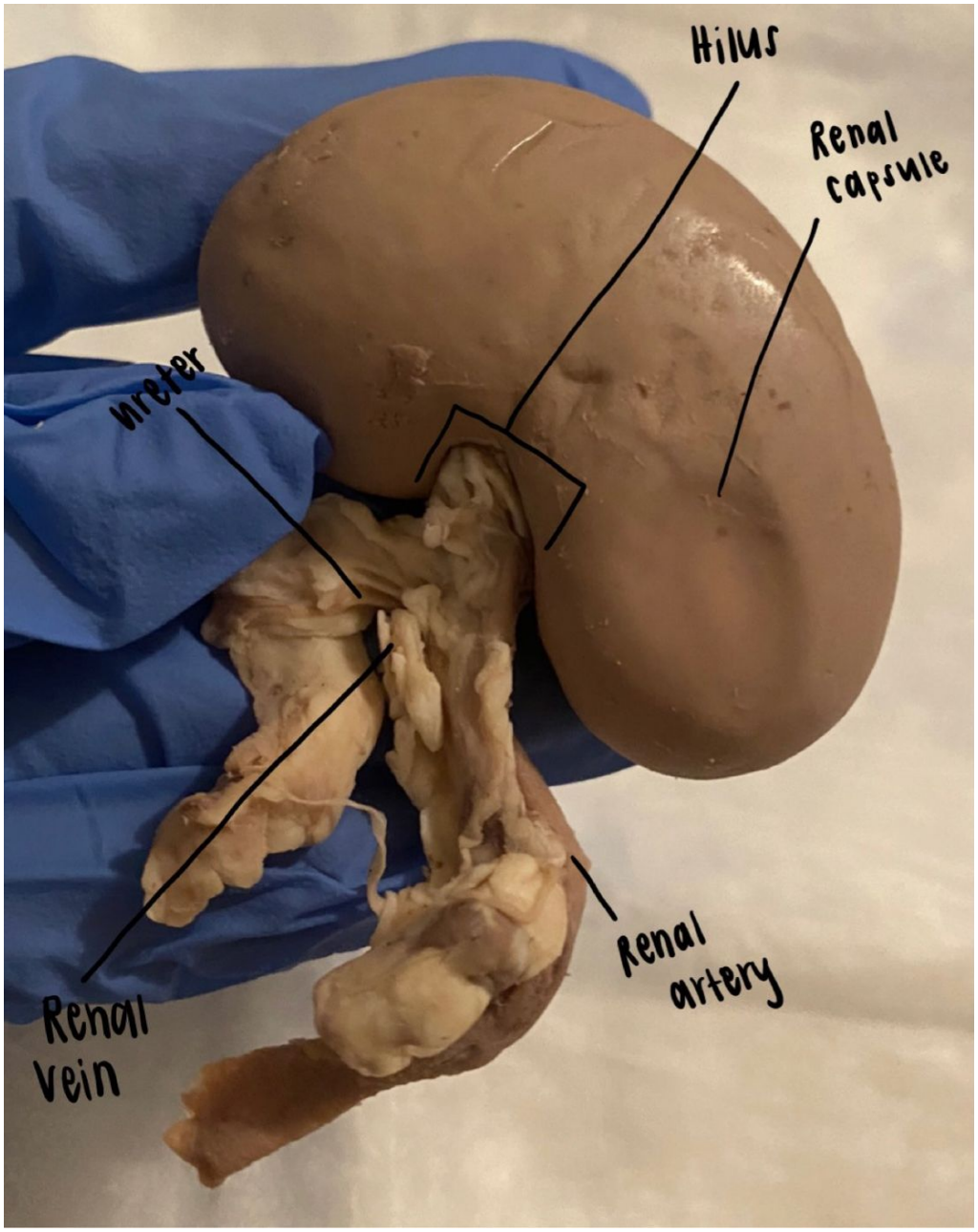
Mammalian Kidney Dissection Answer Sheet

Observations

External Observations of the Kidney

Insert your photograph of the exterior of the kidney. Identify the external features on the kidney and label them on your photo.

Refer to front of dissection mat.



