Structure Of Nephron Diagram

The most distinctive characteristic of the proximal tubule is its luminal brush border. 765d0fce24 Kidney development 765d0fce24 The glomerulus and its surrounding Bowman's capsule constitute a renal corpuscle, the basic filtration unit of the kidney. The rate at which blood is filtered through all of the glomeruli, and thus the measure of the overall kidney... 765d0fce24 juxtaglomerular cells, (also known as granular cells) which secrete renin 765d0fce24 == See also == 765d0fce24

Juxtaglomerular apparatus The juxtaglomerular apparatus is named because it is next to (juxta-) the glomerulus. juxtaglomerular complex) is a structure in the kidney that regulates the function of each nephron, the functional units of the kidney. The juxtaglomerular The juxtaglomerular apparatus (also known as the juxtaglomerular complex) is a structure in the kidney that regulates the function of each nephron, the functional units of the kidney 765d0fce24

Metanephrogenic blastema metanephric blastema mostly develops into nephrons, but can also form parts of the collecting duct system. The system of tissue induction between the ureteric The metanephrogenic blastema or metanephric blastema (or metanephric mesenchyme, or metanephric mesoderm) is one of the two embryological structures that give rise to the kidney, the other being the ureteric bud 765d0fce24

Renal physiology length of the nephron, which is a tubular structure lined by a single layer of specialized cells and surrounded by capillaries. This encompasses all functions of the kidney, including maintenance of acid-base balance; regulation of fluid balance; regulation of sodium, potassium, and other electrolytes; clearance of toxins; absorption of glucose, amino acids, and other small molecules; regulation of blood pressure; production of various hormones, such as erythropoietin; and activation of vitamin D. The major functions of these Renal physiology (Latin renes, "kidneys") is the study of the physiology of the kidney 765d0fce24

The juxtaglomerular apparatus consists of three types of cells: 765d0fce24

Glomerulus (kidney) The tuft is structurally supported by the mesangium (the space between the blood vessels), composed of intraglomerular mesangial cells. : glomeruli) is a network of small blood vessels (capillaries) known as a

tuft, located at the beginning of a nephron in the kidney. Each of the two kidneys contains The glomerulus (pl. The filtrate then enters the renal tubule of the nephron. glomeruli) is a network of small blood vessels (capillaries) known as a tuft, located at the beginning of a nephron in the kidney. Each of the two kidneys contains about one million nephrons. The blood is filtered across the capillary walls of this tuft through the glomerular filtration barrier, which yields its filtrate of water and soluble substances to a cup-like sac known as Bowman's capsule 765d0fce24

The metanephric blastema mostly develops into nephrons, but can also form parts of the collecting duct system. 765d0fce24 At the junction of the thick ascending limb and the distal convoluted tubule are a subset of 15–25 cells known as the macula densa that are part of renal autoregulation through the mechanism of tubuloglomerular feedback. 765d0fce24 == Structure == 765d0fce24 The thin ascending limb is found in the medulla of the kidney, and the thick ascending limb can be divided into a part that is in the renal medulla and a part that is in the renal cortex. The ascending limb is much thicker than the descending limb. 765d0fce24 == Description == 765d0fce24 Mesenchyme 765d0fce24 Proper function of the kidney requires that it receives and adequately filters blood. This is performed at the microscopic level by many hundreds of thousands of filtration units called renal... 765d0fce24 The loop of Henle can be divided into four parts: 765d0fce24 Outside the capsule, there are two poles: 765d0fce24 The basal lamina is absent between macula densa and juxtaglomerular cells to allow direct contact between these cells. 765d0fce24

Proximal tubule At this The proximal tubule is the segment of the nephron in kidneys which begins from the renal (tubular) pole of the Bowman's capsule to the beginning of loop of Henle. The proximal tubule can be further classified into the proximal convoluted tubule (PCT) and the proximal straight tubule (PST). At this location, the glomerular parietal epithelial cells (PECs) lining bowman's capsule abruptly transition to proximal tubule epithelial cells (PTECs). is the segment of the nephron in kidneys which begins from the renal (tubular) pole of the Bowman's capsule to the beginning of loop of Henle 765d0fce24

Blastema 765d0fce24 By means of a countercurrent multiplier system, which uses electrolyte pumps, the loop of Henle creates an area of high urea concentration deep in the medulla, near the papillary duct in the collecting duct system. Water present in the filtrate in the papillary duct flows through aquaporin channels out of the duct, moving passively down its concentration

gradient. This process reabsorbs water and creates a concentrated urine for excretion. 765d0fce24 the macula densa, in the distal straight tubule (thick ascending limb of the loop of Henle), after which the distal convoluted tubule begins 765d0fce24 extraglomerular mesangial cells 765d0fce24 == Structure == 765d0fce24 == Structure == 765d0fce24 The glomerulus receives its blood supply from an afferent arteriole of the renal arterial circulation. Unlike most capillary beds, the glomerular capillaries exit into efferent arterioles rather than venules. The resistance of the efferent arterioles causes sufficient hydrostatic pressure within the glomerulus to provide the force for ultrafiltration. 765d0fce24 Functions of a healthy kidney include maintaining a person's fluid balance, maintaining an acid-base balance; regulating sodium and other electrolytes; clearing toxins; regulating blood pressure; and regulating hormones, such as erythropoietin; and activation of vitamin D. The kidney is also involved in maintaining blood pH balance. 765d0fce24 Metanephros 765d0fce24

