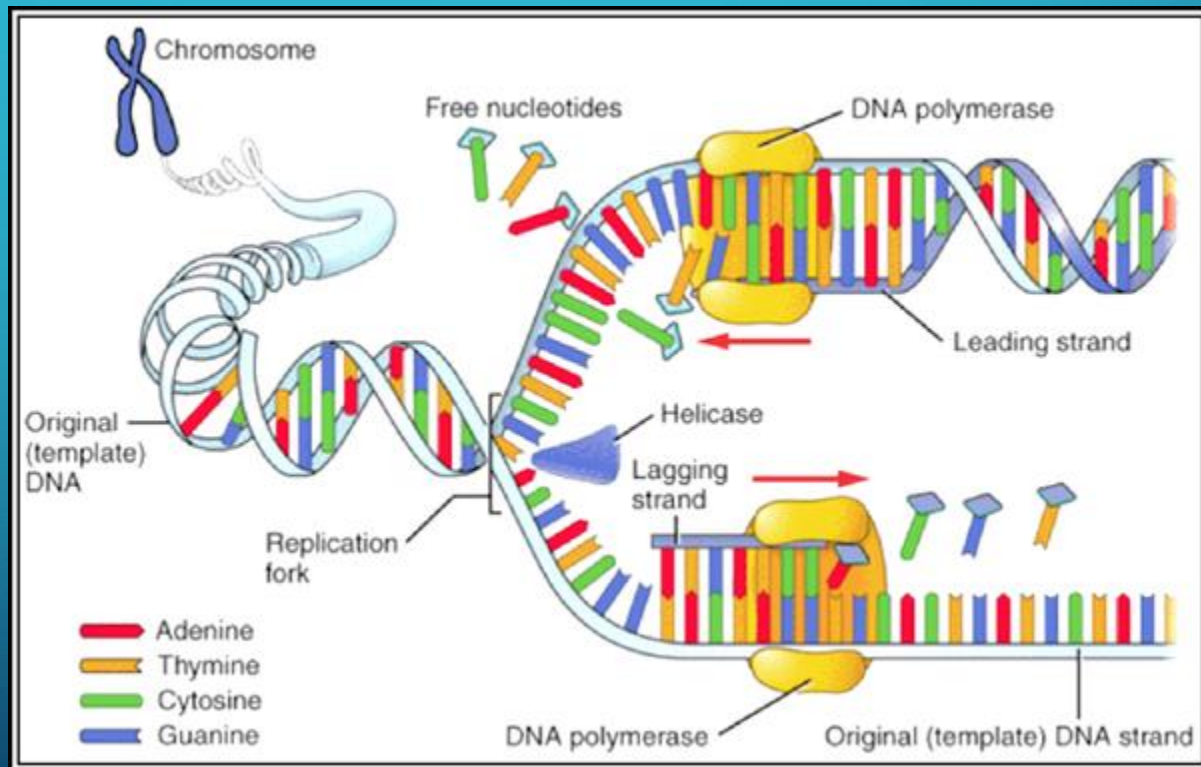
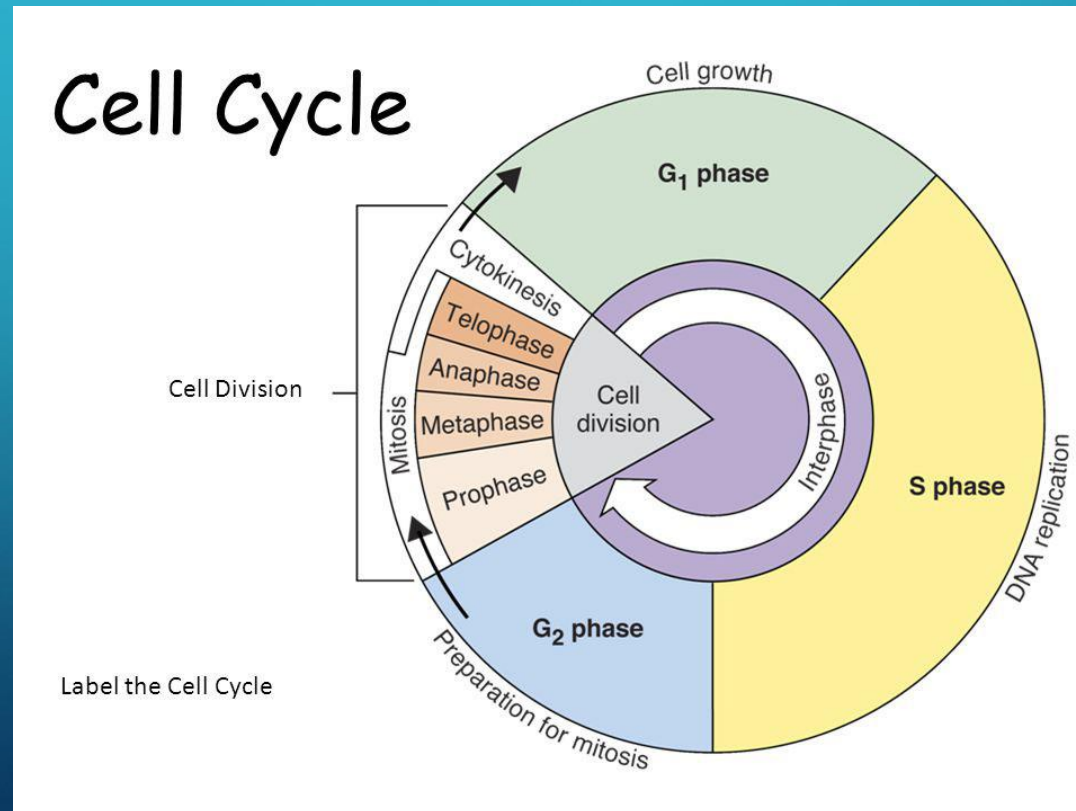


