THE HUMAN ENRINE SYSTEM pdf

1: Diabetes Center | California | The Human Engine Clinic

Human reproductive system, organ system by which humans reproduce and bear live offspring. Provided all organs are present, normally constructed, and functioning properly, the essential features of human reproduction are (1) liberation of an ovum, or egg, at a specific time in the reproductive cycle, (2) internal fertilization of the ovum by spermatozoa, or sperm cells, (3) transport of the.

One team might make steering wheels. Another team might make seats. Other teams may assemble different parts of the engine. But even though each team is doing its own thing, they all share a common goal: Your body operates in much the same way. Different systems within your body are responsible for different jobs, yet they all share the common goal of keeping you alive. At the center of all of this activity is the heart. Circulatory system If the heart is the foreman, the circulatory system is the second in command of your body. This system is actually in charge of three different sets of operations, all designed to constantly move your blood throughout your body. The pulmonary circulatory system regulates the lungs, the coronary circulatory system regulates the heart, and the systemic circulatory system handles the other parts of your body. Much like those car factory teams we talked about, each circulatory system must do its job independently in order for the circulatory system to function as a whole. Pulmonary circulation system Did you know that you can actually hear pulmonary circulation? Pulmonary circulation is the movement of blood through the right side of the heart, to the lungs, and then back through the left side of the heart. Blood takes a very precise route during pulmonary circulation. Two large veins called the vena cavae bring blood to the right atrium of the heart. The atrium fills with the waste-rich blood and then contracts, pushing the blood through a one-way valve down into the right ventricle. The right ventricle fills and then contracts, pushing the blood out of the heart into the pulmonary artery, which leads to the lungs. In the lung capillaries , the exchange of carbon dioxide waste and oxygen takes place. Fresh, oxygen-rich blood enters the pulmonary veins and then returns to the heart, re-entering the organ through the left atrium. The oxygen-rich blood then passes through a one-way valve into the left ventricle, where it will exit the heart through the main artery, called the aorta. The contraction of the left ventricle forces the blood into the aorta, allowing the blood to begin its journey throughout the body. If blood started flowing the wrong way, the blood gases oxygen and carbon dioxide might mix, causing a serious threat to your body. However, the heart also provides these important services for itself using the coronary circulation system. When blood leaves the left ventricle of the heart through the aorta, some of that blood branches off to two coronary arteries. These narrow arteries transport oxygen-rich blood into the tissue of the heart muscle. Cardiac veins then transport de-oxygenated blood out of the heart muscle. From there, the blood is returned to the right atrium to move through the pulmonary circulation system again. Systemic circulation system The systemic circulation system supplies nourishment to all of the tissue located throughout every part of the body, minus the heart and lungs. Oxygen-rich blood enters the blood vessels through the aorta. The aorta then branches into many smaller arteries that run throughout the body. The oxygen-rich blood is transported to capillaries, where the oxygen and nutrients are released to body tissue. The capillaries also collect waste-rich blood and channel it back into the veins. The veins carry the blood back to the heart where the circulatory process begins again. The lymphatic system is a critical part of the circulatory system, helping the body to absorb nutrients and remove waste. Lymph is made up largely of white blood cells. It is created when blood plasma escapes from the blood vessels and is absorbed into the surrounding tissue. The fluid collects in lymph tubes throughout the body. After passing through a lymph node to deposit waste, the fluid is returned to the blood. Lymph nodes are the clumps of tissue that collect the waste deposits. Your tonsils and adenoids are two examples of lymph nodes. The lymph nodes also assist the spleen and the bones in producing new white blood cells. Respiratory system Do you know what happens when you breathe? Each respiration, or breath, allows the body to take in oxygen and expel carbon dioxide. Respiration is achieved through the mouth, nose, trachea, lungs, and diaphragm. Oxygen enters the respiratory system through the mouth and the nose every time you breathe in. The trachea splits into two smaller tubes called the bronchi. Each bronchus then divides again, forming the bronchial tubes. The bronchial tubes lead directly into the lungs, where they divide into many smaller tubes that connect to tiny, spongy sacs called alveoli. Inhaled oxygen passes into the alveoli and then diffuses through the surrounding capillaries into the arterial blood. Meanwhile, the waste-rich blood from the veins releases its carbon dioxide into the alveoli. The carbon dioxide follows the same path out of the lungs when you exhale. The diaphragm is a sheet of muscles that lies across the bottom of the chest cavity. The diaphragm helps pump the carbon dioxide out of the lungs and pull the oxygen back into the lungs. When the diaphragm contracts, oxygen is pulled into the lungs. When the diaphragm relaxes, carbon dioxide is pumped out of the lungs. Excretory system Believe it or not, your body is full of poison. But fear not, because your excretory system is your dedicated poison-fighting team. Your lungs, kidneys, and skin work together to ensure that waste is carried away. During systemic circulation, blood passes through the kidneys. This phase of systemic circulation is known as renal circulation. During this phase, the kidneys filter much of the waste from the blood. Each day, your kidneys produce about 1. Waste from dead cells and sweat are removed from the body through the skin. The skin not only protects the body; it has another important job as well. It also provides for the removal of dead cells and sweat, which contains waste products. Hair, fingernails, and toenails are actually accumulations of dead epidermal cells being expelled through the integumentary system. As more cells die and need to be removed, the hair and nails grow.

