

Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

April 13-17, 2020

Course: 7 Science

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Weekly Plan:

Monday, April 13

- Review All Nervous System Notes
- Take Nervous System Quiz

Tuesday, April 14

- Read and take notes from *The Teacher Notes* below on the *Excretory System*.
- Make Vocabulary Foldable.

Wednesday, April 15

- Review Excretory Notes
- Study the Excretory System Anatomy
- Read and Take Notes on *The Path of Blood Through the Excretory System*
- Quiz yourself on the Excretory Anatomy

Thursday, April 16

- Review all Excretory System Notes from this week
- Read and take notes on the *Nephron Anatomy* and on the *Path of Blood & Waste Through the Nephron*.
- Quiz yourself on the Excretory *and* Nephron Anatomy

Friday, April 17

- Review all Excretory System Notes from this week
- Quiz yourself on the Excretory *and* Nephron Anatomy
- Read the section of the book on the Excretory System (pages 445-450)
- Complete the 5 questions on page 450 on a new piece of paper with a full heading.

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

Student Signature

Parent Signature

Monday, April 13

- Review all your notes from the last two weeks.
- Complete the “quiz” below. You may use your notes but you *should not* consult your parents, siblings, or peers. Write your answer on a new sheet of paper with a full heading.

NERVOUS SYSTEM QUIZ

Directions: Write the letter of the best answer for each statement below.

1. A change or signal in the environment that makes the nervous system react is called a
 - a. stimulus.
 - b. response.
 - c. receptor.
 - d. Synapse.
2. The structures that carry messages toward a neuron's cell body are
 - a. Axons.
 - b. Dendrites.
 - c. Nerves.
 - d. impulses
3. Which structure links the brain and the peripheral nervous system?
 - a. the cerebrum
 - b. the cerebellum
 - c. the axon
 - d. the spinal cord
4. Which structure of the neuron transfers or passes on the messages being sent from the dendrites.
 - a. the cell body
 - b. the axon
 - c. the nucleus
 - d. Other dendrites

Directions: If the statement is true, write true. If the statement is false, change the underlined word or words to make the statement true.

5. A nerve message is also called a nerve impulse.
6. The Central Nervous System has three main parts: the Brain, the Spinal Cord, and Sensory Organs.
7. The three types of Neurons are: Sensory Neurons, Motor Neurons, and Interneurons.
8. Sensory Neurons get information from sense organs.
9. Interneurons send responses from the brain to the muscles to get things done.

Directions: Answer each question in 1-3 complete sentences.

9. What is the same about and what is different about the autonomic and somatic nervous systems?
10. As a man walks barefoot along a beach, he steps on a sharp shell. His foot automatically jerks upward, even before he feels pain. What process is this an example of? How does it help protect the man?

Tuesday, April 14

→ Read and take notes from *The Teacher Notes* below on the *Excretory System*.

→ Use your book (pages 445-450) to define the following words. Create a foldable if you'd like!

- ◆ excretion
- ◆ urea
- ◆ kidneys
- ◆ urethra
- ◆ urine
- ◆ ureters
- ◆ Nephron
- ◆ bladder

