

Examination of sensory system

- Nervous system

Composed of :-

- 1- central NS -----brain & spinal cord
- 2- peripheral NS-----cranial & spinal nerves
- & 3- autonomic nervous system sympathetic & parasympathetic

Peripheral NS three types of fibers

- Somatic (Sensory & Motor).
- autonomic

Sensation occur through sensory receptors

Ex. Of sensory receptors are

A- Mechanoreceptors

- I. Free nerve ending
- II. Merkel's discs
- III. Spray endings
- IV. Ruffini's endings
- V. Encapsulated endings
- VI. Meissner's corpuscles
- VII. Krause's corpuscles
- VIII. Hair end-organs
- IX. Expanded tip endings
- X. Encapsulated endings
- XI. Pacinian corpuscles

Muscle receptors

- I. Muscle spindles
- II. Golgi tendon receptors

Hearing

Sound receptors of cochlea

Equilibrium

- I. Vestibular receptors

Arterial pressure

Baroreceptors of carotid sinuses and aorta.

B- Thermoreceptors

- I. Cold receptors
- II. Warm receptors

C- Nociceptors

- I. Pain Free nerve endings

D- Electromagnetic receptors

- I. Vision Rods Cones

E- Chemoreceptors

- I. Taste Receptors of taste buds
- II. Smell Receptors of olfactory epithelium
- III. Arterial oxygen Receptors of aortic and carotid bodies
- IV. Osmolality Neurons in or near supraoptic nuclei
- V. Blood CO₂ Receptors in or on surface of medulla and in aortic and carotid bodies
- VI. Blood [glucose](#), [amino acids](#), fatty acids Receptors in hypothalamus

Classification of sensory nerve fibers

Group Ia Fibers from the annulospiral endings of muscle spindles (average about 17 microns in diameter).

Group Ib Fibers from the Golgi tendon organs (average about 16 micrometers in diameter).

Group II Fibers from most discrete cutaneous tactile receptors and from the flower-spray endings of the muscle spindles (average about 8 micrometers in diameter).

