

Al- mustaqbal university college

Medical laboratories techniques

Human physiology

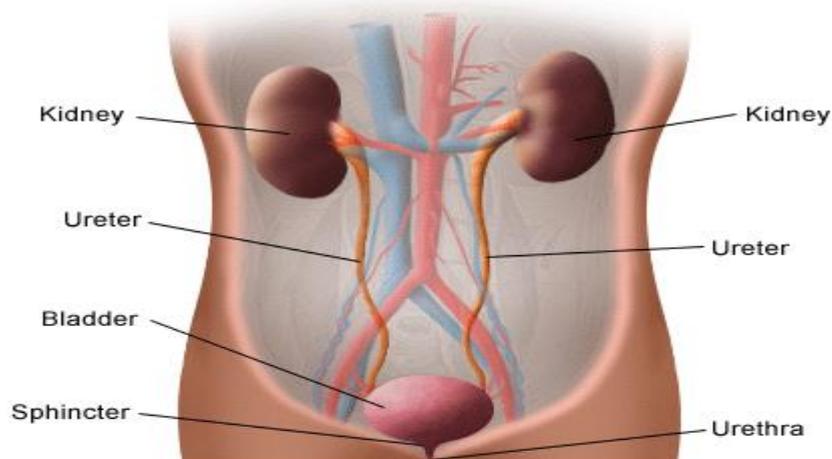
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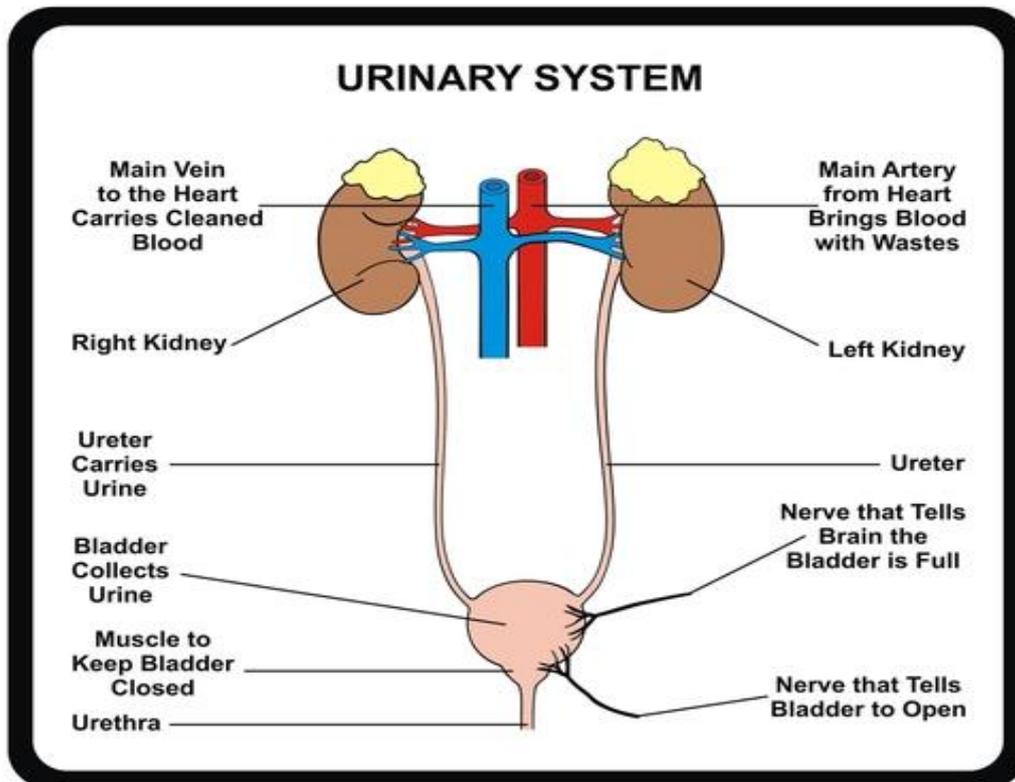
Urinary system

The Urinary

The Urinary System is a group of organs in the body concerned with filtering out excess fluid and other substances from the bloodstream. The substances are filtered out from the body in the form of urine. Urine is a liquid produced by the kidneys, collected in the bladder and excreted through the urethra. Urine is used to extract excess minerals or vitamins as well as blood corpuscles from the body. The Urinary organs include the kidneys, ureters, bladder, and urethra. The Urinary system works with the other systems of the body to help maintain homeostasis. The kidneys are the main organs of homeostasis because they maintain the acid base balance and the water salt balance of the blood

Front View of Urinary Tract





Functions of the Urinary System

One of the major functions of the Urinary system is the process of.

1-Excretion is the process of eliminating, from an organism, waste products of metabolism and other materials that are of no use.

2-The urinary system maintains an appropriate fluid volume by regulating the amount of water that is excreted in the urine.

3-Other aspects of its function include regulating the concentrations of various electrolytes in the body fluids and maintaining normal pH of the blood. Several body organs carry out excretion, but the kidneys are the most important excretory organ.

The primary function of the kidneys is to maintain a stable internal environment (homeostasis) for optimal cell and tissue metabolism. They do this by separating urea, mineral salts, toxins, and other waste

products from the blood. They also do the job of conserving water, salts, and electrolytes. At least one kidney must function properly for life to be maintained

Six important roles of the kidneys are:

1-Regulation of plasma ionic composition. Ions such as sodium, potassium, calcium, magnesium, chloride, bicarbonate, and phosphates are regulated by the amount that the kidney excretes.

2-Regulation of plasma osmolarity. The kidneys regulate osmolarity because they have direct control over how many ions and how much water a person excretes.

3-Regulation of plasma volume. Your kidneys are so important they even have an effect on your blood pressure. The kidneys control plasma volume by controlling how much water a person excretes. The plasma volume has a direct effect on the total blood volume, which has a direct effect on your blood pressure. Salt(Na Cl)will cause osmosis to happen; the diffusion of water into the blood.

4-Regulation of plasma hydrogen ion concentration (pH). The kidneys partner up with the lungs and they together control the pH. The kidneys have a major role because they control the amount of bicarbonate excreted or held onto. The kidneys help maintain the blood pH mainly by excreting hydrogen ions and reabsorbing bicarbonate ions as needed.

5-Removal of metabolic waste products and foreign substances from the plasma. One of the most important things the kidneys excrete is nitrogenous waste. As the liver breaks down amino acids it also releases ammonia. The liver then quickly combines that ammonia with carbon

dioxide, creating urea which is the primary nitrogenous end product of metabolism in humans. The liver turns the ammonia into urea because it is much less toxic. We can also excrete some ammonia, creatinine and uric acid. The creatinine comes from the metabolic breakdown of creatine phosphate (a high-energy phosphate in muscles). Uric acid comes from the break down of nucleotides. Uric acid is insoluble and too much

6-Secretion of Hormones

The endocrine system has assistance from the kidney's when releasing hormones. Renin is released by the kidneys. Renin leads to the secretion of aldosterone which is released from the adrenal cortex. Aldosterone promotes the kidneys to reabsorb the sodium (Na^+) ions. The kidneys also secrete erythropoietin when the blood doesn't have the capacity to carry oxygen. Erythropoietin stimulates red blood cell production. The Vitamin D from the skin is also activated with help from the kidneys. Calcium (Ca^+) absorption from the digestive tract is promoted by vitamin D