THE HUMAN ENRINE SYSTEM pdf

2: Anatomy of a CAR Vs. Human by Zach Pridgen on Prezi

The human brain is the body's control center, receiving and sending signals to other organs through the nervous system and through secreted hormones. It is responsible for our thoughts, feelings.

An immune cell undergoing an allergic reaction Photo courtesy National Institute of Allergy and Infectious Disease NIAID Your immune system works around the clock in thousands of different ways, but it does its work largely unnoticed. One thing that causes us to really notice our immune system is when it fails for some reason. We also notice it when it does something that has a side effect we can see or feel. Here are several examples: When you get a cut, all sorts of bacteria and viruses enter your body through the break in the skin. When you get a splinter you also have the sliver of wood as a foreign object inside your body. Your immune system responds and eliminates the invaders while the skin heals itself and seals the puncture. In rare cases the immune system misses something and the cut gets infected. It gets inflamed and will often fill with pus. Inflammation and pus are both side-effects of the immune system doing its job. When a mosquito bites you, you get a red, itchy bump. That too is a visible sign of your immune system at work. Each day you inhale thousands of germs bacteria and viruses that are floating in the air. Your immune system deals with all of them without a problem. Occasionally a germ gets past the immune system and you catch a cold, get the flu or worse. A cold or flu is a visible sign that your immune system failed to stop the germ. The fact that you get over the cold or flu is a visible sign that your immune system was able to eliminate the invader after learning about it. If your immune system did nothing, you would never get over a cold or anything else. Each day you also eat hundreds of germs, and again most of these die in the saliva or the acid of the stomach. Occasionally, however, one gets through and causes food poisoning. There is normally a very visible effect of this breach of the immune system: There are also all kinds of human ailments that are caused by the immune system working in unexpected or incorrect ways that cause problems. For example, some people have allergies. Some people have diabetes, which is caused by the immune system inappropriately attacking cells in the pancreas and destroying them. Some people have rheumatoid arthritis, which is caused by the immune system acting inappropriately in the joints. In many different diseases, the cause is actually an immune system error. Finally, we sometimes see the immune system because it prevents us from doing things that would be otherwise beneficial. For example, organ transplants are much harder than they should be because the immune system often rejects the transplanted organ.

THE HUMAN ENRINE SYSTEM pdf

3: Human Body Analogy to Car? | Yahoo Answers

The circulatory system would be the fuel lines and movement of gas in the www.enganchecubano.comnt of fluids carrying energy. The skeletal system would be the body of the car, which gives it shape and substance.

Skeletal system is the system of bones, associated cartilages and joints of human body. Together these structures form the human skeleton. Skeleton can be defined as the hard framework of human body around which the entire body is built. Almost all the hard parts of human body are components of human skeletal system. Joints are very important because they make the hard and rigid skeleton allow different types of movements at different locations. If the skeleton were without joints, no movement would have taken place and the significance of human body; no more than a stone. Human Skeleton Human skeleton is composed of three main components; Bones, Associated cartilages and Joints. Bone is a tough and rigid form of connective tissue. It is the weight bearing organ of human body and it is responsible for almost all strength of human skeleton. For more details visit: Cartilage is also a form of connective tissue but is not as tough and rigid as bone. The main difference in the cartilage and bone is the mineralization factor. Bones are highly mineralized with calcium salts while cartilages are not. Joints are important components of human skeleton because they make the human skeleton mobile. Human skeleton can be divided into two divisions. Axial skeleton forms the axis of human body. It consists of Skull, vertebral column and thoracic cage. Skull is that part of human skeleton that forms the bony framework of the head. It consists of 22 different bones that are divided into two groups: For more details, visit: It is a flexible column of vertebrae, connecting the trunk of human body to the skull and appendages. It is composed of 33 vertebrae which are divided into 5 regions: Cervical, Thoracic, Lumbar, Sacral, and Coccygeal. It is a bony cage enclosing vital human organs formed by the sternum and ribs. There are 12 pairs of ribs that are divided into three groups: True ribs, False ribs, and Floating ribs. Axial Skeleton Appendicular Skeleton: It is the skeleton of appendages of human body. It consists of Shoulder girdle, Skeleton of upper limb, Pelvic girdle and Skeleton of lower limb. It attaches the upper limb to body trunk and is formed by two bones: Clavicle is a modified long bone and is subcutaneous throughout its position. It is also known as the beauty bone. For more details on clavicle, visit: It possesses three important processes: Spine of scapula, Acromion process and Coracoid process. Skeleton of Upper limb: The skeleton of each upper limb consists of 30 bones. Click on the name of any bone for more details. There are two pelvic girdles one for each lower limb but unlike the pectoral girdles, they are jointed with each other at symphysis pubis. Each pelvic girdle is a single bone in adults and is made up of three components: Ileum, Ischium and Pubis. Skeleton of Lower limb: The skeleton of each lower limb consists of 30 bones. Appendicular Skeleton Functions of human skeleton: Human skeleton performs some important functions that are necessary for survival of human beings. It gives strength, support and shape to the body. In areas like the rib cage and skull, the skeleton protects inner soft but vital organs like heart and brain from external shocks. Bones of the human skeleton in all parts of body provide attachment to the muscles. These muscles provide motor power for producing movements of body parts. In these movements the parts of skeleton acts like levers of different types thus producing movements according to the needs of the human body. Bones like the sternum, and heads of tibia have hemopoeitic activity blood cells production. These are the sites of production of new blood cells. Basic Anatomy of Skeletal System.

