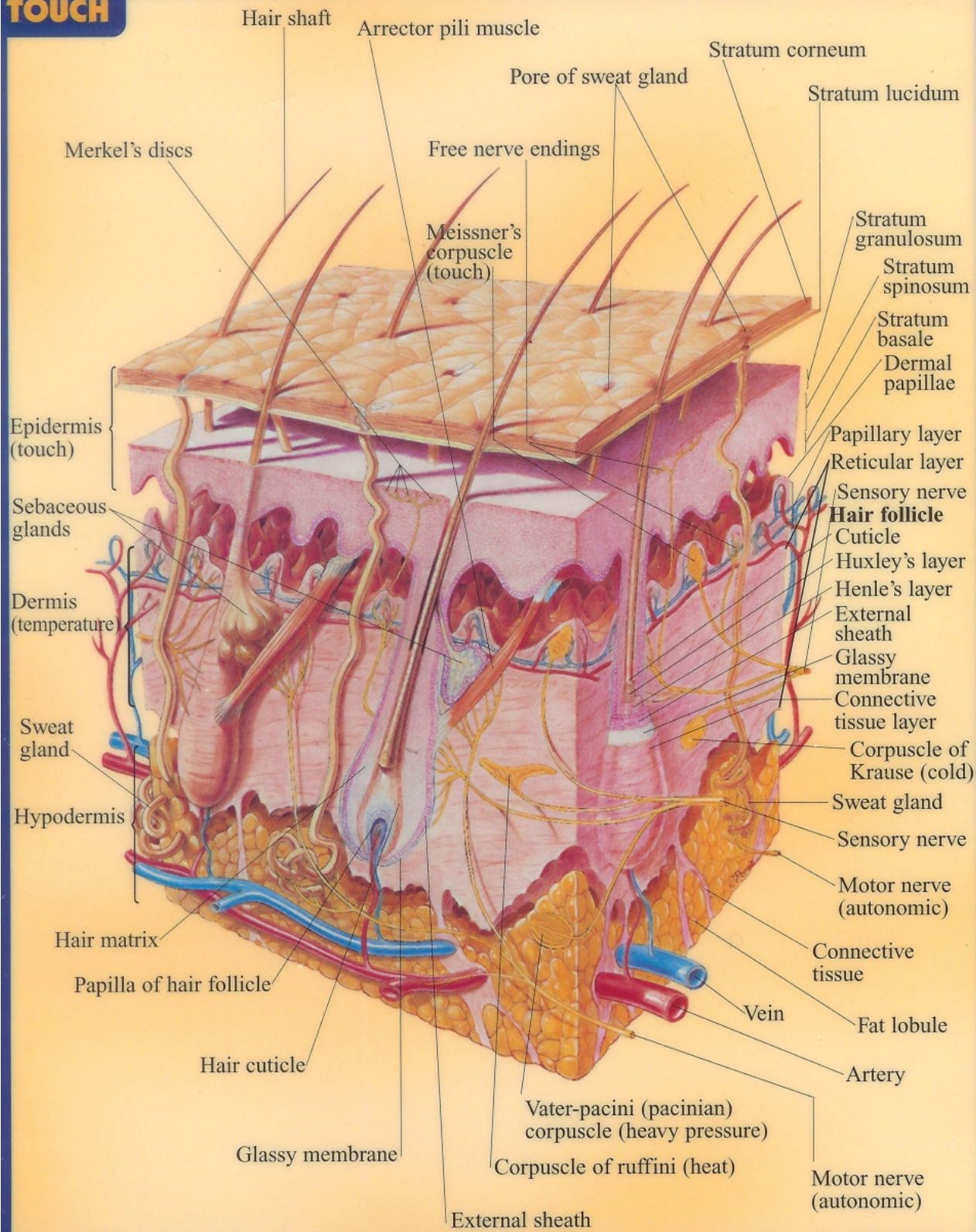


TOUCH

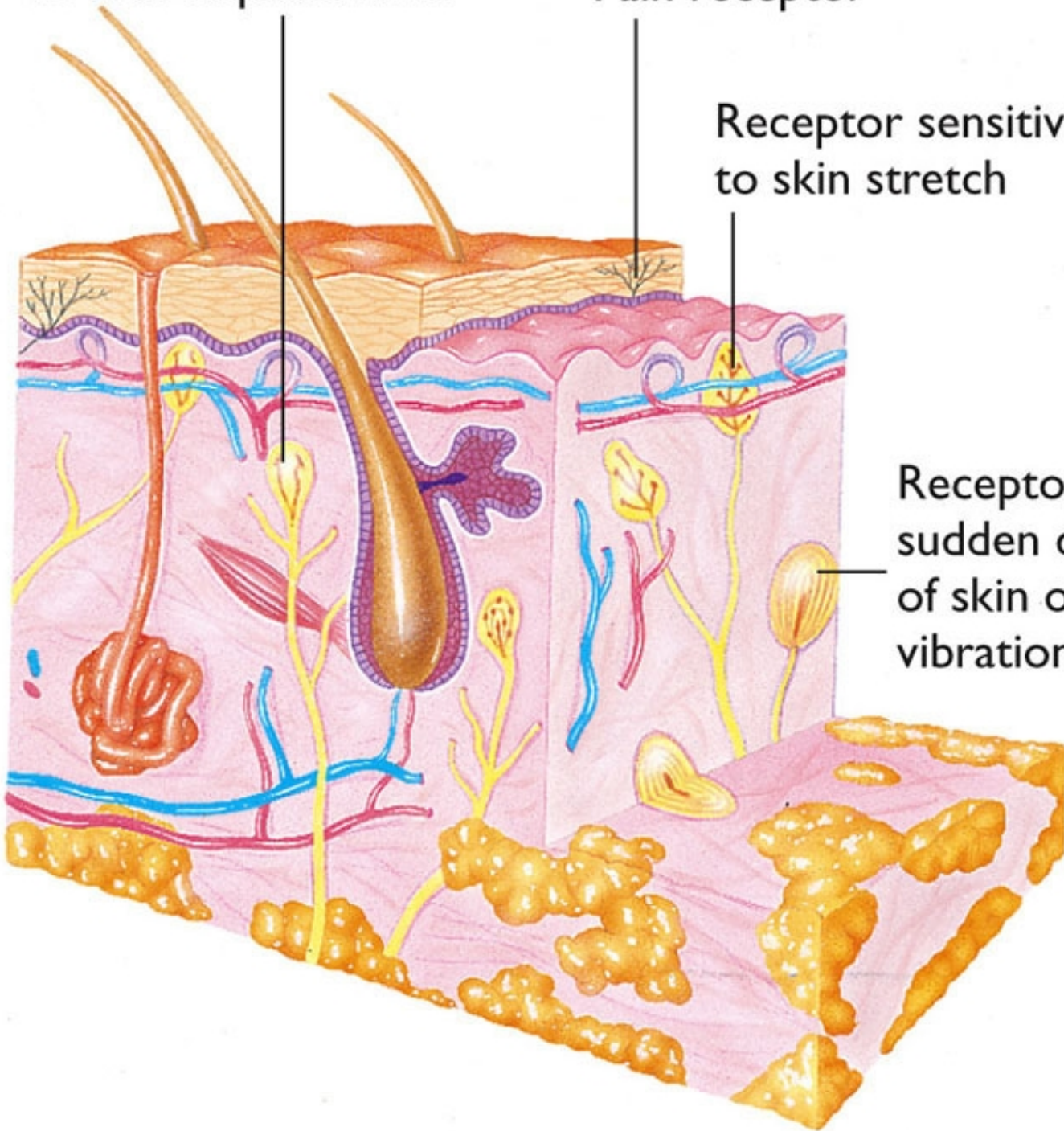


