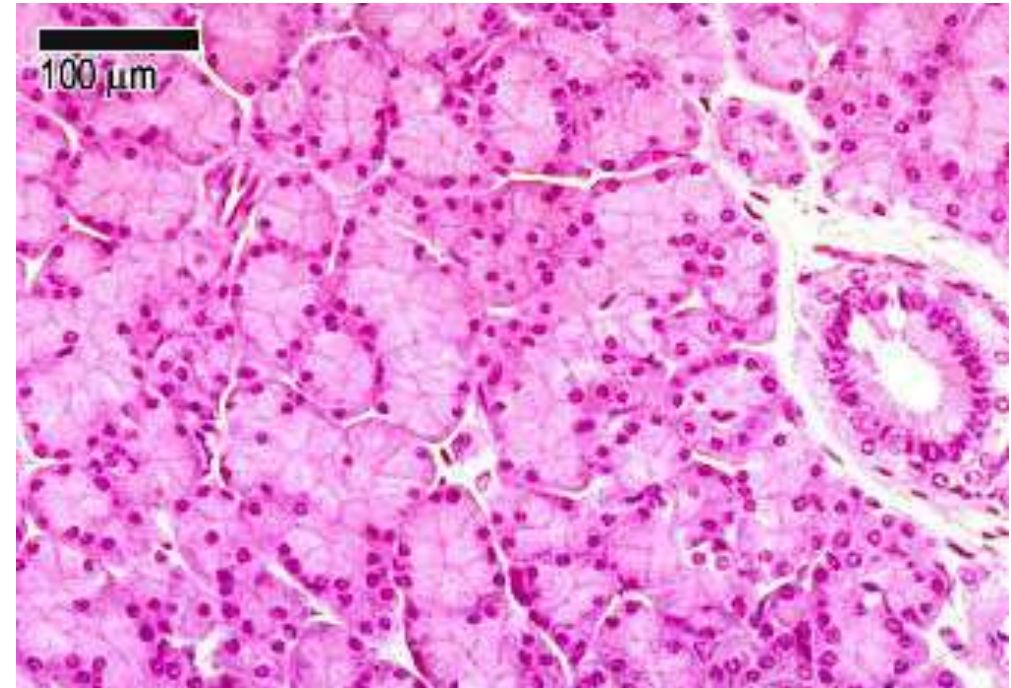
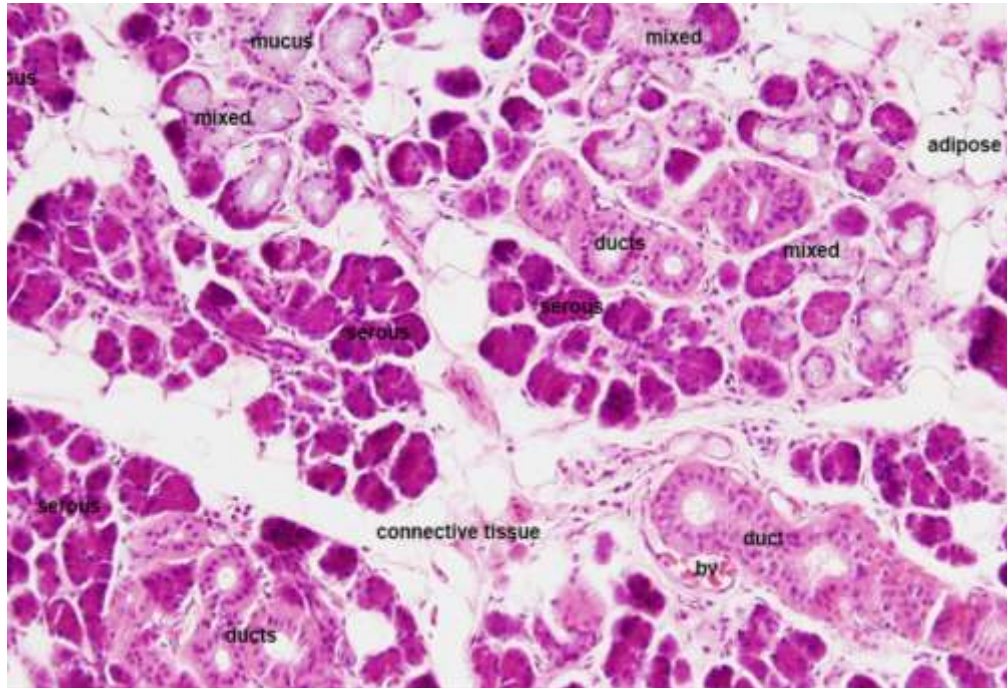


## **ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY**

- Study of histological slides: Salivary gland, Liver, Pancreas, Stomach and Intestine.
- Glucose estimation
- Amylase assay in the given sample
- Determination of blood groups (ABO and Rh factor)
- Erythrocyte counting
- Total leucocytes counting in blood
- Study of histological slides: Kidney, Heart and Lungs
- Study of Kidney, Heart and Lungs with models/PPT

# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

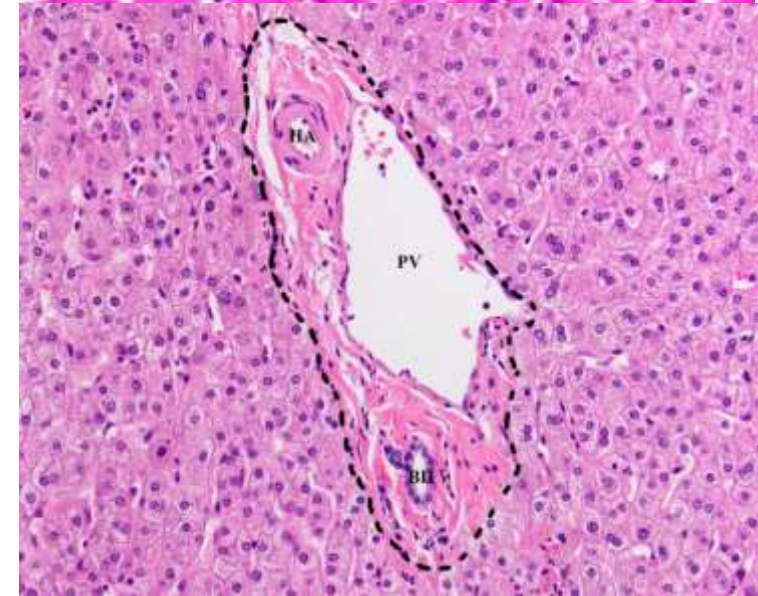
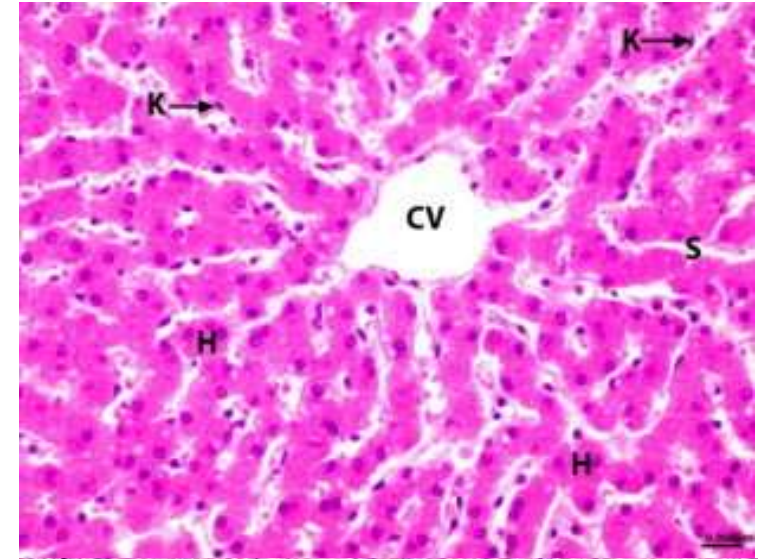
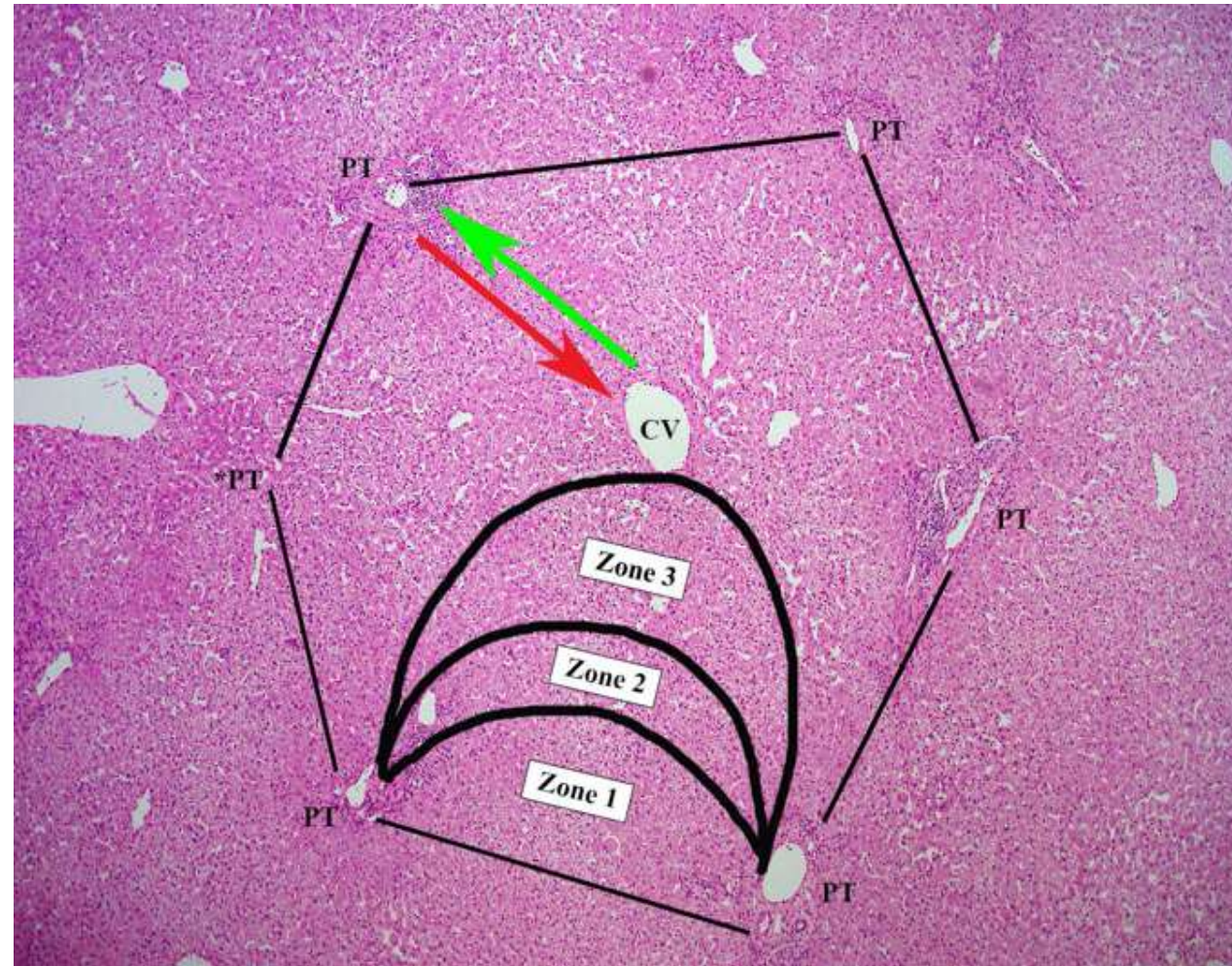
## Study of histological slides: Salivary gland





# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

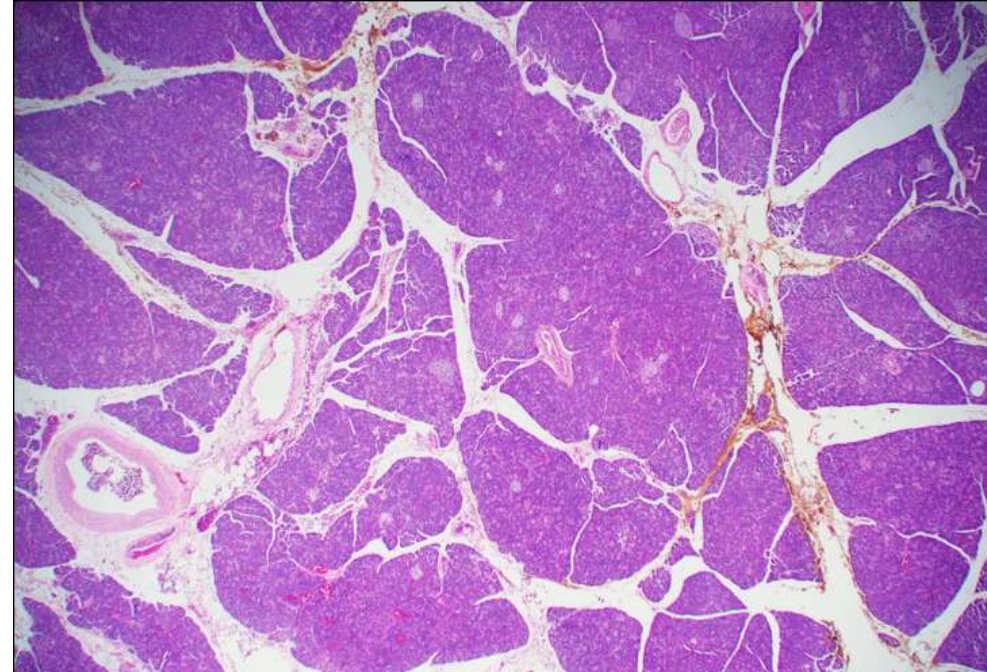
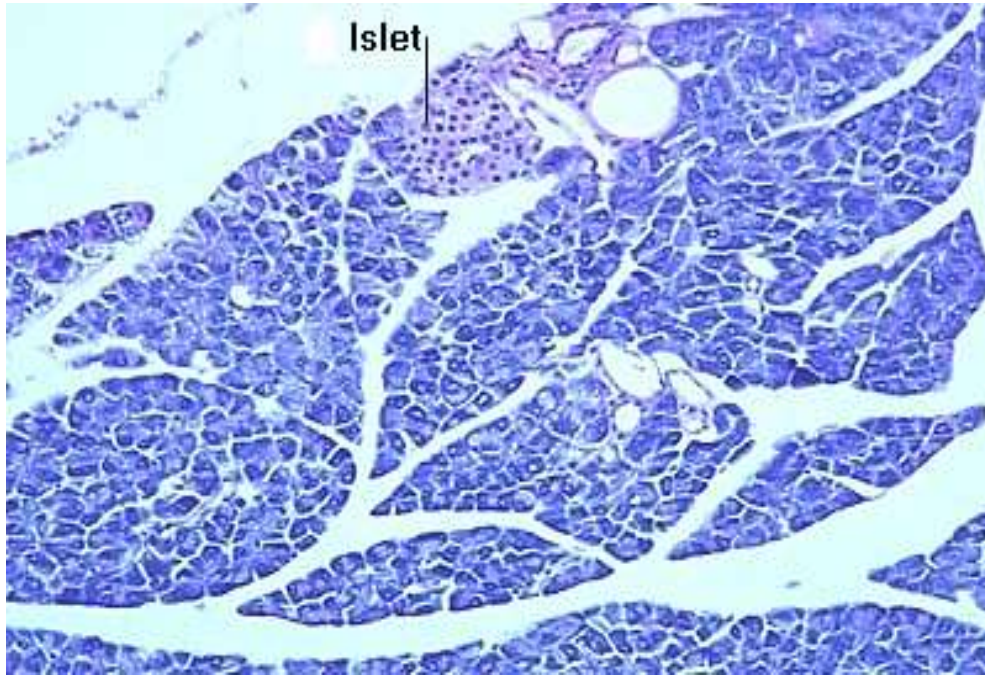
## Study of histological slides: Liver





