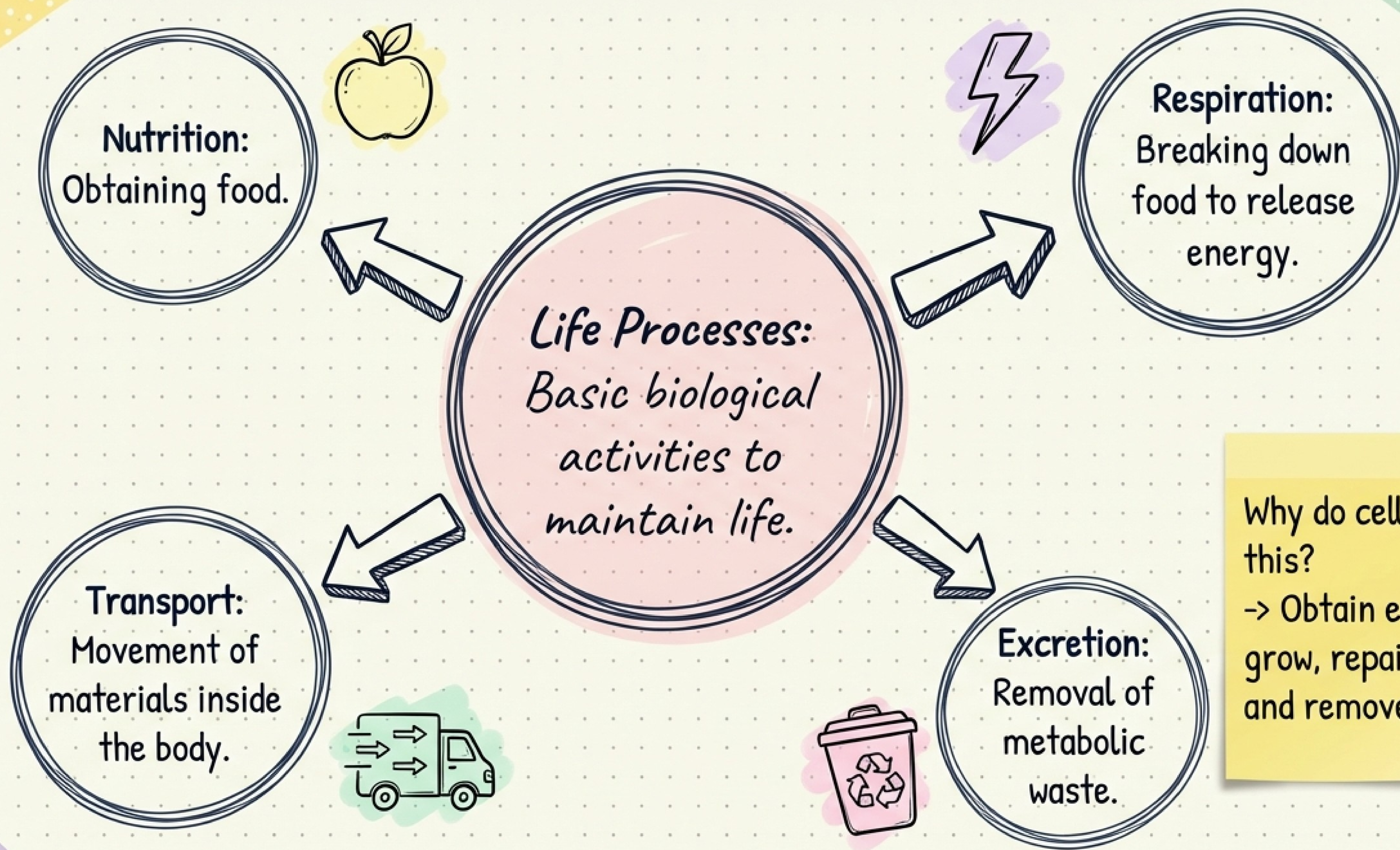


Life Processes - Study Notes





Nutrition:
Obtaining food.