TEACHER NOTES

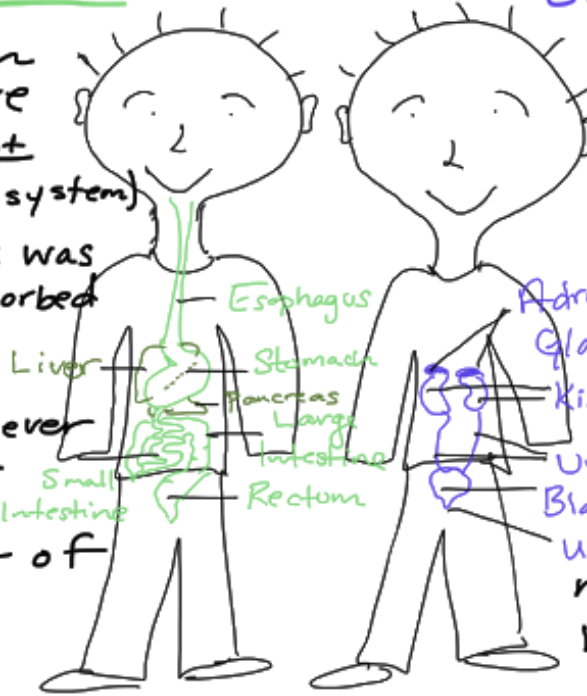
Excretory System

Latin "ex" + "cedere" ⇒ To Excrete is
"out" "separate" ⇒ to separate out.

We know from our experience as humans that our bodies create and get rid of two types of waste **SOLID WASTE** and **CELLULAR WASTE** (what we probably think of as liquid waste).

SOLID WASTE

- Comes from the Digestive System (not the excretory system)
- Solid Waste was **NEVER** absorbed into the blood stream (you could say it never really enters the internal environment of the body).



CELLULAR WASTE

- Comes from your blood.
- Cellular waste is formed from particles that have been absorbed into the blood stream but are not (or no longer) needed by the body.

Cellular Waste Excretion

There are actually 4 Organ Systems that take part in getting rid of cellular waste.

- 1) Respiratory System
→ we breath out CO_2
- 2) Skin System
→ we sweat out cellular waste
- 3) Digestive System
→ the liver breaks down proteins creating the waste product UREA, which is absorbed into the blood stream (this is actually creating waste not getting rid of it...)
→ the liver RECYCLES the hemoglobin from old Red Blood Cells into the bile that helps break down fats in the small intestine.

