The Nervous System

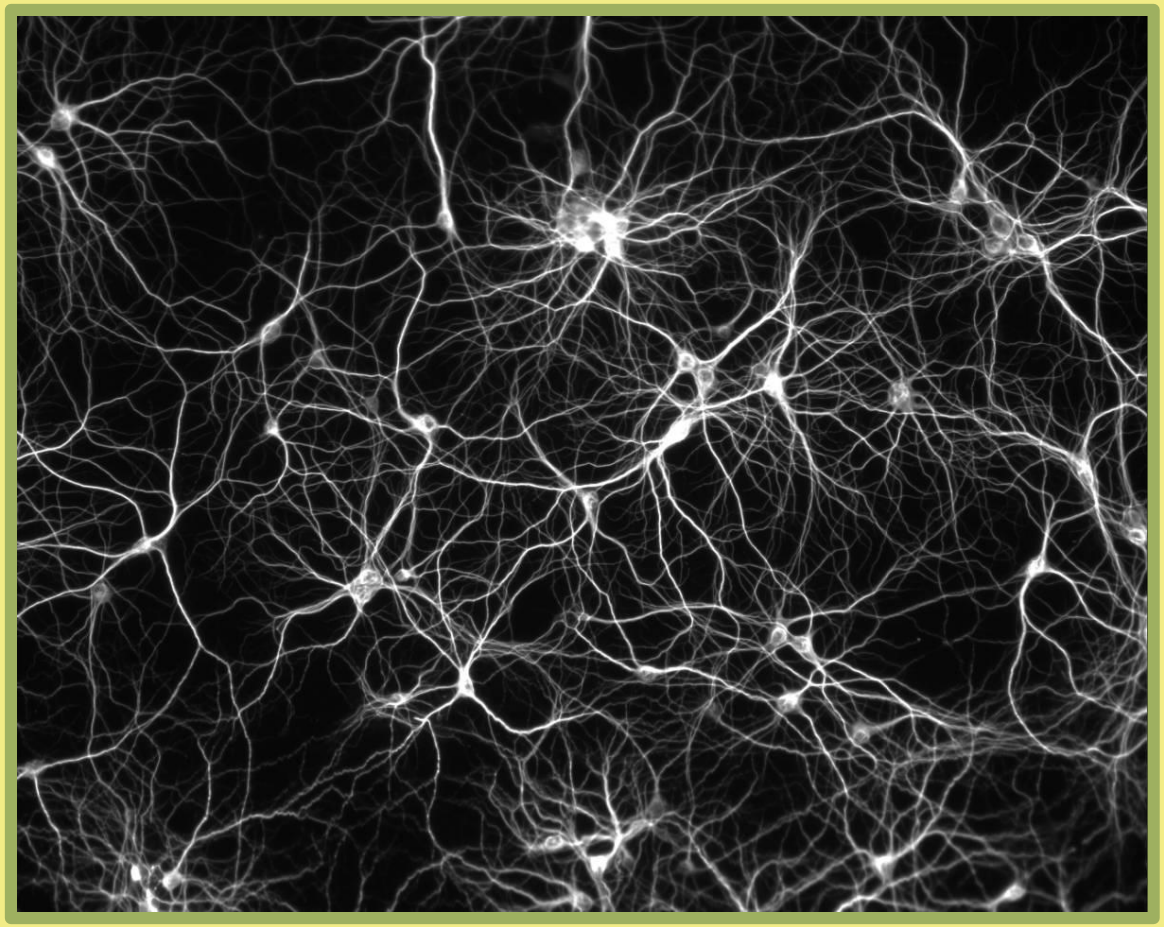
List as many words you can think about having to do with the nervous system….

GO ! ! !

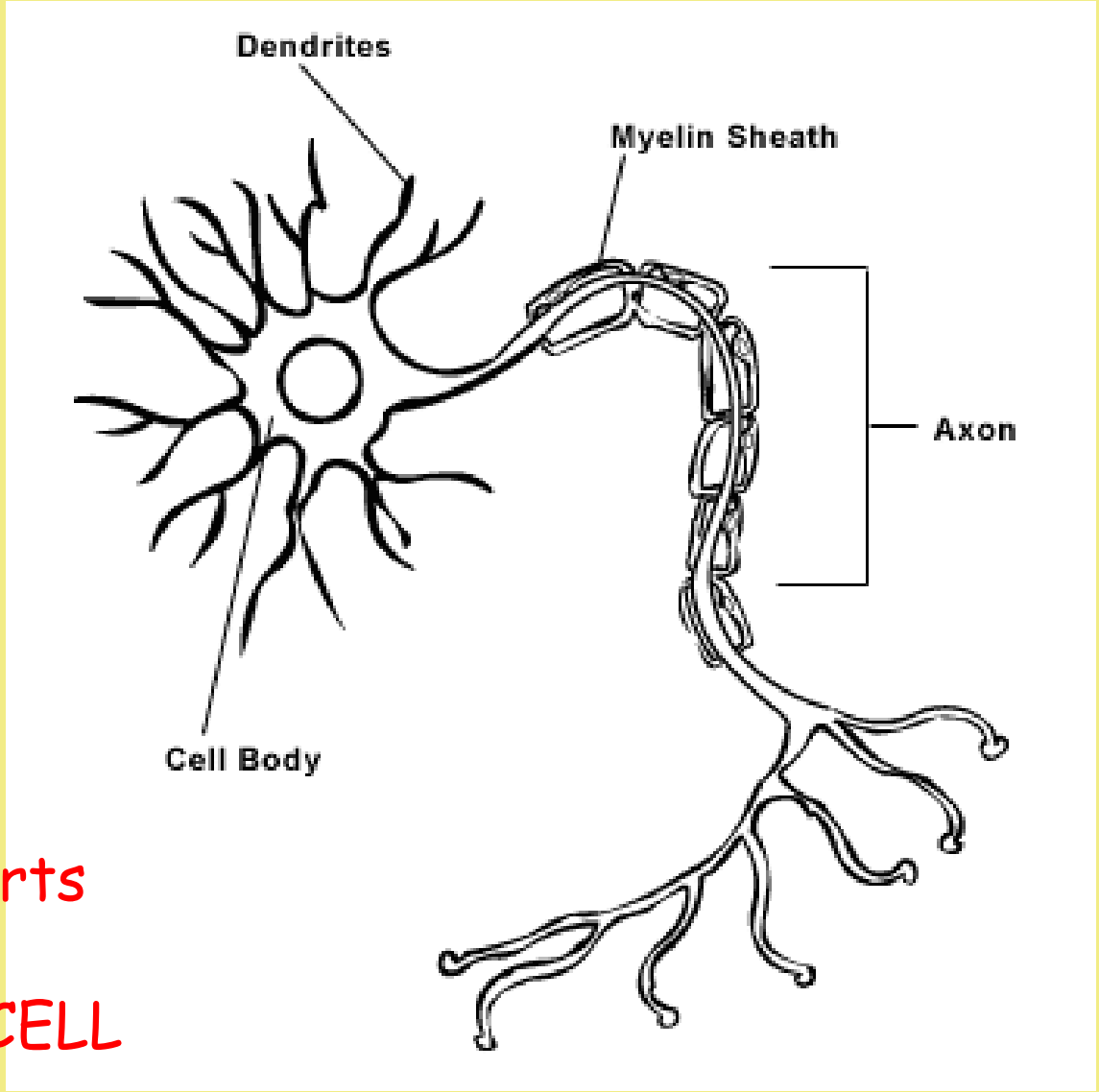
Explain what happens when a you kick a soccer ball…..

http://www.brainpop.com/health/bodysystems/neurons/

Nerve cells are called NEURONS.
They are highly specialized for the transmission of signals from one part of the body to another.

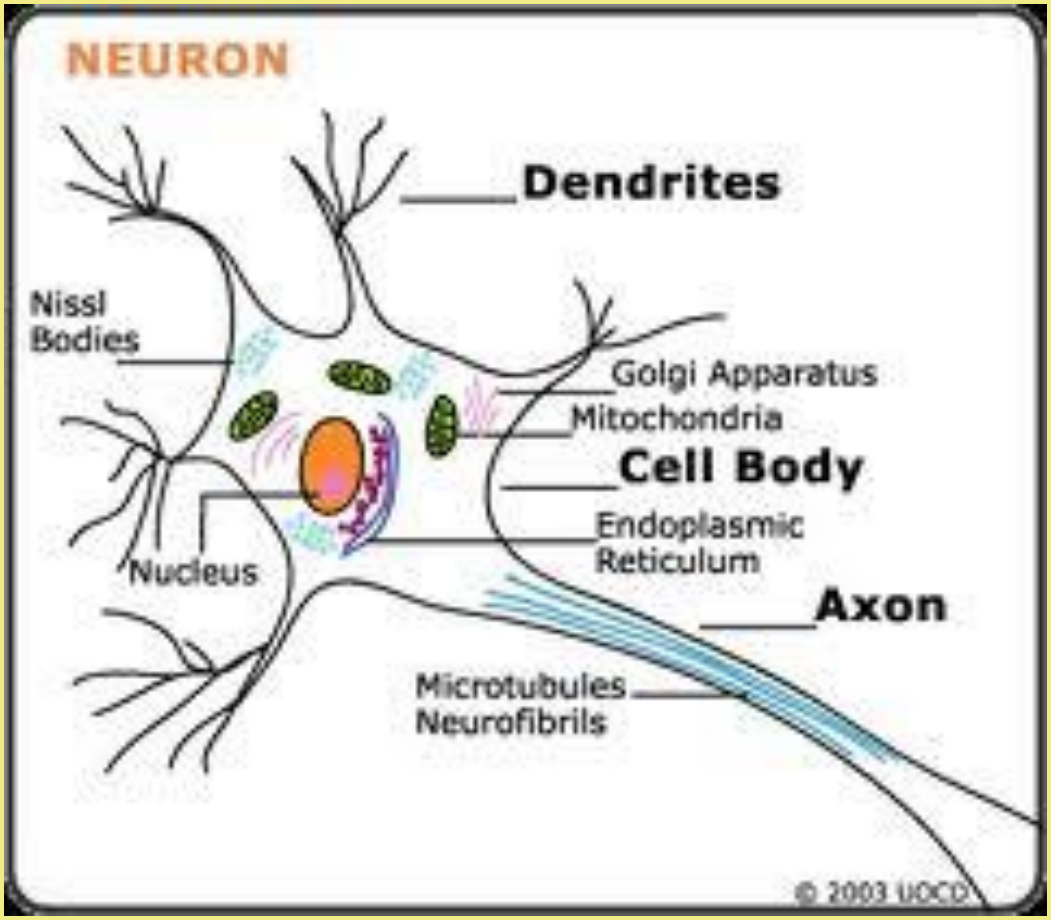


The signal a nerve cell carries is called an IMPULSE.