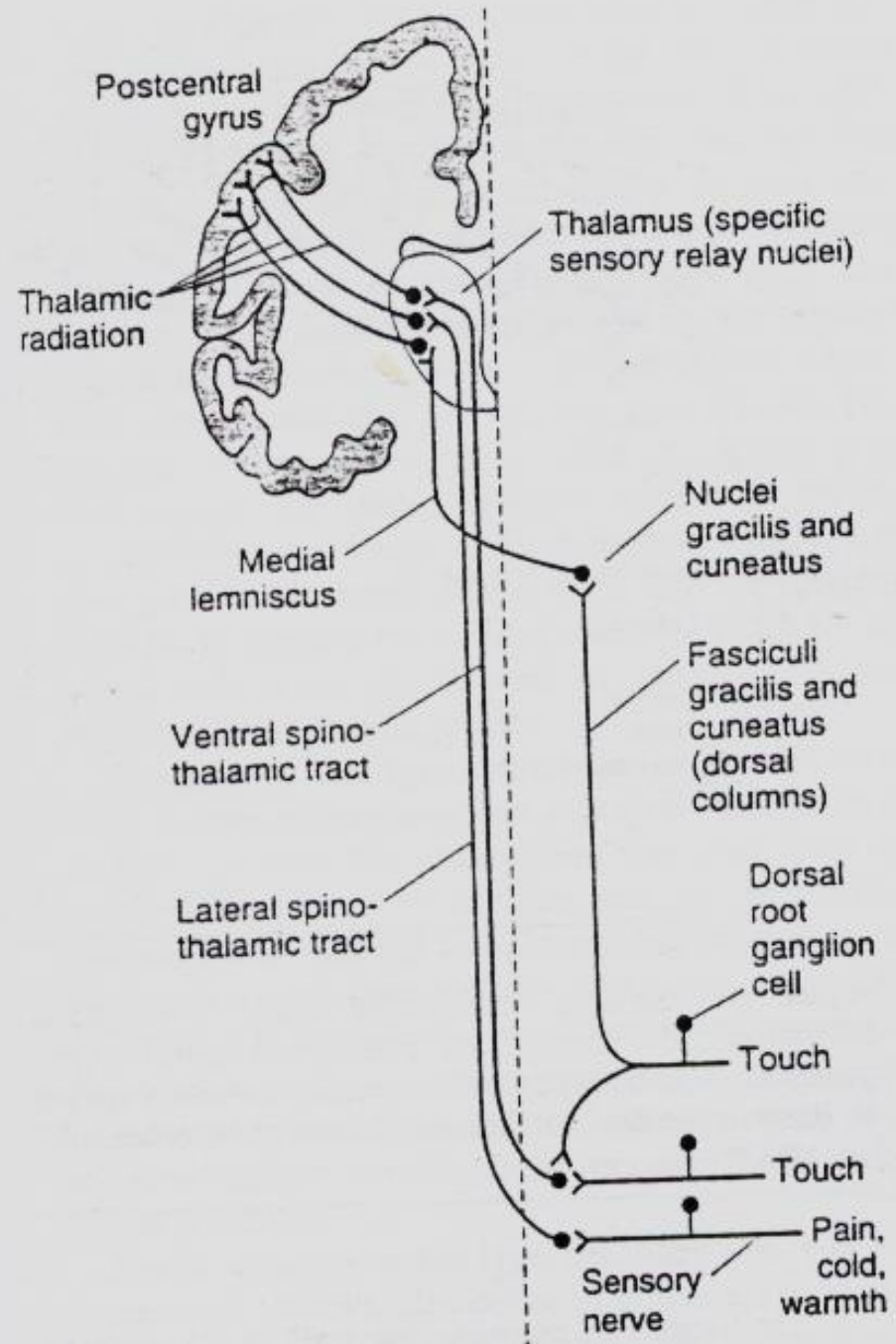
Group III Fibers carrying temperature, crude touch, and pricking pain sensations (average about 3 micrometers in diameter).

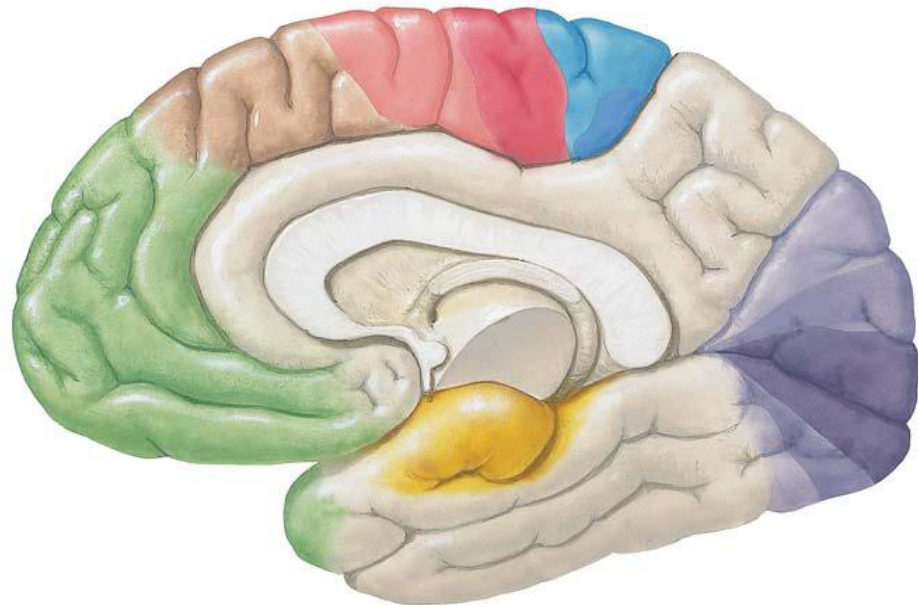
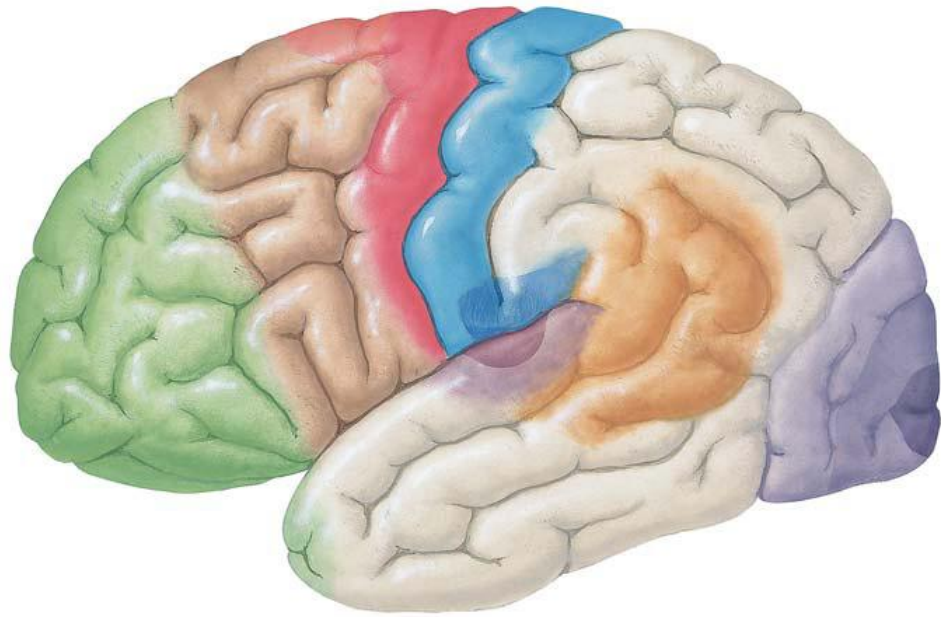
Group IV Unmyelinated fibers carrying pain, itch, temperature, and crude touch sensations (0.5 to 2 micrometers in diameter).