# DNA REPLICATION



# THE STRUCTURE OF DNA IS IMPORTANT TO PASSING ON GENETIC INFORMATION.

- A cell replicates its DNA once in the cell cycle.



# DNA REPLICATION

- **Replication:** a process that makes identical copies of a DNA molecule
- Each new DNA molecule consists of an original strand and a new strand.

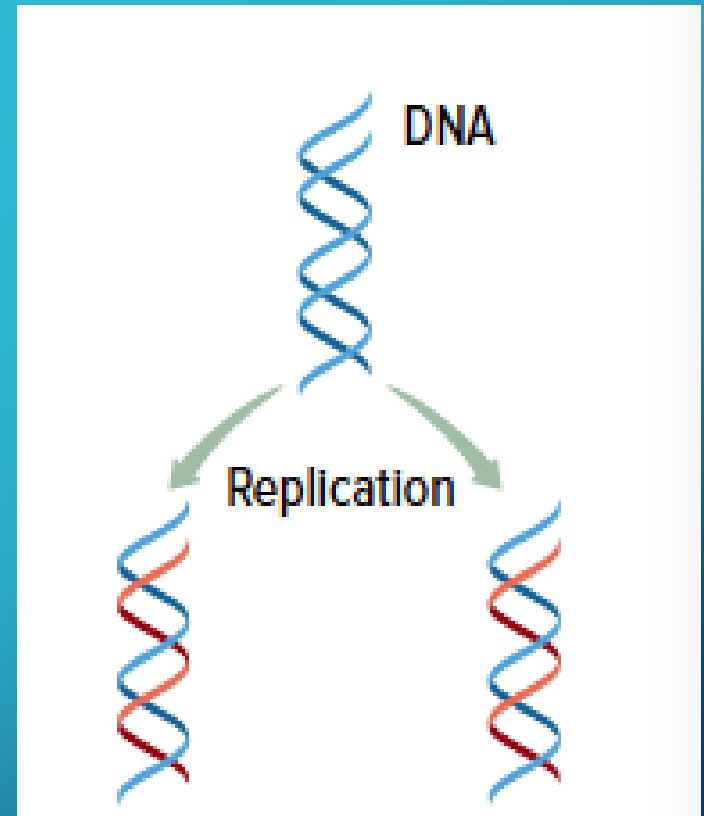


