DOWNLOAD PDF HUMAN EYE PARTS AND FUNCTIONS

Chapter 1 : Functions of the Eye | calendrierdelascience.com

Eye Parts. Description and Functions. Cornea. The cornea is the outer covering of the eye. This dome-shaped layer protects your eye from elements that could cause damage to the inner parts of the eye.

Check new design of our homepage! A Detailed Study of the Parts of the Human Eye and Their Working This article gives you information on the parts of the human eye, its functions, and the working strategy of the eye as a whole. Bodytomy Staff Last Updated: Dec 21, Our eyes are the doorway to the external environment, and clearly, the most important of the sense organs. They play a pivotal role in our day-to-day existence. The eye receives light from the outside world, and converts it into electrical signals that are transported to the brain and perceived as an image. So what are the parts of the eye? In the coming sections, we will learn about the human eye, its various parts, and how these parts work in collaboration to enable us to see the world around us. Main Parts of the Human Eye Sclera The sclera is the white part of the eye that surrounds the cornea. It is made up of fibrous tissues, and provides protection to the inner parts of the eye. This is the tissue that is commonly called the white of the eye. Cornea The cornea is the transparent tissue at the front of the eyes through which light coming from an object enters the eye. It also helps in focusing the light on the retina. Aqueous Humor It is a clear transparent fluid that fills the space between the cornea and the eye lens. It also supplies nutrients and oxygen to these parts. Iris The iris is a ring of muscles in the central part of the eye, that is helpful in regulating the amount of light entering the eye by controlling the size of the pupil. Pupil This is an opening in the center of the iris through which light passes and falls on the eye lens. Its size is controlled by the iris. Eye Lens The lens of the eye is situated directly behind the pupil. It helps in focusing the light on the retina. The eye lens is capable of changing its shape so as to enable us to see objects near and far. Ciliary Muscles This is a ring-shaped tissue that holds and controls the movement of the eye lens, and therefore, helps in controlling the shape of the lens. Vitreous Humor It acts as a filler and covers the space between the eye lens and retina. It also provides protection to the lens. It makes up for about two-thirds of the total volume of the eye, and is composed mainly of water. Retina It is a membrane responsible for converting the light falling on it into electrical impulses that can be sent to the brain. The retina contains light-sensitive photoreceptor cells called rods and cones. The rods help in black and white vision and for seeing in dim light, while the cones help in daytime and color vision. Optic Nerve It is a bundle of nerve fibers that serve as a cable that connects the eye to the brain. This optic nerve helps in transmitting signals from the retina to the visual center of the brain. Yellow Spot or Macula Situated at the center of the retina, this yellow spot helps in absorbing excess light that enters the eye. The macula is responsible for our reading vision, and helping us to see objects right in front of us. Eyelids The eyelids help in the protection and lubrication of our eyes. They also help in controlling the amount of light falling onto our eyes. Muscles of the Eye The eyeball is held in its place by the help of several eye muscles. The eye muscles are responsible for the up and down, as well as the left and right movement of the eye. Working of the Human Eye 1. When we look at an object, the light falling on it is reflected towards our eyes, and it enters the eye through the transparent layer of cornea, which helps in focusing the light. Light then passes through the moisture-containing aqueous humor and reaches the central opening called the pupil, which with the help of the iris expands or contracts to regulate the amount of light passing through it. The light coming through the pupil passes to the eye lens, which helps in adjusting and focusing the light on the retina. It does so by changing its shape, depending upon whether the light is coming from a distant or a close-by object. The focused light then passes through the vitreous humor and is finally projected on the epiretinal membrane containing the photoreceptor cells. The rods and the cones of the retina convert the light rays into electrical impulses. These electrical signals are transmitted by the optic nerve to reach the visual centers in the brain. The brain interprets and perceives these signals as an image. Interesting Facts The eyes are said to be the ultimate marvel of biological evolution, and are often compared to the brain in terms of complexity. Here are some fascinating facts about the human eye: The human eye goes on to blink at an average of 4,, times every year. The human eye can see the light of a candle that has been placed 14 miles away, under suitable conditions. Human eyes are capable of detecting over 10 million colors. The eye of a

human can distinguish shades of the color gray. The cornea is the only living tissue that does not contain any blood vessels. All babies are colorblind when they are born. The color of the iris determines whether our eyes look black, blue, green, brown, or gray. The lens in our eye is quicker than any camera lens invented till date. During an average lifespan, a human would see around 25 million images around him. The muscles of the eyes are the most active ones in the whole body.

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Chapter 2 : human eye | Definition, Structure, & Function | calendrierdelascience.com

WebMD's Eyes Anatomy Pages provide a detailed picture and definition of the human eyes. Learn about their function and problems that can affect the eyes. A doctor uses a laser on parts of the.

