



- 1. Which direction would water move between two isotonic solutions? Into a cell, out of a cell, or both in and out equally?**
- 2. What is G3P used to make?**
- 3. Would damaged cells be able to repair themselves if they had no ribosomes?**
- 4. Why are fat cells larger than muscle cells?**
- 5. Why is the mitochondria “ruffled”?**



Cells Review

1. Explain the main points of cell theory:

Cells Review

1. Explain the main points of cell theory:

1. All living things
are made of cells.



2. Cells are the
basic unit of life.



3. Cells come from
pre-existing cells.

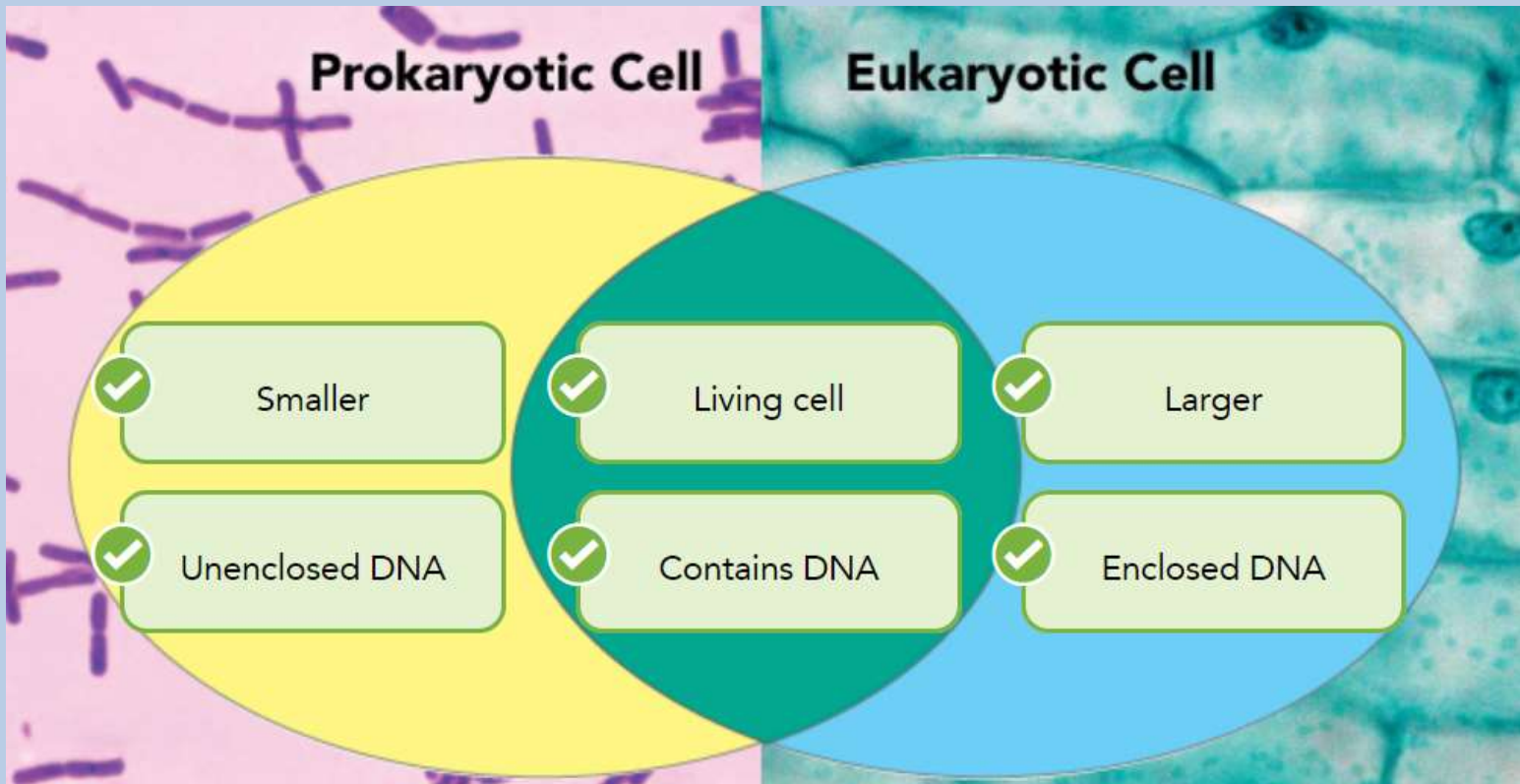


Cells Review

**2. Compare and contrast
prokaryotic and eukaryotic cells:**

Cells Review

2. Compare and contrast prokaryotic and eukaryotic cells:



Cells Review

3. Explain the functions of; nucleus, vacuoles, lysosomes, cytoskeleton, chloroplast, mitochondria, cell membrane:

Cells Review

3. Explain the functions of;

- Nucleus: **store and protect DNA**
- Vacuoles: **store water and monomers**
- Lysosomes: **filled with enzymes to break apart old cell parts, invaders, and self-destruct cells**
- Cytoskeleton: **provides support**
- Chloroplast: **converts solar energy into chemical energy (glucose)**
- Mitochondria: **converts chemical energy (glucose) into usable energy (ATP)**
- Cell membrane: **controls what goes in and out**