Figure 1.7: During DNA replication, two molecules of DNA are made from one. The resulting new molecules are identical to the original. Each new molecule contains one original strand of DNA (shown here in blue) and one new strand (shown in red).

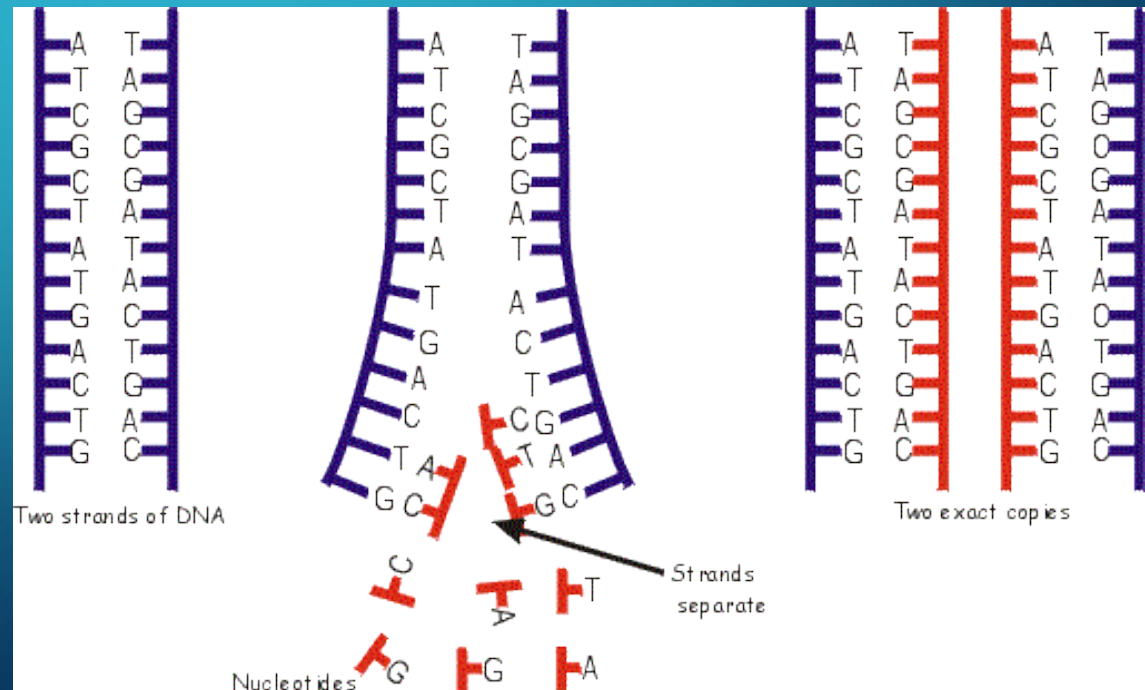
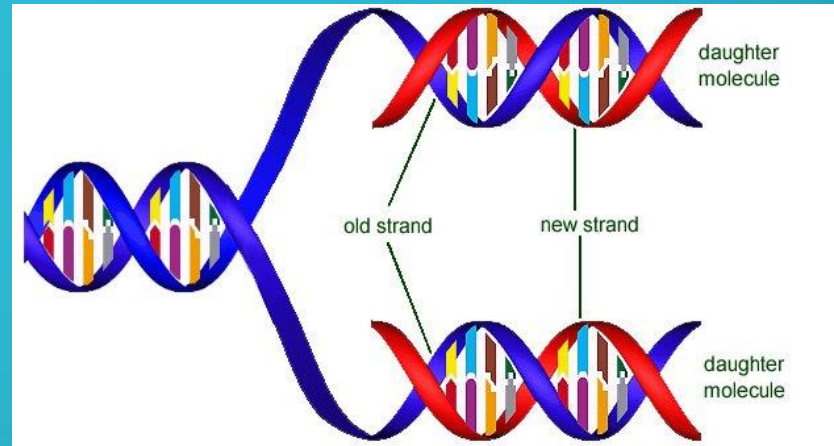
# REPLICATION