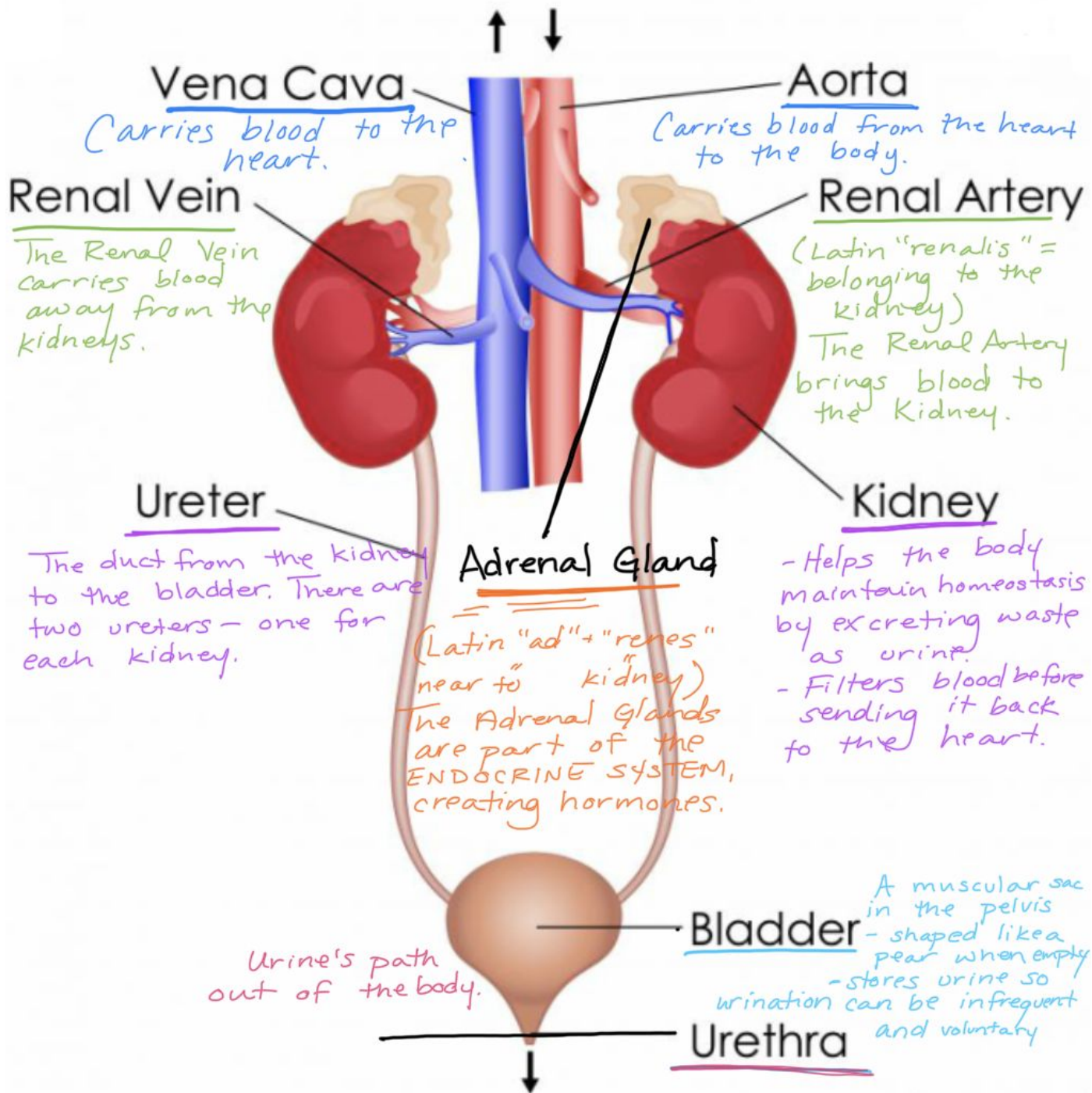
4) EXCRETORY SYSTEM

- The KIDNEYS absorb the rest of the cellular waste (not gotten rid of by breathing, sweating, and the liver) and gets rid of the waste by urinating
- By absorbing the rest of the waste, the KIDNEYS are CLEANING THE BLOOD so we don't send dirty blood to our heart, brain, or the rest of our body.

Wednesday, April 15

- Begin your lesson by reviewing your notes from yesterday.
- Spend time studying the Excretory Anatomy Image below.
 - ◆ Read through the description of each anatomy part.
 - ◆ On a separate sheet of paper this a proper heading, list and define all 9 anatomy parts.
- Read and take notes from *Teacher Notes* below on the *Path of Blood Through the Excretory System*.
- Quiz yourself on the Excretory Anatomy using the blank anatomy sheet found at the end of the packet.

