



BABY PROFESSOR

SKIN

THE LARGEST ORGAN IN THE BODY

BIOLOGY BOOKS FOR KIDS
CHILDREN'S BIOLOGY BOOKS

SK

THE LARGE
IN THE

BIOLOGY BOO

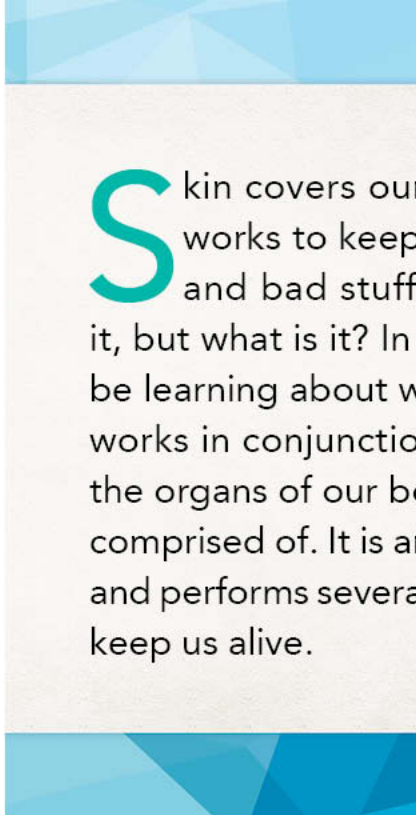
Children's Bic




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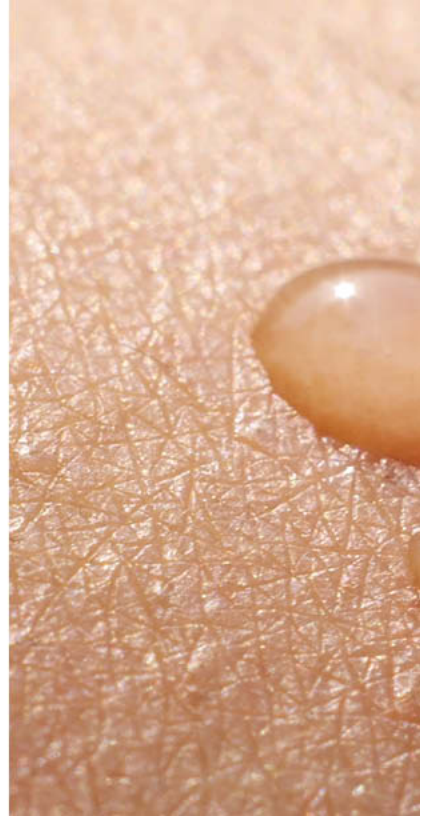


Skin covers our
works to keep
and bad stuff
it, but what is it? In
be learning about w
works in conjunctio
the organs of our b
comprised of. It is a
and performs severa
keep us alive.



WHAT IS THE INTEGUMENTARY SYSTEM?

Drop of water on human skin.

