Keystone Biology Remediation

A3: Bioenergetics

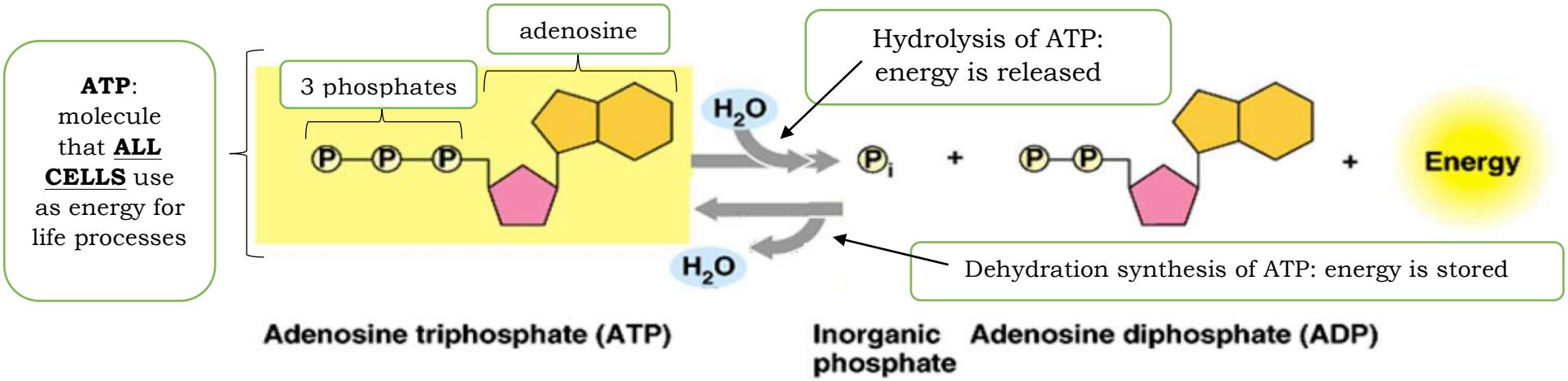
Assessment Anchors:

- to describe role of ATP in biochemical reactions (A.3.2.2)
- to describe the fundamental role of plastids (e.g. chloroplasts) and mitochondria in energy transformations (A.3.1.1)
- to compare the basic transformation of energy during photosynthesis and cellular respiration (A.3.2.1)

Unit Vocabulary:

adenosine triphosphate (ATP)	cellular respiration	consumer	photosynthesis
autotroph	chemical energy	energy transformation	plastids
bioenergetics	chloroplast	heterotroph	producer
carbohydrate	mitochondria		

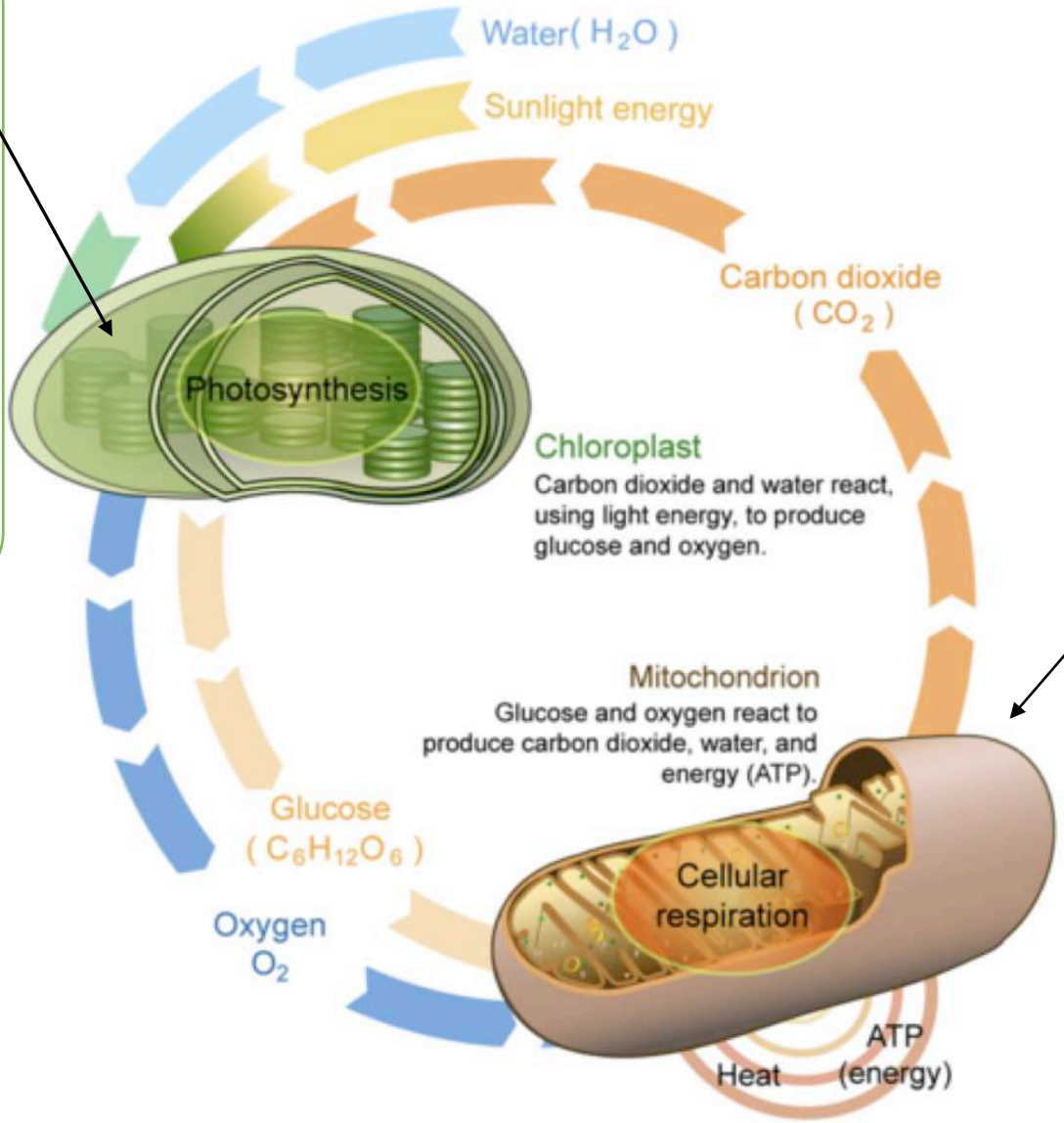
Assessment Anchor: Describe the role of ATP in biochemical reactions (A.3.2.2)