4: human reproductive system | Definition, Diagram & Facts | www.enganchecubano.com

Organ systems are the groups of organs that are within an organism. Ten major organ systems of the human body are listed below along with the major organs or structures that are associated with each system.

Sacrum - 1 vertebra Coccyx tailbone - 1 vertebra With the exception of the singular sacrum and coccyx, each vertebra is named for the first letter of its region and its position along the superior-inferior axis. For example, the most superior thoracic vertebra is called T1 and the most inferior is called T Ribs and Sternum The sternum, or breastbone, is a thin, knife-shaped bone located along the midline of the anterior side of the thoracic region of the skeleton. The sternum connects to the ribs by thin bands of cartilage called the costal cartilage. There are 12 pairs of ribs that together with the sternum form the ribcage of the thoracic region. Pectoral Girdle and Upper Limb The pectoral girdle connects the upper limb arm bones to the axial skeleton and consists of the left and right clavicles and left and right scapulae. The humerus is the bone of the upper arm. It forms the ball and socket joint of the shoulder with the scapula and forms the elbow joint with the lower arm bones. The radius and ulna are the two bones of the forearm. The ulna is on the medial side of the forearm and forms a hinge joint with the humerus at the elbow. The radius allows the forearm and hand to turn over at the wrist joint. The lower arm bones form the wrist joint with the carpals, a group of eight small bones that give added flexibility to the wrist. The carpals are connected to the five metacarpals that form the bones of the hand and connect to each of the fingers. Each finger has three bones known as phalanges, except for the thumb, which only has two phalanges. Pelvic Girdle and Lower Limb Formed by the left and right hip bones, the pelvic girdle connects the lower limb leg bones to the axial skeleton. The femur is the largest bone in the body and the only bone of the thigh femoral region. The femur forms the ball and socket hip joint with the hip bone and forms the knee joint with the tibia and patella. Commonly called the kneecap, the patella is special because it is one of the few bones that are not present at birth. The patella forms in early childhood to support the knee for walking and crawling. The tibia and fibula are the bones of the lower leg. The fibula is mainly a muscle attachment point and is used to help maintain balance. The tibia and fibula form the ankle joint with the talus, one of the seven tarsal bones in the foot. The tarsals are a group of seven small bones that form the posterior end of the foot and heel. The tarsals form joints with the five long metatarsals of the foot. Then each of the metatarsals forms a joint with one of the set of phalanges in the toes. Each toe has three phalanges, except for the big toe, which only has two phalanges. Living bone cells are found on the edges of bones and in small cavities inside of the bone matrix. Although these cells make up very little of the total bone mass, they have several very important roles in the functions of the skeletal system. The bone cells allow bones to: Grow and develop Be repaired following an injury or daily wear Be broken down to release their stored minerals Types of Bones All of the bones of the body can be broken down into five types: Long bones are longer than they are wide and are the major bones of the limbs. Long bones grow more than the other classes of bone throughout childhood and so are responsible for the bulk of our height as adults. A hollow medullary cavity is found in the center of long bones and serves as a storage area for bone marrow. Examples of long bones include the femur, tibia, fibula, metatarsals, and phalanges. Short bones are about as long as they are wide and are often cubed or round in shape. The carpal bones of the wrist and the tarsal bones of the foot are examples of short bones. Flat bones vary greatly in size and shape, but have the common feature of being very thin in one direction. Because they are thin, flat bones do not have a medullary cavity like the long bones. The frontal, parietal, and occipital bones of the craniumâ€”along with the ribs and hip bonesâ€”are all examples of flat bones. Irregular bones have a shape that does not fit the pattern of the long, short, or flat bones. The vertebrae, sacrum, and coccyx of the spineâ€”as well as the sphenoid, ethmoid, and zygomatic bones of the skullâ€”are all irregular bones. The sesamoid bones are formed after birth inside of tendons that run across joints. Sesamoid bones grow to protect the tendon from stresses and strains at the joint and can help to give a mechanical advantage to muscles pulling on the tendon. The patella and the pisiform bone of the carpals are the only sesamoid bones that are counted as part of the bones of the body. Other sesamoid bones can form in the joints of the hands and feet, but are not present in all people. Parts of Bones The long bones of the body contain many distinct regions due to the way in which they develop. At birth, each long bone is made of three individual bones separated by hyaline cartilage. The epiphyses and diaphysis grow towards one another and eventually fuse into one bone. Once the long bone parts have fused together, the only hyaline cartilage left in the bone is found as articular cartilage on the ends of the bone that form joints with other bones. The articular cartilage acts as a shock absorber and gliding surface between the bones to facilitate movement at the joint. Looking at a bone in cross section, there are several distinct layered regions that make up a bone. The