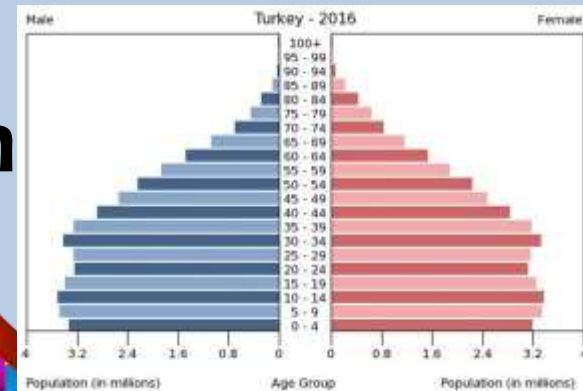
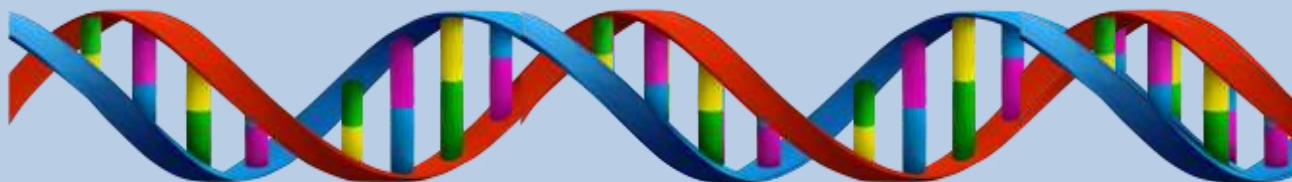


1. What is the difference between science and engineering?
2. How many substrates will an enzyme react with?
3. Why are keystone species good?
4. How much energy is lost between each trophic level?
5. What stage is this country in



Logistics

Wednesday Finals schedule

Period 5 Exam **10:10 - 11:40**

Lunch **11:40 - 12:15**

Optional Nest **12:15-12:35**

Period 6 Exam **12:40 - 2:10**

Period 7 Exam **2:15 – 3:45**

Logistics

- Thursday Finals schedule

Period 3 Exam **8:00-9:30**

Break **9:30-9:40**

Period 4 Exam **9:40-11:10**

Logistics

- Friday Finals schedule

Period 1 Exam **8:00-9:30**

Break **9:30-9:40**

Period 2 Exam **9:40-11:10**

**NOT SURE IF I CAN'T STUDY
MORE BECAUSE I'M CONFIDENT**



OR I JUST DON'T CARE ANYMORE.

IT'S THE FINAL



COUNTDOWN!

memegenerator.net

Unit 1 Review – pg. 7

- Describe the goals of science:**
- Define the term scientific theory (and understand how it is different from a hypothesis and law):**
- Identify characteristics of all living things:**

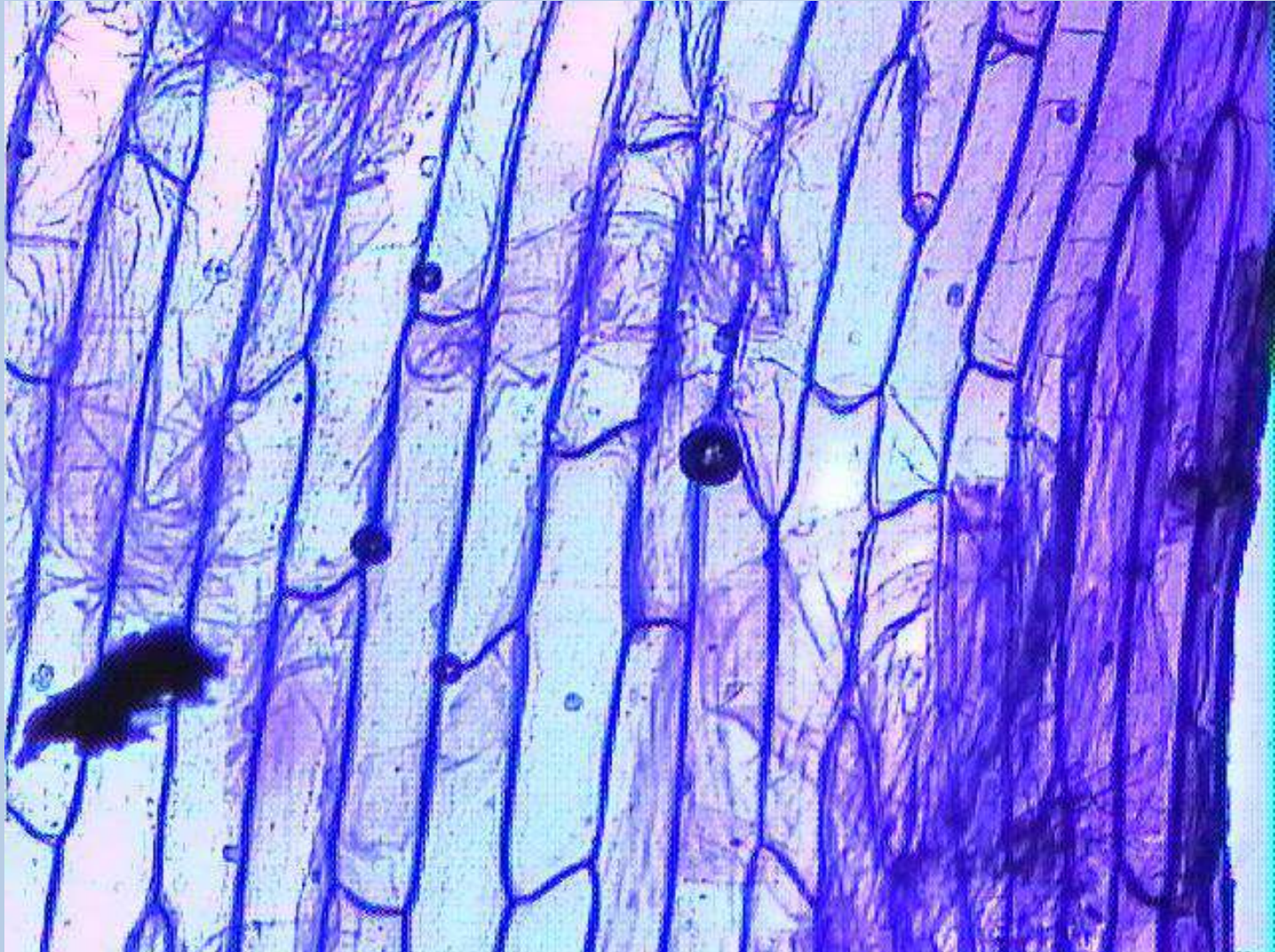
Unit 1 Review

- Describe the goals of science:

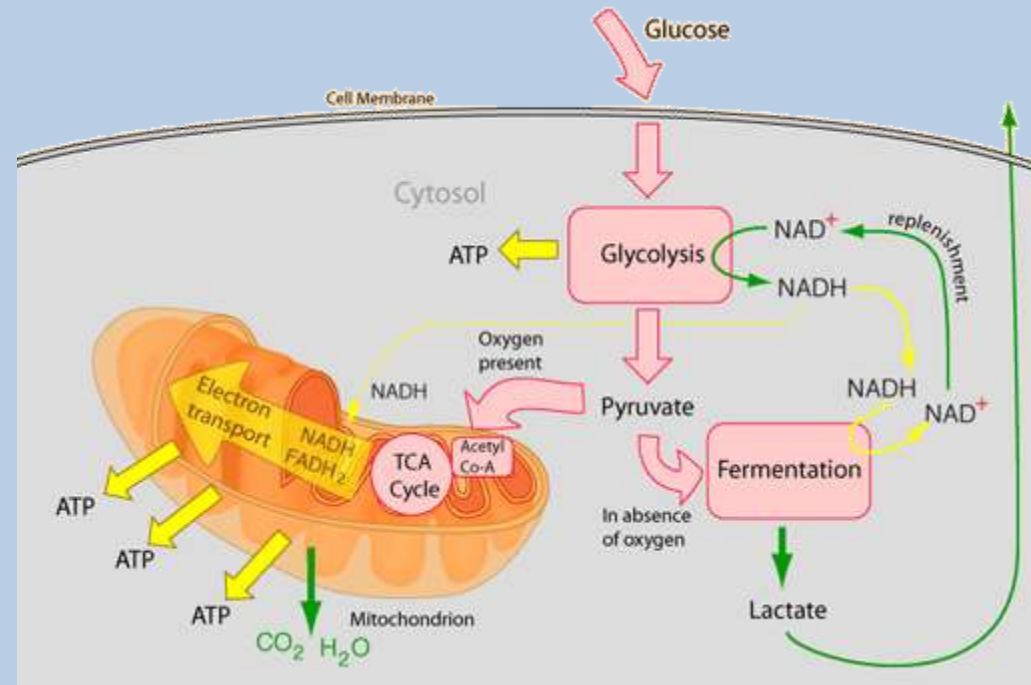
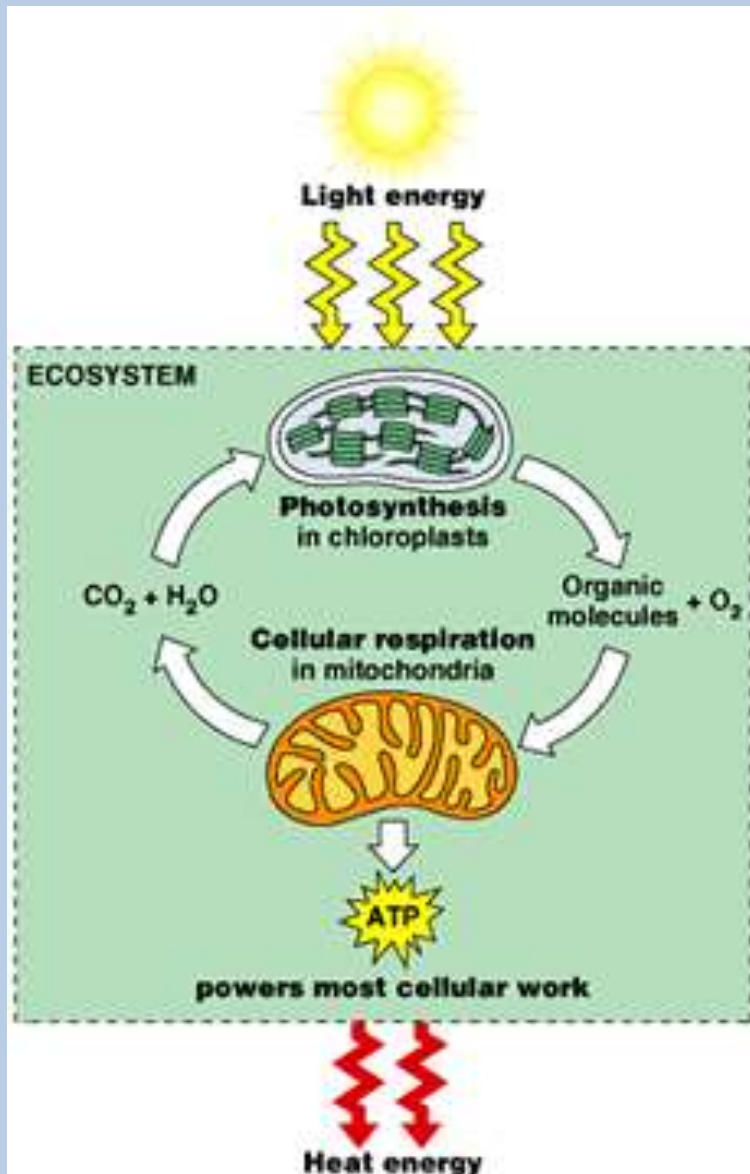
The goal of science is use data to find patterns and make predictions/solve problems

- Define the term scientific theory (and understand how it is different from a hypothesis and law): a theory explains HOW/WHY, a law explains WHAT, they and hypotheses are proposed explanations, but theories and laws are backed by a TON of evidence
- Identify characteristics of all living things:

Characteristics of Life - Cells



Characteristics of Life - Metabolism



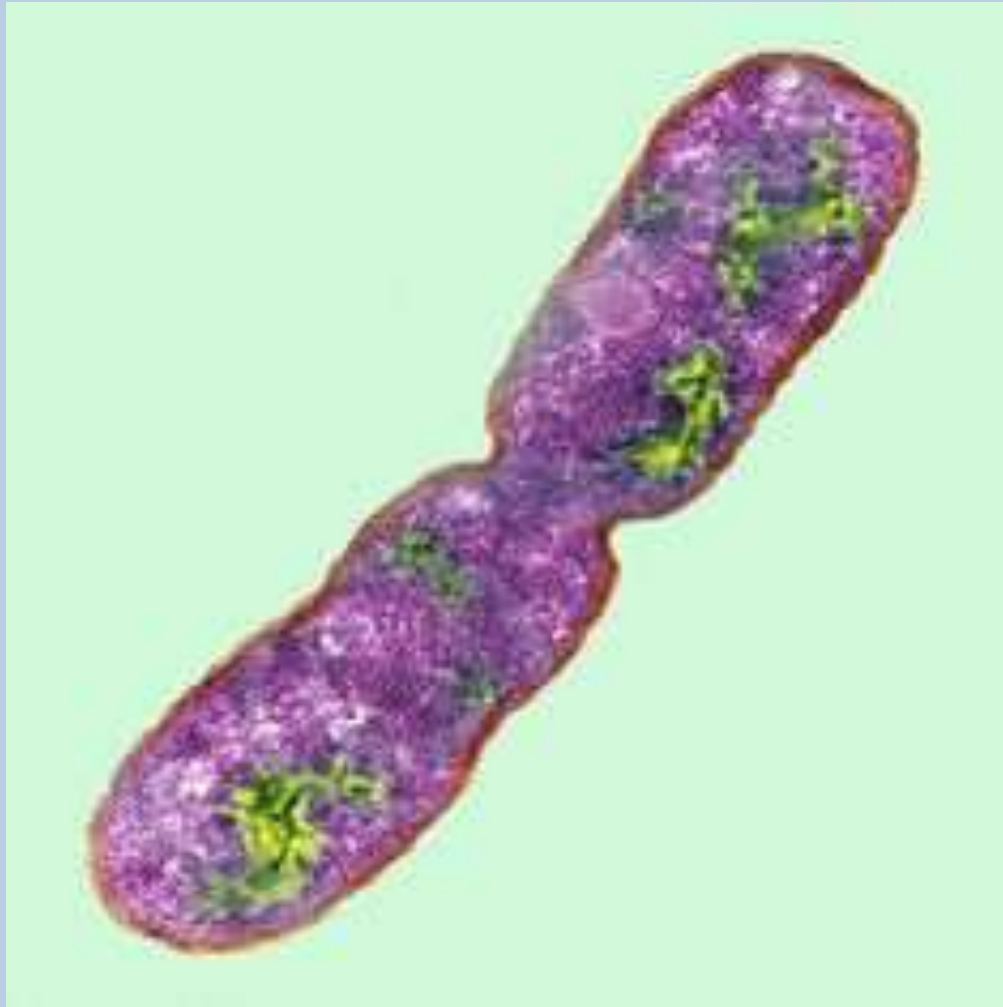
Characteristics of Life – Response to Stimuli



Characteristics of Life – Homeostasis



Characteristics of Life – Reproduction



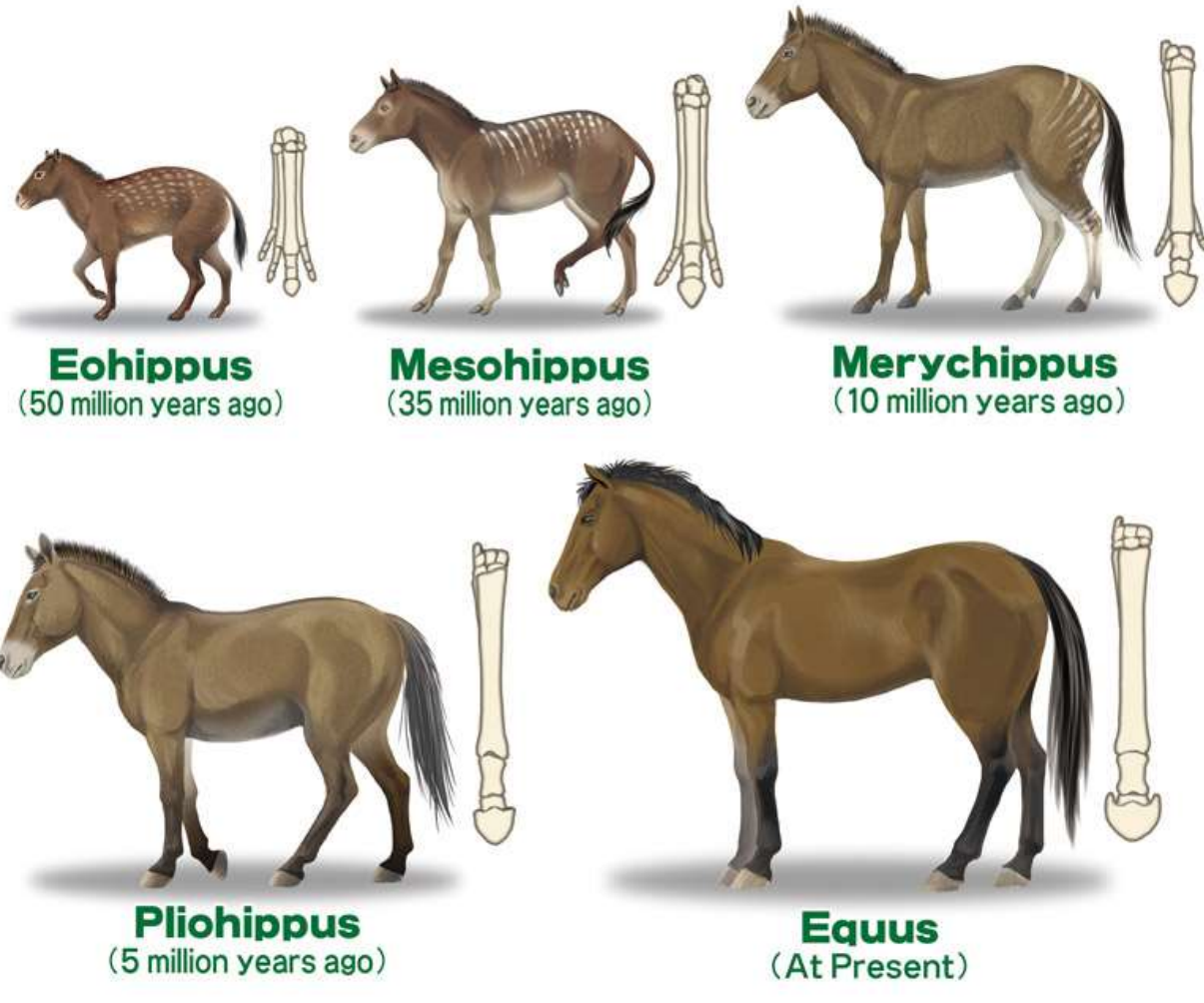
Characteristics of Life – Change Over Time



