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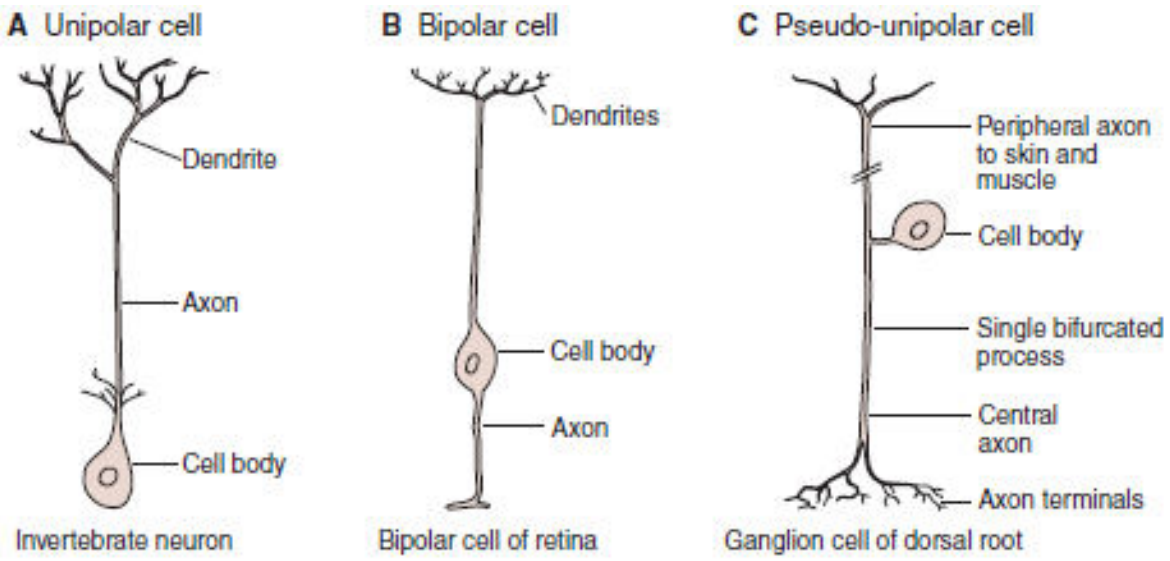
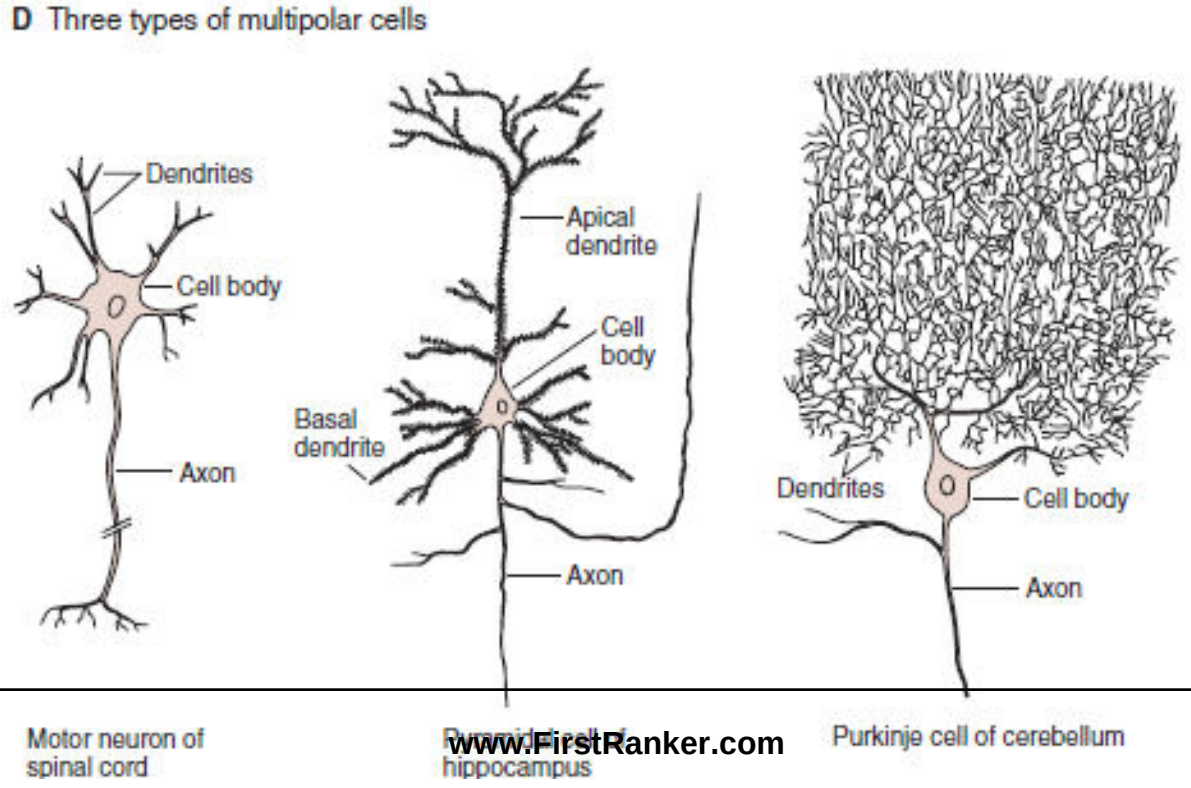
CNS I- Sensory





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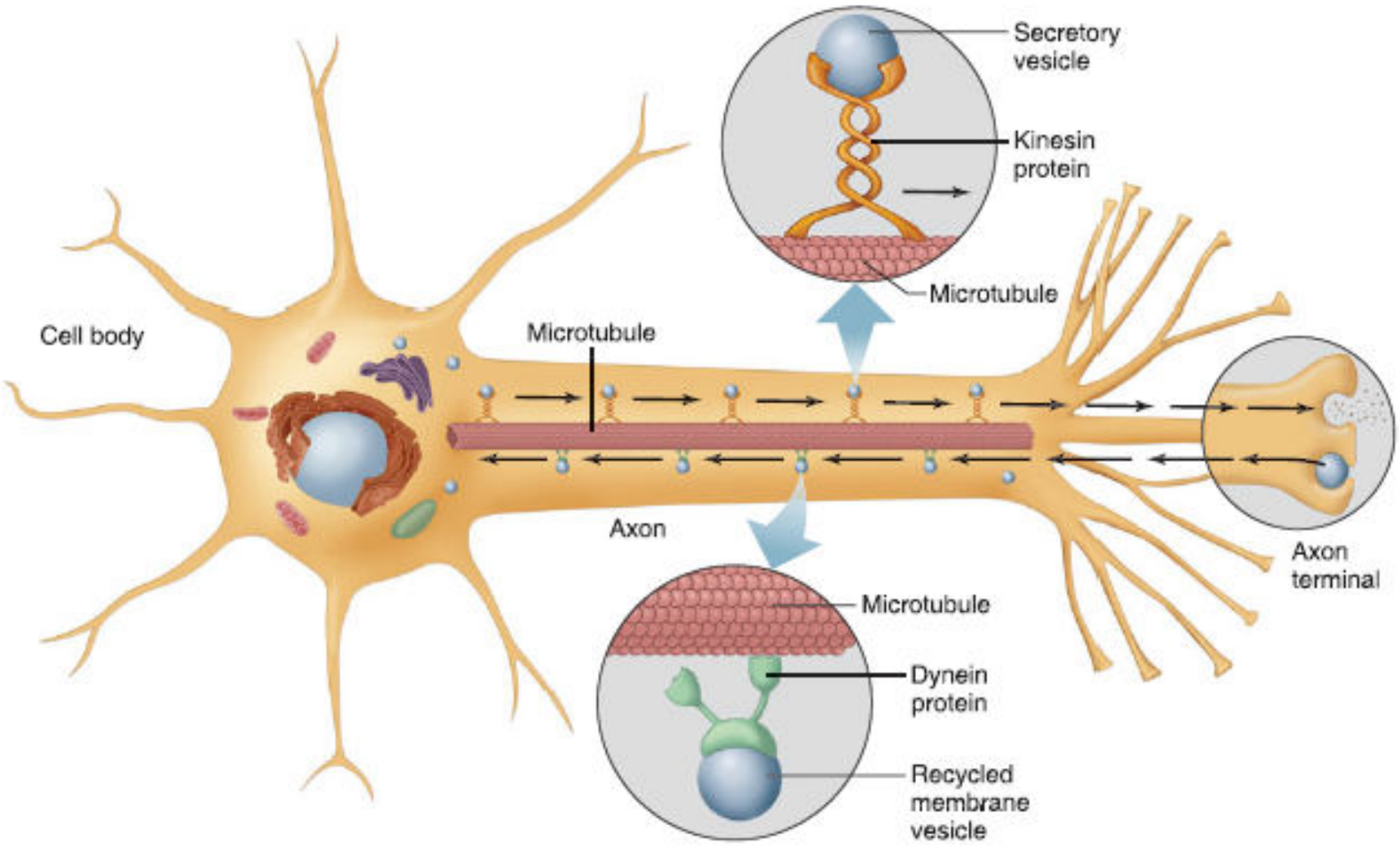
Axonal transport



