ANATOMY AND FUNCTION pdf

1: Function of the Digestive System

The human body is everything that makes up, well, you. The basic parts of the human body are the head, neck, torso, arms and legs. Our bodies consist of a number of biological systems that carry.

Finally, the muscles of respiration, including the diaphragm and intercostal muscles, work together to act as a pump, pushing air into and out of the lungs during breathing. The nose is a structure of the face made of cartilage, bone, muscle, and skin that supports and protects the anterior portion of the nasal cavity. The nasal cavity is a hollow space within the nose and skull that is lined with hairs and mucus membrane. The function of the nasal cavity is to warm, moisturize, and filter air entering the body before it reaches the lungs. Hairs and mucus lining the nasal cavity help to trap dust, mold, pollen and other environmental contaminants before they can reach the inner portions of the body. Air exiting the body through the nose returns moisture and heat to the nasal cavity before being exhaled into the environment. Mouth The mouth, also known as the oral cavity , is the secondary external opening for the respiratory tract. Because the pathway of air entering the body from the mouth is shorter than the pathway for air entering from the nose, the mouth does not warm and moisturize the air entering the lungs as well as the nose performs this function. The mouth also lacks the hairs and sticky mucus that filter air passing through the nasal cavity. The one advantage of breathing through the mouth is that its shorter distance and larger diameter allows more air to quickly enter the body. Pharynx The pharynx, also known as the throat, is a muscular funnel that extends from the posterior end of the nasal cavity to the superior end of the esophagus and larynx. The pharynx is divided into 3 regions: The nasopharynx is the superior region of the pharynx found in the posterior of the nasal cavity. Inhaled air from the nasal cavity passes into the nasopharynx and descends through the oropharynx, located in the posterior of the oral cavity. Air inhaled through the oral cavity enters the pharynx at the oropharynx. The inhaled air then descends into the laryngopharynx , where it is diverted into the opening of the larynx by the epiglottis. The epiglottis is a flap of elastic cartilage that acts as a switch between the trachea and the esophagus. Because the pharynx is also used to swallow food, the epiglottis ensures that air passes into the trachea by covering the opening to the esophagus. During the process of swallowing, the epiglottis moves to cover the trachea to ensure that food enters the esophagus and to prevent choking. Larynx The larynx , also known as the voice box, is a short section of the airway that connects the laryngopharynx and the trachea. The larynx is located in the anterior portion of the neck, just inferior to the hyoid bone and superior to the trachea. Several cartilage structures make up the larynx and give it its structure. The epiglottis is one of the cartilage pieces of the larynx and serves as the cover of the larynx during swallowing. The thyroid holds open the anterior end of the larynx and protects the vocal folds. Inferior to the thyroid cartilage is the ring-shaped cricoid cartilage which holds the larynx open and supports its posterior end. In addition to cartilage, the larynx contains special structures known as vocal folds, which allow the body to produce the sounds of speech and singing. The vocal folds are folds of mucous membrane that vibrate to produce vocal sounds. The tension and vibration speed of the vocal folds can be changed to change the pitch that they produce. Trachea The trachea, or windpipe, is a 5-inch long tube made of C-shaped hyaline cartilage rings lined with pseudostratified ciliated columnar epithelium. The trachea connects the larynx to the bronchi and allows air to pass through the neck and into the thorax. The rings of cartilage making up the trachea allow it to remain open to air at all times. The open end of the cartilage rings faces posteriorly toward the esophagus, allowing the esophagus to expand into the space occupied by the trachea to accommodate masses of food moving through the esophagus. The main function of the trachea is to provide a clear airway for air to enter and exit the lungs. In addition, the epithelium lining the trachea produces mucus that traps dust and other contaminants and prevents it from reaching the lungs. Cilia on the surface of the epithelial cells move the mucus superiorly toward the pharynx where it can be swallowed and digested in the gastrointestinal tract. Bronchi and Bronchioles At the inferior end of the trachea, the airway splits into left and right branches known as the primary bronchi. The left and right bronchi run into each lung before branching off into smaller secondary bronchi. The secondary bronchi carry air into the lobes of the lungsâ€”2 in the left lung and 3 in the right lung. The secondary bronchi in turn split into many smaller

