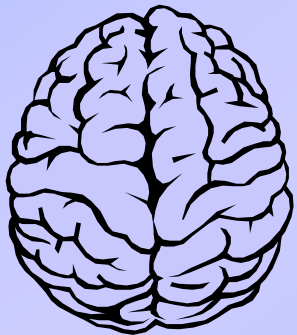


The Nervous System

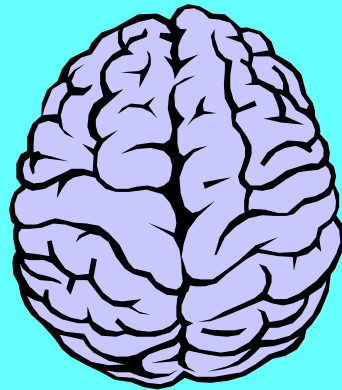


Nervous System

- Made of two parts
 - Central
 - Peripheral

Central Nervous System

The Central Nervous System is made of the brain and the spinal cord.



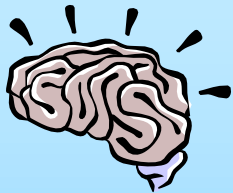
The Central Nervous System controls everything in the body.

Nervous System

A system that controls all of the activities of the body.

The central nervous system is made of:

The brain



The spinal cord



The nerves



The senses



Brain

An organ that controls your emotions, your thoughts, and every movement you make.



The Brain

- * The brain controls everything in the body.
- * The brain is made of more than 10 billion nerves!
- * The brain is divided into three parts and is protected by the skull.

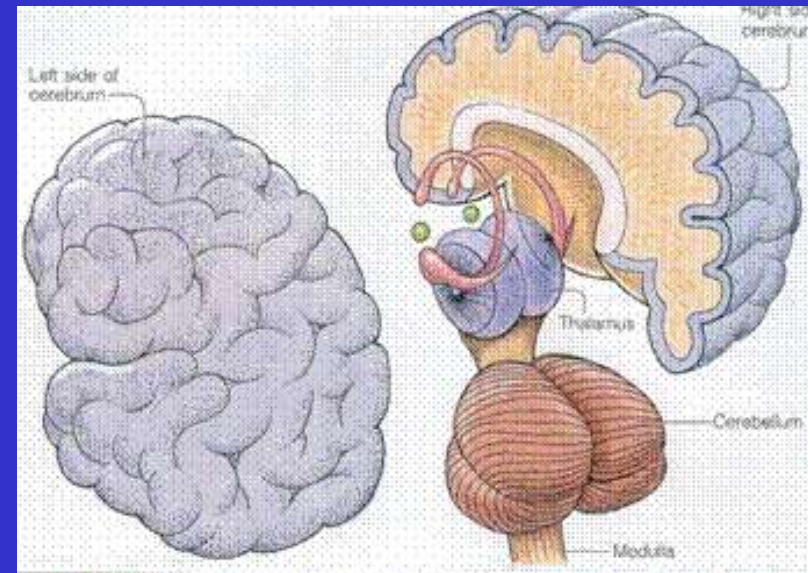


The Three Parts of the Brain



* The Brain has three main parts...

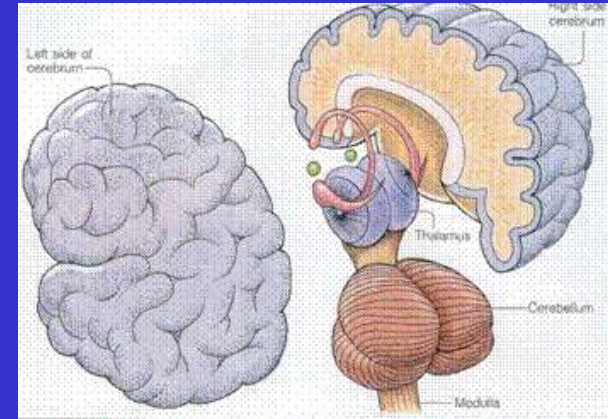
1. The Cerebrum
2. The Cerebellum
3. The Brain Stem



The Cerebrum

* The Cerebrum is the largest part of the brain.

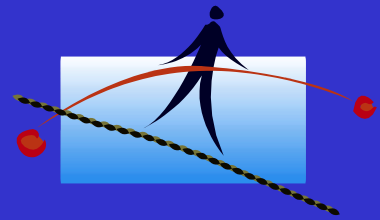
1. The cerebrum controls your thinking.
2. The cerebrum controls your memory.
3. The cerebrum controls your speaking.
4. The cerebrum controls your movement and identifies the information gathered by your sense organs.



