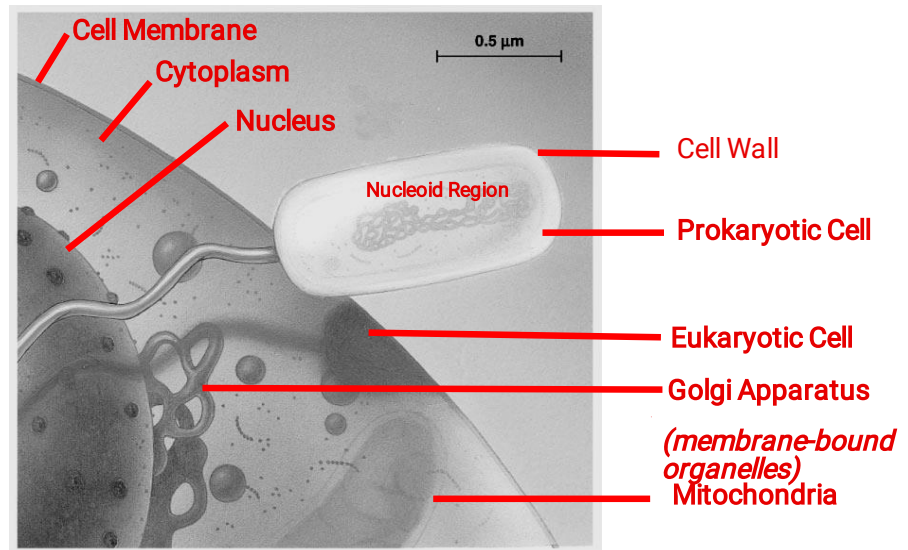


Guided Reading: Chapter 1

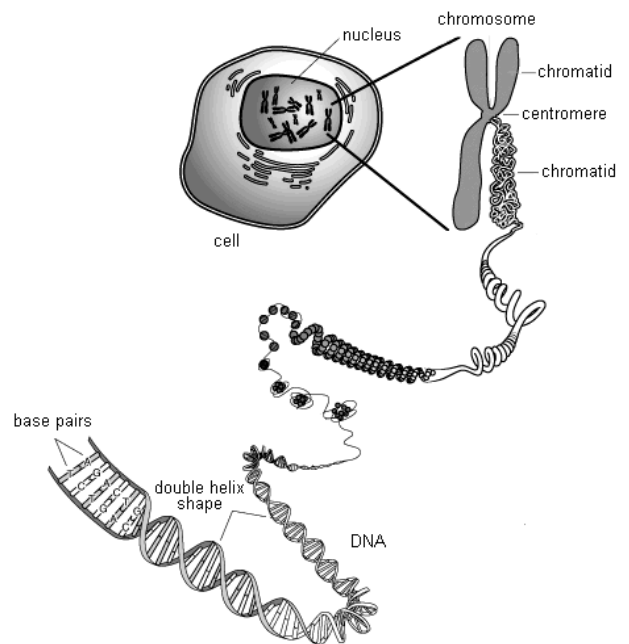
- (p.6) 1. Label the diagram below and use it to compare and contrast prokaryotic and eukaryotic cells.



