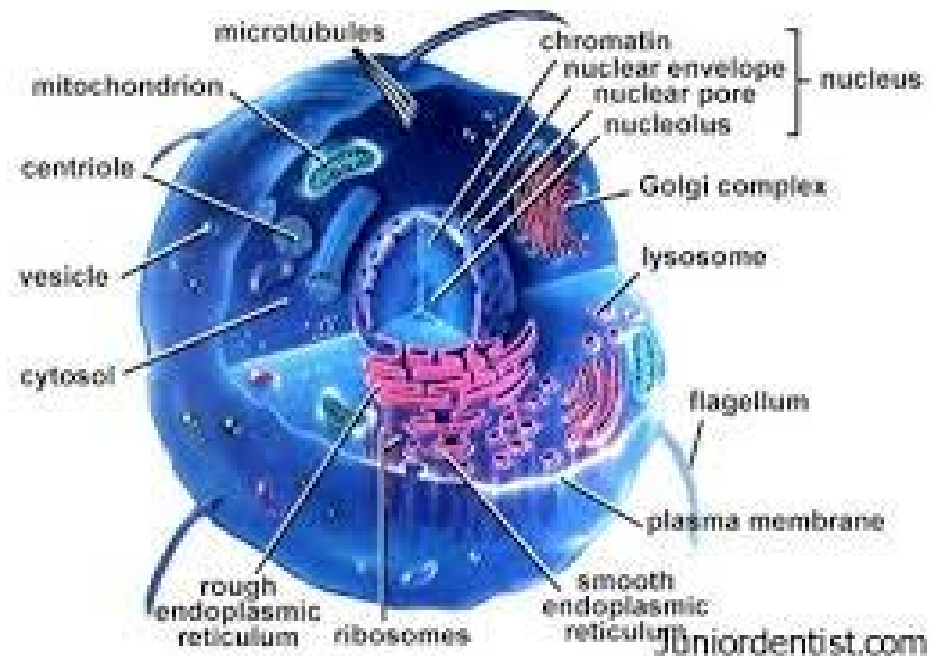


The magnificent cell
and all of its
functions

Recall

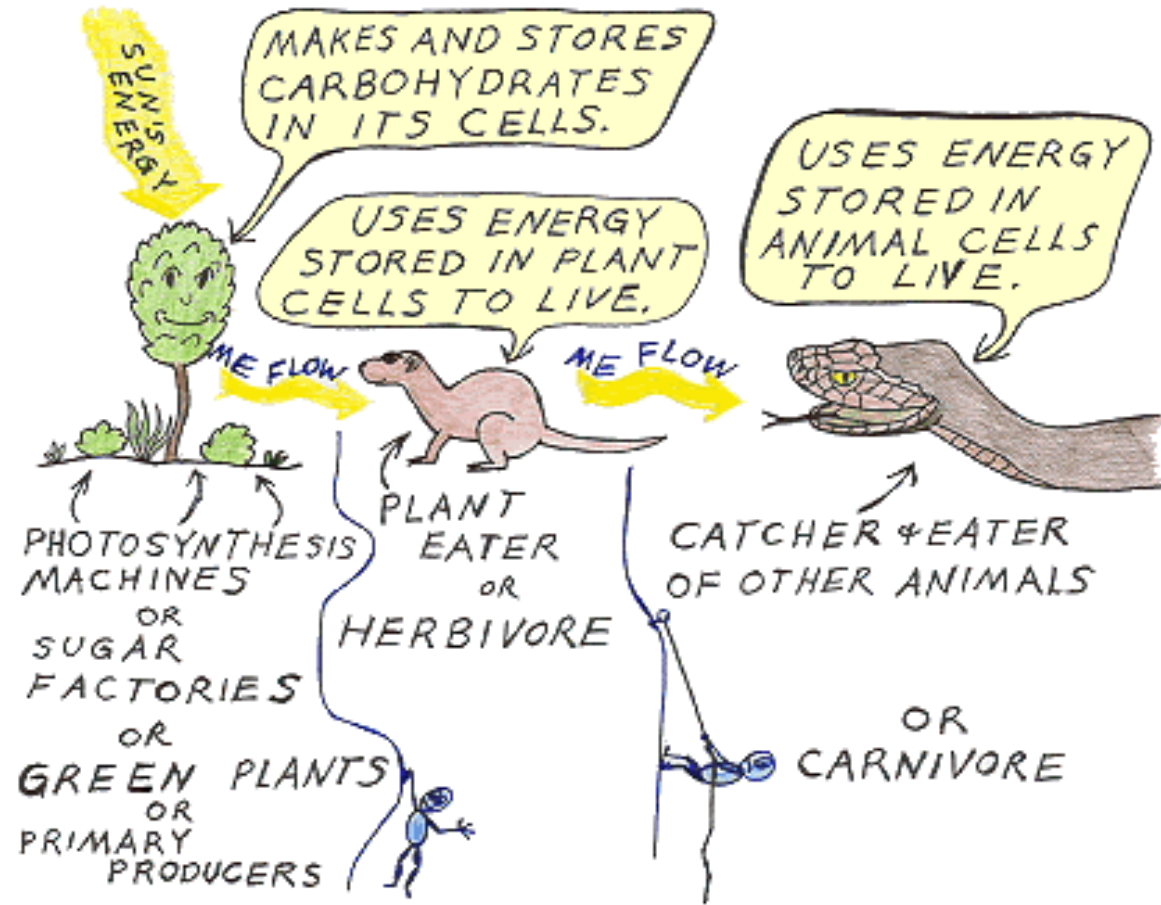
- All cells must complete these 5 essential functions
 - Obtain energy
 - Grow
 - Remove wastes
 - Reproduce
 - Respond to Stimuli

