SISTEMA TACTIL

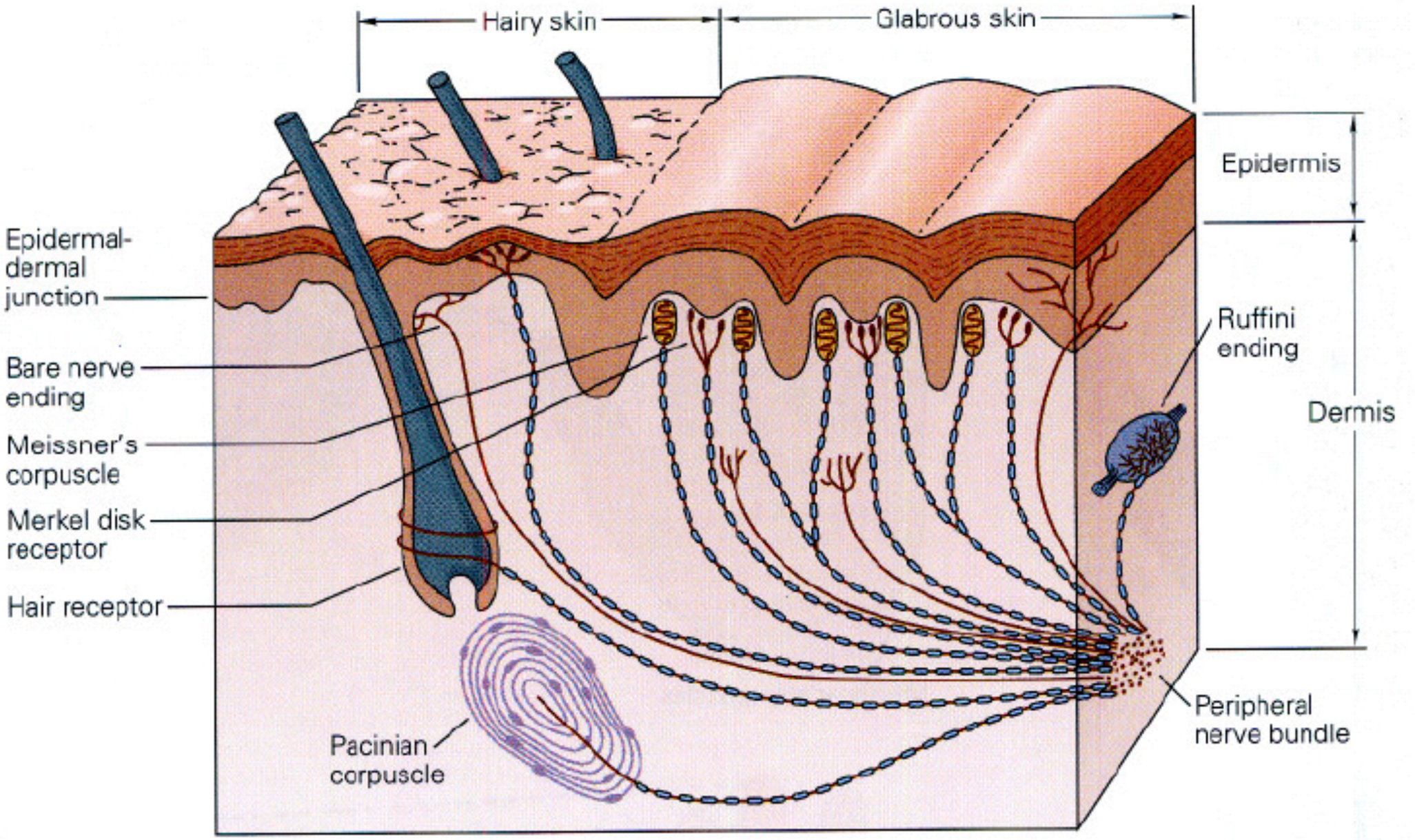
Psicobiología

Sistema Táctil

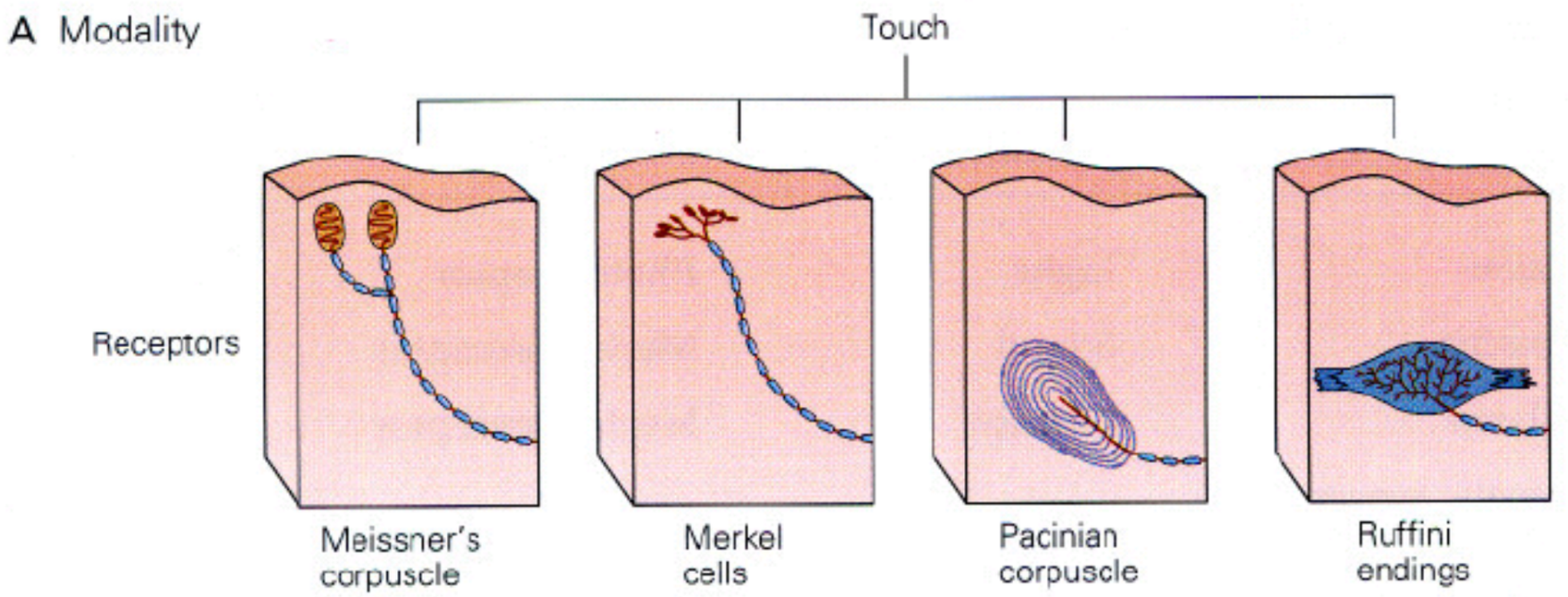
Los sistemas sensoriales codifican 4 atributos elementales del estímulo:

- Modalidad
- Localización
- Intensidad
- Temporalidad

La Piel y los Receptores



Tacto


A Modality
Touch
Receptors
Meissner's corpuscle
Merkel cells
Pacinian corpuscle
Ruffini endings
B Location
Receptive field
C Intensity and time course
Neural spike train
Stimulus

Mecanoreceptores del Tacto

- Al disparo de los 4 receptores, se produce sensación de contacto con un objeto
- La activación selectiva de las celulas de Merkel y de Ruffini produce sensación de presión sobre la piel.
- Cuando el mismo patrón de disparo ocurre solamente en los corpúsculos de Meissner y Pacini la sensación de vibración es percibida.