EXCRETORY SYSTEM ANATOMY



TEACHER NOTES

THE PATH OF BLOOD THROUGH THE EXCRETORY SYSTEM

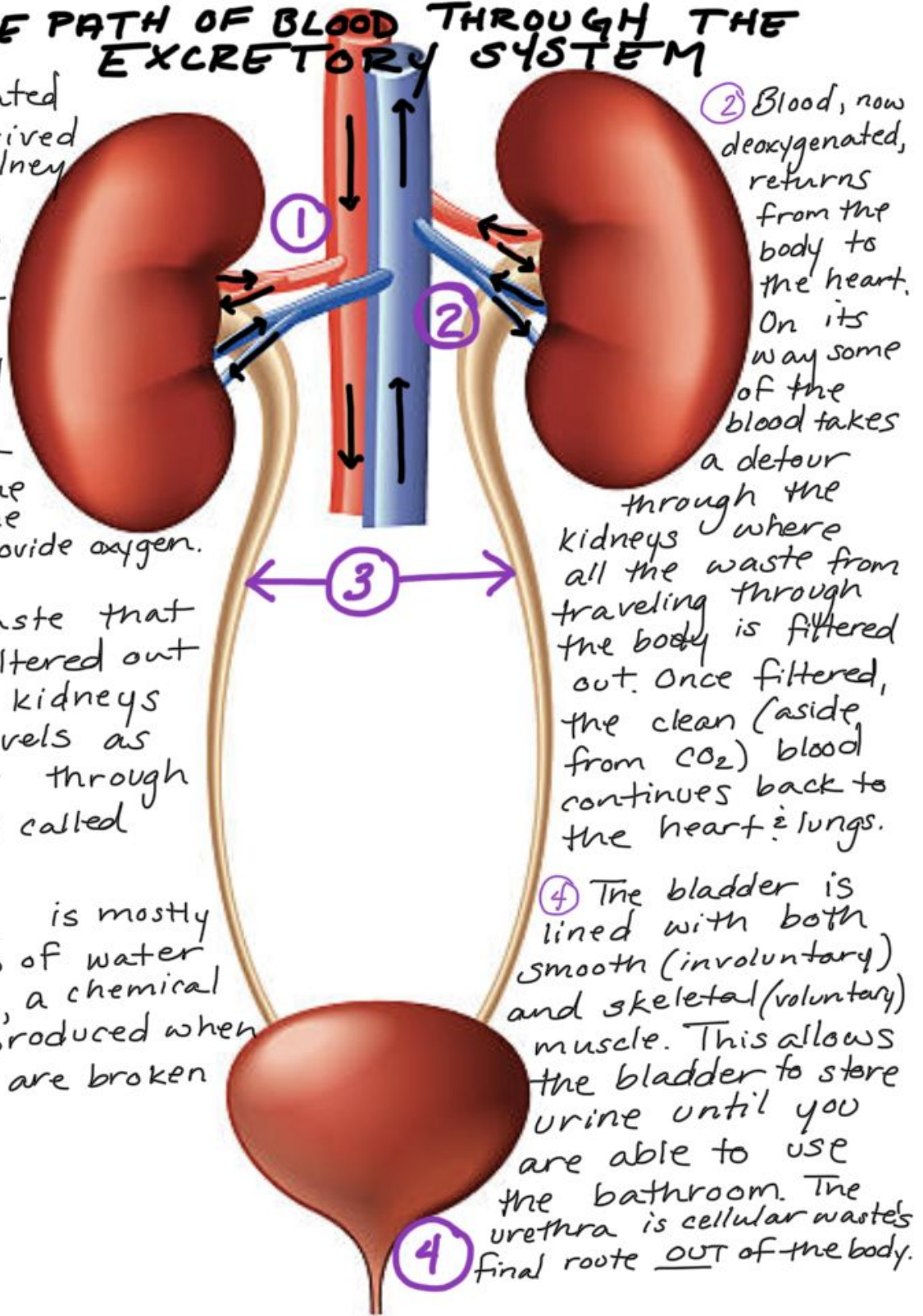
① Oxygenated blood arrived at the kidney from the heart. The kidney filters out all waste in the blood before sending it out to the rest of the body to provide oxygen.

③ The waste that was filtered out by the kidneys now travels as URINE through the tubes called ureters.

* Urine is mostly made up of water and urea, a chemical that is produced when proteins are broken down.

② Blood, now deoxygenated, returns from the body to the heart. On its way some of the blood takes a detour through the kidneys where all the waste from traveling through the body is filtered out. Once filtered, the clean (aside from CO₂) blood continues back to the heart & lungs.

④ The bladder is lined with both smooth (involuntary) and skeletal (voluntary) muscle. This allows the bladder to store urine until you are able to use the bathroom. The urethra is cellular wastes' final route OUT of the body.



Thursday, April 16

- Begin your lesson by reviewing your notes from yesterday.
- Quiz yourself on the Excretory Anatomy using the blank anatomy sheet found at the end of the packet.
- Read and take notes from *Teacher Notes* below on the *Nephron Anatomy* and on the *Path of Blood & Waste Through the Nephron*.
- Quiz yourself on the Nephron Anatomy using the blank anatomy sheet found at the end of the packet.