How do they do this???



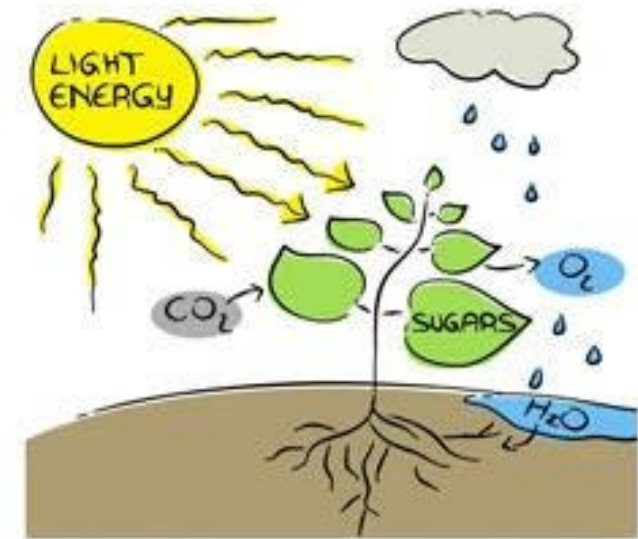
#1 How do cells obtain energy?

- Create their own energy
- Obtain energy through food



Creating Energy

- Plant cells have specialized organelles known as chloroplasts.
- Inside chloroplasts is the pigment chlorophyll which captures the energy of the sun and converts that energy into chemical energy (ie food)
- It is like having a solar panel
- This process gives “food” to the plant to carry out its functions
- This process is known as **PHOTOSYNTHESIS**