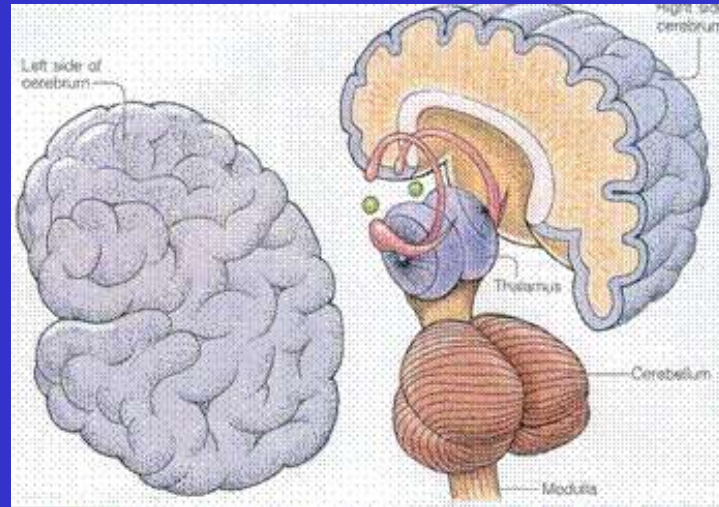
The Cerebellum

* The cerebellum is below and to the back of the cerebrum.

1. The cerebellum controls you balance.

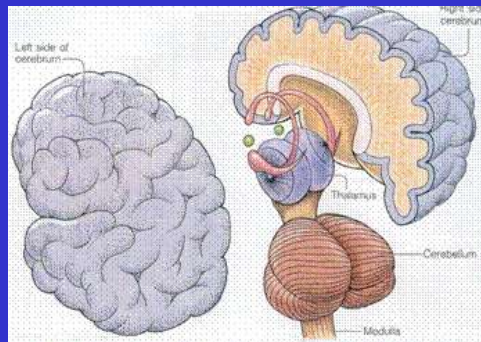


2. The cerebellum controls your posture.



The Brain Stem

- * The Brain Stem connects the brain to the spinal cord.
- * The nerves in the brain stem control your heartbeat, breathing, and blood pressure.



The Spinal Cord



- * The spinal cord sends messages to the brain.
- * The spinal cord is the part of the nervous system that connects the brain to the rest of the nervous system.

The Vertebrae

* The vertebrae are the many bones that protect the nerves in the spinal cord.



The nervous system allows you to react to a stimulus.

Stimulus

A stimulus is a change in the environment.

Helps to maintain homeostasis.

Example: A hot stove

Or... tripping over a rock

Environment

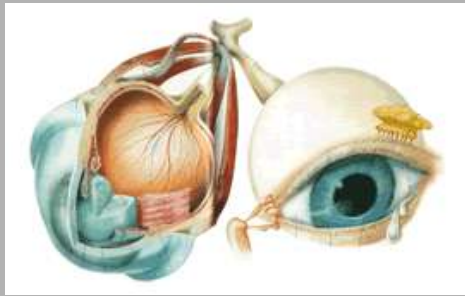
The **environment** is everything outside the body.

The sense organs gather information from outside the body, then send the messages to the brain.

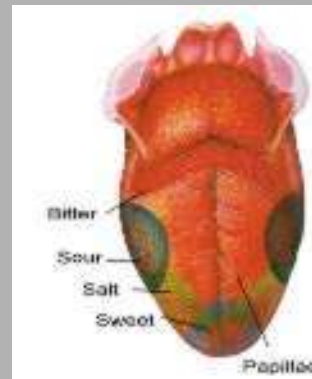
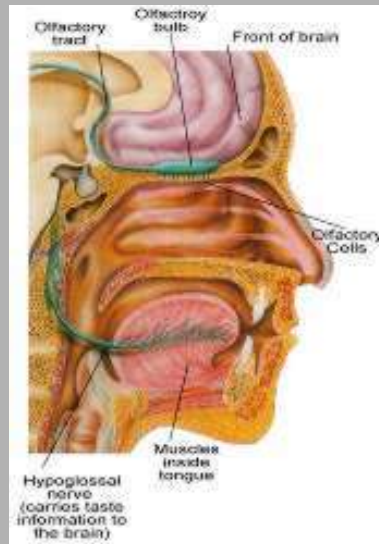
The Outer Nervous System or Peripheral Nervous System



Sense Organs

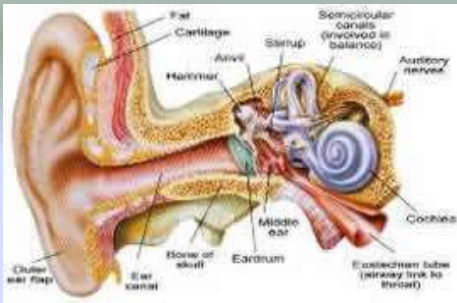


Sensory neurons carry messages about the environment to the central nervous system.