- DNA molecule opens up
  - Enzyme: DNA Helicase

- New nucleotides join opened sides
  - Enzyme: DNA Polymerase

- Backbone of sugar – phosphate is sealed
  - Enzyme : DNA Ligase
- New DNA
  - One parent strand
  - One daughter strand

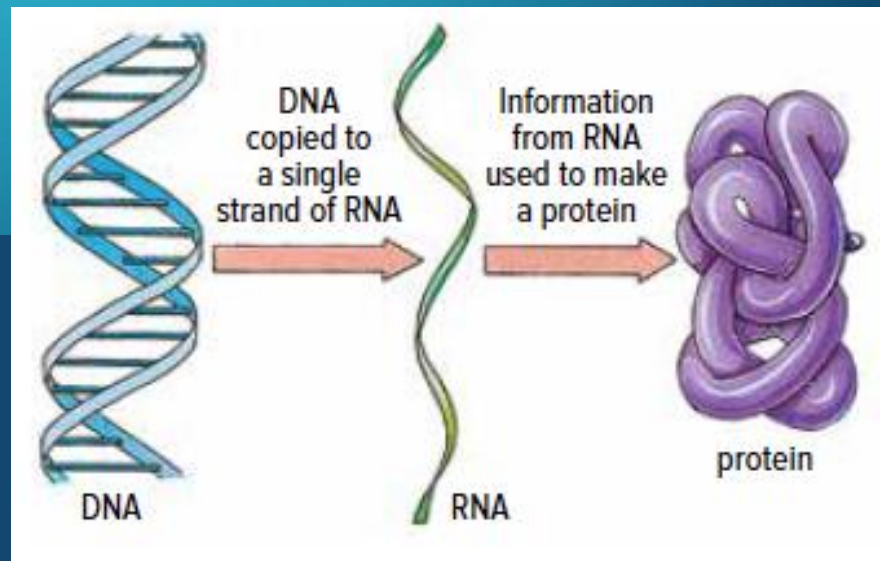
# DNA REPLICATION



# PROTEIN SYNTHESIS

- DNA is used to produce RNA.
- RNA is then translated to produce a protein.
- The sequence of bases in the DNA molecule determines the specific sequence of amino acids in the protein molecule.

Figure 1.8: Genetic information passes from the genes (DNA) to an RNA copy of the gene, and the RNA copy directs the sequential assembly of a chain of amino acids to produce a protein.





