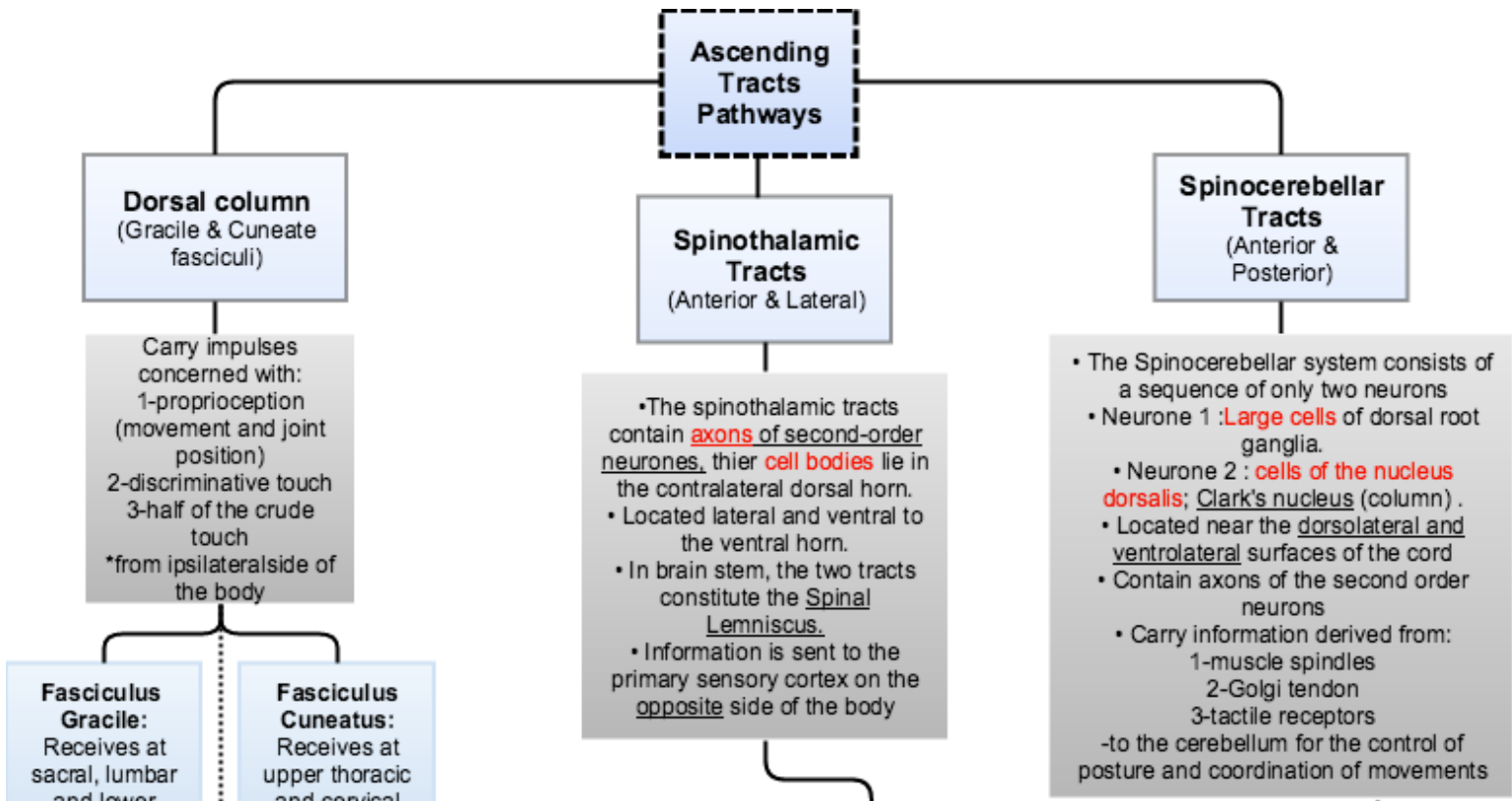


Created by: Nouf Alabdulkarim  
 Med 435



**Pathway**

1. Fibers ascend without interruption.
2. 2nd order neurons in nucleus gracilis and nucleus cuneatus.
3. The axons of the 2nd order neurons decussate in the medulla as internal arcuate fibers.
4. ascend through the brain stem as Medial Lemniscus.
5. terminates in the ventral posterior nucleus of the thalamus (3rd order neurons).
6. which project to the somatosensory cortex. (thalamocortical fibers)