Internal Observations of the Kidney

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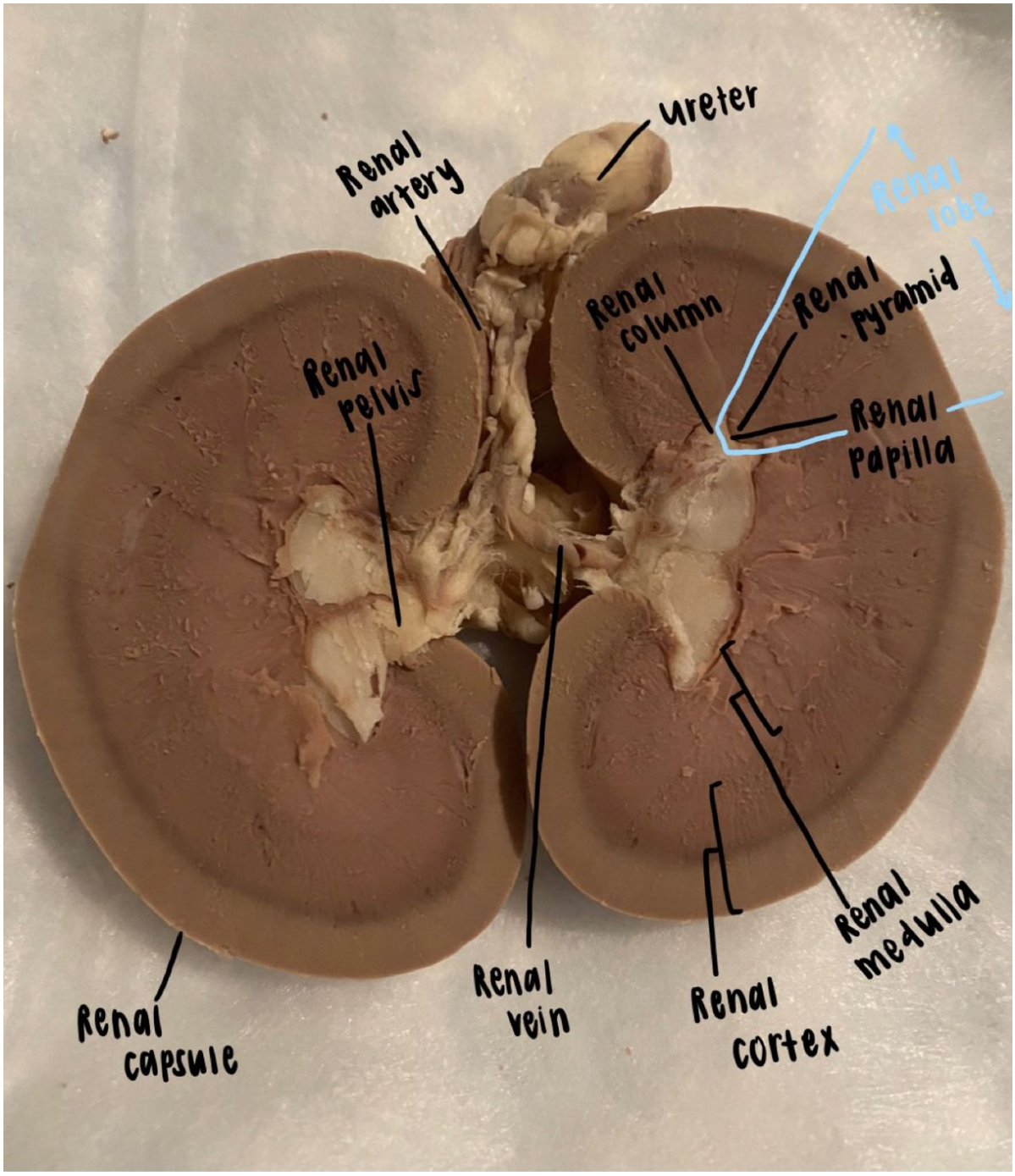
Insert your photograph of the interior view of the kidney. Identify the major and minor calyx, the renal artery, renal capsule, renal column, renal lobe, renal pyramid, renal vein, and ureter. Describe the role of each of those structures in fluid maintenance.

Refer to back of dissection mat.