Neuroglia

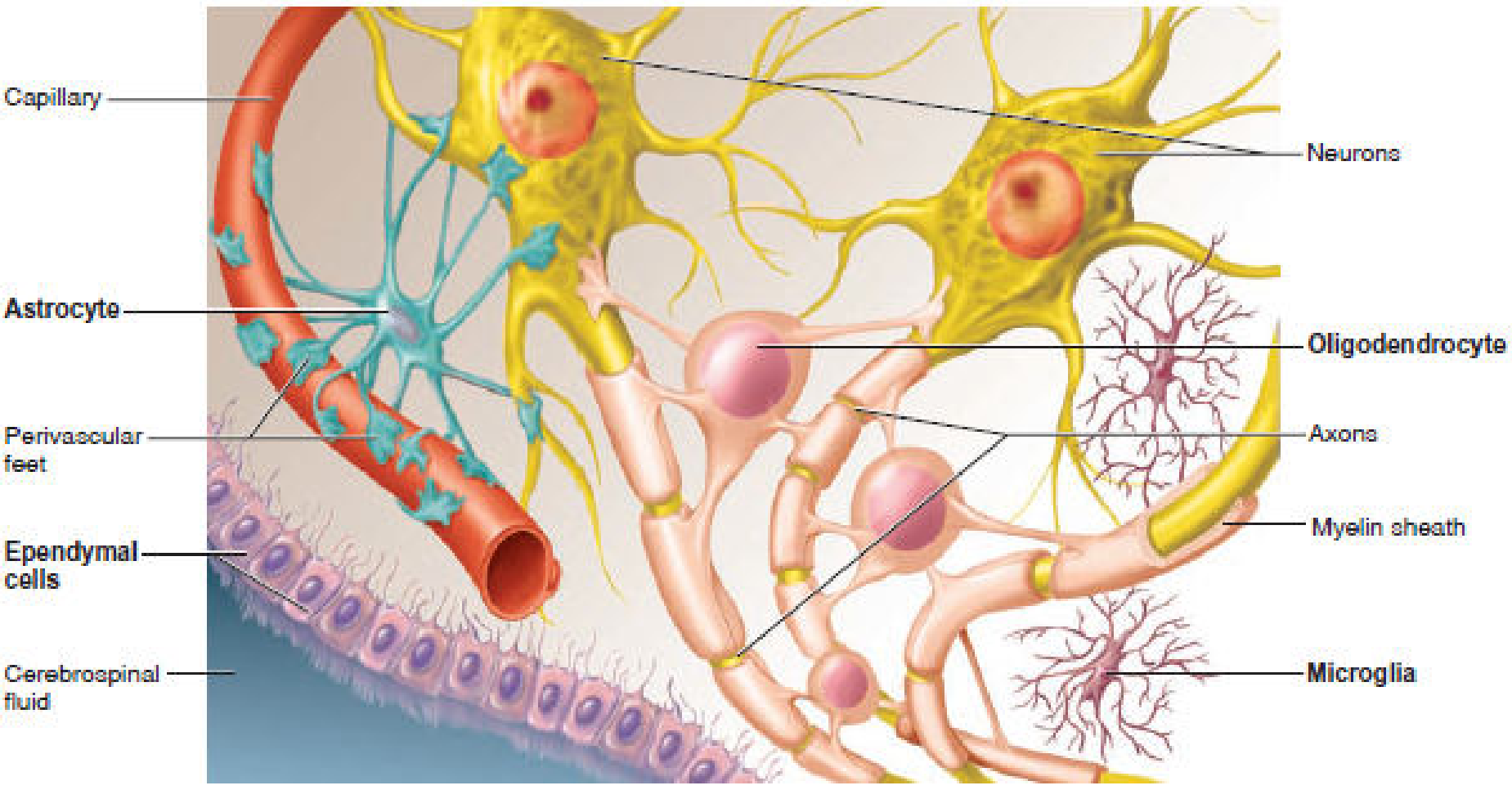


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TABLE 4–1 Types of mammalian nerve fibers.

Fiber Type	Function	Fiber Diameter (μm)	Conduction Velocity (m/s)
Aα	Proprioception; somatic motor	12–20	70–120
Aβ	Touch, pressure	5–12	30–70
Aγ	Motor to muscle spindles	3–6	15–30
Aδ	Pain, temperature	2–5	12–30
B	Preganglionic autonomic	<3	3–15
C, Dorsal root	Pain, temperature	0.4–1.2	0.5–2
C, Sympathetic	Postganglionic sympathetic	0.3–1.3	0.7–2.3

TABLE 4–2 Numerical classification of sensory nerve fibers.

Number	Origin	Fiber Type
Ia	Muscle spindle, annulo-spiral ending	Aα
Ib	Golgi tendon organ	Aα
II	Muscle spindle, flower-spray ending; touch, pressure	Aβ
III	Pain and cold receptors; some touch receptors	Aδ
IV	Pain, temperature, and other receptors	Dorsal root C

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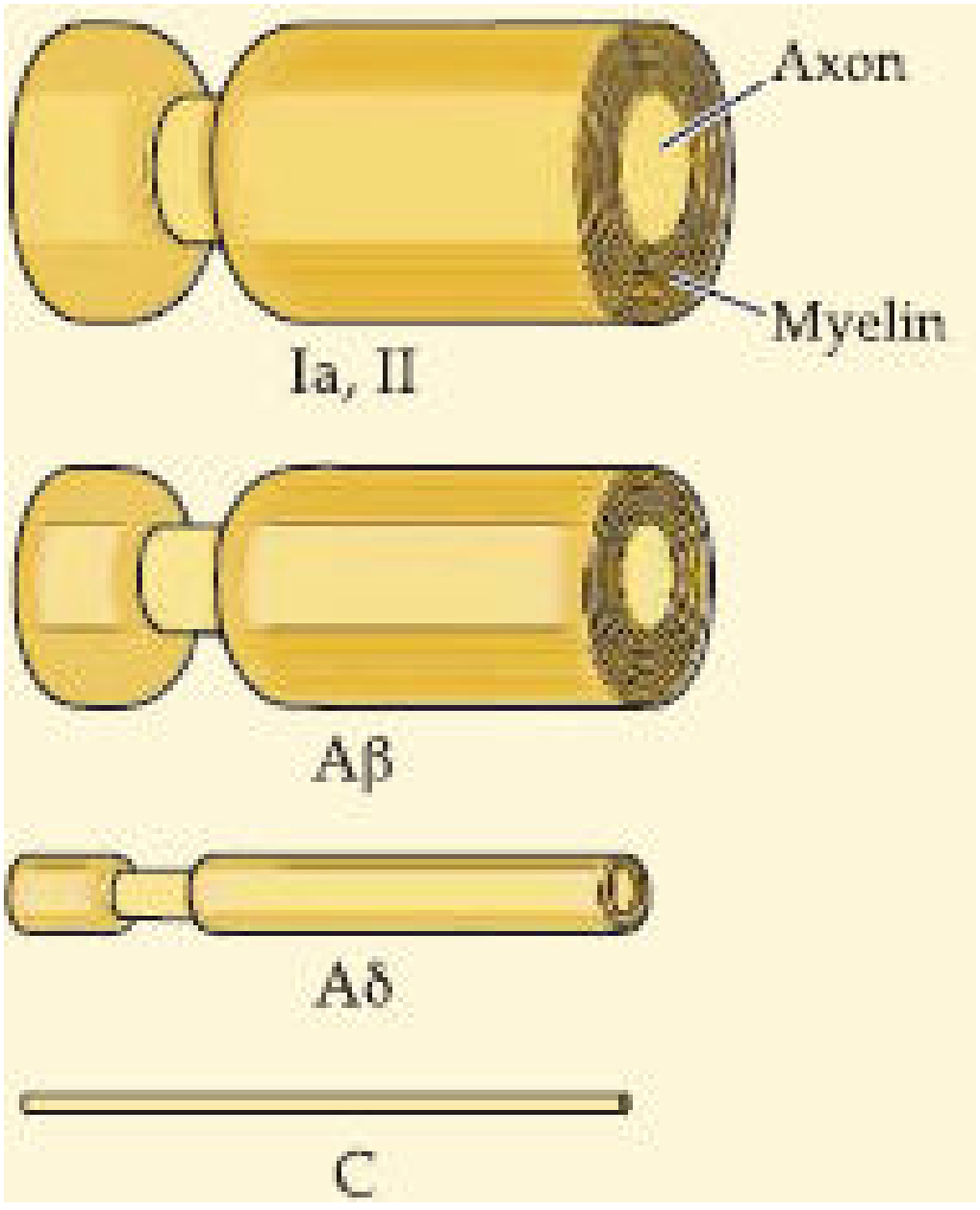

