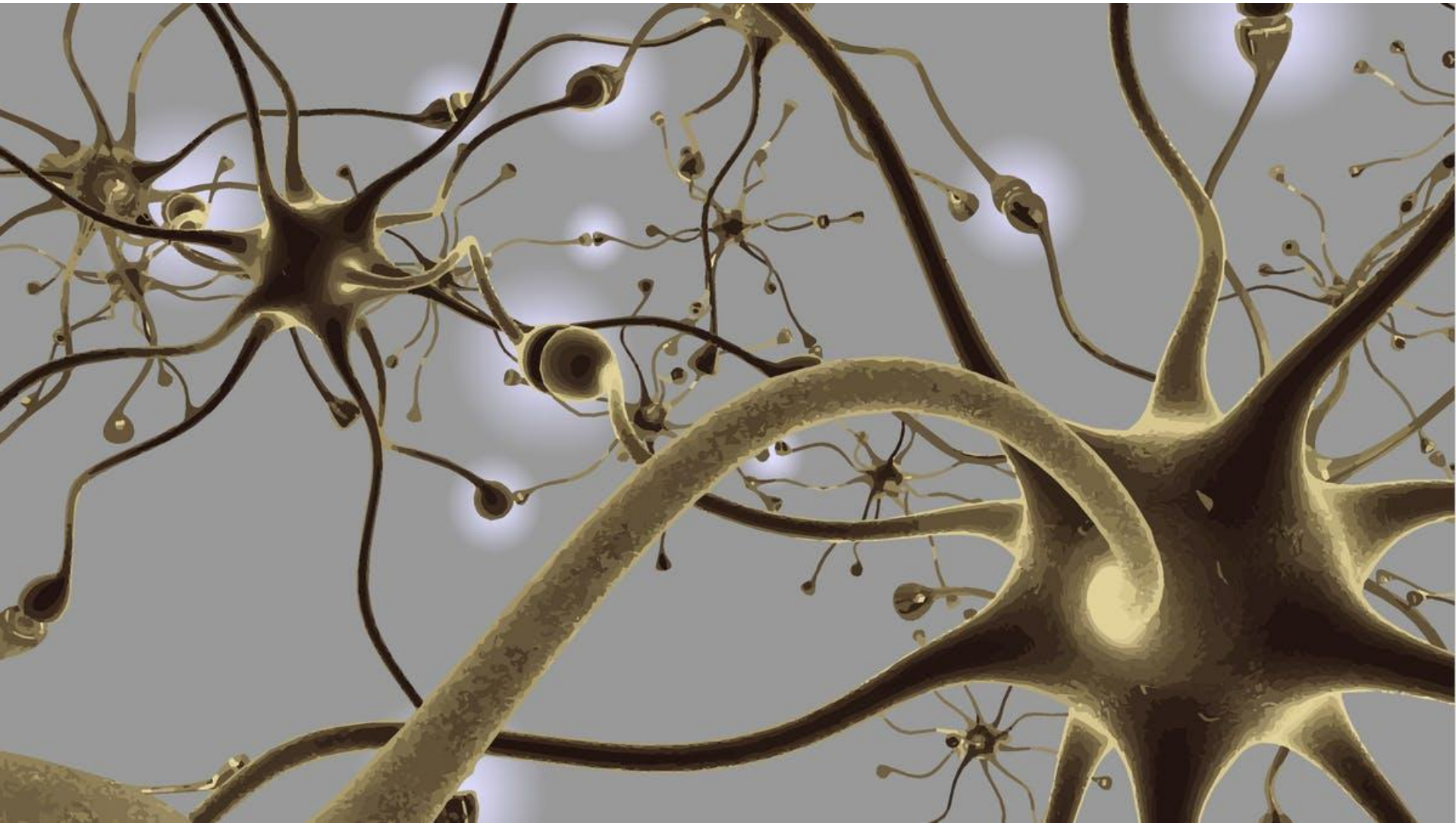
Nerve tissue



Neurons

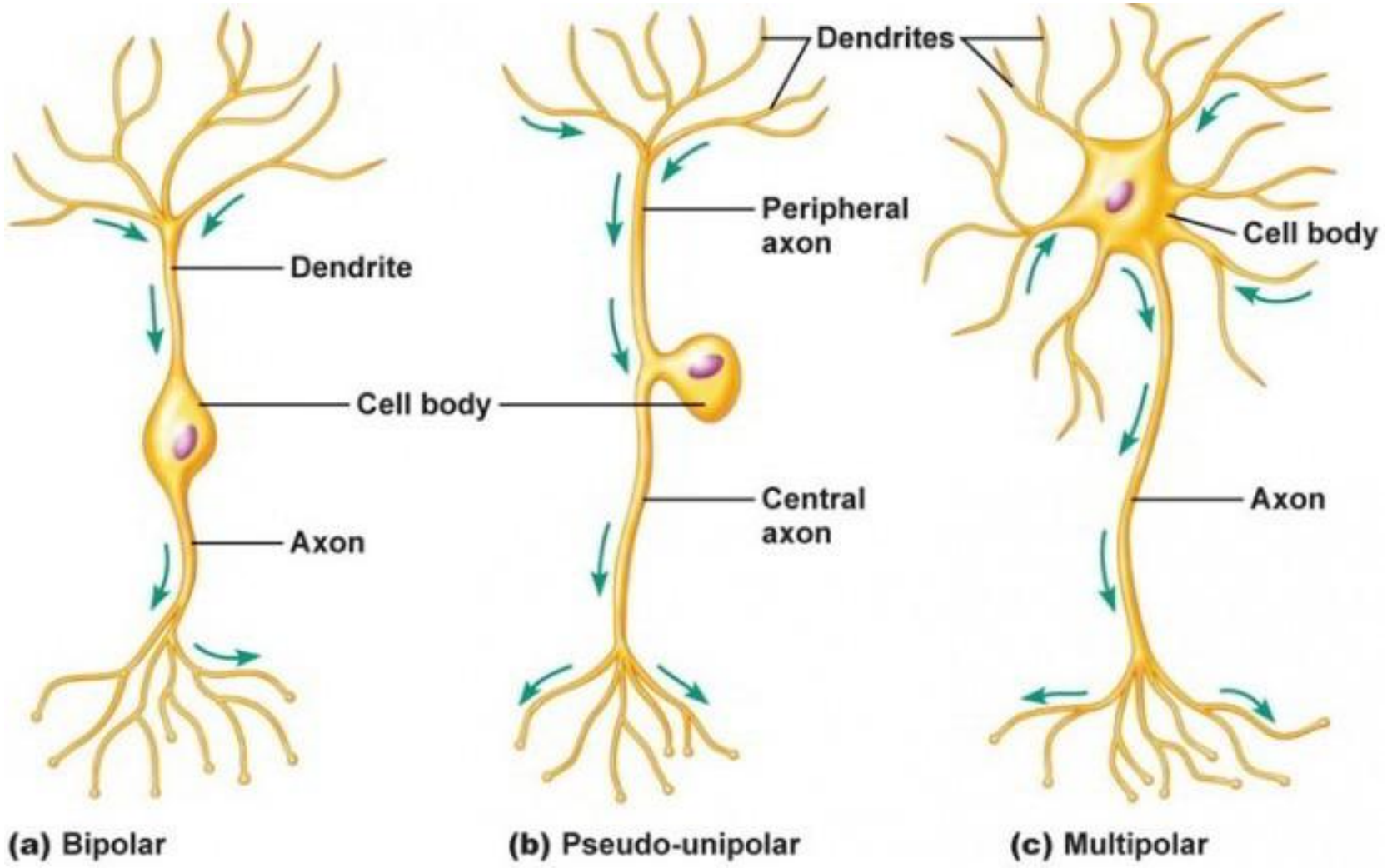
Functional classification

- Sensory (receptive, afferent)
- Interneurons (intercalated, associative)
- Motor (efferent)

