מסלולי תחושה
ופגיעה תחושתית בטרשת נפוצה

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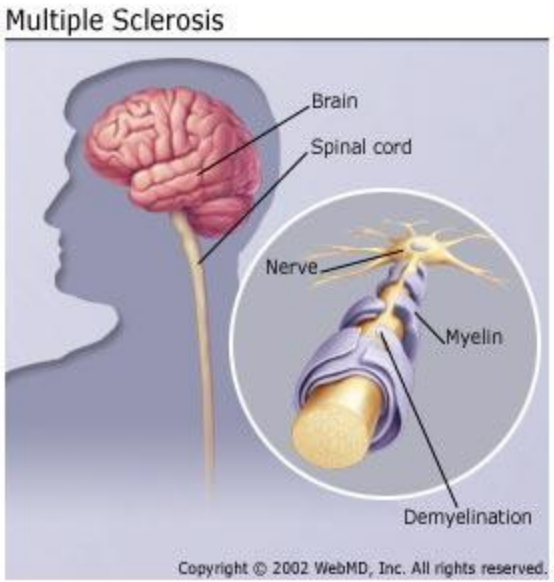
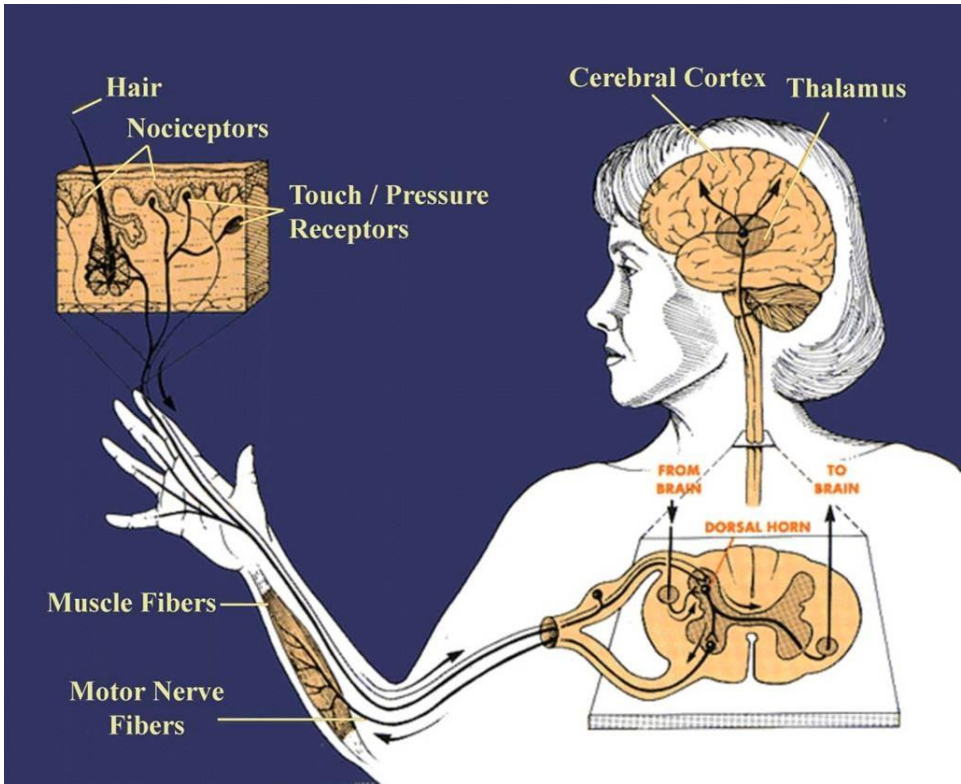
שנה 4 בתוכנית ה-4 שנתית
אוניברסיטת תל-אביב



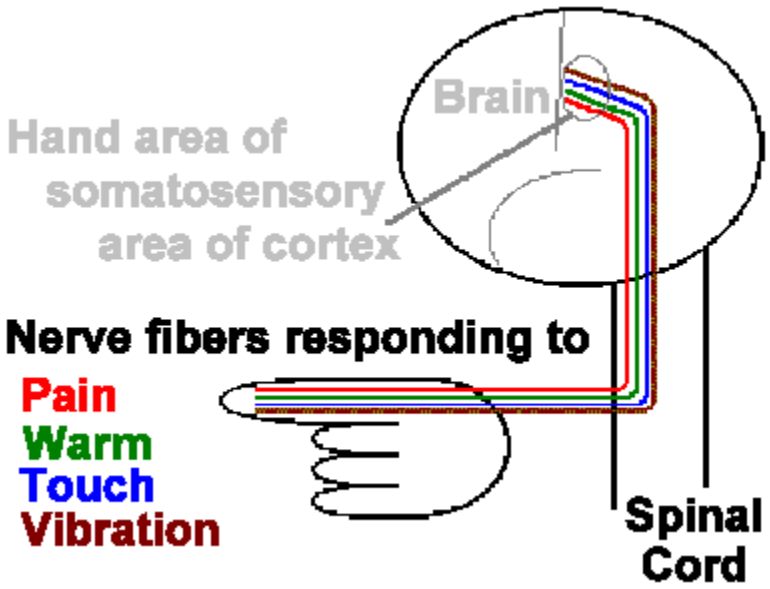
Somatosensory system

- Typically consists of three neurons
  1. **Primary** neuron – from periphery to spinal cord
  2. **Secondary** neuron – from spinal cord/medulla to thalamus
  3. **Tertiary** neuron – from thalamus to cortex