tertiary bronchi within each lobe. The tertiary bronchi split into many smaller bronchioles that spread throughout the lungs. Each bronchiole further splits into many smaller branches less than a millimeter in diameter called terminal bronchioles. Finally, the millions of tiny terminal bronchioles conduct air to the alveoli of the lungs. As the airway splits into the tree-like branches of the bronchi and bronchioles, the structure of the walls of the airway begins to change. The primary bronchi contain many C-shaped cartilage rings that firmly hold the airway open and give the bronchi a cross-sectional shape like a flattened circle or a letter D. As the bronchi branch into secondary and tertiary bronchi, the cartilage becomes more widely spaced and more smooth muscle and elastin protein is found in the walls. The bronchioles differ from the structure of the bronchi in that they do not contain any cartilage at all. The presence of smooth muscles and elastin allow the smaller bronchi and bronchioles to be more flexible and contractile. The main function of the bronchi and bronchioles is to carry air from the trachea into the lungs. Smooth muscle tissue in their walls helps to regulate airflow into the lungs. When greater volumes of air are required by the body, such as during exercise, the smooth muscle relaxes to dilate the bronchi and bronchioles. The dilated airway provides less resistance to airflow and allows more air to pass into and out of the lungs. The smooth muscle fibers are able to contract during rest to prevent hyperventilation. The bronchi and bronchioles also use the mucus and cilia of their epithelial lining to trap and move dust and other contaminants away from the lungs. Lungs The lungs are a pair of large, spongy organs found in the thorax lateral to the heart and superior to the diaphragm. The negative pressure allows the lungs to passively fill with air as they relax. The left and right lungs are slightly different in size and shape due to the heart pointing to the left side of the body. The left lung is therefore slightly smaller than the right lung and is made up of 2 lobes while the right lung has 3 lobes. The interior of the lungs is made up of spongy tissues containing many capillaries and around 30 million tiny sacs known as alveoli. The alveoli are cup-shaped structures found at the end of the terminal bronchioles and surrounded by capillaries. The alveoli are lined with thin simple squamous epithelium that allows air entering the alveoli to exchange its gases with the blood passing through the capillaries. Muscles of Respiration Surrounding the lungs are sets of muscles that are able to cause air to be inhaled or exhaled from the lungs. The principal muscle of respiration in the human body is the diaphragm, a thin sheet of skeletal muscle that forms the floor of the thorax. When the diaphragm contracts, it moves inferiorly a few inches into the abdominal cavity, expanding the space within the thoracic cavity and pulling air into the lungs. Relaxation of the diaphragm allows air to flow back out the lungs during exhalation. Between the ribs are many small intercostal muscles that assist the diaphragm with expanding and compressing the lungs. These muscles are divided into 2 groups: The internal intercostal muscles are the deeper set of muscles and depress the ribs to compress the thoracic cavity and force air to be exhaled from the lungs. The external intercostals are found superficial to the internal intercostals and function to elevate the ribs, expanding the volume of the thoracic cavity and causing air to be inhaled into the lungs. Physiology of the Respiratory System Pulmonary Ventilation Pulmonary ventilation is the process of moving air into and out of the lungs to facilitate gas exchange. The respiratory system uses both a negative pressure system and the contraction of muscles to achieve pulmonary ventilation. The negative pressure system of the respiratory system involves the establishment of a negative pressure gradient between the alveoli and the external atmosphere. The pleural membrane seals the lungs and maintains the lungs at a pressure slightly below that of the atmosphere when the lungs are at rest. This results in air following the pressure gradient and passively filling the lungs at rest. As the lungs fill with air, the pressure within the lungs rises until it matches the atmospheric pressure. At this point, more air can be inhaled by the contraction of the diaphragm and the external intercostal muscles, increasing the volume of the thorax and reducing the pressure of the lungs below that of the atmosphere again. To exhale air, the diaphragm and external intercostal muscles relax while the internal intercostal muscles contract to reduce the volume of the thorax and increase the pressure within the thoracic cavity. The pressure gradient is now reversed, resulting in the exhalation of air until the pressures inside the lungs and outside of the body are equal. At this point, the elastic nature of the lungs causes them to recoil back to their resting volume, restoring the negative pressure gradient present during inhalation. External Respiration External respiration is the exchange of gases between the air filling the alveoli and the blood in the capillaries surrounding the walls of the alveoli. Air entering the lungs from the

