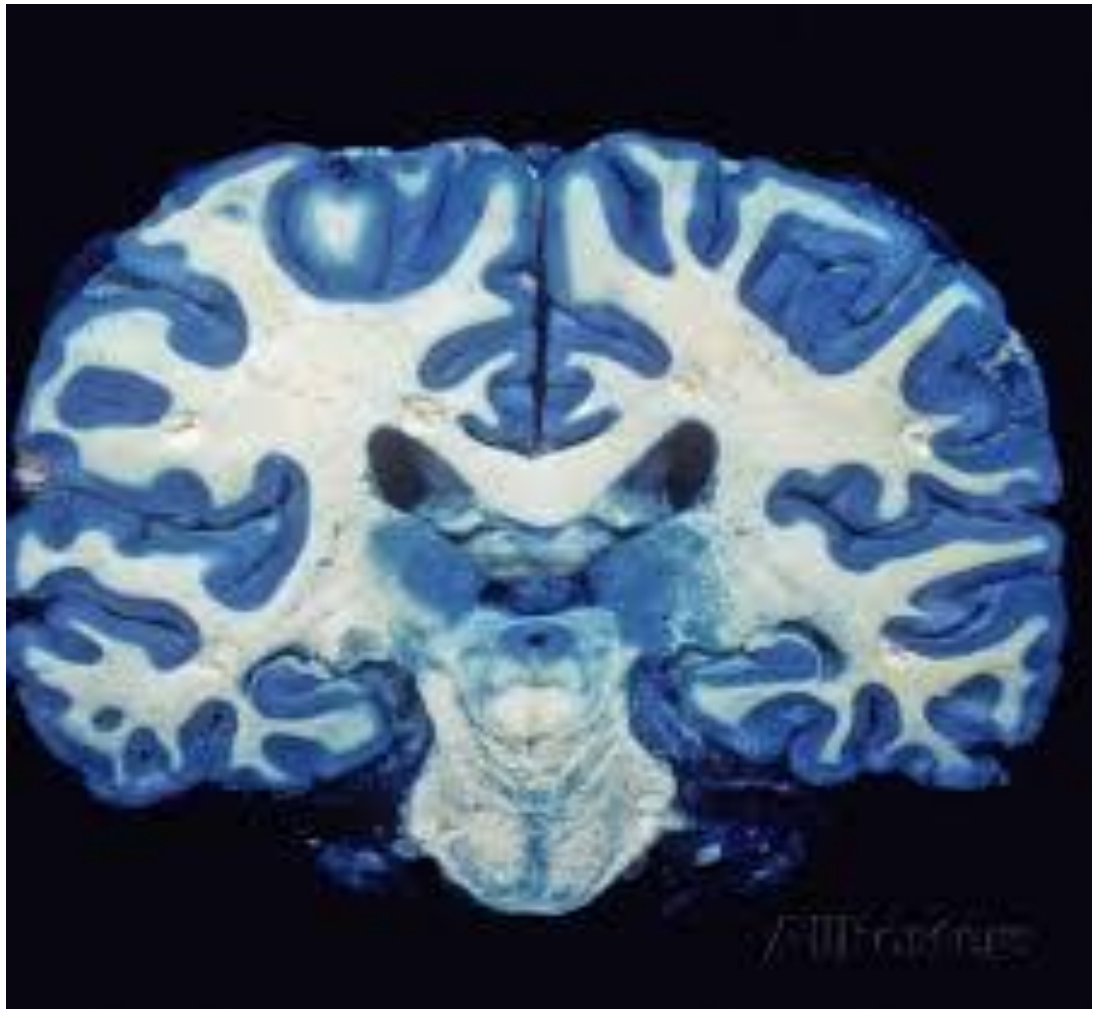
Human brain

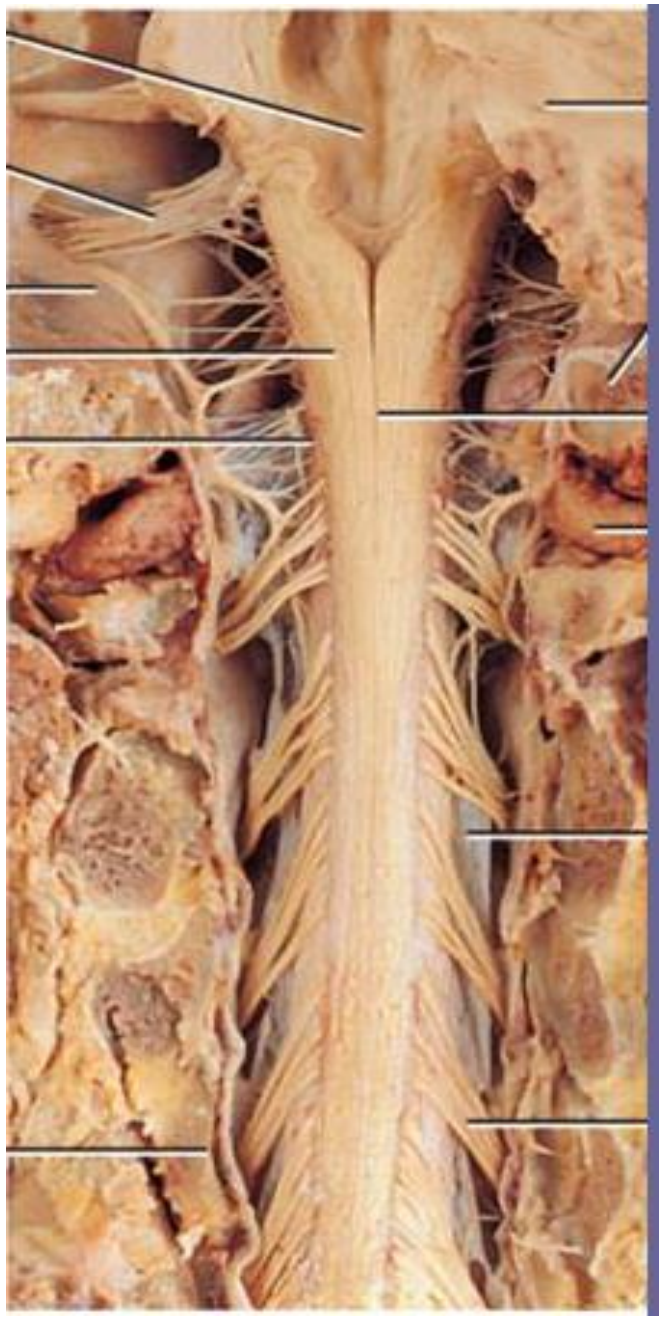


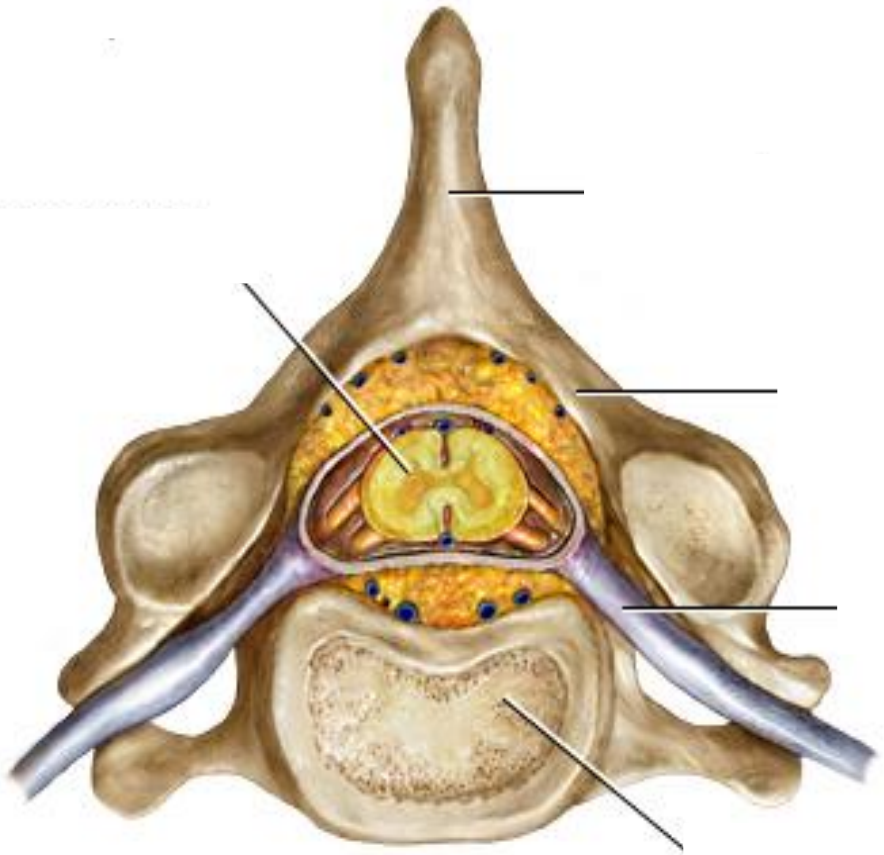

Gray matter
White matter

Neurons and the brain