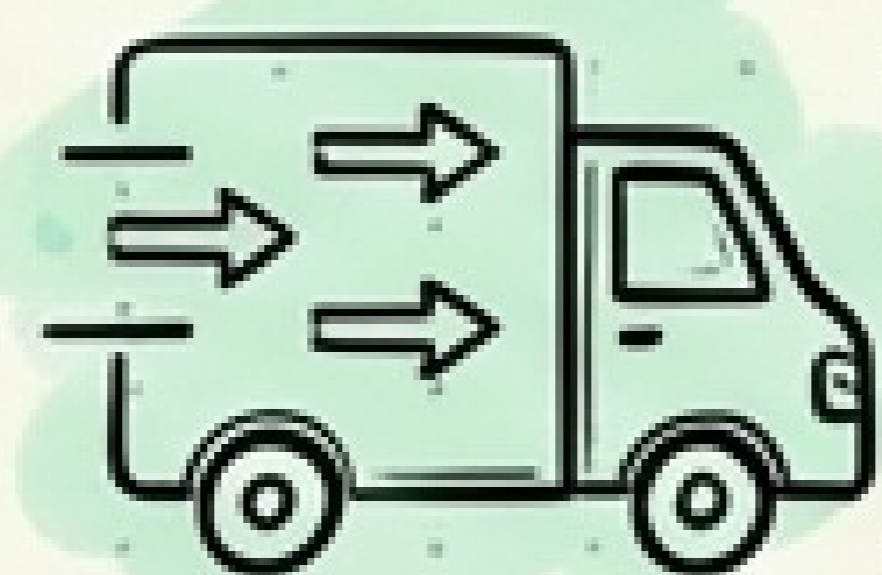


*Life Processes:
Basic biological
activities to
maintain life.*

Respiration:
Breaking down
food to release
energy.



Transport:
Movement of
materials inside
the body.



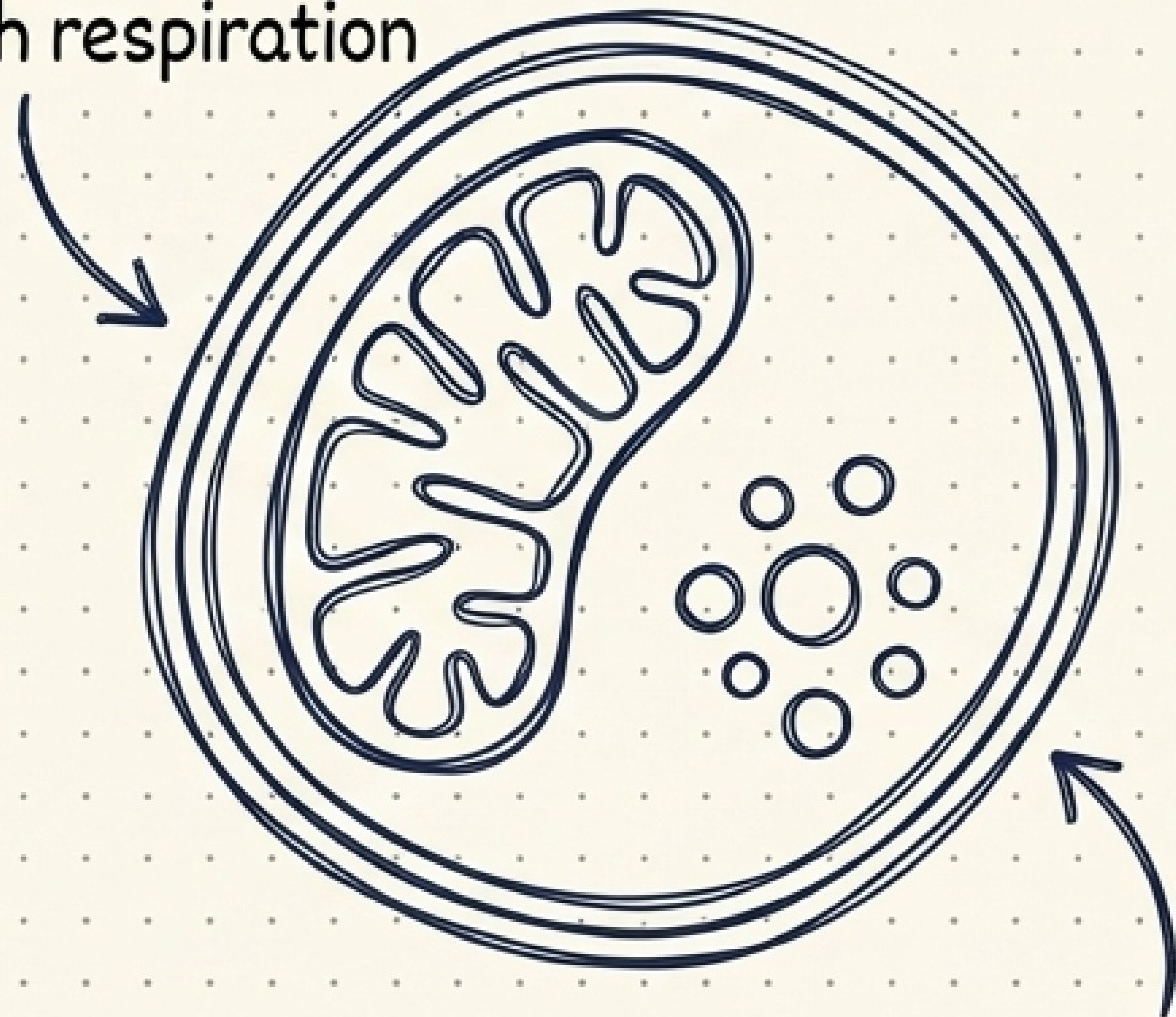
Excretion:
Removal of
metabolic
waste.