Receptor sensitive to skin displacement

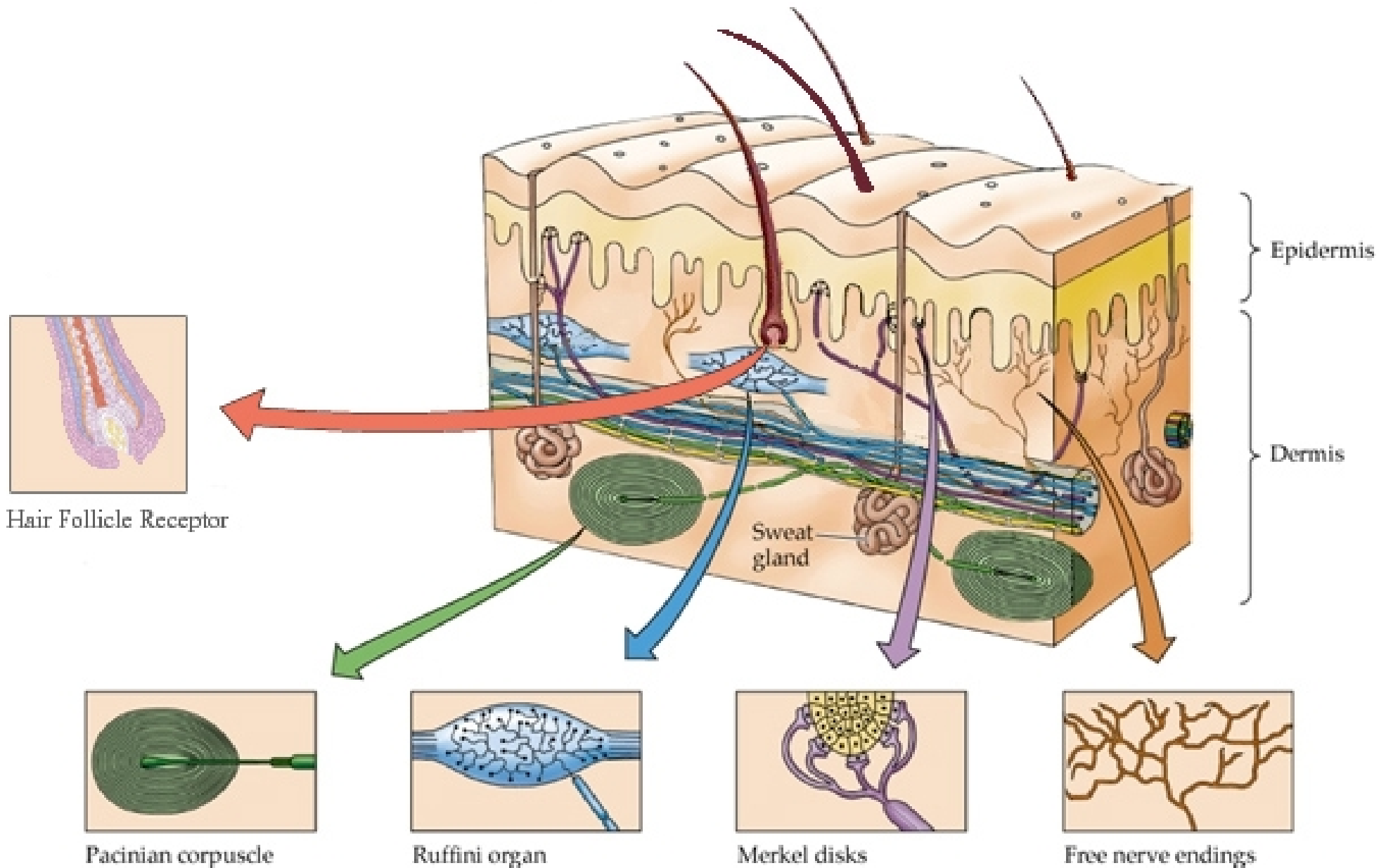