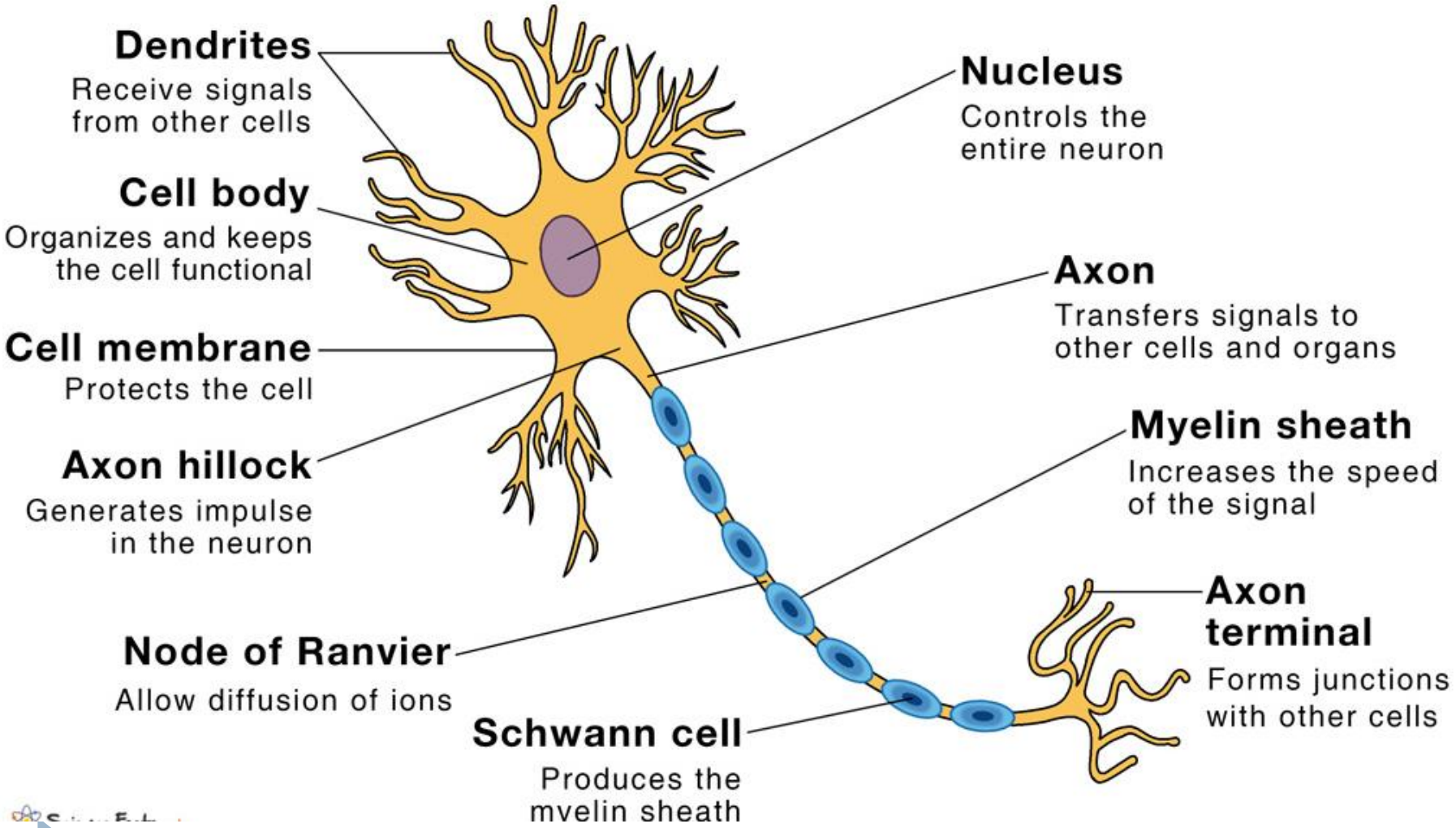
Morphological classification

- Unipolar
- Bipolar
- Pseudounipolar
- Multipolar

Types of neurons

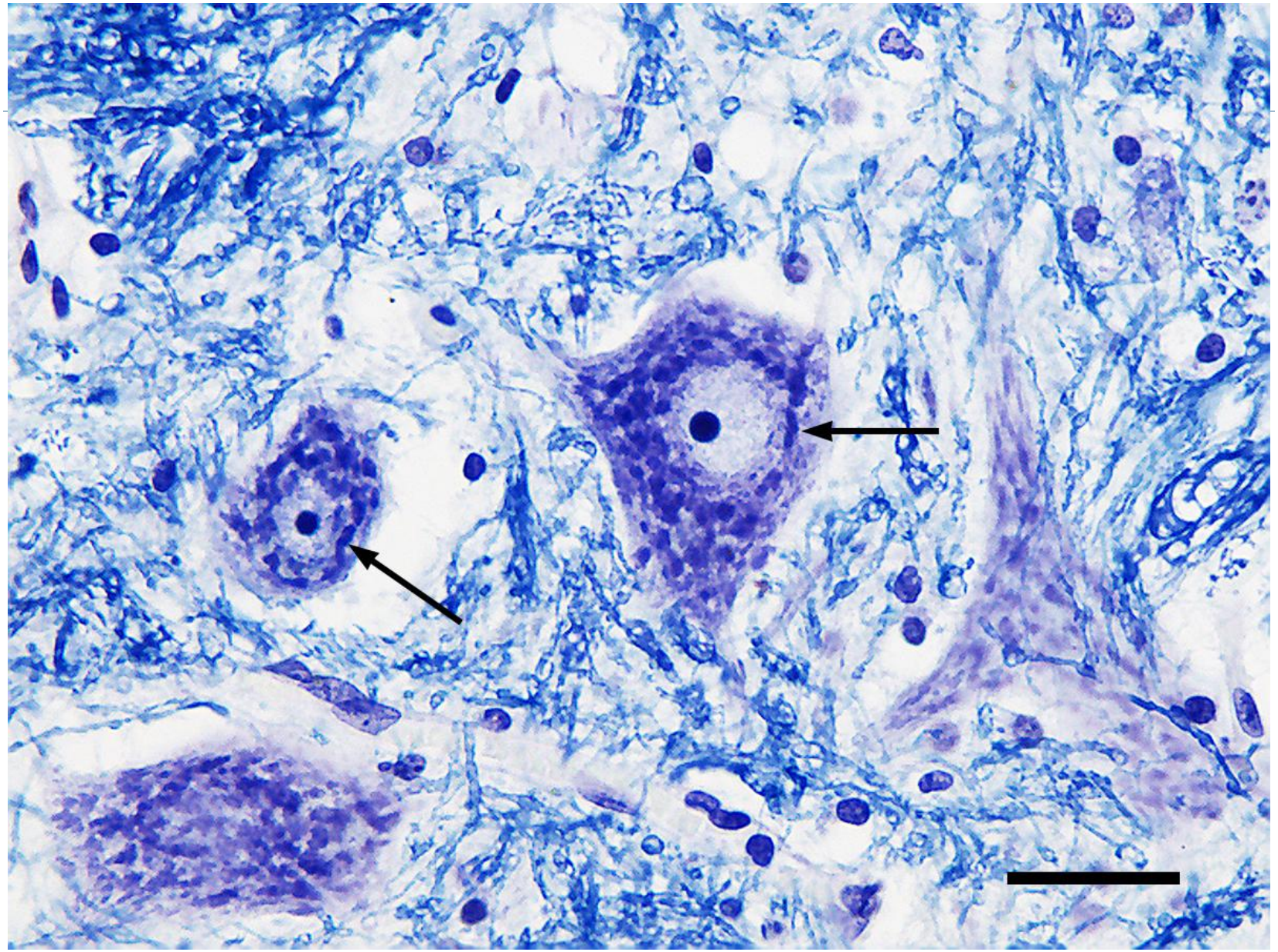


Neuron. Structure



Special organelles

- Nissl (chromatophilic) substance corresponds to the RER
- Neurofibrils. Composed of bundles of the neurofilaments and neurotubules.