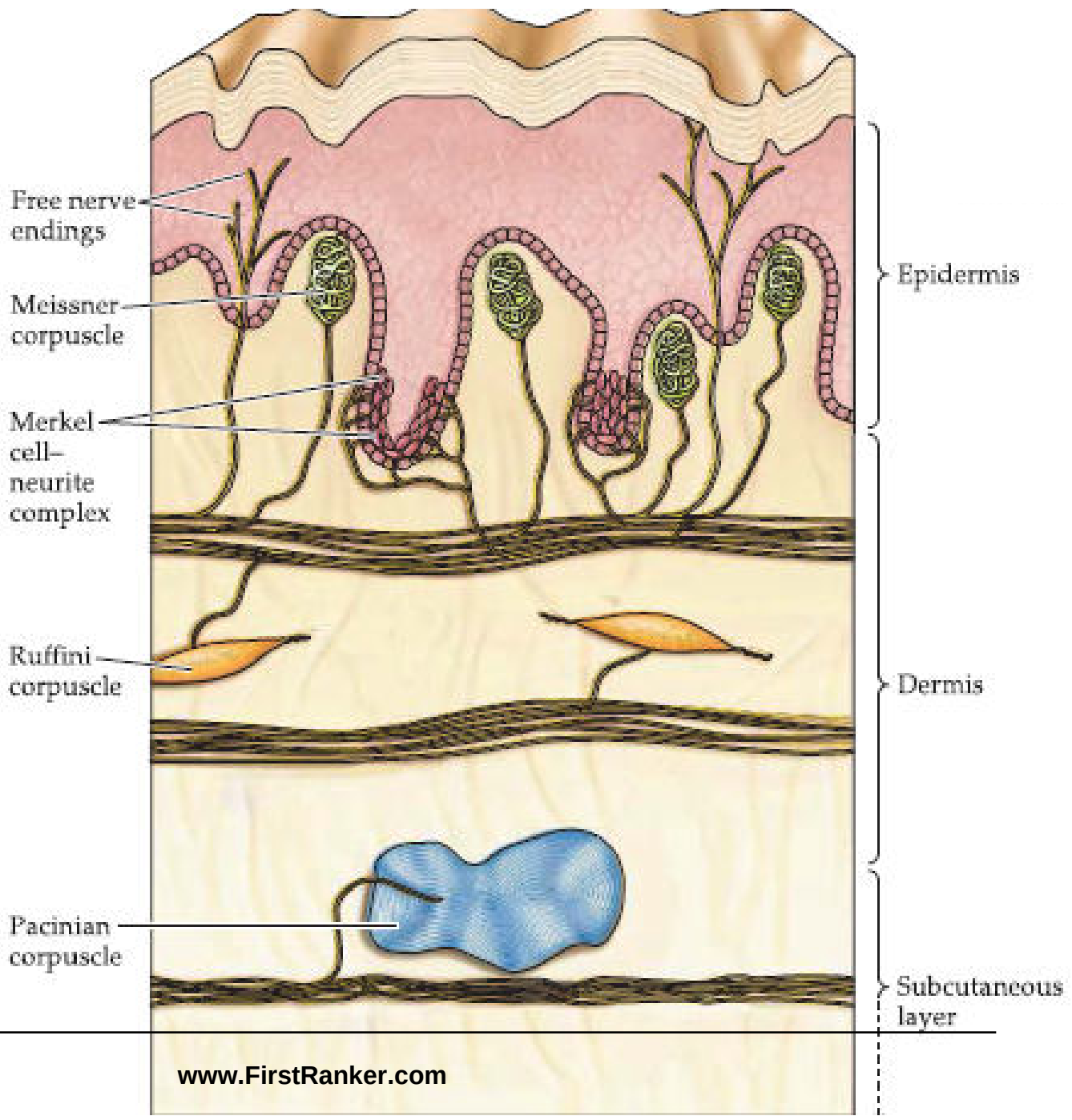

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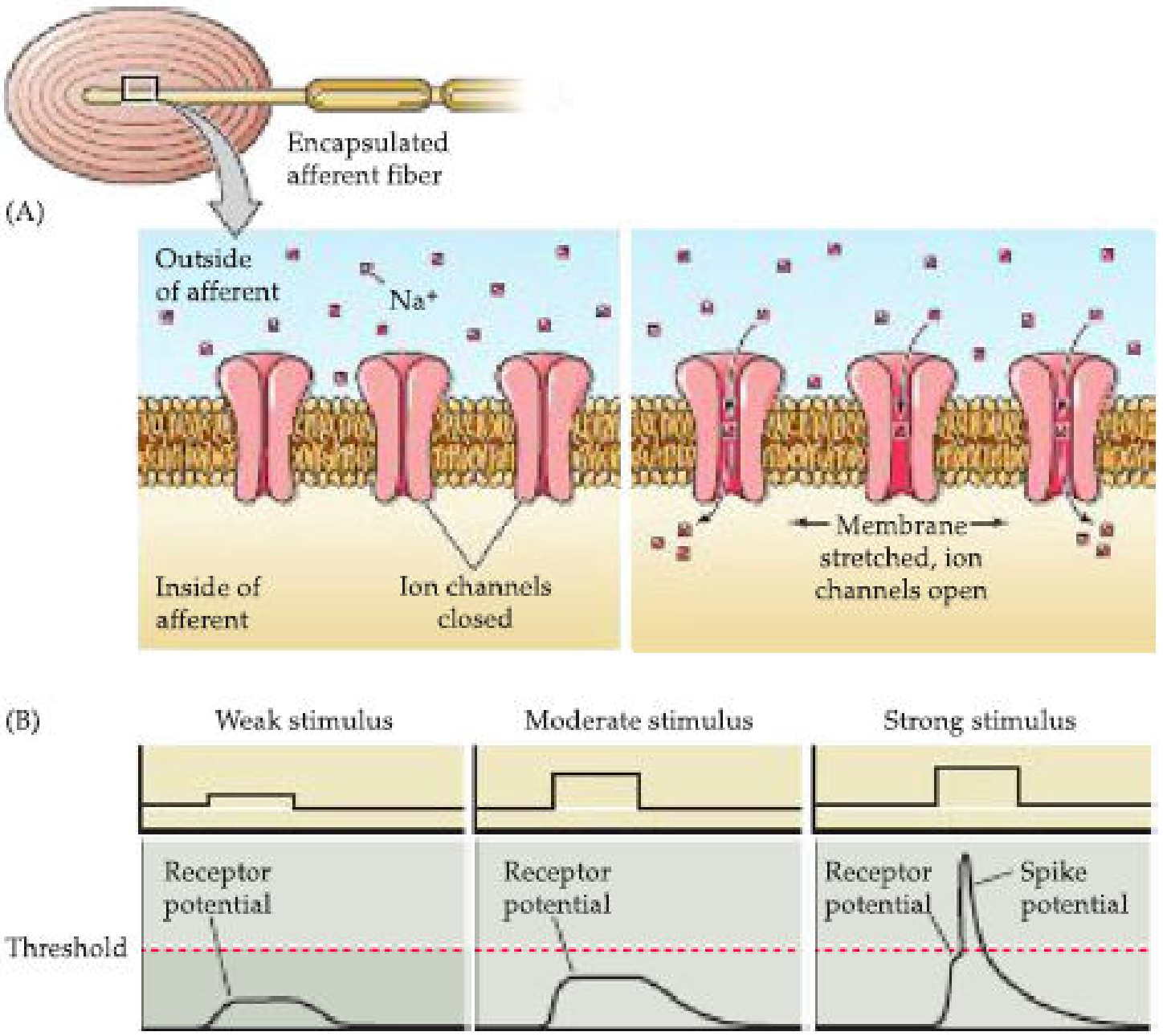

