

BIOLOGY Review... DNA & The Cell Cycle

Chapters 5, 7, 8

GENETICS...

GENES ARE A SET OF INSTRUCTIONS ENCODED IN THE DNA SEQUENCE OF EACH ORGANISM THAT SPECIFY THE SEQUENCE OF AMINO ACIDS IN PROTEINS NEEDED.

1. Look at the depiction shown below... this is often referred to as the central dogma of DNA. It shows the general pathway by which the instructions of DNA are carried out. Describe the steps that are shown.

DNA → transcription → mRNA → translation → protein

2. Write the amino acids encoded in this mRNA sequence (p 187). AUGCUUCAAAAUGGCUGUUA
3. Would the following produce the same protein as #2? (Explain) AUGCUUCAAGAUGGCUGUUA
4. How might a deletion or insertion mutation affect the protein that is made? What is a silent mutation?
5. RNA splicing removes non-coding regions during transcription. Explain how it is also used to control which genes are expressed (shown) in different cells.

SEXUAL REPRODUCTION LEADS TO GENETIC VARIATION IN A POPULATION.

6. What happens during meiosis? How is each gamete unique?
7. Which cells in a multicellular organism undergo meiosis?
8. Explain why the joining of gametes to form a zygote produces a new combination of alleles.
9. Approximately how much of an individual's DNA sequence comes from each parent? Why?
10. How do chromosomes determine whether an individual is male or female?