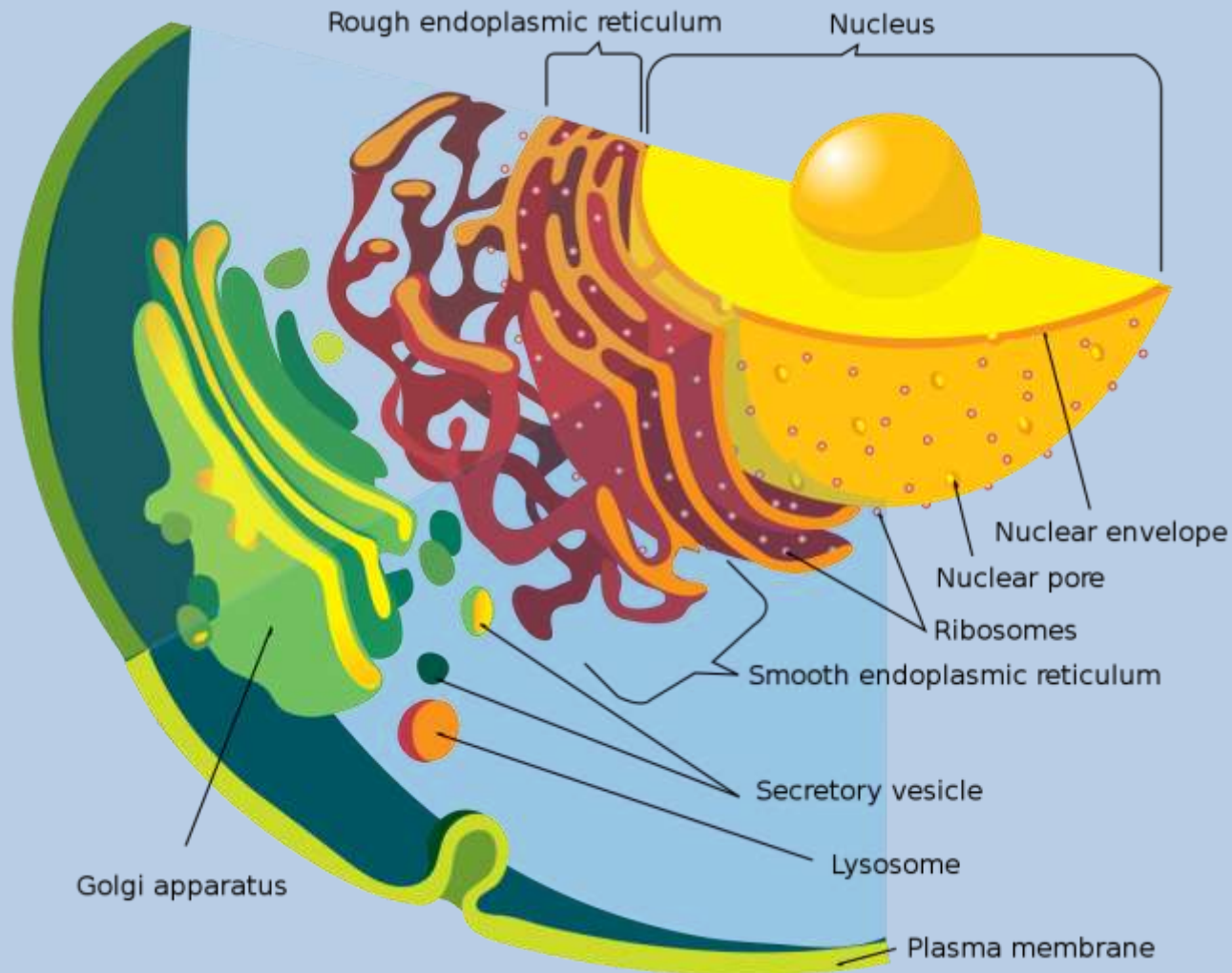
Cells Review

4. Identify the organelles involved in protein synthesis:

Cells Review

4. Identify the organelles involved in protein synthesis: **nucleus, ribosomes, rough ER, Golgi body, vesicles**