Pain receptor

Receptor sensitive to skin stretch

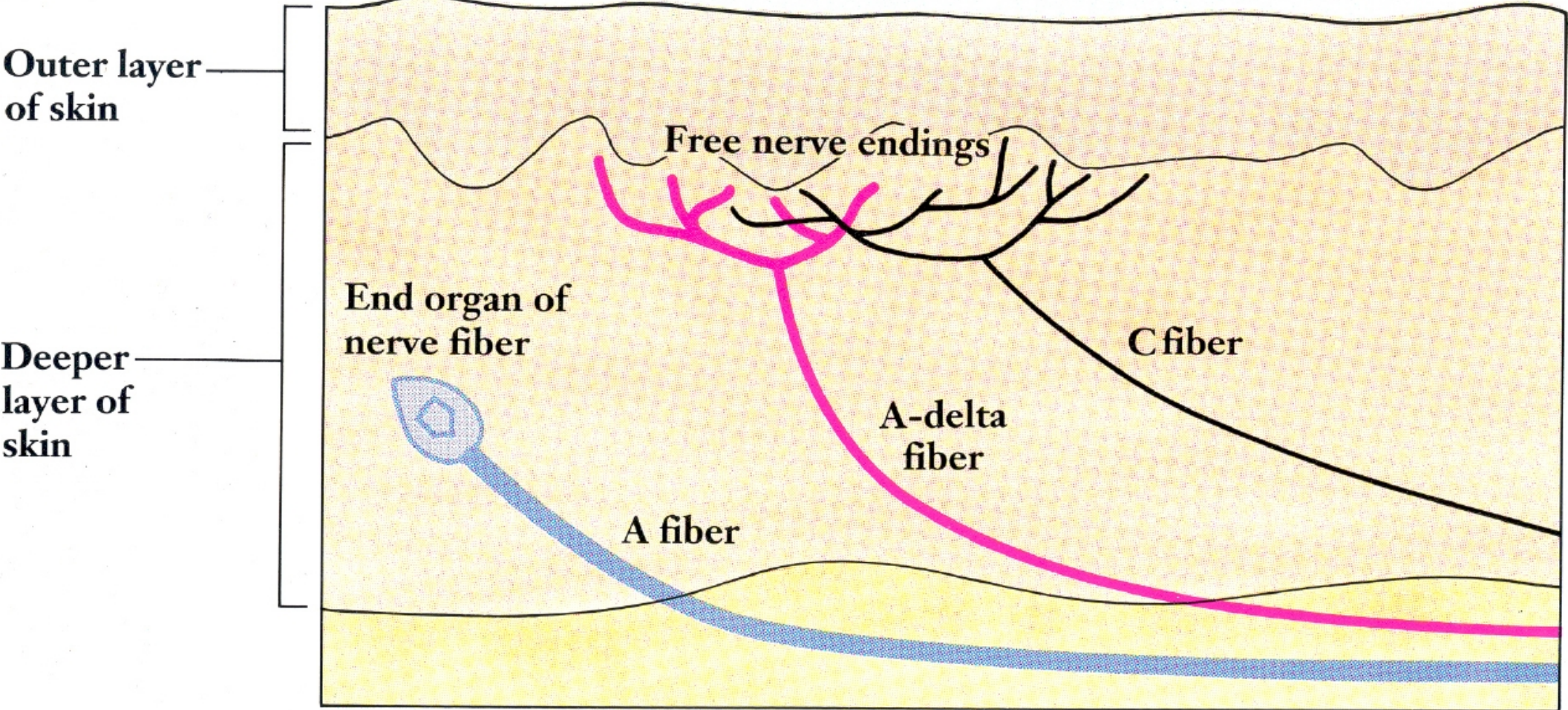
Receptor sensitive to sudden displacement of skin or high-frequency vibration