Peripheral Nervous System

- The outer Peripheral Nervous system is made of:
- the Sensory Neurons (the sense organs.) (receive stimuli)
- The Motor Neurons (the nerves to the muscles) (respond to stimuli)



Ear

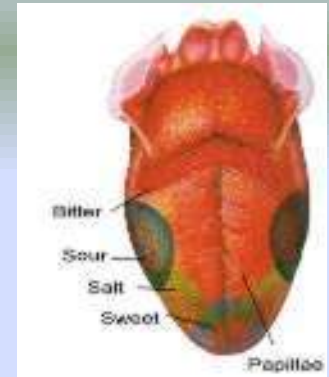


Eye



Skin

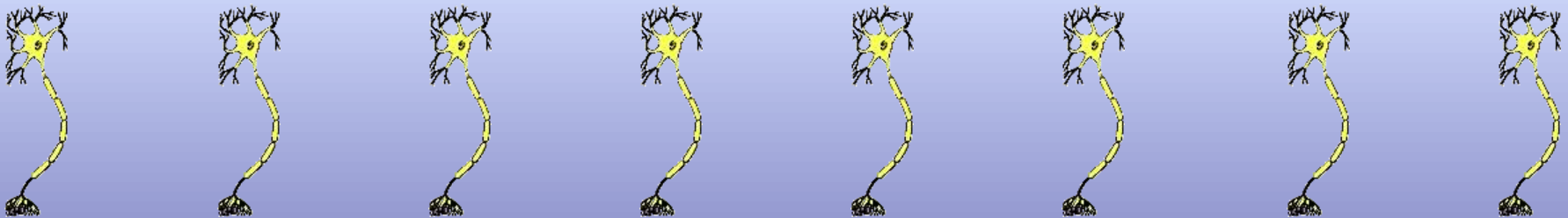
Nerves



Tongue

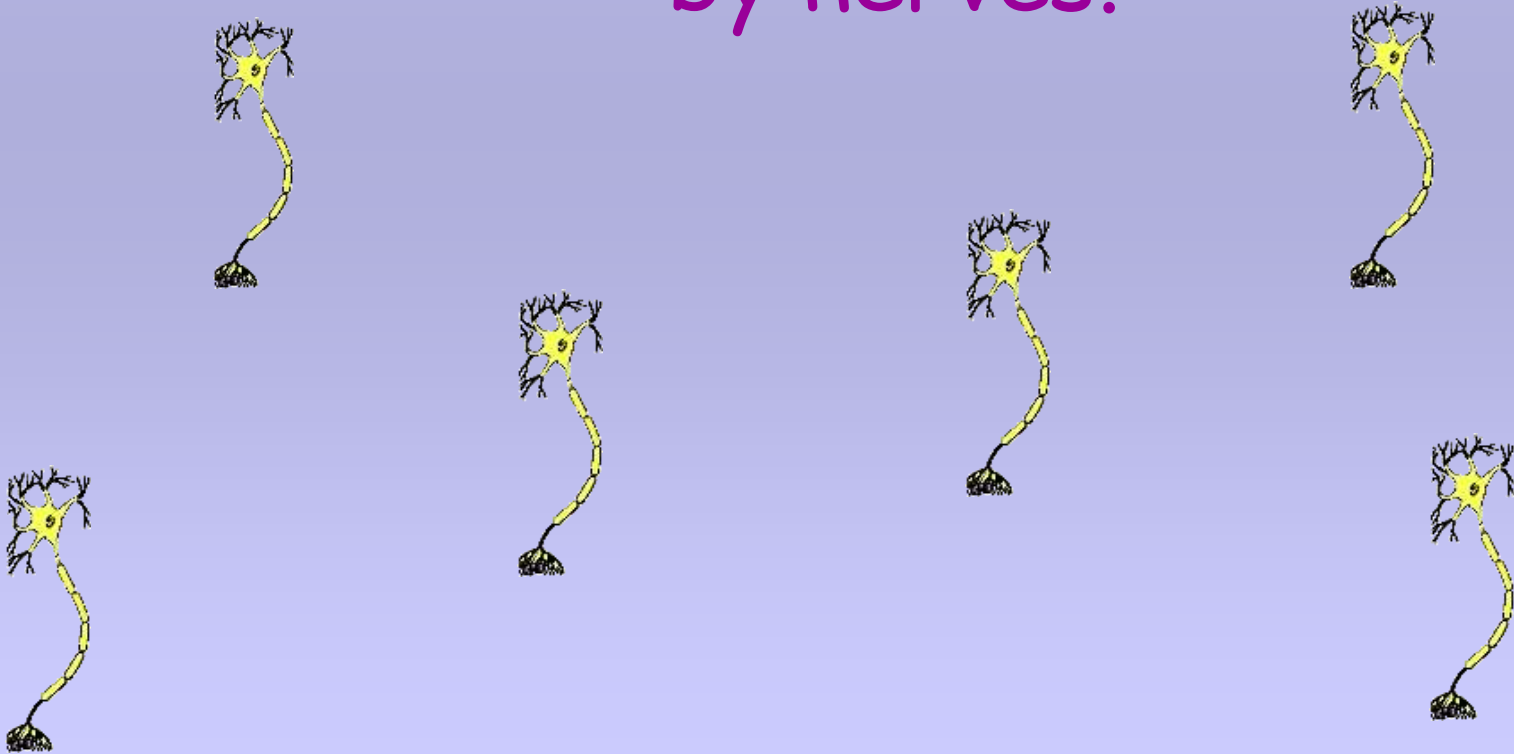
Outer Nervous System

- * The outer nervous system carries messages between the central nervous system and the rest of the body.
- * The Outer Nervous System's job is to connect the Central Nervous System to the rest of the body.