Protein Production



Cells Review

5. Explain passive transport:

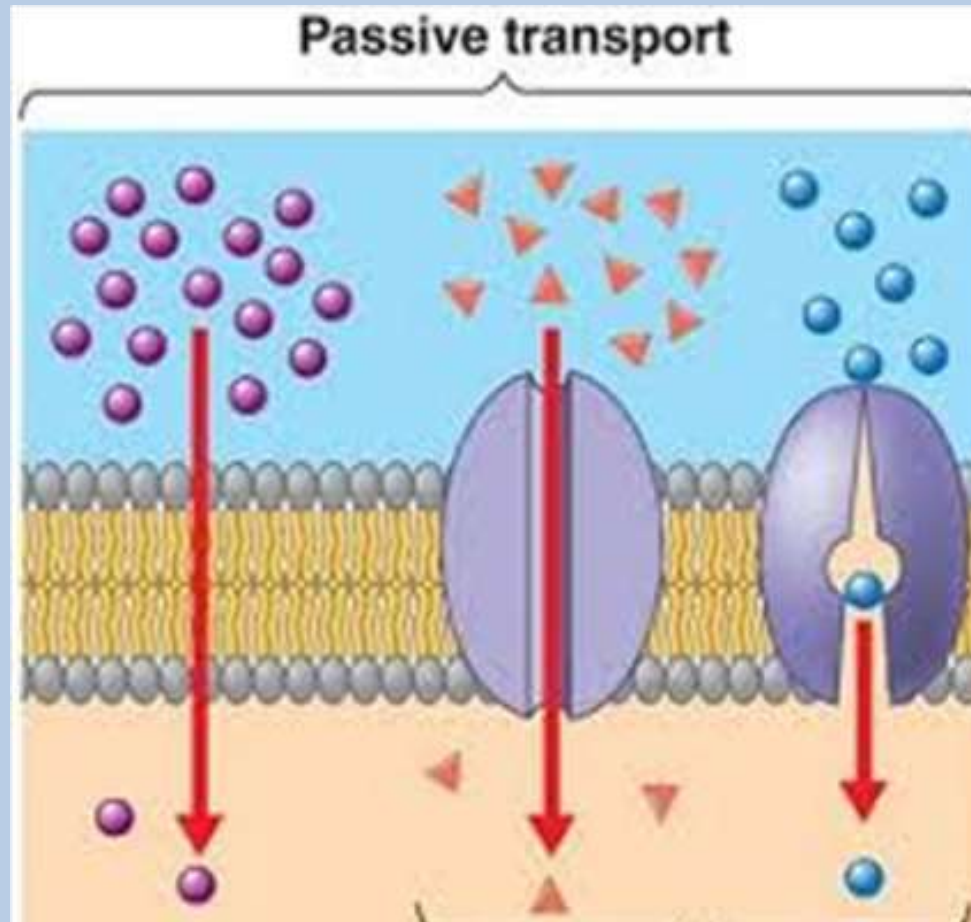
Cells Review

5. Explain passive transport: **no energy needed, high to low**

- **Diffusion**
- **Facilitated diffusion**
- **Osmosis**

Cells Review