Campos Receptores

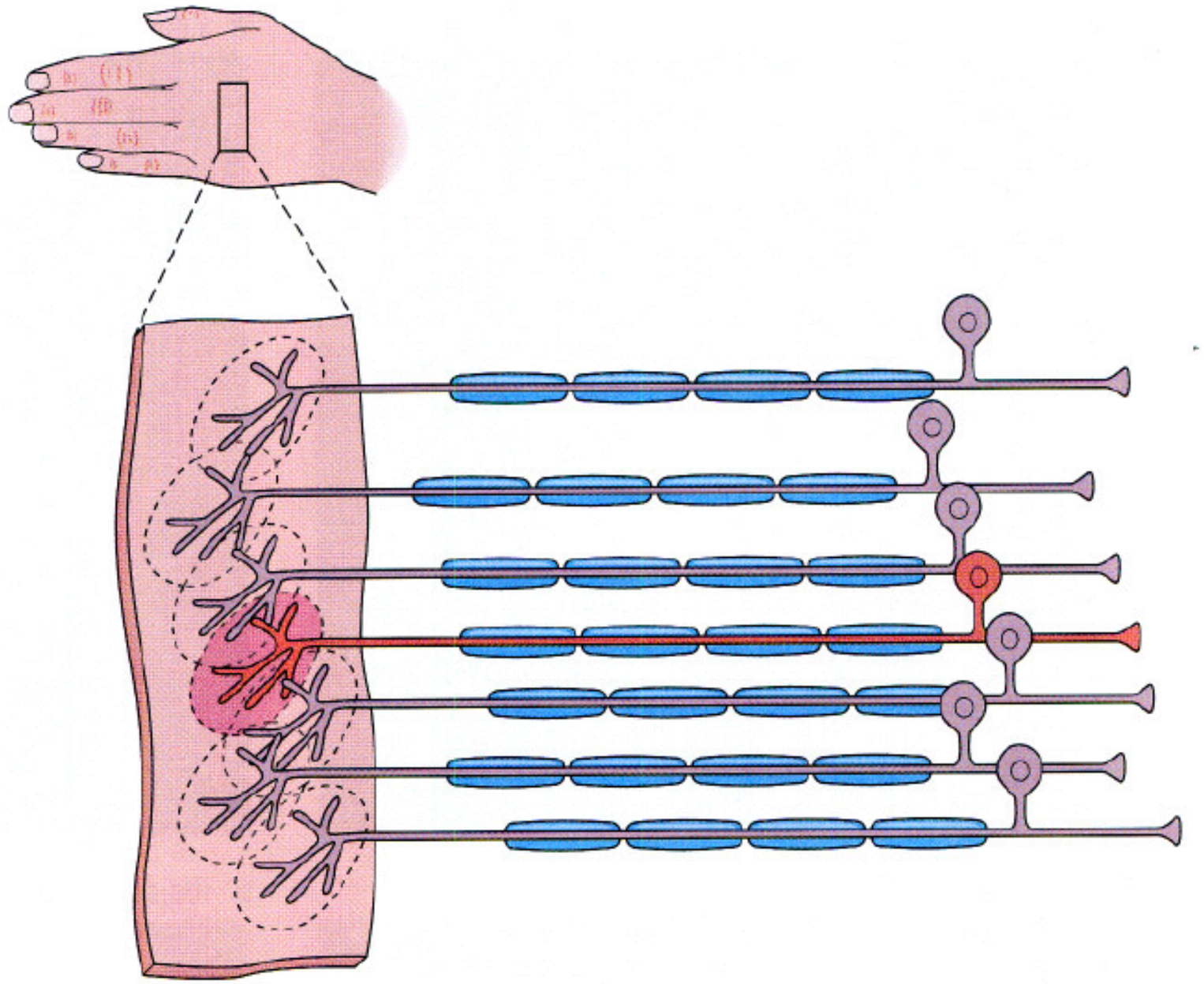


Figure 21-5 **Structural basis of the receptive field of receptors for the sense of touch.** The receptive field of a touch-sensitive neuron in the skin includes the sensory transduction apparatus in the nerve terminals and the surrounding skin in which the terminals are located. A patch of skin contains many overlapping receptive fields innervated by individual sensory nerve fibers. When this region is touched, spikes are initiated at the node of Ranvier closest to the nerve terminals in the skin. They are conducted past the cell body, located in the dorsal root ganglion, to the synaptic terminals in the spinal cord or medulla.

