



METABOLIC WASTE

U4:L1

METABOLIC

METABOLIC: related to the **metabolism** of a living organism

METABOLISM: the **chemical processes** that occur within a living organism in order to maintain life

CHEMICAL PROCESSES: chemical reaction (the change of a chemical compound)

IE: reactant + reactant → product

WASTE

Eliminated / discarded material which is no longer useful.

EXCRETION

...is the act or process of detecting and removing **waste matter** from the body.

- Helps maintain homeostasis
- Protects the body from toxins.

WASTE MATTER

...is the product of **cellular metabolism**

The cells want to get rid of this waste, because if it builds up it will become toxic to the cell.



CELLULAR METABOLISM

Chemical reactions that occur in a cell in order to maintain life.

Oxygen + Food Molecules → Water + Carbon Dioxide + Energy

☺ a.k.a Cellular Respiration ☺

PROBLEM:

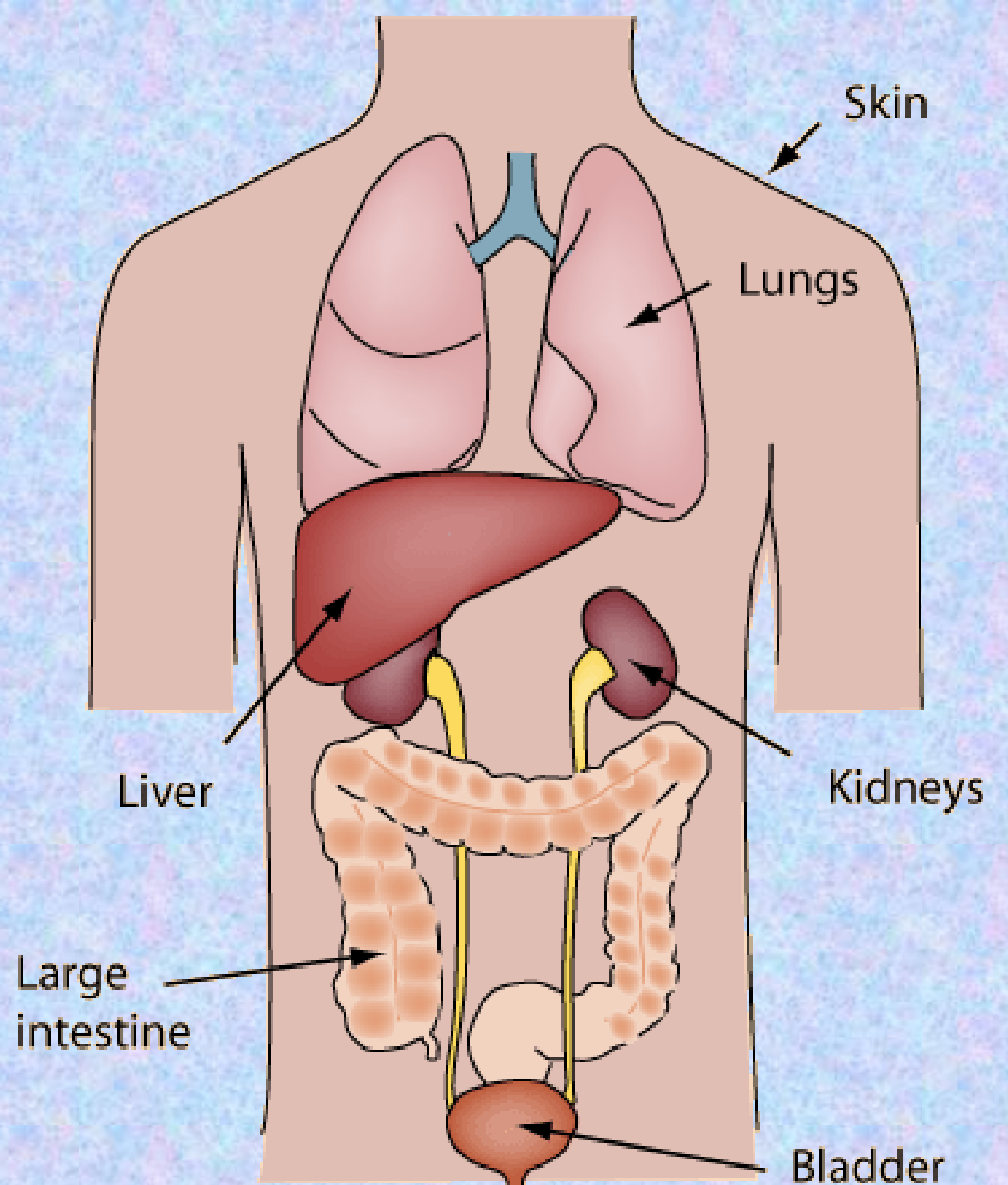
Some **products** are WASTE & can be harmful to the body!