- Encapsulated nerve ending – low threshold
- Free nerve ending – high threshold comparatively

- Slow adapting – continuous (static) sti
- Fast adapting – dynamic (change) sti

- Intensity discrimination – at receptors

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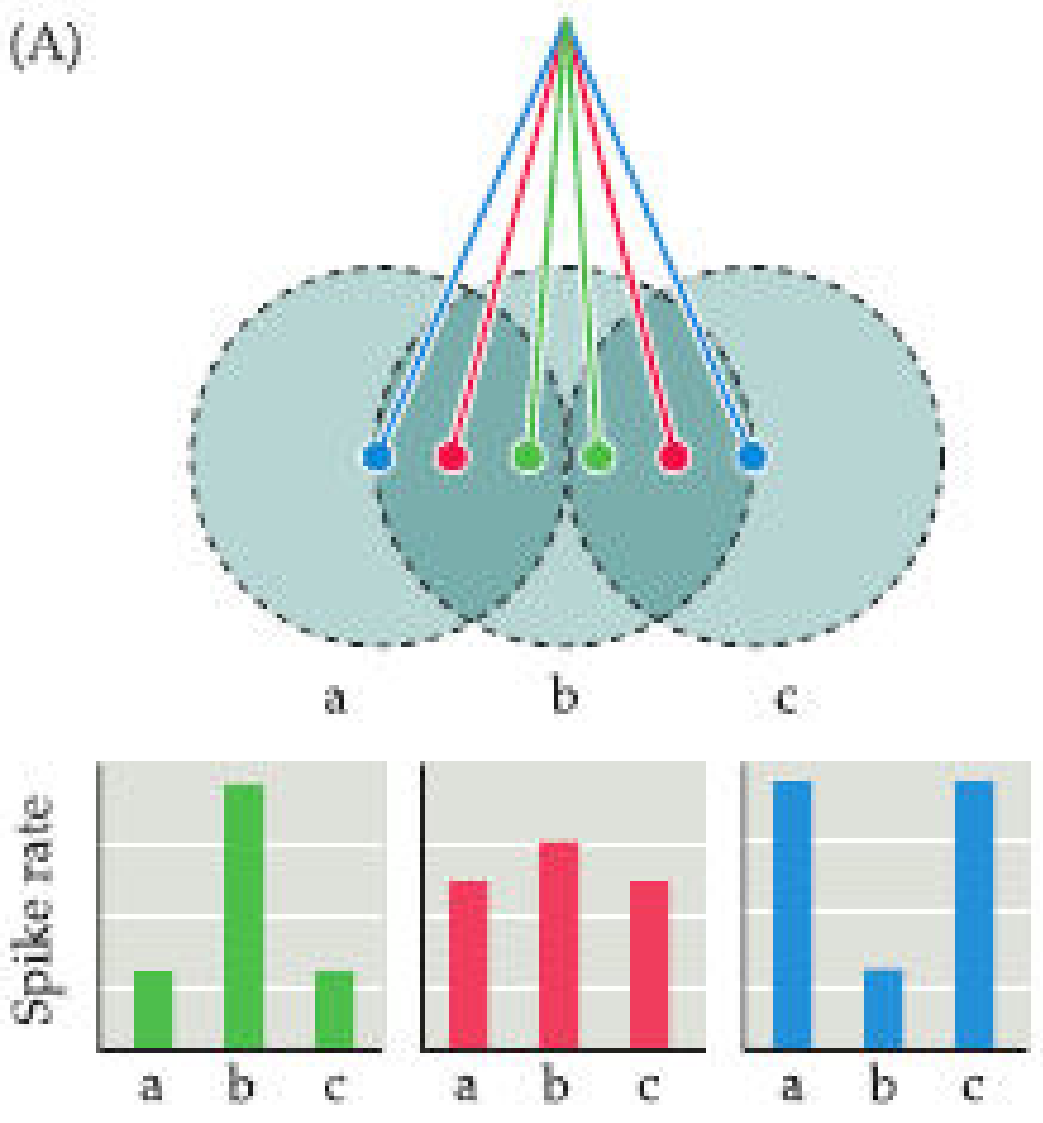