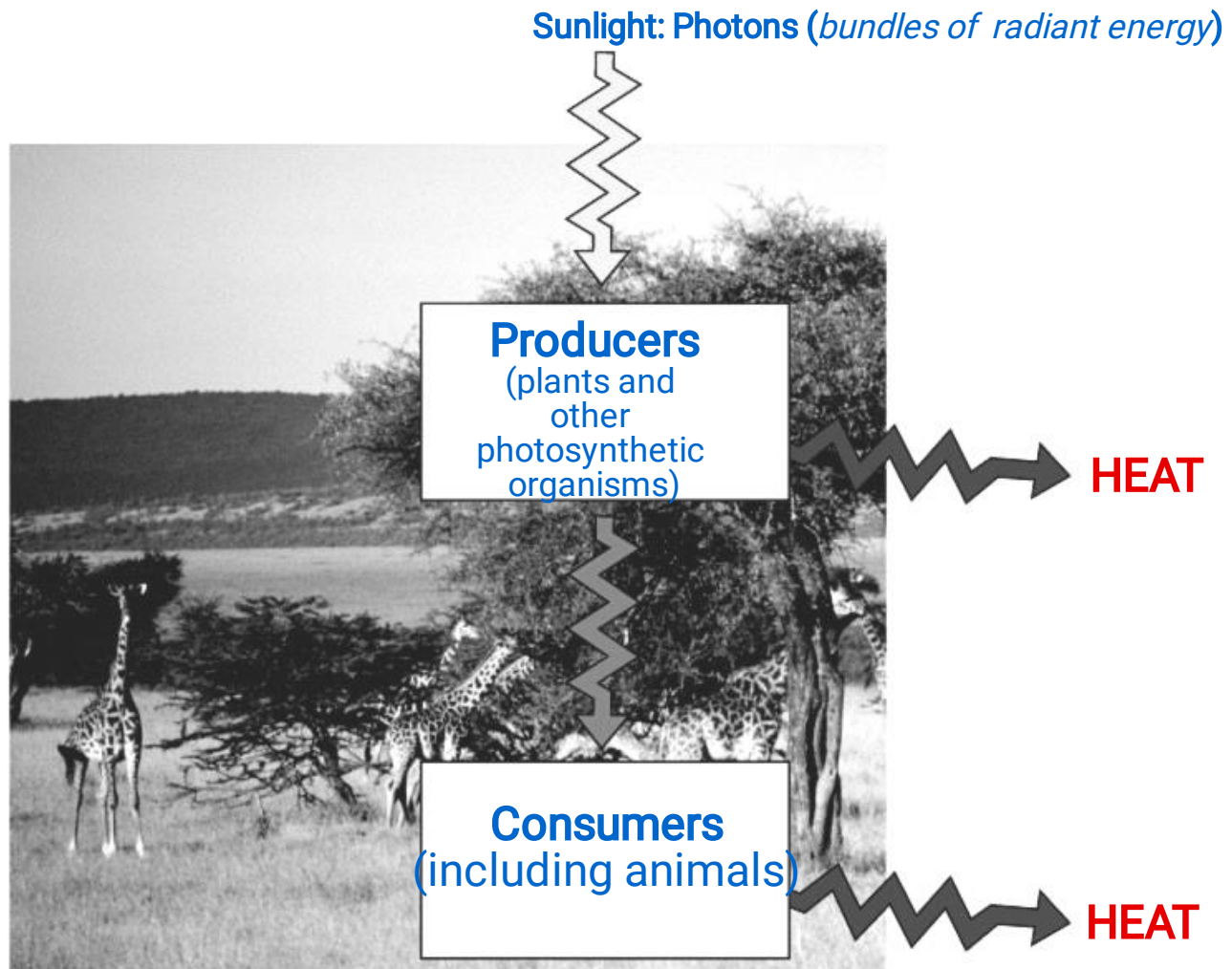
Prokaryotic Cells	Eukaryotic Cells
<ul style="list-style-type: none"> (1) Very small (0.10-0.50 μm) (2) Simple (3) No membrane-bound organelles (4) DNA not organized in a nucleus 	<ul style="list-style-type: none"> (1) Much larger (2) Complex (3) Contains many membrane-bound organelles (4) DNA organized into chromosomes located in a nucleus

2. Use the diagram below to help you describe the relationship between DNA, genes, chromosomes, nuclei and cells as the basic unit of structure and function in living organisms? **(Prior Knowledge)**

DNA makes up genes which are wrapped around histones forming a nucleosome and organized into distinct structures called chromosomes located in a membrane-bound nucleus. Each replicated or double-stranded chromosome is composed of 2 chromatids joined together at the centromere. At the ends of each chromatid are protective structures called telomeres



- (p.8) 3. Label the diagram below and use it to describe how energy flows through an ecosystem.