TEACHER NOTES

THE FUNCTIONAL UNIT OF THE KIDNEY

For a moment, let's think back on other organs we know better.

The Lungs, in general, provide the body with oxygen and help the body get rid of Carbon dioxide. Specifically, it is the **ALVEOLI** in the lungs that undergo gas exchange with capillaries to get O_2 in and CO_2 out.

The Small Intestine, in general, does most of the digestion and absorption of nutrients for the body. Specifically, it is the **VILLI** in the small intestine that undergo diffusion with Capillaries to get nutrients into the blood stream.

LIKEWISE...

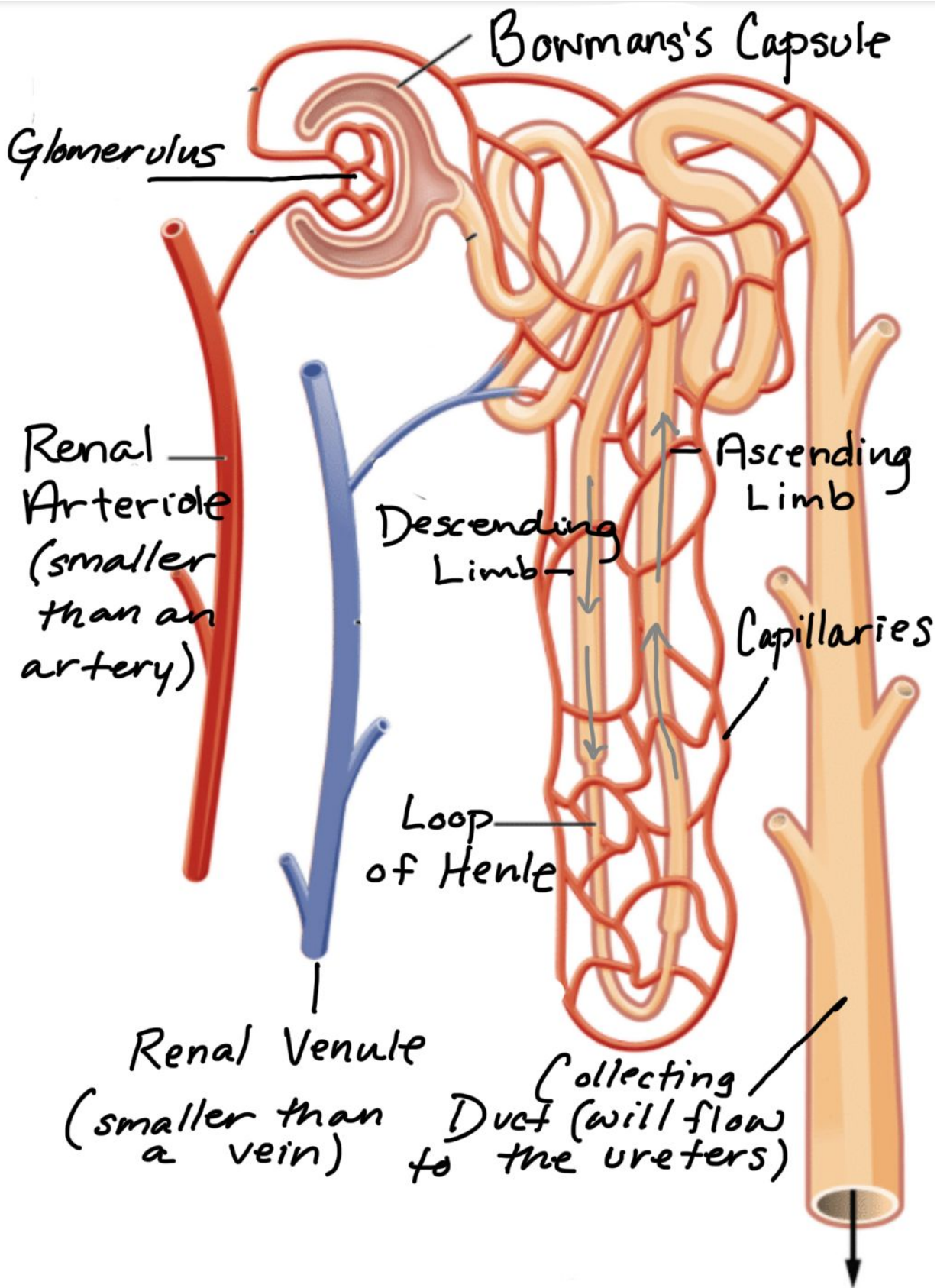
THE KIDNEY, in general, is a filtration system for the blood to get rid of cellular waste, extra water, and extra nutrients.