How do we perceive simple light rays as full fledged images? Before getting into this, we should understand the important parts of a human eye and what their functions are. Imagine this to be like a window to a human eye. The cornea contributes to major refraction of light bending of light rays entering our eyes. It forms the clear front surface of a human eye. It also makes sure that foreign substances do not enter the eye. This lies right behind the cornea. It controls the circular opening called the pupil aperture. It functions like an automatic camera shutter, controlling the amount of light entering a human eye. The lens further focuses the light rays entering our eyes. Again, we can compare this to how an autofocus lens functions in a camera. This is called the accommodating power of the eye. Depending on where the object lies, the lens tries to focus that object. This is a jelly like substance that fills most of the inner chamber of the eye. IT helps the eye maintain its spherical nature. The light rays after passing through the opening, travel through the vitreous humor before striking the retina. It is a light-sensitive inner lining of the human eye. Ideally, light rays should focus on the retina forming an image. It is the innermost lining of the inner tissue which consists of the sclera and the choroid as well. When light finally strikes the retina, an electric signal is sent to the brain the visual cortex via the optic nerve. The brain then processes the image and finally we see what we see. Obviously there are other parts of a human eye with supporting functions like lubrication of the eye tear formation and muscles that allow eye movement. The eyelids play a very important role in protecting the eye from external damage. Apart from the optic nerves, there are other sensory nerves that relay information to the brain regarding pain and other abnormalities. You now have a brief overview about how the human eye works. Meanwhile watch an interesting video on human eye.

Chapter 3 : Parts of the Human Eye

The human eye can be compared to a camera which gathers, focuses, and transmits light through a lens to create an image of the environment. In a camera, the image is created on film; in the eye, the image is created on the retina, a thin layer of light sensitive cells at the back of the eye. The.

It can be important for consumers considering laser eye surgery. Vision is complex and our dominant sense, but the basic parts and structure of the eye can be diagrammed and defined with little effort. But before we define the human eye structure, lets look at a visual illustration of the eyeball and a brief overview of this window to our soul. The eye in an adult human is about 2. The bulk of the eye is not visible, is enclosed by fat and nestled into the skulls bony orbit. Most noticeable, though, are external accessory structures, including the eyebrows, eyelids, and eyelashes. Parts of the eye diagram There are many parts of the human eye, and its best to dissect them by layers. The three layers that form the eyeball wall are the fibrous layer, vascular layer, and inner layer. Fibrous layer The fibrous layer, which is the outermost portion of the eye, is made of avascular connective tissues. The outer art of the eye consists of two different structures: The sclera is the white of the eye. It protects and shapes the eyeball, forming the posterior. The sclera is also an anchoring site for the extrinsic eye muscles. The cornea, which lets light enter the eye, is the most exposed portion of it, making it most vulnerable to damage. The cornea bulges anteriorly from its junction with the sclera. Vascular layer The vascular layer, which is pigmented and also called the uvea, is the middle layer of the eyeball. It is composed of three different regions: The choroid layer is rich in blood vessels and provides nutrition to the entire vascular layer. The choroid is a dark brown membrane layer that forms 83 percent of the posterior portion of the vascular layer. The ciliary body is anterior of the choroid and merges with it. The ciliary body, which is a thickened ring of tissue that encircles the lens, has ciliary muscles, which control the shape of the lens. Also related to controlling shape is the suspensory ligaments also known as the ciliary zonule. The suspensory ligament helps keep the lens upright. When we think of the anatomy of eyes, we think of the iris the colored portion of the eye. This is the most anterior portion of the vascular layer and is made up of two muscles that allow for contraction and dilation of the pupil. The pupil is the opening that allows light to enter the eye. Inner layer The inner part of the eye consists of the retina. This layer is fragile and is composed of a pigmented layer and neural layer. The neural layer contains the photoreceptors. The photoreceptors, which number about a quarter-billion, come in two types: The rods are more numerous and are used for dim light and peripheral vision. The are really receptive to light but dont work for color or bright light thats the job of the cones. Weve all heard of our blind spot. This is the portion of the inner layer where the optic nerve enters the eye. Its often called a blind spot because it does not have any photoreceptors, which means any light focused on it we cant see. Our brain does fill in the gaps in our vision for us, though. The fovea, which is only about pin-head size, is located posterior in the eye and lateral to the optic disc. The fovea is a small pit that contains cones and is responsible for visual acuity i. Your fovea is responsible for helping you focus and see the text on this page. Internal segments, chambers and fluids The three layers of the eye house an anterior and posterior segment, which contains different types of fluid. The posterior segment contains the vitreous humor, which is a clear gel. This gel binds to water and serves three purposes. First, it transmits light. Second, it provides a support system, pushing the retina against the pigmented layer. Lastly, the vitreous humor helps push against extrinsic eye muscle force, helping keep intraoccular pressure normalized. The anterior segment is subdivided into an anterior and posterior chamber. The anterior chamber is the portion between the cornea and the iris. The posterior chamber is between the iris and the lens. Both chambers are filled with aqueous humor, a clear fluid which is similar to plasma in consistency. The aqueous humor has many functions, including help maintain intraoccular pressure. The lens is similar to the cornea; both are avascular. But the lens is biconvex and flexible, changing shape to allow light to precisely target the retina. If you found this article about the parts of the eye and their functions for kids helpful, consider sharing it on a social media site so other health care students can benefit.