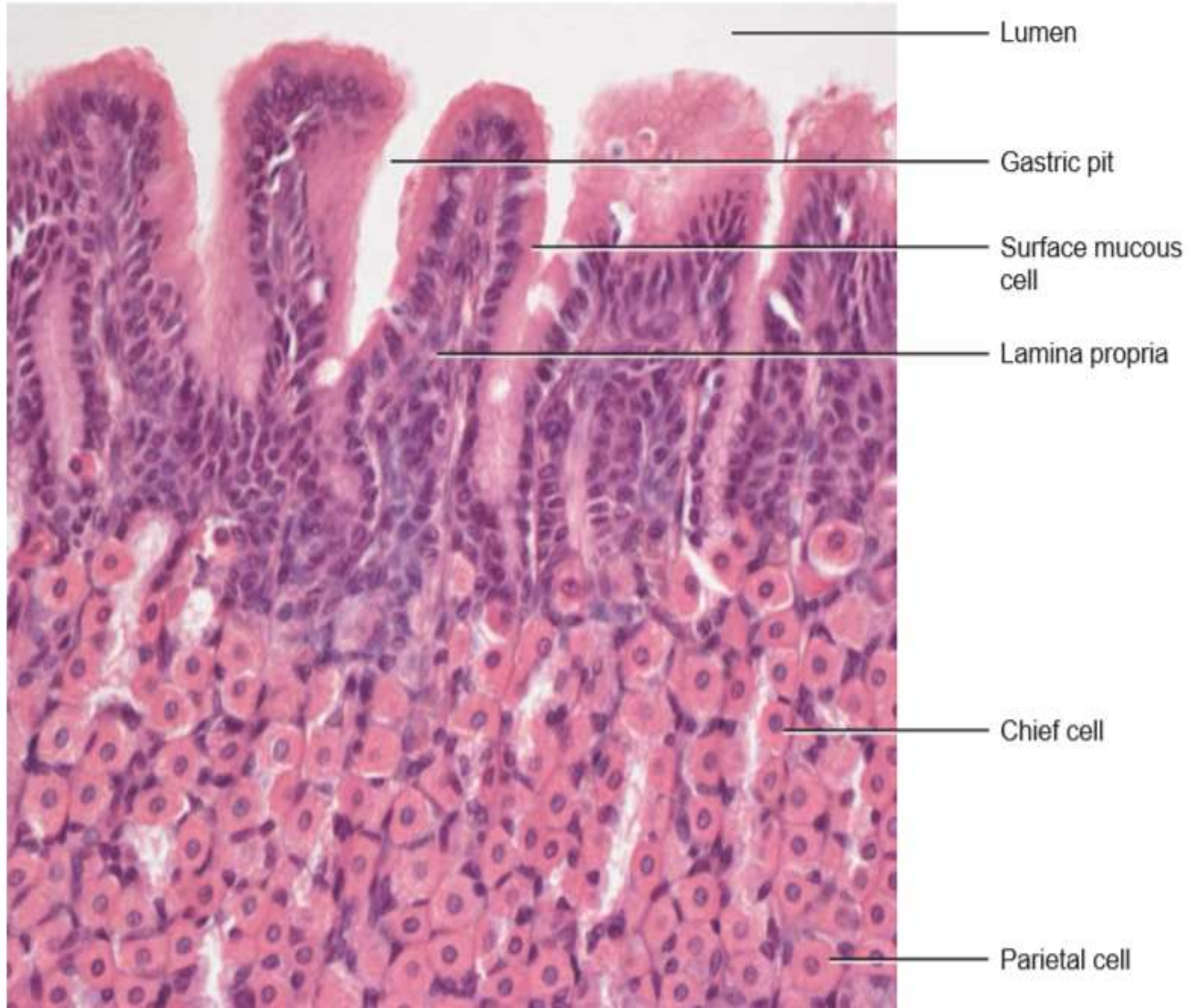
# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of histological slides: Pancreas



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

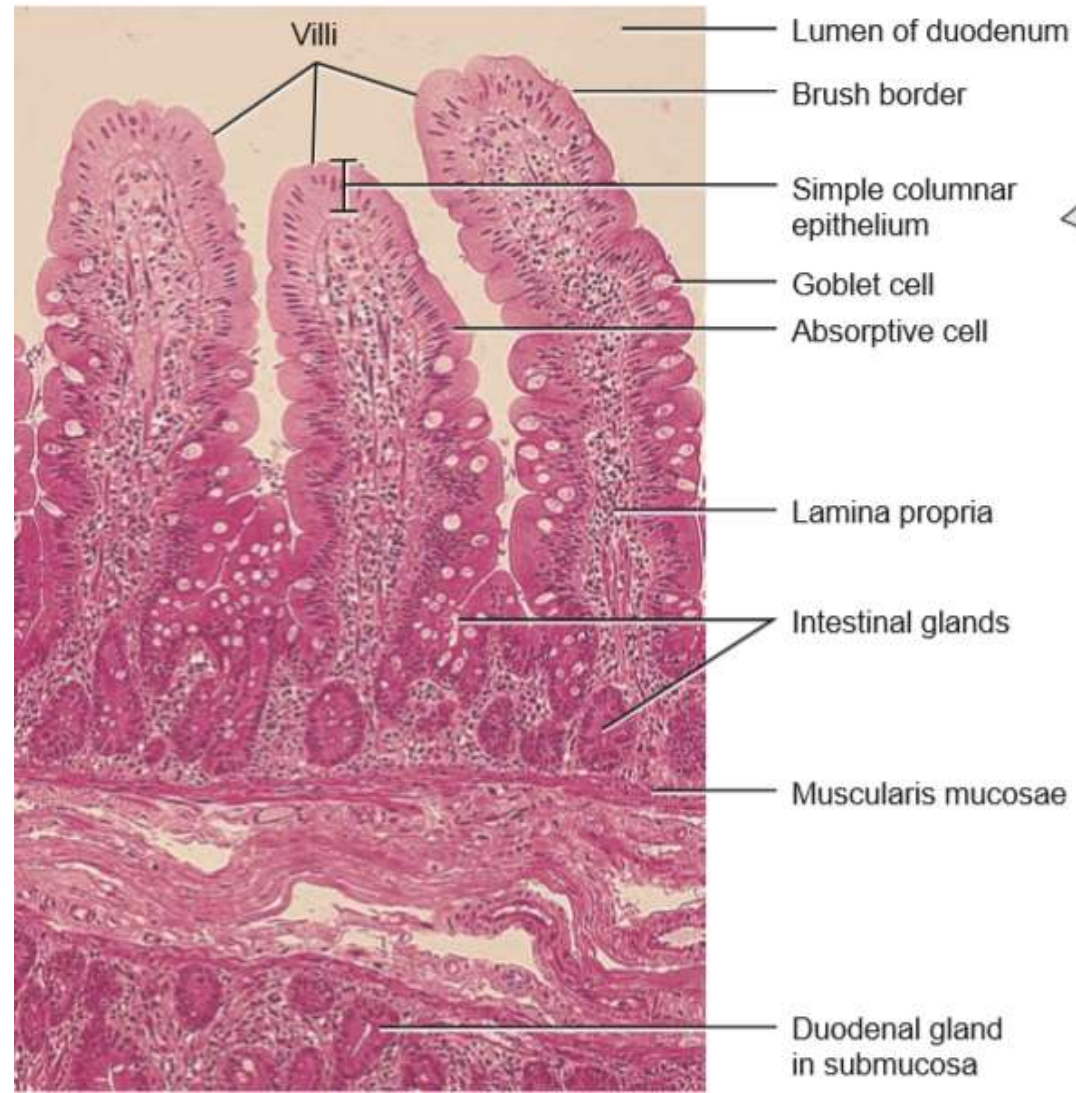
## Study of histological slides: Stomach





# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of histological slides: Small Intestine



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Determination of blood groups (ABO and Rh factor)

### **Objective:**

To determine an individual's ABO blood group (A, B, AB, or O) and Rh factor (positive or negative).

**Materials:** Blood samples from the individual to be tested, Anti-A serum, Anti-B serum, Anti-D (Rh) serum, Microscope slides, Disposable lancets or sterile needles, Alcohol swabs, Safety gloves, Droppers

### **Procedure:**

Sterilize the fingertip using an alcohol swab.

Prick the fingertip with a disposable lancet or sterile needle.

Allow a few drops of blood to flow and collect them in separate droppers or directly onto the labeled agglutination cards/test tubes.

### **Forward Blood Grouping (ABO):**

Place one drop of the individual's blood on three separate microscope slides.

Add one drop of Anti-A serum to the blood on the first slide, Anti-B serum to the second slide, and Anti-D (Rh) serum to the third slide.

# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Determination of blood groups (ABO and Rh factor)

Mix each slide gently.

After mixing, tilt each slide back and forth to observe for agglutination.

If clumping occurs in the Anti-A serum-added slide, the blood group is A.

If clumping occurs in the Anti-B serum-added slide, the blood group is B.

If clumping occurs in both Anti-A and Anti-B serum-added slides, the blood group is AB.

If no clumping occurs in either Anti-A or Anti-B serum-added slides, the blood group is O.

### **Rh (D) Factor Testing:**

Examine the third slide where Anti-D (Rh) serum was added.

If clumping occurs, the Rh factor is positive (+).

If no clumping occurs, the Rh factor is negative (-).