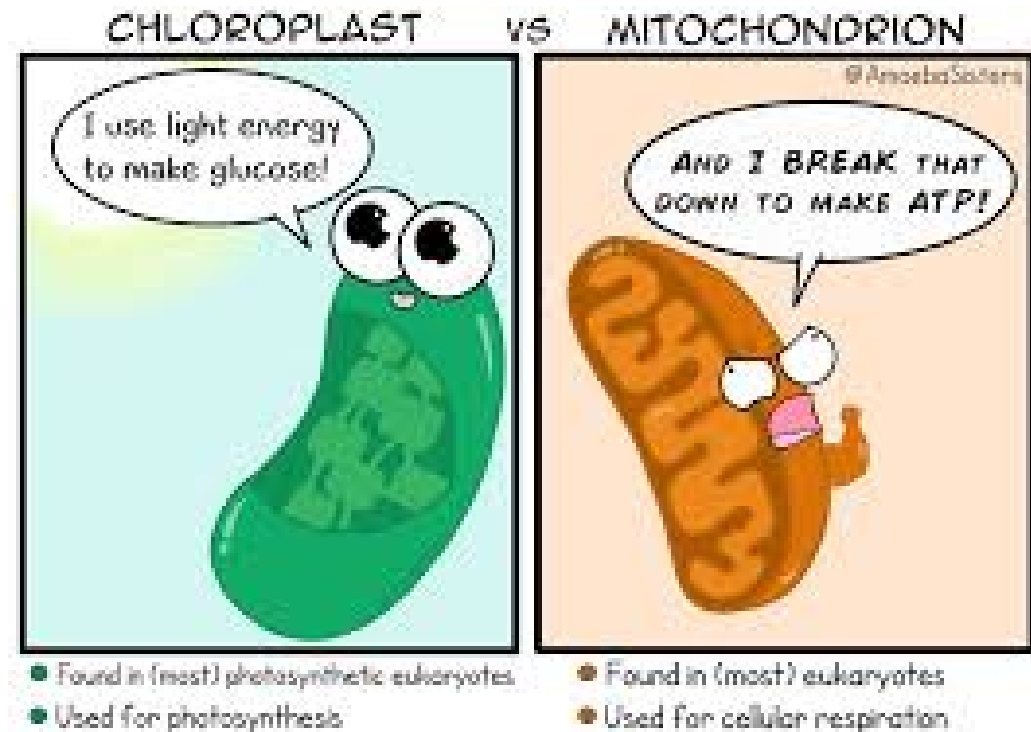


Photosynthesis



What about animal cells? How do they obtain energy?

- Animal cells must obtain their energy by “eating” or absorbing molecules
- Once in the body and broken down, certain molecules can be used by the mitochondria to produce energy for the cell
- The mitochondria converts chemical energy (ex glucose) stored in food into compounds that are easier for the cell to use.
- This process is known as **CELLULAR RESPIRATION**



Cellular Respiration



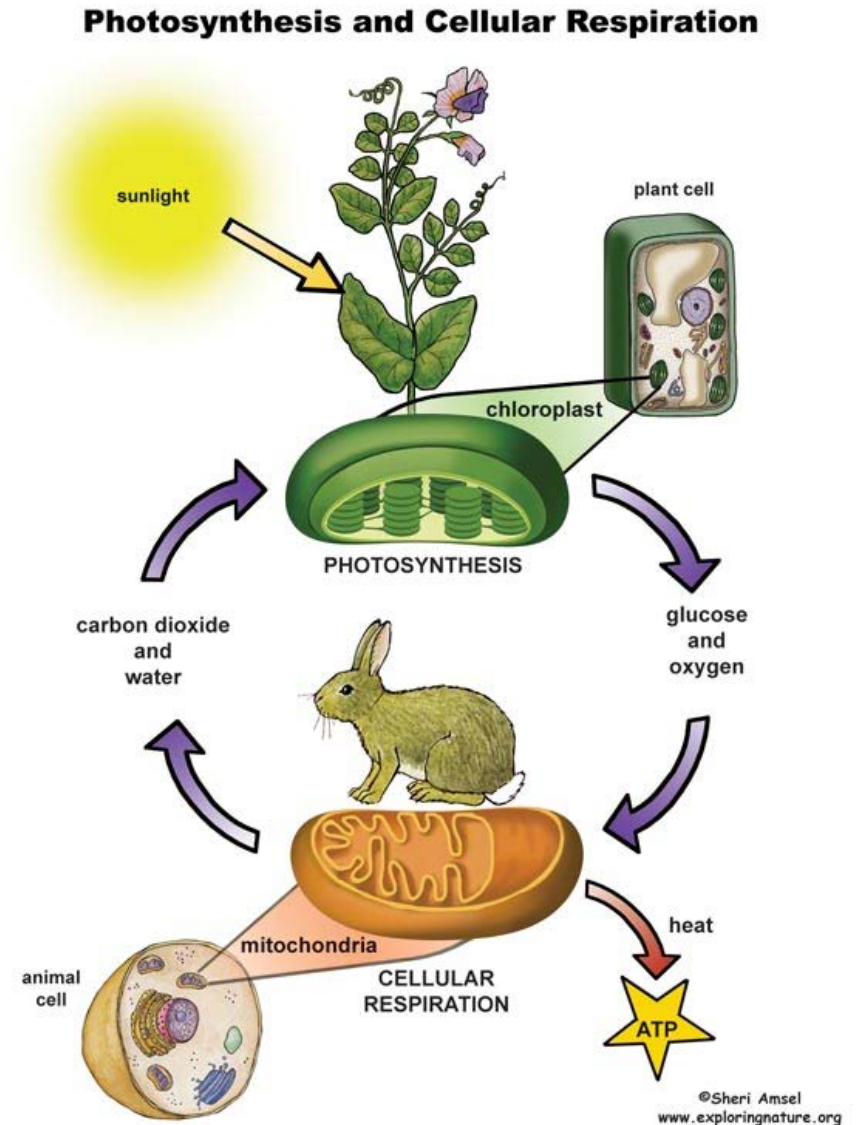
Glucose + Oxygen → Carbon Dioxide + Water + ATP

