

# The gross structure and main functions of all major body systems essay sample



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## Nervous System:

There are 3 main functions for the nervous system which are, collecting information, interpreting it, and then initiating the response. The structure of the nervous system is made up of 2 parts known as the PNS and the CNS. The PNS consists of sensory neurons and motor neurons. The CNS consists of the spinal cord and the brain.

\* Cerebrum: The cerebrum is made up of two parts known as the cerebral hemispheres. The cerebrum contains the sensory, motor and association areas of the brain.

\* Peripheral nerves: These nerves carry messages from the sensory receptor towards the Central Nervous System (CNS) and then take the messages away from the CNS towards the effectors.

\* Spinal cord: The spinal cord has also got two parts to it, known as white matter and grey matter. White matter is the outer part and grey matter which is the inner layer.

## Endocrine System

The main function of the endocrine system is to produce hormones, which are later released into the blood stream.

\* Pituitary Gland: The pituitary gland produces hormones such as HGH, which controls the growth of our bones and muscles. ADH, which controls the amount of urine, produced. Follicle Stimulating Hormone & Luteinizing Hormone, which control the female monthly cycle.

- \* Hypothalamus: This part of the endocrine system influences some of the hormones within the gland.
- \* Thyroid: This produces thyroxine which therefore controls everyday cellular metabolism.
- \* Adrenal Glands: These produce the hormone adrenaline and also various steroids.
- \* Pancreas: This is the site where insulin and glucagon are produced.
- \* Ovaries: Oestrogen and Progesterone are produced here.
- \* Testes: Testosterone is produced here.

### Male Reproductive System

The main function of the male reproductive system is to enable men to produce and maintain sperm, to discharge sperm and to produce and secrete male sex hormones. The gross structure of this system is mainly located outside of the human body but there are various parts located internally.

- \* Bladder: Urine is transported to the bladder via two ureters running from the kidneys.
- \* Seminal vesicle: These are sac-like glands that secrete a fluid that forms roughly 60% of semen. The sugar within the fluid provides the sperm the energy to swim.

- \* Prostate gland: This part of the system produces a milky secretion which all in all makes only 20% of the seminal fluid.
- \* Penis: This is composed of columns of erectile tissue that becomes erect when filled with blood.
- \* Scrotum: This relaxes and contracts to move the testes towards and away from the body to keep everything at the correct temperature.
- \* Epididymis: Once the sperm is matured they are stored here inside the coiled tube.
- \* Urethra: This is the tube that carries urine towards the exterior. The male urethra is much longer than that of a woman.
- \* Testicles: This produces the male hormone Testosterone and also produces sperm.

### Female Reproductive System

The main functions of the female reproductive system are to distribute the sex hormones and transports the ova to the site of fertilisation. Its gross structure is mainly internal organs but there are also various external parts as well.

- \* Fallopian tubes: A tube either side of the uterus receives the released eggs from the ovaries.
- \* Ovary: This releases an egg each month from alternative ovaries. They produce the hormone oestrogen and progesterone.

\* Uterus: This is the site of pregnancy where the developing baby grows. The uterus aids the transfer of food via the placenta during pregnancy.

\* Cervix: This is situated at the neck of the uterus. When it is opened it accepts sperm in and lets menstruation blood and a baby pass through. The cervix dilates when in labour.

\* Vagina: This is a highly elasticised muscular passage from the uterus to the external genitals.

## The Lymphatic System

The lymphatic system consists of many vessels which all join with the blood system in the shoulders. Its main function is to return excess fluid, absorb fats and to fight against microorganisms. The gross structure of the lymphatic system is all internal and it is most commonly linked to the lymph nodes which are designed to trap foreign bodies.

\* Tonsils: These glands produce antibiotics against inhaled organisms.

\* Thymus: This gland is the site where important lymphocytes known otherwise as T-Cells mature.

\* Spleen: This is the largest one of the lymph organs. The spleen produces anti-bodies and filters out damaged red blood cells.