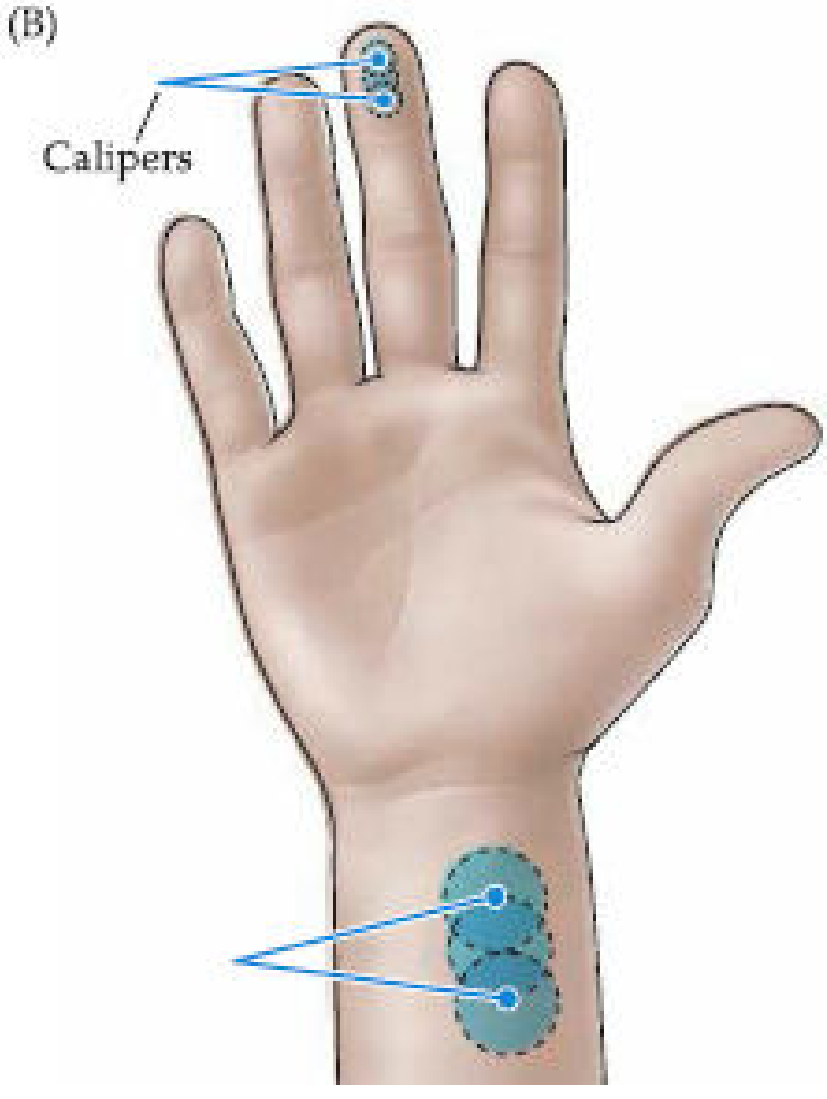
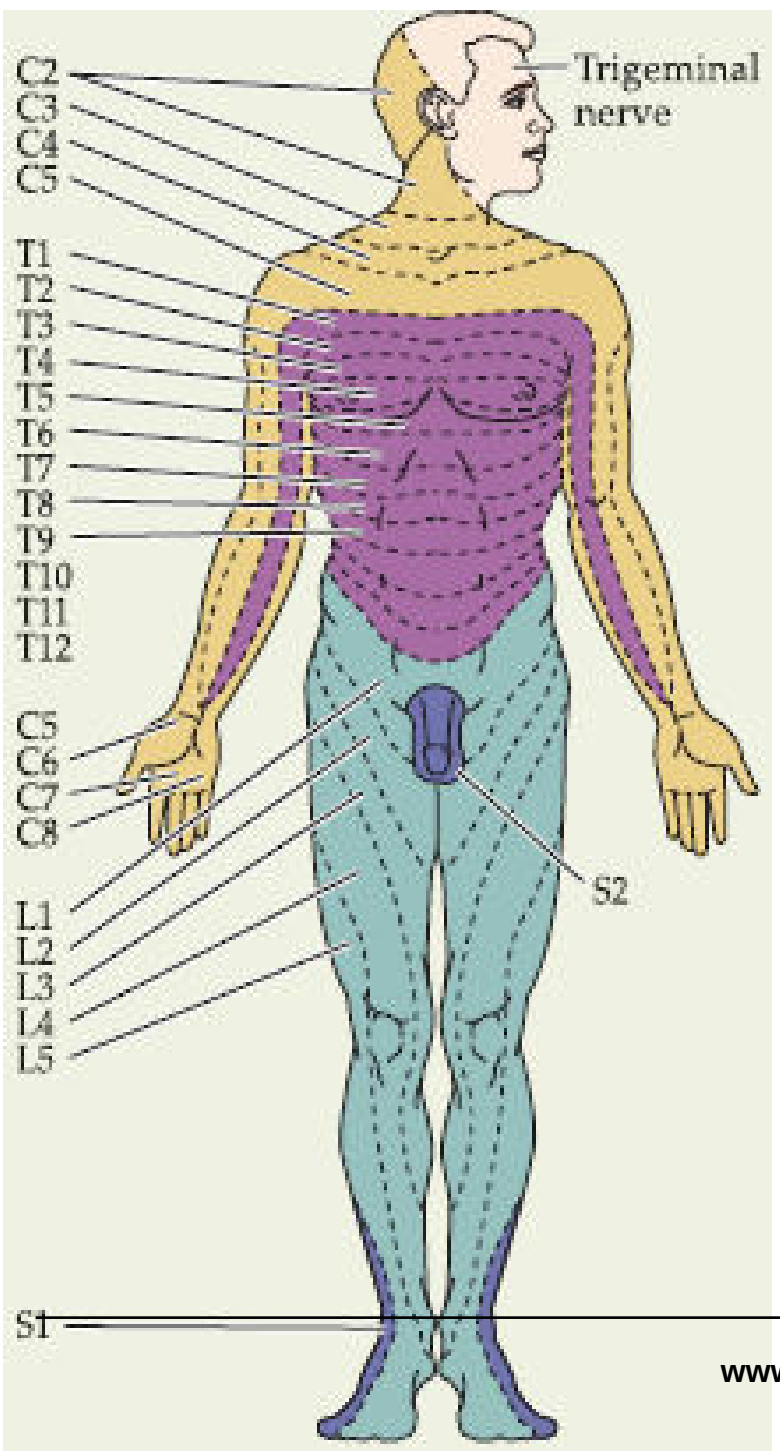
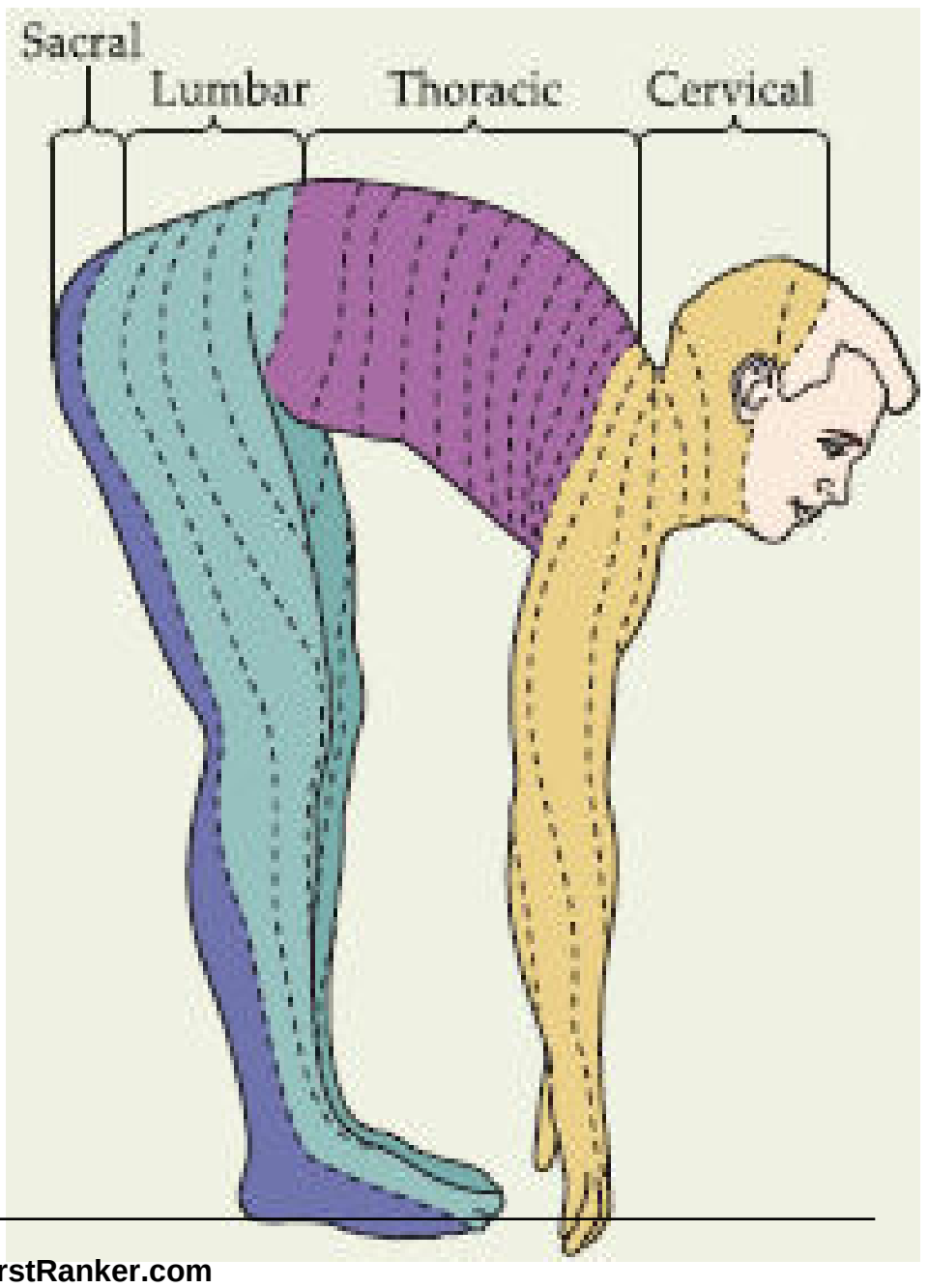




- Receptive field-





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- Mullers doctrine of specific nerve energies

- Labelled line principle
- Law of projection
  Phantom limb
- Weber Fechner law
- Stevens power law