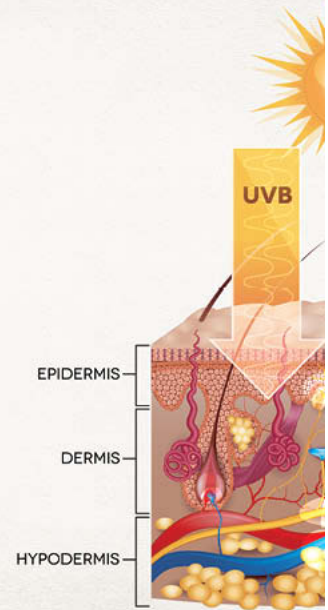


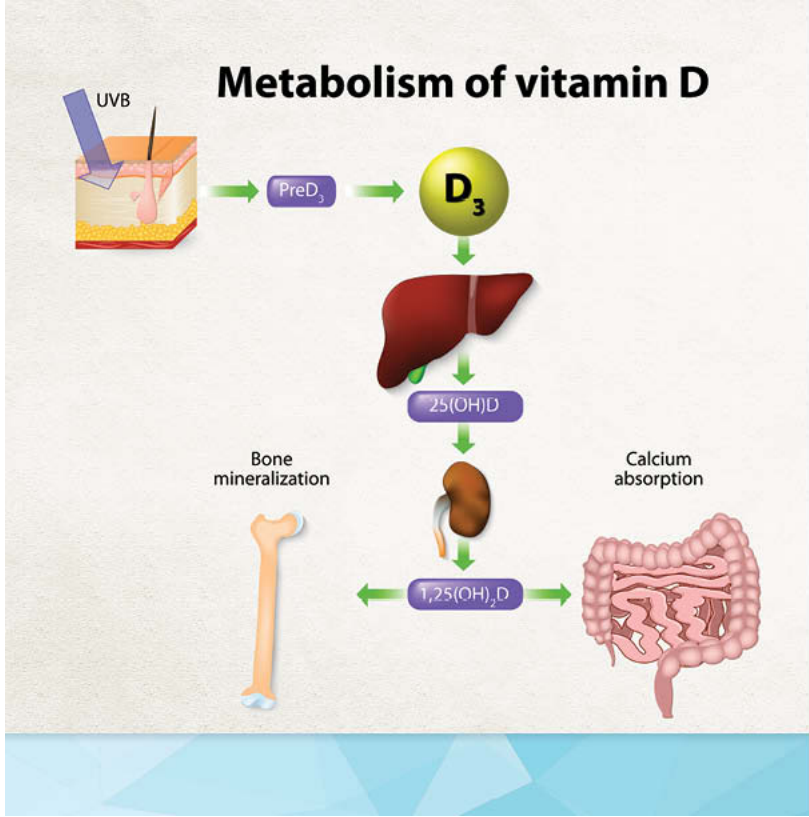


Our integumentary system protects us from various kinds of damage, such as the sun, the outside environment, or water loss. Our skin and its appendages, such as hair, feathers, scales, and nails, are part of this system.

It serves many functions; serving as a cushion, to waterproof and protect the deeper tissues, regulation of temperature as well as excretion of wastes, and it serves as the attachment site for our sensory receptors for detection of pain, pressure, temperature and sensation. With significant exposure to sunlight, it can also provide vitamin D synthesis in many terrestrial vertebrates.

UVB and UVA radiation penetrate into the skin.





THE SKIN'S IN

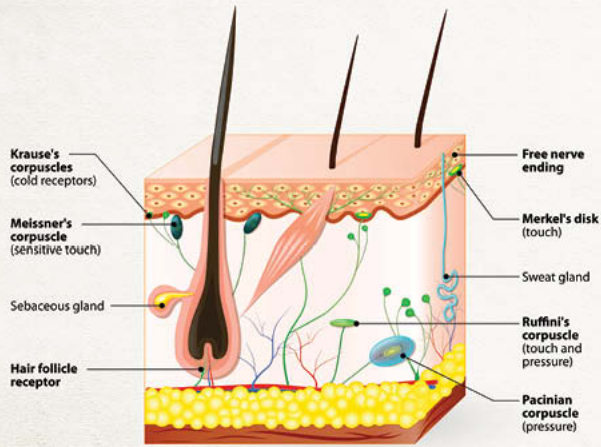
Our skin has several layers that make it multi-functional. One of its main lines of defense is in protecting against the environment surrounding us. It helps regulate our body temperature and can absorb the sun's rays with heat and vitamin

- **PROTECTION** – This is one of skin's basic functions. Over most of our body, skin is approximately 2mm thick. In some areas it might be thinner, such as your eyelids, and in other areas, such as the bottom of your feet, it is much thicker. Another function of the skin is to keep the bad stuff out of our bodies, such as dirt and germs that might cause an infection. It also works at keeping the good stuff inside, such as blood and water.

Human skin cutaway diagram.



HUMAN SKIN (receptors)