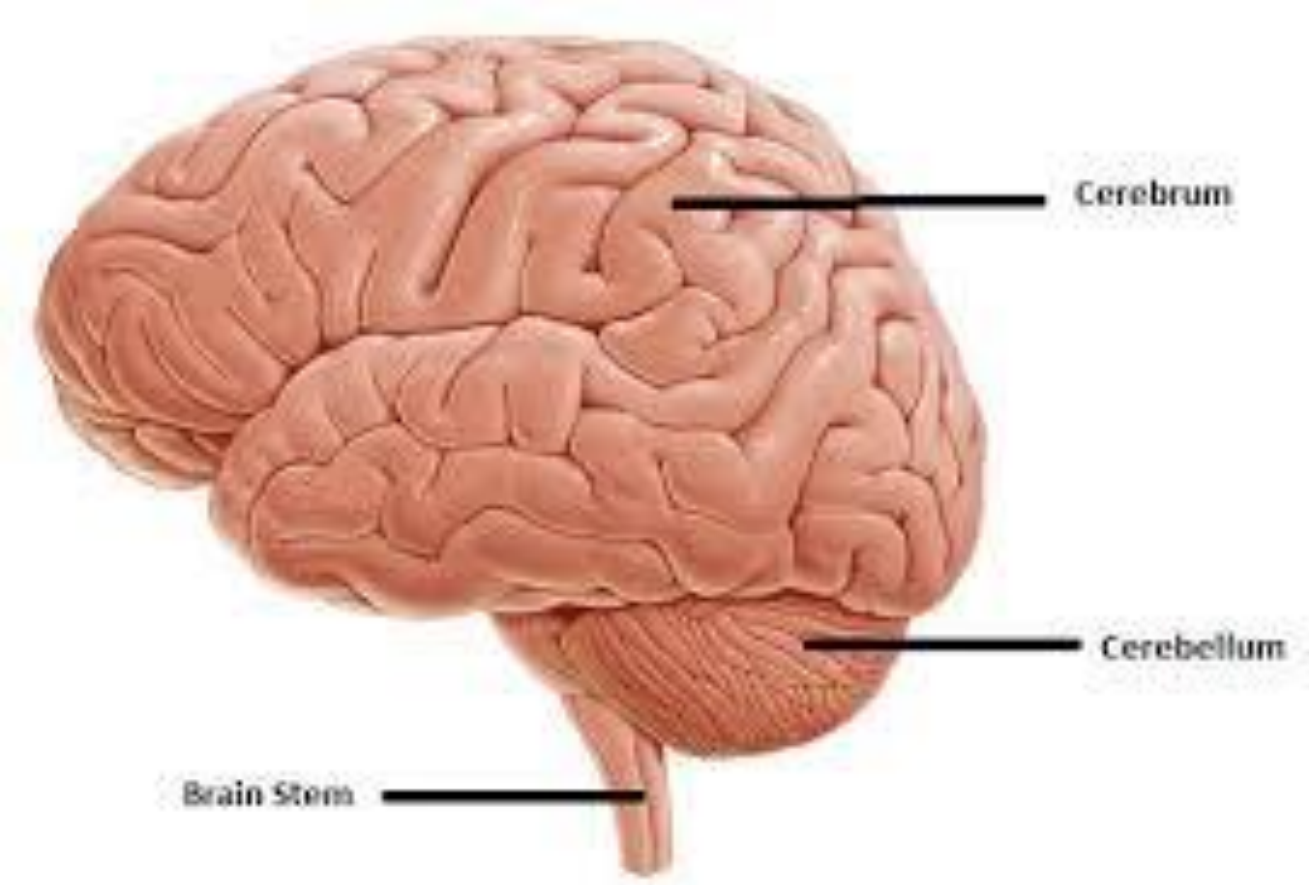

White Matter
Gray Matter

The brain divided

Evolutionary perspective

- Older brain (protoreptilian formation)
  - Brainstem; Cerebellum; Thalamus; etc
- Limbic system (paleomammalian formation)
  - Amygdala; hypothalamus; hippocampus; etc
- Newer brain (neomammalian formation)
  - Cortex/cerebrum

The brain divided



The brain divided

The brain divided