Assessment Anchor: Describe the fundamental role of plastids (e.g. chloroplasts) and mitochondria in energy transformations (A.3.1.1)

Chloroplast:

location of **photosynthesis**; contains the pigment **chlorophyll** that traps energy from the sun, as well as the many **enzymes** that are necessary for the chemical reactions of photosynthesis

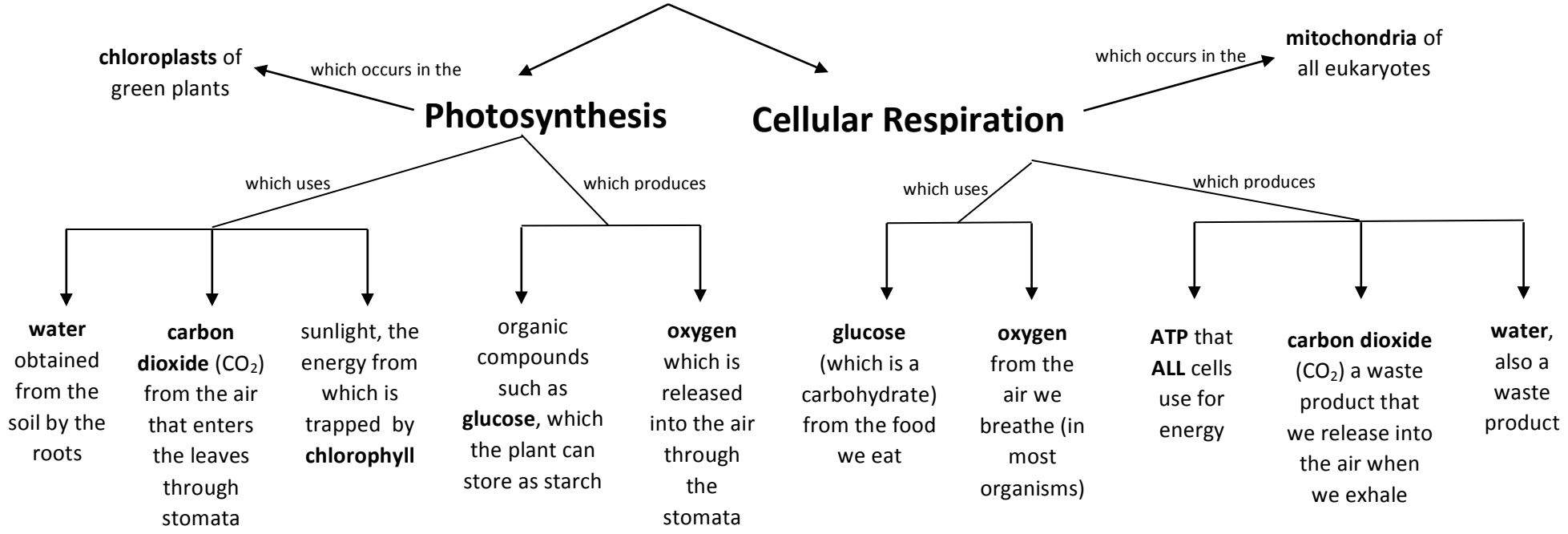


Mitochondria:

site of **cellular respiration**; has a folded inner membrane that increases the surface area for the reactions of respiration to occur as well as the many **enzymes** that are involved in the reactions of respiration.

Assessment Anchor: Compare the basic transformation of energy during photosynthesis and cellular respiration (A.3.2.1)

The Two Main Processes that Transform Energy in Living Organisms



The word equation for photosynthesis is:

carbon dioxide + water + light energy ---→ glucose + oxygen

The formula equation for photosynthesis is:

$CO_2 + H_2O$ + light energy ----→ $C_6H_{12}O_6 + O_2$

The type of energy transformation occurring in photosynthesis is:

light energy ----------→ chemical energy

The word equation for cellular respiration is:

glucose + oxygen ---→ carbon dioxide + water + ATP

The formula equation for cellular respiration is:

$C_6H_{12}O_6 + O_2$ ----→ $CO_2 + H_2O$ + ATP

The type of energy transformation occurring in respiration:

chemical ----------→ chemical