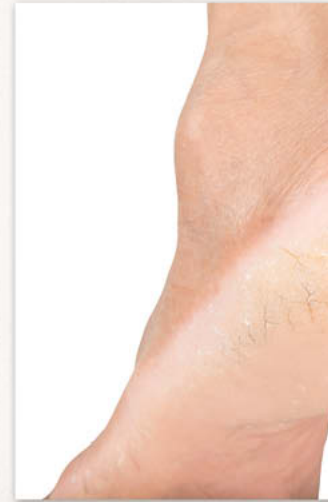


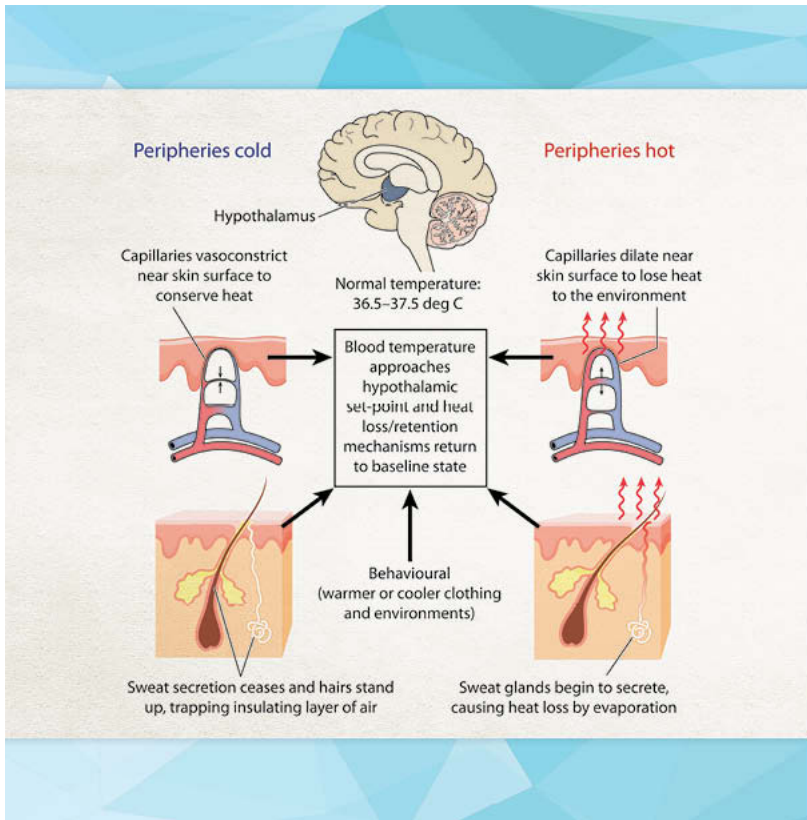
Cross section human skin. Pressure, vibration, temperature, pain and itching are transmitted via special receptor organs and nerves.

- **SENSE OF TOUCH** – (us with one of the There are thousand receptor cells, or sen cells provide the bra regarding things we ei They indicate to the cold, hot, smooth, ro parts of our body hav than other parts.

Our lips, feet and hands have extra sensors which makes these parts of the body more sensitive than others. Each type of sensation has different types of receptor cells.

Cracked heels.





- **TEMPERATURE CONTROL**

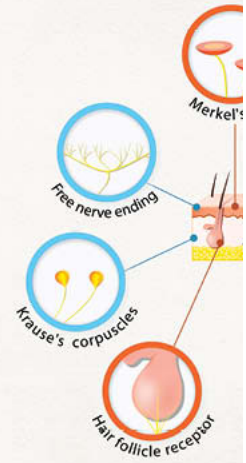
Our skin plays a major role in the control of body temperature. If the body is too hot, we start to sweat. Additionally, it has the ability to dilate the blood vessels of the skin to cool the body.

Control of body temperature by the hypothalamus causing constriction or dilation of blood vessels and sweat production.

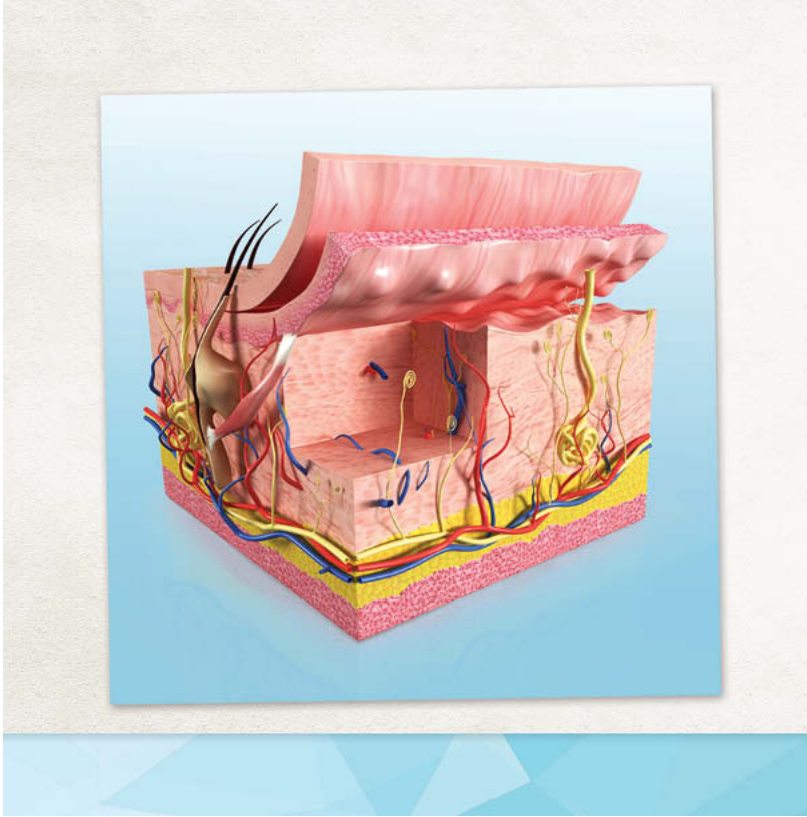
The skin can also narrow the blood vessels to help us get warm when we are chilly. The skin regulates the temperature of our body by sweat as well as controlling the blood flow.