Campos Receptores

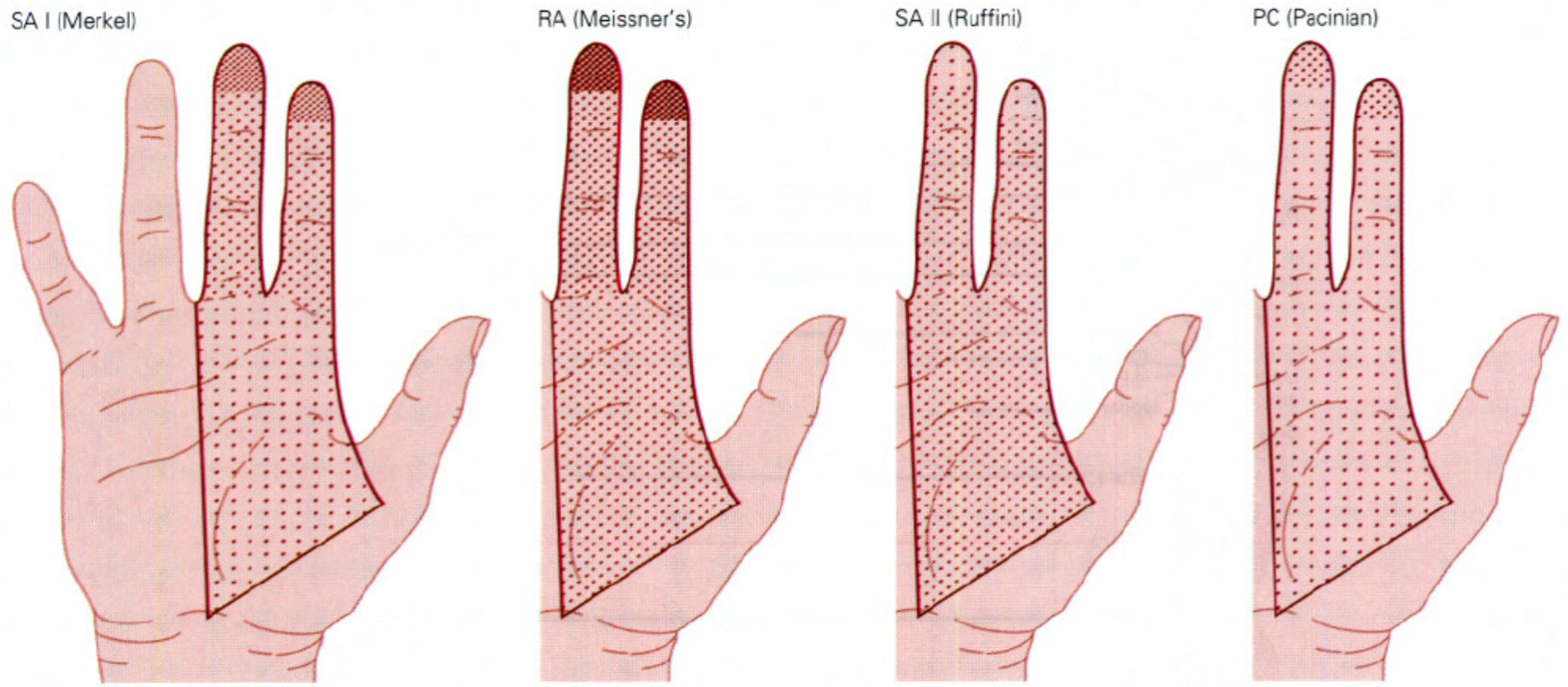
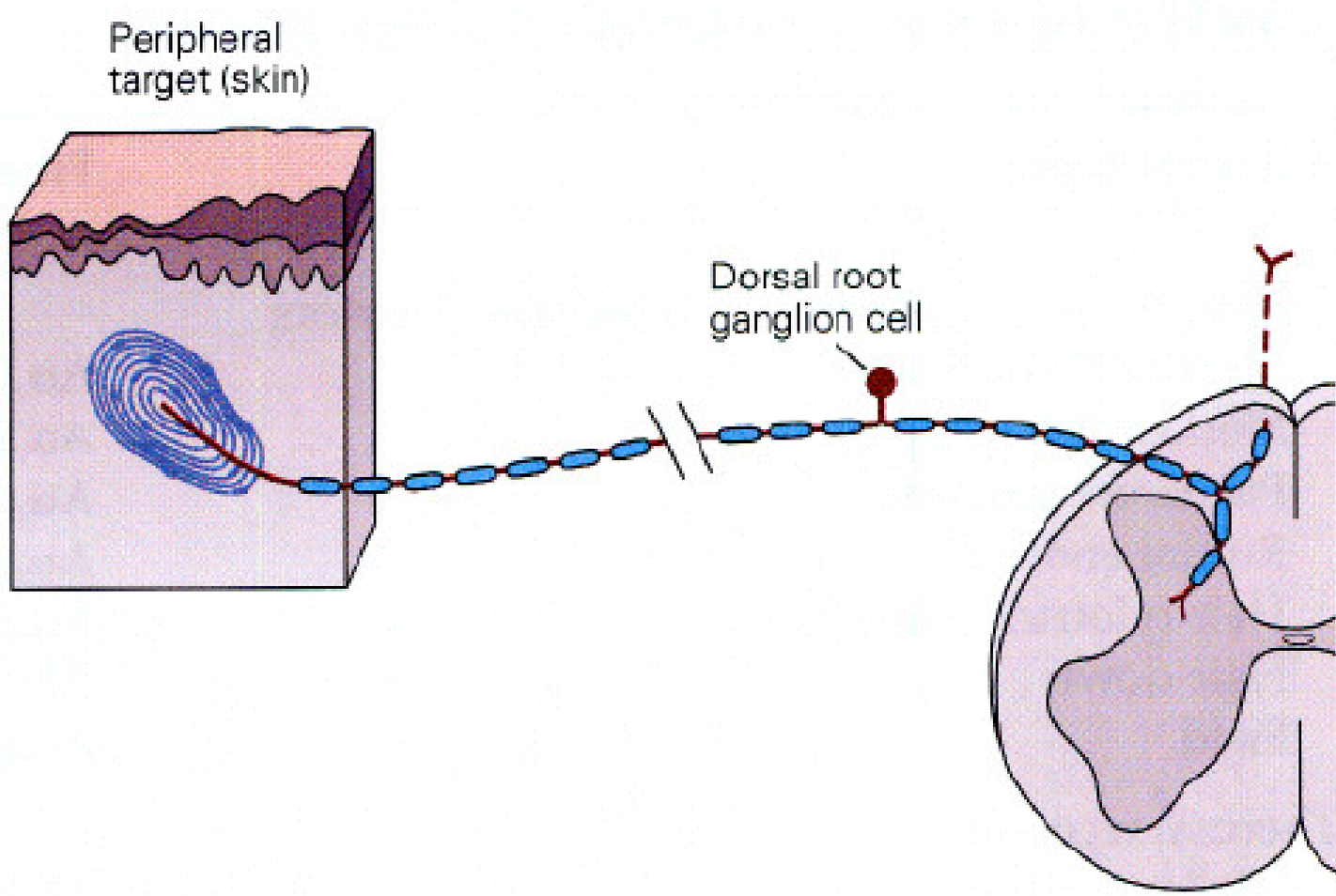