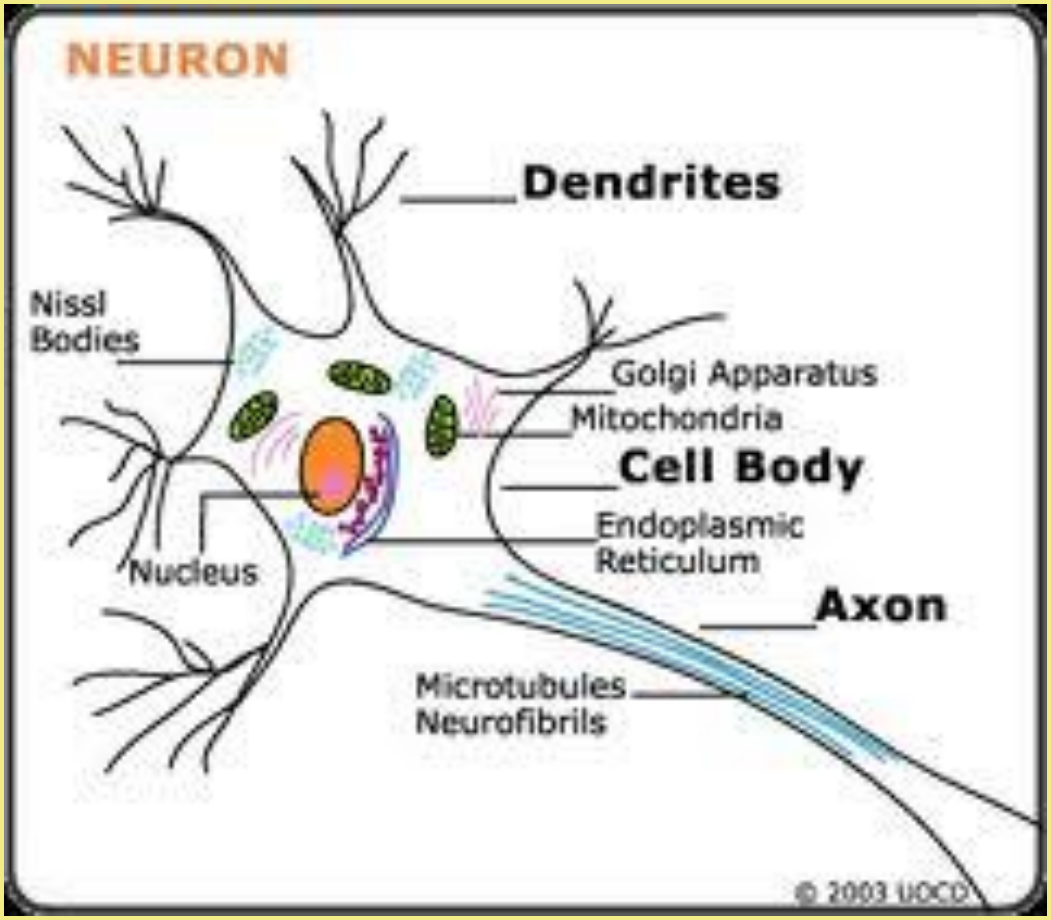
The three main parts of a neuron are The DENDRITES, CELL BODY, and AXON.

The CELL BODY contains the cell's nucleus, mitochondria, and other organelles.

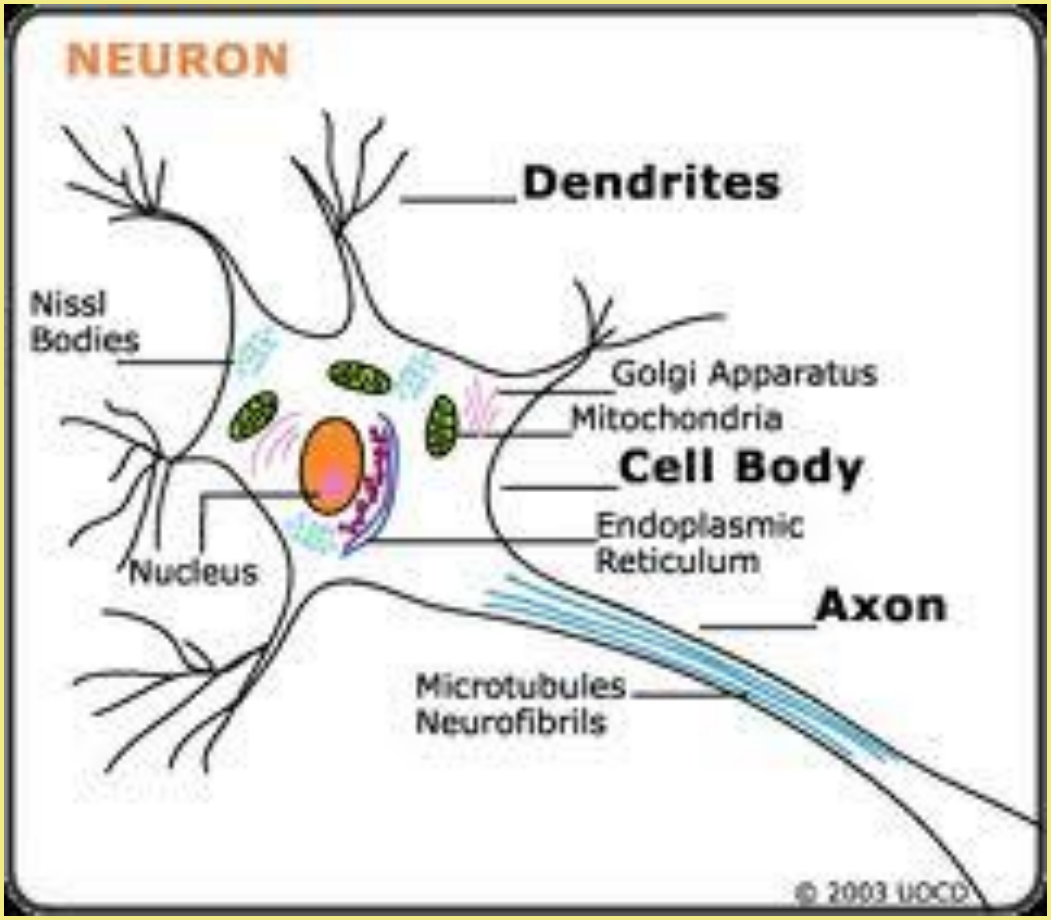


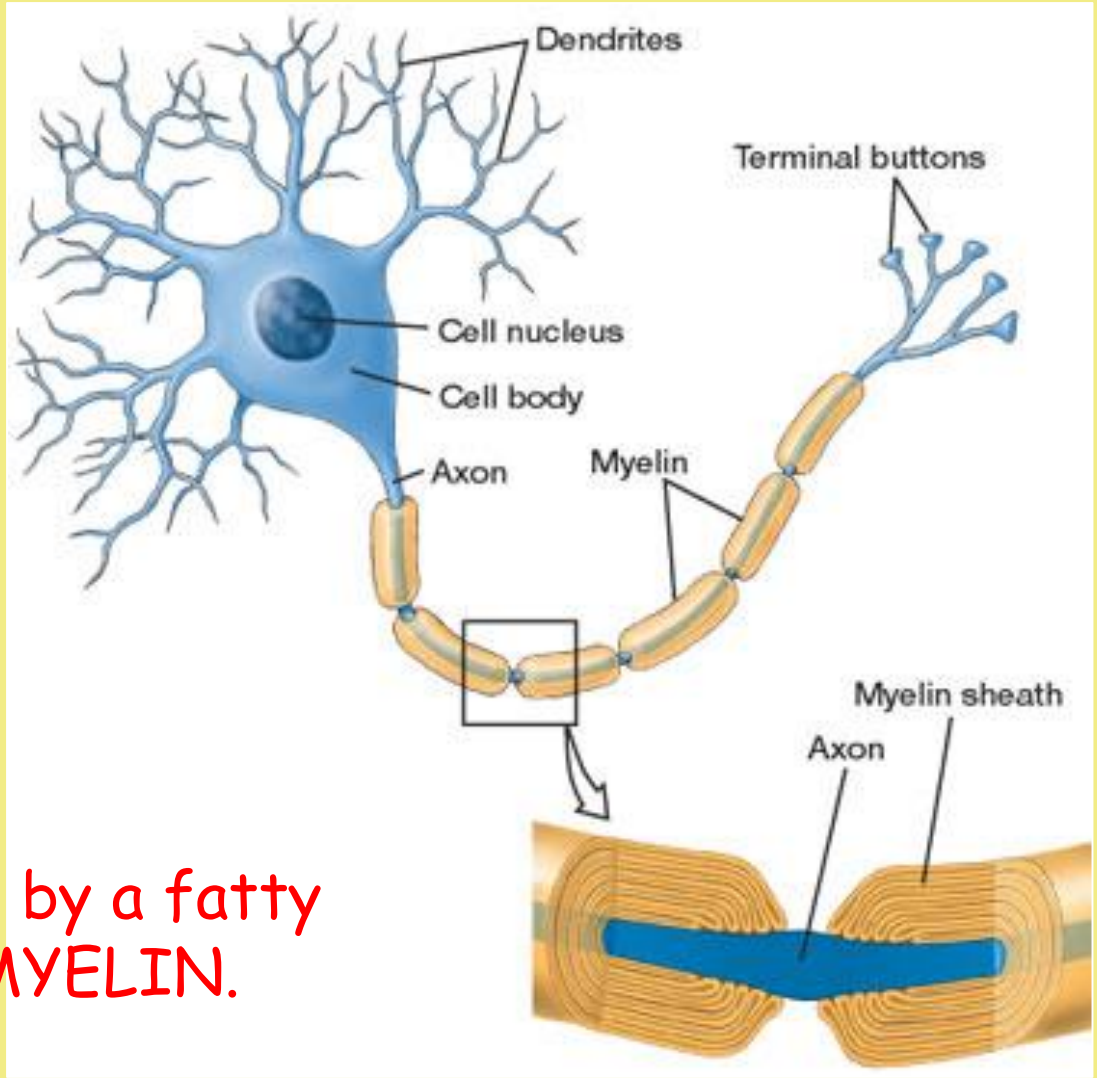
DENDRITES are the sensors.

They have branches for receiving impulses.



The AXON carries impulses away from the cell body to another cell.