Human skin and sensory receptors.

SENSORY R



● - temperature ● - touch



LAYERS OF

Our skin has three layers, each with a specific function.

- **EPIDERMIS** – This is the outermost layer of our skin and performs protective functions. The cells in the most outer layer are always dying and being replaced by new cells.

Skin anatomy with layers.

- **DERMIS** - The dermis contains the hair follicles, the sweat glands, and the blood cells and is thicker than the epidermis layer.
- **HYPODERMIS** - The hypodermis is underneath the dermis and connects our skin to bone and muscles.

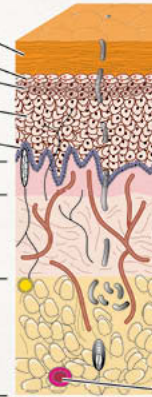
Epidermis:

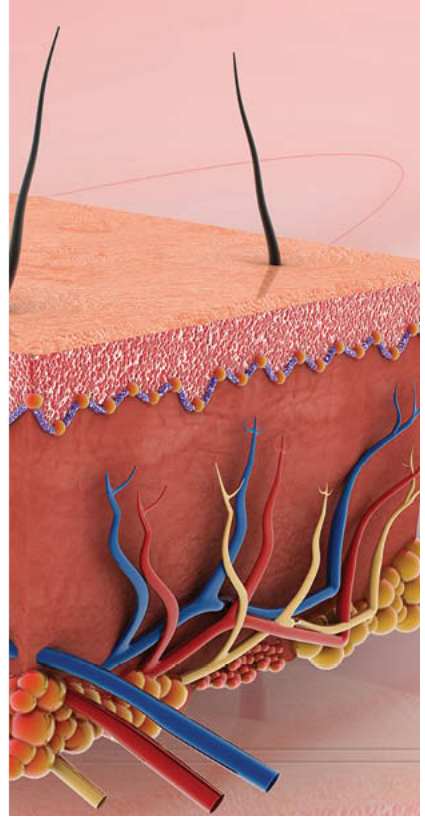
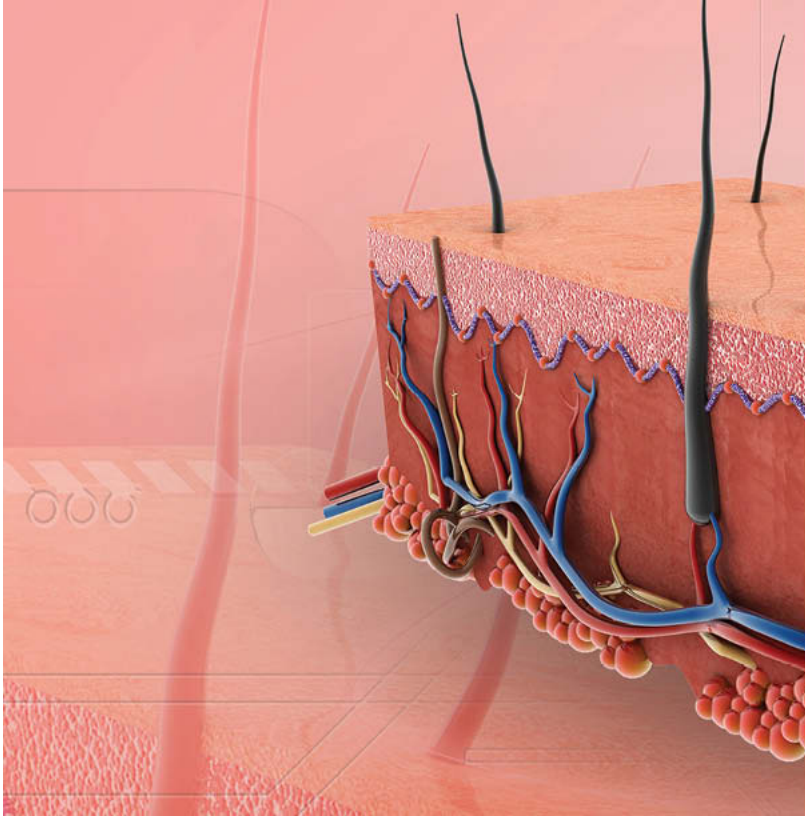
Stratum corneum
Stratum lucidum
Stratum granulosum
Stratum spinosum
Stratum basale