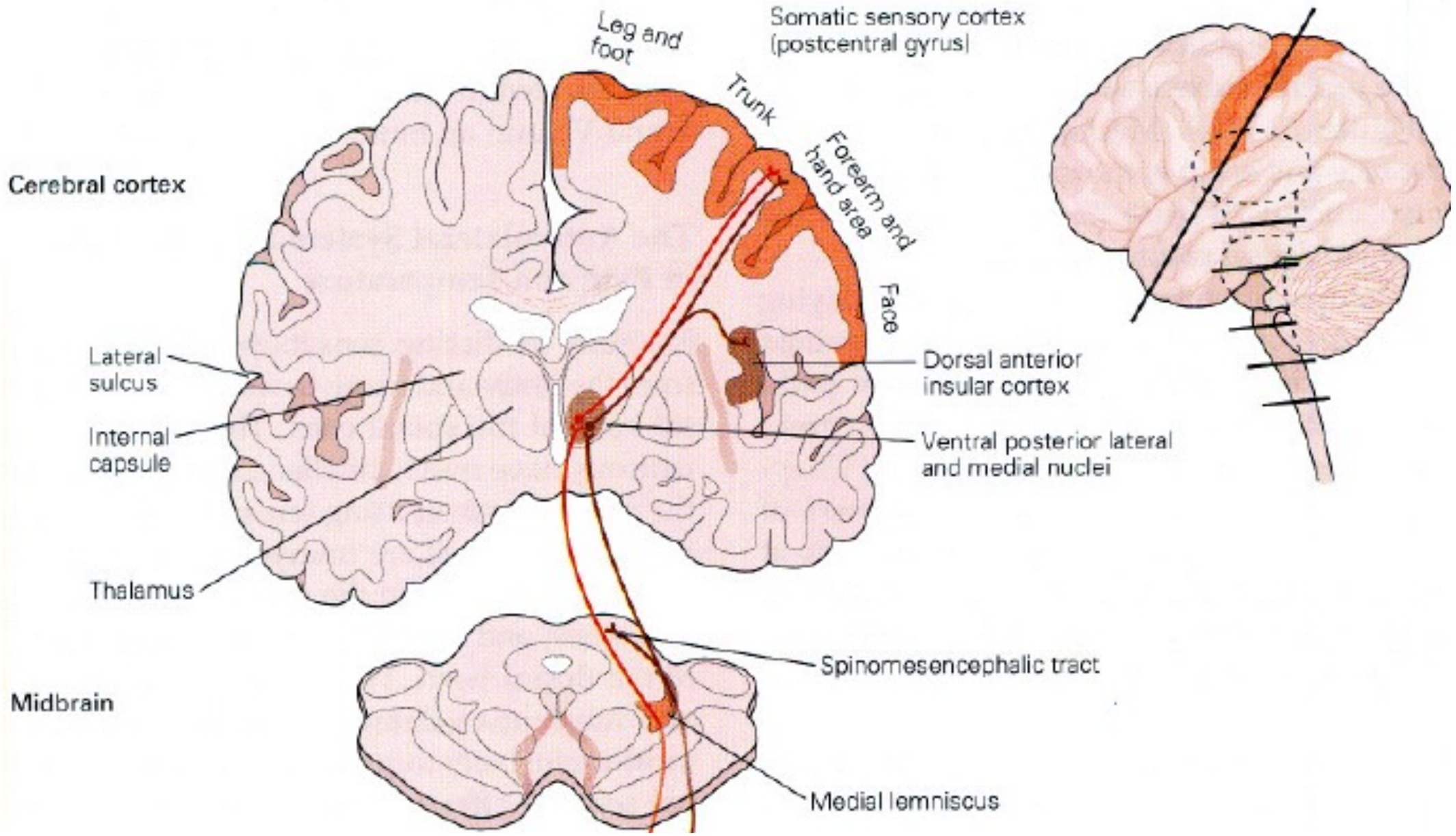
Figure 22-4 The distribution of receptor types in the human hand varies. The number of sensory nerve fibers innervating an area is indicated by the stippling density, with the highest density of receptors shown by the heaviest stippling. (**RA** = rapidly adapting, **SA** = slowly adapting.) Meissner's corpuscles (RA) and Merkel disk receptors (SA I) are the most numerous receptors; they are distributed preferentially on the distal half of the fingertip. Pacinian corpuscles (PC) and Ruffini endings (SA II) are much less common; they are distributed more uniformly on the hand, showing little differentiation of the distal and proximal regions. The fingertips are the most densely innervated region of skin in the human body, receiving approximately 300 mechanoreceptive nerve fibers per square centimeter. The number of mechanoreceptive fibers is reduced to 120/cm^2 in the proximal phalanges, and to 50/cm^2 in the palm. (Adapted from Vallbo and Johansson 1978.)