### **Recording Results:**

Document the individual's blood group and Rh factor based on the observed agglutination patterns.

### **Precautions:**

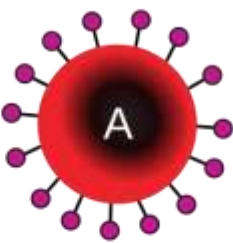
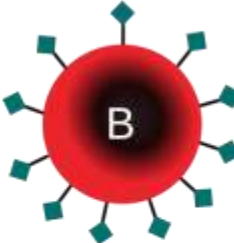
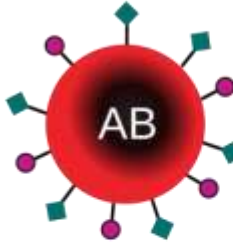
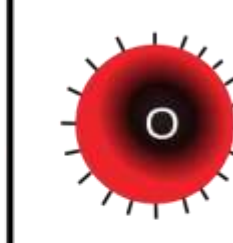


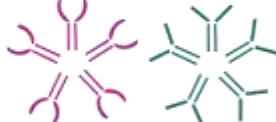
Always wear safety gloves when handling blood samples to prevent contamination and potential exposure to blood-borne pathogens.





































Dispose of lancets, needles, and any used materials in a designated biohazard waste container.



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Determination of blood groups (ABO and Rh factor)

	Group A	Group B	Group AB	Group O
Red blood cell type				
Antibodies in plasma	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
Antigens in red blood cell	A antigen	B antigen	A and B antigens	None

Anti-A	Anti-B	Anti-D	Control	Blood type
				O-positive
				O-negative
				A-positive
				A-negative
				B-positive
				B-negative
				AB-positive
				AB-negative
				Not valid

# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Erythrocyte counting

### **Objective:**

To determine the concentration of red blood cells per unit volume of blood.

### **Materials:**

Microscope, Hemocytometer, Cover slip, Pipette, Diluting fluid (e.g., isotonic saline or Hayem's solution), Lancet or needle, Microscope slides

### **Procedure:**

#### **Preparation of Diluting Fluid:**

Prepare a diluting fluid by mixing isotonic saline or Hayem's solution with distilled water as per the manufacturer's instructions or standard laboratory protocol.

#### **Sample Collection:**

Sterilize the fingertip using an alcohol swab.

Prick the fingertip with a lancet or needle.

Collect a small drop of blood without squeezing the fingertip excessively.

#### **Preparation of Blood Sample:**

Wipe away the first drop of blood.

Fill the pipette with blood up to the 0.5 mark.

Mix blood with 0.5 mL of diluting fluid by gently squeezing and releasing the pipette several times.



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Erythrocyte counting

### **Loading the Neubauer Chamber:**

Clean the surface of the Neubauer chamber and cover slip to remove any dust or debris.

Place the cover slip over the counting chamber of the Neubauer chamber without trapping air bubbles.

Allow the blood to settle for a few minutes to ensure an even distribution in the counting chamber.

### **Counting RBCs:**

Count the number of red blood cells in multiple grids to get an average count.

Ensure that you count only the cells that lie within the grid lines or on the top and right lines of each grid.

### **Recording Results:**

Record the RBC count in millions per microliter ( $\times 10^6/\mu\text{L}$ ).

### **Safety Precautions:**

Handle all biological samples with care to avoid contamination and potential exposure to blood-borne pathogens.

Dispose of lancets, needles, and any used materials in a designated biohazard waste container.

# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Erythrocyte counting

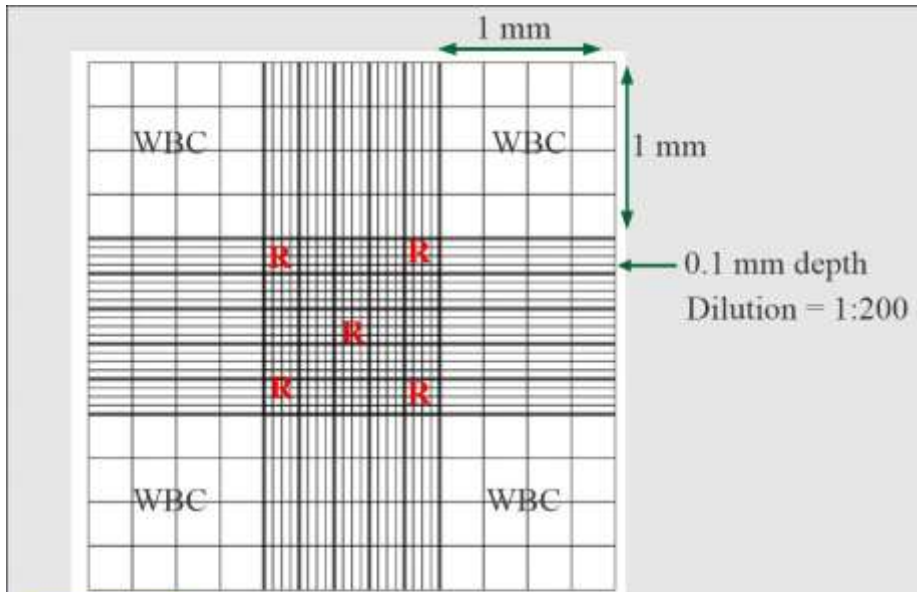
### Calculating RBC Count:

- Use the formula:

$$\text{RBC count} = \frac{\text{Average number of RBCs counted}}{\text{Number of squares counted}} \times \text{Dilution factor}$$

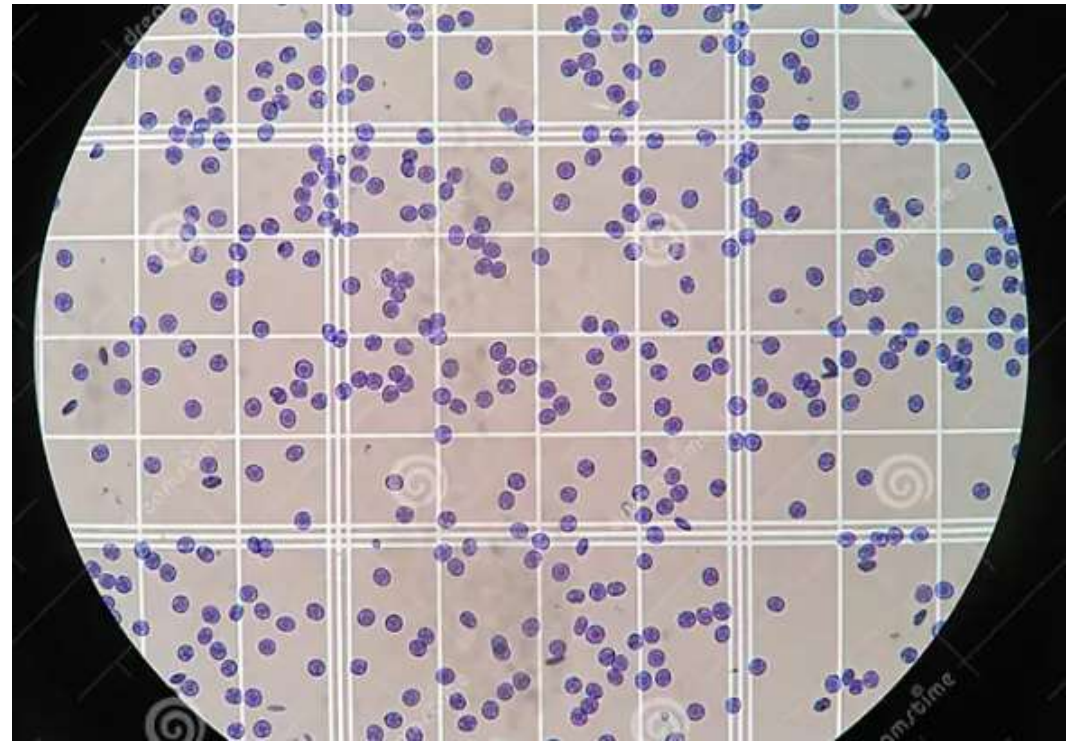
- Common dilution factors:

- Unopette method: 200
- Hayem's method: 10



$$\text{RBC/cmm} = \text{no. of cell counted} \times \text{dilution factor} \times \text{Depth} \times \text{Area counted}$$

$$\text{RBC/cmm} = 500 \times 200 \times 10 \times 5 = 5,000,000$$





# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Total leucocytes counting in blood

### Procedure:

Fill the blood into the 0.5 marks and then add the TLC solution.

Fill the pipette with the TLC solution to point 11.