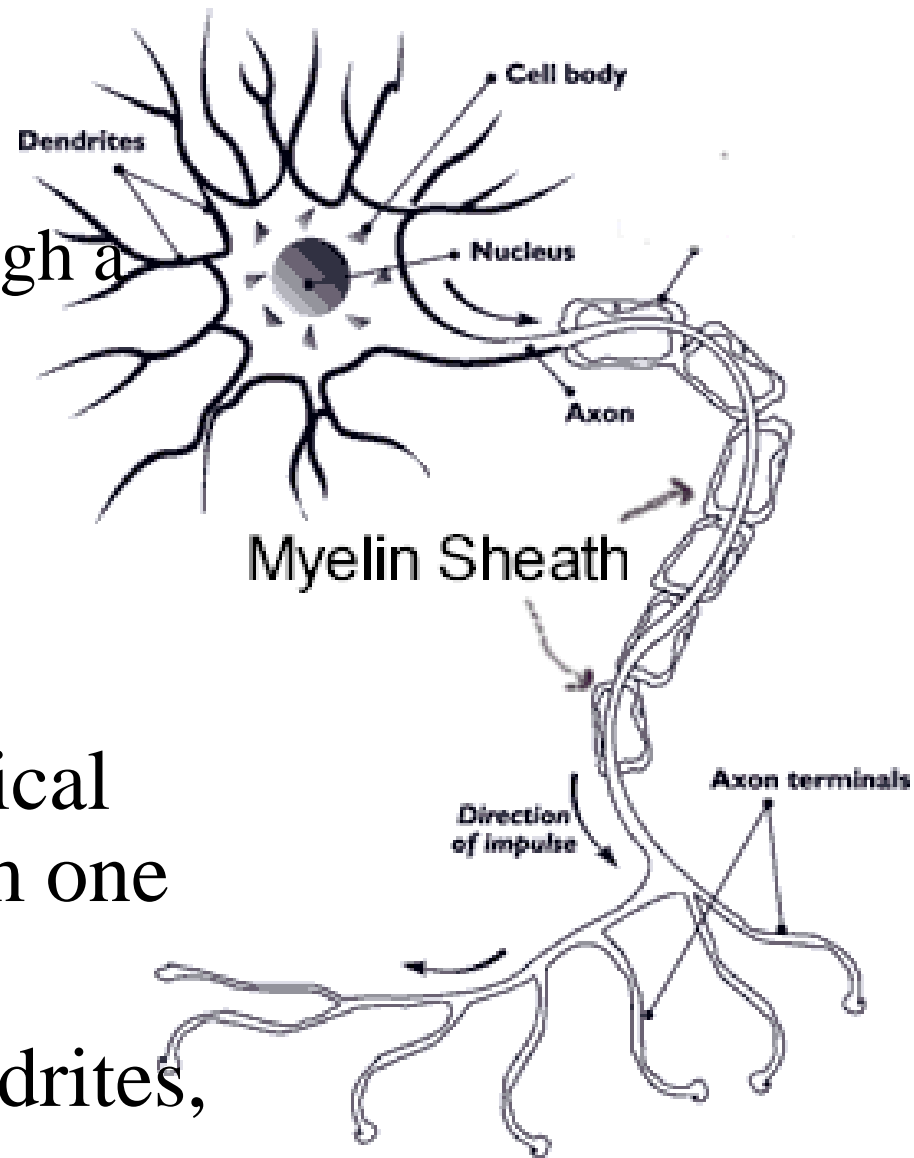
Nerve Impulse

Messages carried throughout the body by nerves.



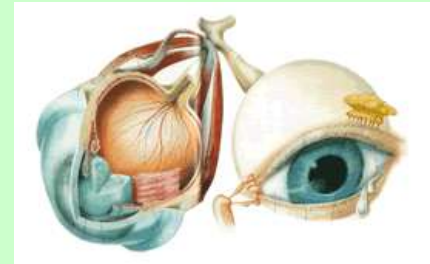
Nerve Cell (Neuron)

- Nerve Impulse
 - Electric message sent through a neuron
- Dendrites
- Cell Body
- Axon
- Synapses- when the electrical impulse is transferred from one neuron to another
- Direction of impulses- Dendrites, cell body, axon



Vision is your ability to see.

Vision



Vision involves the eye and the brain.

The Eye

The eye is one of your sense organs.

The eye is made of the iris
and the pupil.

The eye gathers pictures and
sends them to the brain.