Ganglios de la Raíz Dorsal

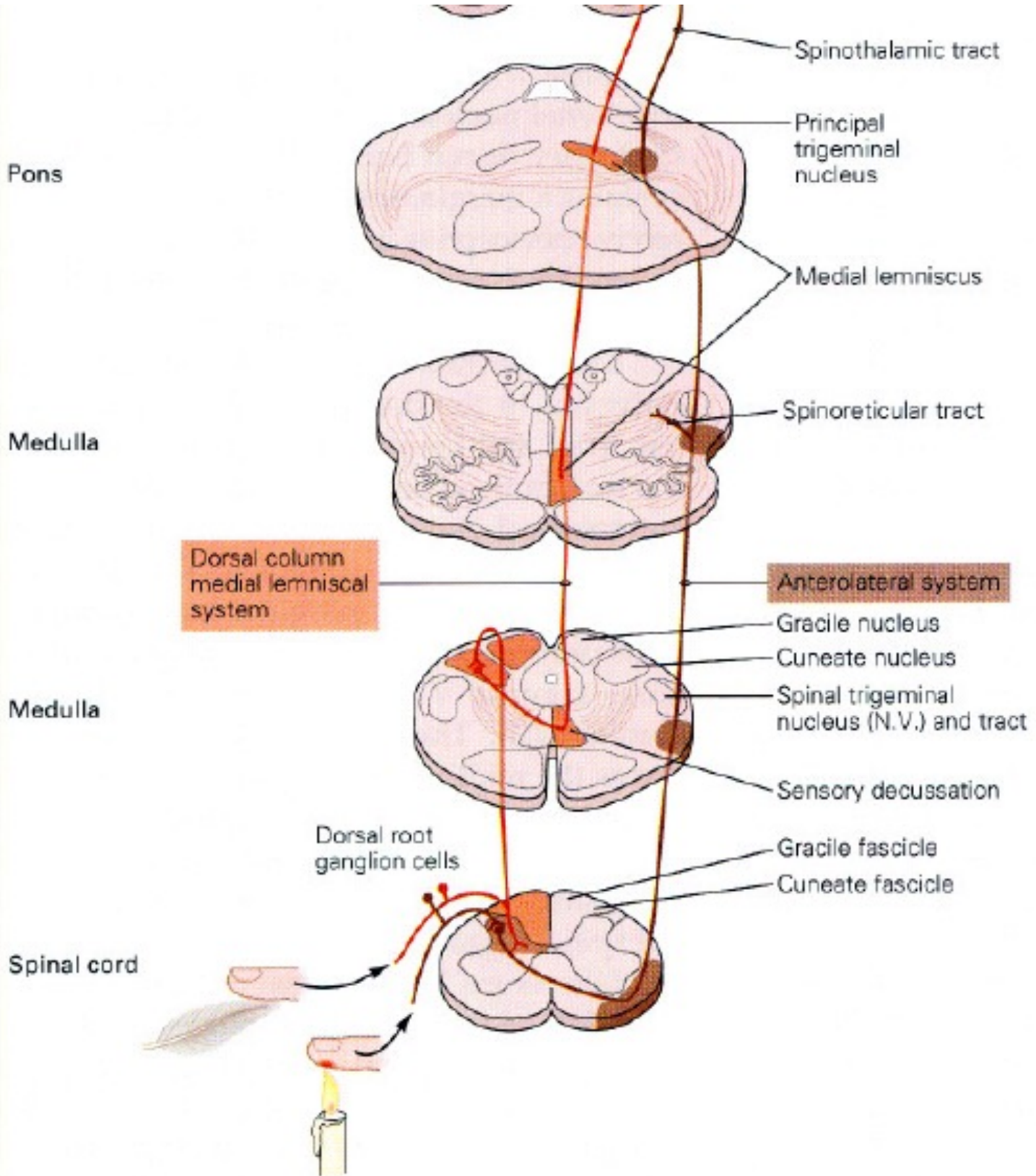
- Los cuerpos celulares llegan al ganglio de la raíz dorsal de los nervios espinales.
- Sensaciones somáticas:
  - ✦ Epicrítica: envuelve aspectos finos del tacto y está mediada por receptores encapsulados
  - ✦ Protopática: envuelve las sensaciones de dolor y temperatura y son mediadas por receptores con terminales nerviosas descubiertas