outside of a bone is covered in a thin layer of dense irregular connective tissue called the periosteum. The periosteum contains many strong collagen fibers that are used to firmly anchor tendons and muscles to the bone for movement. Stem cells and osteoblast cells in the periosteum are involved in the growth and repair of the outside of the bone due to stress and injury. Blood vessels present in the periosteum provide energy to the cells on the surface of the bone and penetrate into the bone itself to nourish the cells inside of the bone. The periosteum also contains nervous tissue and many nerve endings to give bone its sensitivity to pain when injured. Deep to the periosteum is the compact bone that makes up the hard, mineralized portion of the bone. Compact bone is made of a matrix of hard mineral salts reinforced with tough collagen fibers. Many tiny cells called osteocytes live in small spaces in the matrix and help to maintain the strength and integrity of the compact bone. Deep to the compact bone layer is a region of spongy bone where the bone tissue grows in thin columns called trabeculae with spaces for red bone marrow in between. The trabeculae grow in a specific pattern to resist outside stresses with the least amount of mass possible, keeping bones light but strong. Long bones have a spongy bone on their ends but have a hollow medullary cavity in the middle of the diaphysis. The medullary cavity contains red bone marrow during childhood, eventually turning into yellow bone marrow after puberty. Articulations An articulation, or joint, is a point of contact between bones, between a bone and cartilage, or between a bone and a tooth. Synovial joints are the most common type of articulation and feature a small gap between the bones. This gap allows a free range of motion and space for synovial fluid to lubricate the joint. Fibrous joints exist where bones are very tightly joined and offer little to no movement between the bones. Fibrous joints also hold teeth in their bony sockets. Finally, cartilaginous joints are formed where bone meets cartilage or where there is a layer of cartilage between two bones. These joints provide a small amount of flexibility in the joint due to the gel-like consistency of cartilage. The bones of the axial skeleton act as a hard shell to protect the internal organsâ€”such as the brain and the heart â€”from damage caused by external forces. The bones of the appendicular skeleton provide support and flexibility at the joints and anchor the muscles that move the limbs. Movement The bones of the skeletal system act as attachment points for the skeletal muscles of the body. Almost every skeletal muscle works by pulling two or more bones either closer together or further apart. Joints act as pivot points for the movement of the bones. The regions of each bone where muscles attach to the bone grow larger and stronger to support the additional force of the muscle. In addition, the overall mass and thickness of a bone increase when it is under a lot of stress from lifting weights or supporting body weight. Hematopoiesis Red bone marrow produces red and white blood cells in a process known as hematopoiesis. Red bone marrow is found in the hollow space inside of bones known as the medullary cavity. The amount of red bone marrow drops off at the end of puberty, replaced by yellow bone marrow. Storage The skeletal system stores many different types of essential substances to facilitate growth and repair of the body. Proper levels of calcium ions in the blood are essential to the proper function of the nervous and muscular systems. Bone cells also release osteocalcin, a hormone that helps regulate blood sugar and fat deposition. The yellow bone marrow inside of our hollow long bones is used to store energy in the form of lipids. Finally, red bone marrow stores some iron in the form of the molecule ferritin and uses this iron to form hemoglobin in red blood cells. Growth and Development The skeleton begins to form early in fetal development as a flexible skeleton made of hyaline cartilage and dense irregular fibrous connective tissue. These tissues act as a soft, growing framework and placeholder for the bony skeleton that will replace them. As development progresses, blood vessels begin to grow into the soft fetal skeleton, bringing stem cells and nutrients for bone growth. Osseous tissue slowly replaces the cartilage and fibrous tissue in a process called calcification. The calcified areas spread out from their blood vessels replacing the old tissues until they reach the border of another bony area. At birth, the skeleton of a newborn has more than bones; as a person ages, these bones grow together and fuse into larger bones, leaving adults with only bones. Flat bones follow the process of intramembranous ossification where the young bones grow from a primary ossification center in fibrous membranes and leave a small region of fibrous tissue in between each other. In the skull these soft spots are known as fontanels, and give the skull flexibility and room for the bones to grow. Bone slowly replaces the fontanels until the individual bones of the skull fuse together to form a rigid adult skull. Long bones follow the process of endochondral ossification where the diaphysis grows inside of cartilage from a primary ossification center until it forms most of the bone. The epiphyses then grow from secondary ossification centers on the ends of the bone. A small band of hyaline cartilage remains in between the bones as a growth plate. As we grow through childhood, the growth plates grow under the influence of growth and sex hormones, slowly separating the bones. At the same time the bones grow larger by growing back into the growth plates.