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Chapter 4 : Parts of Human Eye and Their Functions | calendrierdelascience.com

A Detailed Study of the Parts of the Human Eye and Their Working This article gives you information on the parts of the human eye, its functions, and the working strategy of the eye as a whole. Bodytomy Staff.

Made of many working parts, the human eye functions much like a digital camera. Light enters the eye through the cornea, the clear front surface of the eye, which acts like a camera lens. The iris works much like the diaphragm of a camera--controlling how much light reaches the back of the eye. Focused by the cornea and the crystalline lens, the light makes its way to the retina. This is the light-sensitive lining in the back of the eye. Think of the retina as the electronic image sensor of a digital camera. Its job is to convert images into electronic signals and send them to the optic nerve. The optic nerve then transmits these signals to the visual cortex of the brain which creates our sense of sight. Cones are responsible for perceiving color and detail. Rods are responsible for night vision, peripheral or side vision, and detecting motion. Rods and cones convert the light from our retinas into electrical impulses, which are sent by the optic nerve to the brain, where an image is produced. The macula is the part of the retina that gives us central vision. Tears Another function of the eye is to produce tears. Tears are important in maintaining healthy eyes. Tears nourish and lubricate the surface of the eye as well as wash away debris. A normal tear consists of water, oil, and mucus. There are three main parts in the tear system: Glands that make the tear fluid, oil, and mucus Openings that let tears flow out of the eye Ducts inside the nose that tears drain through We make fewer tears as we age and that can lead to a condition called dry eye. If you believe you have dry eye, it may be time to speak with your eye doctor. Schedule an appointment today.

Chapter 5 : Structure of Eye - Structure and Function of an Human Eye

The iris of the eye functions like the diaphragm of a camera, controlling the amount of light reaching the back of the eye by automatically adjusting the size of the pupil (aperture). The eye's crystalline lens is located directly behind the pupil and further focuses light.

It is mainly responsible for vision, differentiation of color the human eye can differentiate approximately 10 â€" 12 million colors and maintaining the biological clock of the human body. The human eye can be compared to a camera as both functions by gathering, focusing, and transmitting the light through the lens for creating an image of an object. To understand more in detail about our eye and how our eye functions, we need to look into the structure of the human eye. Structure and Function of an Human Eye The human eyes are the most complicated sense organ in the human body, with several parts fixed together form a spherical structure. Every part of the human eye is mainly responsible for a certain action. The structure of a human eye can be broadly classified into the external structure and internal structure. The External Structure of an Eye The parts of the eye that are visible externally comprise of the external structure of the eye- Sclera: It is a tough and thick white sheath that protects the inner parts of the eye. It is a thin transparent membrane that is spread across the sclera. It keeps the eyes moist and clear by secreting small amounts of mucus and tears. It is the transparent layer of skin that is spread over the pupil and the iris. The main role of the cornea is to refract the light that enters the eyes. It is a pigmented layer of tissues that make up the colored portion of the eye. Its primary function is to control the size of the pupil, depending on the amount of light entering it. It is the small opening located at the middle of the Iris. It allows light to come in. The Internal Structure of an Eye The internal structure of the eye includes the following parts: It is a transparent, biconvex, and an adjustable part of an eye. The lens with the help of the cornea refracts light focused on the retina, therefore creating images on it. It is the layer present at the back of the eye where all the images are formed. It is the third and inner coat of the eye which is very sensitive towards the light because of the presence of Photoreceptors. The retina functions by converting the light rays into impulses and sending the signals to the brain through the optic nerve. It is located at the end of the eyes, behind the retina. The optic nerve is mainly responsible for carrying all the nerve impulses from the photoreceptors to the human brain , without which vision would not be possible. It is a watery fluid that is present in the area between the lens and the cornea. It is responsible for the nourishment of both the lens and the cornea. It plays an important role in maintaining the shape of the eye and also causes refraction of light before it reaches the retina.

Chapter 6 : The Anatomy of the Human Eye - with diagram of the eye.

Human Eye Facts - How It Works. There is one of the human eye facts that these small organs perform a very complex function. The working mechanism of the eyes consists of the following simple steps.