Characteristics of Life – Genetic Material



Characteristics of Life – Evolution



Unit 1 Review

- **Explain the unique properties of water:**
- **Explain how water's polarity affects the way it interacts with other molecules:**

Unit 1 Review

- Explain the unique properties of water:

polar -> cohesion -> surface tension

polar -> adhesion -> capillary action

- Explain how water's polarity affects the way it interacts with other molecules: water is only attracted to other polar molecules

Unit 1 Review

- **Explain the functions of each of the four groups of macromolecules:**

Unit 1 Review

- **Explain the functions of each of the four groups of macromolecules:**
 - **Carbohydrates: energy, structure**
 - **Lipids: energy**
 - **Nucleic acids: store information**
 - **Proteins: structure and function**

Unit 1 Review

- **Explain what happens to chemical bonds during chemical reactions:**
- **Explain the role enzymes play in living things and what affects their function:**

Unit 1 Review

- Explain what happens to chemical bonds during chemical reactions:
break or form
- Explain the role enzymes play in living things and what affects their function:
 - **speed up reactions by lowering the activation energy**
 - **temperature and pH changes**

Unit 2 Review – pg. 15

- **Define abiotic and biotic factors:**
- **Describe the factors that change due to climate change:**

Ecology Review

- Define abiotic and biotic factors:
non-living and living
- Describe the factors that change due to climate change:
temperature, clouds, winds, precipitation, the frequency and severity of extreme weather events

Ecology Review

- Describe how producers and consumers get energy:
- Describe the flow of energy through ecosystems:
- Explain how ecological pyramids model energy flow in ecosystems:

Ecology Review

- Describe how producers and consumers get energy: **producers use abiotic factors, consumers use biotic factors**
- Describe the flow of energy through ecosystems: **sun -> producers -> primary consumers -> secondary consumers -> tertiary consumers**
- Explain how ecological pyramids model energy flow in ecosystems: **producers have most energy and matter in ecosystems**

Ecology Review

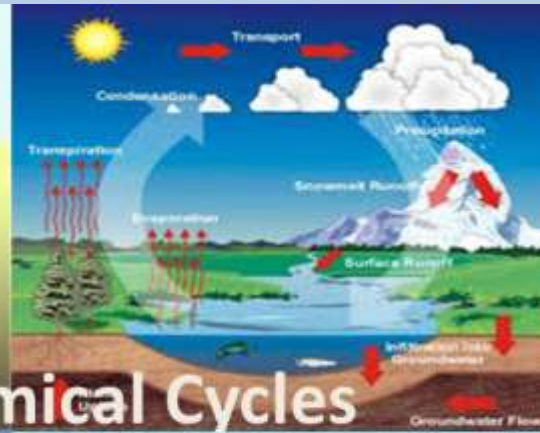
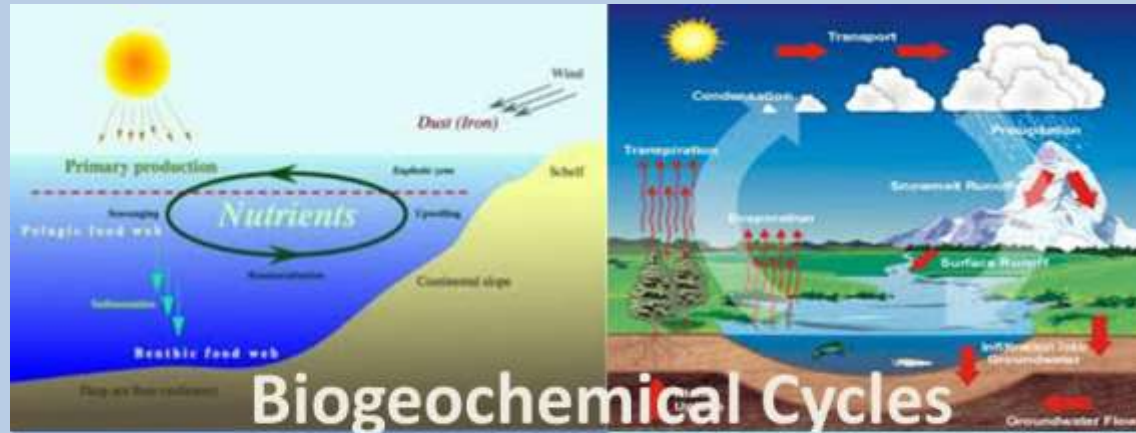
- **Describe biogeochemical cycles and their importance:**

Ecology Review

- Describe biogeochemical cycles and their importance:
biogeochemical cycles describe the recycling of matter on Earth (in and between ecosystems), they are important because they make a variety of abiotic factors available for a variety of biotic factors