The Parts of the Eye

The colored part of the eye is the **iris**.

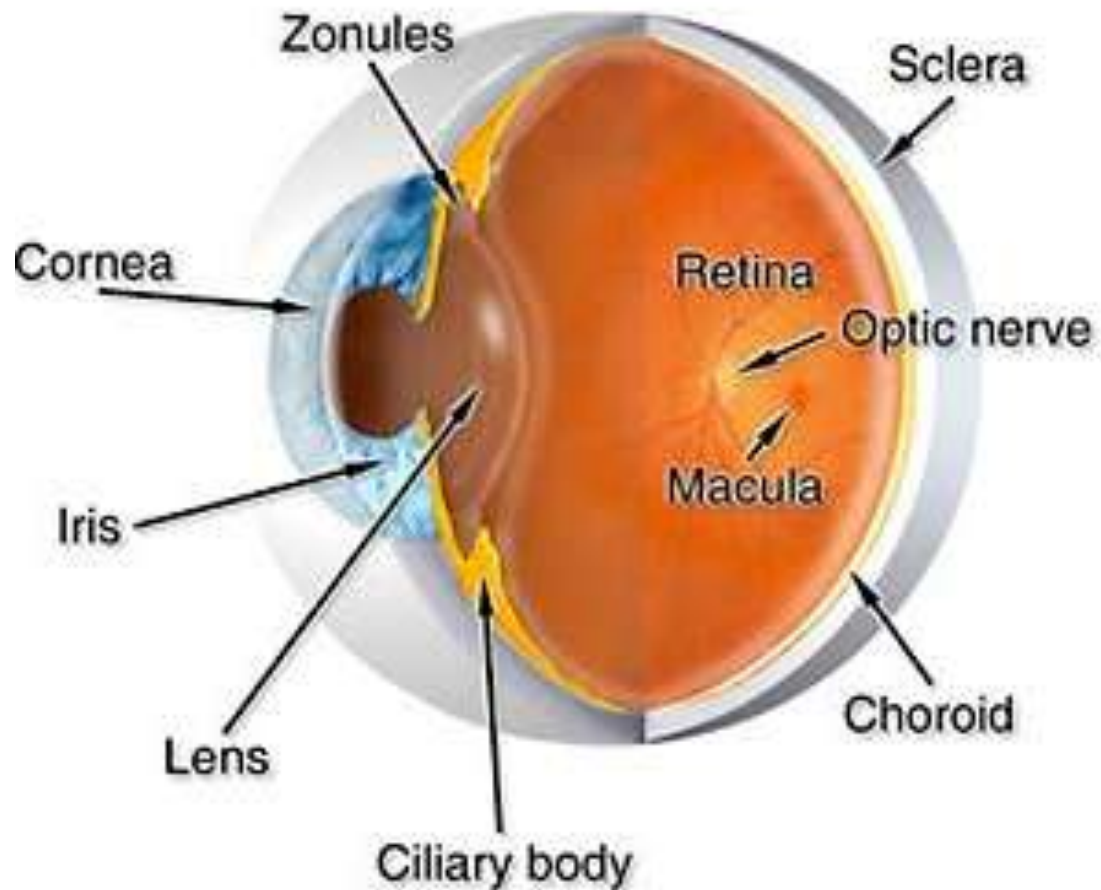
The black part of the eye is the **pupil**.

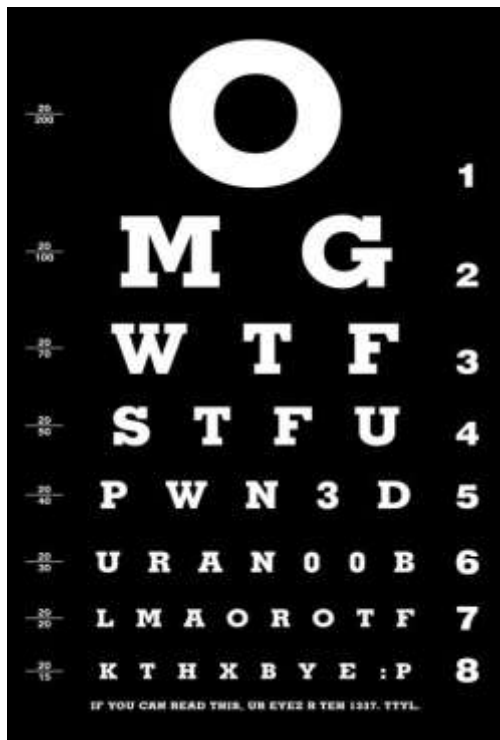


The pupil becomes larger and smaller as it controls the light coming into the eye.

Light Receptor

Normal Eye Anatomy





When a sound is made, the air around the sound vibrates.

Hearing

Hearing starts when some of the sound waves go into the ear.



The **pinna** is the part of the ear that you can see.

The **ear canal** is the tube between the outside of the ear and the ear drum.

