

Sample essay on urinary system

[Health & Medicine](#), [Stress](#)



**ASSIGN
BUSTER**

This is the discussion of the results of the anatomy of the urinary system. The report analyses the structure and functions of various organs and cells that are involved in the excretion of toxic material from the body.

Simple cuboidal epithelium of the kidney the

The epithelial cells: are uni-layered, they are square in shape. The nucleus is placed at the centre of these tissues. They have Squamous cells that are plate like. They appear very thin.

Surface epithelium: have different surface proteins. Facilitate absorption and transportation of filtered materials in the kidney tubes.

Transitional Epithelium of the Bladder

ct = connective tissue
lu = lumen
rbc = red blood cell (stained bright pink in this slide)

The cells provide transitional capabilities depending on the fill of the bladder. The connections cells connect the outer and the inner part allowing for the stretch and contraction. They expand as excretion continues allowing for more space for storages of urine before it is passed out through the urethra.

Cross-section of the ureter

Connective cells: connects the inner and outer layer of the ureter. Found in the transitional epithelium.

Cross Section of Urethra

Transitional epithelium cells allow for expansion and contraction of the urethra.

Part one

How is the tissue of the kidneys structurally modified to aid in filtration?

Nephrons are adapted to their function in following ways. They have glomerular capillaries with fenestrations. The capillaries allow substances of certain size to pass through. Red blood cells and plasma cells are too big to pass through the fenestrations.

Within the nephron, there is the Bowman's capsule that has squamous cells and podocytes. It wraps around the fenestrations leaving filtration slits. It is negatively charged and repels some of the molecules that are negatively charged. The basement membrane also blocks some of the molecules from entering it.

Proximal tubes receive the molecules that go beyond the fenestrations, basement membrane and filtration slits. Amino acids, glucose, and electrolytes are reabsorbed.

The loop of Henle receives molecules from the proximal tubes. Water is reabsorbed at this point.

Distal Tubules and collecting duct; reabsorbs sodium and excretes potassium and hydrogen ions. It has lining cells that allow chloride to pass through back to the system.

What is important functionally about transitional epithelium?

The transitional epithelium allows for expansion and contraction of the bladder depending on the fill.

What is the function of the ureter? How does its structure support this function?

The ureter connects the kidneys and the urinary bladder. It is the passage of

the excreted waste from the kidney to the bladder. It is thick walled, has mucous coating on the inside to reduce corrosion, and has smooth muscles. The ureter is such an angle as it enters the bladder such that it cannot allow urine to go back. The outer layer has fibrous connective tissues.

What is the function of the urethra? How does its structure support this function?

The urethra passes out urine from the bladder. The inner surface is coated with mucous and has relatively thick smooth muscle tissues that are longitudinal.

Part two

What is the function of the fat that surrounds the kidneys?

The fat surrounding the kidneys serves to cushion the kidneys from damage. The fat acts as insulators to external pressure that cannot be withstood by the surrounding organs.

What is the function of the kidneys?

The kidney serves as part of the homeostasis of the whole body. It regulates acid and bases in body as well as the electrolyte concentration. It also regulates blood pressure. In specific terms, the kidney excretes metabolism products that include the nitrogenous wastes known as urea. The urea is removed from catabolism, uric acid, and nucleic acid. The kidney also helps in the reabsorption of the vital molecules required by the body. These include glucose, water, among others.

The human body is adapted to remove waste in the following ways. The first is exhalation that removes carbon dioxide from the body through the lungs.

The skin regulates salt in body and removes wastes from the body through sweating. The skins also remove dead skin. The kidneys also remove urea from the body.

What is a nephron and what does it do?

The nephron refers to one of the components of the kidney. It is located within the kidney. Its main function is to regulate the concentration of the sodium salts and water filtered from the blood. It reabsorbs the vital molecules in the process of filtration of the blood in the kidney. It also excretes and eliminates the waste from the body. It regulates the blood pressure and volume too.

Part three

How is the tissue in the renal pyramids modified to carry out its functions?

The renal pyramids have the following sections that make its tissue adapted to its functions. Connecting tubule that is the most proximal part of the collecting duct adjacent o distal convoluted tubule. It connects adjacent nephrons to form the cortical tubules that join to from collecting ducts.

Cortical collecting ducts that receive and filter rom the multiple connecting tubules descending form the medulla forming the medullary collecting ducts.

The medullary collecting acts have inner and outer segments. Its main purposes are to reabsorption or secretion of potassium, hydrogen, ion, etc. It has papillary ducts referred to as Bellini that forms the terminal parts of the medullary collecting ducts and empty at the minor calyx.

How is the density of the tissue on the renal cortex related to its function?

The renal cortex receives blood at very high pressure. Therefore, the dense tissues are adopted to withstand the high pressure of blood from the renal artery.

How does the structure of the renal medulla aid in its function?

It is pyramid in shape. Blood in the glomerulus reaches a very high pressure gradient. A large surface area forces the serum of the blood out of the vessel in to the renal tubes then into the proximal tube, loop of Henle and then leaves through the renal duct from the collecting duct. The structure is constructed in such a way that it withstands the high pressure of the blood.

How do the sheep and human organs compare? What are the similarities and differences you observed?

There are basic similarities between the organs of a sheep to that of humans. For example, they both have a mammalian heart, kidney, breathing system, etc. but these are not exactly similar. For example, the colliculus in the sheep's brain is larger than it is in the humans. This is because the sheep rely more on senses than humans to survive. The valves in the heart of the humans are the same to that of the sheep in both size and structure.