# TIME OUT

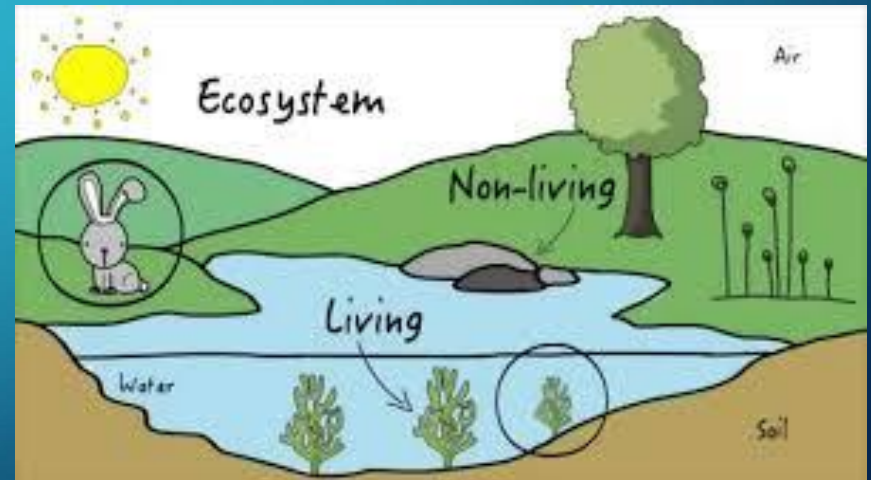
- Pg 3-8 in workbook



# THE DIFFERENT GENETIC MAKE-UP OF ORGANISMS IS REFLECTED IN THE DIVERSITY OF LIFE

- Biodiversity exists at three different levels:

- 1) species diversity
- 2) genetic diversity
- 3) ecosystem diversity





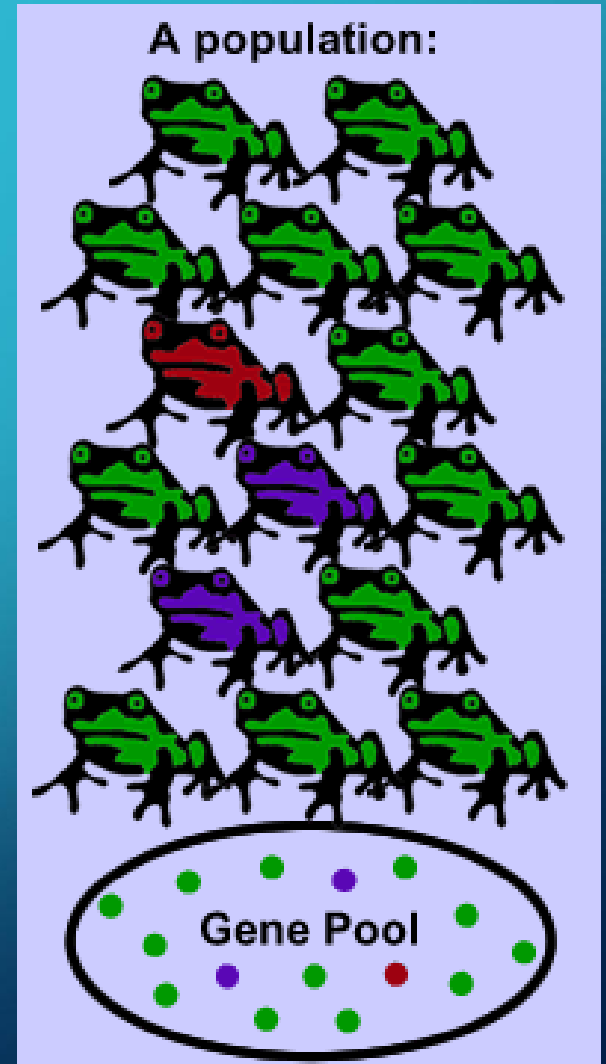
# SPECIES DIVERSITY

- **Species:** group of organisms that can interbreed in nature and produce fertile offspring
- **Species diversity:** variety and abundance of species in a given area



# GENETIC DIVERSITY

- **Genetic diversity:** variety of inherited traits within a species
  - Genetic diversity is due to mutations in genes and reshuffling of alleles during meiosis (sexual reproduction).
- **Gene pool:** genetic diversity within a population
- **Population:** members of the same species living in the same geographical area at the same time



# ECOSYSTEM DIVERSITY

- **Ecosystem diversity:**  
variety of ecosystems  
in the biosphere
- Ecosystems are made  
up of biotic (living)  
factors and abiotic  
(non-living) factors.
- **Community:** Living  
organisms within an  
ecosystem



Tropical Rainforest



Temperate Forest



Coniferous Forest (Taiga)



Tropical Grassland (Savannah)