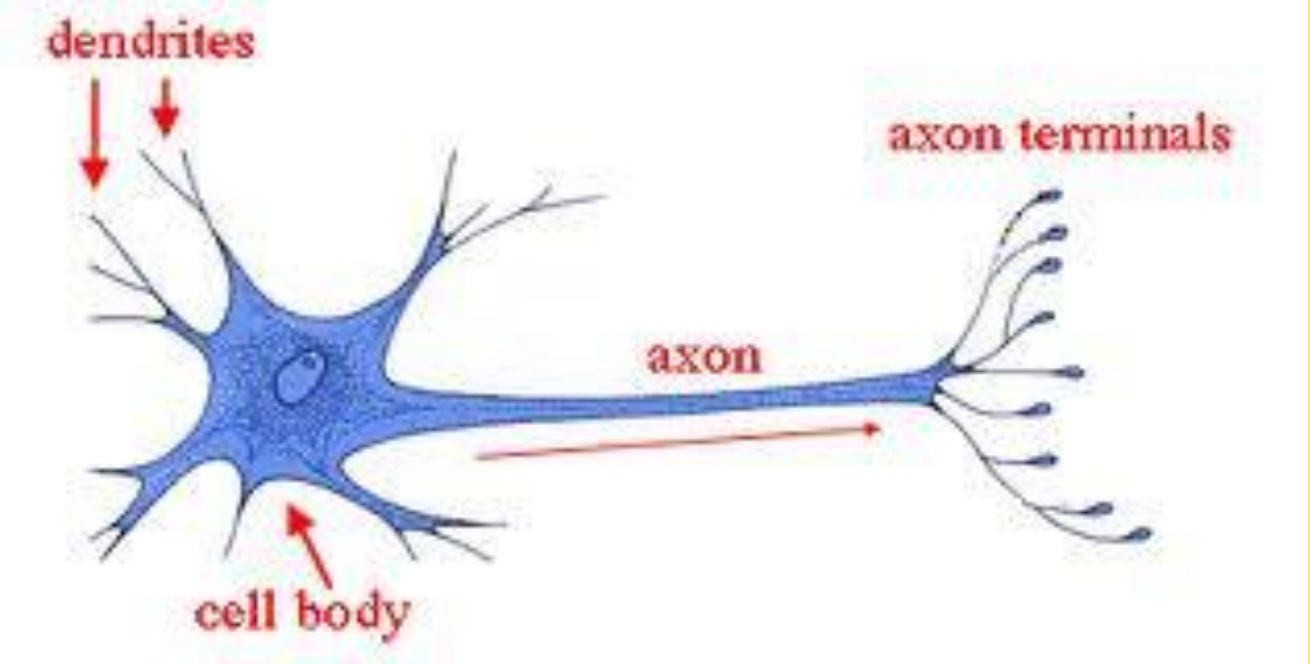




The axon is insulated by a fatty substance called MYELIN.

The myelin sheath increases the strength and speed of impulses passing along the axon.

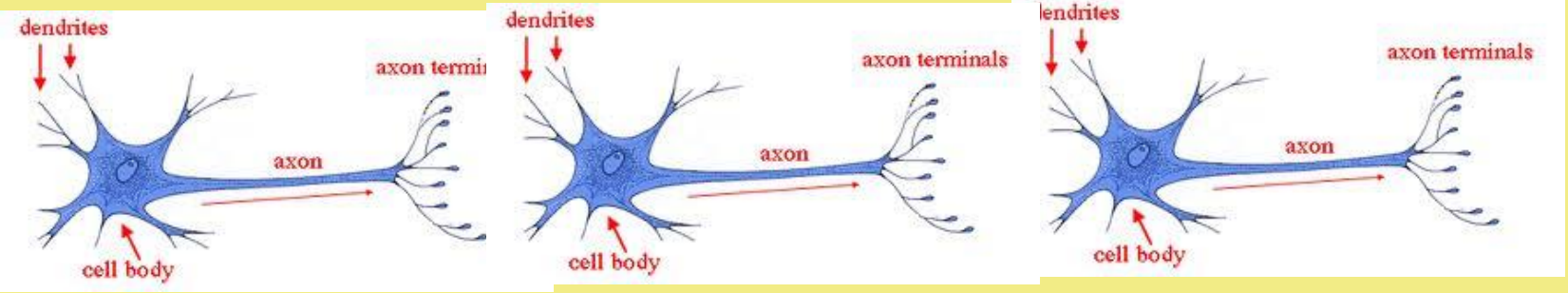
An IMPULSE is an electric signal passed through the axon.

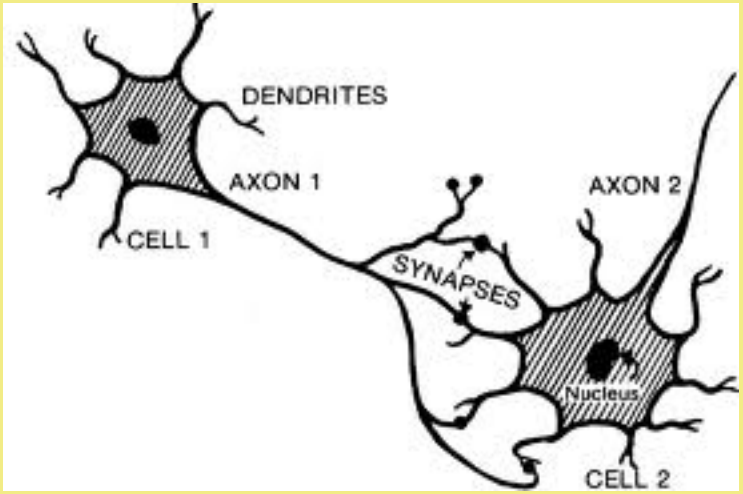


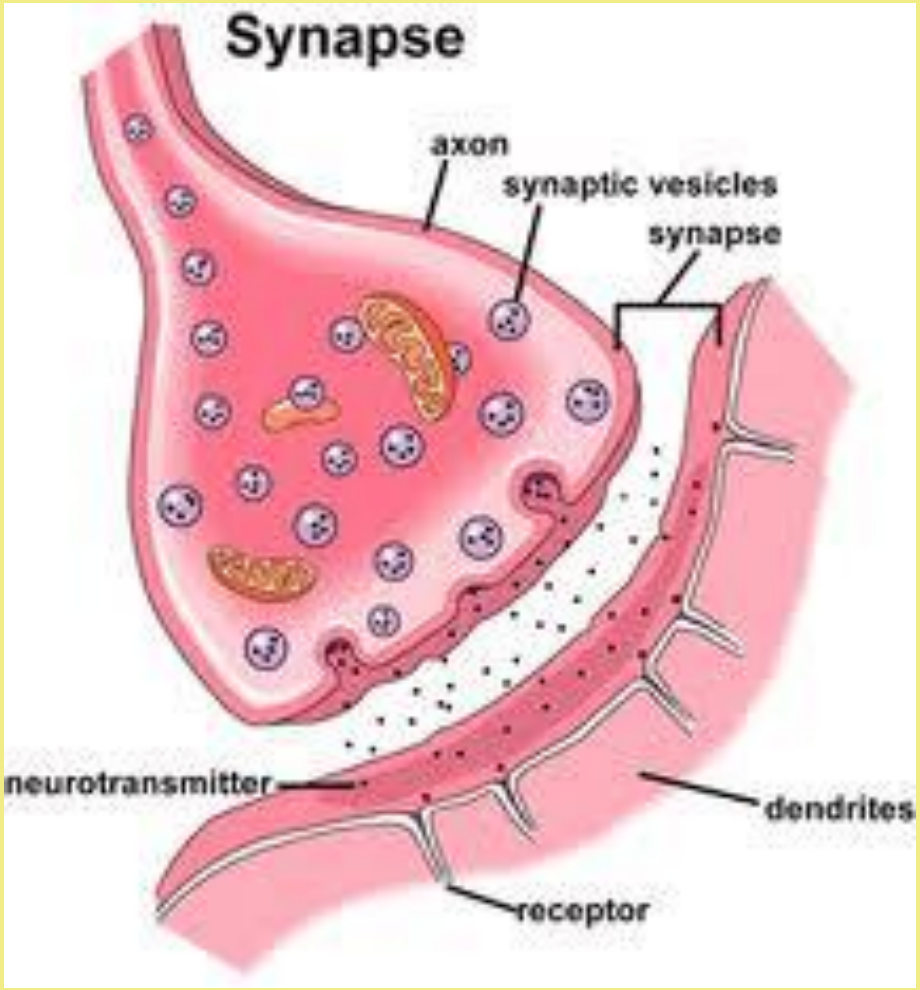
IMPULSE PATH

Dendrites → Cell Body → Axon → Terminal Branches

Dendrites Cell Body Axon Terminal Branches Dendrites Cell Body Axon Terminal Branches Dendrites Cell Body Axon Terminal Branches



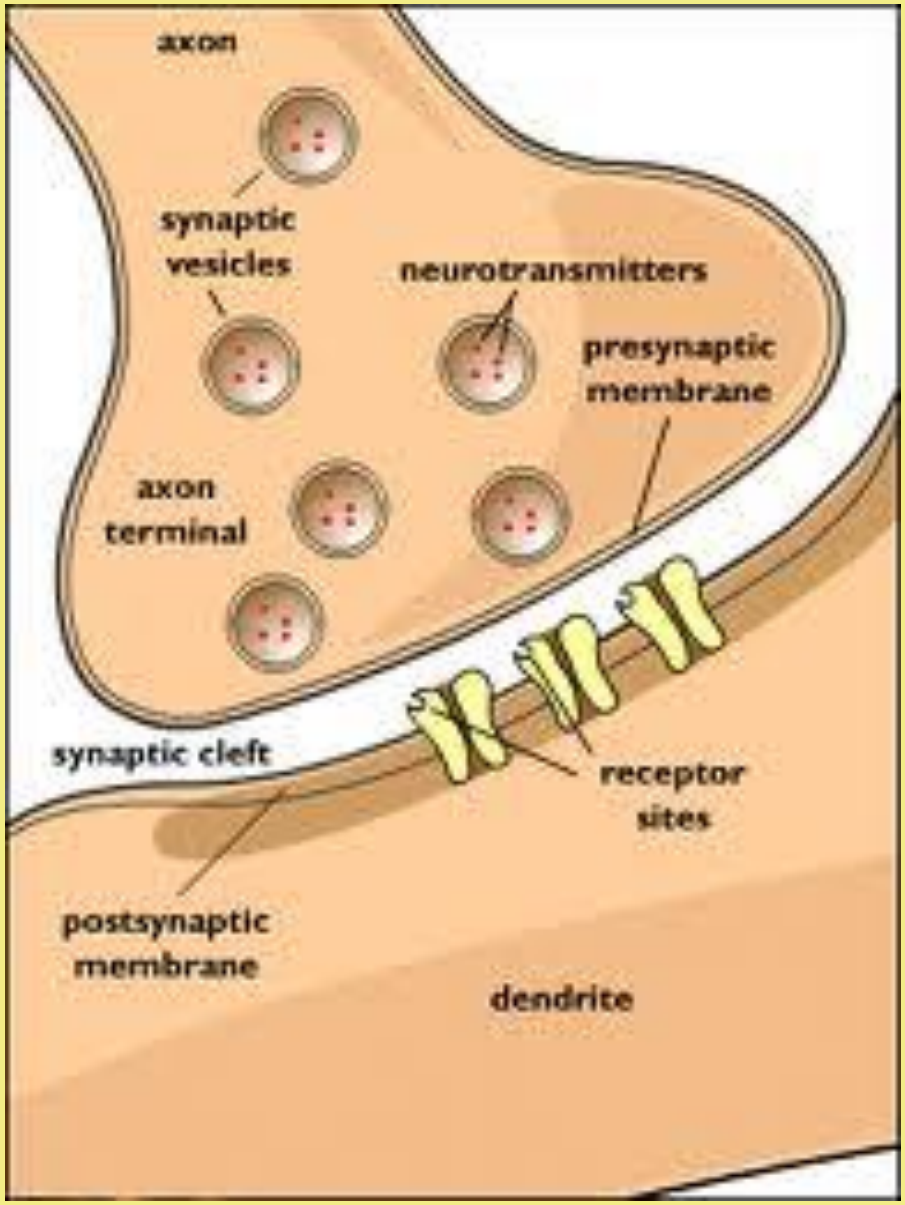




The Synapse is where an impulse passes from one cell to another.