Bowman's capsule Fluids from blood in the glomerulus are collected in the glomerular capsule. sac at the beginning of the tubular component of a nephron in the mammalian kidney that performs the first step in the filtration of blood to form urine The glomerular capsule (or the Bowman capsule, capsula glomeruli, or Bowman's capsule) is a cup-like sac at the beginning of the tubular component of a nephron in the mammalian kidney that performs the first step in the filtration of blood to form urine. A glomerulus is enclosed in the sac 765d0fce24

== Structure == 765d0fce24

Nephron The tubule has adjacent peritubular capillaries that run between the descending and ascending portions of the tubule. The renal The nephron is the minute or microscopic structural and functional unit of the kidney. It is composed of a renal corpuscle and a renal tubule. A healthy adult has 1 to 1. The nephron is the minute or microscopic structural and functional unit of the kidney. The renal corpuscle consists of a tuft of capillaries called a glomerulus and a cup-shaped structure called Bowman's capsule. The capsule and tubule are connected and are composed of epithelial cells with a lumen. 5 million nephrons in each kidney. Blood is filtered as it passes through three layers: the endothelial cells of the capillary wall, its basement membrane, and between the podocyte foot processes of the lining of the capsule. This process regulates the volume of body fluid as well. It is composed of a renal corpuscle and a renal tubule. As the fluid from the capsule flows down into the tubule, it is processed by the epithelial cells lining the tubule: water is reabsorbed and

substances are exchanged (some are added, others are removed); first with the interstitial fluid outside the tubules, and then into the plasma in the adjacent peritubular capillaries through the endothelial cells lining that capillary. The renal tubule extends from the capsule 765d0fce24

The system of tissue induction between the ureteric bud and the metanephric blastema is a reciprocal control system. GDNF, glial cell-derived neurotrophic factor, is produced by the metanephric blastema and is essential in binding to the RET receptor on the ureteric bud, which bifurcates and coalesces as a result to form the renal pelvis, major and minor calyces and collecting ducts. Mutations in the EYA1 gene, whose product regulates GDNF expression in the developing kidney, lead to the renal abnormalities of BOR syndrome (branchio-oto-renal syndrome). 765d0fce24 Much of renal physiology is studied at the level of the nephron, the smallest functional unit of the kidney. Each nephron begins with a filtration component that filters the blood entering the kidney. This filtrate then flows along the length of the nephron, which is a tubular structure lined by a single layer of specialized cells and surrounded by capillaries. The major functions of these lining cells are the reabsorption of water and small molecules from the filtrate into the blood, and the secretion of wastes from the blood into the urine. 765d0fce24 The ascending limb of the loop of Henle is a direct continuation from the descending limb of loop of Henle, and one of the structures in the nephron of the kidney. The ascending limb has a thin and a thick segment. The ascending limb drains urine into the distal convoluted tubule. 765d0fce24

Loop of Henle The loop of Henle (/ˈhɛnli/; also known as Henle's loop, Henle loop, nephron loop) is the portion of a nephron that leads from the proximal convoluted The loop of Henle (; also known as Henle's loop, Henle loop, nephron loop) is the portion of a nephron that leads from the proximal convoluted tubule to the distal convoluted tubule. Named after its discoverer, the German anatomist Friedrich Gustav Jakob Henle, the loop of Henle's main function is to create a concentration gradient in the medulla of the kidney 765d0fce24

Assessment of kidney function length of the nephron, which is a tubular structure lined by a single layer of specialized cells and surrounded by capillaries. The major functions of these Assessment of kidney function occurs in different ways, using the presence of symptoms and signs, as well as measurements using urine tests, blood tests, and medical imaging 765d0fce24

Ascending limb of loop of Henle Within the nephron of the kidney, the

ascending limb of the loop of Henle is a segment of the heterogenous loop of Henle downstream of the descending Within the nephron of the kidney, the ascending limb of the loop of Henle is a segment of the heterogenous loop of Henle downstream of the descending limb, after the sharp bend of the loop. This part of the renal tubule is divided into a thin and thick ascending limb; the thick portion is also known as the distal straight tubule, in contrast with the distal convoluted tubule downstream 765d0fce24