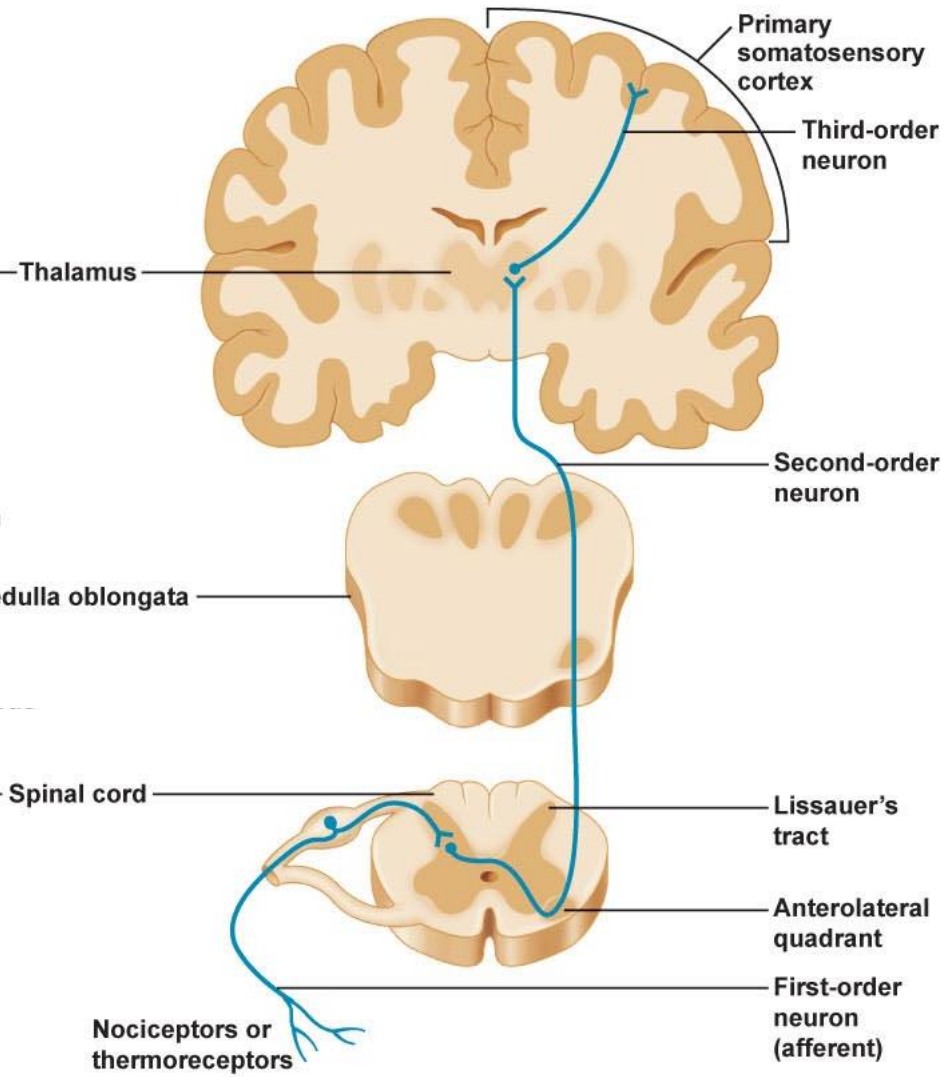


Sensory Tracts

1. Spinothalamic system
   - **Pain**
   - **Temperature**
   - Itch
   - Crude touch
2. Meidal Lemniscal System
   - **Discriminative touch**
   - **Vibration**
   - Proprioception