In a camera, the image is created on film; in the eye, the image is created on the retina, a thin layer of light sensitive cells at the back of the eye. The lens of the eye bends, or refracts, light that enters the eye. The cornea, which is a clear, transparent covering in the front portion of the eye also contributes to focusing light on the retina. The optic nerve transmits messages about what we see from the eye to the brain. Like a camera, the human eye controls the amount of light that enters the eye through the lens under various lighting conditions. One chart that is commonly used for measuring visual acuity is the Snellen chart, which contains letters of the alphabet arranged by line, with each line of letters from the bottom up increasing in size. The letters on the lowest line are the smallest letters on the chart, and the letter at the top is the largest. When the Snellen chart is used, visual acuity is generally measured with a person seated 20 feet away from the chart. This means that at 20 feet the person can see the line of letters that people with normal sight see from 20 feet. These imperfections, which occur because light entering the eye is not brought into sharp focus on the retina, are known as common errors of refraction or refractive errors. Refractive errors occur as a result of irregularities in the shape of the cornea, the actual size or shape of the eyeball itself, or the focusing capacity of the lens. Common refractive errors that are fully corrected with eyeglasses or contact lenses are not visual impairments because sight can be corrected to normal. Nearly every person is likely to have a refractive error at some point in life, especially after age 40, and perhaps need to wear eyeglasses or contact lenses. The common refractive errors are: Eyeglasses or contact lenses correct myopia but do not slow or alter its progression. Hyperopia Farsightedness Hyperopia is blurred vision that occurs when light is focused behind the retina,usually because the eyeball is short or small. Eyeglasses or contact lenses correct hyperopia but do not slow or alter its progression. Astigmatism Astigmatism refers to an irregularly curved cornea that distorts the focus of light entering the eye. Generally corrective lenses restore clear vision. People with presbyopia, typically those age 40 and older, experience a progressive inability to focus for near vision viewing as the lens becomes less elastic with age. Lenses with magnification are used to provide the correction needed. Variable focus lenses are also available to correct presbyopia. Visual Impairment Visual impairment describes vision that cannot be fully corrected by ordinary prescription lenses, medical treatment, or surgery. The term visual impairment includes conditions ranging from the presence of good usable vision, low vision, or to the absence of any sight at all--total blindness. Many terms are used when people refer to visual impairment. These terms are explained below. Legal Blindness Legal blindness defines visual conditions that, when present, connote eligibility for government or other benefits and services. Severe Visual Impairment Severe visual impairment is a term used by researchers at the National Center for Health Statistics NCHS to describe visual impairment in people who are unable to read ordinary newsprint even with correction. This term, used primarily for studying visual impairment in the population, is not used in clinical references by eye care professionals. People with a severe visual impairment may or may not be legally blind. Visually Impaired The term visually impaired, also used by the National Center for Health Statistics for studying visual impairment in the population, describes visual impairment in people who have difficulty reading ordinary newsprint even with correction. Like the term severe visual impairment, visual impairment is used by researchers who study the population, and is not used in clinical references. Low Vision Low vision is a clinical diagnostic term used to describe impaired vision that cannot be improved by conventional eyeglasses, contact lenses, medications, or surgery in which some good usable vision remains. People with low vision can learn to make the best use of the vision available to them. Resources Beach Street, P. Box San Francisco, CA

Chapter 7 : A Detailed Study of the Parts of the Human Eye and Their Working

If not, this lesson will help you to identify the parts of the eye and understand their specific functions. After learning about the eye, you will be able to test your knowledge with a quiz.

Anatomy of the visual apparatus Structures auxiliary to the eye The orbit The eye is protected from mechanical injury by being enclosed in a socket, or orbit, which is made up of portions of several of the bones of the skull to form a four-sided pyramid, the apex of which points back into the head. Thus, the floor of the orbit is made up of parts of the maxilla, zygomatic, and palatine bones, while the roof is made up of the orbital plate of the frontal bone and, behind this, by the lesser wing of the sphenoid. The optic foramen , the opening through which the optic nerve runs back into the brain and the large ophthalmic artery enters the orbit, is at the nasal side of the apex; the superior orbital fissure is a larger hole through which pass large veins and nerves. These nerves may carry nonvisual sensory messagesâ€”e. There are other fissures and canals transmitting nerves and blood vessels. The eyeball and its functional muscles are surrounded by a layer of orbital fat that acts much like a cushion, permitting a smooth rotation of the eyeball about a virtually fixed point, the centre of rotation. The protrusion of the eyeballsâ€”proptosisâ€”in exophthalmic goitre is caused by the collection of fluid in the orbital fatty tissue. The eyelids It is vitally important that the front surface of the eyeball, the cornea, remain moist. This is achieved by the eyelids, which during waking hours sweep the secretions of the lacrimal apparatus and other glands over the surface at regular intervals and which during sleep cover the eyes and prevent evaporation. The lids have the additional function of preventing injuries from foreign bodies, through the operation of the blink reflex. The lids are essentially folds of tissue covering the front of the orbit and, when the eye is open, leaving an almond-shaped aperture. The points of the almond are called canthi; that nearest the nose is the inner canthus, and the other is the outer canthus. The lid may be divided into four layers: The conjunctiva is a mucous membrane that serves to attach the eyeball to the orbit and lids but permits a considerable degree of rotation of the eyeball in the orbit. The portion that lines the lids is called the palpebral portion of the conjunctiva; the portion covering the white of the eyeball is called the bulbar conjunctiva. Between the bulbar and the palpebral conjunctiva there are two loose, redundant portions forming recesses that project back toward the equator of the globe. These recesses are called the upper and lower fornices, or conjunctival sacs; it is the looseness of the conjunctiva at these points that makes movements of lids and eyeball possible. The fibrous layer The fibrous layer, which gives the lid its mechanical stability, is made up of the thick, and relatively rigid, tarsal plates, bordering directly on the palpebral aperture, and the much thinner palpebral fascia, or sheet of connective tissue; the two together are called the septum orbitale. When the lids are closed, the whole opening of the orbit is covered by this septum. Two ligaments, the medial and lateral palpebral ligaments, attached to the orbit and to the septum orbitale, stabilize the position of the lids in relation to the globe. The medial ligament is by far the stronger. The muscles of the lids Closure of the lids is achieved by contraction of the orbicularis muscle, a single oval sheet of muscle extending from the regions of the forehead and face and surrounding the orbit into the lids. It is divided into orbital and palpebral portions, and it is essentially the palpebral portion, within the lid, that causes lid closure. The palpebral portion passes across the lids from a ligament called the medial palpebral ligament and from the neighbouring bone of the orbit in a series of half ellipses that meet outside the outer corner of the eye, the lateral canthus, to form a band of fibres called the lateral palpebral raphe. The muscle of Riolan, lying close to the lid margins, contributes to keeping the lids in close apposition. The orbital portion of the orbicularis is not normally concerned with blinking, which may be carried out entirely by the palpebral portion; however, it is concerned with closing the eyes tightly. It must be appreciated that the two portions can be activated independently; thus, the orbital portion may contract, causing a furrowing of the brows that reduces the amount of light entering from above, while the palpebral portion remains relaxed and allows the eyes to remain open. Opening of the eye is not just the result of passive relaxation of the orbicularis muscle but also is the effect of the contraction of the levator palpebrae superioris muscle of the upper lid. This muscle takes origin with the extraocular muscles at the apex of the orbit as a narrow tendon and runs forward into the upper lid as a broad tendon, the