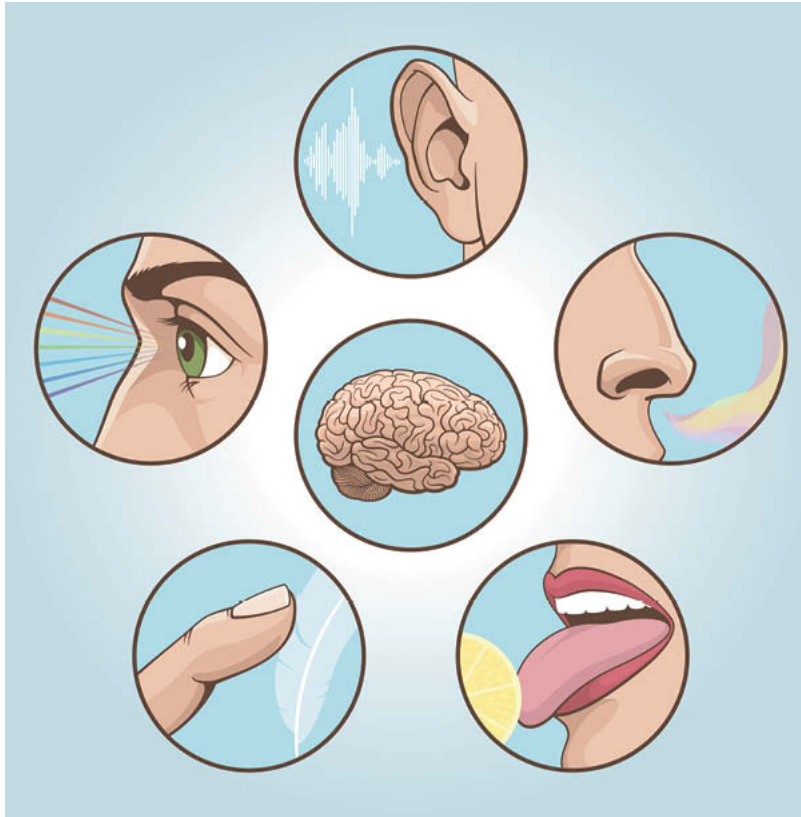
Dermis

Papillary
Reticular

**Subcutaneous
fatty tissue**







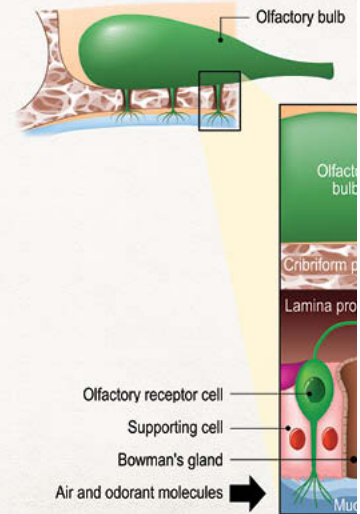
OUR FIVE

Our bodies have five senses that use for conveying information from the outside world to our brains. These senses include **Touch (Skin)** (we discussed), **Taste (Tongue)**, **Hearing (Ears)**, and **Sight (Eyes)**.

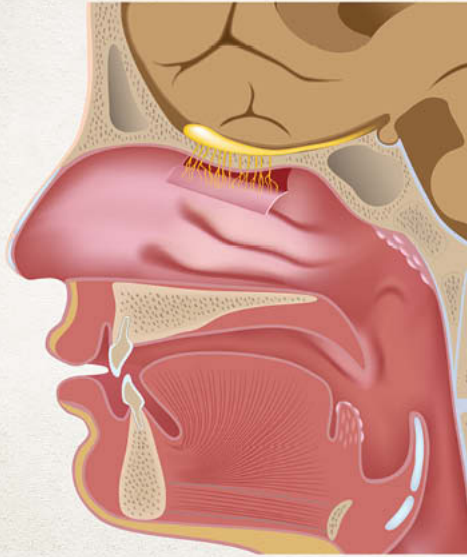
Tasting and smelling are two senses that often work together. Our nose is used for smelling things. Inside our nose are very tiny hairs referred to as cilia.

Olfactory system. Sense of smell.

OLFACTOR



Olfactory Nerve



They connect to our brain and are there to send signals to the brain using the olfactory bulb. When something enters our nose, floating in the air they pass through the mucus and we then smell what they are. tiny molecules are so small that we can't see them, but they do have a smell that we can get these molecules to the top of our nose so that our olfactory sensors can ascertain what they are.

