

**Topic question:**

True or False? A mitochondrion is not only a membrane-bound organelle, it is a double membrane-bound organelle. **True.**

**5.11 EUKARYOTIC ORGANELLES: VACUOLE**

- Vacuoles are storage organelles.

**Topic question:**

What is the function of a vacuole? **It is for storage of substances in the cell.**

**5.12 EUKARYOTIC ORGANELLES: CHLOROPLAST**

- Chloroplasts are found in algae and plants; animal cells do not contain them.
- Chloroplasts perform photosynthesis.

**Topic question:**

What do chloroplasts do? **Perform photosynthesis.**

**5.13 PLANT AND ANIMAL ENERGY**

- All processes that cells perform require energy.
- The energy that cells need to perform their chemical reactions is obtained from ATP.
- Cellular respiration, occurring in mitochondria, is the biochemical set of reactions that makes ATP using energy released when glucose is broken down.
- Photosynthesis, occurring in chloroplasts, is the biochemical set of reactions that capture the sun's energy and use it to make glucose from carbon dioxide and water.

**Topic questions:**

True or False? ATP is the molecule made during photosynthesis. **False. ATP production is a function of mitochondria.**

What is important about the glucose plants make during photosynthesis? **The glucose provides all the available glucose for cellular respiration to occur not only in plants but also in animals and all other consumers.**

**5.14 PHOTOSYNTHESIS: FUNCTION OF CHLOROPLASTS**

- Chloroplasts contain the photosynthetic pigment chlorophyll.
- Photosynthesis is the set of chemical reactions occurring in chloroplasts in which the sun's energy is captured and used to make glucose from carbon dioxide and water.
- Plants and algae perform photosynthesis.

**Topic question:**

True or False? During photosynthesis, six molecules of water and six molecules of carbon dioxide are used to make one molecule of glucose and six molecules of oxygen. **True.**

**5.15 CELLULAR RESPIRATION**

- Cellular respiration is the series of chemical reactions occurring in mitochondria in which glucose is broken down, then the released heat is captured and used by enzymes to make molecules of ATP.
- Almost all organisms on earth perform cellular respiration, and they all need glucose, manufactured in plants, to perform it.
- All chemical reactions require energy and ATP is the universal power molecule that cells use to fuel their chemical reactions.