levator aponeurosis, which is attached to the forward surface of the tarsus and the skin covering the upper lid. Contraction of the muscle causes elevation of the upper eyelid. The nervous connections of this muscle are closely related to those of the extraocular muscle required to elevate the eye, so that when the eye looks upward the upper eyelid tends to move up in unison. The orbicularis and levator are striated muscles under voluntary control. The lids also contain smooth involuntary muscle fibres that are activated by the sympathetic division of the autonomic system and tend to widen the palpebral fissure the eye opening by elevation of the upper, and depression of the lower, lid. In addition to the muscles already described, other facial muscles often cooperate in the act of lid closure or opening. The pyramidalis, or procerus , muscles occupy the bridge of the nose; they arise from the lower portion of the nasal bones and are attached to the skin of the lower part of the forehead on either side of the midline; they pull the skin into transverse furrows. In lid opening, the frontalis muscle, arising high on the forehead, midway between the coronal suture, a seam across the top of the skull, and the orbital margin, is attached to the skin of the eyebrows. Contraction therefore causes the eyebrows to rise and opposes the action of the orbital portion of the orbicularis; the muscle is especially used when one gazes upward. It is also brought into action when vision is rendered difficult either by distance or the absence of sufficient light. The skin The outermost layer of the lid is the skin, with features not greatly different from skin on the rest of the body, with the possible exception of large pigment cells, which, although found elsewhere, are much more numerous in the skin of the lids. The cells may wander, and it is these movements of the pigment cells that determine the changes in coloration seen in some people with alterations in health. The skin has sweat glands and hairs. As the junction between skin and conjunctiva is approached, the hairs change their character to become eyelashes. The glandular apparatus The eye is kept moist by secretions of the lacrimal glands tear glands. These almond-shaped glands under the upper lids extend inward from the outer corner of each eye. Each gland has two portions. One portion is in a shallow depression in the part of the eye socket formed by the frontal bone. The other portion projects into the back part of the upper lid. The ducts from each gland, three to 12 in number, open into the superior conjunctival fornix, or sac. From the fornix, the tears flow down across the eye and into the puncta lacrimalia, small openings at the margin of each eyelid near its inner corner. The puncta are openings into the lacrimal ducts; these carry the tears into the lacrimal sacs, the dilated upper ends of the nasolacrimal ducts, which carry the tears into the nose. The evaporation of the tears as they flow across the eye is largely prevented by the secretion of oily and mucous material by other glands. Thus, the meibomian, or tarsal glands , consist of a row of elongated glands extending through the tarsal plates; they secrete an oil that emerges onto the surface of the lid margin and acts as a barrier for the tear fluid, which accumulates in the grooves between the eyeball and the lid barriers. Extraocular muscles Six muscles outside the eye govern its movements. These muscles are the four rectus muscles â€”the inferior, medial, lateral, and superior rectiâ€”and the superior and inferior oblique muscles. The rectus muscles arise from a fibrous ring that encircles the optic nerve at the optic foramen, the opening through which the nerve passes, and are attached to the sclera, the opaque portion of the eyeball, in front of the equator, or widest part, of the eye. The superior oblique muscle arises near the rim of the optic foramen and somewhat nearer the nose than the origin of the rectus medialis. It ends in a rounded tendon that passes through a fibrous ring, the trochlea, that is attached to the frontal bone. The trochlea acts as a pulley. The tendon is attached to the sclera back of the equator of the eye. The inferior oblique muscle originates from the floor of the orbit, passes under the eyeball like a sling, and is attached to the sclera between the attachments of the superior and lateral rectus muscles. The rectus muscles direct the gaze upward and downward and from side to side. The inferior oblique muscle tends to direct the eye upward, and the superior oblique to depress the eye; because of the obliqueness of the pull, each causes the eye to roll, and in an opposite direction. The oblique muscles are strictly antagonistic to each other, but they work with the vertical rectus muscles in so far as the superior rectus and inferior oblique both tend to elevate the gaze and the inferior rectus and superior oblique both tend to depress the gaze. The superior and inferior recti do not produce a pure action of elevation or depression because their plane of action is not exactly vertical; in consequence, as with the obliques, they cause some degree of rolling torsion , but by no means so great as that caused by the obliques; the direction of rolling caused by the rectus muscle is opposite to that of its synergistic oblique; the superior rectus causes the eye to roll inward, and the