shutterstock

Types of transport

- Axonal (from perikaryon to the nerve ending)
  - Fast (components required for the synapse)
  - Slow (components for synthesis of neurotransmitters, components for regeneration of the nerve endings)
- Dendritic (from nerve ending to the perikaryon)

<u>Direction:</u>

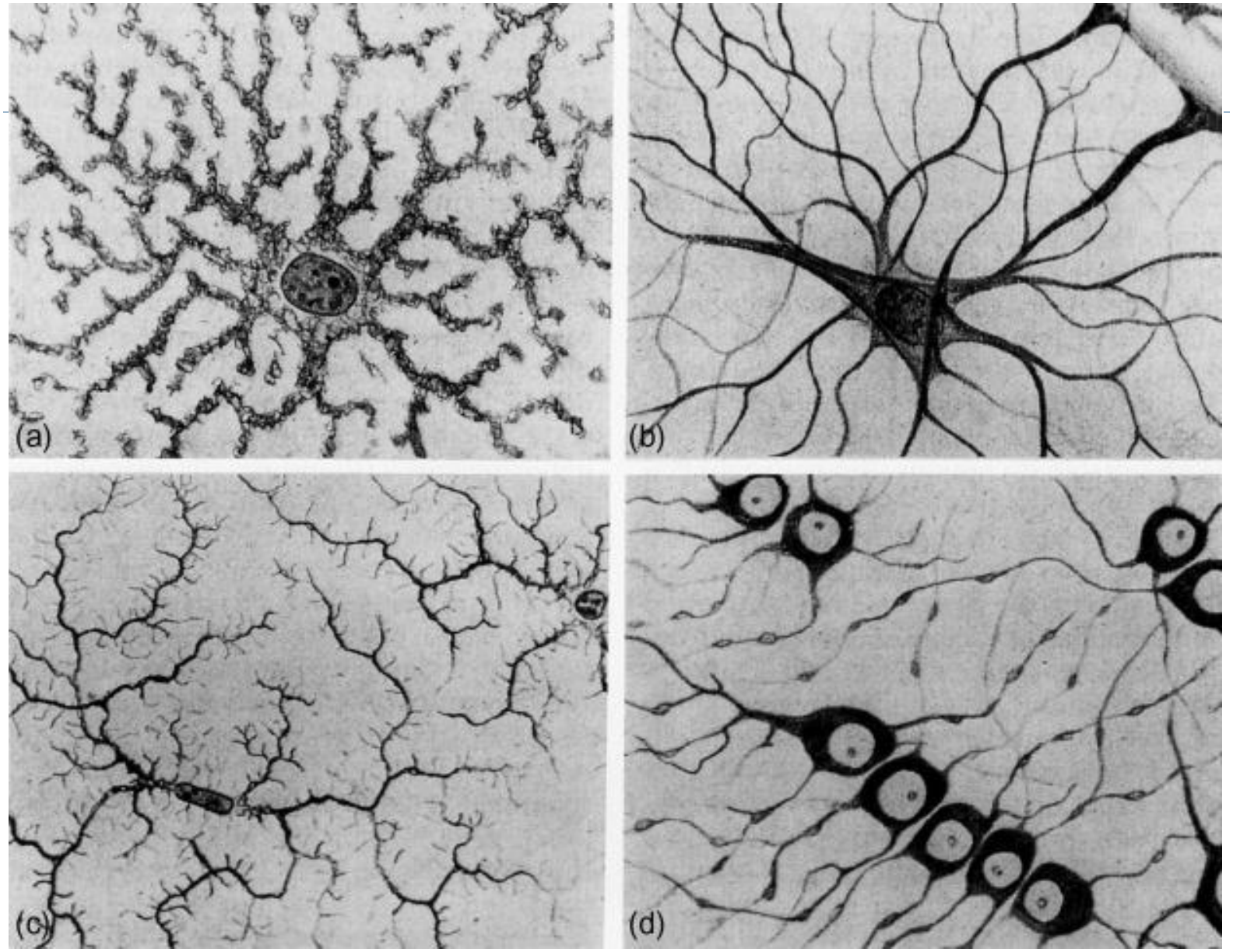
- Anterograde
- Retrograde

Neuroglial cells

Macroglial cells

- Ependymal cells
- Astrocytes
  - Protoplasmic(delimiting, trophic)
  - Fibrous (supporting, isolation)
- Oligodendrocytes (Schwann cell, neurolemmocyte)

Microglial cells


(a)
(b)
(c)
(d)