Why do cells do this?
-> Obtain energy,
grow, repair tissues,
and remove waste!

Inside the Cell: Constant Activity

Mitochondria =
Produce ATP
through respiration



Ribosomes =
Synthesize proteins

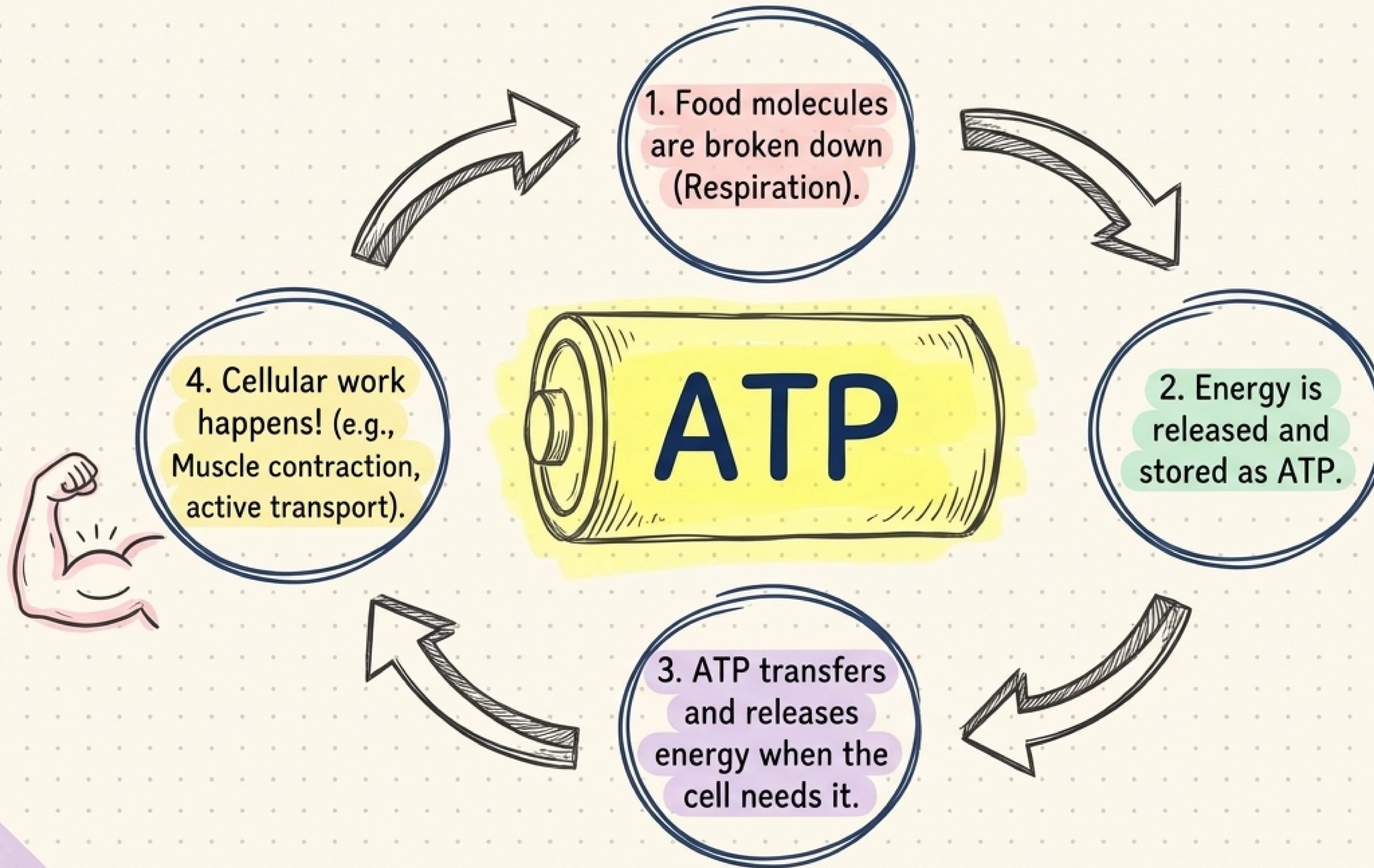
- Cells are busy! They handle metabolism, cell division, and transport across membranes.