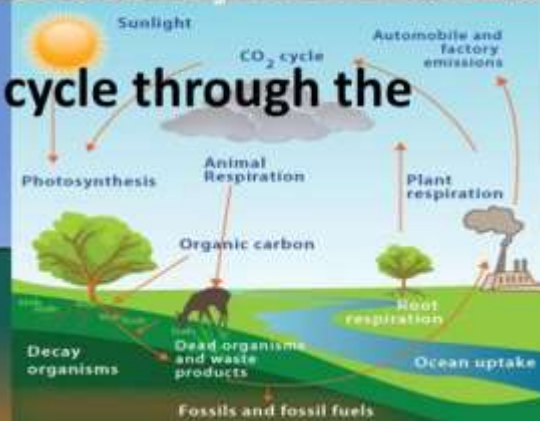
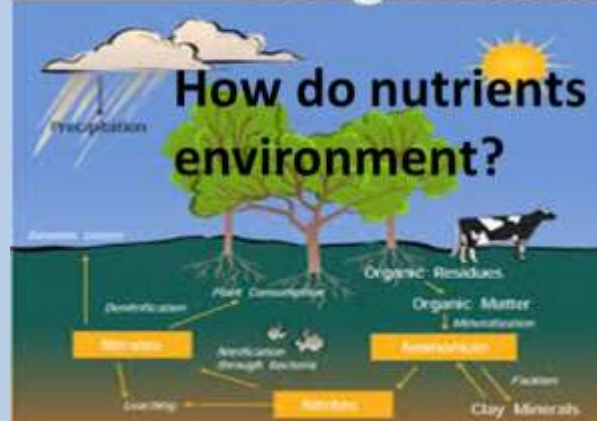
Ecology Review

- **Biogeochemical Cycles: cycle of nutrients in an ecosystem**



Important vocabulary:

- Transpiration
- Photosynthesis
- Respiration
- Combustion
- Denitrification
- Nitrogen Fixation
- Leaching



Ecology Review

- **Explain how carrying capacity is determined:**
- **Compare and contrast density dependent and density independent limiting factors:**
- **Explain the relationship between limiting factors and extinction:**

Ecology Review

- Explain how carrying capacity is determined: **Amount of resources and limiting factors**
- Compare and contrast density dependent and density independent limiting factors:
 - **Density-dependent; disease, competition, predation**
 - **Density-independent: weather, natural disasters, humans**
- Explain the relationship between limiting factors and extinction: **Limiting factors can become so restrictive that the carrying capacity becomes 0 = extinction**

Ecology Review

- **Describe which factors affect population growth:**
- **Describe the effect of keystone species on ecosystems:**

Ecology Review

- Describe which factors affect population growth: **Birthrate, immigration, death rate, emigration**
- Describe the effect of keystone species on ecosystems: **Keystone species allow more biodiversity -> more interactions -> more RESILIENT ecosystem**

Ecology Review

- **Give examples of the three symbiotic relationships:**
- **Describe the benefits of biodiversity:**

Ecology Review

- Give examples of the three symbiotic relationships: **Mutualism, commensalism, parasitism**
- Describe the benefits of biodiversity: **More biodiversity -> more interactions -> more RESILIENT ecosystem (back-up species to fill niches)**

Unit 3 Review – pg. 27

- **Describe how human population size has changed over time:**

Humans and Global Change

- Describe how human population size has changed over time:
generally increased, but increased rapidly after the industrial revolution

Humans and Global Change

- Describe how human activities change the atmosphere and climate:

Humans and Global Change

- Describe how human activities change the atmosphere and climate: **Human activities release greenhouse gases, which change; temperatures, winds, clouds, precipitation, and severe weather events**

Humans and Global Change

- Describe how atmospheric changes drive climate change and other changes in global systems:

Humans and Global Change

- Describe how atmospheric changes drive climate change and other changes in global systems: **more greenhouse gases -> warmer -> changing climate -> loss of biodiversity in the biosphere -> disruption to cycles in geosphere**

Humans and Global Change

- Describe how human land use drives change in global systems:
- Describe the kinds of pollutants that drive of global change:

Humans and Global Change

- Describe how human land use drives change in global systems: **habitat destruction and pollution leads to loss of biodiversity in biosphere, disruption to cycles in atmosphere and geosphere**
- Describe the kinds of pollutants that drive of global change: **CO₂ and methane**

Humans and Global Change

- **Describe evidence for climate change:**
- **Describe impacts of climate change:**

Humans and Global Change

- Describe evidence for climate change: **changing temperatures, more CO₂ in atmosphere, rising sea levels, melting ice caps**
- Describe impacts of climate change:
 - **changing precipitation = less water**
 - **changing seasons = less crops**
 - **changing sea level = less land**