atmosphere has a higher partial pressure of oxygen and a lower partial pressure of carbon dioxide than does the blood in the capillaries. The difference in partial pressures causes the gases to diffuse passively along their pressure gradients from high to low pressure through the simple squamous epithelium lining of the alveoli. The net result of external respiration is the movement of oxygen from the air into the blood and the movement of carbon dioxide from the blood into the air. Internal Respiration Internal respiration is the exchange of gases between the blood in capillaries and the tissues of the body. Capillary blood has a higher partial pressure of oxygen and a lower partial pressure of carbon dioxide than the tissues through which it passes. The difference in partial pressures leads to the diffusion of gases along their pressure gradients from high to low pressure through the endothelium lining of the capillaries. The net result of internal respiration is the diffusion of oxygen into the tissues and the diffusion of carbon dioxide into the blood. Transportation of Gases The 2 major respiratory gases, oxygen and carbon dioxide, are transported through the body in the blood. Blood plasma has the ability to transport some dissolved oxygen and carbon dioxide, but most of the gases transported in the blood are bonded to transport molecules. Hemoglobin can also carry a small amount of carbon dioxide from the tissues back to the lungs. However, the vast majority of carbon dioxide is carried in the plasma as bicarbonate ion. When the partial pressure of carbon dioxide is high in the tissues, the enzyme carbonic anhydrase catalyzes a reaction between carbon dioxide and water to form carbonic acid. Carbonic acid then dissociates into hydrogen ion and bicarbonate ion. When the partial pressure of carbon dioxide is low in the lungs, the reactions reverse and carbon dioxide is liberated into the lungs to be exhaled. Homeostatic Control of Respiration Under normal resting conditions, the body maintains a quiet breathing rate and depth called eupnea. Autonomic chemoreceptors in the body monitor the partial pressures of oxygen and carbon dioxide in the blood and send signals to the respiratory center of the brain stem. The respiratory center then adjusts the rate and depth of breathing to return the blood to its normal levels of gas partial pressures. Health Issues Affecting the Respiratory System When something impairs our ability to exchange carbon dioxide for oxygen, this is obviously a serious problem. Many health problems can cause respiratory problems, from allergies and asthma to pneumonia and lung cancer. The causes of these issues are just as variedâ€”among them, infection bacterial or viral , environmental exposure pollution or cigarette smoke, for instance , genetic inheritance or a combination of factors.

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2: Kidney function and anatomy (video) | Khan Academy

A Patient's Guide to Anatomy and Function of the Spine Introduction. The spine is one of the most important parts of your body. Without it, you could not keep yourself upright or even stand up.

If a surgery or catheter placement is causing urethritis, it usually resolves on its own over time. However, urethritis due to an infection requires treatment with antibiotics or antiviral medication. Urethral stricture Sometimes the urethra narrows or becomes blocked. This is known as urethral stricture. Males are more likely to develop urethral stricture because of their longer urethras, but it can affect females as well. Symptoms of urethral stricture include: Infections, including STIs, can also cause it. Most cases are treatable with minor surgery to open up the urethra or remove a blockage. Urethral cancer Urethral cancer is one of the rarer types of cancer. It can rapidly spread to surrounding tissues in the bladder and vagina. It may not cause any symptoms in its early stages. However, urethral cancer can eventually result in: Urethral syndrome Urethral syndrome is a condition that causes symptoms similar to those of a UTI. The main symptom of urethral syndrome is chronic pain in the pelvis and urinary tract. In some cases, the pain is constant. In others, certain things, including exercise, allergies, or exposure to irritants, can trigger it. Other common symptoms include an increased need to urinate and pain while urinating. Exercise or physical therapy programs may be helpful in treating urethral syndrome. Avoiding scented soaps, perfumes, or bath oils may also help. For urethral syndrome linked to allergies or food sensitivities, eliminating the following may relieve symptoms:

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3: Liver: Anatomy and Functions | Johns Hopkins Medicine Health Library

Search by topics or systems, and create a list of visuals to review, or communicate anatomy and physiological processes with patients or peers.