Chemicals called NEUROTRANSMITTERS are released to allow the signal to cross the gap.

Receptors must must match the neurotransmitter.

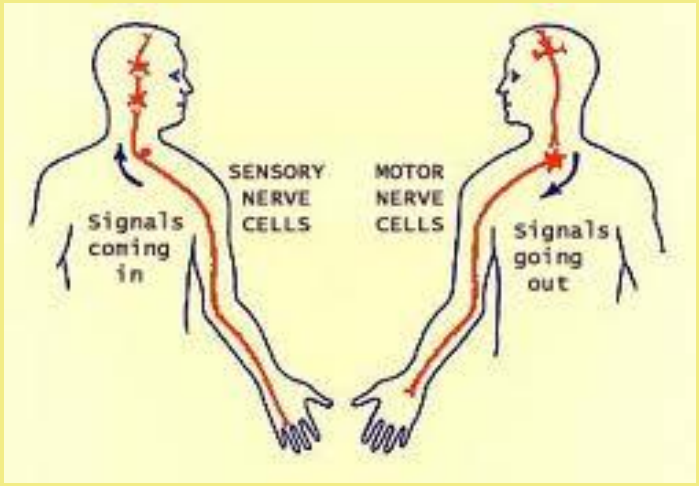


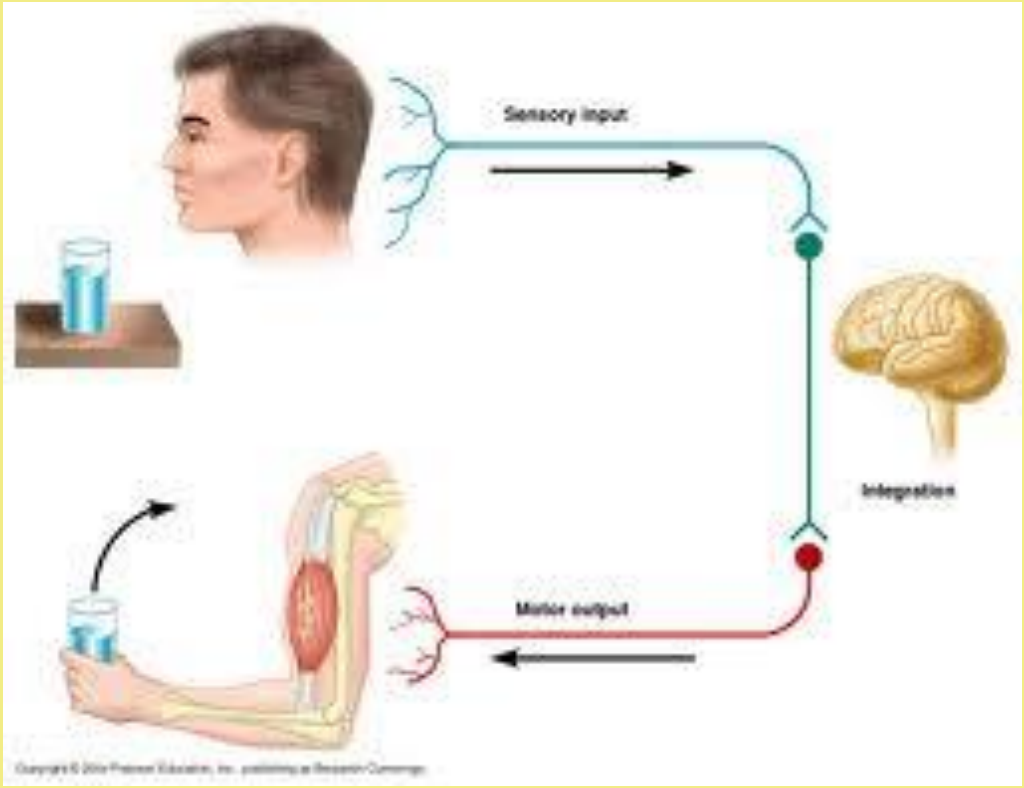
Our brains are always making new connections between neurons.

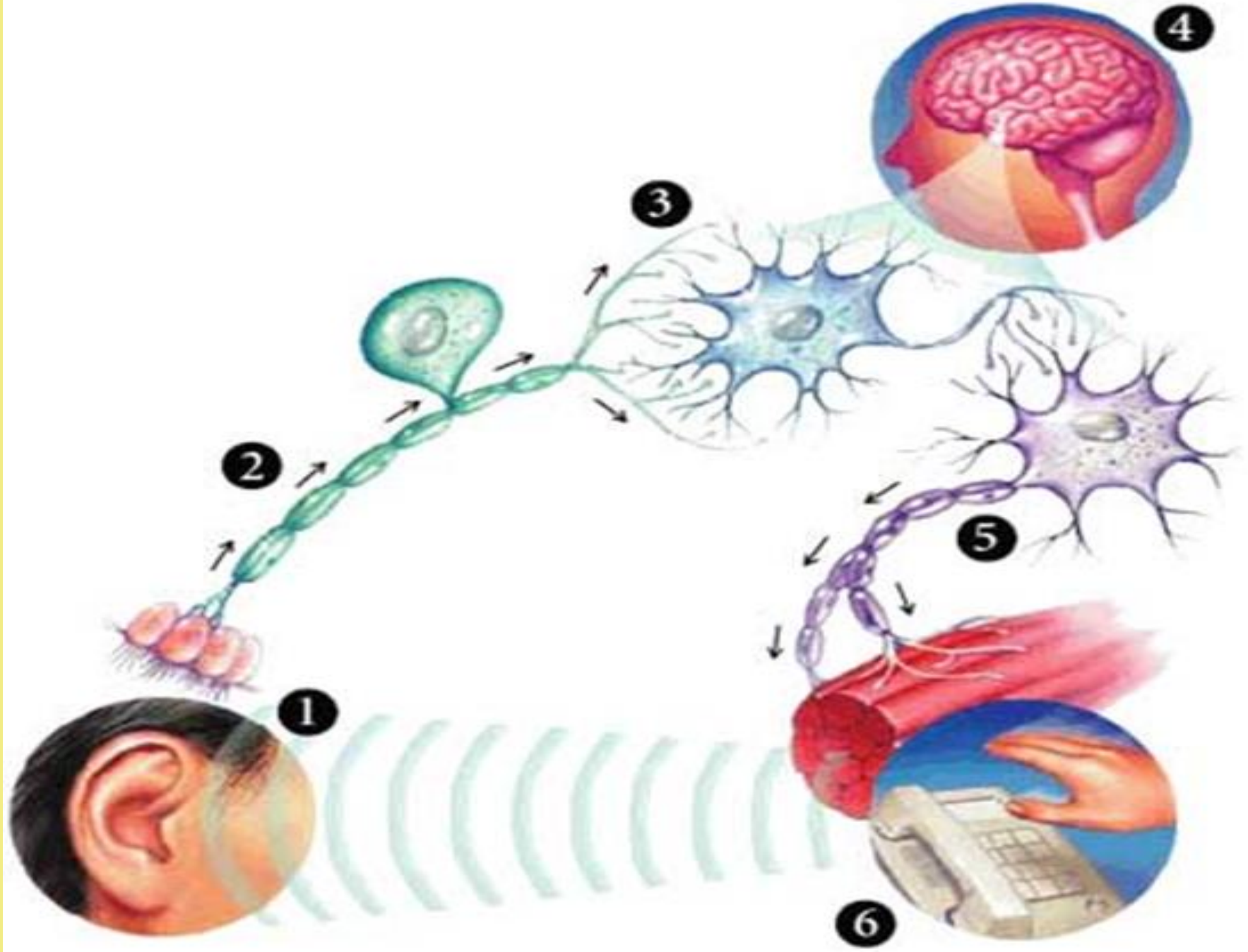
This is how we get smarter……

There are three types of neurons;

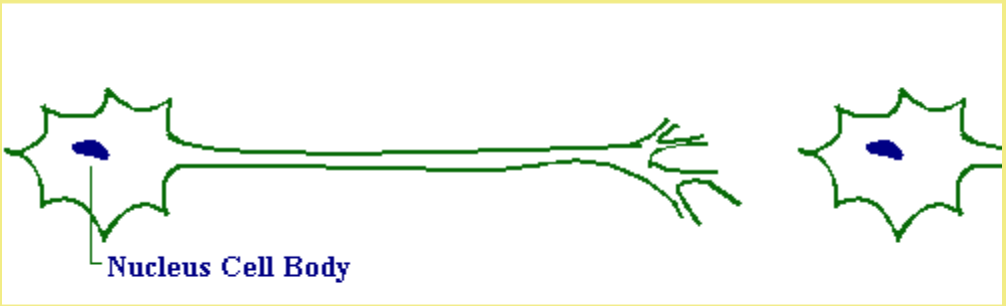
- SENSORY NEURON
- INTERNEURON
- MOTOR NEURON






1
2
3
4
5
6

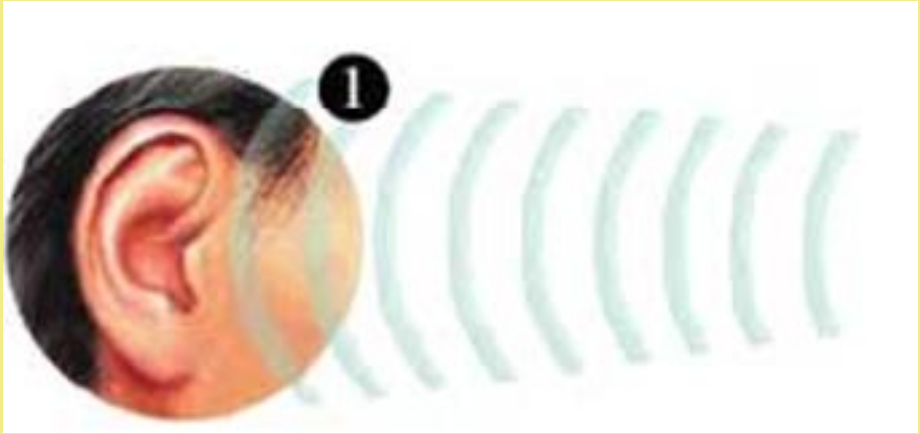
An IMPULSE signal is started when a **RECEPTOR** receives information from the somewhere.