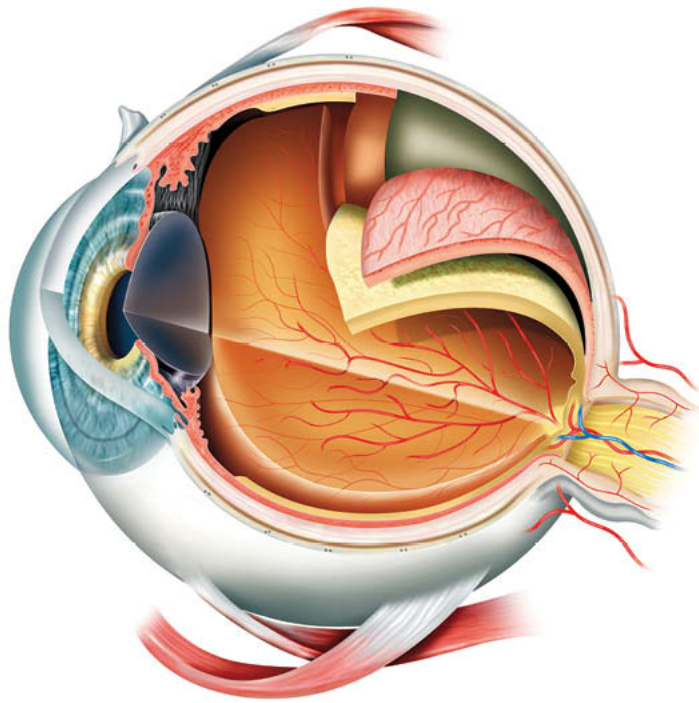
SIGHT AND OUR EYES

Sight is the sense that helps us obtain information about what is happening in the world around us. The eyes are the organs that are used to take in images and light and turns them into electrical impulses so that our brain can understand what is going on around us.

What we see is actually reflected light. The rays of light bounce from the objects into our eyes.



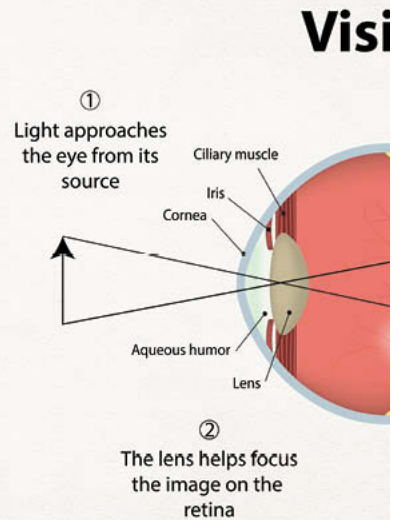
Human Eye Extra



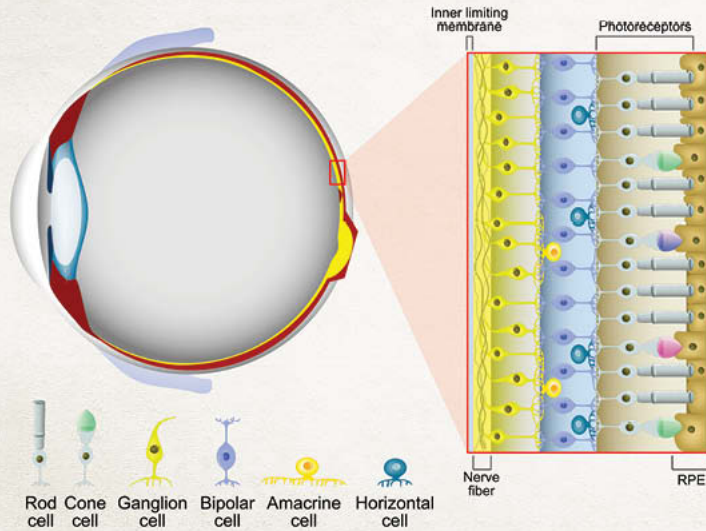
Our eyeballs consist of the iris, and the retina. The light enters our eye with the assistance of the colored area surrounding the lens, which is a muscle. Once the light passes through the lens and vitreous fluids, it lands at the back of the eye, the retina. The retina converts light into signals that our brain can understand.

Anatomy of the eye.

Our eyes also contain a lens which is used to focus the light on the retina. The brain then sends indicators to the muscles surrounding the lens to instruct it on how to focus the light, similar to how a microscope or camera works. When the lens doesn't work exactly right in focusing the light, we then end up needing contacts or glasses to see correctly.



RETINAL CELLS



The cones and rods convert the light into electrical signals. These signals are sent to the optic nerves. The brain and helps the eye to see. The eyes work as a team to see things in speed which allows us to see along with the assistance

Rod and cone cells. The arrangement shown in a cross section.