Spinothalamic tract

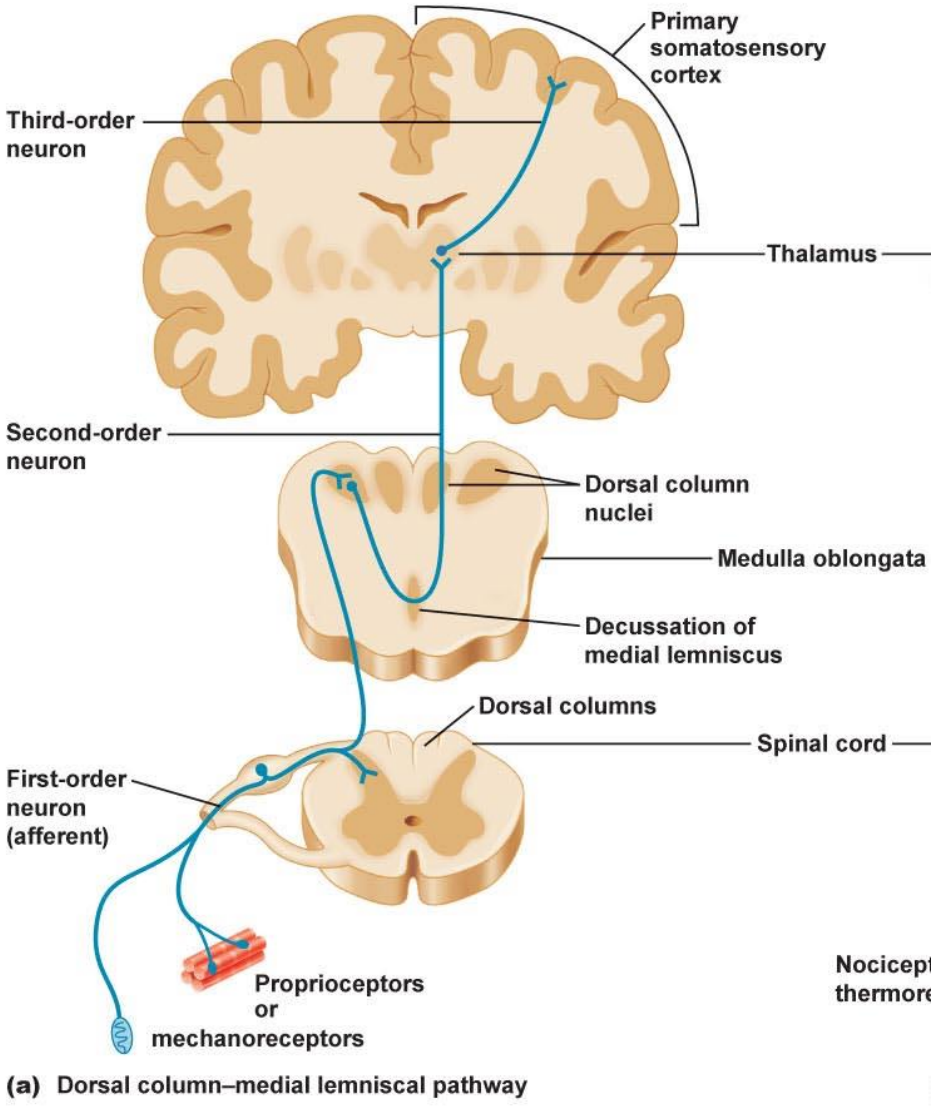


(b) Spinothalamic tract

Consists of three neurons:

1. Primary – cell body in **dorsal root ganglion**. Axon ends in posterior horn.
2. Secondary – cell body in the **posterior horn.** Decussation. Axon ends in the thalamus
3. Tertiary – cell body in thalamus. Axon ends in postcentral gyrus

Medial Lemniscal Tract



Consists of three neurons:

1. Primary – cell body in dorsal root ganglion. via Fasiculus gracilis/ cuneatus, to medulla.
2. Secondary – cell body in the **medulla.** Decussation. Axon ends in the thalamus.
3. Tertiary – cell body in thalamus, its axon ends in the postcentral gyrus

Sensory impairments in MS

Common? Significant?

Table 380-2 Initial Symptoms of MS

Symptom	Percent of Cases	Symptom	Percent of Cases
Sensory loss	37	Lhermitte's	3
Optic neuritis	36	Pain	3
Weakness	35	Dementia	2
Paresthesias	24	Visual loss	2
Diplopia	15	Facial palsy	1
Ataxia	11	Impotence	1
Vertigo	6	Myokymia	1
Paroxysmal attacks	4	Epilepsy	1
Bladder	4	Falling	1

Source: After WB Matthews et al, McAlpine's Multiple Sclerosis, New York, Churchill Livingstone, 1991.

Sensory loss

- Paresthesias (tingling, prickling, formications, "pins and needles," painful burning)
- Hyposthesia (reduced sensation, numbness)
- Unpleasant sensations (eelings that body parts are swollen, wet, raw, or tightly wrapped)
- Pain is a experienced by >50% of patients.

Optic Neuritis

- An inflammation of the optic nerve caused by swelling and destruction of myelin sheath
- Most common etiology is **multiple sclerosis**
- Presents as diminished visual acuity, dimness, or decreased color perception
- Generally monocular
- Periorbital pain often precedes or accompanies the visual loss.

Diplopia

- May result from internuclear ophthalmoplegia (INO) or from palsy of the sixth cranial nerve
- INO consists of impaired adduction of one eye due to a lesion in the ipsilateral medial longitudinal fasciculus
- Prominent nystagmus is often observed in the abducting eye
- A bilateral INO is particularly suggestive of MS

Bladder Dysfunction

- Present in >90% of MS patients
- During normal voiding, relaxation of bladder sphincter is coordinated with contraction of detrusor in the bladder wall
- *Motor-neuron component - Detrusor hyperreflexia*.
- *Sensory component - detrusor sphincter dyssynergia*, due to loss of synchronization between detrusor and sphincter muscles.
- Causes difficulty in initiating or stopping the urinary stream, producing hesitancy, urinary retention, overflow incontinence, and recurrent infection.