Specifically, it is the **NEPHRON** in the kidney that undergo diffusion with Capillaries to get the waste OUT of the blood stream.

We say the functional unit of the lungs is the alveoli,
the functional unit of the small intestine is villi,
the functional unit of the KIDNEY is the NEPHRON.

So really, there's not that much new information to learn... except the nephron anatomy is quite complicated.

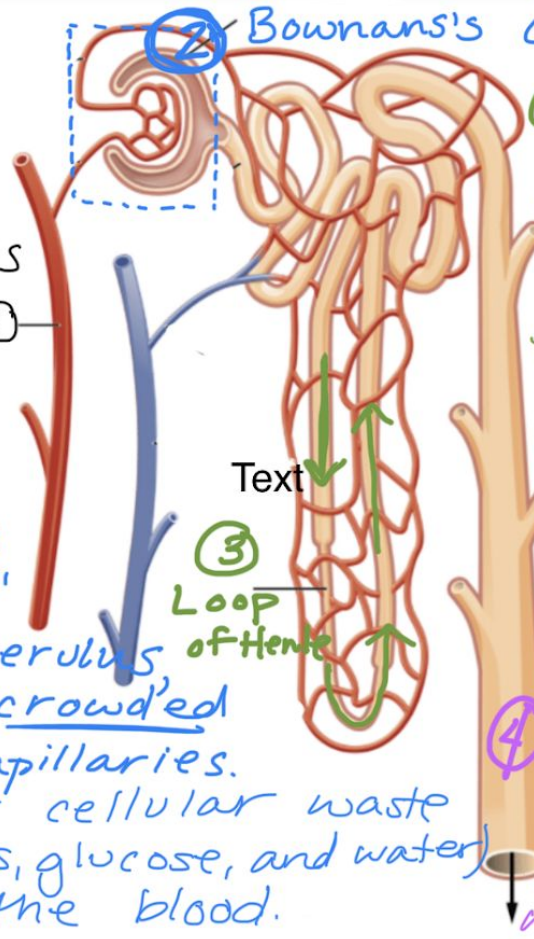
NEPHRON ANATOMY



PATH OF BLOOD & WASTE THROUGH THE NEPHRON

① After blood enters the kidney it flows into smaller vessels that feed into the millions of nephrons found in the kidney

② Once inside the nephron, the blood flows to Bowman's Capsule. The "capsule" surrounds the Glomerulus, which is a very crowded area filled with Capillaries. This is where most cellular waste (urea, excess nutrients, glucose, and water) are filtered out of the blood.



③ After almost everything is filtered out of the blood at Bowman's Capsule, the waste travels through long, circuitous tubes (including the Loop of Henle)-still surrounded by capillaries. As the waste travels, some water, salt, and glucose are reabsorbed!