Time out:

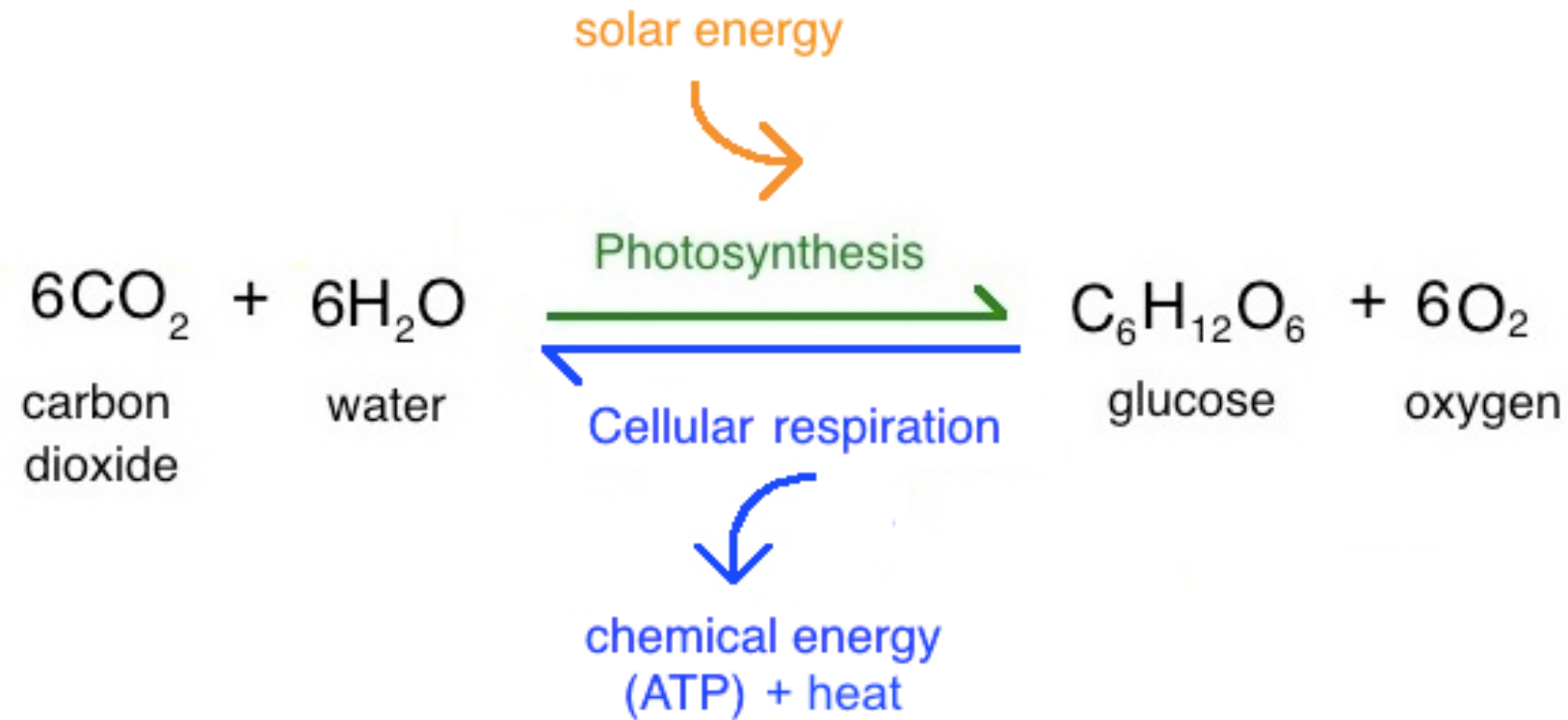
- **Discussion Questions:**
- **How do cellular respiration and photosynthesis compare?**
- **What do they use/release?**
- **Why does a top consumer need to eat more than a primary consumer?**

How do cellular respiration and photosynthesis compare?