Temperate Grassland



Mediterranean



Desert



Tundra

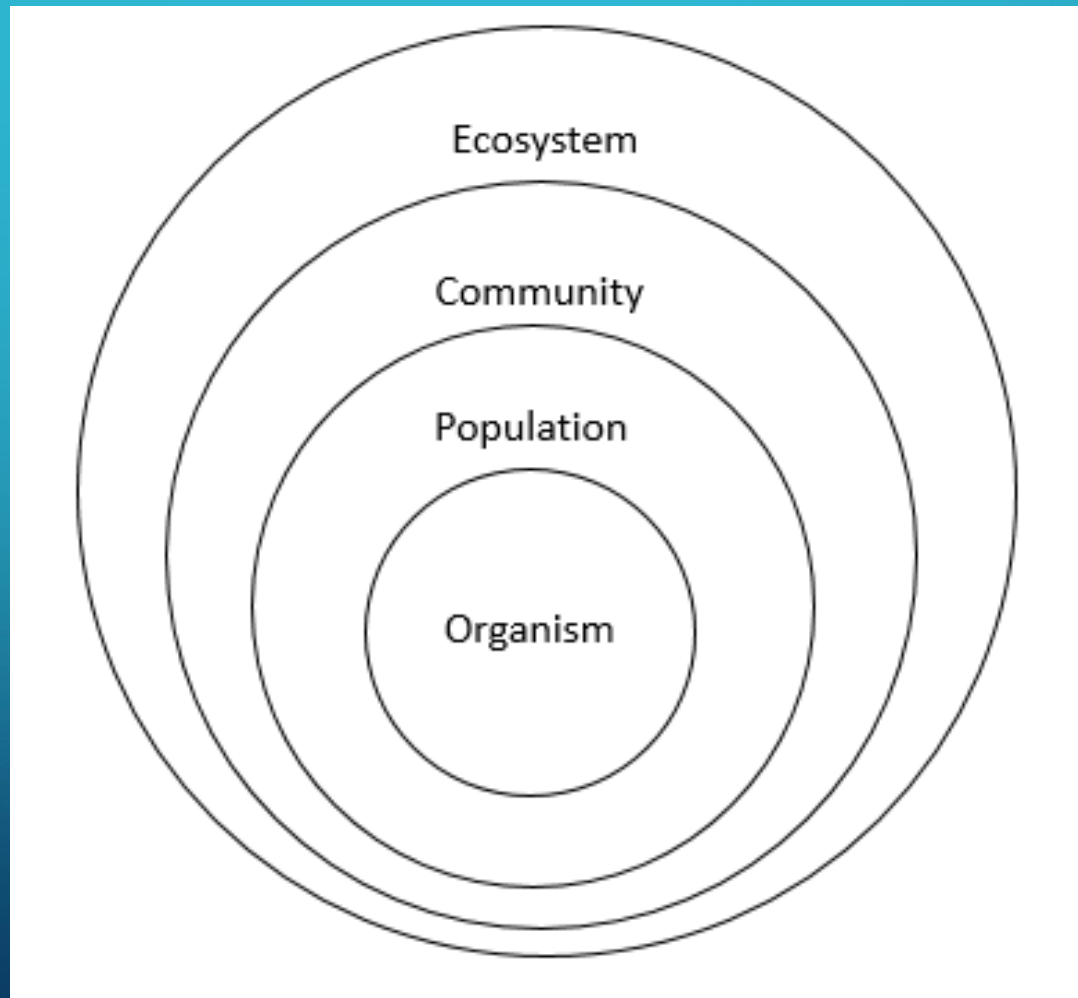


Mountain

# DISCUSSION QUESTIONS

1. Describe the differences among the three types of biodiversity.
2. Explain how variation in genes is related to all three types of biodiversity.

# HIERARCHY ASSIGNMENT



# WORKBOOK

- Pg 10-14