Humans and Global Change

- **Describe the criteria for evaluating the sustainability of a development:**

Humans and Global Change

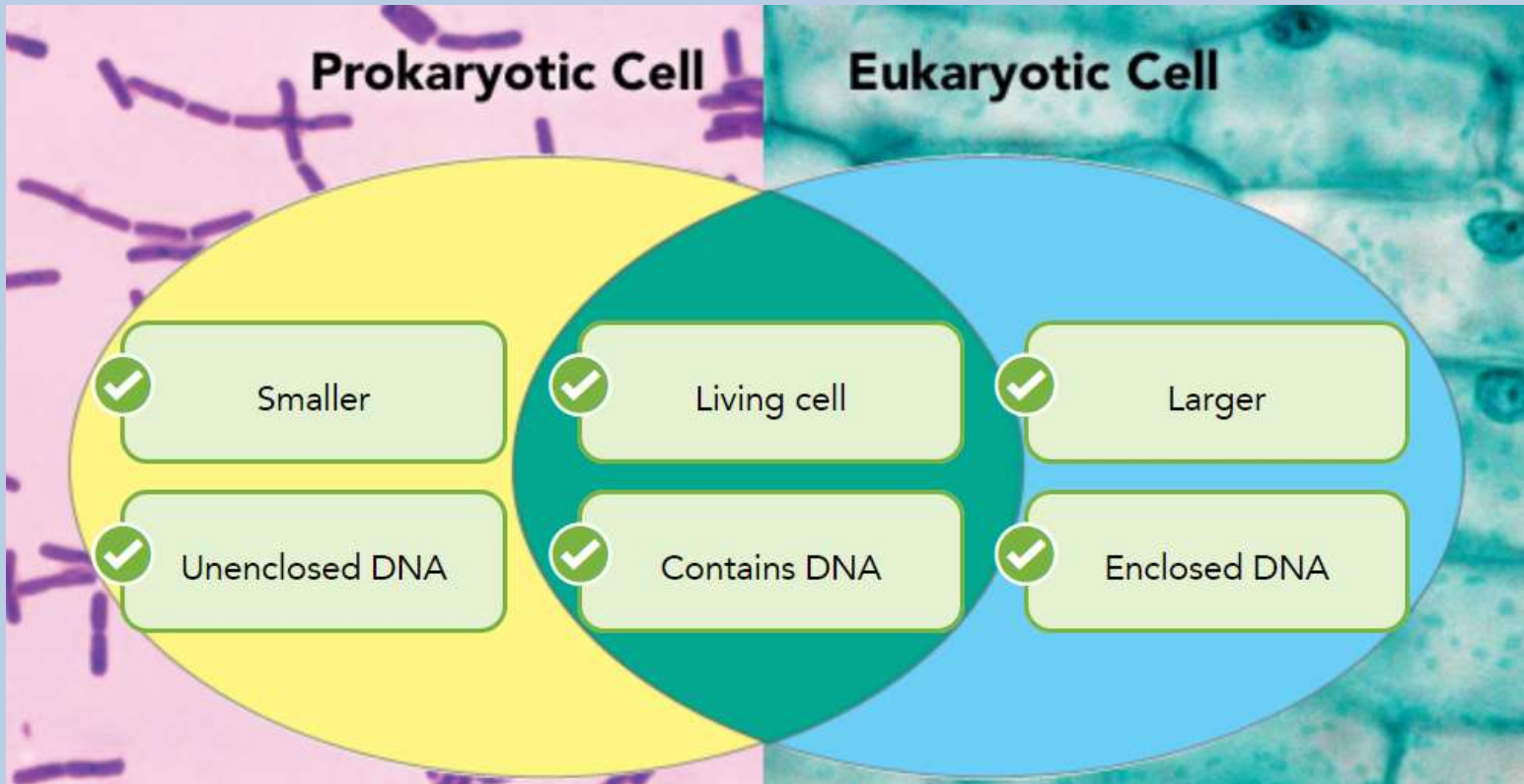
- Describe the criteria for evaluating the sustainability of a development: **provide for human needs, protect the environment**

Unit 4 Review – pg. 33

- **Compare and contrast prokaryotic and eukaryotic cells:**

Cells Review

- Compare and contrast prokaryotic and eukaryotic cells:



Cells Review

- **Explain the functions of; nucleus, ribosomes, rough ER, Golgi body, chloroplast, mitochondria, cell membrane, central vacuole:**

Cells Review

- Explain the functions of;
 - Nucleus: **store and protect DNA**
 - Ribosomes: **synthesize (make) proteins**
 - Rough ER: **covered in ribosomes**
 - Golgi body: **finishes and packages proteins**
 - 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**
 - Central vacuole: **stores water and provides structure to PLANTS**

Cells Review

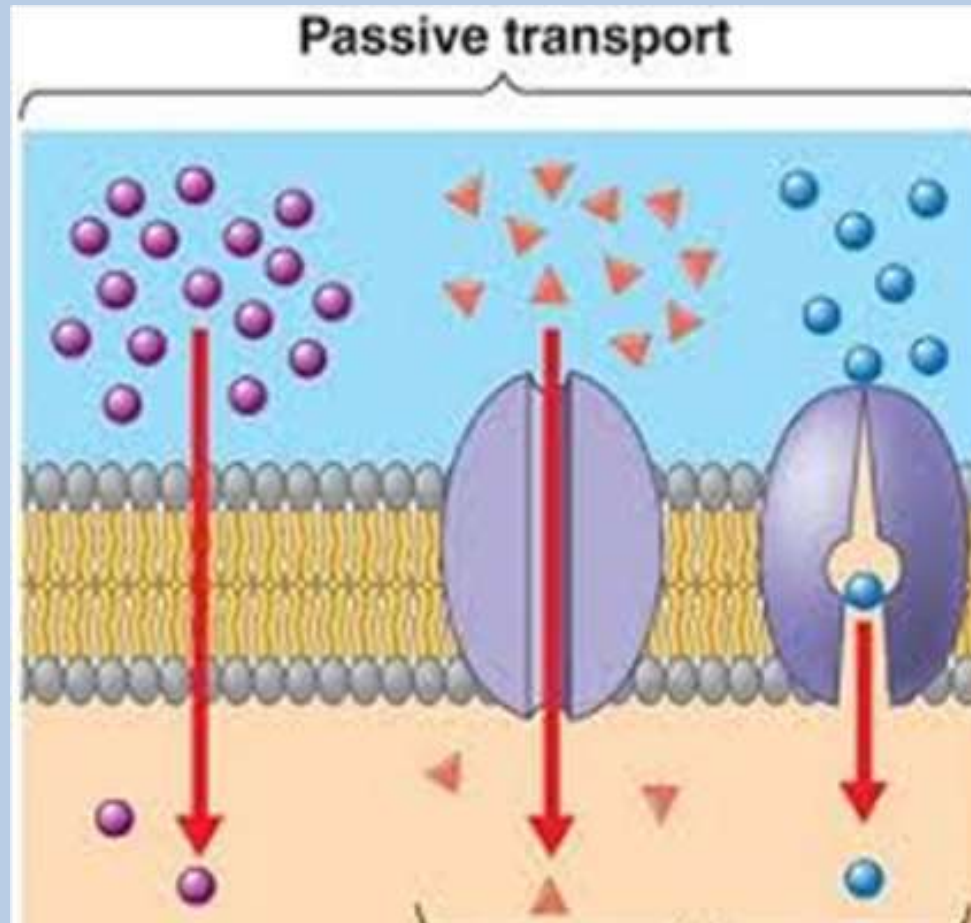
- **Explain passive transport:**

Cells Review

- Explain passive transport: **no energy needed, high to low**
 - Diffusion
 - Facilitated diffusion
 - Osmosis

