

Laboratory Exercise 8: Urinary system anatomy

Introduction

During this lab you will carry out Exercise 40 in the Human Anatomy and Physiology Laboratory Manual.

Objectives

The specific objectives for the lab are outlined in page 413 of your lab manual.

The main objective of Exercise 40 is to familiarize you with the gross anatomy of the major structures of the urinary tract.

You will also become familiar with basic histological features of the kidney and urinary bladder.

Preparation:

The following resources are available to prepare you for lab.

Required preparation:

- Exercise 40
 - Read Exercise 40 in the lab manual and review relevant photomicrographs in the manual's histology atlas (Plates 47, 48, 49).

Optional preparation:

- pages 1004 – 1010 and 1029 – 1032 in your lecture text are a good complement to the lab material

In-lab assignment

1. Complete Review Sheets, Exercise 40 (pp. 661 – 664) and turn them in at end of lab.

2. You are responsible for identification of the following structures in diagrams and/or models:

a. Kidney

- Capsule
- Cortex
- Medulla
- Medullary pyramids
- Renal columns
- Papillae
- Minor calyx
- Major calyx
- Renal pelvis

b. Kidney vasculature

- Renal arteries
- Segmental arteries
- Lobar arteries
- Interlobar arteries
- Arcuate arteries
- Interlobular arteries
- Afferent arterioles
- Glomerulus
- Efferent arterioles
- Peritubular capillaries
- Vasa recta (in some cases)
- Interlobular veins
- Arcuate veins
- Interlobar veins
- Renal veins

c. Kidney – basic nephron structure

- Glomerulus
- Bowman's capsule
- Proximal convoluted tubule
- Loop of Henle
- Distal tubule
- Collecting duct

d. Ureters

- Mucosa
 - Transitional epithelium
- Muscularis
 - Inner longitudinal smooth muscle layer
 - Outer circular smooth muscle layer
- Adventitia
 - Fibrous connective tissue

e. Bladder

- Trigone
- Bladder neck
- Mucosa
 - Transitional epithelium
- Muscular layer – detrusor muscle
 - Inner longitudinal smooth muscle layer
 - Middle circular smooth muscle layer
 - Outer longitudinal smooth muscle layer

f. Urethra

- Internal urethral sphincter
- External urethral sphincter
 - Note differences between male and female