

Pre-lab **Genetics: DNA, Biology and Technology**

Notes:

- DNA serves as the macromolecule of heredity
- The structure of DNA and how it replicates
- Transcription produces mRNA which is then translated into a polypeptide (protein)
- The 3 types of RNA and the role of each in transcription and translation
- The principles of the process of gel electrophoresis to separate of DNA fragments into a DNA fingerprint
- How to interpret a DNA fingerprint

Exercise 22 – DNA Biology and Technology (pg. 209-211)

Background info: Read introductory information at the beginning of the exercise and at the beginning of each section. Answer the following questions.

1. Define molecular genetics.
 - ➔ The study of the structure and function of DNA.
2. What is the importance of DNA replication in your cells?
 - ➔ It provides a means and materials for passing DNA from cell to cell and organism to organism.
3. What are the 4 nucleotides of DNA? What's inside a nucleotide? In DNA, what are the combinations of complementary base pairs?
 - ➔ Adenine, Thymine, Guanine, Cytosine. A-T and G-C.
4. What kind of bond exists between complementary bases?
 - ➔ Hydrogen bond
5. What does the semi-conservative mean?
 - ➔ That means separating half and keeping half. In this specific case, 1 strand of DNA is conserved.
6. What are the two parts to protein synthesis? Where does each occur in the cell?
 - ➔ Transcription in nucleus and translation in cytoplasm.
7. What is transcription?
 - ➔ The process of creating (copying) genetic information in the form of mRNA from DNA.
8. What is translation?
 - ➔ The process of reading the genetic code on mRNA and synthesizing protein according to the code.