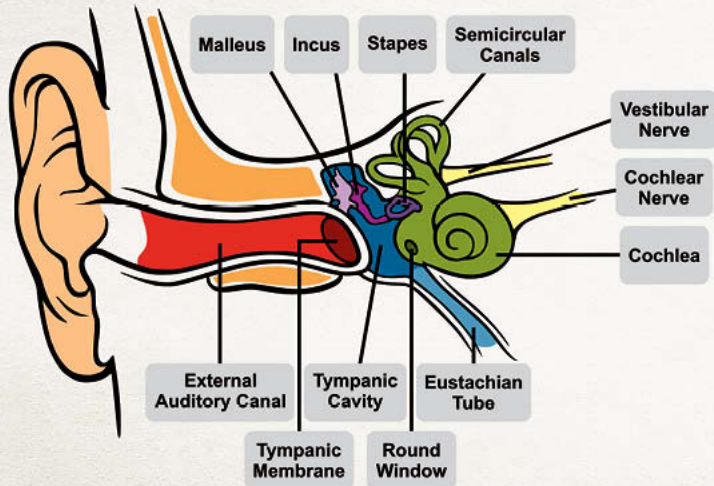
HEARING AND THE EAR

How we perceive sound is known as hearing. This is how our ears can take sound waves and make them something which our brain is able to understand. There are three key parts to the ear which help us to hear:

- **THE OUTER EAR** consists of three sections:



Human Ear Anatomy

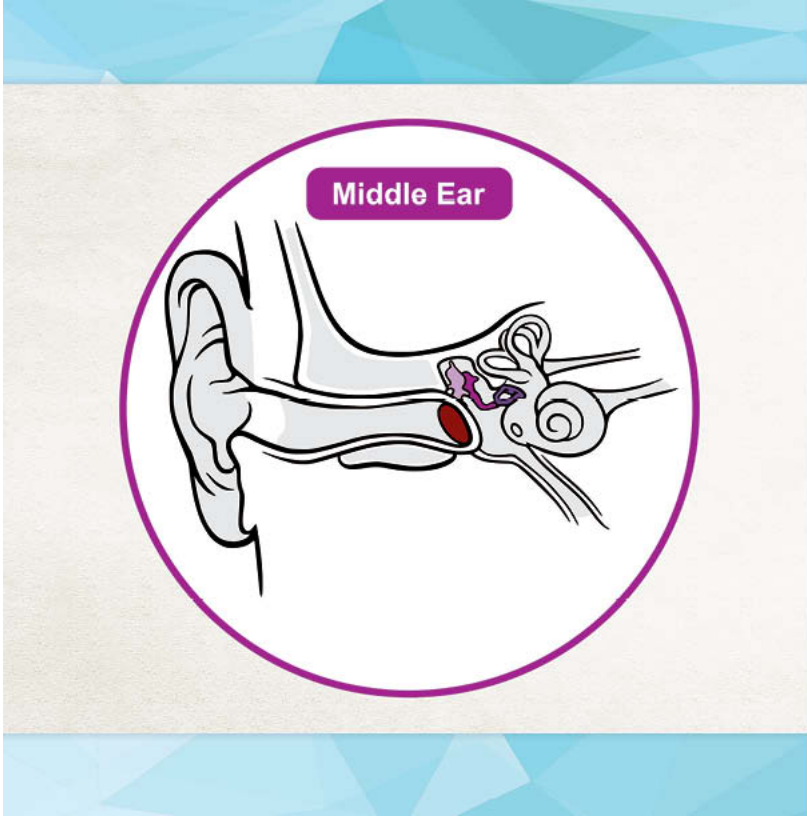


o *The Auricle* or *Pinna* is the part of the ear outside of our head. It is typically referred to as the "ear". Its primary function is to collect sound vibrations and so-called "additional sounds".

o *The Ear Canal* is the passage through which the sound waves enter the ear to the next stage.

o *The Eardrum* is a sheet that is very thin and when sound reaches it, it vibrates. It is very fragile and sensitive. It is not a good idea to ever put something into your ear, even something that might seem soft and small which can still damage it.