**What
Waste do
our bodies
produce?**

Here's a hint...
These are the
main excretory
organs in our
bodies!

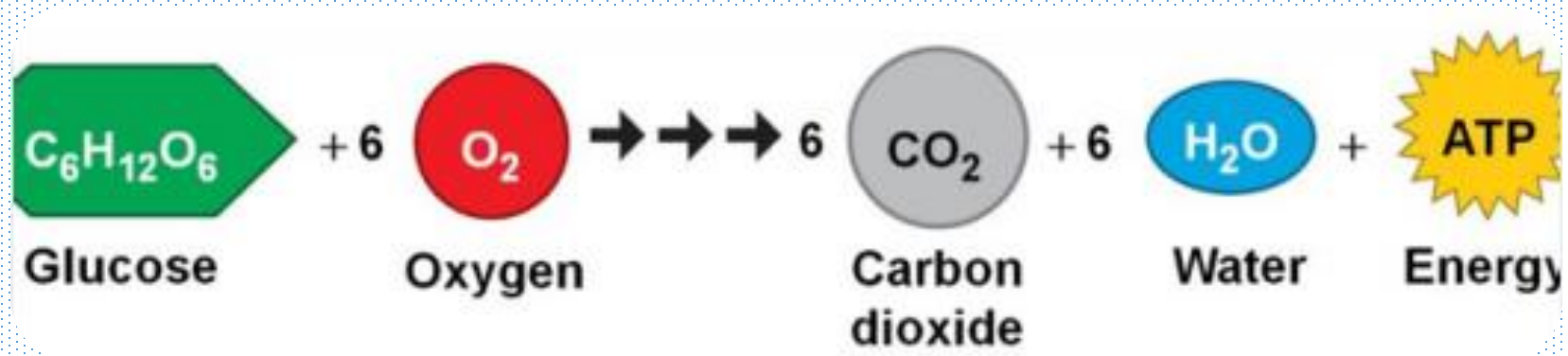




1. CARBON DIOXIDE (CO_2)
2. WATER (H_2O)
3. NITROGENOUS WASTES
4. MINERAL SALTS

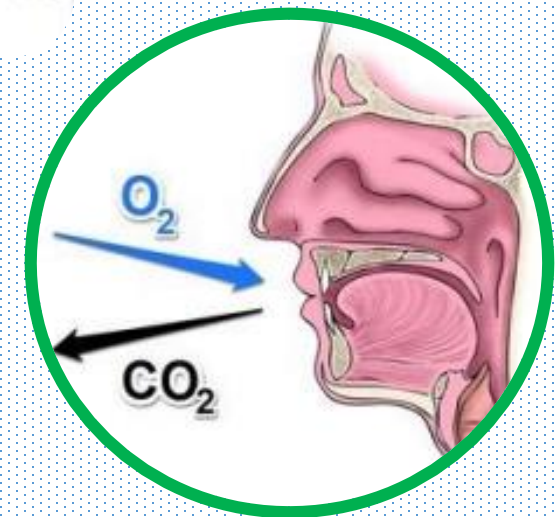
CARBON DIOXIDE (CO₂)

Waste product of cellular respiration:



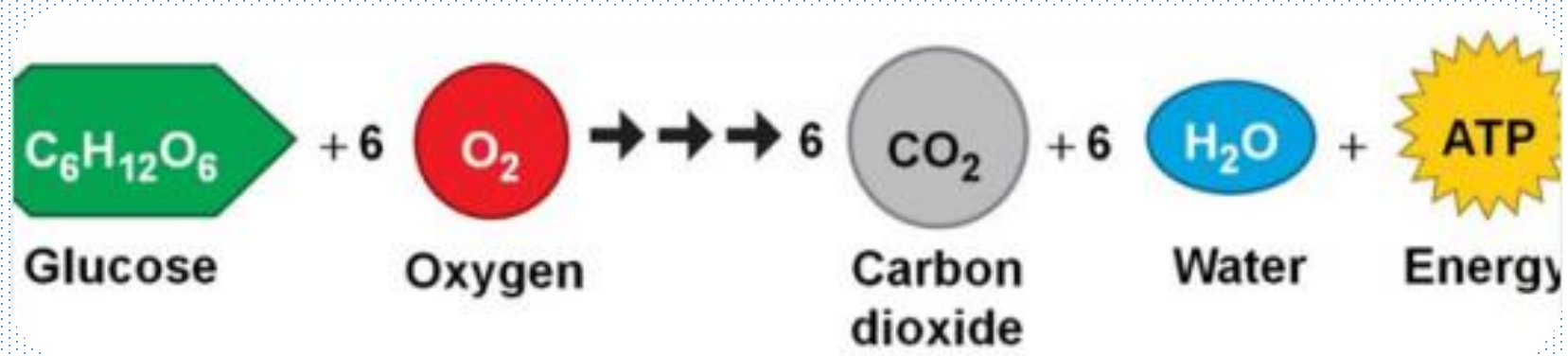
- Released by cells into the bloodstream
- Removed by lungs when we EXHALE

Excretory Organ: LUNGS



WATER (H₂O)

Waste product of cellular respiration:



- Excess water is removed by the kidneys, skin and lungs
- Some water is delivered to the intestines for absorption
- Excretory Organs: KIDNEYS / SKIN / LUNGS / INTESTINES



NITROGENOUS WASTE

Waste product of broken down **protein**.

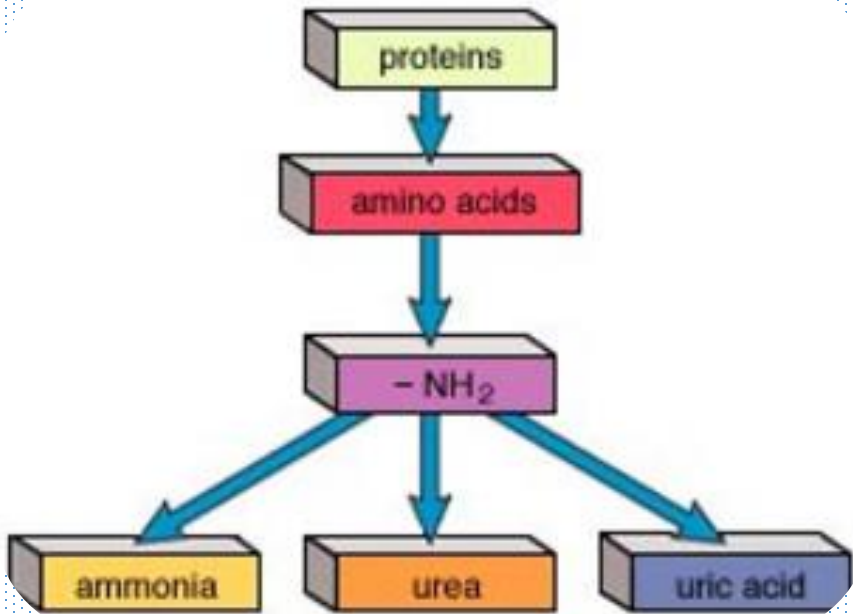
Ammonia (NH₃)

- Waste product of protein breakdown
- Toxic to the body
- Converted to urea in the liver before being released into the bloodstream

Urea

- Ammonia + Carbon Dioxide
- Removed through sweat and urine by the skin and kidneys

Excretory Organs: SKIN / KIDNEYS / LIVER



MINERAL SALTS

Waste product of a variety of broken down **foods**

- Example of a mineral salt is sodium chloride
- Removed through sweat and urine through the skin and kidneys