4. Can energy be recycled? Explain. (Prior Knowledge)

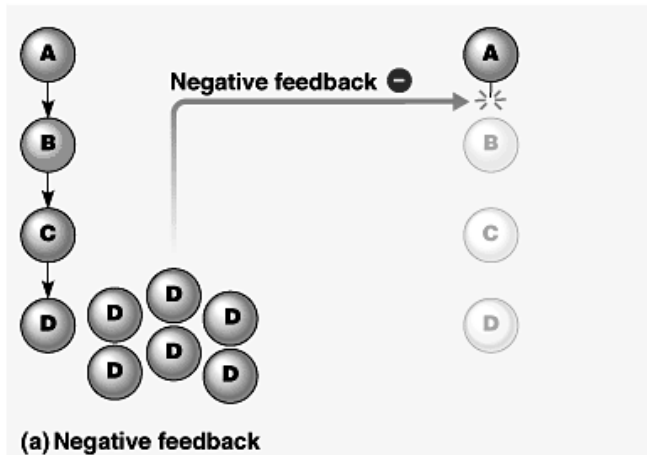
NO! Energy CANNOT be recycled. Energy can only be transformed from one form to another. Photosynthesis transforms the solar (radiant) energy from the sun into the chemical energy of sugar or glucose ($C_6H_{12}O_6$)

- (p.9) 5. What is feedback and how does it relate to property of life – regulation?

Feedback is how biological processes self-regulate in which an output or product of a process *regulates* that process. Negative feedback (feedback inhibition) slows or stops processes; positive feedback speeds a process up.

- (p.9) 6. By the end of the year you will be able to explain this in your sleep – use the diagrams below to define Negative and Positive Feedback and give an example of each.
In your own words – relate the example you choose and how it meets the criteria of your definition.

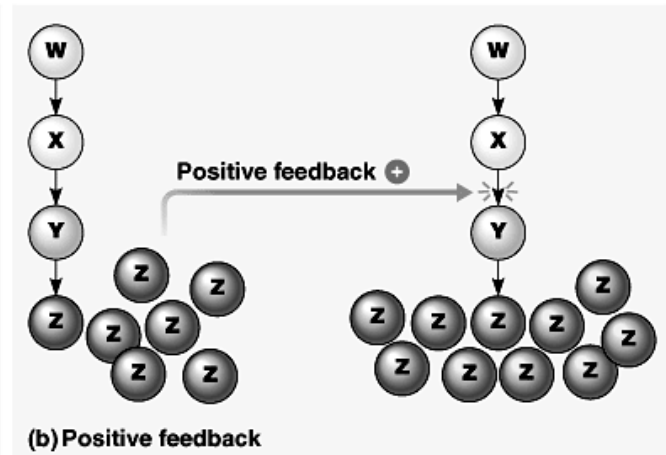
Negative Feedback



The diagram above involves four molecules A-D. The black arrows represent 3 different enzymes catalyzing the conversion of one molecule to the next. The final product (D) INHIBITS the first enzyme in the sequence; when the concentration of D rises to a certain point, the reaction shuts itself down.

EXAMPLE: Body Temperature

Positive Feedback



In positive feedback, the final product of the reaction sequence (Z) ENHANCES the action of one of the enzymes increasing the rate of production of the product.

EXAMPLE: Blood Clotting

- (p.10) 7. Why is classification of living organisms necessary to understanding biology?

The classification of living organisms is necessary to understanding biology because it helps biologist achieve one of biology's major goals of explaining how such diversity arises while also accounting for characteristics common to different species.

- (pp.12-13) 8. What does the statement “*there is unity in diversity*” mean in terms of biology and why is it said that “*Evolution is the unifying theme of biology*?”

The statement “*there is unity in diversity*” means that there are similarities among all the diverse life forms on planet Earth. The most striking similarity is the universal genetic language or “software of life” DNA.

Evolution is the unifying theme of biology because it explains the process that has transformed life on Earth from its earliest beginnings to the extensive diversity we see today.

9. Based on your knowledge of the Darwin's theory of Natural Selection – imagine you are at the dinner table – explain the theory in your own words and give an example that supports your statements.

- (pp.12-13) 10. Compare and contrast **inductive** and **deductive** reasoning.

Both inductive and deductive reasoning involve inferences, which means reaching a conclusion based on evidence. However, deductive reasoning moves from idea to observation, while inductive reasoning moves from observation to idea. Inductive reasoning aims at developing a theory while deductive reasoning aims at testing an existing theory. Inductive reasoning moves from specific observations to broad generalizations, and deductive reasoning the other way around.

- (p.18) 11. Define each of the following terms associated with a well designed controlled experiment?

- a. Experimental Group – The setup that receives the experimental treatment or independent variable.
- b. Control Group – The setup that does NOT receive the experimental treatment or independent variable.

- (p.19) 12. How is the term *theory* used in science?

The term theory is used in science to help explain phenomena supported by the accumulation of extensive and varied evidence.