5: Engine Lubrication, Fuel, Exhaust and Electrical Systems | HowStuffWorks

The Human Body, Body Systems (1st Grade, 2nd Grade, 3rd Grade, 4th Grade) Cycles in Nature (2nd Grade) Cells (5th Grade) Life Cycles and Reproduction (5th Grade) IV.

The sexual response in both males and females can be defined by three physiological events. The first stage begins with psychogenic impulses in higher neural centres, which travel through multineuronal pathways and cause excitation of sacral parasympathetic outflow innervating vascular tissues of theâ€¦ Development of the reproductive organs The sex of a child is determined at the time of fertilization of the ovum by the spermatozoon. The differences between a male and a female are genetically determined by the chromosomes that each possesses in the nuclei of the cells. Once the genetic sex has been determined, there normally follows a succession of changes that will result, finally, in the development of an adult male or female. There is, however, no external indication of the sex of an embryo during the first eight weeks of its life within the uterus. This is a neutral or indifferent stage during which the sex of an embryo can be ascertained only by examination of the chromosomes in its cells. The next phase, one of differentiation, begins first in gonads that are to become testes and a week or so later in those destined to be ovaries. Embryos of the two sexes are initially alike in possessing similar duct systems linking the undifferentiated gonads with the exterior and in having similar external genitalia, represented by three simple protuberances. The embryos each have four ducts, the subsequent fate of which is of great significance in the eventual anatomical differences between men and women. Two ducts closely related to the developing urinary system are called mesonephric, or wolffian, ducts. In males each mesonephric duct becomes differentiated into four related structures: In females the mesonephric ducts are largely suppressed. Differentiation also occurs in the primitive external genitalia, which in males become the penis and scrotum and in females the vulva the clitoris , labia, and vestibule of the vagina. Differentiation of the external genitalia in the human embryo and fetus. At birth the organs appropriate to each sex have developed and are in their adult positions but are not functioning. Various abnormalities can occur during development of sex organs in embryos, leading to hermaphroditism , pseudohermaphroditism , and other chromosomally induced conditions. During childhood until puberty there is steady growth in all reproductive organs and a gradual development of activity. Puberty marks the onset of increased activity in the sex glands and the steady development of secondary sexual characteristics. In males at puberty the testes enlarge and become active, the external genitalia enlarge, and the capacity to ejaculate develops. Marked changes in height and weight occur as hormonal secretion from the testes increases. The larynx , or voice box, enlarges, with resultant deepening of the voice. Certain features in the skeleton, as seen in the pelvic bones and skull, become accentuated. The hair in the armpits and the pubic hair becomes abundant and thicker. Facial hair develops, as well as hair on the chest, abdomen, and limbs. Hair at the temples recedes. Skin glands become more active, especially apocrine glands a type of sweat gland that is found in the armpits and groin and around the anus. In females at puberty, the external genitalia enlarge and the uterus commences its periodic activity with menstruation. The breasts develop, and there is a deposition of body fat in accordance with the usual contours of the mature female. Growth of axillary armpit and pubic hair is more abundant, and the hair becomes thicker. The male reproductive system The male gonads are the testes; they are the source of spermatozoa and also of male sex hormones called androgens. The other genital organs are the epididymides; the ductus, or vasa, deferentia; the seminal vesicles; the ejaculatory ducts; and the penis; as well as certain accessory structures, such as the prostate and the bulbourethral Cowper glands. The principal functions of these structures are to transport the spermatozoa from the testes to the exterior, to allow their maturation on the way, and to provide certain secretions that help form the semen. External genitalia The penis The penis , the male organ of copulation, is partly inside and partly outside the body. The inner part, attached to the bony margins of the pubic arch that part of the pelvis directly in front and at the base of the trunk , is called the root of the penis. The second, or outer, portion is free, pendulous, and enveloped all over in skin; it is termed the body of the penis. The organ is composed chiefly of cavernous or erectile tissue that becomes engorged with blood to produce considerable enlargement and erection. The penis is traversed by a tube, the urethra , which serves as a passage both for urine and for semen. The body of the penis, sometimes referred to as the shaft, is cylindrical in shape when flaccid but when erect is somewhat triangular in cross section , with the angles rounded. This condition arises because the right corpus cavernosum and the left corpus cavernosum, the masses of erectile tissue, lie close together in the dorsal part of the penis, while a single body, the corpus spongiosum , which contains the urethra, lies in a midline groove on the undersurface of the corpora cavernosa. The dorsal surface of the penis is that which faces upward and backward during erection. The slender corpus spongiosum reaches beyond the extremities of the erectile corpora cavernosa and at its outer end is enlarged considerably to form a soft, conical, sensitive structure called the glans penis. The base of the glans has a projecting margin, the corona, and the groove where the corona overhangs the corpora cavernosa is referred to as the neck of the penis. The glans is traversed by the urethra, which ends in a vertical, slitlike, external opening. The skin over the penis is thin and loosely adherent and at the neck is folded forward over the glans for a variable distance to form the prepuce or foreskin. A median fold, the frenulum of the prepuce, passes to the undersurface of the glans to reach a point just behind the urethral opening. The prepuce can usually be readily drawn back to expose the glans. The root of the penis comprises two crura, or projections, and the bulb of the penis. The crura and the bulb are attached respectively to the edges of the pubic arch and to the perineal membrane the fibrous membrane that forms a floor of the trunk. Each crus is an elongated structure covered by the ischiocavernosus muscle, and each extends forward, converging toward the other, to become continuous with one of the corpora