The **ear drum** is in the middle ear. It vibrates when sound waves hit it.



Parts of the Ear

The three smallest bones in the body, the hammer, the anvil, and the stirrup, are in the middle ear.

The **hammer** gets the vibrations from the eardrum, then sends them to the anvil.

The **anvil** passes the vibrations to the stirrup.

The **stirrup** passes the vibrations to the inner ear.

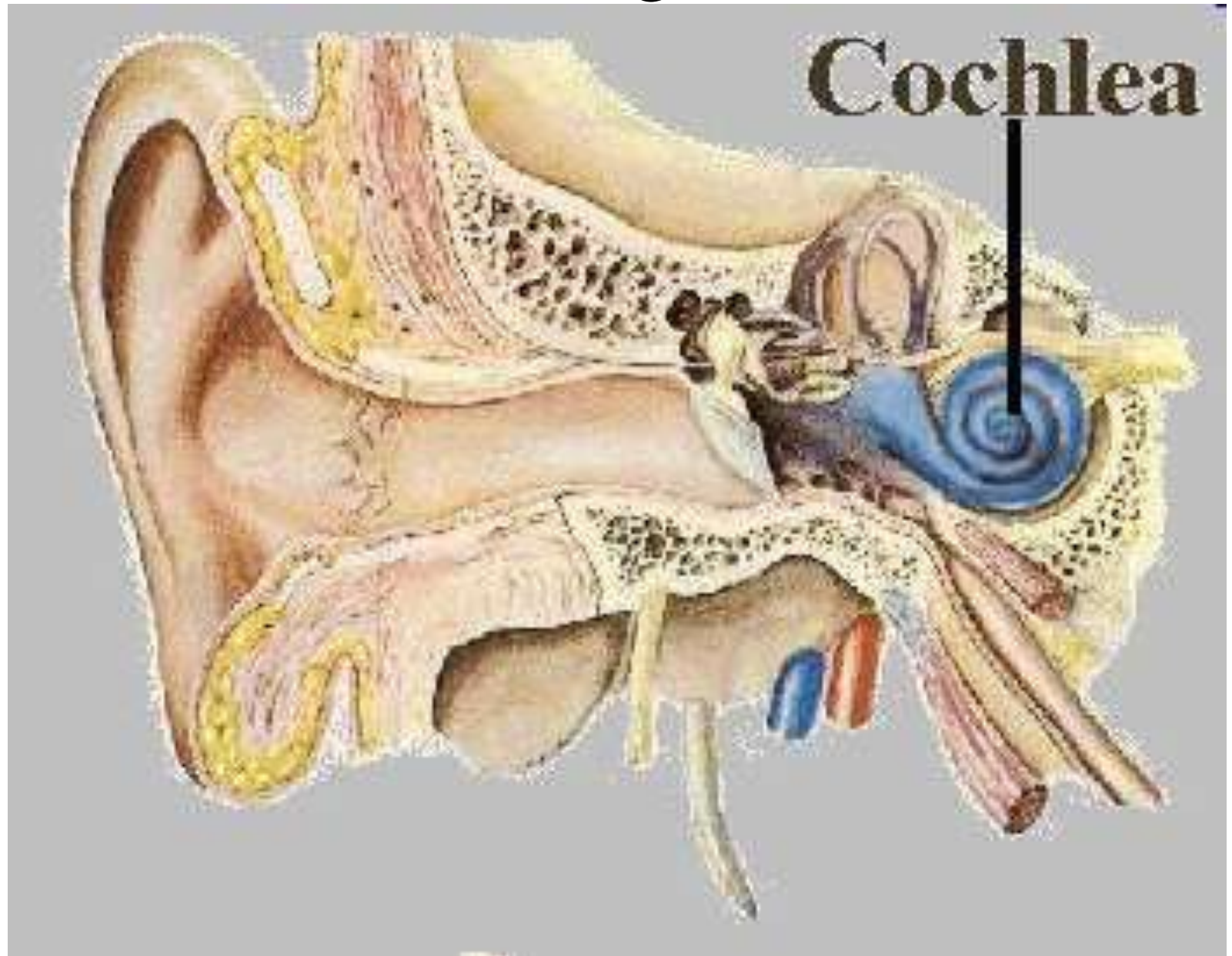
The **Eustachian tube** controls the amount of pressure in the ear.

The inner ear is made of the **cochlea** and liquid.

The **cochlea** is in the inner ear. The cochlea looks like a shell.

The **auditory nerve** carries the hearing information to the brain and the brain tells us what we heard.

