The Nervous System

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Function of the Nervous System

The nervous system is a network of neurons that make connections and transmit messages throughout the body. In vertebrates, the central nervous system is characterized by the spinal chord, the brain, and the retina.

http://en.wikipedia.org/wiki/Nervous_system

CNS

The central nervous system comprises the brain, the spinal chord, and the retina. The spinal chord receives and transmits information from the peripheral nervous system to the brain. This includes sensory information from cardiac, skeletal and smooth muscles. The brain is the receiver of all sensory information that comes from the spinal chord and from nerves. Most of the brain's capabilities are used in receiving nerve signals and responding with the appropriate coordinated motor outputs.

http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/C/CNS.html

PNS

The two kinds of cells in the PNS are sensory and motor cells. Sensory cells transmit information to the CNS and motor cells bring information back from the CNS to other parts of the body such as muscles, organs, etc. Motor cells in the nervous system are made up of 2 parts, the somatic and autonomic nervous system. The somatic system controls voluntary muscles. The autonomic system controls involuntary muscles. The brain receives information from the organs and muscles from the PNS via spinal and cranial nerves.

http://biology.about.com/od/organsystems/a/aa061804a.htm

Parts of CNS

The CNS contains two different types of tissue: gray matter and white matter. Gray matter is made up of nerve cells, dendrites and axons. White matter contain mostly axons. Axons are portions of neurons that conduct electric signals away from the cell. Dendrites also conduct electricity.

http://mcb.berkeley.edu/courses/mcb135e/central.html

Parts of PNS

Sensory Nervous System-transmits info to CNS from organs

Motor Nervous System-info sent from CNS to organs

Somatic Nervous System-controls skeletal muscle, voluntary muscle

Autonomic Nervous System-controls involuntary muscle

Sympathetic- Controls actions that increase use of energy

Parasympathetic- controls actions that conserve energy

http://biology.about.com/od/organsystems/a/aa061804a.htm

Nerve Impulse

Nerve impulses are generated by the release of an action potential. In an action potential, part of the neuron's membrane opens to bring in positively charged ions and cast out negatively charged ions, making the nerve fiber increasingly positive. Once the charge reaches a tipping point, the charge is discharged down the nerve as an electrical pulse. The pulse continues down the nerve by a series of action potentials. http://psychology.about.com/od/aindex/g/actionpot.htm

Neurotransmitters

Neurotransmitters are chemicals that exchange information throughout the brain and body. Neurotransmitters conduct messages between neurons. They regulate everything from our emotions to muscle movement. The two types of neurotransmitters are inhibitory and exhitatory, the former calms the brain while the latter stimulates it.

http://www.neurogistics.com/TheScience/WhatareNeurotransmi09CE.asp

EPSP vs. IPSP

Postsynaptic conductance changes and the potential changes that go along with them alter the probability that an action potential will be produced in postsynaptic cells. Sometimes synaptic action increases the chances of an action potential in postsynaptic cells, and sometimes it decreases the chances of the occurrence of an action potential. Excitatory PSPs increase the likelihood while Inhibitory PSPs decrease likelihood.

http://www.ncbi.nlm.nih.gov/books/NBK11117/

Disorders: Alzheimer Disease

A) Alzheimer's is a disease that causes dementia, most commonly among the elderly, and the cause is still not completely known.

B) Alzheimer's can cause memory loss, dementia, and a decrease in brain mass are all symptoms of Alzheimer's

C) Alzheimer's is the most common causation of dementia, and it is estimated it effects 26.6 million people worldwide.

D) Because the cause is unknown, treatment is limited. Today, scientists are looking into genetics to find cures for Alzheimer's. Usually there is a 70 to 90 percent decrease in the enzyme that produces the neurotransmitter acetlycholine, as well as other unnatural neurotransmitter levels, which could lead us to find a cure to Alzheimer's.

http://www.sci.uidaho.edu/med532/alzheimer.htm
http://en.wikipedia.org/wiki/Alzheimer's_disease

Disorders: Multiple Sclerosis

A) Multiple Sclerosis is a chronic disease that often leads to neurological deterioration and ataxic paraplegia, and it is found more commonly in women than men.

B) MS symptoms occur in cycles and the symptoms include lesions throughout the CNS, which can cause vision problems and coordination problems. Kinks in blood clots can also result from MS.

C) The prevalence of MS is between every 2 to 150 people per 100,000 people. It is the most common demyelinating disease in humans.

D) There is no cure as of now for MS, but it can be treated medicinally, with therapy, and with dietary regimens.

http://www.sci.uidaho.edu/med532/multiple_sclerosis.htm
http://en.wikipedia.org/wiki/Multiple_sclerosis#Management