cavernosa. The oval bulb of the penis lies between the two crura and is covered by the bulbospongiosus muscle. It is continuous with the corpus spongiosum. The urethra enters it on the flattened deep aspect that lies against the perineal membrane, traverses its substances, and continues into the corpus spongiosum. The two corpora cavernosa are close to one another, separated only by a partition in the fibrous sheath that encloses them. The erectile tissue of the corpora is divided by numerous small fibrous bands into many cavernous spaces, relatively empty when the penis is flaccid but engorged with blood during erection. The structure of the tissue of the corpus spongiosum is similar to that of the corpora cavernosa, but there is more smooth muscle and elastic tissue. A deep fascia, or sheet of connective tissue , surrounding the structures in the body of the penis is prolonged to form the suspensory ligament, which anchors the penis to the pelvic bones at the midpoint of the pubic arch. The penis has a rich blood supply from the internal pudendal artery, a branch of the internal iliac artery, which supplies blood to the pelvic structures and organs, the buttocks, and the inside of the thighs. Erection is brought about by distension of the cavernous spaces with blood, which is prevented from draining away by compression of the veins in the area. The penis is amply supplied with sensory and autonomic involuntary nerves. Of the autonomic nerve fibres the sympathetic fibres cause constriction of blood vessels, and the parasympathetic fibres cause their dilation. It is usually stated that ejaculation is brought about by the sympathetic system, which at the same time inhibits the desire to urinate and also prevents the semen from entering the bladder. The scrotum The scrotum is a pouch of skin lying below the pubic symphysis and just in front of the upper parts of the thighs. It contains the testes and lowest parts of the spermatic cord. A scrotal septum or partition divides the pouch into two compartments and arises from a ridge, or raphe, visible on the outside of the scrotum. The raphe turns forward onto the undersurface of the penis and is continued back onto the perineum the area between the legs and as far back as the anus. This arrangement indicates the bilateral origin of the scrotum from two genital swellings that lie one on each side of the base of the phallus, the precursor of the penis or clitoris in the embryo. The swellings are also referred to as the labioscrotal swellings, because in females they remain separate to form the labia majora and in males they unite to form the scrotum. The skin of the scrotum is thin, pigmented, devoid of fatty tissue , and more or less folded and wrinkled. There are some scattered hairs and sebaceous glands on its surface. Below the skin is a layer of involuntary muscle, the dartos, which can alter the appearance of the scrotum. On exposure of the scrotum to cold air or cold water, the dartos contracts and gives the scrotum a shortened, corrugated appearance; warmth causes the scrotum to become smoother, flaccid, and less closely tucked in around the testes. Beneath the dartos muscle are layers of fascia continuous with those forming the coverings of each of the two spermatic cords, which suspend the testes within the scrotum and contain each ductus deferens, the testicular blood and lymph vessels, the artery to the cremaster muscle which draws the testes upward , the artery to each ductus deferens, the genital branch of the genitofemoral nerve, and the testicular network of nerves. The scrotum is supplied with blood by the external pudendal branches of the femoral artery , which is the chief artery of the thigh, and by the scrotal branches of the internal pudendal artery. The veins follow the arteries. The lymphatic drainage is to the lymph nodes in the groin. The testes The two testes , or testicles, which usually complete their descent into the scrotum from their point of origin on the back wall of the abdomen in the seventh month after conception , are suspended in the scrotum by the spermatic cords. Each testis is 4 to 5 cm about 1. This sac is lined internally by the tunica vasculosa, containing a network of blood vessels, and is covered by the tunica vaginalis, which is a continuation of the membrane that lines the abdomen and pelvis. The tunica albuginea has extensions into each testis that act as partial partitions to divide the testis into approximately compartments, or lobules. Structures involved in the production and transport of semen. Each lobule contains one or more convoluted tubules , or narrow tubes, where sperm are formed. The tubules, if straightened, would extend about 70 cm about 28 inches. The multistage process of sperm formation, which takes about 60 days, goes on in the lining of the tubules, starting with the spermatogonia, or primitive sperm cells, in the outermost layer of the lining. Spermatozoa sperm leaving the tubules are not capable of independent motion, but they undergo a further maturation process in the ducts of the male reproductive tract; the process may be continued when, after ejaculation, they pass through the female tract. Maturation of the sperm in the female tract is called capacitation. Each spermatozoon is a slender elongated structure with a head, a neck, a middle piece, and a tail. The head contains the cell nucleus. When the spermatozoon is fully mature, it is propelled by the lashing movements of the tail. The male sex hormone testosterone is produced by Leydig cells. These cells are located in the connective interstitial tissue that holds the tubules together within each lobule. The tissue becomes markedly active at puberty under the influence of the interstitial-cell-stimulating hormone of the anterior lobe of the pituitary gland ; this hormone in women is called luteinizing hormone. Testosterone stimulates the male accessory sex glands prostate, seminal vesicles and also brings about the development of male secondary sex characteristics at puberty. The hormone may also be necessary to cause maturation of sperm and to heighten the sex drive of the male. The testis is also the source of some of the female sex hormone estrogen , which may exert an influence on pituitary activity. Each testis is supplied with blood by the testicular arteries , which arise from the front of the aorta just below the origin of the renal kidney arteries. Each artery crosses the rear abdominal wall, enters the spermatic cord, passes through the inguinal canal, and enters the upper end of each testis at the back. The veins leaving the testis and epididymis form a network, which ascends into the spermatic cord. The lymph vessels, which also pass through the spermatic cord, drain to the lateral and preaortic lymph nodes. Nerve fibres to the testis accompany the vessels; they pass through the renal and aortic nerve plexuses, or networks.