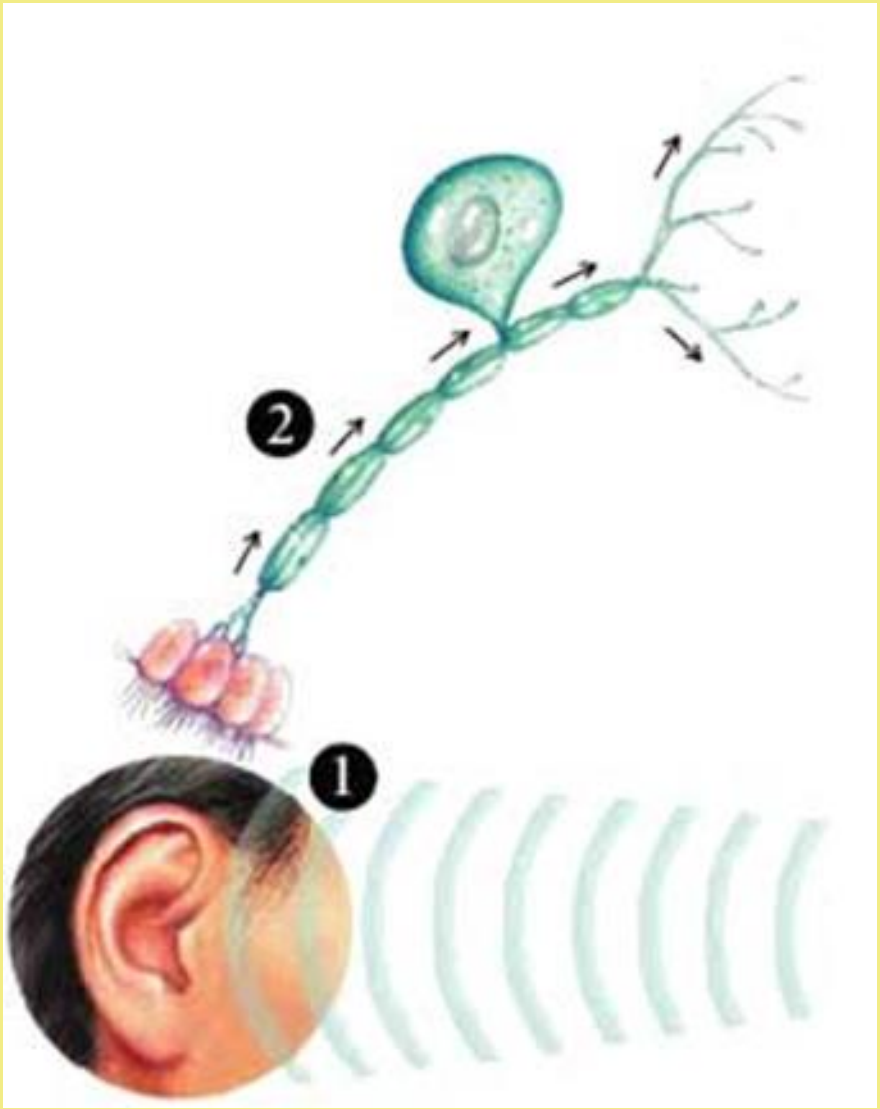

© Ron Leishman * www.ClipartOf.com/1044757

1. A RECEPTOR receives information from the outside environment.

This information is called a STIMULUS.

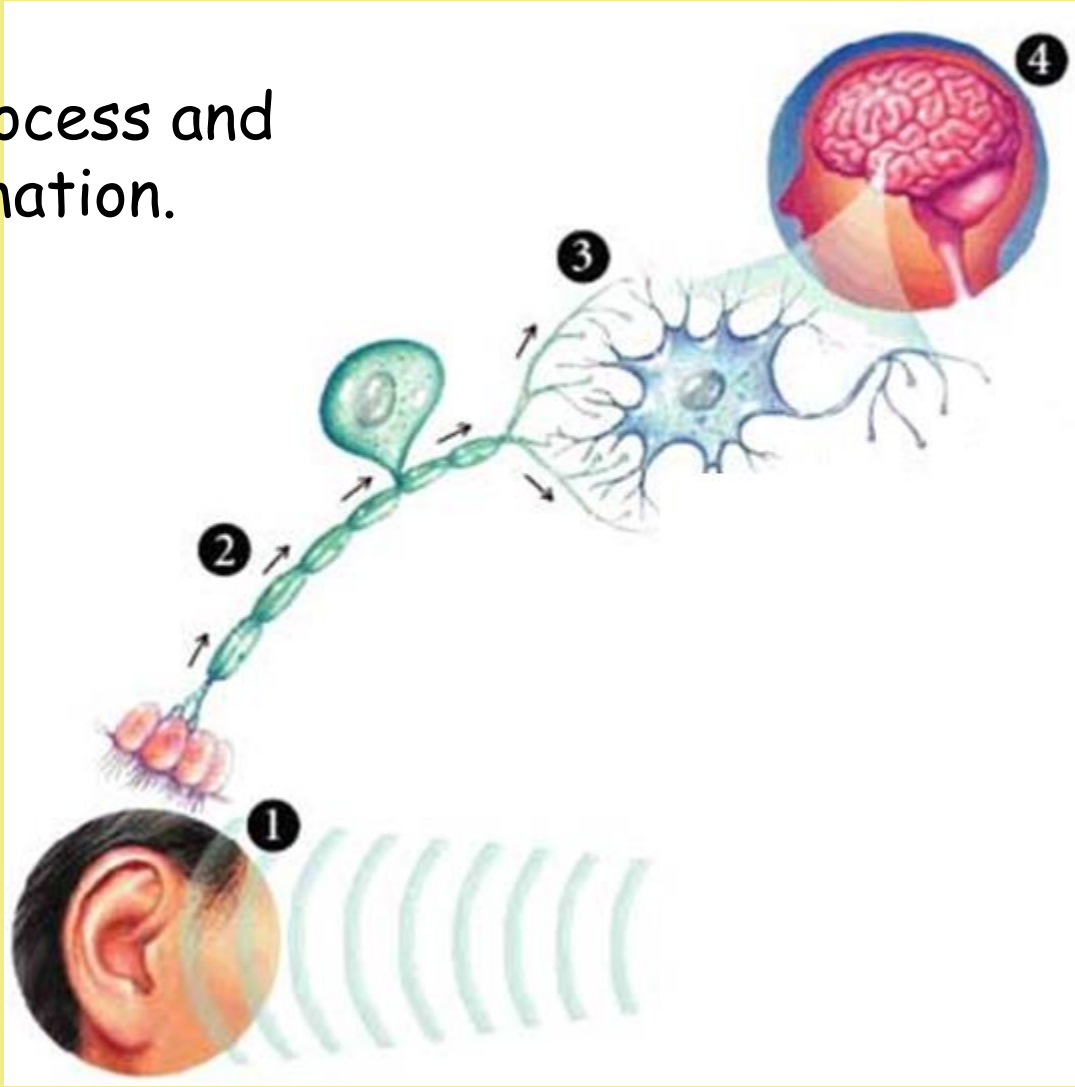


2. The stimulus initiates an impulse along a SENSORY NEURON.



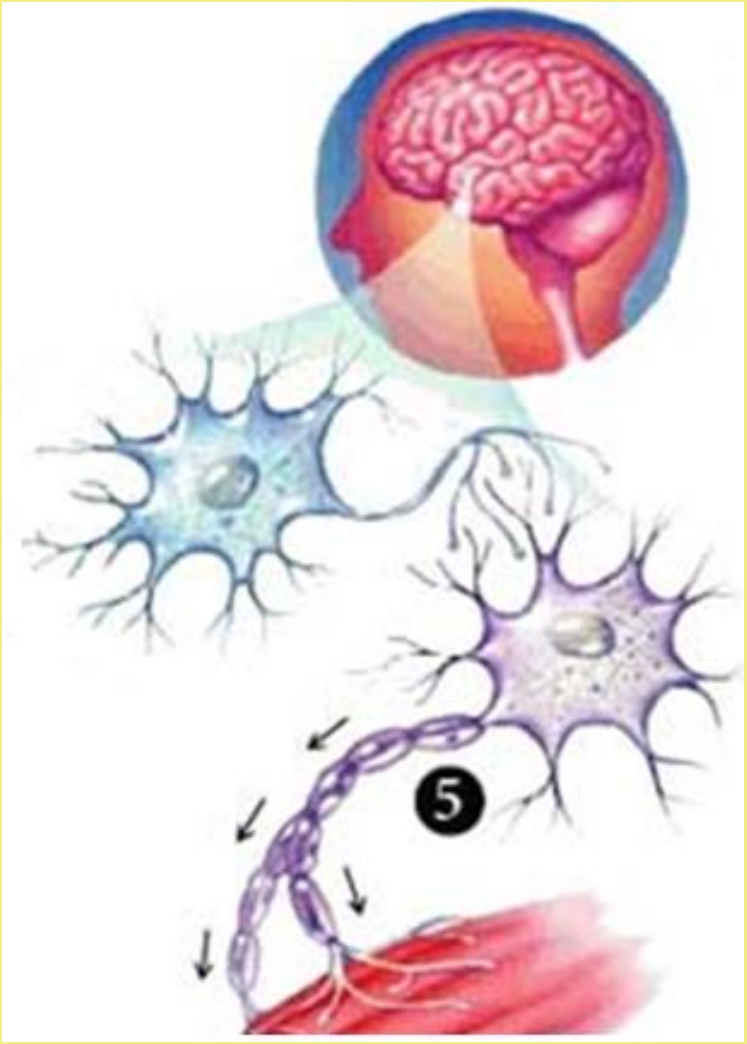
3. An impulse reaches the brain, where it crosses to an INTERNEURON.

