Answers

2.12 Urinary System

483. a + b - c + d – e +
Kidneys are retroperitoneal structure invested with a tough, connective tissue capsule. Connective tissue is very sparse within the kidney, though the kidneys have an extremely abundant blood supply.

484. a + b – c – d + e -
The nephron is the basic morphofunctional unit of the kidney and is found partly in the cortex and partly in the medulla.

485. a + b + c – d + e +
The capillaries of the renal corpuscle are fenestrated. The podocytes sit on a very broad sort of basal lamina. The so-called 'slit-membrane' is found between the processes of the podocytes. Mesangial cells are also present in renal corpuscle and are believed by many researchers to be responsible for the renewal of the broad basal lamina that separates the podocytes from the endothelial cells. Another viewpoint is that the mesangial cells functions as macrophages and clean the filter of trapped residues.

486. a + b – c – d – e -

487. a + b – c – d – e -
Medullary rays are found in the cortex and are composed of cortical extensions of medullary substance. The medullary rays consist of branched collecting tubules into which distal convoluted segments of several surrounding nephrons discharge their contents. These medullary rays on entering the medulla are no longer referred to as rays.

488. a – b + c + d – e -
The macula densa is a modified part of the distal convoluted tubule associated with the vascular pole of the glomeruli. The cells in the macula densa are all very close to each other and in light microscope preparations the nuclei give the impression of being partly superimpose. No basal lamina is present in the area of the macula densa.

489. a – b + c + d + e +
Juxtaglomerular cells are found in the tunica media of afferent arterioles and are part of the so- called juxaglormerular apparatus (JGA). They are epitheliod cells, which contain abundant cytoplasmic secretory granules and are the source of the substance called rennin, which is released into the blood when blood pressure is reduced.

490. a – b + c + d + e +
Podocytes are epithelial cells that are found in glomeruli. They form the visceral layer of Bowman's capsule and have a large number of small processes that terminate on the broad basal lamina that separates them from endothelial cells. The so- called 'slit-membrane' is found between the terminal parts of the processes.

491. a + b + c + d + e +
Cells of the proximal convoluted tubule have an apical 'brush border' of microvilli, multiple in folding of the basal plasma lemma, an abundance of mitochondria, lysosomes and peroxisomes. These cells show typical features of epithelial cells that are involved in the active transport of ions.

492. a – b - c – d + e -
The cells of the thin segment of the loop of Henle are fairly flattened in appearance and have a singular lack of organelles.

493. a + b + c + d + e -
Arterial blood en route to the glomeruli travels from the renal artery to interlobar arteries, to arcuate arteries, to interlobular arteries, to intralobular arteries before reaching the afferent arterioles of the glomeruli.

494. a + b + c – d + e +
The ureter has a musou membrane thrown into longitudinal folds. It is lined with transitional epithelium. The lamina propria consists of fairly dense connective tissue. Surrounding this is a muscular coat. The outermost coat of the ureter is composed of fibroelastic connective tissue

495. a + b + c + d + e +
The urinary bladder is lined with transitional epithelium. The muscle fibers of bladder run in all directions within three indistinct muscle layers. Only near the bladder neck can these three layers be easily identified. A fibroelastic adventitia covers the external surface of most of the bladder except for the upper part, which is covered by the peritoneum.