Watch a video about what the kidneys do. How do my kidneys work? Each of your kidneys is made up of about a million filtering units called nephrons. Each nephron includes a filter, called the glomerulus , and a tubule. The nephrons work through a two-step process: Each nephron has a glomerulus to filter your blood and a tubule that returns needed substances to your blood and pulls out additional wastes. Wastes and extra water become urine. The glomerulus filters your blood As blood flows into each nephron, it enters a cluster of tiny blood vesselsâ€"the glomerulus. The thin walls of the glomerulus allow smaller molecules, wastes, and fluidâ€"mostly waterâ€"to pass into the tubule. Larger molecules, such as proteins and blood cells, stay in the blood vessel. The tubule returns needed substances to your blood and removes wastes A blood vessel runs alongside the tubule. As the filtered fluid moves along the tubule, the blood vessel reabsorbs almost all of the water, along with minerals and nutrients your body needs. The tubule helps remove excess acid from the blood. The remaining fluid and wastes in the tubule become urine. How does blood flow through my kidneys? Blood flows into your kidney through the renal artery. This large blood vessel branches into smaller and smaller blood vessels until the blood reaches the nephrons. In the nephron, your blood is filtered by the tiny blood vessels of the glomeruli and then flows out of your kidney through the renal vein. Your blood circulates through your kidneys many times a day. In a single day, your kidneys filter about quarts of blood. Most of the water and other substances that filter through your glomeruli are returned to your blood by the tubules. Only 1 to 2 quarts become urine. Blood flows into your kidneys through the renal artery and exits through the renal vein. Your ureter carries urine from the kidney to your bladder. What are clinical trials, and are they right for you? Clinical trials are part of clinical research and at the heart of all medical advances. Clinical trials look at new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. Find out if clinical trials are right for you. What clinical trials are open? Clinical trials that are currently open and are recruiting can be viewed at www. The NIDDK translates and disseminates research findings through its clearinghouses and education programs to increase knowledge and understanding about health and disease among patients, health professionals, and the public.

ANATOMY AND FUNCTION pdf

4: Heart Valves: Anatomy and Function

Anatomy of the liver Click image to enlarge The liver is located in the upper right-hand portion of the abdominal cavity, beneath the diaphragm, and on top of the stomach, right kidney, and intestines.

Research and Ecotourism Anatomy: Form and Function Suddenly and without warning, the peaceful summer afternoon was fractured. Clanging bells and bullhorns blared the awful news: Instantly, thousands of waders and swimmers dashed in desperation for the safe solidity of the beach. For all their splashing, screaming and yelling, none of them seemed able to move remotely fast enough. Those fortunate to be in water waist-deep or shallower tried to run, but the viscous medium tugged at and restrained them like legions of steely hands. Even the best of swimmers clawed violently at the water, making relatively little progress. The cool, undulating liquid that mere moments before seemed so welcoming had become their enemy. When the last of the stampeding masses had collapsed on the sand, gasping uncontrolledly and clutching their loved ones, all eyes turned seaward. Beneath it, clearly visible, was the dark shadow of a shark perhaps 5 feet 1. Apparently disinterested in the turmoil it had inadvertently caused, the shark turned and headed for deeper water to continue hunting small schooling fishes in a more peaceful setting. As it departed, the shark never altered its fluid movements or languid pace. Form and function are inextricably linked. One influences the other as surely and intimately as do life and death. Yet form and function are rarely static. In human technologies, changes in desired features or production costs often provoke modifications in design or material. Similarly, in living things form and function can be modified through the processes of evolution. But the degree to which biological form and function can be modified has firm limits. It is a compromise many millennia in the making, tested on the anvil of natural selection and tempered by functional plasticity. Everything that the White Shark is results from the complex and subtle ways in which its component parts work together. That the White Shark is such a remarkably spare and efficient package of muscle, cartilage, organs, and instincts is testimonial to the creative genius of natural selection. Our own cleverness has yet to come close to matching the feats of engineering prowess made flesh in the Great White Shark.

ANATOMY AND FUNCTION pdf

5: Anatomy: Form and Function

An overview of how the many parts of the eye work together to produce clear vision. Visual field (VF) is a term used to describe how far you can see to the side. A normal visual field is degrees, which is a half-circle. Visual acuity (VA) is defined as the clarity of the image seen by the eye.