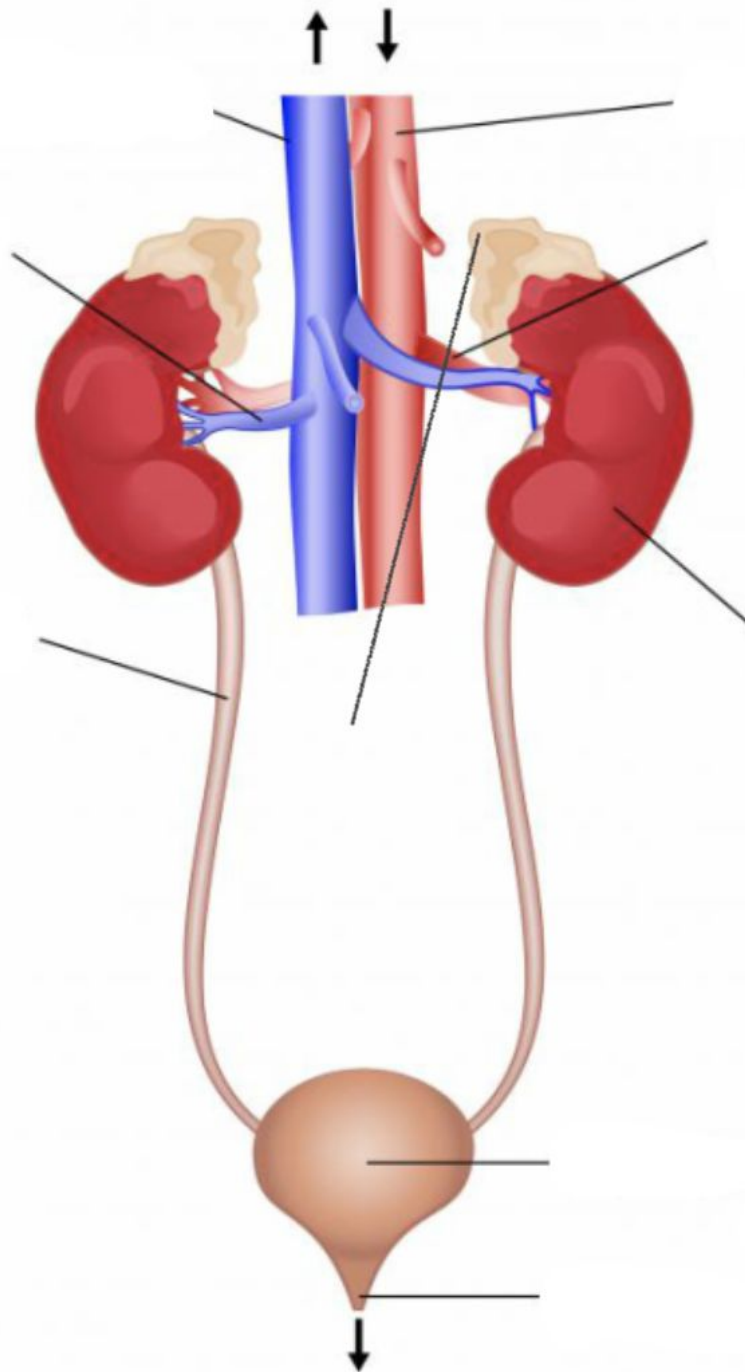
④ The blood, having now reabsorbed important nutrients exits the nephron and kidney to serve the body. The waste exits the body.

Friday, April 17

- Begin your lesson by reviewing your notes from the whole week.
- Quiz yourself on the Excretory Anatomy and the Nephron using the blank anatomy sheets found at the end of the packet. When it comes to the nephron, try to explain what happens in each part of the nephron.
- Read the section of the book on the Excretory System (pages 445-450)
- Complete the 5 questions on page 450 on a new piece of paper with a full heading.

*Thank you for another week of hard work!
We are proud of the time and effort you are putting in.
Enjoy your weekend!*

BLANK EXCRETORY SYSTEM ANATOMY
(use this blank anatomy to quiz yourself on the excretory anatomy)



BLANK NEPHRON SYSTEM ANATOMY
(use this blank anatomy to quiz yourself on the nephron anatomy)