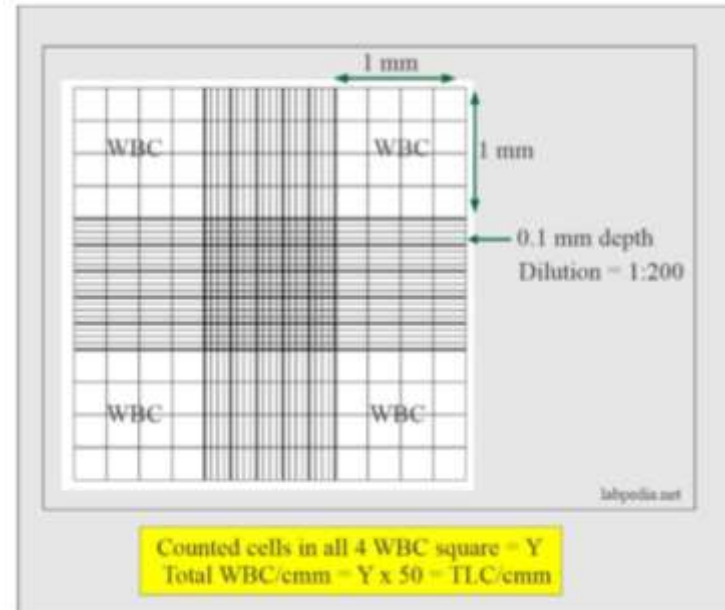
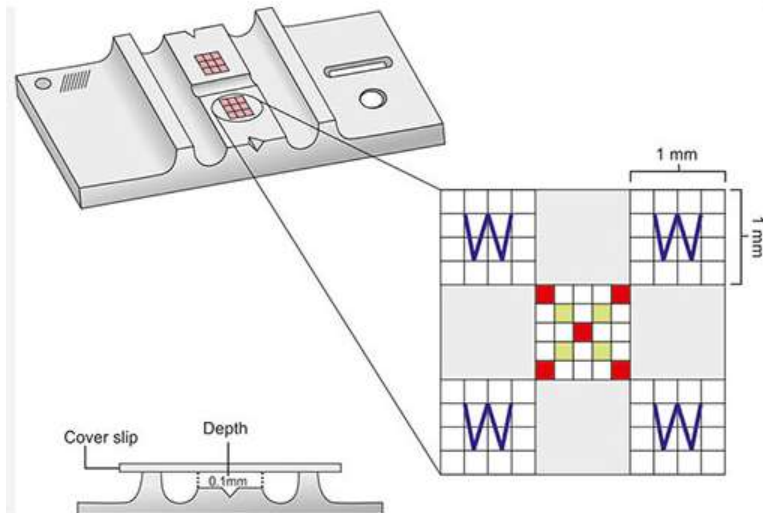
Remove the rubber tubing.

Seal both ends or hold in between two fingers.

Shake for 1 minute or preferably for 2 minutes.

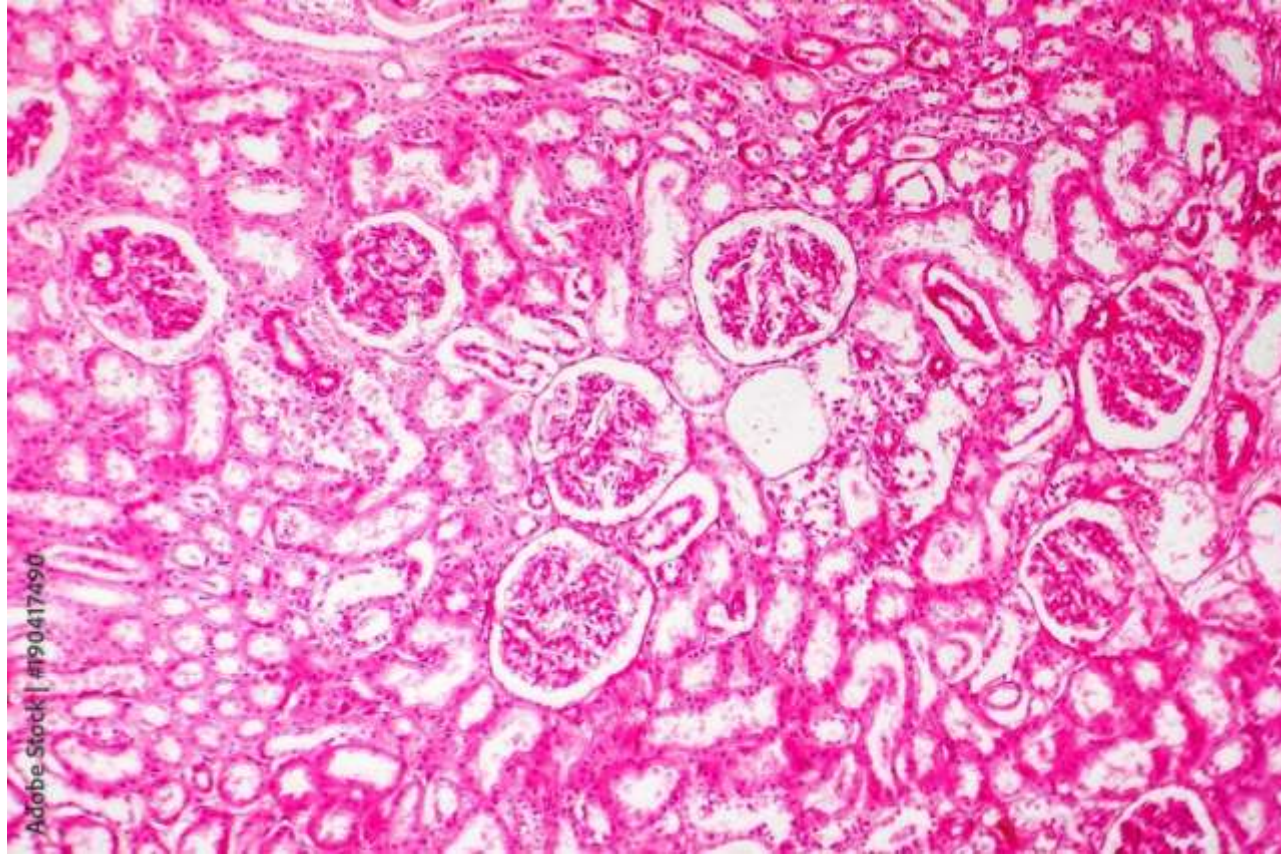
After thorough mixing, discard the first few drops and then gently fill the chamber until the platform is filled.

Allow the chamber on the microscope stage for 2 to 3 minutes till the cells are settled.