Digestive System Anatomy Mouth Food begins its journey through the digestive system in the mouth, also known as the oral cavity. Inside the mouth are many accessory organs that aid in the digestion of foodâ€"the tongue, teeth, and salivary glands. Teeth chop food into small pieces, which are moistened by saliva before the tongue and other muscles push the food into the pharynx. The teeth are 32 small, hard organs found along the anterior and lateral edges of the mouth. Each tooth is made of a bone-like substance called dentin and covered in a layer of enamelâ€"the hardest substance in the body. Teeth are living organs and contain blood vessels and nerves under the dentin in a soft region known as the pulp. The teeth are designed for cutting and grinding food into smaller pieces. The tongue is located on the inferior portion of the mouth just posterior and medial to the teeth. It is a small organ made up of several pairs of muscles covered in a thin, bumpy, skin-like layer. The taste buds on the surface of the tongue detect taste molecules in food and connect to nerves in the tongue to send taste information to the brain. The tongue also helps to push food toward the posterior part of the mouth for swallowing. Surrounding the mouth are 3 sets of salivary glands. The salivary glands are accessory organs that produce a watery secretion known as saliva. Saliva helps to moisten food and begins the digestion of carbohydrates. The body also uses saliva to lubricate food as it passes through the mouth, pharynx, and esophagus. Pharynx The pharynx, or throat, is a funnel-shaped tube connected to the posterior end of the mouth. The pharynx is responsible for the passing of masses of chewed food from the mouth to the esophagus. The pharynx also plays an important role in the respiratory system, as air from the nasal cavity passes through the pharynx on its way to the larynx and eventually the lungs. Because the pharynx serves two different functions, it contains a flap of tissue known as the epiglottis that acts as a switch to route food to the esophagus and air to the larynx. It carries swallowed masses of chewed food along its length. At the inferior end of the esophagus is a muscular ring called the lower esophageal sphincter or cardiac sphincter. The function of this sphincter is to close of the end of the esophagus and trap food in the stomach. Stomach The stomach is a muscular sac that is located on the left side of the abdominal cavity, just inferior to the diaphragm. In an average person, the stomach is about the size of their two fists placed next to each other. This major organ acts as a storage tank for food so that the body has time to digest large meals properly. The stomach also contains hydrochloric acid and digestive enzymes that continue the digestion of food that began in the mouth. It is located just inferior to the stomach and takes up most of the space in the abdominal cavity. The entire small intestine is coiled like a hose and the inside surface is full of many ridges and folds. These folds are used to maximize the digestion of food and absorption of nutrients. Liver and Gallbladder The liver is a roughly triangular accessory organ of the digestive system located to the right of the stomach, just inferior to the diaphragm and superior to the small intestine. The liver weighs about 3 pounds and is the second largest organ in the body. The liver has many different functions in the body, but the main function of the liver in digestion is the production of bile and its secretion into the small intestine. The gallbladder is a small, pear-shaped organ located just posterior to the liver. The gallbladder is used to store and recycle excess bile from the small intestine so that it can be reused for the digestion of subsequent meals. Pancreas The pancreas is a large gland located just inferior and posterior to the stomach. The pancreas secretes digestive enzymes into the small intestine to complete the chemical digestion of foods. Large Intestine The large intestine is a long, thick tube about 2. It is located just inferior to the stomach and wraps around the superior and lateral border of the small intestine. The large intestine absorbs water and contains many symbiotic bacteria that aid in the breaking down of wastes to extract some small amounts of nutrients. Feces in the large intestine exit the body through the anal canal. Digestive System Physiology The digestive system is responsible for taking whole foods and turning them into energy and nutrients to allow the body to function, grow, and repair itself. The six primary processes of the digestive system include: Ingestion of food Secretion of fluids and digestive enzymes

