

Investigation 9.A: Identifying Structures of the Excretory System

Question: What features of a mammalian kidney can you identify?

Safety Precautions

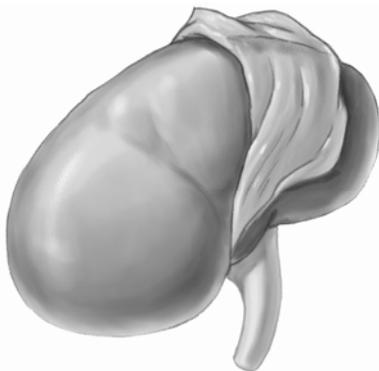
Extreme care must be taken when using dissecting instruments, particularly scalpels. To the extent possible, make cuts away from your body. The kidneys are preserved in a chemical solution. Wear plastic gloves, goggles, and an apron at all times, and work in a well ventilated area. At the end of the lesson, wash your hands thoroughly. Dispose of all materials as instructed by your teacher, and clean your work area.

Materials

- preserved sheep kidney
- dissection instruments
- disposable plastic gloves
- plastic bag and tie (to store your specimen if necessary)
- newspapers and/or paper towels
- large tongs
- dissecting tray
- apron

Procedure

1. Obtain a kidney and observe its external features. The renal capsule is a smooth semi-transparent membrane that is tightly bound to the outer surface of the kidney. You may notice fatty deposits clinging to the renal capsule. Identify and remove the renal capsule.
2. Under the renal capsule is the surface of the renal cortex. Locate the area where the renal blood vessels and the ureter are attached to the kidney.
3. Cut through the kidney lengthwise as shown in the photograph. Identify the renal cortex.
4. Locate the renal medulla. The renal medulla contains the collecting ducts. They are visible as a striped pattern throughout the medulla.
5. Locate the renal pelvis, which is continuous with the ureter.



The renal capsule provides a thin layer of protection for the outer tissues of the kidney.



Remember to cut away from you as you open the kidney.



Internal features of the kidney

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Analysis

1. Based on your specimen, draw a labelled sketch of the kidney that includes the following structures.
 - a) renal capsule
 - b) renal cortex
 - c) renal medulla
 - d) renal pelvis
 - e) renal vein
 - f) renal artery

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2. Refer to Figures 9.2 and 9.3 in your text and your sketch from question 1. Draw a new sketch of your specimen that shows the regions of the kidney in which you would expect to observe the following nephron structures: glomerulus, proximal tubule, loop of Henle, distal tubule, and collecting duct.