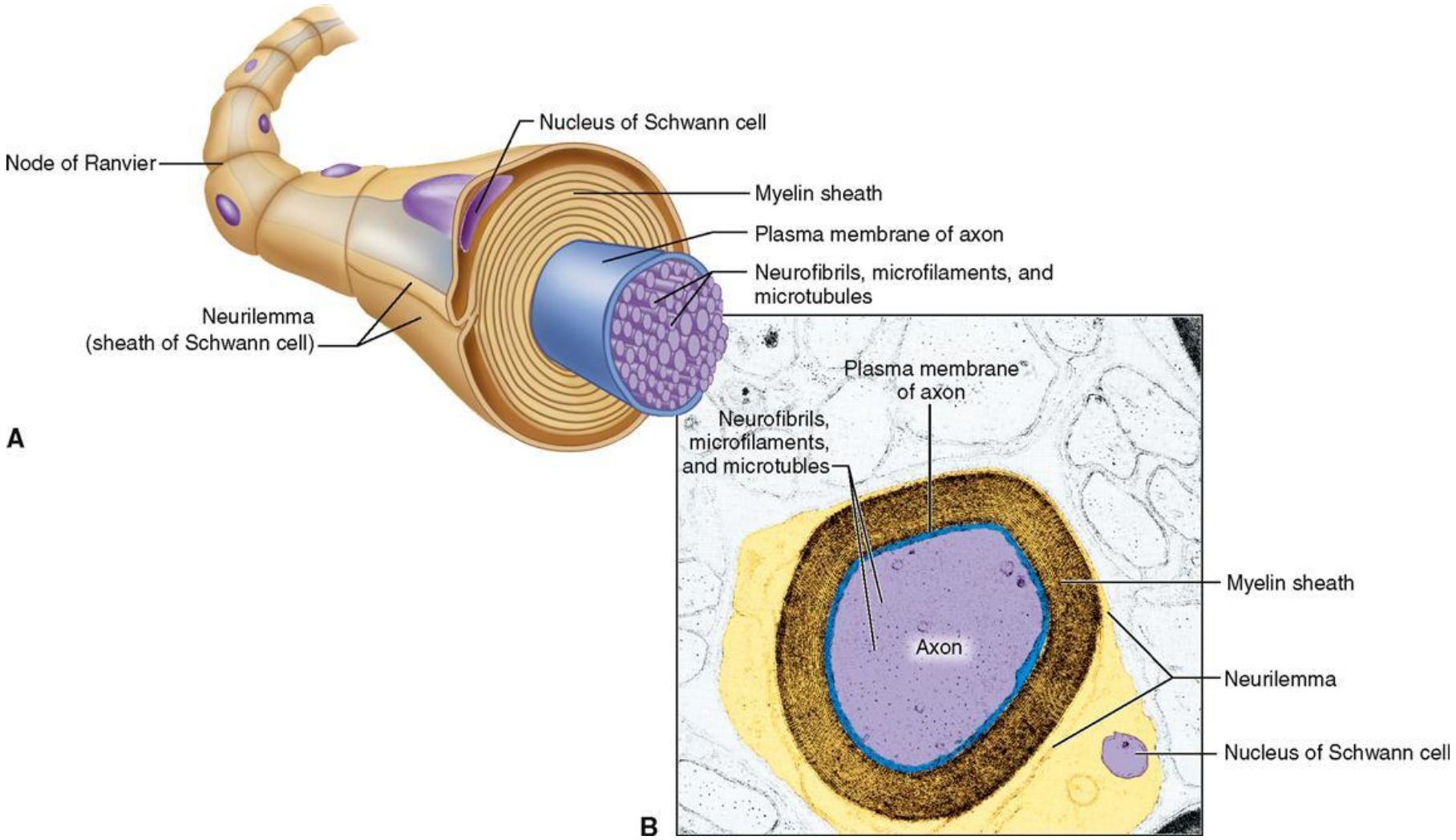
Myelinated nerve fibers

Components:

1. Axial cylinder- dendrite or axon process
2. Myelin sheath is formed by oligodendrocyte
3. Neurolemma
4. Basal lamina

Areas without myelin sheath: nodes of Ranvier, axonal hillock, terminal branches

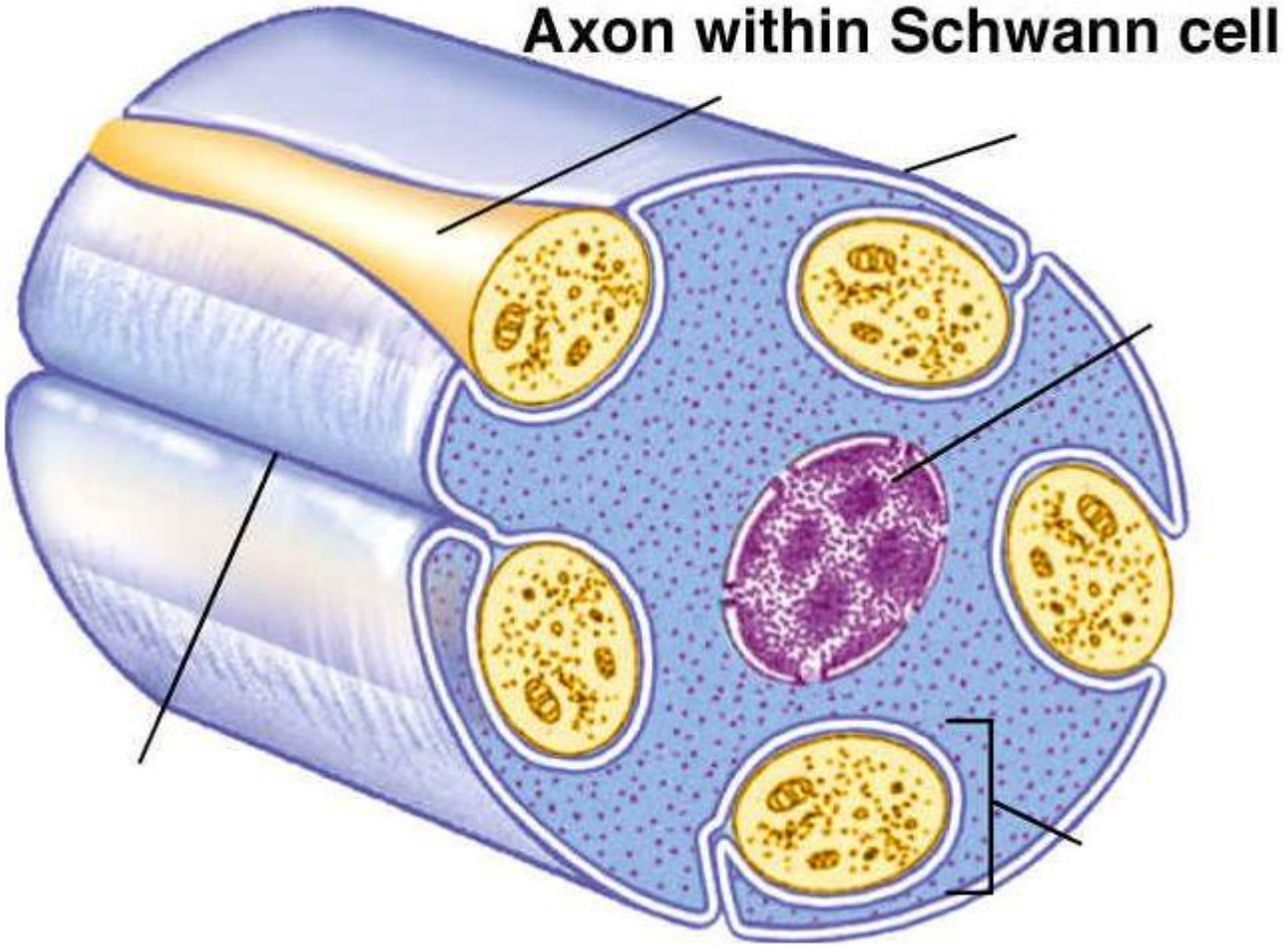
Internodal segments-areas between two neighboring nodes of Ranvier


Node of Ranvier
Nucleus of Schwann cell
Myelin sheath
Plasma membrane of axon
Neurofibrils, microfilaments, and microtubules