Excretory Organs: SKIN / KIDNEYS

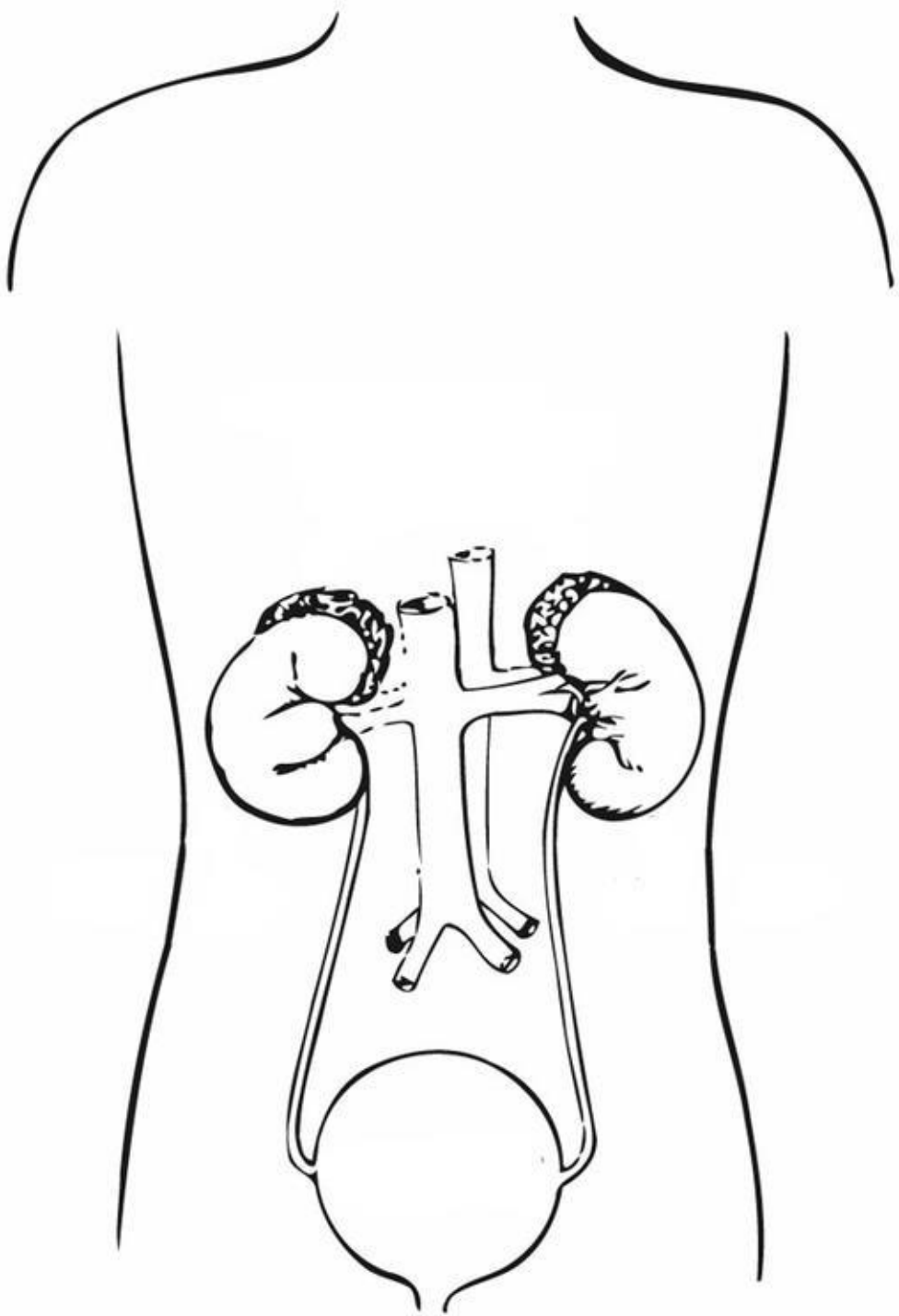




Why is
excrement
not included in
the list of
metabolic
wastes?



Excrement is not a product of cellular metabolism. It is a "leftover" after the body absorbs what nutrients it needs from the small intestine.



- KIDNEYS
- RENAL CORTEX
- RENAL MEDULLA
- RENAL PELVIS
- RENAL ARTERIES AND VEINS
- URETERS
- URINARY BLADDER
- URETHRA
- URINARY SPHINCTERS

WHAT WOULD
HAPPEN IF YOU
DIDN'T DRINK WATER?