Ear Diagram



The Ear and Balance

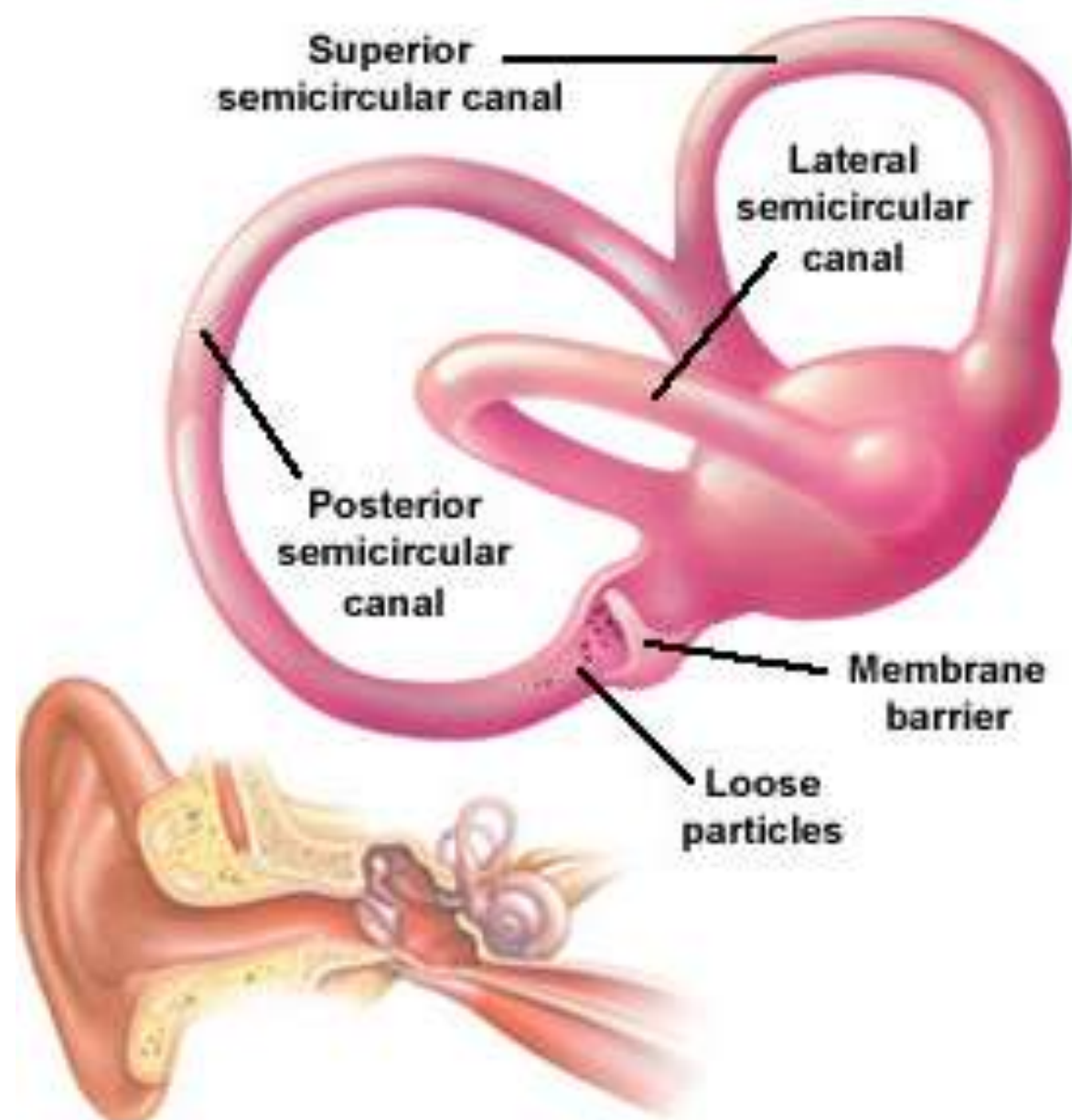
The ear works with the brain to control your balance.

All of your movements are controlled by balance and muscles.

The liquid in your inner ear (semicircular canal) is responsible for your balance.

The liquid in your ear moves when we move. The liquid movement sends information to the brain to tell it how we are moving.

Semicircular Canal



The sense of touch is located in the skin.

Touch



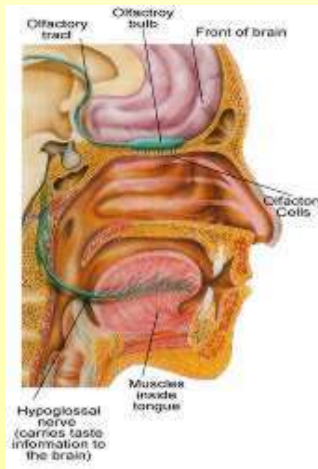
The nerves in the skin allow us to feel **texture**, pressure, heat, cold, and pain.

Texture is how something feels.

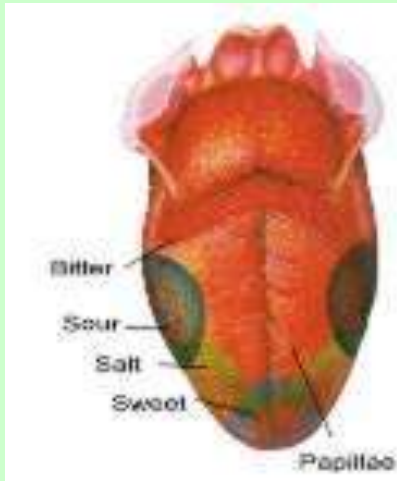
The nose controls your sense of smell.