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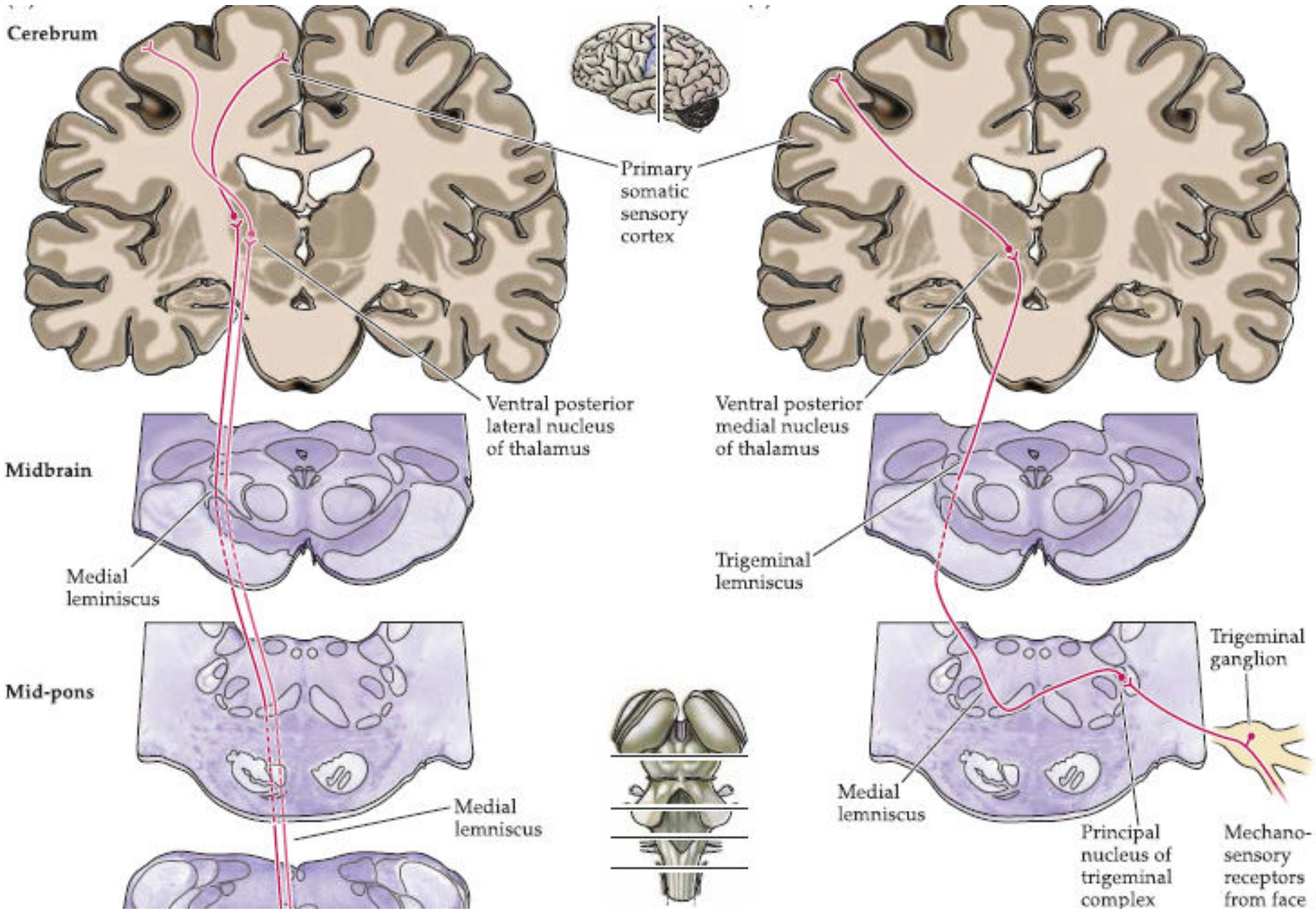

