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NURSING SCIENCE

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SOMATOSENSORY PATHWAY

A somatosensory pathway will typically consist of three neurons: primary, secondary, and tertiary. In the periphery, the primary neuron is the sensory receptor that detects sensory stimuli like touch or temperature.

- The somatosensory tracts (also referred to as the somatosensory system or somatosensory pathways) process information about somatic sensations such as pain, temperature, touch, position, and vibration. This information is received through receptors inside or at the surface of the body. It is then processed by one of a number of complex systems of neurons and pathways, depending on what information has been received.
- The somatosensory system consists of the two main paired pathways that take somatosensory information up to the brain: the medial lemniscal or posterior pathway, and the spinothalamic or

anterolateral pathway.

Summary of Somatosensory pathway

- Somatosensory pathways start by specialized receptors in the periphery receiving information and transmitting this through a series of neurons and synaptic relays in the central nervous system. The two main sensory pathways are the dorsal column pathway which conveys information regarding fine touch, vibration, proprioception, and two-point discrimination and the spinothalamic or anterolateral pathway which conveys information on crude touch, pain, and temperature.

Somatosensory pathways

The nervous system can be split into an afferent or sensory division and an efferent or motor division.

The afferent division brings sensory information from the outside world into the brain.

- Sensory information may involve special senses - so vision, hearing, taste, and smell - as well as general somatic senses, so the somatosensory system, which is involved in the sense of touch, proprioception, pain, and temperature. These sensations are transduced by sensory receptors, which are present in the cell

membrane of highly specialized cells found all over the body.

- According to the stimulus they respond to, sensory receptors are classified as mechanoreceptors for touch and proprioception, nociceptors for pain, and thermoreceptors for temperature.
- neurons are the main cells of the nervous system. They're composed of a cell body, which contains all the cell's organelles, and nerve fibers, which are projections that extend out from the neuron cell body. These are either dendrites that receive signals from other neurons, or axons that send signals along to other neurons.
- Where two neurons come together is called a synapse, and that's where one end of an axon sends neurotransmitters to the dendrites or directly to the cell body of the next neuron in the series.
- To trigger the release of neurotransmitters, neurons use an electrical signal that races down the axon, known as the action potential.
- To help speed up that electrical signal, some axons are intermittently wrapped by a fatty protective sheath called myelin, which comes from glial cells like

oligodendrocytes in the central nervous system, and Schwann cells in the peripheral nervous system.

- Somatic senses are sometimes referred to as somesthetic senses, with the understanding that somesthesia includes the sense of touch, proprioception (sense of position and movement), and (depending on usage) haptic perception.

2.) The mapping of the body surfaces in the brain is called somatotopy. In the cortex, it is also referred to as the cortical homunculus. This brain-surface ("cortical") map is not immutable, however. Dramatic shifts can occur in response to stroke or injury.