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

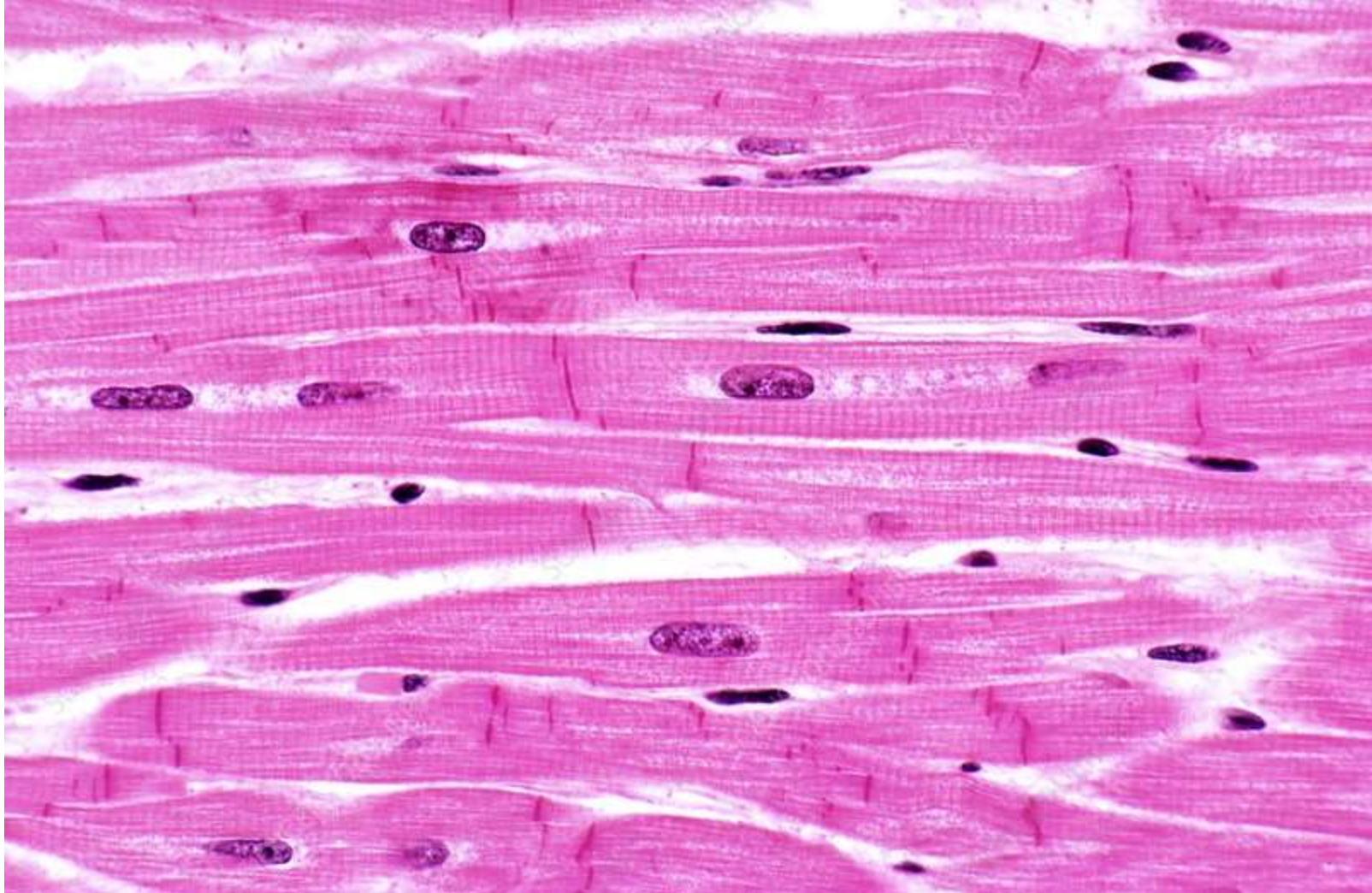
## Study of histological slides: Kidney





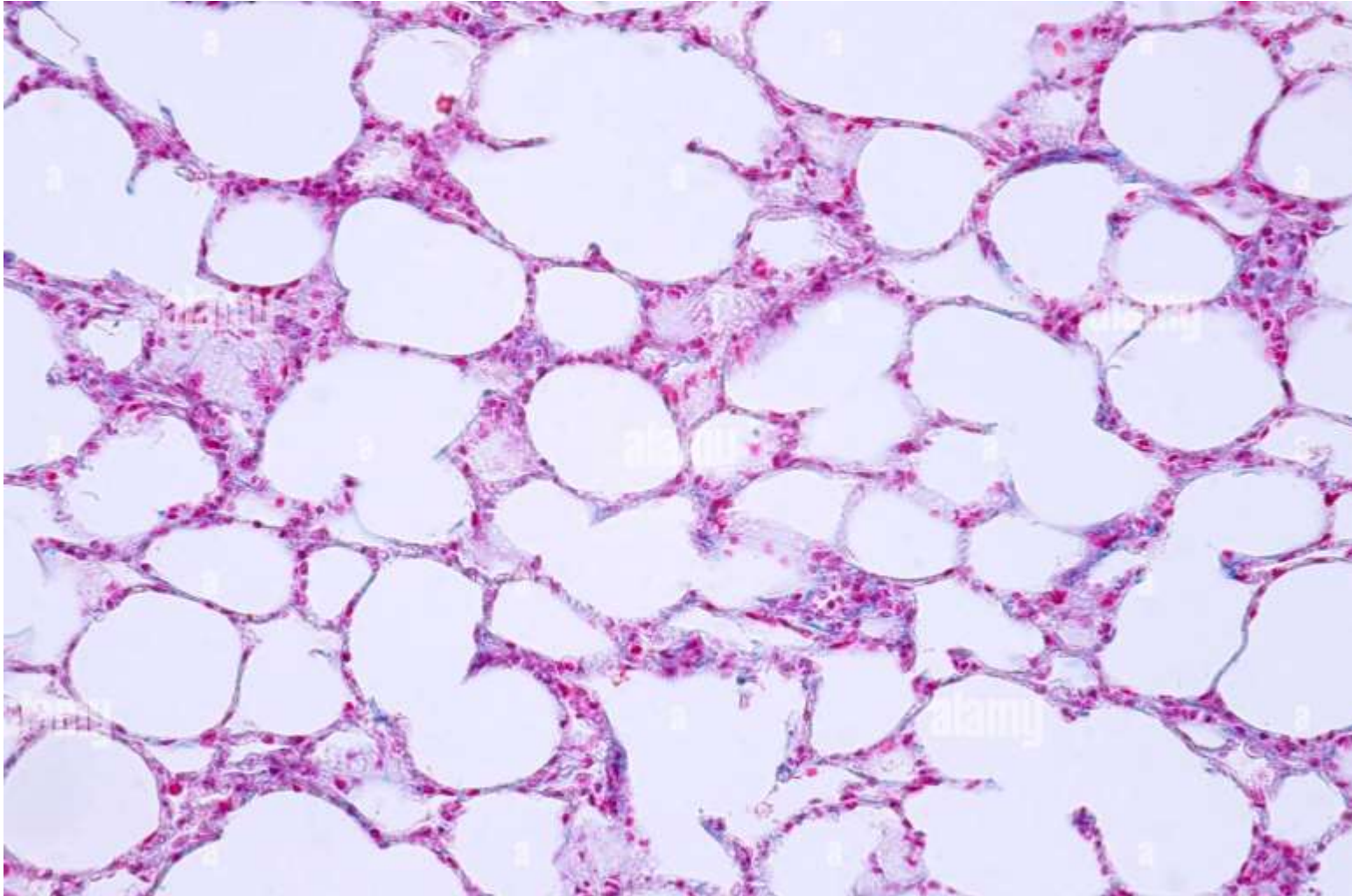
# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of histological slides: Heart