inferior oblique outward. The eye General description The eyeball is not a simple sphere but can be viewed as the result of fusing a small portion of a small, strongly curved sphere with a large portion of a large, not so strongly curved sphere Figure 1. The small piece, occupying about one-sixth of the whole, has a radius of 8 mm 0. The ring where the two areas join is called the limbus. Thus, on looking directly into the eye from in front one sees the white sclera surrounding the cornea; because the latter is transparent one sees, instead of the cornea, a ring of tissue lying within the eye, the iris. The iris is the structure that determines the colour of the eye. The centre of this ring is called the pupil. It appears dark because the light passing into the eye is not reflected back to any great extent. By use of an ophthalmoscope, an instrument that permits the observer to illuminate the interior of the eyeball while observing through the pupil, the appearance of the interior lining of the globe can be made out. Called the fundus oculi, it is characterized by the large blood vessels that supply blood to the retina; these are especially distinct as they cross over the pallid optic disk, or papilla, the region where the optic nerve fibres leave the globe. Horizontal section of the eye. The dimensions of the eye are reasonably constant, varying among normal individuals by only a millimetre or two; the sagittal vertical diameter is about 24 mm about one inch and is usually less than the transverse diameter. At birth the sagittal diameter is about 16 to 17 mm about 0. The weight is about 7. The eye is made up of three coats, which enclose the optically clear aqueous humour, lens, and vitreous body Figure 1. The outermost coat consists of the cornea and the sclera; the middle coat contains the main blood supply to the eye and consists, from the back forward, of the choroid, the ciliary body, and the iris. The innermost layer is the retina, lying on the choroid and receiving most of its nourishment from the vessels within the choroid, the remainder of its nourishment being derived from the retinal vessels that lie on its surface and are visible in the ophthalmoscope. The ciliary body and iris have a very thin covering, the ciliary epithelium and posterior epithelium of the iris, which is continuous with the retina. Within the cavities formed by this triple-layered coat there are the crystalline lens, suspended by fine transparent fibresâ€”the suspensory ligament or zonule of Zinnâ€”from the ciliary body; the aqueous humour, a clear fluid filling the spaces between the cornea and the lens and iris; and the vitreous body, a clear jelly filling the much larger cavity enclosed by the sclera, the ciliary body, and the lens. The anterior chamber of the eye is defined as the space between the cornea and the forward surfaces of the iris and lens, while the posterior chamber is the much smaller space between the rear surface of the iris and the ciliary body, zonule, and lens; the two chambers both contain aqueous humour and are in connection through the pupil. Outer and middle tunics of the globe The outermost coat The outermost coat is made up of the cornea and the sclera. The cornea is the transparent window of the eye. Up to 90 percent of the thickness of the cornea is made up of the stroma. The epithelium, which is a continuation of the epithelium of the conjunctiva, is itself made up of about six layers of cells. The superficial layer is continuously being shed, and the layers are renewed by multiplication of the cells in the innermost, or basal, layer. The stroma appears as a set of lamellae, or plates, running parallel with the surface and superimposed on each other like the leaves of a book; between the lamellae lie the corneal corpuscles, cells that synthesize new collagen connective tissue protein essential for the repair and maintenance of this layer. The lamellae are made up of microscopically visible fibres that run parallel to form sheets; in successive lamellae the fibres make a large angle with each other. The lamellae in man are about 1. The fibrous basis of the stroma is collagen. The former is about five to 10 microns thick and is made up of a different type of collagen from that in the stroma; it is secreted by the cells of the endothelium, which is a single layer of flattened cells. There is apparently no continuous renewal of these cells as with the epithelium, so that damage to this layer is a more serious matter. The sclera is essentially the continuation backward of the cornea, the collagen fibres of the cornea being, in effect, continuous with those of the sclera. The sclera is pierced by numerous nerves and blood vessels; the largest of these holes is that formed by the optic nerve, the posterior scleral foramen. The outer two-thirds of the sclera in this region continue backward along the nerve to blend with its covering, or dural sheath â€”in fact, the sclera may be regarded as a continuation of the dura mater, the outer covering of the brain. The inner third of the sclera, combined with some choroidal tissue, stretches across the opening, and the sheet thus formed is perforated to permit the passage of fasciculi bundles of fibres of the optic nerve. This region is called the lamina cribrosa Figure 1.

