MATRIC NO: 19/MHS03/016
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DEPARTMENT: Anatomy. 200L
COURSE CODE: ANA 204. HISTOLOGY OF SYSTEMS.

URINARY SYSTEM ASSIGNMENT.

1. **Critically examine the renal function of desert dwellers and the anatomical basis of their unique adaptation.**

Desert dwellers do not readily find water and they must excrete less amount of urine, this results in producing hypertonic urine which is a highly concentrated urine. The loop of Henle of juxtamedullary nephrons along with counter flowing blood vessels, called VASA RECTA help in water conservation to prevent water loss. They adapt to their environment to help balance water income and water use. The nephrons in the desert mammal like camel are equipped with well developed loop of Henle and number of juxtamedullary nephrons in kidneys of man is about 15%. Blood first flows along ascending limb of Henle, which is impermeable to water. Solutes can leave the filtrate and enter the blood along this stretch.

2. **Write extensively on the clinical importance of the glomerular filtration barrier.**

The glomerular filtration barrier functions as a highly organized, semipermeable membrane preventing the passage of the majority of proteins into the urine. The barrier is composed of the glomerular basement, the podocyte, and the slit diaphragm between the podocytes. As blood flows into the nephron, it enters a cluster of tiny blood vessels which is the Glomerulus. The thin walls of the glomerulus allow smaller molecules, wastes, and fluid mostly water to pass into the tubule. Larger molecules such as proteins and blood cells, stay in the blood vessel. The slit diaphragm is the major barrier in the passage of plasma proteins into the filtrate.
Proteinura is a disease where there is a high amount of protein in the urine, it occurs when there is a leakage of protein into the filtrate and can be due to damage of the slit diaphragm filtration barrier.