Neurilemma (sheath of Schwann cell)
A
Plasma membrane of axon
Neurofibrils, microfilaments, and microtubles
Myelin sheath
Axon
Neurilemma
Nucleus of Schwann cell
B

Unmyelinated nerve fibers

Components:

1. Axial cylinder- dendrite or axon process
2. Neurolemma
3. Basal lamina


Axon within Schwann cell

Synapse

Types

-axosomatic

-axodendritic

-axoaxonic

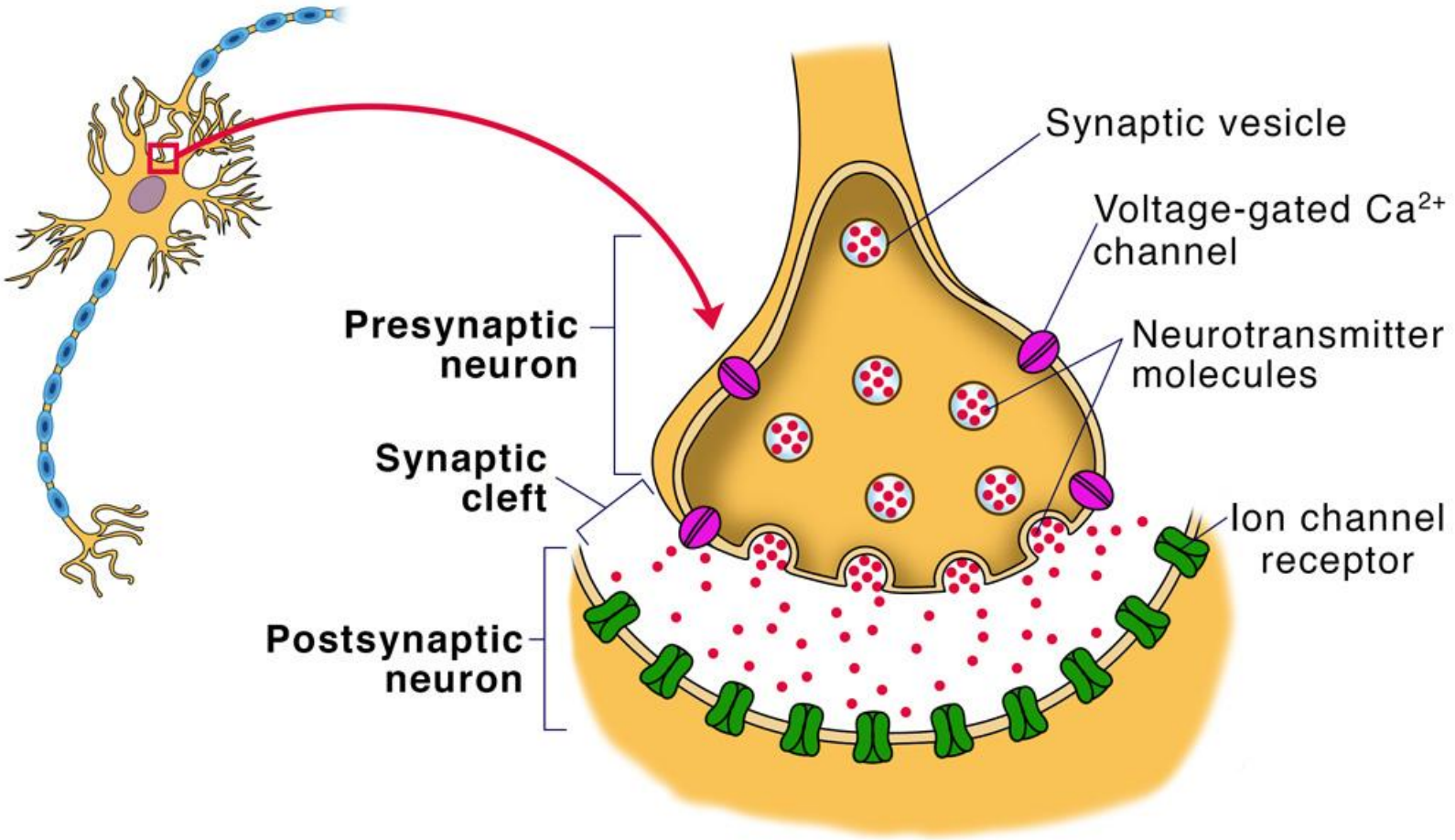
Components:

-Presynaptic part (inhibitory neurotransmitter: glycine, dopamine, gamma aminobyteric acid; activators: acetylcholine, noradrenalin, serotonin)

-Synaptic cleft

-Postsynaptic part with receptors

Synapse


Synaptic vesicle
Voltage-gated Ca^{2+} channel
Neurotransmitter molecules
Presynaptic neuron
Synaptic cleft
Ion channel receptor
Postsynaptic neuron

Nerve endings

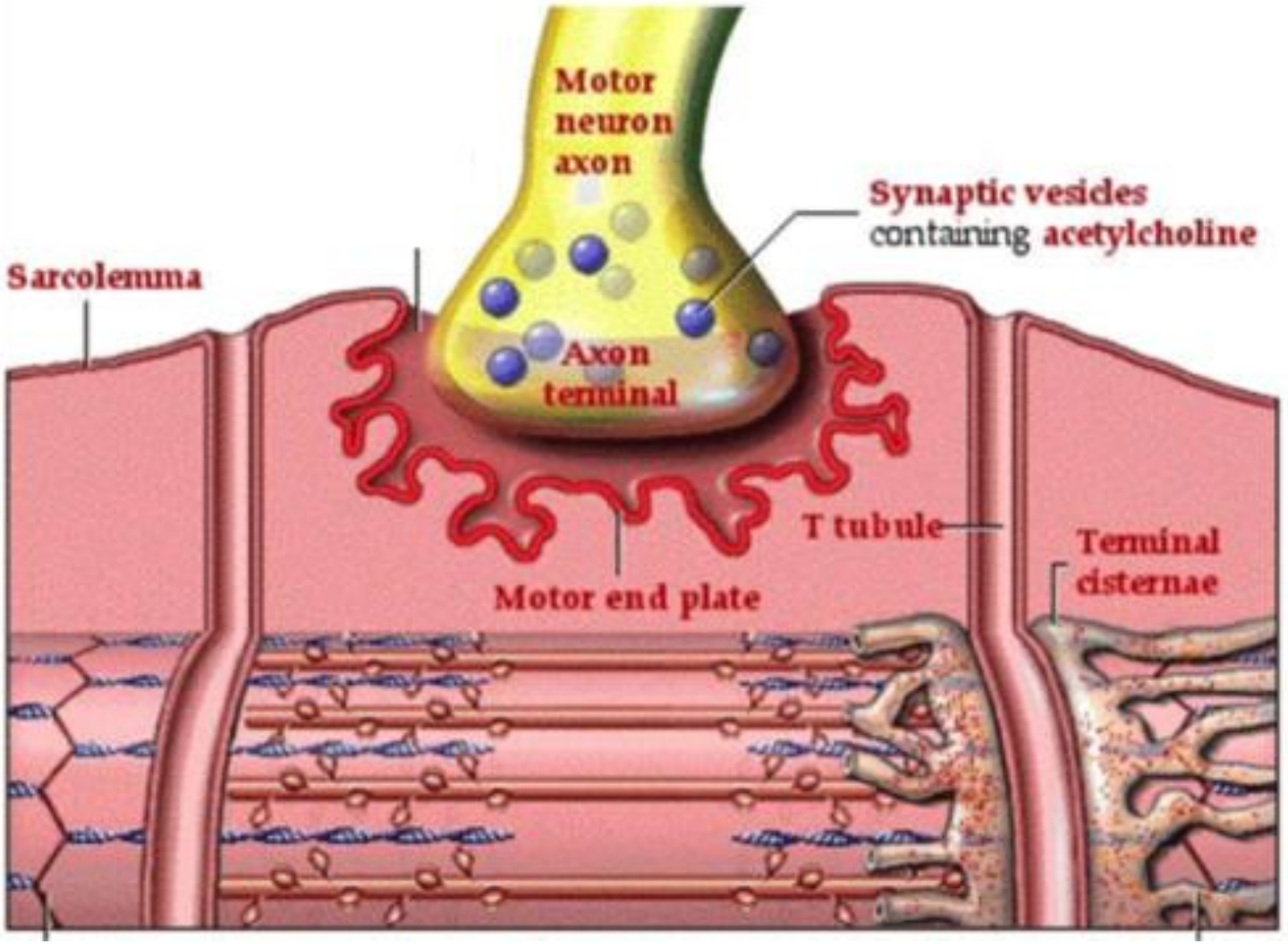
Effector

- Motor (neuromuscular ending)
- Secretory