Chapter 8 : Human Eye Anatomy - Parts of the Eye Explained

Parts of the Eye Although the eye is a small structure, it is extremely complex and contains an immense network of nerves, blood vessels, cells and specialized tissues. To understand how the eye operates, it is first necessary to know the names and functions of some of its parts.

Helps to focus light into the retina 6. Covers the outer surface visible part of the eye 7. Provides power to the cornea 8. Provides the eye its form and shape 9. Retina Captures the light rays focussed by the lens and sends impulses to the brain via optic nerve Transmits electrical signals to the brain Contracts and extends in order to change the lens shape for focusing. Therefore the above statement is absolutely correct. The human eye is a ball about 2. It consists of the following parts: Sclerotic is the outer coating of the eye which is white in colour, that protects the interior of the eye and provides the shape to the eye. The front part of sclerotic is transparent to light and is termed as cornea. The light coming from an object enters the eye through cornea. Iris is just at the back of cornea. This controls the size of the pupil. It acts like a shutter of a photographic camer and allows the regulated amount of light to enter the eye. Eye lens is a double convex lens with the help of which image is formed at retina by refraction of light. The eye lens is held by ciliary muscles. Ciliary muscles help the eye lens to change its focal length. At the centre of the iris there is a hole through which light falls on the lens, which is called pupil. The space between cornea and eye lens is filled with a transparent fluid called aqueous humour. The space between eye lens and retina is filled with a jelly like transparent fluid called vitreous humour. Retina serves the purpose of a screen in the eye, wherethe images of the objects are formed. Retina is at the back of the eye lens. Retins is made of light sensitive cells, which are connected to the optical nerve. Optic nerve carries the information to brain. The region of eye containing the optic nerve is not at all sensitive to light and is called blind spot. If the image of an object is formed in the blind spot, it is not visible. The central part of retina lying on the optic axis of eye is most sensitive to light and is called yellow spot. Eye lids are provided to control the amount of light falling on the eye. They also protect the eye from dust particles etc. Hope it will be helpful It is strange to learn that such a small organ has so many parts. The following account provides you information on the parts of the human eye and its function along with the particular functions assigned to each part of it. The cornea is a round, transparent dome that acts as the outer window of the eye. It is the structure that focuses the light that enters the eye. It comprises five parts. All the parts work together to protect the eye and help in the proper working of the cornea as a whole. The lens is that part of the human eye that is located immediately behind the iris. It is transparent, elastic and crystalline. Its role is to focus the light and move towards the retina. The uvea forms the center of the eyeball. It is made up of three parts, choroid, ciliary body and iris. The choroid is a thin membrane that is placed between the outer protective sclera and retina. Its function is to prevent the rays of light from bouncing off on the back side of the eye. Malfunctioning of the choroid may cause the formation of confusing images. The role of ciliary body is to assist in the adjustment of the shape of the lens. The iris is described as a separate part in this section of the article. The colored part of the eye is known as iris. It is present in the eye in the form of a thin diaphragm. The iris lies between the cornea and the crystalline lens. The color is due to the presence of a pigment. It is the iris that gives your eyes a particular color. The basic iris colors are blue, green and brown. Majority of humans have varying shades of these colors. It is composed of connective tissues and smooth muscle fibers. The composition of the iris enables it to dilate or contract the pupil, which in turn controls the amount of light that falls on the retina. The retina is the innermost layer of the eye. It consists of nerve tissue that senses the light entering the eye. Its function is to send impulses through the optic nerve back to the brain, where it gets translated into the images that we see. There are four types of light-sensitive receptors present in the retina. These are rods and three different types of cones. Some cones absorb long-wavelength, some absorb middle-wavelength and the rest absorb short-wavelength. The hole in the center of the eye through which the light passes, is called the pupil. The pupil gets bigger and smaller depending on the amount of light falling on the eye. The continuation of the axons of the ganglion cells in the retina is known as the optic nerve. It connects the eye with the brain. The optic nerve emerges from the back of the eye, travels through the skull