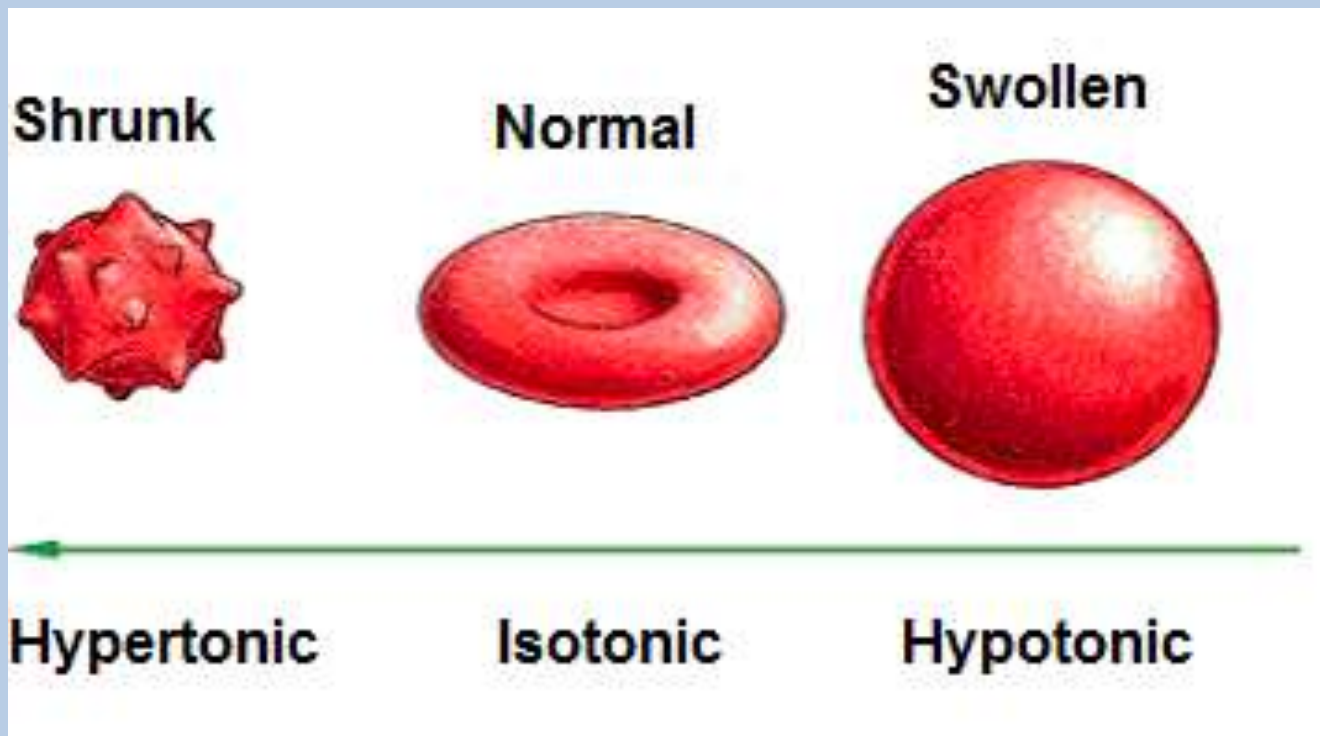
Cells Review

- Explain passive transport:



Cells Review

- Explain passive transport:



Cells Review

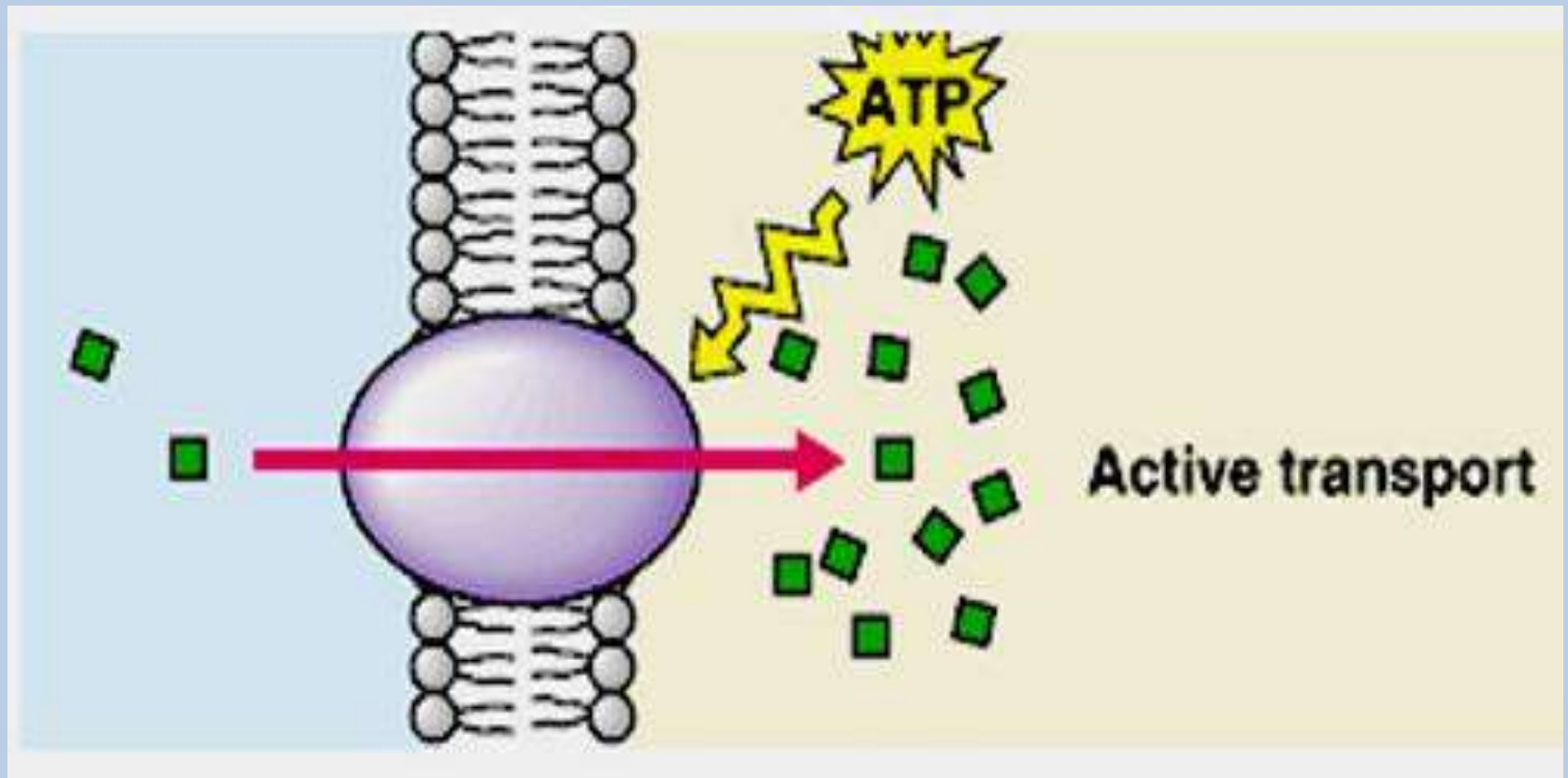
- **Explain active transport:**

Cells Review

- **Explain active transport: requires energy, low to high**
 - **Protein pumps**
 - **Endocytosis**
 - **Exocytosis**

