

SENSORY CORTEX,
THALAMUS,
MIDBRAIN,
MEDULLA,
SPINAL CORD.

Brainstem

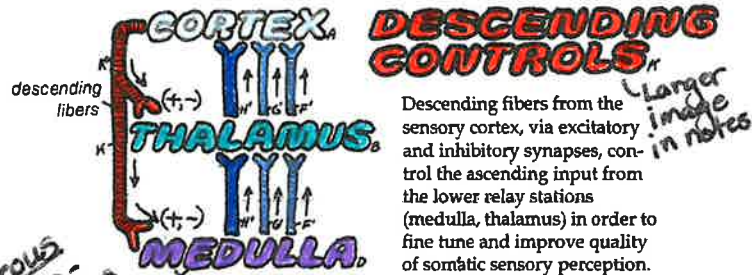
PAIN, WARMTH AND COLD:
LATERAL SPINOTHALAMIC
PATHWAY + p'

CRUDE TACTILE: TOUCH & PRESSURE
ANTERIOR SPINOTHALAMIC
PATHWAY + a'

Pain, thermal, and crude tactile sensations are conducted by thin unmyelinated (type C) fibers. Terminating in the dorsal horns, these fibers synapse with relay cells that cross the midline and ascend to the brain via the spinothalamic pathways (pain and temperature via lateral division; tactile via anterior division) to synapse in the thalamus. In midbrain and reticular formation, collateral synapses are made for midbrain motor reflexes and arousal, respectively. Synapses in the thalamus integrate and relay sensory signals to the somatic sensory cortex for higher perception. Sensations produced by this projection system are crude and diffuse.

DISCRIMINATIVE TACTILE:
 FINE TOUCH & PRESSURE 2-POINT DISCRIMINATION VIBRATION
OR PROPRIOCEPTION:
POSTERIOR COLUMN
PATHWAY

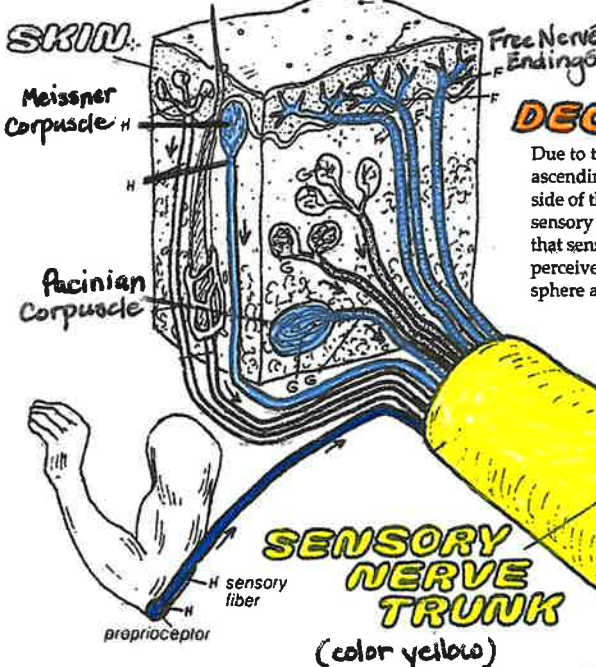
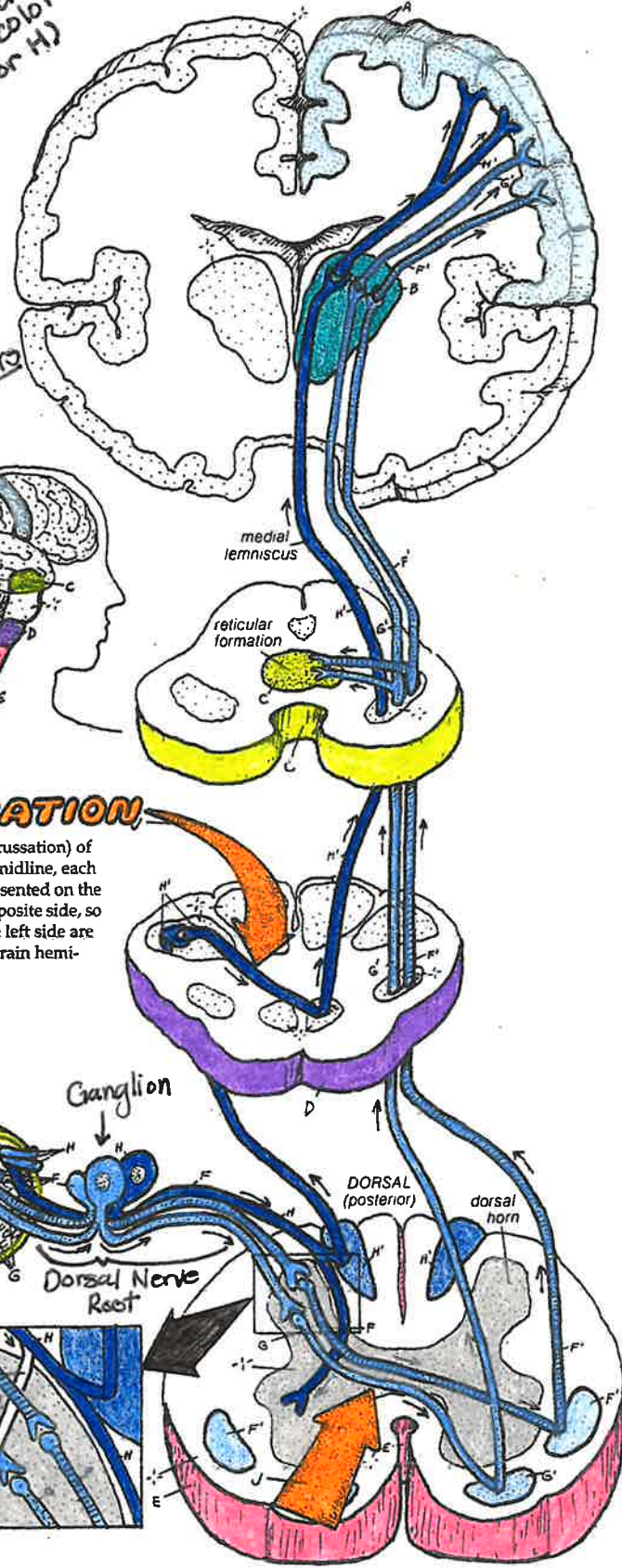
Signals from discriminative tactile senses (fine touch, pressure, vibration, two-point discrimination) as well as from kinesthetic and proprioceptive senses (limb and body position) are conducted by thick, myelinated (type A) fibers. After sending collaterals to the dorsal horn for reflexes, the main central processes ascend in the dorsal columns to synapse in the brain medulla. Relay cells cross the midline and form the medial lemniscus pathway, which ascends to thalamus. Thalamic fibers (somatic radiation) project to the somatic sensory cortex (postcentral gyrus). This system is responsible for fine tactile discrimination, for exact stimulus localization in the body and skin, and for body image and position.



DESCENDING CONTROLS
 Descending fibers from the sensory cortex, via excitatory and inhibitory synapses, control the ascending input from the lower relay stations (medulla, thalamus) in order to fine tune and improve quality of somatic sensory perception.
 Larger image in notes

Articular Mechanoreceptors
 (color a different shade of color chosen for H)

Articular Mechanoreceptors



DECUSSATION
 Due to the crossing (decussation) of ascending fibers at the midline, each side of the body is represented on the sensory cortex of the opposite side, so that sensations from the left side are perceived by the right brain hemisphere and vice versa.

COLLATERAL REFLEX FIBERS