4. The interneurons process and decipher the information.



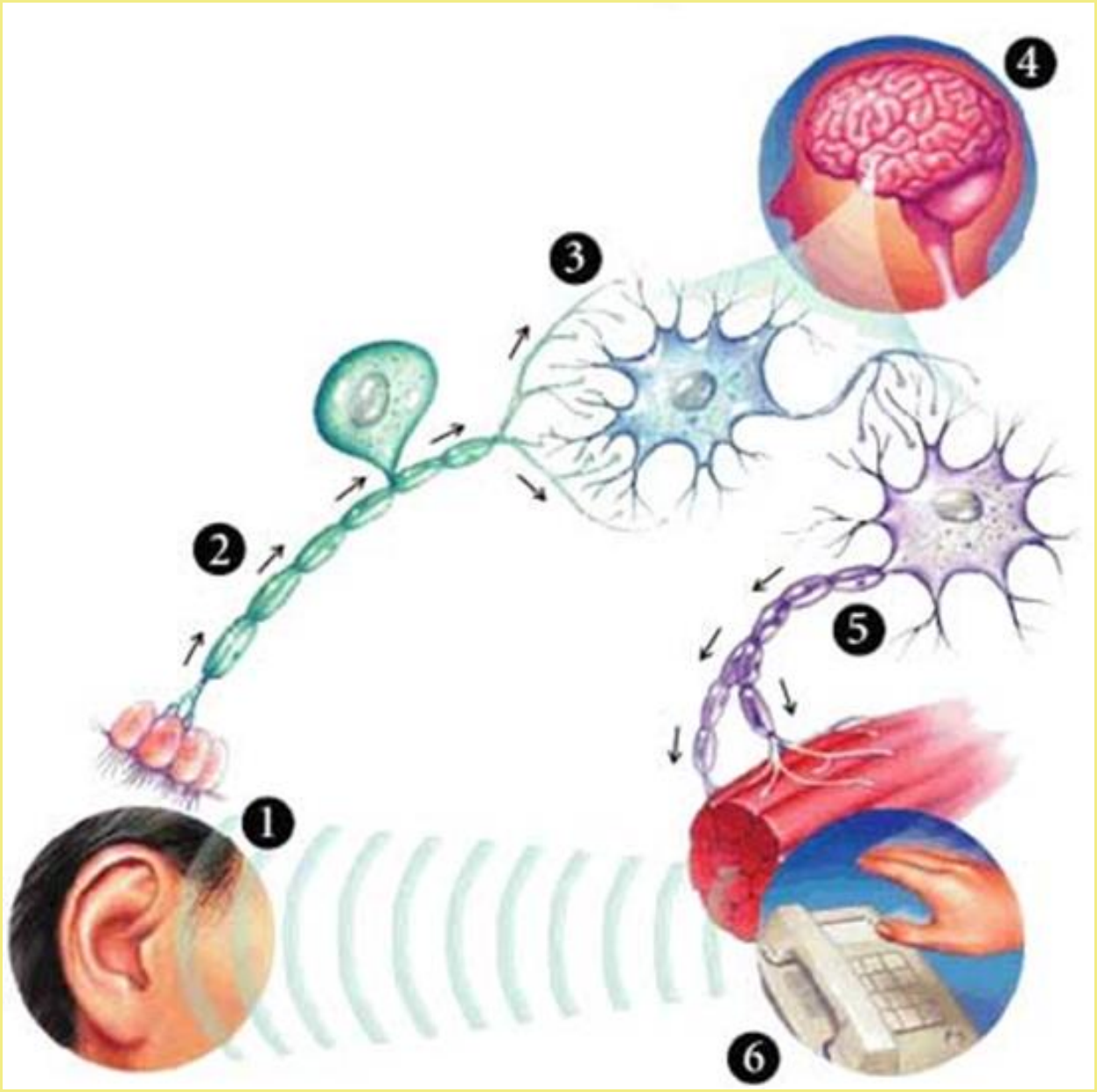
A new impulse is started in the brain.

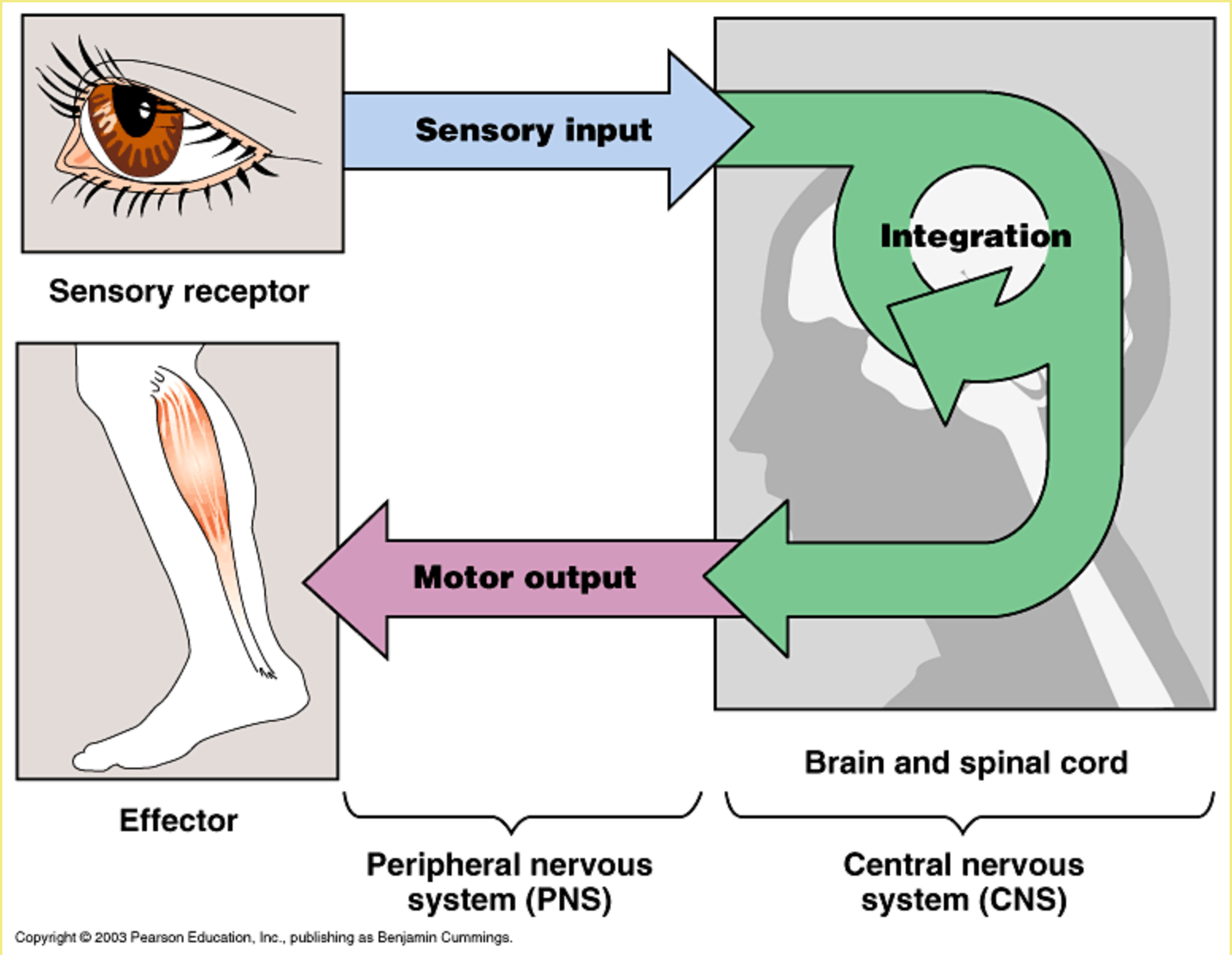
5. The new impulse travels along a MOTOR NEURON to a muscle that will respond.

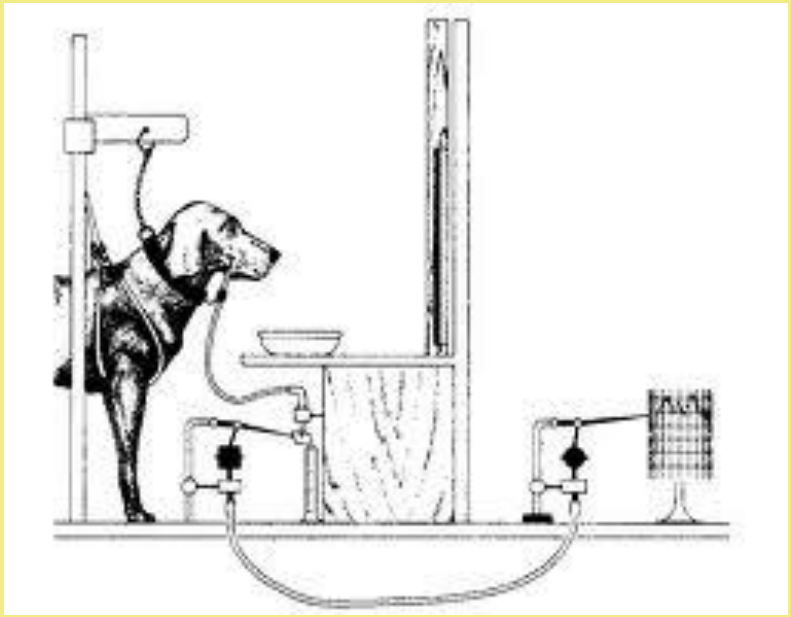


6. Muscles and glands that respond to impulses are called EFFECTORS.

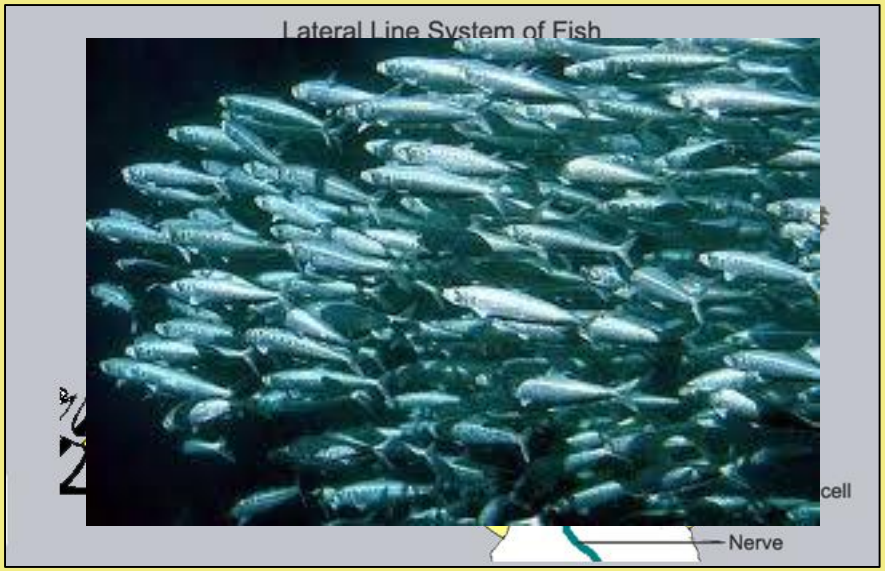
In order to respond to the stimulus muscles contract or glands secrete.