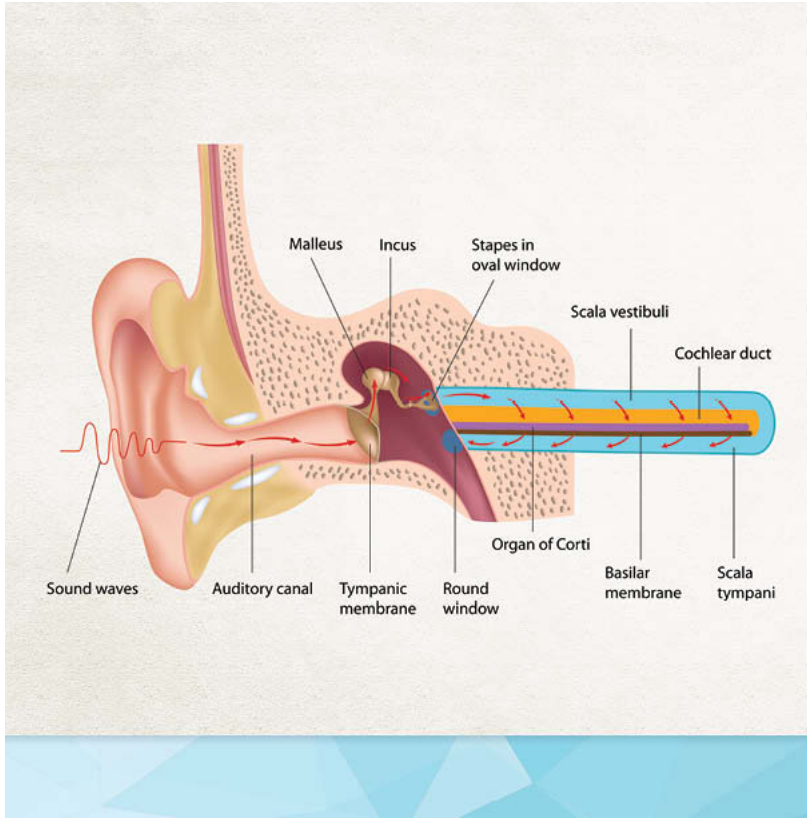




- **THE MIDDLE EAR** contains three bones. They are referred to as the *Anvil (Incus)*, and the *Hammer (Malleus)*. They are used to amplify the sound.

- **THE INNER EAR** contains fluid as well as the *Cochlea*, which is the hearing organ. It helps in taking the vibrations and translating them to electrical signals to be sent to the brain. It uses tiny hairs that vibrate along with the sound waves throughout the fluid. This is when you are able to hear something. The fluid filled tubes contained in the inner ear are also use to help you maintain your balance.





SOUND FREQUENCY

We are able to hear a certain range of sound frequencies, from 20 Hz to 20,000 Hz. Some animals, such as dolphins, cannot hear low-pitched sounds, but can hear high-pitched sounds. Cats and dogs are able to hear higher pitched sounds than humans.

Mechanism of hearing.

DIZZINESS

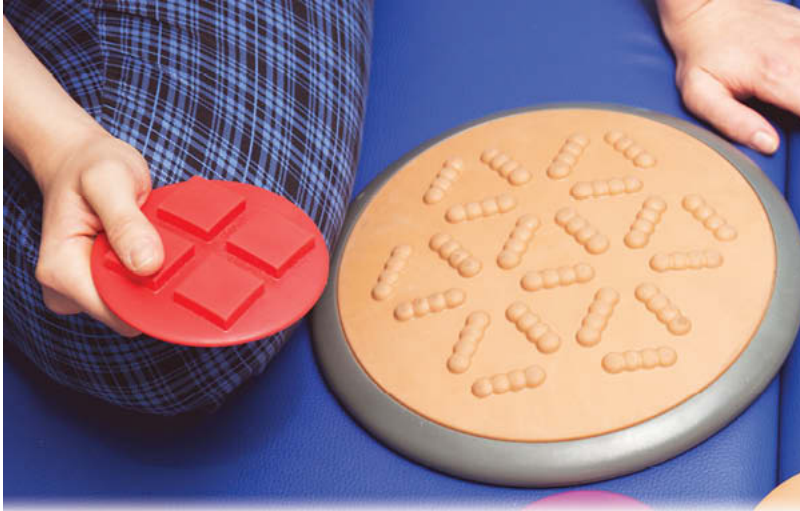
The brain has the ability to keep our body balanced using many signals. One of the signals is obtained from fluid in our inner ear. The brain learns a lot by the movement of the fluid in your ear, as well as using your sense of touch and your eyes to inform it about your position and balance.

Balance Disorders





If you spin around quickly, the fluid in your inner ear continues to spin even though your body has stopped. This can cause your brain to misinterpret the signals, causing you to feel dizzy.



The next time you touch something, think about what happens so that you are able to feel something that is hot or




cold or soft or rough. in such a short amount

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and ask questions
family and friends.



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