6. Explain passive transport:



Cells Review

6. Explain active transport:

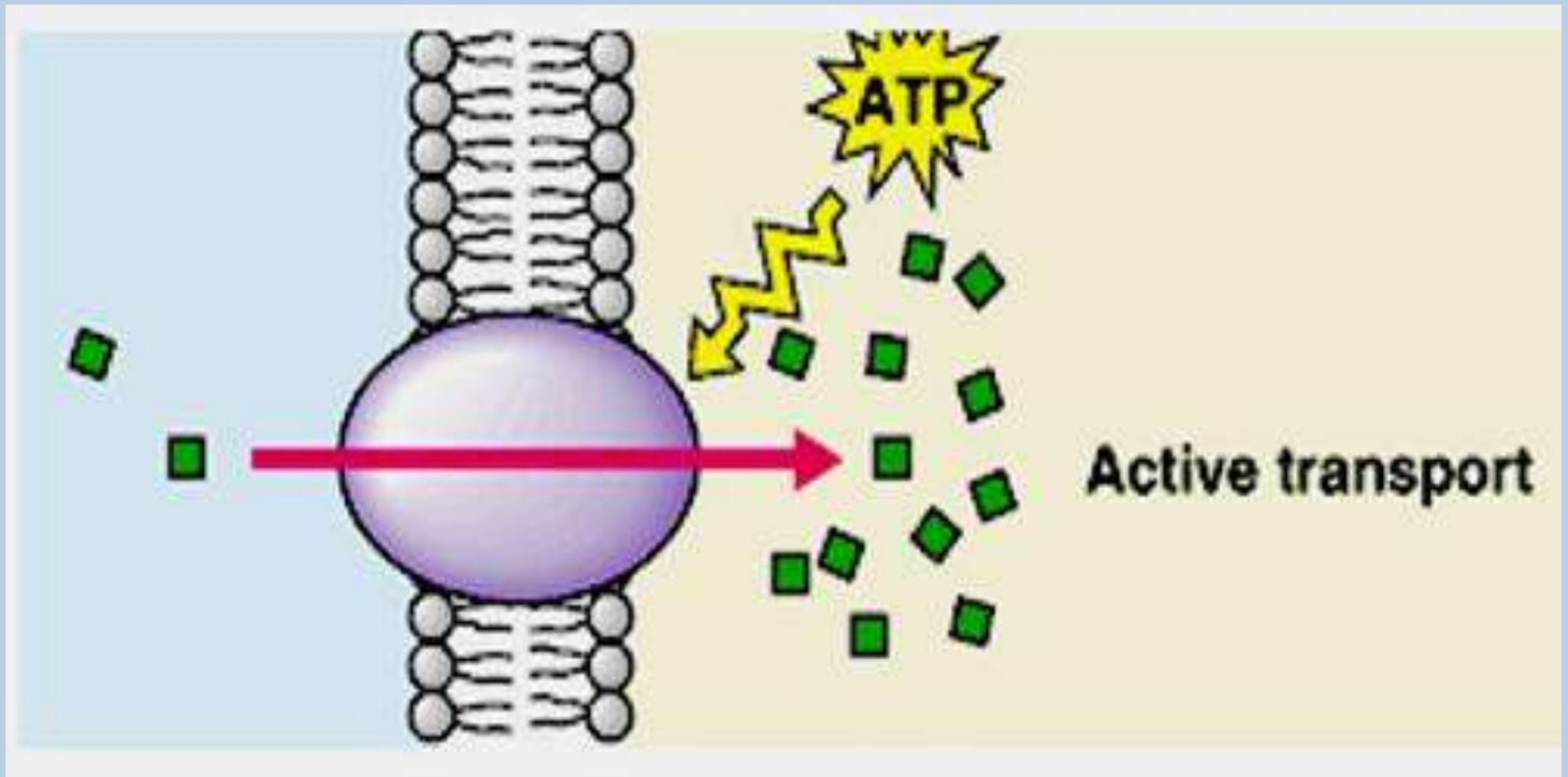
Cells Review

6. Explain active transport: **requires energy, low to high**

- **Protein pumps**
- **Endocytosis**
- **Exocytosis**