Synthesis Callout: Building complex molecules from simpler substances.

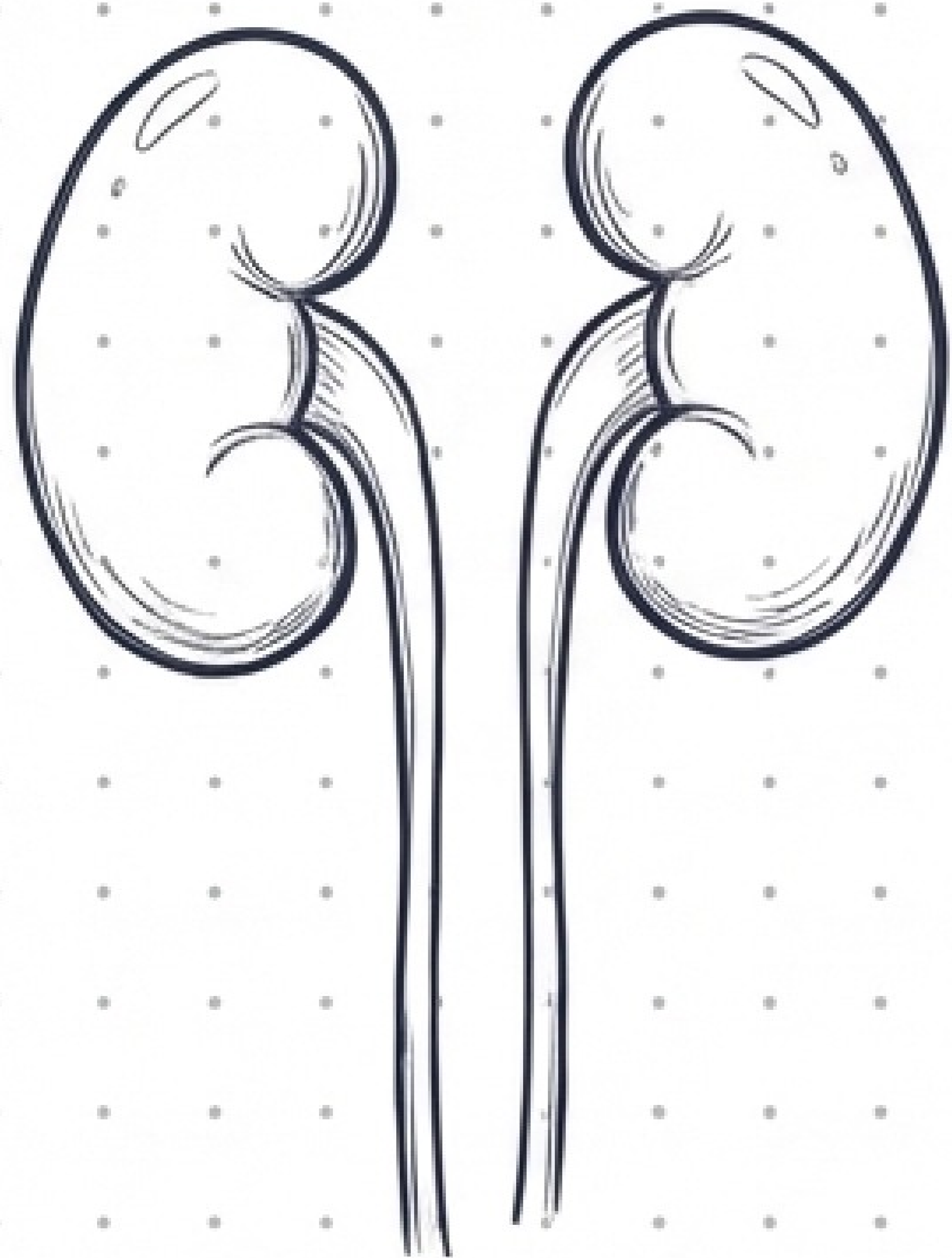


- Example 1: Plants synthesize glucose during photosynthesis.
- Example 2: Cells synthesize proteins from amino acids for growth and repair.

Adenosine Triphosphate (ATP): The Energy Currency



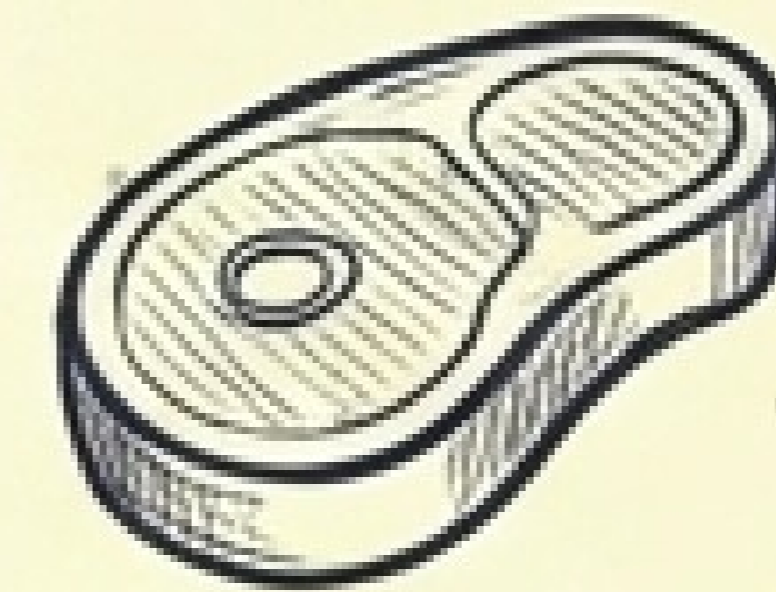
Deep Dive: Kidney Function



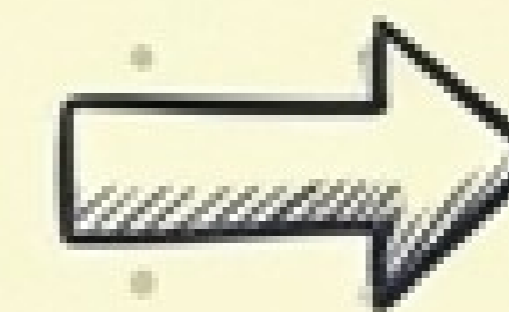
- Bean-shaped organs that filter blood.
- Main job: Remove waste (urea, excess salts, water).
- Keep everything **balanced**: Maintain water balance and regulate blood composition.

Real World Example!

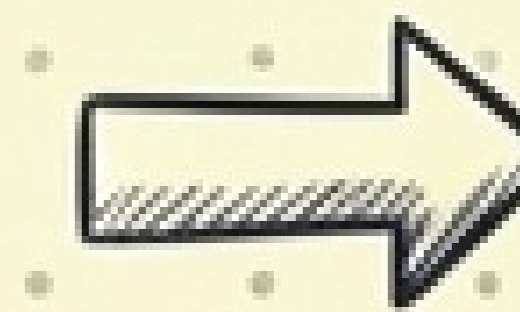
When we eat protein-rich food, our body produces a **nitrogenous waste** called **UREA**. The **kidneys** filter this urea from the blood and **remove it safely through urine!**