Receptive (affector, sensory)

Terminal

Neuromuscular Junction



Receptive endings

Exteroreceptors

Interoreceptors

Depending on nature of the percepted stimuli

Mechanoreceptors

baroreceptors

chemoreceptors

thermoreceptors

nociceptors

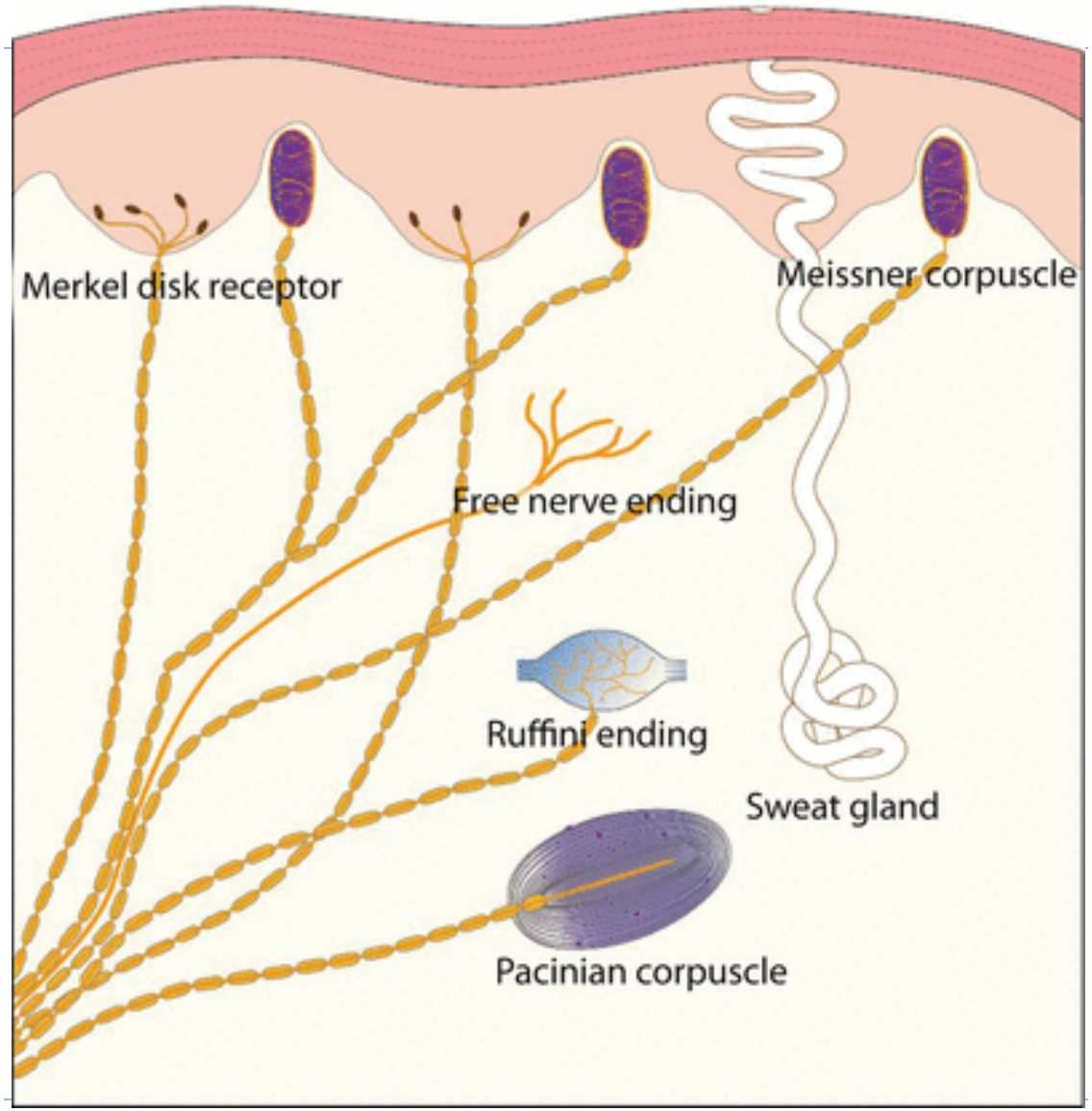
Based on their structure

Free

Non-free

encapsulated

non-encapsulated


Merkel disk receptor
Meissner corpuscle
Free nerve ending
Ruffini ending
Sweat gland
Pacinian corpuscle