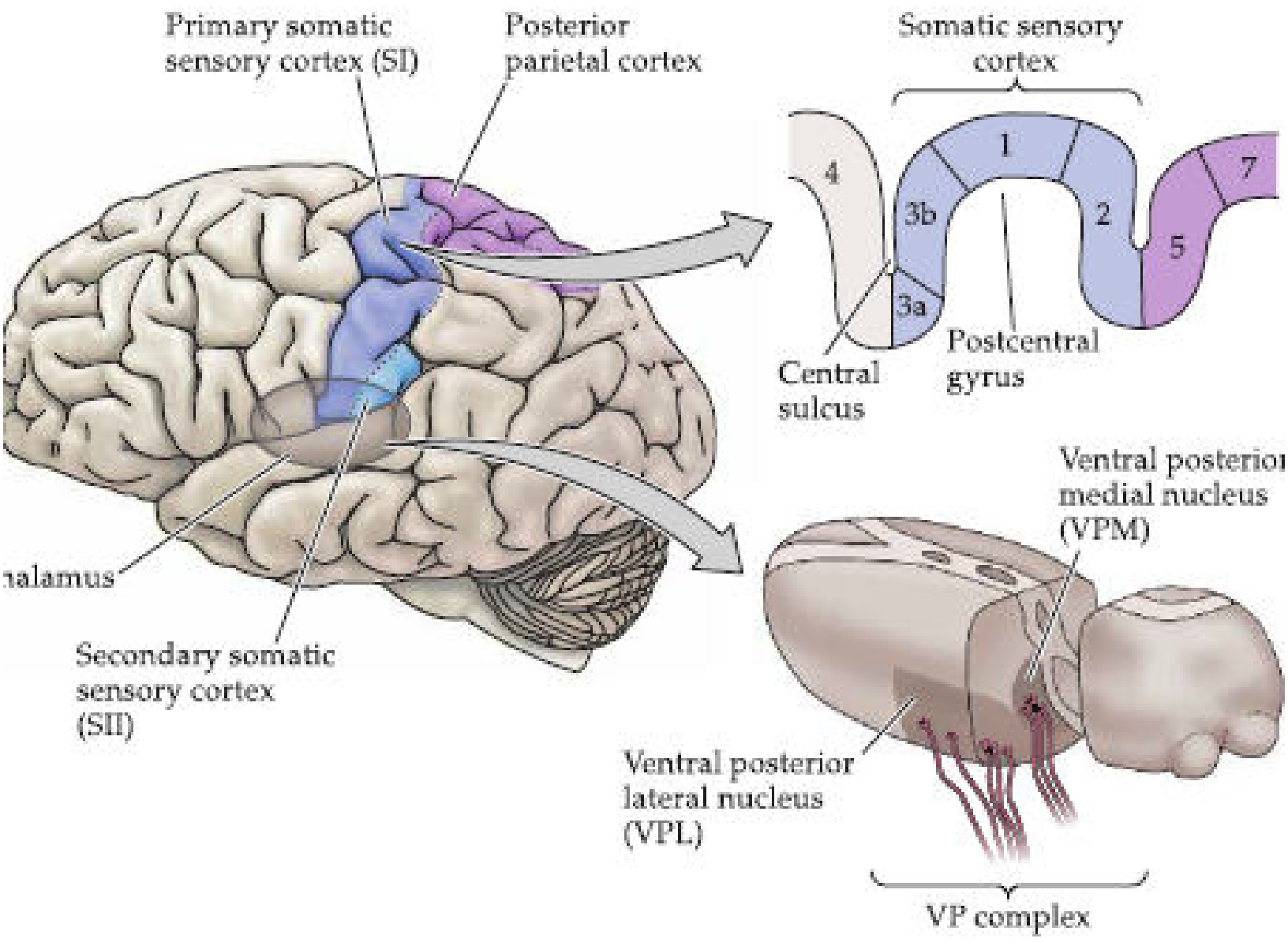

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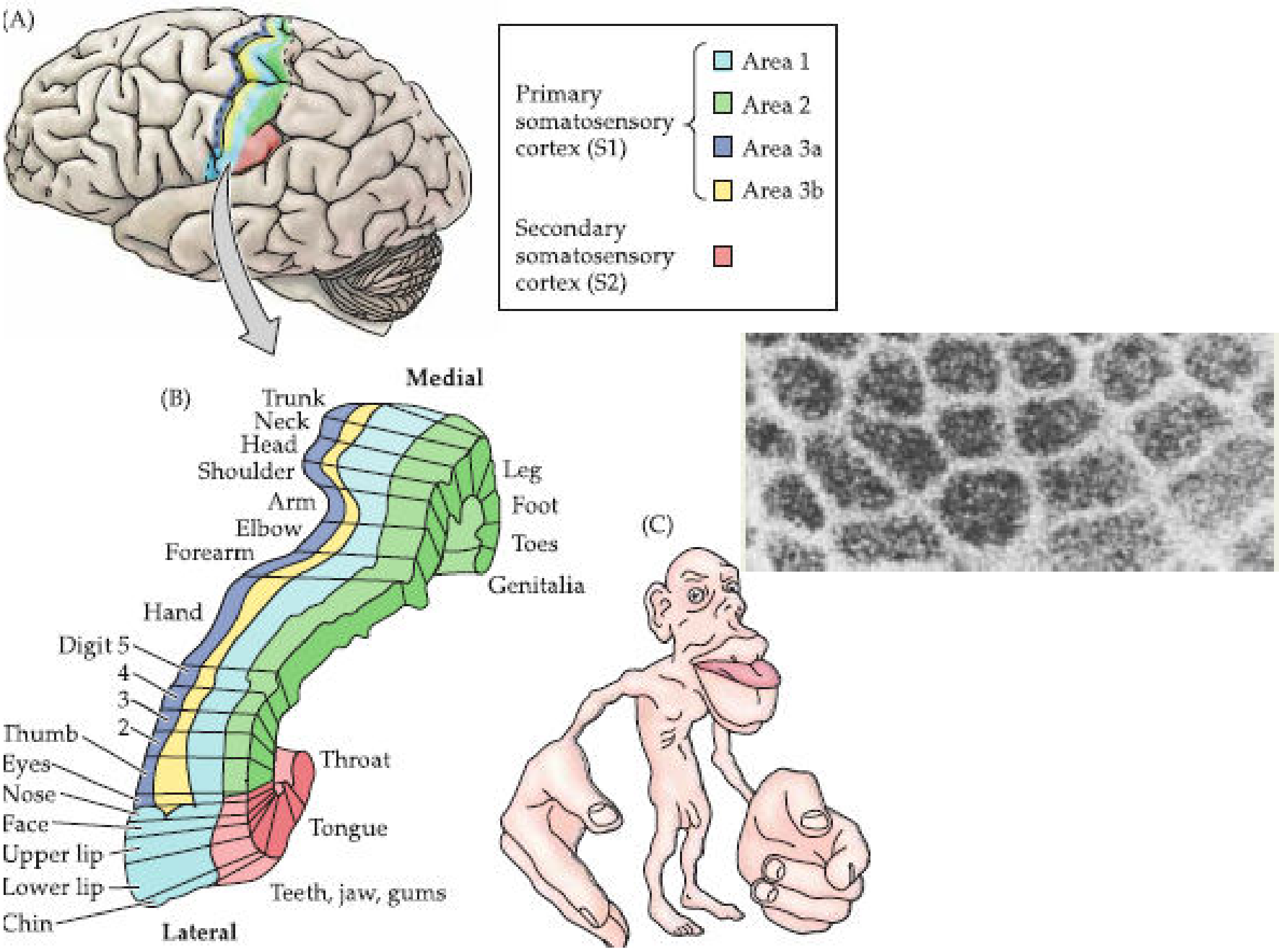
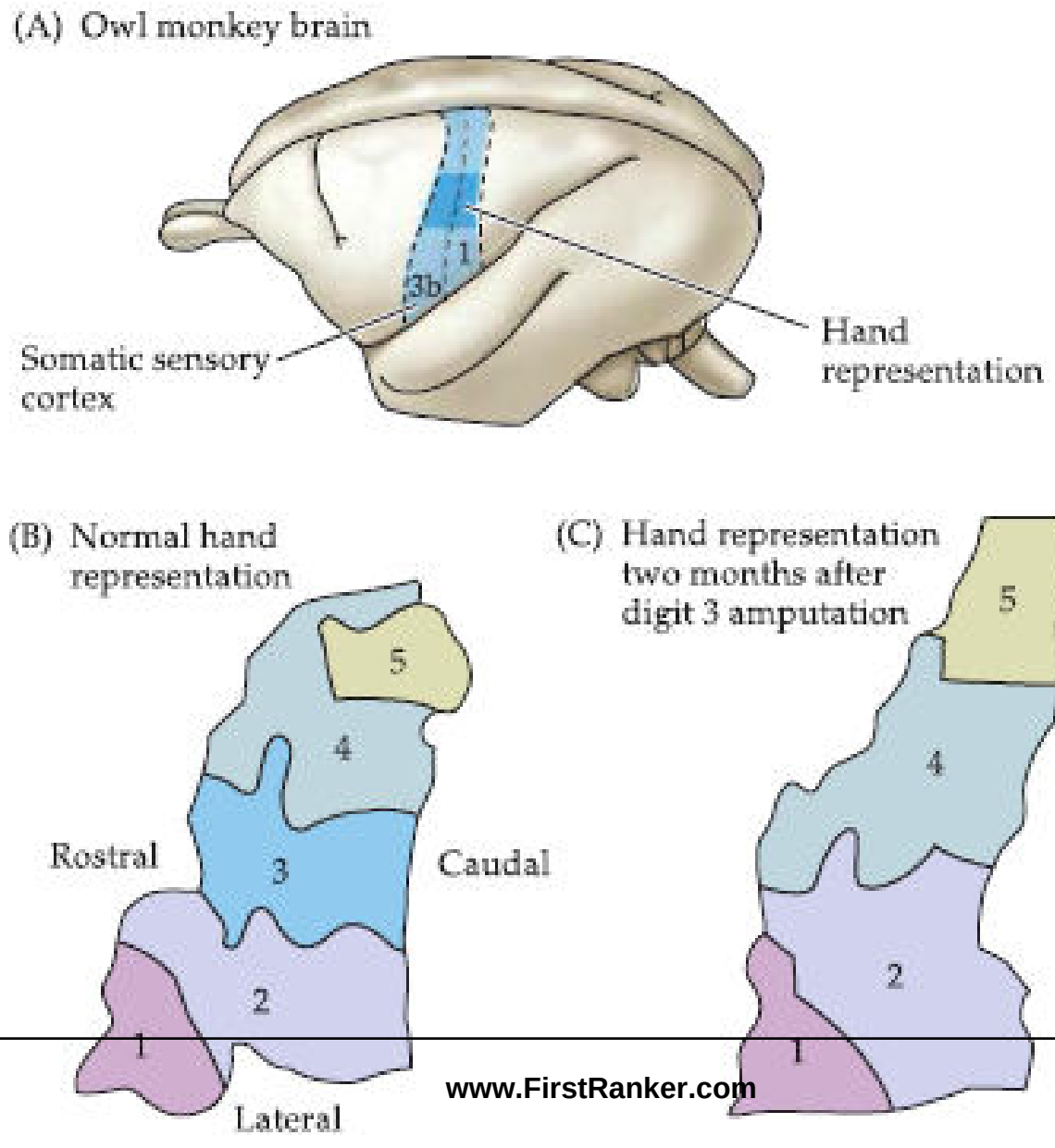