and stops inside the skull bone. From the skull bone, the nerves move through the lateral geniculate body, the internal capsule and ends up at the back of the brain. This part of the brain is known as visual cortex. It is responsible for receiving information from the eyes and interpreting it. The sclera is the whitish, opaque part of the eye, which is connected to the cornea. Its role is to provide protection and meet the purpose of attachment for the extraocular muscles that enables eye to move. It is the jelly like substance that is present within the interior chamber behind the lens. It is that part of the human eye whose role is to provide pressure inside the eye and keep it inflated. It bends the rays of light and moves towards the pupil and iris. After passing the pupil and iris, the light rays falls on the lens of your eye. The lens of the eye functions like a camera and brings the light in focus. The lens sends the light to the back of the eye, where it reaches the retina. The photoreceptor nerve cells of the retina transforms the light into electrical impulses. These electrical impulses are then sent to the optic nerve of the eye, which transmits the information to the brain. Since both the eyes are separated by the nose, they have different fields of vision. Due to the difference in the visual fields, each eye sees at different angles of the object, and so gives different information to the brain. Along the way at the optic chiasma, some of the nerves from each optic nerve cross over so as to separately collect the information from the left and right side of the field of vision. The swapping of information takes place one more time at the cell station. This connection works in accordance with the reflexes of the pupils. The information is now received by the visual cortex, which interprets the image at this point.

Chapter 9 : Human Eye - Anatomy Of The Human Eye And Its Functions - BYJU'S

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Parts of Human Eye and Their Functions Parts of Human Eye and Their Functions Understanding the different parts of our eye can help you understand how you see and what you can do to help keep the eye functioning properly. The eye is one of the most complex parts of the body. The different parts of the eye allow the body to take in light and perceive objects around us in the proper color, detail and depth. This allows people to make more informed decisions about their environment. If a portion of the eye becomes damaged, you may not be able to see effectively, or lose your vision all together. What are the parts? Which part is not function properly when we suffer different vision problems like myopia and glaucoma? Which part produces tears? Parts of the Eye and Their Functions There are several physical and chemical elements that make up the eye. The eye is also heavily involved with the nervous system, which allows the brain to take in information from the eyes and make the appropriate decisions on how to act upon this information. The nerves must be kept in prime condition or the brain may start to receive false images, or you will not take in enough information to get an accurate perception of your environment. This dome-shaped layer protects your eye from elements that could cause damage to the inner parts of the eye. There are several layers of the cornea, creating a tough layer that provides additional protection. These layers regenerate very quickly, helping the eye to eliminate damage more easily. The cornea also allows the eye to properly focus on light more effectively. Those who are having trouble focusing their eyes properly can have their corneas surgically reshaped to eliminate this problem. Sclera The sclera is commonly referred to as the "whites" of the eye. This is a smooth, white layer on the outside, but the inside is brown and contains grooves that help the tendons of the eye attach properly. The sclera provides structure and safety for the inner workings of the eye, but is also flexible so that the eye can move to seek out objects as necessary. Pupil The pupil appears as a black dot in the middle of the eye. This black area is actually a hole that takes in light so the eye can focus on the objects in front of it. Iris The iris is the area of the eye that contains the pigment which gives the eye its color. This area surrounds the pupil, and uses the dilator pupillae muscles to widen or close the pupil. This allows the eye to take in more or less light depending on how bright it is around you. If it is too bright, the iris will shrink the pupil so that they eye can focus more effectively. Conjunctiva Glands These are layers of mucus which help keep the outside of the eye moist. If the eye dries out it can become itchy and painful. If the conjunctiva glands become infected the patient will develop "pink eye. They produce tears which help moisten the eye when it becomes dry, and flush out particles which irritate the eye. As tears flush out potentially dangerous irritants, it becomes easier to focus properly. Lens The lens sits directly behind the pupil. This is a clear layer that focuses the light the pupil takes in. It is held in place by the ciliary muscles, which allow the lens to change shape depending on the amount of light that hits it so it can be properly focused. Retina The light focuses by the lens will be transmitted onto the retina. This is made of rods and cones arranged in layers, which will transmit light into chemicals and electrical pulses. The retina is located in the back of the eye, and is connected to the optic nerves that will transmit the images the eye sees to the brain so they can be interpreted. The back of the retina, known as the macula, will help interpret the details of the object the eye is working to interpret. The center of the macula, known as the fova will increase the detail of these images to a perceivable point. Ciliary Body Ciliary body is a ring-shaped tissue which holds and controls the movement of the eye lens, and thus, it helps to control the shape of the lens. Choroid The choroid lies between the retina and the sclera, which provides blood supply to the eye. Just like any other portion of the body, the blood supply gives nutrition to the various parts of the eye. Vitreous Humor The vitreous humor is the gel located in the back of the eye which helps it hold its shape. This gel takes in nutrients from the ciliary body, aqueous humor and the retinal vessels so the eye can remain healthy. When debris finds its way into the vitreous humor, it causes the eye to perceive "floaters," or spots that move across the vision area that cannot be attributed to objects in the environment. Aqueous Humor The aqueous humor is a watery substance that fills the eye. It is split into two chambers. The anterior chamber is located in front of the iris, and the posterior chamber is directly behind it. These layers allow the eye to

maintain its shape. This liquid is drained through the Schlemm canal so that any buildup in the eye can be removed. Hope the above chart helps you understand the parts of the eye and their functions more clearly.