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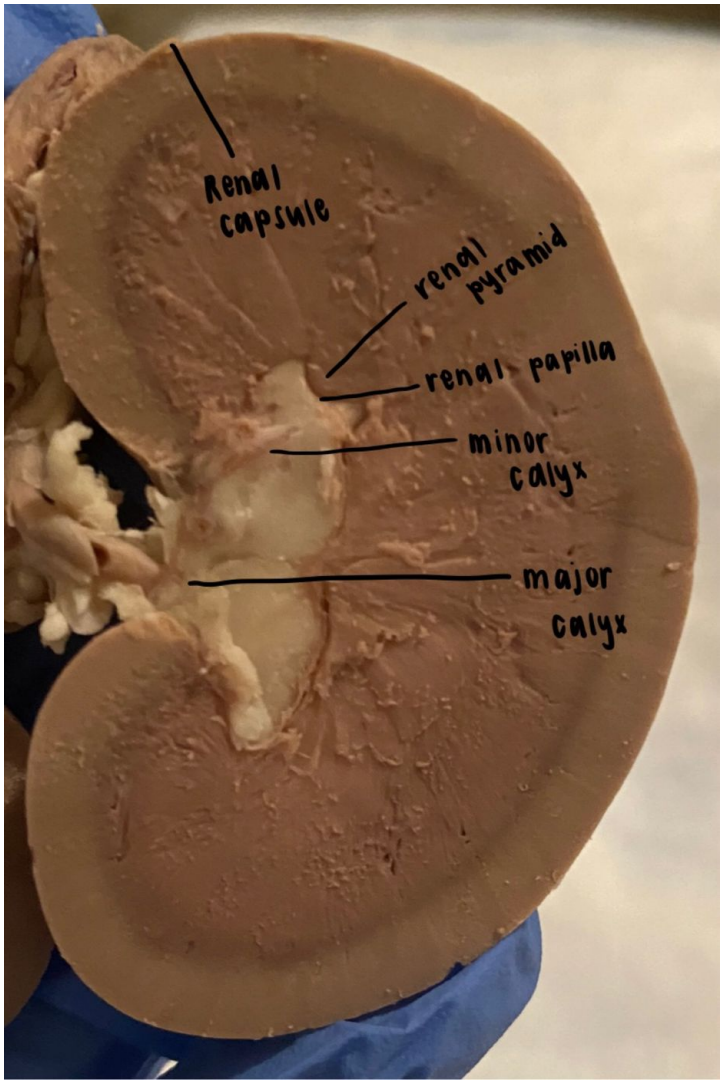

Post-laboratory Questions

1. Describe the functions of each of the following parts of the nephron and associated structures in the process of urine production: glomerulus, glomerular capsule, proximal convoluted tubule, peritubular capillaries, descending limb of the nephron loop, ascending limb of the nephron loop, distal convoluted tubule, and collecting duct. Trace the path of filtrate and fluid within the kidney.

The glomerulus is a cluster of nerve endings, spores, or small blood vessels around the end of the kidney tubule where waste products are filtered from the blood. The glomerular capsule is also known as the Bowman's capsule is a cup-like sac that performs the first step of filtration of blood to form urine. The proximal convoluted tubule is responsible for reabsorption and secretion. It will reabsorb water and other ions. The

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peritubular capillaries are tiny blood vessels that travel alongside nephrons to allow reabsorption and secretion between blood and inner lumen of the nephron. The descending limb of the nephron loop is extremely permeable to water and is less permeable to ions. It receives isotonic fluid from the proximal convoluted tubule and can easily reabsorb water. The ascending limb of the nephron loop is a direct continuation of the descending limb. It contains a thick and thin segment and is responsible for draining urine into the distal convoluted tubule. The distal convoluted tubule plays a critical role in the absorption of many ions like sodium and potassium. It is also responsible for water reabsorption. The collecting ducts collect urine from the nephrons and move it into the renal pelvis and ureters.

So blood flows into the kidneys through the renal artery. This artery then branches into several other branches and the blood will follow these branches. The renal artery branches into segmental arteries, the lobar and ther interlobar arteries. The interlobar arteries then branch into the afferent arterioles, which then branch into a capillary network called the glomerulus. So blood will then enter the glomerulus and exit in the Bowman's capsule. Particles and fluid will be removed from the blood and continues to be moved through to the proximal convoluted tubule. I will then go through the loop of Henle and to the distal convoluted tubule. It will then finish off at the collecting ducts that will then send the filtrate/urine to the renal pelvis.

2. What is located in the renal medulla? How do these structures affect coloration of the medulla?

Blood is located in the medulla which is why the medulla is a dark red color. The blood is dispersed into it via the renal artery which then divides into the interlobar arteries.

3. Which structures are found at the hilus of the sheep kidney?

The renal artery , the renal vein, and the ureters are found in the renal hilum.