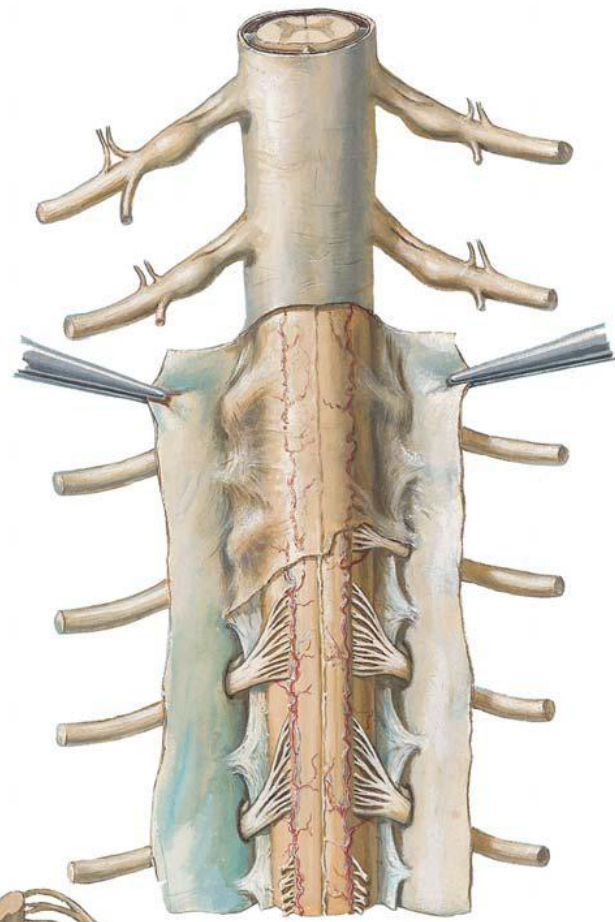
There are two sensory pathways in the body:-