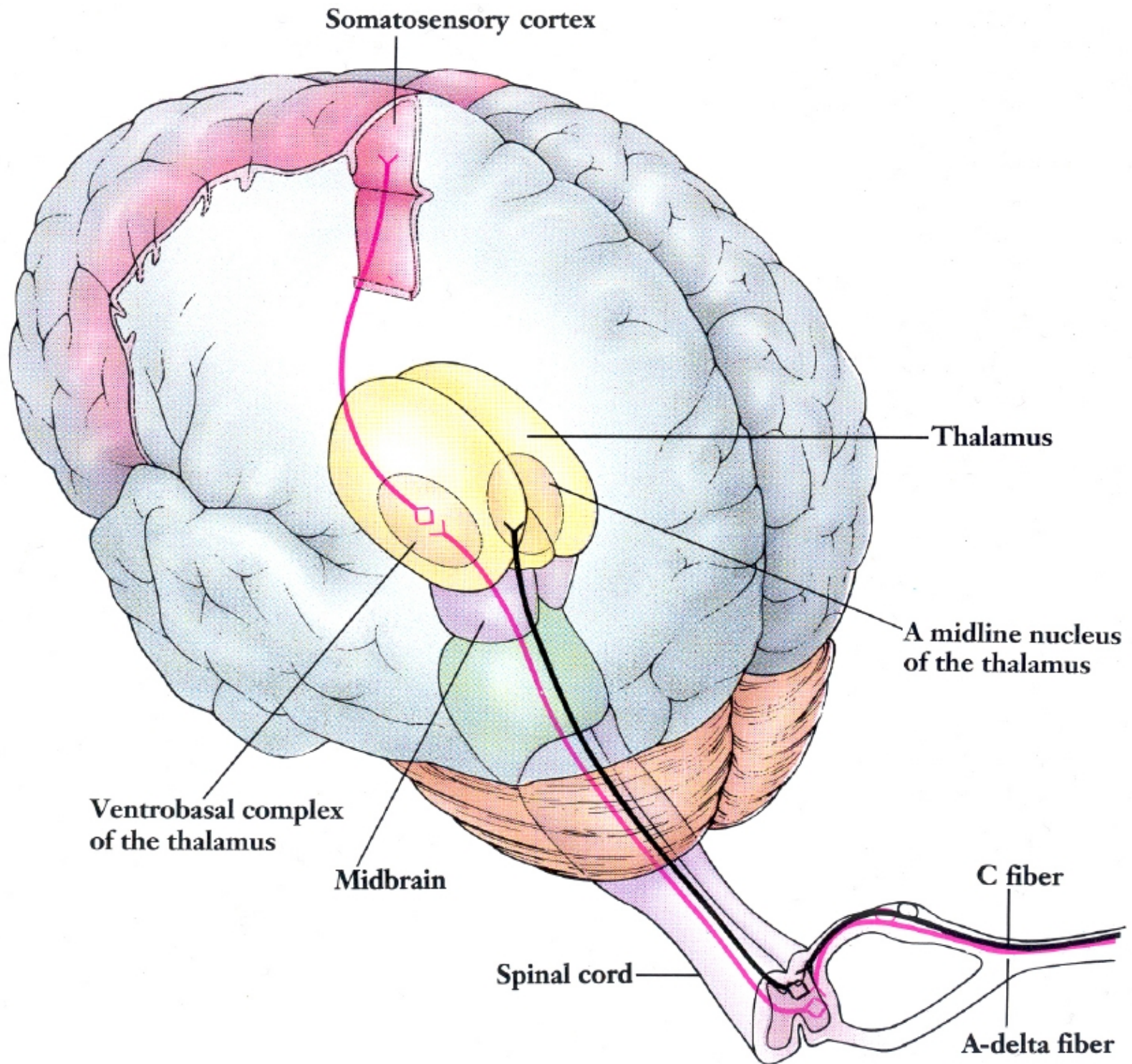
Mechanoreceptors of the Skin



Pain Receptors in the Skin

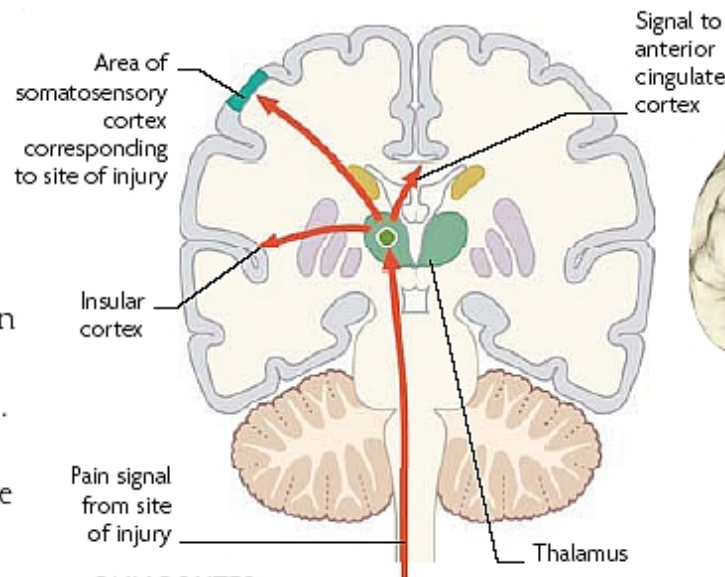


Pain pathways



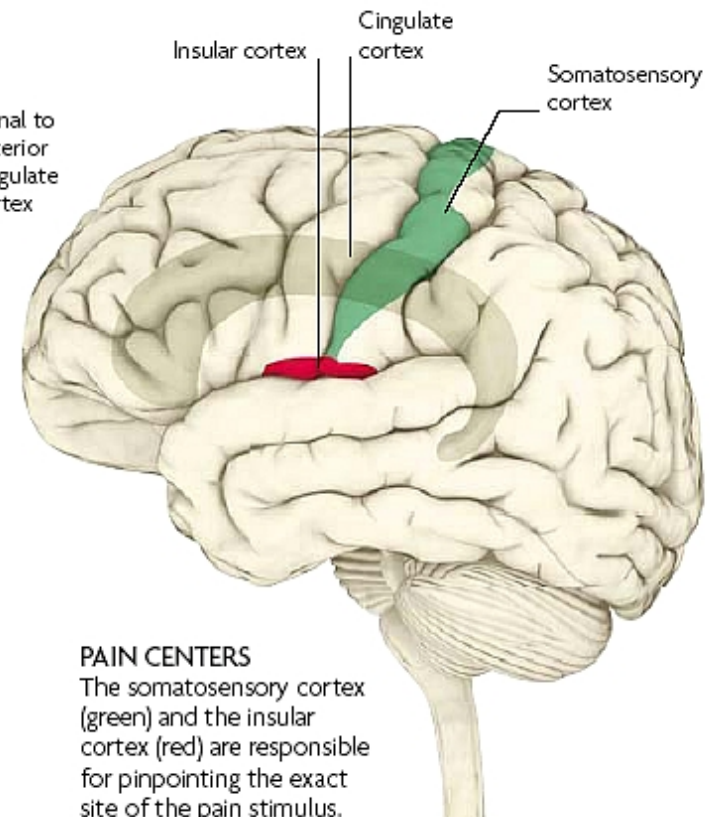
PATHWAY OF PAIN

Pain signals are transmitted to several areas of the cortex, where they activate neurons that monitor the state of the body. Two such areas are the somatosensory cortex, which lets the brain know which part of the body the pain stems from, and the insular cortex—the deep fold that divides the temporal and frontal lobes. The other cortical site associated with pain experience is the anterior (front) of the cingulate cortex (ACC), which lies in the groove between the hemispheres. The ACC seems to be particularly concerned with the emotional significance of pain and with determining how much attention an injury should command.



PAIN ROUTES

Pain signals from the body ascend to the brain via the spinal cord, then rise through the brainstem to the thalamus. Thereafter, they are distributed to various cortical areas for processing.



PAIN CENTERS

The somatosensory cortex (green) and the insular cortex (red) are responsible for pinpointing the exact site of the pain stimulus.

Organization of the Primary Motor Cortex and Somatosensory Cortex