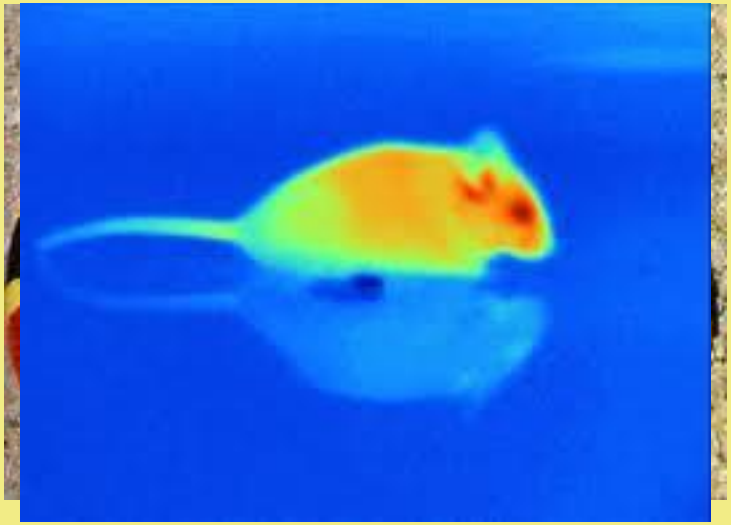

1
2
3
4
5
6

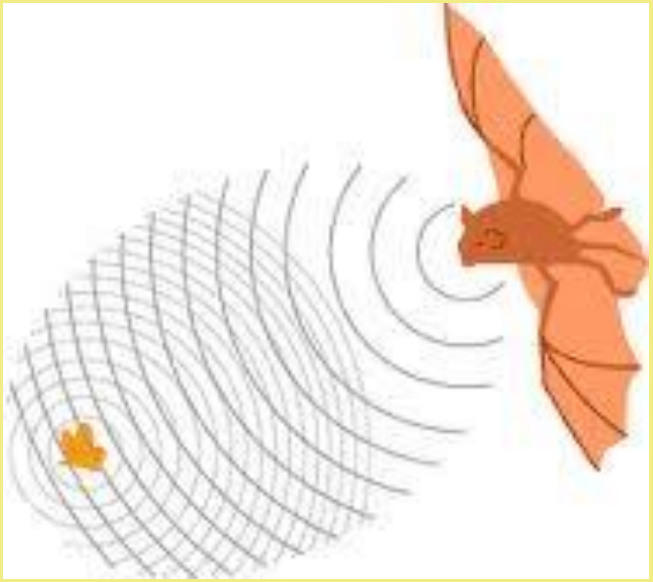




http://www.youtube.com/watch?v=FMJJpbRx_O8&feature=related


Lateral Line System of Fish
cell
Nerve

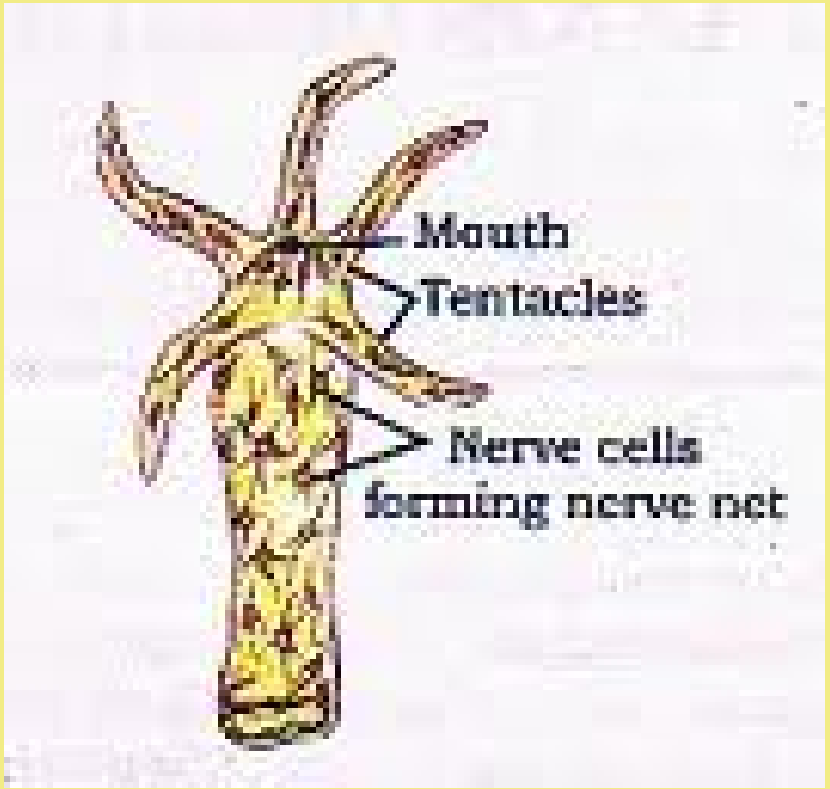




In the HYDRA, impulses do not follow a direct pathway.

The hydra has a NERVE NET of interconnected neurons.

When the hydra is in danger, its entire body responds by contracting.



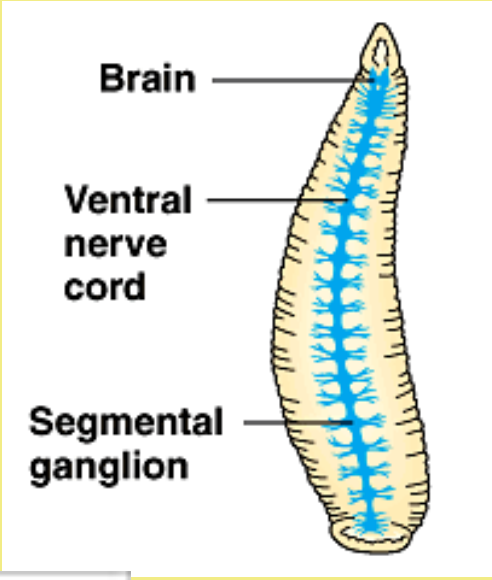
More advanced animals have a
CENTRAL NERVOUS SYSTEM
that shows CEPHALIZATION –
the development of a head with a brain.

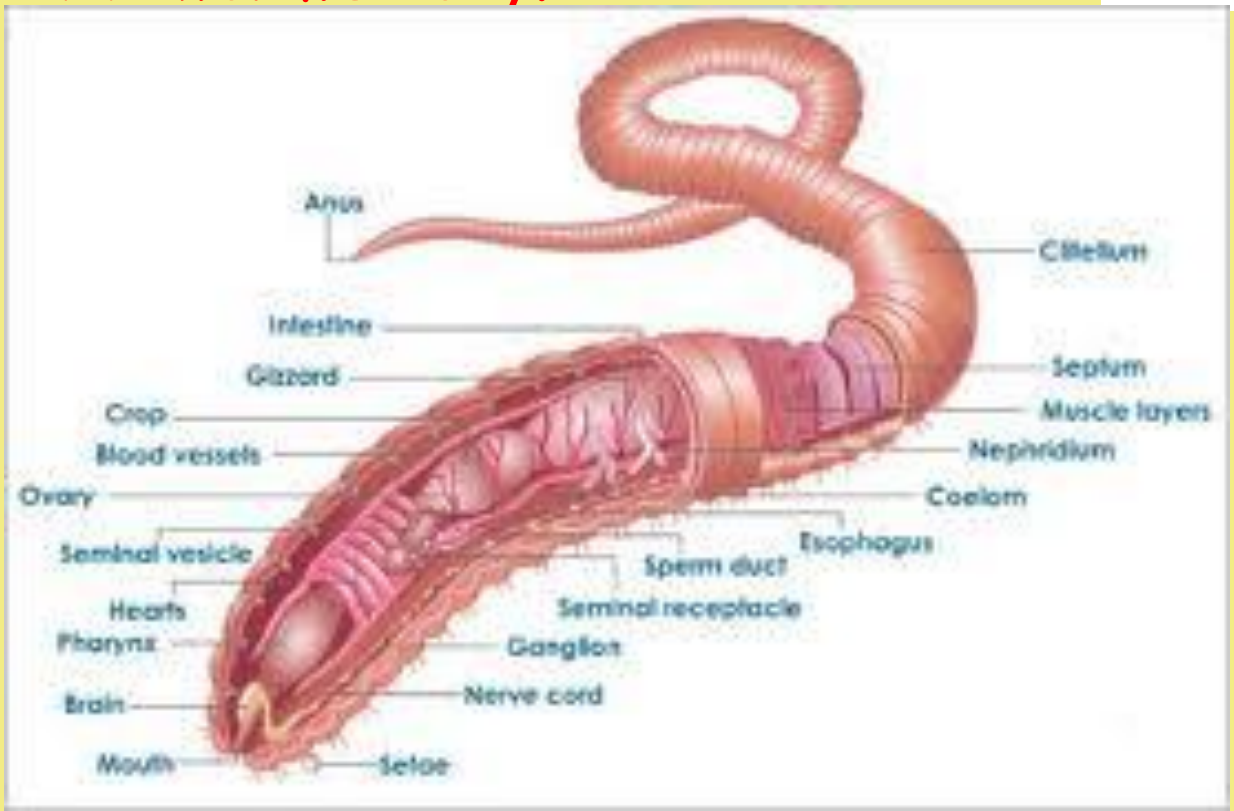
A CENTRAL NERVOUS SYSTEM includes

1. BRAIN
2. NERVE CORD
3. BRANCHING NERVES
4. SENSE ORGANS

The earthworm has a VENTRAL NERVE CORD and many branching nerves.

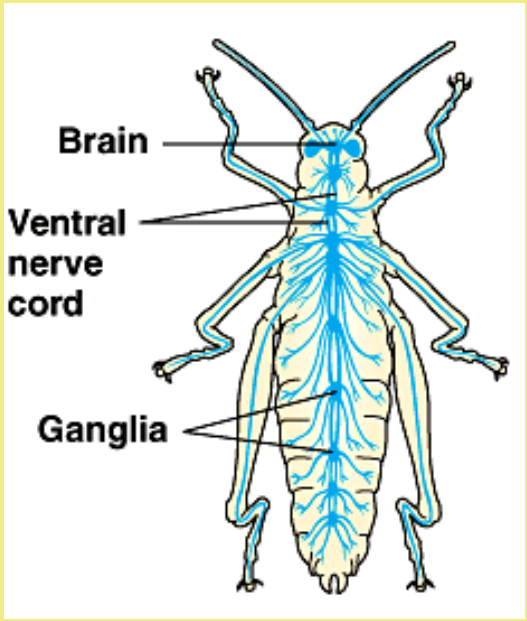
Ganglia in each segment help pass the impulses throughout the worm's body.