Plasticity



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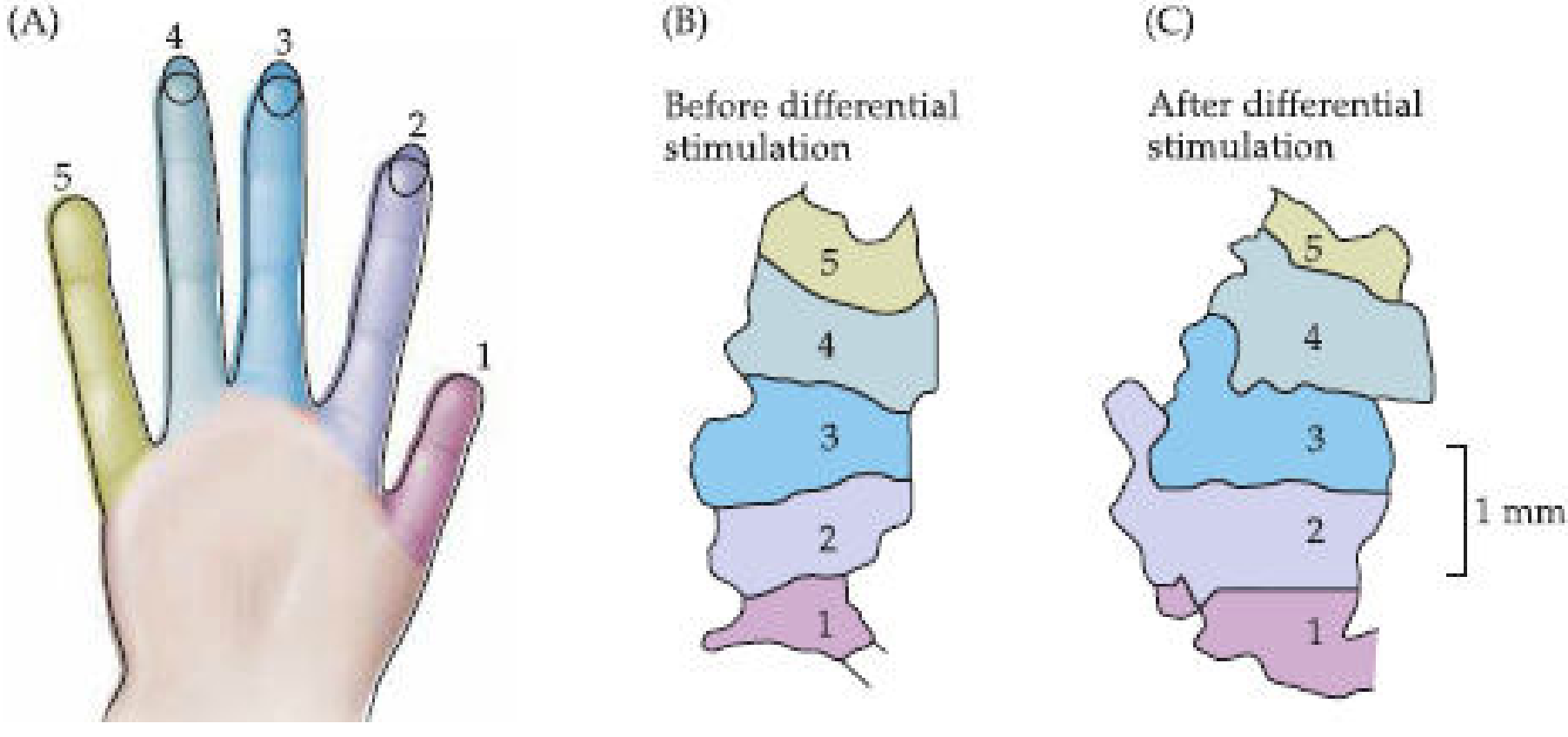

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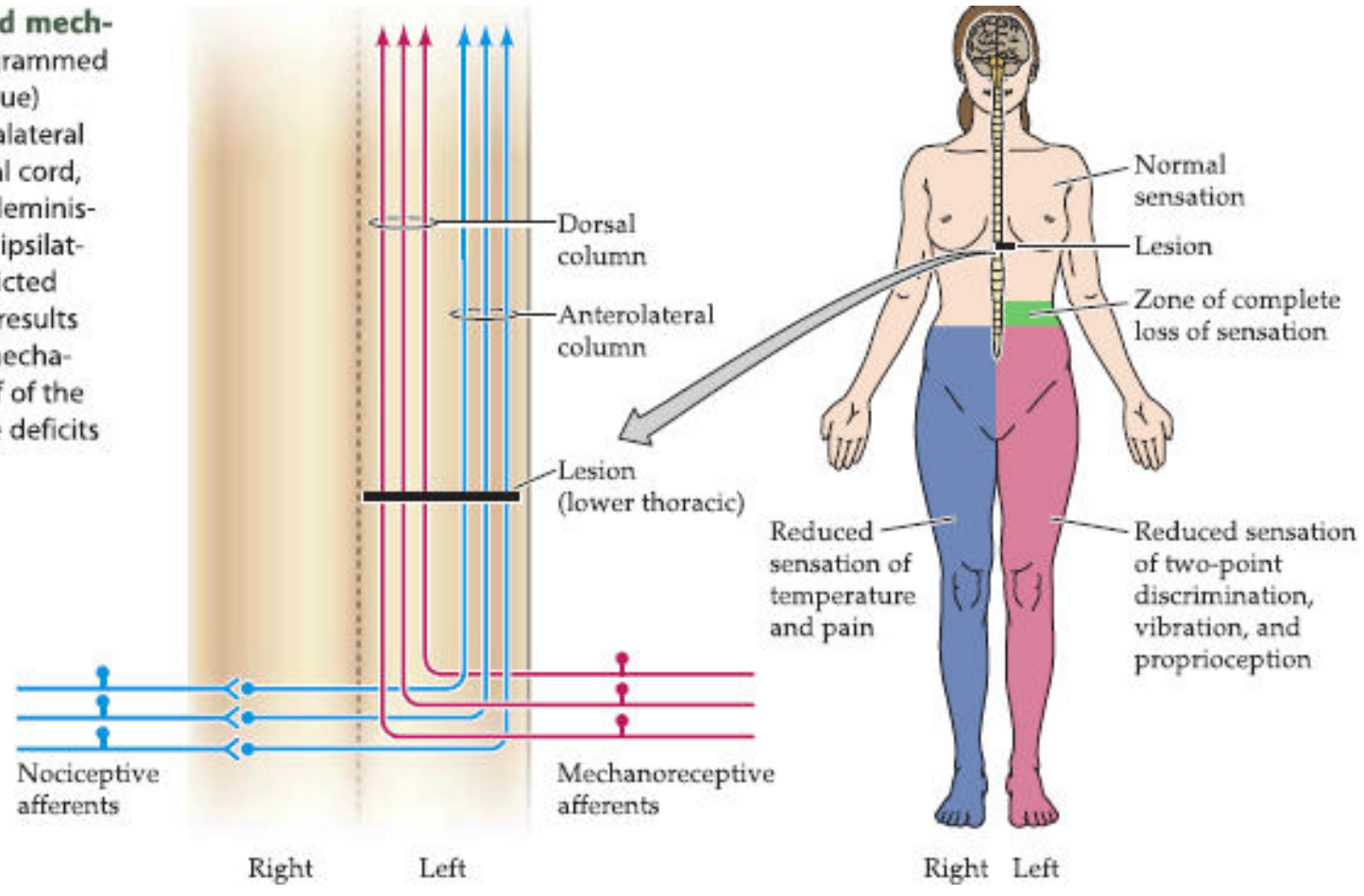

FIGURE 10.4 Nociceptive and mechanosensory pathways. As diagrammed here, the anterolateral system (blue) crosses and ascends in the contralateral anterolateral column of the spinal cord, while the dorsal column–medial leminiscal system (black) ascends in the ipsilateral dorsal column. A lesion restricted to the left half of the spinal cord results in dissociated sensory loss and mechanosensory deficits on the left half of the body, with pain and temperature deficits experienced on the right.

- NCV
- Evoked Potential (upto 100ms)
- Event Related Potential (100-1000ms)

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A generator potential

A. always leads to an action potential.

B. increases in amplitude as a more intense stimulus is applied.

C. is an all-or-none phenomenon.

D. is unchanged when a given stimulus is applied repeatedly over time.

E. all of the above.

Sensory systems code for the following attributes of a stimulus:

A. modality, location, intensity, and duration

B. threshold, receptive field, adaptation, and discrimination

C. touch, taste, hearing, and smell

D. threshold, laterality, sensation, and duration

E. sensitization, discrimination, energy, and projection

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A 28-year-old male was seen by a neurologist because he had experienced prolonged episodes of tingling and numbness in his right arm. He underwent a neurological exam to evaluate his sensory nervous system. Which of the following receptors is correctly paired with the type of stimulus to which it is most apt to respond?

A. Pacinian corpuscle and motion.

B. Meissner's corpuscle and deep pressure.

C. Merkel cells and warmth.

D. Ruffini corpuscles and sustained pressure.

E. Muscle spindle and tension.

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