6: Skeletal System â€“ Labeled Diagrams of the Human Skeleton

Your immune system works around the clock in thousands of different ways, but it does its work largely unnoticed. One thing that causes us to really notice our immune system is when it fails for some reason. We also notice it when it does something that has a side effect we can see or feel. Here are.

Jump to navigation Jump to search Automotive systems today are a vital part of life all over the world, either by helping to produce, harvest and move food to distribution centers, by moving workers into the economic machine, or simply improving the quality of life by extending the range of movement of populations. To better understand the automotive system in special the common automobile, we can better understand physics, mechanics, chemistry, and how they apply in our lives. Considering a car as a complete system The Car. An entire system in its own right. The many uses of the automobile have given rise to many forms. The many makers of cars have each added their own style to these forms. Even car owners have done much to make even more variations. Form follows function, and the functions required of a car determine the design parameters and constraints on the car as a whole and every single part of its construction. Although many different cars have been created to do many different things, and some cars have been created to do many things themselves, across the wide diversity of car uses, shapes, and sizes, most of them have evolved into having very similar systems making up their construction. Imagine a Formula 1 race car parked next to a new Sport Utility Vehicle. The differences are immediately and strikingly obvious. Under the skin, deep within the arrangement of interconnected parts, the 2 vehicles still have quite a lot in common. Even specific systems such as the suspension, are dramatically different in appearance and construction, yet each performs the same functions on both vehicles. Both cars use a reciprocating combustion engine. They both feature hydraulically operated braking systems. This book serves to explain the most common systems, and hopefully explore some of the rare and even odd systems that have been used, as well as diving into the new systems that are now arriving and are on the way. Often it will be seen that a part of one system will have an equal role in yet another. Engine Introduction to the Engine The engine is the most important part of any vehicle. The modern automotive engine is quite a system in itself. Rather complicated in its entirety, it can also be broken down into a set of subsystems. Before any discussion of the engine subsystems can begin, an understanding of the engine as a whole must be made. In our conventional sense, an automotive engine converts the chemical energy in gasoline into mechanical energy of moving a vehicle down the street. Gasoline is burned in the engine. In a process known as combustion, the atoms of the gasoline molecule are combined with atoms of the air molecule, and the result is new compounds and extra energy. The extra energy is used to propel the car. At this time it is important to point out the difference between a motor and an engine. A motor uses energy. An engine converts energy. As a prime example of the difference, let us consider steam. A steam locomotive would be a steam engine. The locomotive burns coal or wood, and thereby converts the chemical energy of the fuel into heat. The heat turns water into steam, the pressure of the steam turns the drive wheels. However, a steam turbine would be a steam motor. The steam pressure is created in an external process. High pressure steam flows into the turbine, creating the mechanical energy. This brings us to internal combustion engine. In the case of the steam locomotive, the combustion takes place in a burner and the heat from the burner is applied to a boiler. Steam exits the boiler and enters the mechanisms to turn the wheels, be it a turbine or reciprocating assembly. This could be called an external combustion engine, because the reaction of fuel and air takes place in the burner, and the conversion to mechanical energy takes place in the drive mechanism. In the internal combustion engine, the pressure from the combustion itself operates the mechanical parts that create motion. Among internal combustion engines, there are several