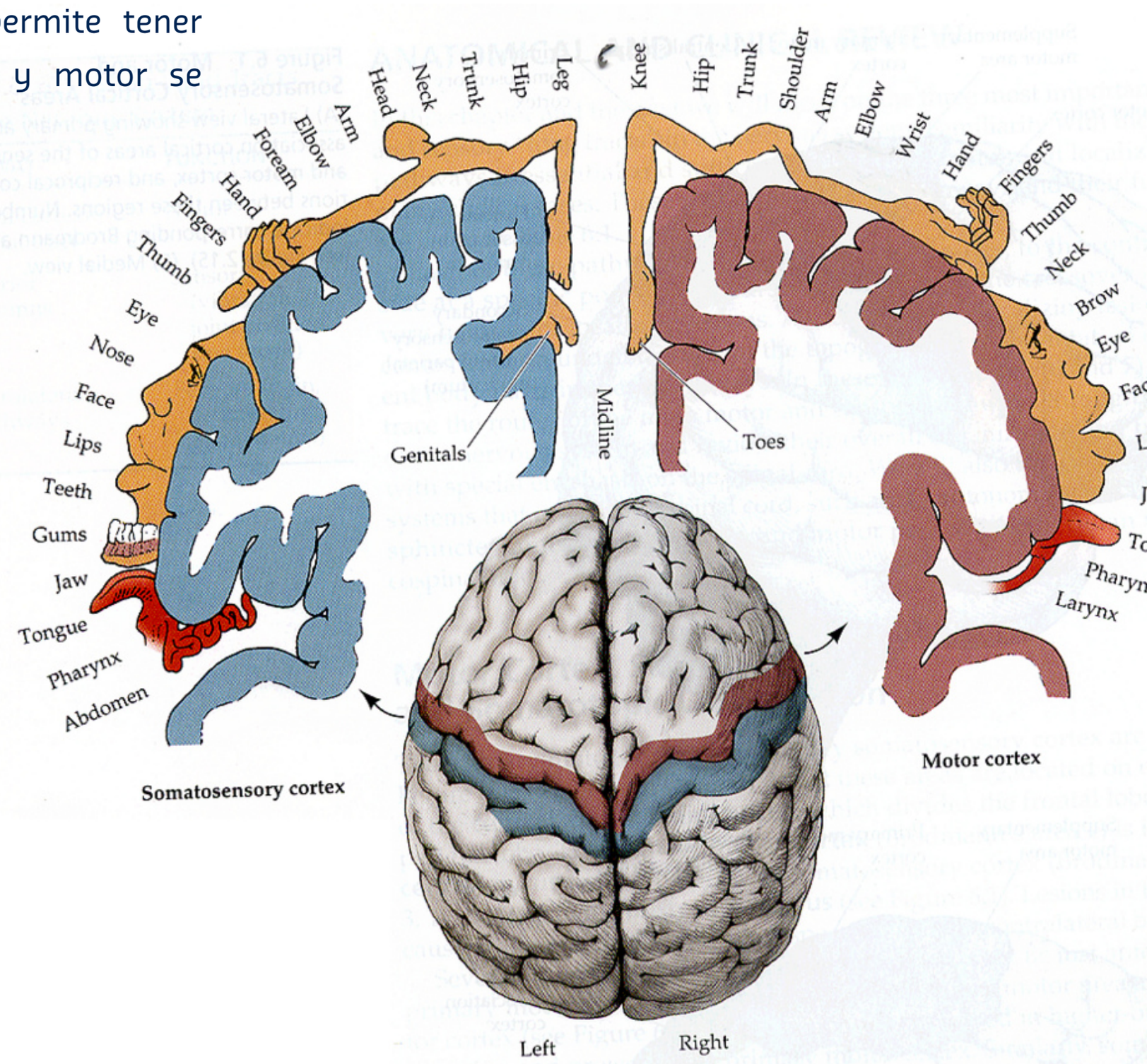
Sensación Epicrítica y Protopática



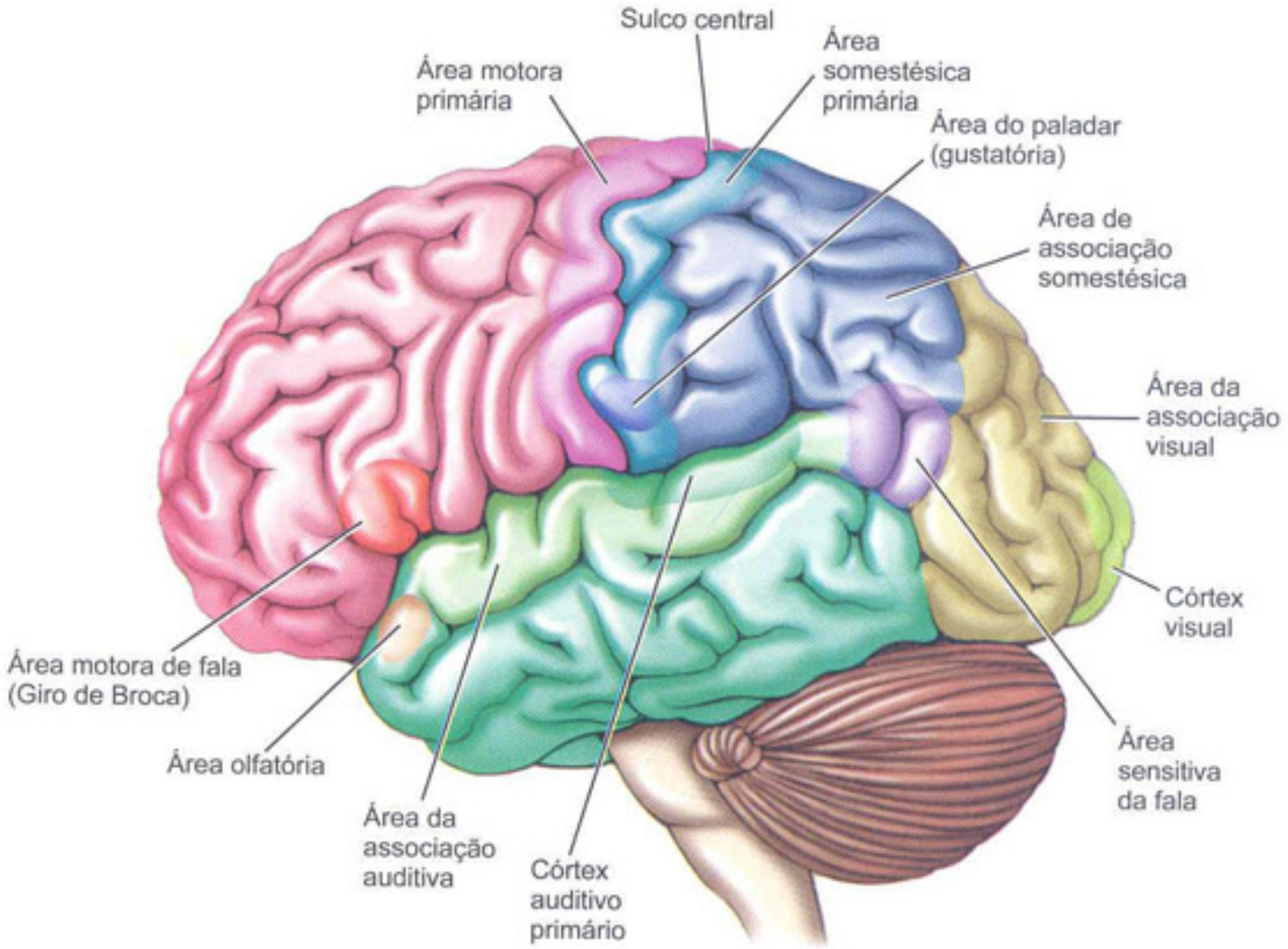
Sensación Epicrítica y Protopática



La comparación y correlación entre las zonas responsables del tacto(en color azul) y movimiento (en color morado) permite tener idea de cómo sistema sensorial y motor se coordinan.



Cortezas Secundarias



Corteza de Asociación