Excretory System

Excretion

- Process where metabolic wastes & excess substances are removed (eliminated) from the organism.
- If wastes **BUILD UP**, organism dies.

Metabolic Wastes

- Excess salts (NaCl, KSO4)
- Carbon dioxide
- Nitrogen compounds (urea, ammonia)
- Excess water

Organs Of Excretion

- Liver
- Kidneys
- Lungs
- Skin

Liver

**Structure:** Liver Cells

**Function:**
- **Detoxify** (makes less harmful) some substances.
- **Filters** toxins and dead RBCs from the blood.
- Breaks down **amino acids** into **ammonia**, then into a less harmful substance called **urea**.

Kidneys

**Structure:**
- 2 fist-sized, bean shaped organs located in lower back.

- Kidneys
- Ureters
- Bladder
Kidneys

**Function:**
- Filters all the body's blood (every 45 minutes) & reabsorbs nutrients
- Nephron-basic structural unit

The Kidneys

- Helps to regulate blood pressure by removing water from the blood when blood pressure is high.

Kidney's Function

- Clean the Blood
- Remove Extra Fluid
- (Regulate water balance)
- Filter Out Waste Products in urine (Nephrons)
- Keep Your Body Chemicals In Balance (Vitamins, minerals, etc.)
- Control Red Blood Cells and Blood Pressure (Regulate blood volume)

Your Body Wants To Avoid

- TOXIC BLOOD

Lungs

**Structure:** Alveoli

**Function:**
- CO₂ & H₂O (water vapor) is excreted (removed).
  - End products of **CELLULAR RESPIRATION**
  \[ \text{O}_2 + 
\text{C}_6\text{H}_12\text{O}_6 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Energy} \]

Skin

**Structure:** Sweat glands

**Function:**
- Excretes water, urea, & dissolved salts in sweat.
- Removal of excess heat
Structures of the Urinary System

- **Kidneys** - a bean-shaped organ that produces urine.
- **Ureters** - a tube leaving each kidney for urine to pass from the kidneys to the bladder.
- **Bladder** - where urine is stored.
- **Urethra** - a tube where urine travels from the bladder to the outside of the body.

Urine

- Made of
  - urea
  - excess salts
  - water
  - other substances

2 Processes in Urine Formation

1. **Filtration** (removal of wastes)
2. **Reabsorption** (good substances re-enter)

   **Water, amino acids, glucose, salts**
Disorders

Nephritis
- Inflammation (swelling) of kidneys.
- Symptoms: swelling (eyes, ankles), bloody urine, increased blood pressure
  - Causes: infection
  - Treatment: antibiotics

Kidney stones
- A hard mass of crystals (urine lacks the chemicals that prevent the crystals from forming).
- Calcium or uric acid stones
- Symptoms: EXTREME PAIN, nausea, vomiting
  - Causes: unknown
  - Treatments: passed by person, lithotripsy (shock waves), surgery

Kidney Failure
- Kidneys stop working.
- If both kidneys fail, you need to rid body of cell wastes.
- Symptoms: weakness, swelling, decreased urine, high blood pressure
  - Causes: many factors (high blood pressure, infection)
  - Treatment: Dialysis (machine) or Kidney Transplant
The End

Wrap up questions

What do we call the removal of waste products from an organism?
excretion

What are the different systems used to bring necessities to the cell and carry away wastes?
- Respiratory
- Digestive
- Excretory

What are all the chemical processes going on in the body called?
metabolism

The chemical processes of the body creates waste, what if these wastes build up?
Some chemical wastes include:

- CO₂
- H₂O
- Urea
- Ammonia
- Salts

What are some of the organs of the excretory system?

- Lungs
- Liver
- Kidneys
- Skin

What 2 systems are the lungs part of?

- Respiratory & Excretory systems

To what system are the lungs connected?

- Circulatory system

As part of the excretory system, what waste are the lungs responsible for eliminating?

- CO₂

What are some of the parts of the urinary system?

- Kidneys
- Ureters
- Bladder
- Urethra
The kidneys are responsible for filtering the blood.

The wastewater from the kidney drains into a tube called the **Ureter**.

These tubes connect the kidney and the **Bladder**, allowing the urine to drain from the kidneys to the bladder.

The bladder is an elastic, muscular organ, that holds urine. When the bladder is full, the urine leaves the body through a tube called the **Urethra**.

When a person's kidneys are not functioning, they must undergo a process called **Dialysis** in which a machine filters the waste out of the blood.

**Review Questions For Quiz**

1. Which of the following is not part of the excretory system?
   - A. lungs
   - B. skin
   - C. ureter
   - D. appendix
2. What waste product is produced by the lungs?
- A. Urea
- B. Perspiration
- C. Urine
- D. Carbon Dioxide

3. What is responsible for filtering the blood?
- A. Lungs
- B. Kidneys
- C. Bladder
- D. Urethra

4. Where does urine leave the body from?
- A. Bladder
- B. Urethra
- C. Ureter
- D. Dialysis

5. Which part of the urinary system are the arrows pointing?
- A. Urethras
- B. Dialysis
- C. Ureters
- D. Bladder

6. Which organ is responsible for filtering out harmful chemicals and breaking them down?
- A. Bladder
- B. Lungs
- C. Liver
- D. Skin

7. What is the process by which a machine does the work of the kidneys?
- A. metabolism
- B. respiration
- C. perspiration
- D. dialysis
8. What is the removal of waste products from an organism?

- A. excretion
- B. secretion
- C. dialysis
- D. metabolism

9. What are all the chemical processes going on in the body called?

- A. dialysis
- B. metabolism
- C. respiration
- D. perspiration

Answers:

1. D  6. C
2. D  7. D
3. B  8. A
5. C