varieties. Different types of fuel have been successfully used. Most modern cars burn either diesel fuel or gasoline. There are also different methods to create motion from the combustion process. Gas turbines and rotary engines have been used in automobiles, along with the prevalent reciprocating engine. The reciprocating engine currently exists in two forms; 2-stroke or 2-cycle and 4-stroke or 4-cycle. These names refer to the length of the combustion cycle within the combustion chamber. This 2-stroke cycle repeats while the engine is running. In the 4-stroke engine, the piston moves down 1 for an intake stroke, then up 2 for a compression stroke. The piston then moves down again 3 forced by the power of combustion, during the power stroke. Finally, the piston moves up 4 in the exhaust stroke. At this point the 4 stroke cycle repeats while the engine is running. Some history may be useful here in getting us to a useful understanding of the ICE as we know it today, however. The first known "atmospheric engine" this term will be explained shortly was created by Christian Huygen in the s for King Louis XIV. Although it never actually performed work, this prototype is crucial to ICE development. The two terms which define his invention are "external combustion" and "atmospheric;" external combustion means that the fuel-energy conversion was occurring outside of the work-producing chamber and atmospheric means that the piston in this engine was exposed to atmospheric pressure. To put these in context, imagine a massive cylinder with a vertical piston and 3 main ports; 2 of these ports are horizontally extending through the chamber wall, separated by some vertical distance, with the third port being at the chamber bottom. The piston itself is attached at the open chamber top by a pulley to some arbitrarily-set device, with the back face of the piston exposed to atmospheric air pressure. In this system, a body of water was boiled outside the main chamber external combustion and the steam was carried into the main chamber via the lower horizontal port, which would build cylinder pressure and force the piston vertically up until the higher horizontal port was reached. The steam pressure would then dump out into open atmosphere, the atmospheric pressure at the piston-back would force it down, excess water from cooling and condensation would exit out the bottom vertical port, and the pulley-attached device would have some usable working stroke such as a water carrier from the river Seine up to the Palace of Versailles. The Englishman Thomas Savory patented the use of atmospheric-style engines for removing water from coal mines. Thomas Newcomen developed a valved system around which improves system efficiency. Eventually, that valving system is automated. The first real automobile was a 3-wheeled, steam-engine propelled carriage built by Nicolas Cugnot of France in the late s. Self-propelled vehicles like these would be virtually non-existent for the next century. Operation of the four cycle engine As the four stroke engine is most commonly employed in modern automobiles, most information here will be derived from and apply to it. Two stroke engines operate under different principles. The four strokes that make up one cycle are:

7: How Your Immune System Works | HowStuffWorks

The lymphatic system is a critical part of the circulatory system, helping the body to absorb nutrients and remove waste. Lymph is made up largely of white blood cells. It is created when blood plasma escapes from the blood vessels and is absorbed into the surrounding tissue.

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

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.

8: The Human Design Chart, BodyGraph and Mandala

Inside your body there is an amazing protectioÂn mechanism called the immune www.enganchecubano.com is designed to defend you against millions of bacteria, microbes, viruses, toxins and parasites that would love to invade your body.

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

The digestive system is a group of organs working together to convert food into energy and basic nutrients to feed the *entire body. Food passes through a long tube inside the body known as the alimentary canal or the gastrointestinal tract (GI tract).*

THE HUMAN ENRINE SYSTEM pdf

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