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

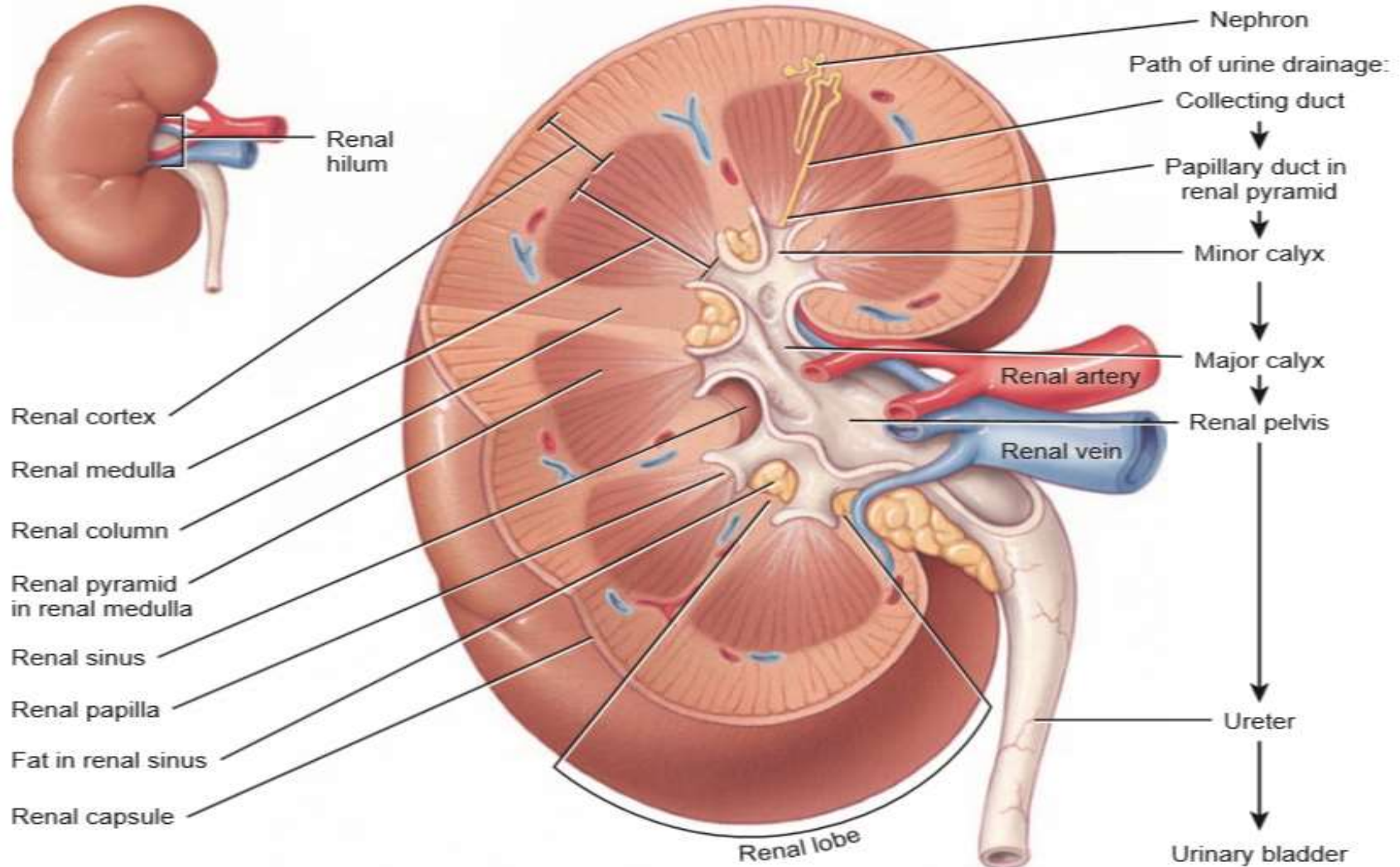
## Study of histological slides: Lungs





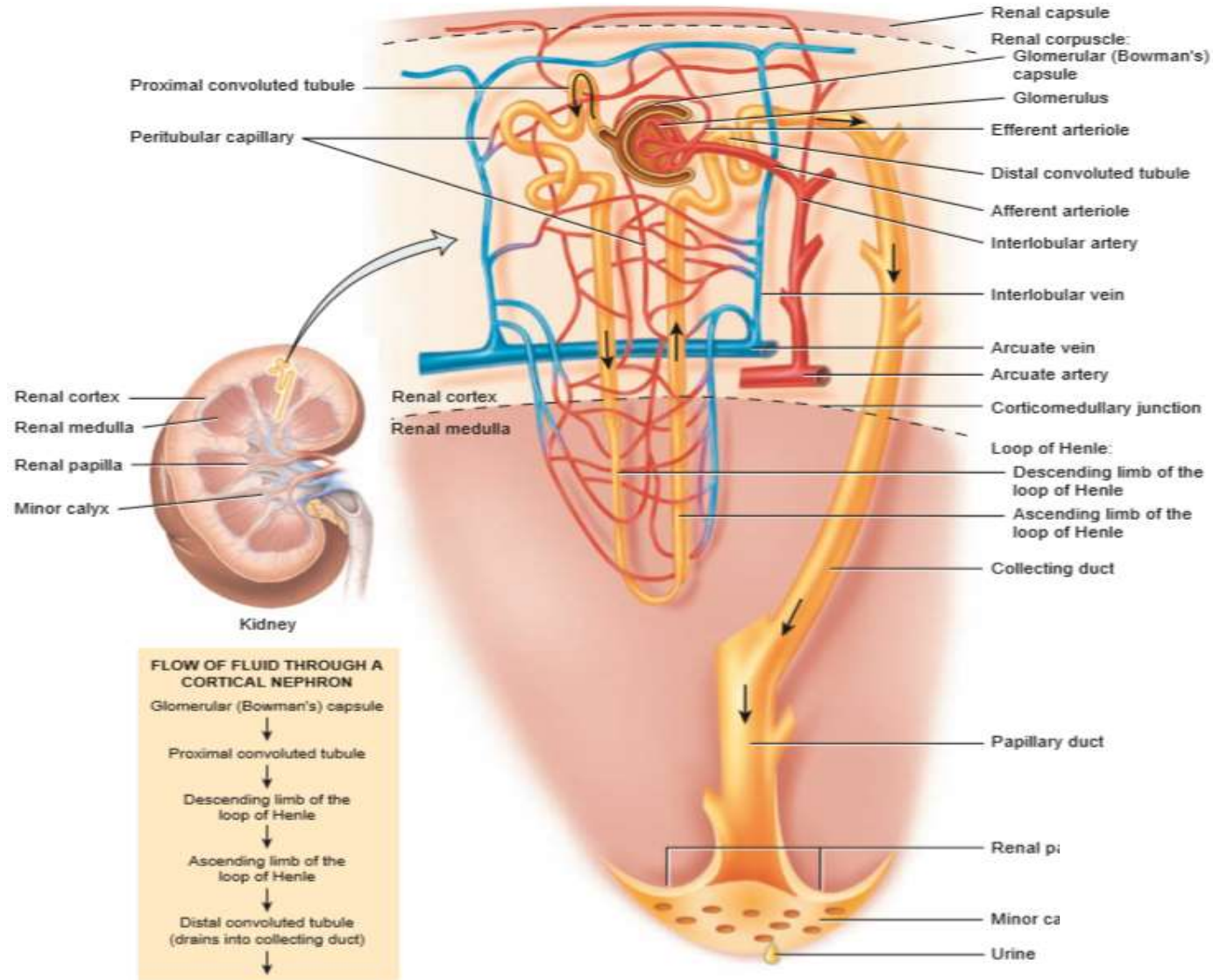
# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of Kidney with models/PPT