Spinothalamic Tract	Lateral	Anterior
<b>Function</b>	Carries pain & Temperature to thalamus and sensory area of the cerebral cortex.	Carries 1/2 crude touch (non discriminative) & pressure to thalamus and sensory cortex.
<b>1<sup>st</sup> Neuron</b>	<b>Small</b> cells in the dorsal root ganglia.	<b>Medium</b> sized cells in the dorsal root ganglia.
<b>2<sup>nd</sup> Neuron</b>	Cells of substantia <b>gelatinosa of Rolandi</b> in the posterior horn.	-Cells of <b>main sensory nucleus or (nucleus proprius)</b> . -Fibers arising from Substantia Gelatinosa & Nucleus Proprius decussate in the <u>Anterior White Commissure</u>
<b>3<sup>rd</sup> Neuron</b>	Cells of ( <u>Ventral Posterior</u> ) nucleus of the thalamus.	Cells of ( <u>Ventral Posterior</u> ) nucleus of the thalamus.

SPINOCEREBELLAR TRACT	POSTERIOR PRESENT ONLY ABOVE LEVEL L3	Anterior
<b>CELL BODIES OF 2<sup>ND</sup> NEURON</b>	lie in <b>Clark's column</b>	lie in <b>base of the dorsal horn of the lumbosacral segments</b>
<b>AXONS OF 2<sup>ND</sup> NEURON</b>	terminate ipsilaterally (uncrossed) in the cerebellar cortex by entering through the <u>inferior cerebellar peduncle</u> .	1-cross to opposite side 2-ascend as far as the midbrain 3-then make a sharp turn caudally (the fibers cross the midline for the second time) 4-enter the <u>superior cerebellar peduncle</u> to terminate in the cerebellar cortex.
<b>CONCLUSION</b>	Posterior spinocerebellar tract convey sensory information to <b>the same</b> side of the cerebellum	Ventral spinocerebellar tract conveys sensory information to <b>the same</b> side of the cerebellum

Ascending Tracts Lesions		
Dorsal Column Tracts Lesion	Spinothalamic Tracts Lesion	Spinocerebellar Tracts Lesion
<b>Tabes Dorsalis</b>	<b>Syringomyelia</b>	<b>Friedrichs ataxia</b>
<p>A late manifestation of syphilitic infection on the CNS.</p> <p>-Affects the lumbosacral dorsal spinal roots and dorsal columns of the spinal cord.</p> <p>-Leads to loss of proprioception which is manifested by a high Step Page and unsteady gait (Sensory Ataxia).</p>	<p>-The central canal becomes enlarged forming a cavity compressing (affects) the adjacent nerve fibres serving pain and temperature as they decussate in the ventral white commissure close to the central canal.</p> <p>-Leads to selective loss of:</p> <ol style="list-style-type: none"> <li>1-pain and temperature in the upper limbs (dissociate sensory loss).</li> <li>2-Light touch and proprioceptive sensations are retained.</li> <li>3-Joints of the limbs become disorganized without discomfort (Charcot's joint).</li> </ol>	<p>-An inherited degenerated disease.</p> <p>-It begins in child hood</p> <p>-Wheelchair is bound by 20 year of age.</p> <p>-Affecting the spinocerebellar tracts.</p> <p>-Leading to:</p> <ol style="list-style-type: none"> <li>1-incoordination of arms.</li> <li>2-intense tremor.</li> <li>3-wide base reeling gait ataxia</li> </ol>
<b>Subacute Combined Degeneration of the spinal cord</b>		
<p>-A systemic disease results from B12 deficiency</p> <p>-Affects Dorsal column and Lateral columns (combined) --</p> <p>Leads to Sensory Ataxia causing weak and spastic limbs</p> <p>-It is completely recovered by proper treatment with B12</p>		
<b>Multiple Sclerosis</b>		
<p>-An immune disease</p> <p>-Affects specifically <u>fasciculus Cuneatus</u> of the <u>cervical</u> region.</p> <p>-Leads to loss of proprioception in hands and fingers (Asteriognosis)</p>		