ANATOMY AND FUNCTION pdf

Mixing and movement of food and wastes through the body Digestion of food into smaller pieces Absorption of nutrients 1 Ingestion The first function of the digestive system is ingestion, or the intake of food. The mouth is responsible for this function, as it is the orifice through which all food enters the body. The mouth and stomach are also responsible for the storage of food as it is waiting to be digested. This storage capacity allows the body to eat only a few times each day and to ingest more food than it can process at one time. These fluids include saliva, mucus, hydrochloric acid, enzymes, and bile. Saliva moistens dry food and contains salivary amylase, a digestive enzyme that begins the digestion of carbohydrates. Mucus serves as a protective barrier and lubricant inside of the GI tract. Hydrochloric acid helps to digest food chemically and protects the body by killing bacteria present in our food. Enzymes are like tiny biochemical machines that disassemble large macromolecules like proteins, carbohydrates, and lipids into their smaller components. Finally, bile is used to emulsify large masses of lipids into tiny globules for easy digestion. Swallowing is the process of using smooth and skeletal muscles in the mouth, tongue, and pharynx to push food out of the mouth, through the pharynx, and into the esophagus. Peristalsis is a muscular wave that travels the length of the GI tract, moving partially digested food a short distance down the tract. It takes many waves of peristalsis for food to travel from the esophagus, through the stomach and intestines , and reach the end of the GI tract. Segmentation occurs only in the small intestine as short segments of intestine contract like hands squeezing a toothpaste tube. Segmentation helps to increase the absorption of nutrients by mixing food and increasing its contact with the walls of the intestine. Mechanical digestion is the physical breakdown of large pieces of food into smaller pieces. This mode of digestion begins with the chewing of food by the teeth and is continued through the muscular mixing of food by the stomach and intestines. Bile produced by the liver is also used to mechanically break fats into smaller globules. While food is being mechanically digested it is also being chemically digested as larger and more complex molecules are being broken down into smaller molecules that are easier to absorb. Chemical digestion begins in the mouth with salivary amylase in saliva splitting complex carbohydrates into simple carbohydrates. The enzymes and acid in the stomach continue chemical digestion, but the bulk of chemical digestion takes place in the small intestine thanks to the action of the pancreas. The pancreas secretes an incredibly strong digestive cocktail known as pancreatic juice, which is capable of digesting lipids, carbohydrates, proteins and nucleic acids. By the time food has left the duodenum , it has been reduced to its chemical building blocksâ€”fatty acids, amino acids, monosaccharides, and nucleotides. Absorption begins in the stomach with simple molecules like water and alcohol being absorbed directly into the bloodstream. Most absorption takes place in the walls of the small intestine, which are densely folded to maximize the surface area in contact with digested food. Small blood and lymphatic vessels in the intestinal wall pick up the molecules and carry them to the rest of the body. The large intestine is also involved in the absorption of water and vitamins B and K before feces leave the body. Defecation removes indigestible substances from the body so that they do not accumulate inside the gut. The timing of defecation is controlled voluntarily by the conscious part of the brain, but must be accomplished on a regular basis to prevent a backup of indigestible materials. Digestive Disorders Many diseases and health conditions - such as ulcers, GERD, IBD and celiac disease, just to name a few - lead to dysfunction in our digestive system. Learn about them by visiting our section on digestive diseases and conditions. Also, now you can test for your genetic risk of acquiring celiac disease - learn more about DNA health testing.

6: Brain Anatomy, Anatomy of the Human Brain

Clinical Cardiac CT: Anatomy and Function and millions of other books are available for Amazon Kindle. Learn more Enter your mobile number or email address below and we'll send you a link to download the free Kindle App.

Sequencing and organization Language In general, the left hemisphere of the brain is responsible for language and speech and is called the "dominant" hemisphere. The right hemisphere plays a large part in interpreting visual information and spatial processing. In about one third of people who are left-handed, speech function may be located on the right side of the brain. Left-handed people may need special testing to determine if their speech center is on the left or right side prior to any surgery in that area. Aphasia is a disturbance of language affecting speech production, comprehension, reading or writing, due to brain injury â€" most commonly from stroke or trauma. The type of aphasia depends on the brain area damaged. If this area is damaged, one may have difficulty moving the tongue or facial muscles to produce the sounds of speech. The person can still read and understand spoken language but has difficulty in speaking and writing i. The individual may speak in long sentences that have no meaning, add unnecessary words, and even create new words. They can make speech sounds, however they have difficulty understanding speech and are therefore unaware of their mistakes. Cortex The surface of the cerebrum is called the cortex. It has a folded appearance with hills and valleys. The nerve cell bodies color the cortex grey-brown giving it its name â€" gray matter Fig. Beneath the cortex are long nerve fibers axons that connect brain areas to each other â€" called white matter. The cortex contains neurons grey matter , which are interconnected to other brain areas by axons white matter. The cortex has a folded appearance. A fold is called a gyrus and the valley between is a sulcus. Each fold is called a gyrus, and each groove between folds is called a sulcus. There are names for the folds and grooves that help define specific brain regions. Deep structures Pathways called white matter tracts connect areas of the cortex to each other. Messages can travel from one gyrus to another, from one lobe to another, from one side of the brain to the other, and to structures deep in the brain Fig. Coronal cross-section showing the basal ganglia. It plays a role in controlling behaviors such as hunger, thirst, sleep, and sexual response. It also regulates body temperature, blood pressure, emotions, and secretion of hormones. The pituitary gland is connected to the hypothalamus of the brain by the pituitary stalk. It secretes hormones that control sexual development, promote bone and muscle growth, and respond to stress. It has some role in sexual development. It plays a role in pain sensation, attention, alertness and memory. These nuclei work with the cerebellum to coordinate fine motions, such as fingertip movements. Included in this system are the cingulate gyri, hypothalamus, amygdala emotional reactions and hippocampus memory. Memory Memory is a complex process that includes three phases: Different areas of the brain are involved in different types of memory Fig. Your brain has to pay attention and rehearse in order for an event to move from short-term to long-term memory â€" called encoding. Structures of the limbic system involved in memory formation. The prefrontal cortex holds recent events briefly in short-term memory. The hippocampus is responsible for encoding long-term memory. Short-term memory, also called working memory, occurs in the prefrontal cortex. It stores information for about one minute and its capacity is limited to about 7 items. For example, it enables you to dial a phone number someone just told you. It also intervenes during reading, to memorize the sentence you have just read, so that the next one makes sense. Long-term memory is processed in the hippocampus of the temporal lobe and is activated when you want to memorize something for a longer time. This memory has unlimited content and duration capacity. It contains personal memories as well as facts and figures. Skill memory is processed in the cerebellum, which relays information to the basal ganglia. It stores automatic learned memories like tying a shoe, playing an instrument, or riding a bike. Ventricles and cerebrospinal fluid The brain has hollow fluid-filled cavities called ventricles Fig. Inside the ventricles is a ribbon-like structure called the choroid plexus that makes clear colorless cerebrospinal fluid CSF. CSF flows within and around the brain and spinal cord to help cushion it from injury. This circulating fluid is constantly being absorbed and replenished. CSF is produced inside the ventricles deep within the brain. CSF fluid circulates inside the brain and spinal cord and then outside to the subarachnoid space. Common sites of obstruction: There are two ventricles deep within the