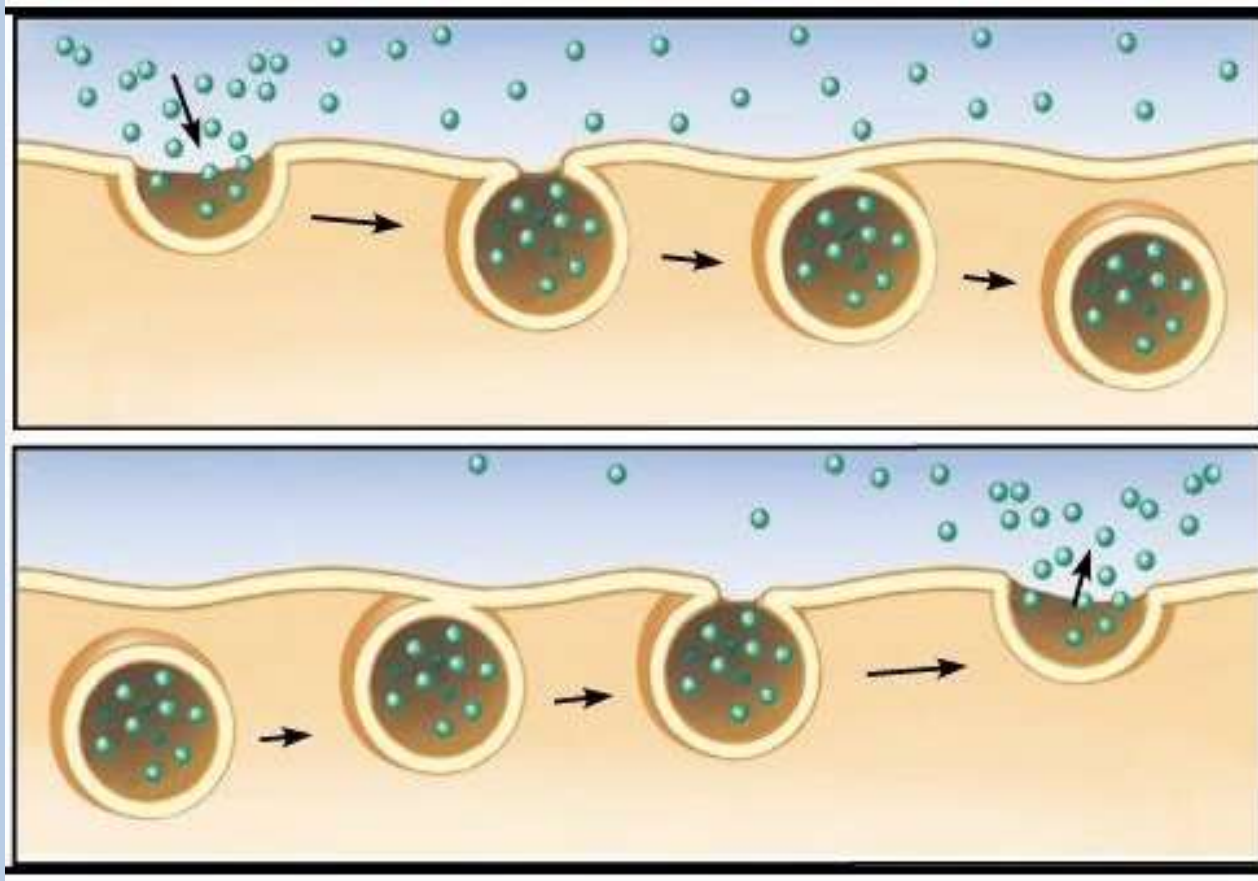
Cells Review

- Explain active transport:



Cells Review

- Explain active transport:



Unit 4 Review – pg. 34

- Describe why ATP is useful for cells:

Photosynthesis

- 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

- Describe the process and formula of photosynthesis, including the transfer of energy that occurs:

Photosynthesis

- 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

- Describe where the light-dependent reaction happens and the product:

Photosynthesis

- Describe where the light-dependent reaction happens and the product:
 - Thylakoid of chloroplast
 - O_2 is released, NADPH and ATP carry energy

Photosynthesis

- Describe where the light-independent reaction happens and the product:

Photosynthesis

- Describe where the light-independent reaction happens and the product:
 - **Stroma of chloroplast**
 - **G3P -> glucose**

Photosynthesis

- Describe the relationship between photosynthesis and cellular respiration:

Photosynthesis

- Describe the relationship between photosynthesis and cellular respiration:
 - Photosynthesis makes glucose, which is needed for cellular respiration

OH YOU HAVE FINALS COMING UP?

I BET YOU'RE USING YOUR TIME WISELY



**"THERE WILL COME A MOMENT WHEN YOU HAVE
THE CHANCE TO STUDY FOR FINALS!"**



**"I LOVE THOSE MOMENTS. I LIKE TO WAVE AT
THEM AS THEY PASS BY"**

Free Study

- **Units 1-4 Cover Sheets**
- **Login to Pearson**
 - **Chapters 1-10**
 - **Interactive Review and Practice**
 - **Practice Tests**
- **BE PRODUCTIVE; use this time to ask questions and get help**

HAPPY FINALS WEEK



MAY THE ODDS BE EVER IN YOUR FAVOR