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

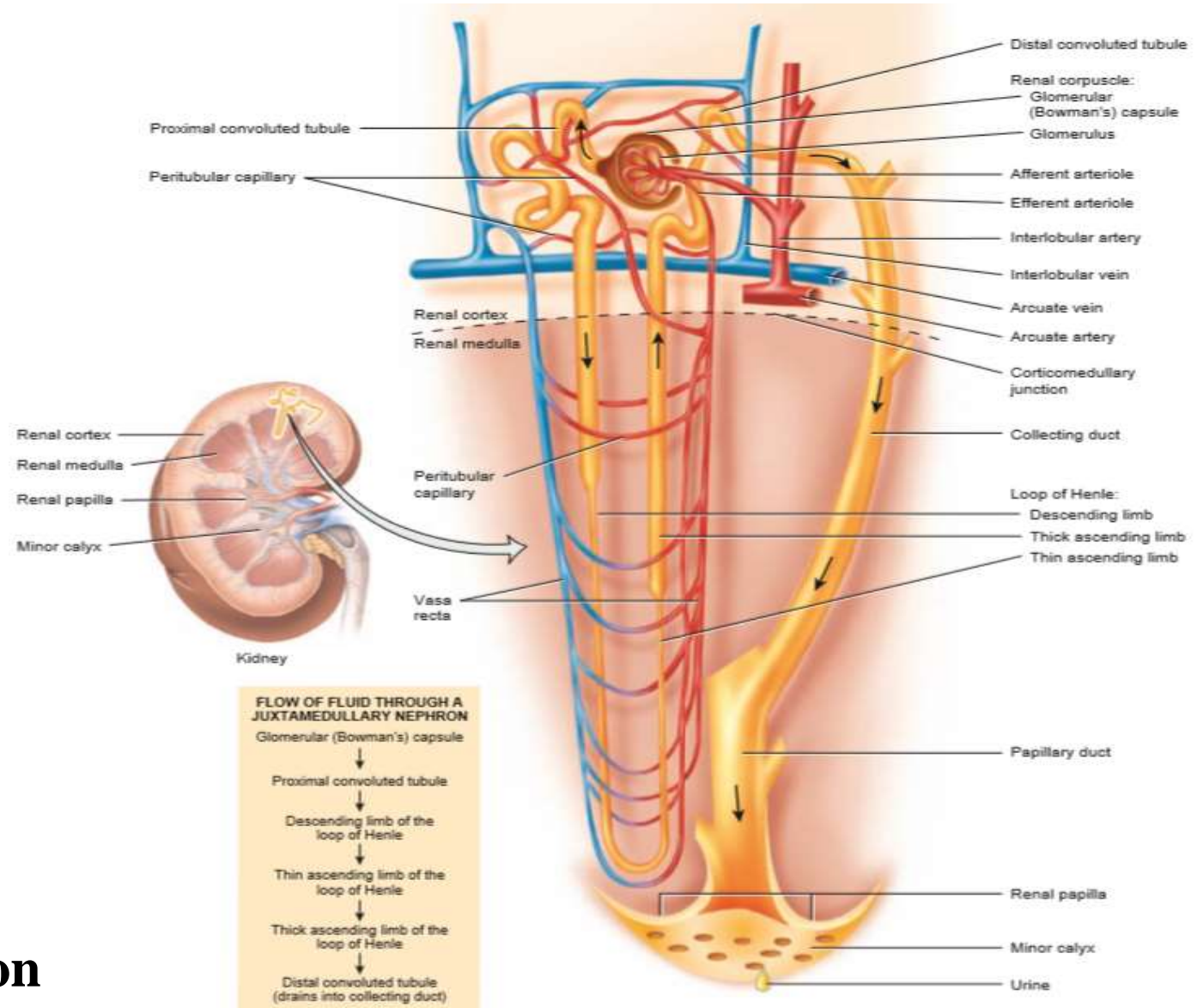
## Study of Kidney with models/PPT



## Cortical Nephron

# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of Kidney with models/PPT

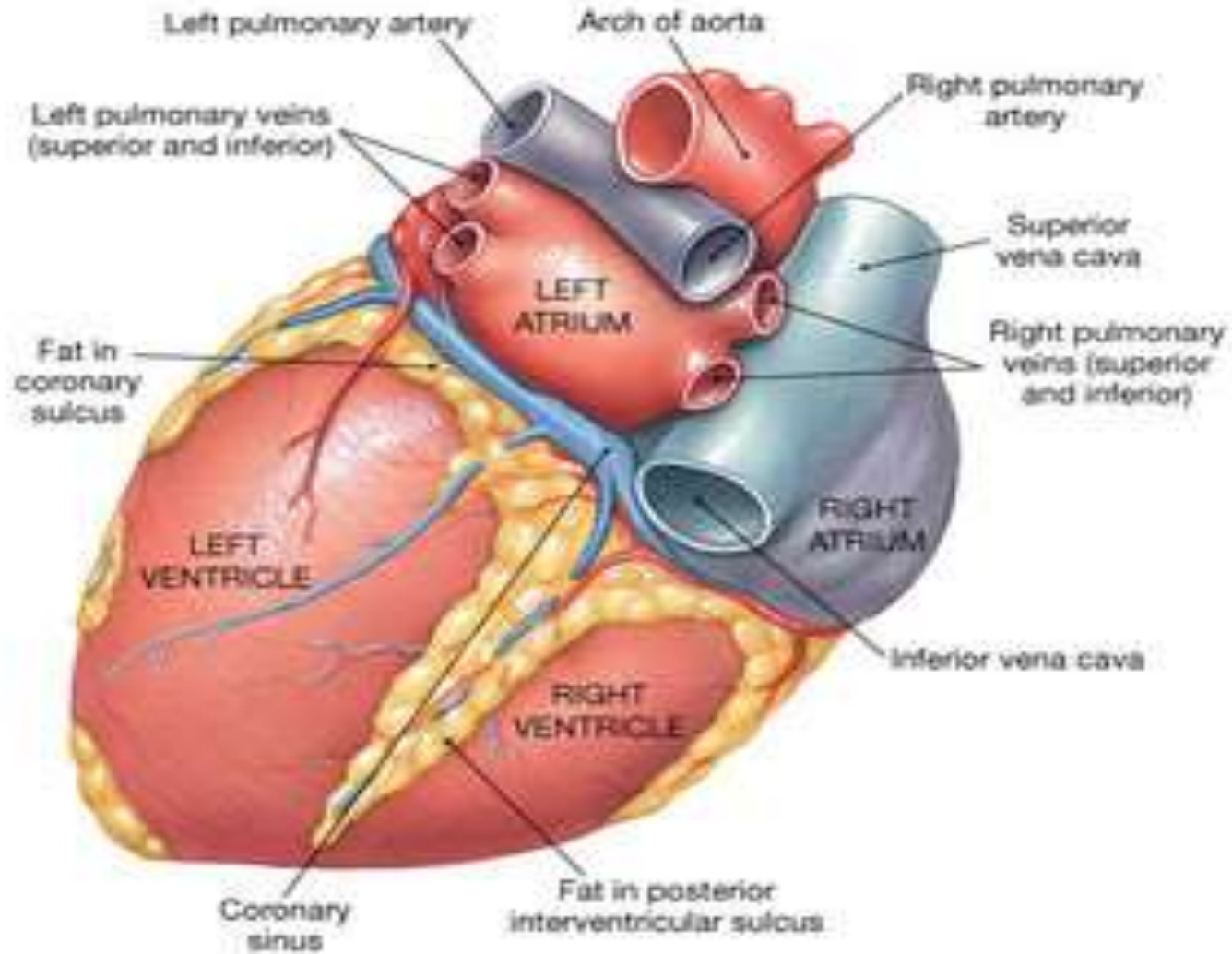


## Juxtamedullary Nephron



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

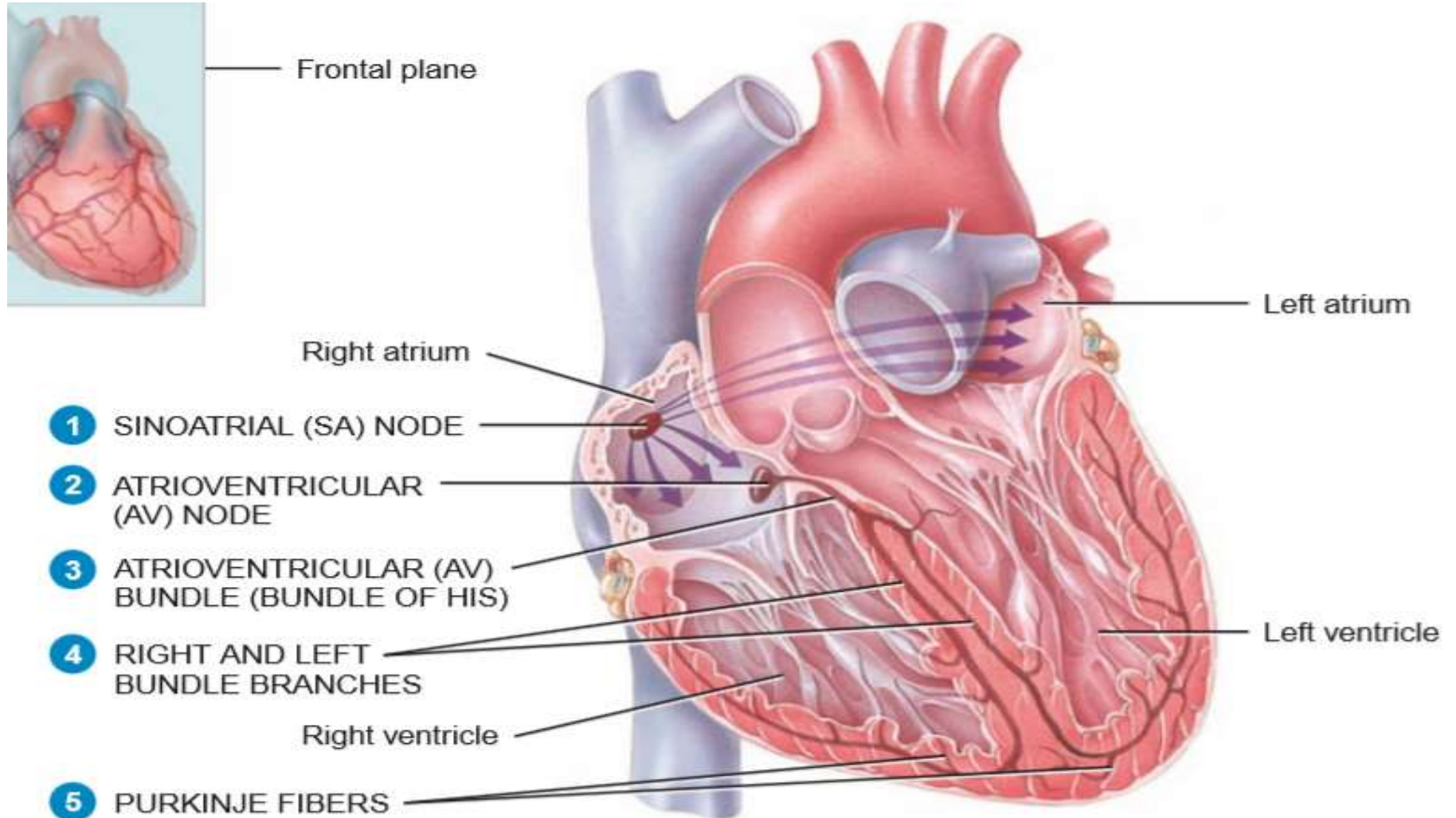
## Study of Heart with models/PPT



(b) Posterior (diaphragmatic) surface

# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of Heart with models/PPT



# ZOPBLT2: BASIC MAMMALIAN PHYSIOLOGY

## Study of Lungs with models/PPT

