**Digestive System**

The digestive system is one of the most complex systems of the body.  The digestive system provides the body's means of transforming food to energy.  Food first enters the digestive system through the mouth, goes through multiple organs, until they are transformed into enzymes, glucose, and other nutrients that the body can use.

**Reproductive System**

The reproductive system is the system that allows for the continuation of the human species.  This system is different in both males and females.  The role of the male’s reproductive system is to manufacture sperm and then to deliver them to the female’s reproductive tract where fertilization may occur.  The role of the female’s reproductive system is basically the same except that it goes further if the sperm meets an egg.  If fertilization occurs the female reproductive system is designed to nurture and care for the cell that will soon grow into a baby.

The sperm is produced in the males testis and then travels through a series of ducts to reach the body         exterior.  The eggs are produced in the ovary of a female.  When a egg is to be expelled or ovulated a “blister forms on the exterior of the ovary.  When the “blister” bursts the egg is collected by the ends of the fallopian tubes and travels through the fallopian tubes where it can be fertilized by a single sperm.

If an egg is fertilized it travels down into the uterus where it embeds in the wall of the uterus.  There it divides rapidly and the cells begin to specialize into the different organs of a pregnancy.  Some of the cells form the amniotic sac while some form the placenta and the umbilical cord.  Only a small number of these cells will eventually form the fetus.

**Cardiovascular System**

The cardiovascular system of the human body has one distinct job; that is to pump the blood to the different parts of the body.  The central organ in this system is the heart. It is made up of cardiac tissue and its job is to pump the blood. It first pumps the blood to the lungs to get oxygen, and then to the various parts of the body for distribution.  The blood travels through a series of arteries and veins.  The difference between the two is that  
arteries carry oxygenated blood from the heart to the body, and the veins return the oxygen-free blood back to the heart.  The circulatory is not complex, but it does an imperative job for the body.

**Endocrine System**

Next to the nervous system the endocrine system is the system that controls the body.  However, the endocrine system uses hormones to stimulate the metabolic activities of the cells.  These hormones are released into the blood stream.  Tissue response to hormones usually occur after a lag time of seconds or days.  Once started the responses tend to be much more prolonged  than those that are induced by the nervous system.

The organs of the endocrine system are small and unimpressive.  The endocrine glands of the body include the pituitary, thyroid, parathyroid, adrenal, pineal, and thymus.

Hormones are chemical compounds that regulate metabolic function of cells in the body.  There are two types of hormones: amino acid-based hormones and steroids.  Most hormones are amino acid-based.  Steroid hormones are synthesized from cholesterol.  Only the gonadal hormones and adrenocortical hormones are steroids.

**Immune System**

The Immune system is the body’s main defense against all foreign substances.  Without the immune system, the human body would die immediately from foreign bacteria.  Billions of which rest on the skin.

**Nervous System**

The nervous system is the master controlling and communicating system of the body.  Every thought, action, and emotion reflects its activity.  The nervous system is by far the most rapid acting and complex system of the body.  The cells of the nervous system communicate by means of electrical signals, which are rapid, specific, and usually cause almost immediate responses.

The nervous system is but one single system, but for convenience we divide it into two parts: the central nervous system (CNS) and the peripheral nervous system (PNS).  The CNS consists of the brain and the spinal cord which are located in the dorsal body cavity.  The CNS is the command center of the nervous system.  It interprets incoming signals and responds to them based on past experiences, reflexes, and current conditions.  The PNS is the part of the nervous system that is not part of the CNS.  It consists mainly of the nerves that extend from the brain and the spinal cord.  These nerves are called the cranial nerves and the spinal nerves, respectively.  These peripheral nerves serve as the communications link from the body to the CNS.

The PNS can then be farther divided into two functional subdivisions.  The sensory division is the division that contains the nerve fibers that carry impulses to the CNS from sensory receptors that are located throughout the body.  There are two types of sensory fibers.  The somatic afferents convey information from the skin , skeletal muscles, and joints.  The visceral afferents convey impulses from the visceral organs.  The other division of the PNS is the motor division.  This division transports messages from the CNS to organs, muscles, and glands.  The motor system can also be divided farther in to two parts.  The somatic nervous system is composed of motor nerve fibers that connect the CNS to the skeletal muscles and is often referred to as the voluntary nervous system.  The autonomic nervous system consists of nerve fibers that regulate the activity of smooth muscles, cardiac muscles, and glands.  Since we usually cannot consciously control these activities, it is generally referred to as the involuntary nervous system

**Respiratory System**

The respiratory system supplies the body with oxygen,  Air is inhaled through the nose or mouth.  It then travels into the pharynx, passes through the larynx, and down the trachea.  The trachea branch and air reaches the lungs where it will diffuse into the blood via the alveoli.

**Muscular System**

The muscular system is the largest system in the body.  Muscles are located in practically every region of the body.  The limbs are almost entirely made up of muscles.  There are over forty muscles located in the skull.  Muscles are unique because they can contract.  This contraction sets muscles apart from all other tissues. There are three different types of muscles tissue, cardiac, skeletal, and smooth.

**Skeletal System**

The skeletal system is the system that supports us and gives us our shape.  Two main structures form the skeletal system: cartilage and bone.  Cartilage is largely composed of water and contains no nerves or blood vessels.  There are three types of cartilage.  Hyaline cartilage provide support with flexibility and resistance.  It is the most abundant cartilage.  Hyaline cartilage is the cartilage that covers the bone ends at movable joints, connect the ribs to the sternum, form the skeleton of the larynx or voice box, reinforce the passageways of the respiratory system, and forms the end of our nose.  Elastic cartilage found in only two locations of the skeletal system which are supporting the external ear and forming the epiglottis. This cartilage is able to stretch and bend repetitively without braking or tearing.  Fibrocartilages are cartilages that act as pads to soften the pressure that is exerted from the bones.  This cartilage is found in the knee and forms the discs that are between the vertebrae.

Bone provide other important functions for us other than giving shape to the body.  For one, they provide a hard framework that is able to support the body and cradle the delicate organs that it contains (One must not also forget that the bones themselves are also living organs.).  They provide protection for the internal organs.  For example, the fused bones of the cranium protect the brain from injury.  The bones also allow for movement in that they are a place for the skeletal muscles to attach.  In this way the bones act as levers to move parts of the body.  The bones also store minerals that the body needs.  The most important of these are calcium and phosphate.  The bones are able to store the minerals and then release them into the bloodstream as ions.  The bones also form most of the blood cells in the blood; this takes place in the bone marrow. In all there are 206 named bones in the human skeleton.  These are group into the axial and appendicular skeletons.  The axial skeleton is formed by the bones of the head and trunk, and the appendicular skeleton is formed by the bones of the upper and lower limbs and the shoulder and hip bones.

**Urinary System**

The urinary system, or excretory system, is composed of multiple organs.  The main organ of the urinary system is the kidney.  The kidney performs dual tasks of filtering out wastes and purifying blood,   The main function of the kidneys is to filter out wastes.  Other organs in the urinary system include;  the urinary bladder, the ureters, and the urethra.  The ureters are two tubes that transport urine from the kidneys to the urinary bladder.  The urinary bladder is a large hollow muxcle sac that holds urine.  The urethra is a tube that transports urine from the bladder to an opening outside the body.

**Integumentary System**

The integumentary system, commonly called the skin, enwraps the body and serves several purposes.  First it offers protection to the underlying layers from the sun.  It also serves in body temperature regulation.  The skin is also home to millions of nerves that respond to temperature, touch, pressure, and pain.