Smell

The nose is able to smell 80 different kinds of smells.

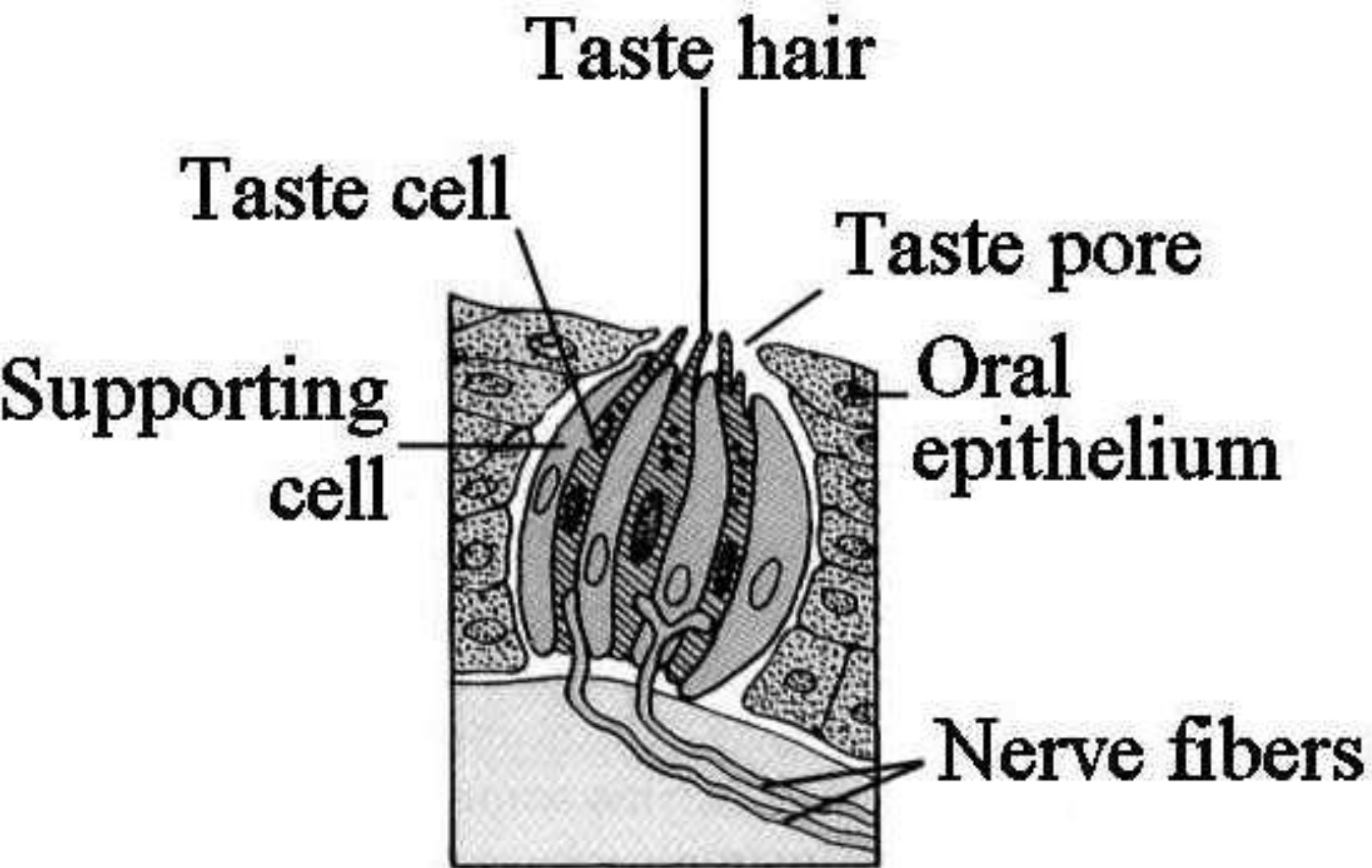


Your sense of taste comes from the taste buds in the tongue.



Taste buds are the parts on the tongue that allow us to taste.

The four kinds of taste buds are sweet, sour, bitter, and salty.



Seeley, Rod R.; T.D. Stephens, and P. Tate. (1996).
Essentials of Anatomy & Physiology, 2nd ed. Mosby, NY. pg.240.

Flavors

Tastes and smells work together to make flavors.

Flavors are the tastes of food and drinks.

Reflex

- * An automatic reaction that happens without thinking about it.
- * A reflex happens quickly in less than a second.



Automatic Nervous System

- * The outer nervous system controls the body's activities that you don't think about.
- * The outer nervous system controls activities in your small intestine, your breathing, and your heartbeat.