cerebral hemispheres called the lateral ventricles. They both connect with the third ventricle through a separate opening called the foramen of Monro. The third ventricle connects with the fourth ventricle through a long narrow tube called the aqueduct of Sylvius. From the fourth ventricle, CSF flows into the subarachnoid space where it bathes and cushions the brain. CSF is recycled or absorbed by special structures in the superior sagittal sinus called arachnoid villi. A balance is maintained between the amount of CSF that is absorbed and the amount that is produced. A disruption or blockage in the system can cause a build up of CSF, which can cause enlargement of the ventricles hydrocephalus or cause a collection of fluid in the spinal cord syringomyelia. Skull The purpose of the bony skull is to protect the brain from injury. The skull is formed from 8 bones that fuse together along suture lines. These bones include the frontal, parietal 2 , temporal 2 , sphenoid, occipital and ethmoid Fig. The face is formed from 14 paired bones including the maxilla, zygoma, nasal, palatine, lacrimal, inferior nasal conchae, mandible, and vomer. The brain is protected inside the skull. The skull is formed from eight bones. Inside the skull are three distinct areas: A view of the cranial nerves at the base of the skull with the brain removed. Cranial nerves originate from the brainstem, exit the skull through holes called foramina, and travel to the parts of the body they innervate. The brainstem exits the skull through the foramen magnum. The base of the skull is divided into 3 regions: Similar to cables coming out the back of a computer, all the arteries, veins and nerves exit the base of the skull through holes, called foramina. The big hole in the middle foramen magnum is where the spinal cord exits. Cranial nerves The brain communicates with the body through the spinal cord and twelve pairs of cranial nerves Fig. Ten of the twelve pairs of cranial nerves that control hearing, eye movement, facial sensations, taste, swallowing and movement of the face, neck, shoulder and tongue muscles originate in the brainstem. The cranial nerves for smell and vision originate in the cerebrum. The Roman numeral, name, and main function of the twelve cranial nerves:

7: Digestive System | Everything You Need to Know, Including Pictures

Anatomy is the study of the structure and relationship between body parts. Physiology is the study of the function of body parts and the body as a whole. Some specializations within each of these sciences follow: Gross (macroscopic) anatomy is the study of body parts visible to the naked eye, such.

8: Biliary System: Anatomy and Functions | Johns Hopkins Medicine Health Library

The liver is an essential organ that has many functions in the body, including making proteins and blood clotting factors, manufacturing triglycerides and cholesterol, glycogen synthesis, and bile production.

9: Overview of neuron structure and function (article) | Khan Academy

The brain is one of the largest and most complex organs in the human body. It is made up of more than billion nerves that communicate in trillions of connections called synapses. The brain is.

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