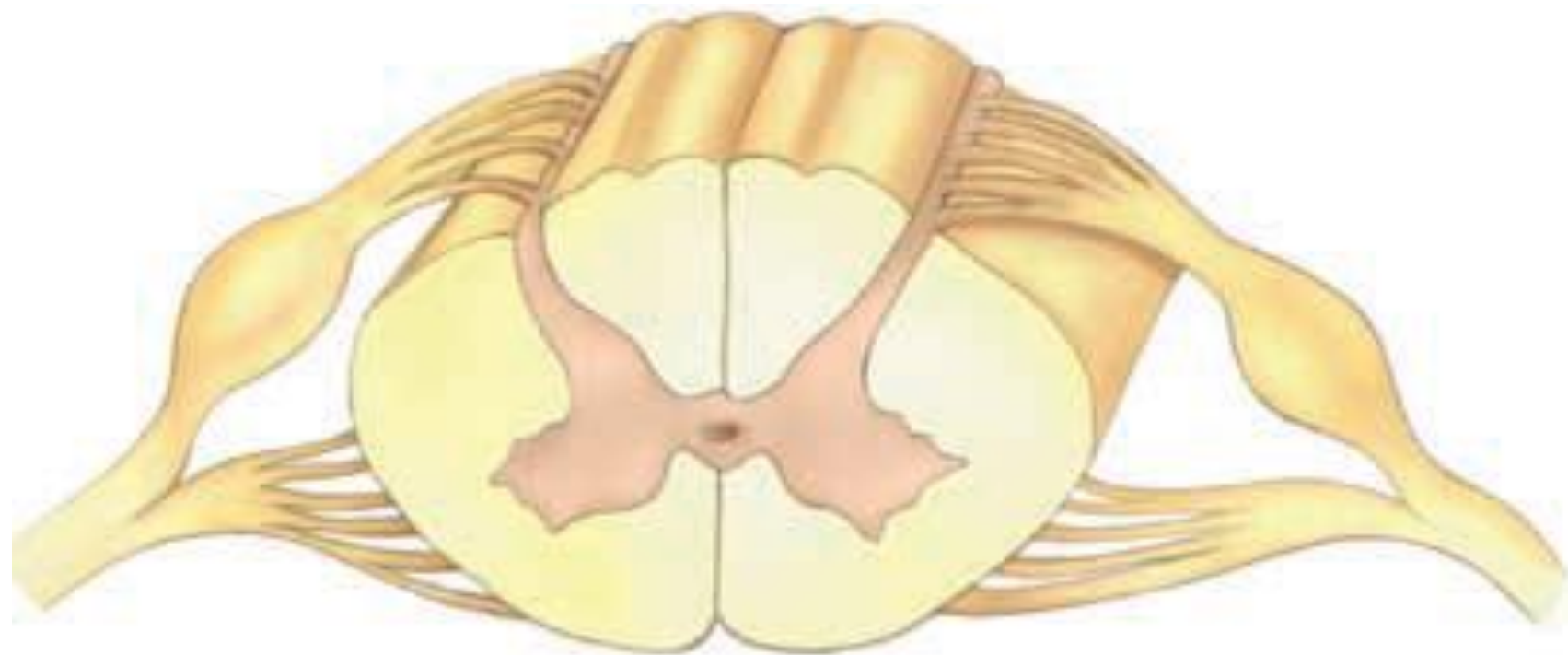
Dorsal spinothalamic tract mediate fine touch & proprioception (joint position, vibration and two point discrimination sensations).