protein



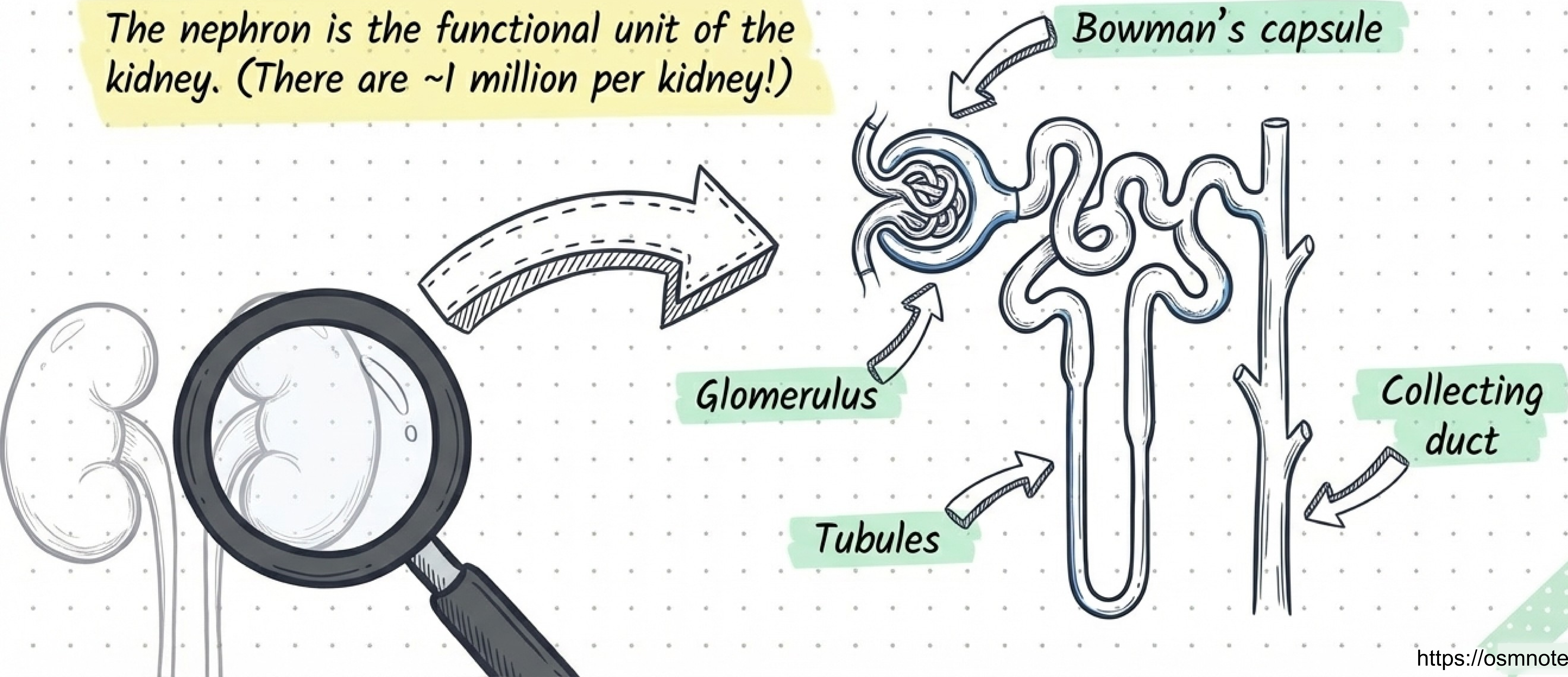
urea



filtered

Zooming In: The Nephron

The nephron is the functional unit of the kidney. (There are ~1 million per kidney!)



Step-by-Step: Filtering the Blood

1. Blood enters the kidney through the Renal Artery.

2. Filtration occurs right inside the Glomerulus.

3. Useful substances (glucose, water) are reabsorbed in the Tubules.


4. Leftover wastes remain in the filtrate, officially forming urine.

5. Urine passes down the Ureter and is stored in the Bladder.



Knowledge Check: Pop Quiz!

100%


1. The energy currency of the cell is:
(A) DNA (B) ATP ✓  (C) RNA (D) Enzyme
2. The functional unit of kidney is:
(A) Neuron (B) Nephron ✓ (C) Alveoli (D) Artery
3. Removal of metabolic waste is called:
(A) Respiration (B) Nutrition (C) Excretion ✓ (D) Circulation
4. Filtration of blood in nephron occurs in:
(A) Tubule (B) Glomerulus ✓ (C) Bladder (D) Ureter