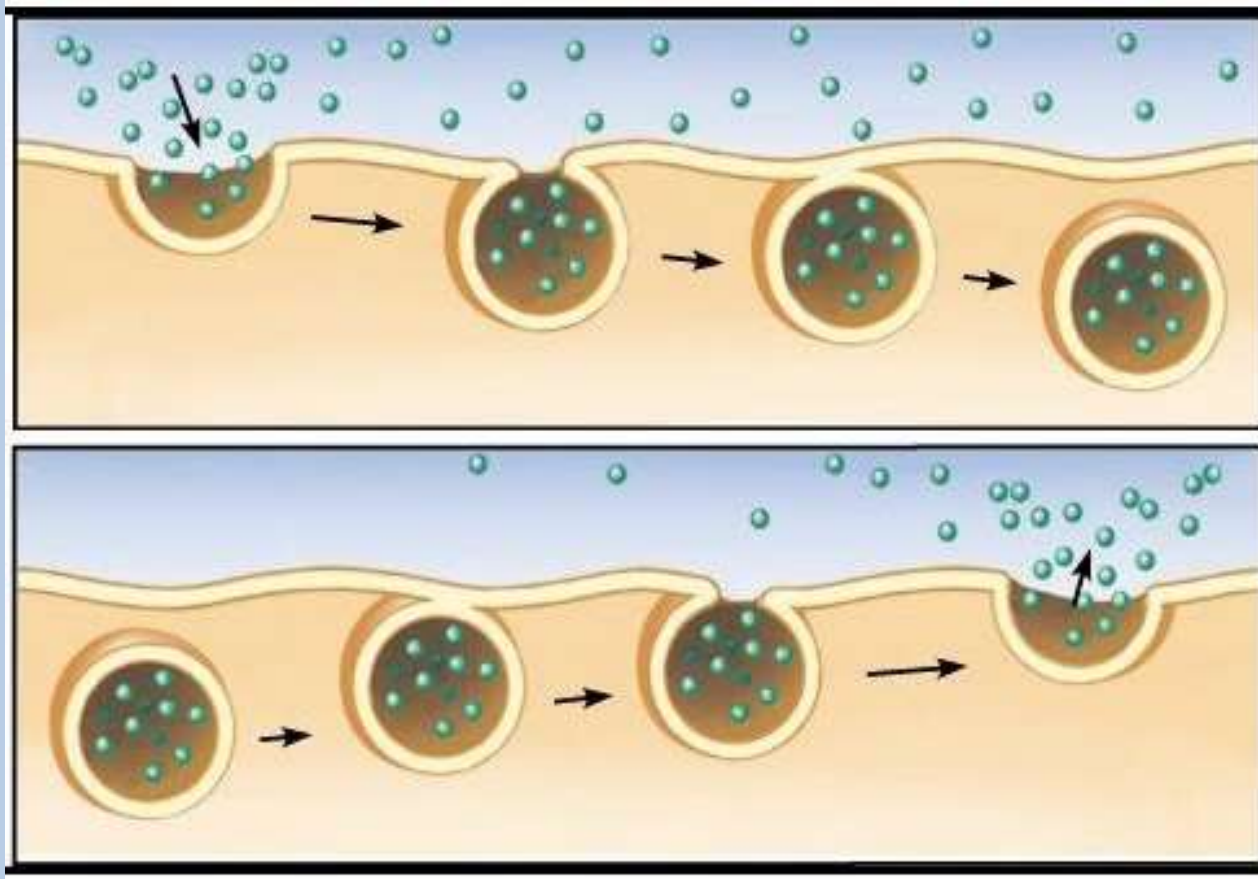
Cells Review

6. Explain active transport:



Cells Review

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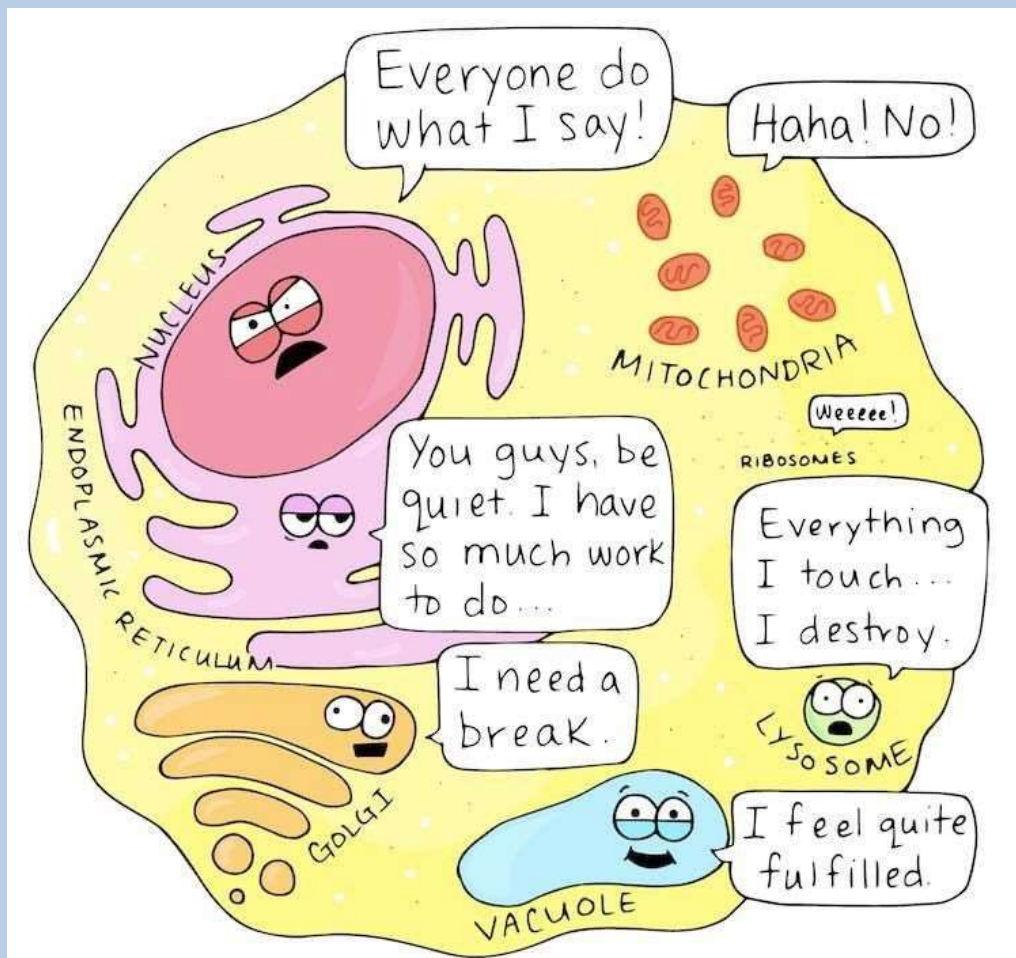
Cells Review

7. Compare and contrast homeostasis in unicellular and multicellular organisms:

Cells Review

7. Compare and contrast homeostasis in unicellular and multicellular organisms: **organelles complete functions vs. specialized cells complete functions**

Organelles



If organelles could talk.