- They are the reverse reactions of one another
- Photosynthesis uses carbon dioxide, water and energy from the sun to produce sugar (food) and oxygen
- Cellular Respiration uses the products of photosynthesis (sugars and oxygen) to produce energy (ATP), water and the waste product carbon dioxide.

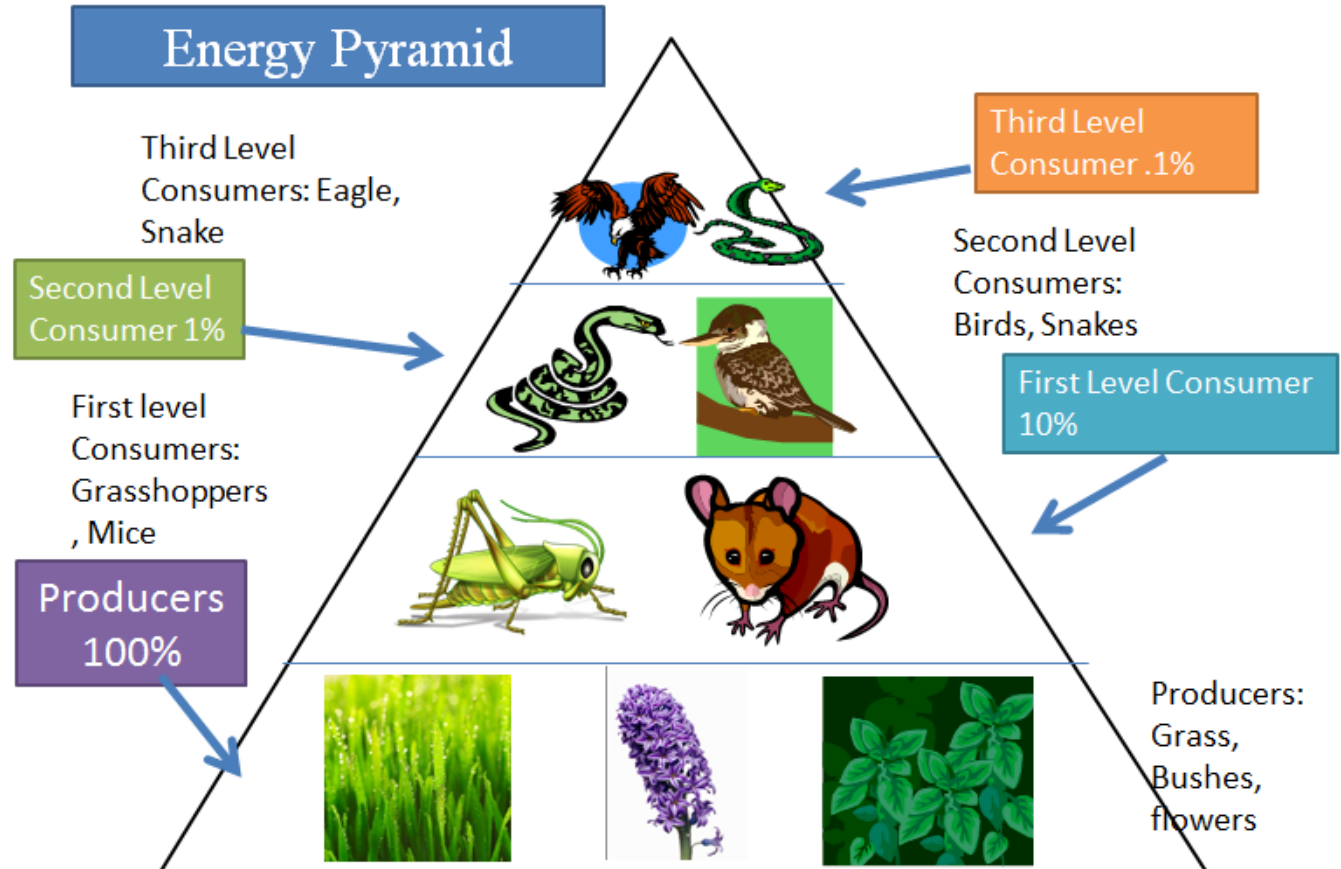


Comparing Both



Why does a top consumer need to eat more than a primary consumer?

- Energy is lost as it is transferred up the food chain
- By the time it reaches the top consumer, the majority of the original energy produced via photosynthesis has been used up by organisms or lost as heat.



Obtaining Energy Worksheet