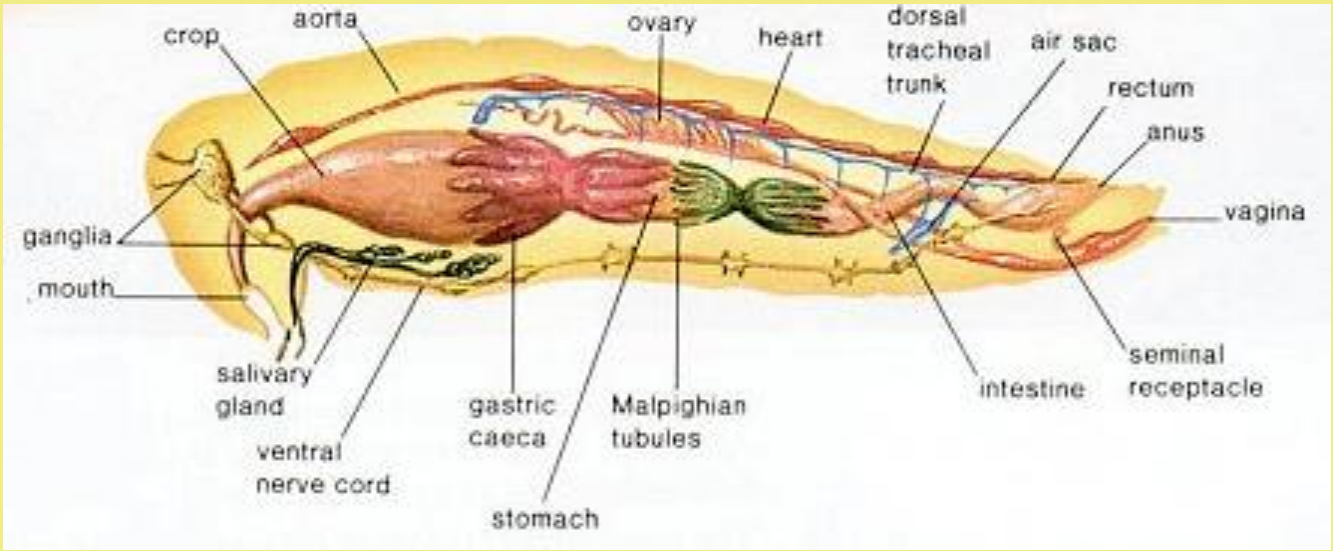




The grasshopper's nervous system is similar to the earthworm's.

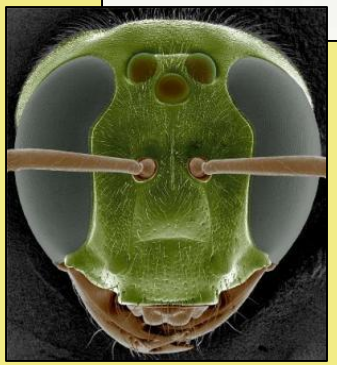
There is a head with a simple brain, a ventral nerve cord, and many branching nerves.



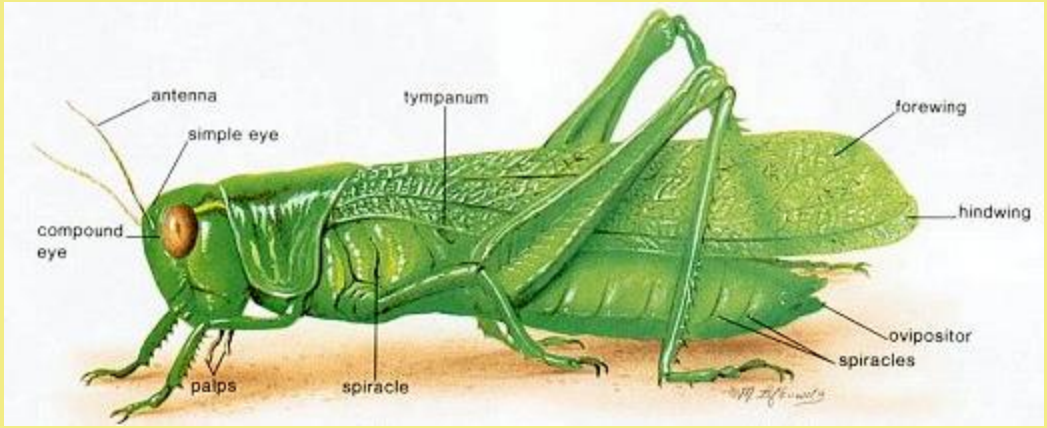


But the grasshopper has more advanced sensory organs than the earthworm.

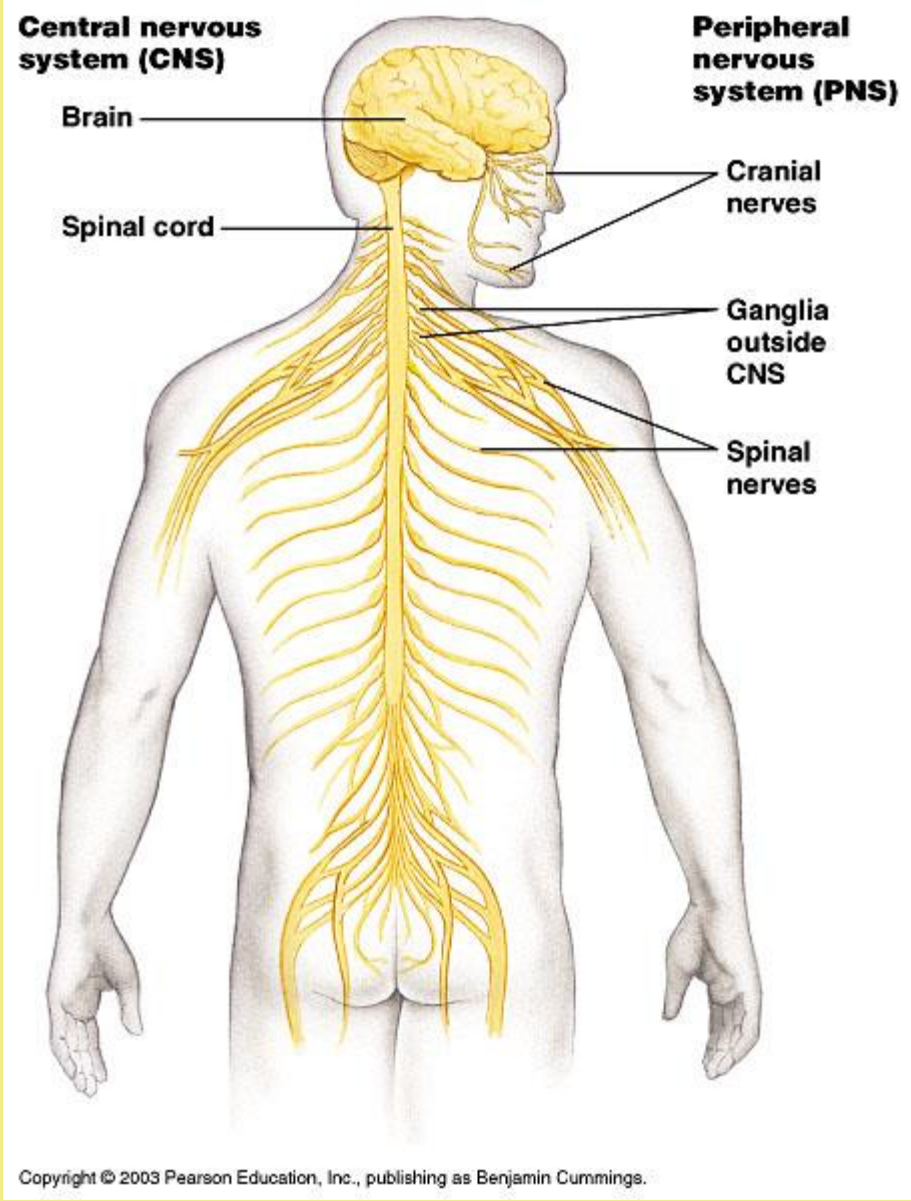
On the head, there are antennae, two types of eyes, and tasting organs called PALPS.

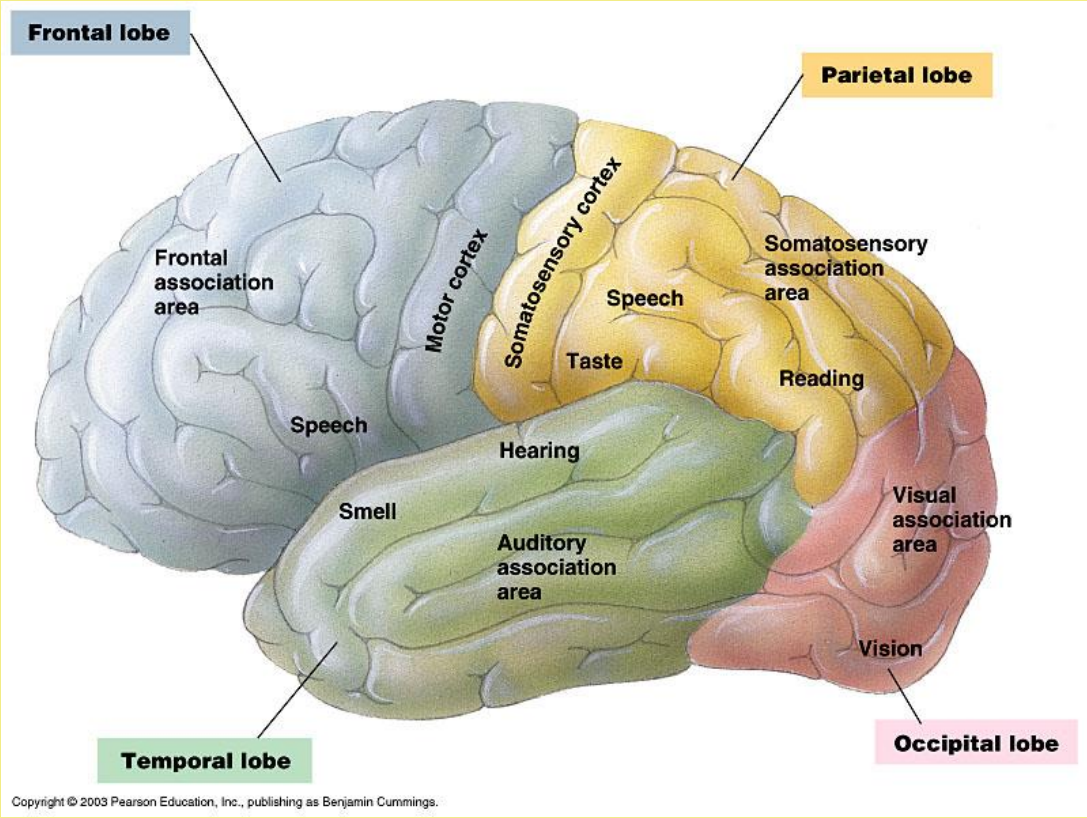


And on the first abdominal segment, there is a pair of hearing organs called TYMPANAE.



The human nervous system also includes a brain, a nerve cord, branching nerves and sense organs.





BLUE GREEN WHITE

RED YELLOW BROWN

PINK BLACK ORANGE