Beatrice the Biologist

Photosynthesis

8. Describe why ATP is useful for cells

Photosynthesis

8. Describe why ATP is useful for cells: **ATP stores energy in the bond between the second and third phosphate, and ADP can be recycled**

Photosynthesis

9. Describe the process and formula of photosynthesis, including the transfer of energy that occurs

Photosynthesis

9. Describe the **process** and **formula** of photosynthesis, including the **transfer of energy** that occurs

- Light dependent and independent reactions
- $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- Sun \rightarrow ATP/NADPH \rightarrow Glucose

Photosynthesis

10. Describe the role of pigments in photosynthesis:

Photosynthesis

10. Describe the role of pigments in photosynthesis: **pigments, like chlorophyll, capture energy from sunlight to start the light dependent reactions**

Photosynthesis

11. Explain the function of electron carrier molecules

Photosynthesis

11. Explain the function of electron carrier molecules: **electron carrier molecules (like NADPH) transport electrons from one reaction to another, powering the light independent reactions**

Photosynthesis

12. Describe the light-dependent reactions

Photosynthesis

12. Describe the light-dependent reactions:

- 1. Sun excites electrons in water**
- 2. Electrons release energy, which is used to make ATP**
- 3. Electrons captured by NADPH**
- 4. O₂ is released**

Photosynthesis

13. Describe the light-independent reactions

Photosynthesis

13. Describe the light-independent reactions:

- 1. Energy from ATP and NADPH is used to convert CO₂ into G₃P sugar**
- 2. ADP and NADP⁺ are recycled**
- 3. G₃P is converted into glucose AND SOMETIMES OTHER MOLECULES OF LIFE**

Photosynthesis

14. Describe the factors that affect photosynthesis

Photosynthesis

14. Describe the factors that affect photosynthesis:

1. Temperature

- too hot = enzymes denature
- too cold = root damage

2. Light (energy)

3. Carbon dioxide (matter)

4. Water (matter)

Photosynthesis

15. Describe where organisms get energy

Photosynthesis

15. Describe why organisms need food:

- **Energy**
- **Monomers (READ: matter!)**

Photosynthesis

16. Describe the process and formula of cellular respiration, including the transfer of energy that occurs

Photosynthesis

16. Describe the **process** and **formula** of cellular respiration, including the **transfer of energy** that occurs

- **Glycolysis, Krebs Cycle, ETC**
- **$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$**
- **Glucose \rightarrow ATP**

Photosynthesis

17. Describe the relationship between photosynthesis and cellular respiration

Photosynthesis

17. Describe the relationship between photosynthesis and cellular respiration

- **Photosynthesis makes glucose, which is needed for cellular respiration**

Photosynthesis

18. Describe glycolysis and the Krebs Cycle

Photosynthesis

18. Describe glycolysis and the Krebs cycle

1. Molecule breaks (glucose, pyruvic acid)
2. Energy excites electrons, which release energy
3. Energy used to make 2 ATP
4. Electrons captured by NADH and $FADH_2$

Photosynthesis

19. Explain how the ETC uses high energy electrons from glycolysis and the Krebs cycle

Photosynthesis

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- **NADH and FADH₂ carry the electrons from glycolysis and the Krebs cycle to the ETC**

Photosynthesis

20. Describe how much ATP cellular respiration generates

Photosynthesis

20. Describe how much ATP cellular respiration generates

- **UP TO 32**
 - **Glycolysis: 2**
 - **Krebs: 2**
 - **ETC: UP TO 28**

Photosynthesis

21. Describe how organisms make energy when no oxygen is available

Photosynthesis

21. Describe how organisms make energy when no oxygen is available

- **Bacteria and yeast: Alcoholic Fermentation**
 - pyruvic acid \rightarrow ethyl alcohol + CO_2
- **Animals and bacteria: Lactic Acid Fermentation**
 - pyruvic acid \rightarrow lactic acid

Photosynthesis

22. Describe how the body produced ATP during the different stages of exercise

Photosynthesis

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- **Short bursts:**
- **Long distance:**

Photosynthesis

22. Describe how the body produced ATP during the different stages of exercise

- **Short bursts: lactic acid fermentation**
- **Long distance: cellular respiration**

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