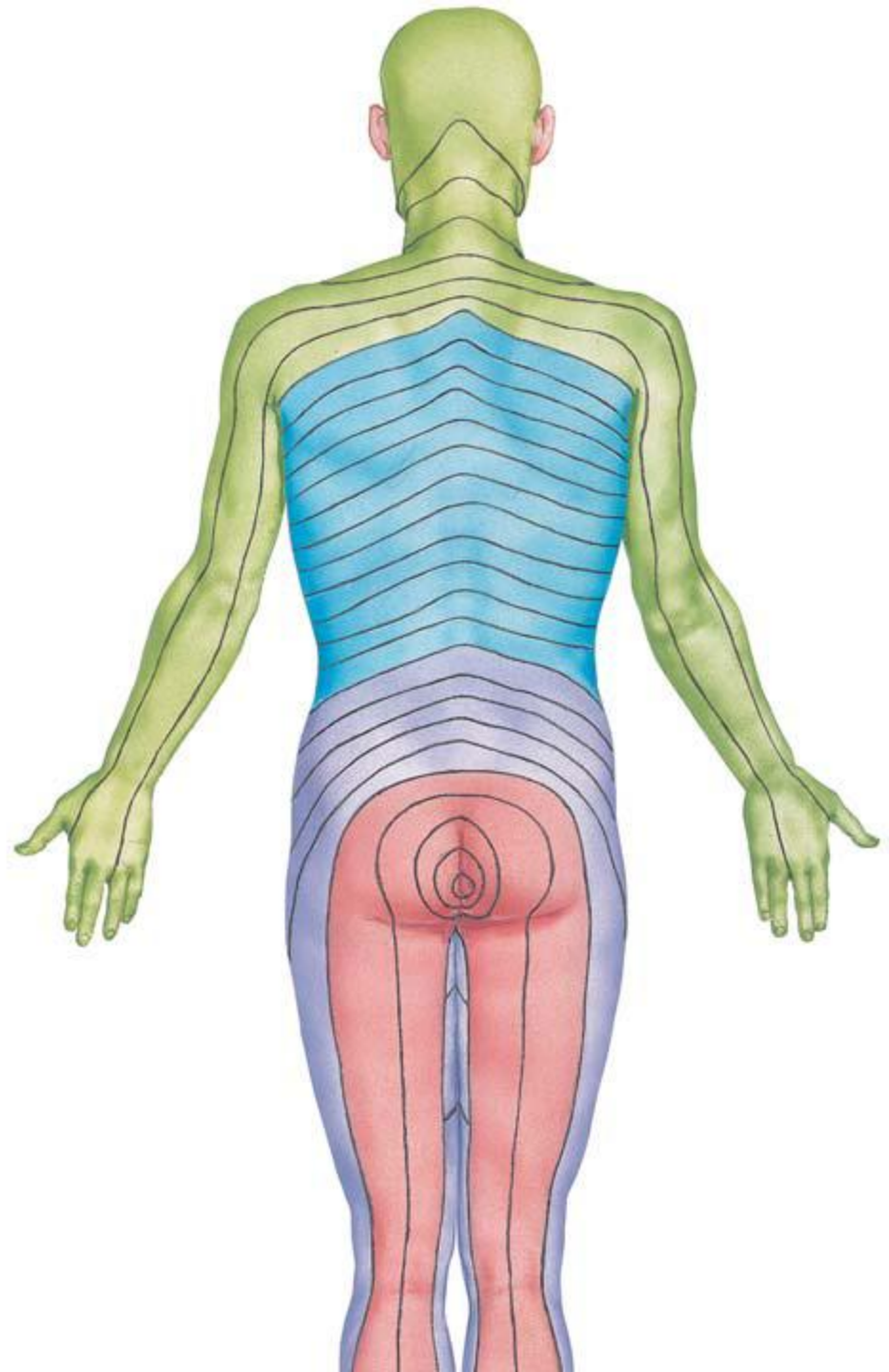
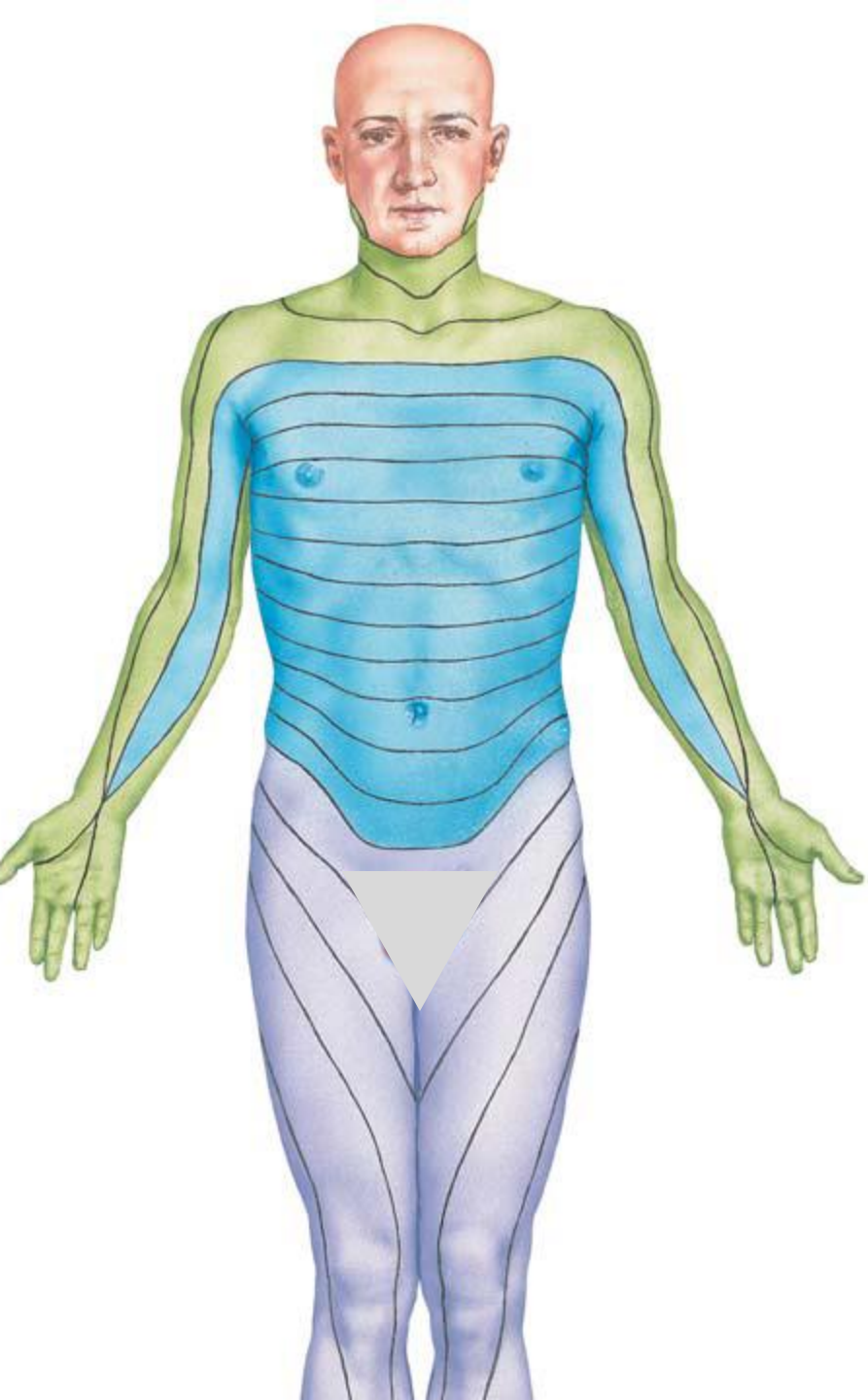
Lateral spinothalamic tract mediate crude touch, temperature, pain.











Term in sensation:

- 1- Hyposthesia: Decreased sensation.**
- 2- Hypersthesia: Increased sensation, subject feels a touch as pricking or burning sensation.**
- 3- Anesthesia: The sensation is completely abolished.**
- 4- Analgesia: Loss sensation of pain.**
- 5- Parasthesia: Tingling sensation.**

The sensory modalities that can be tested:

- 1- Touch (fine and crud) sensation.
- 2- Temperature (cold and warm) sensation.
- 3- Pain sensation.
- 4- Joint position sensation.
- 5- Two point discrimination.
- 6- Vibration sensation.
- 7- stereognosis
- 8- graphesthesia

The last 5 sensation called **higher cerebral functions**