## Muscular-Skeletal System

### Muscles

The main function of the muscular system is designed to aid movement within the human body. Any type of movement that we attempt involves the use of at least one muscle. The gross structure is basically attached to all bones within the body, that is why it is more commonly known as the musculo-skeletal system.

\* Pectorals: This is a muscle in the front cavity of the chest. It is known to be the bulk of the chest in a male and under the breasts of a female.

\* Biceps: this is a muscle from either of two muscle pairs in the body (left or right)

\* Brachioradials: this is a muscle in the forearm that acts to flex the forearm at the elbow.

\* External Oblique: the largest muscle within the abdominal area

\* Sartorius: a long thin muscle that runs down the front of the thigh

\* Quadriceps: includes 4 prevailing muscles on the front of the body

\* Extensor digitorum longus: this is situated at the top of the front of the leg

\* Tibialis: this is the muscle in the shin area, it spans the complete length of the tibia

Muscular-Skeletal System

Bones

The main function for the skeletal system is to provide a safe structure for all internal organs, this provides a framework to prevent our organs from being damaged. Another function is to aid movement in all human beings. The gross structure is all internal, as it is basically the skeleton which contain 206 named bones.

\* Maxilla: This is the fusion of 2 bones in the upper jaw cavity

\* Mandible: this is the largest and strongest bone in the face. This forms the lower jaw

\* Clavicle: this is a long bone that makes up part of the shoulder blade

\* Ribs: the long curved bones which form the rib cage. The main function of your ribs is to protect your vital organs

\* Sternum: this is a long flat bone located in the centre of the chest, also known as your breastbone

\* Radius: this is situated on the forearm and extends from the outside of the limb

\* Ulna: this is also known as the elbow bone. It is situated on the inside of the lower arm

\* Pelvis: this is the long bony structure located at the base of the spine

Immune System

The main function of the immune system is to fight against unknown antibodies, diseases and infections.

- \* Adenoids: mass of tissue situated in the back of the nose
- \* Tonsils: lumps of tissue situated either side of the throat
- \* Thymus: an organ situated in the upper portion of the chest cavity right behind the breastbone
- \* Lymph Nodes: they are situated all over the body, and their main function is to swell up to fight bacteria and infection
- \* Spleen: This is a vital organ located in the abdomen. Its main function is to destroy old red blood cells and fight infections
- \* Lymphatic vessels: these are small vessels spread throughout the human body and are there because they generate the blood around the body during circulation
- \* Peyer's patches: they are found in the lower part of the intestine and are responsible for the importance of the immune system
- \* Appendix: the appendix has no particular function but is situated on the right side in the lower abdomen
- \* Bone marrow: this is the soft tissue found in the hollow interior of the bones

## Digestive System



The main function of the digestive system is to turn food into energy. The digestive system contains many different components, most of which are explained below:

- \* Nasal cavity – This is situated behind the nose, and its main function is to receive and give out oxygen during breathing
- \* Mouth – This is situated on the lower part of the face, its main function is accepting food and drink
- \* Oesophagus – Food is passed through this part of the digestive system. It is sometimes mistaken for the trachea.
- \* Liver – The main purpose of the liver is to maintain the glycogen storage. The liver is situated just below the diaphragm
- \* Stomach – this is a bean shaped organ, situated just below the oesophagus and its main function is to break down certain molecules within the body
- \* Pancreas – The pancreas is within the human body because it both, produces hormones and secretes pancreatic juices
- \* Gall bladder – this is a pear shaped organ and its main function is to store bile
- \* Duodenum – It is known as the smallest part of the small intestine and its main function is being responsible for the break down of food in the small intestine

\* Large intestine – its function is to absorb the remaining water from undigested food taken in through the mouth

\* Small intestine – the small intestine is connected to the large intestine and therefore carries waste towards the exterior

\* Rectum – this is about 20mm long and its function is to remove waste effectively. This is the exit for faeces and other waste products