

Dna worksheet essay sample

[Science](#), [Genetics](#)



**ASSIGN
BUSTER**

1. Describe the structure of DNA. It is a right handed double helix. It is made up of nucleotides that are bound to each other by covalent bonds.

Nucleotides are abbreviated as A, G, C, and T. The abbreviated nucleotides stand for Adenine, Guanine, Cytosine, and Thymine (Simon, Reece, & Dickey, 2010). This bond consists of the sugar from one nucleotide and the phosphate of the next nucleotide. This bond is referred to as a “ sugar-phosphate backbone”. The nitrogenous bases are arranged in an order where they appear to project off of the backbone, moving from left to right. *

* Adenine and Guanine are Purines, and Cytosine paired with Thymine is called Pyrimidines (Simon, Reece, & Dickey, 2010).

2. How does an organism’s genotype determine its phenotype? The genotype basically is the sequence of nucleotides bases in its DNA (Simon, Reece, & Dickey, 2010). The genes are transcribed to produce mRNA. The mRNA is translated to produce proteins. The proteins are most often enzymes that speed up reactions that would otherwise take forever to happen. These reactions involve the formation of products that are functioning in the cell for various things such as structural support, enzymes that provide metabolic food molecules like glucose, energy production, transport, signal systems, pigmentation, attachment to other cells and various others. * For example, there is a gene that produces protein involved in the production of melanin (skin pigment). When this gene is mutated or non-functional, the enzyme is not produced (Simon, Reece, & Dickey, 2010).

3. Describe each stage of the flow of information starting with DNA and ending with a trait. In eukaryotic cells, transcription, the stage from DNA to

RNA, occurs in the nucleus, and then RNA is processed before it enters the cytoplasm. Translation happens very quickly; a single ribosome can make an average-sized polypeptide in less than a minute. As RNA is made, a polypeptide coils up, assuming a three-dimensional shape. Several polypeptides can come together, forming a protein with quaternary structure (see Figure 3. 20, p. 185) (Simon, Reece, & Dickey, 2010). According to page 185 of the text book, “ The chain of command originates with the information in a gene, a specific linear sequence of nucleotides in DNA.” The gene dictates the transcription of a corresponding sequence of nucleotides in mRNA. In turn, mRNA specifies the direct sequence of amino acids in a polypeptide. Finally, the proteins that form from the polypeptides determine the appearance and capabilities of the cell and ultimately, the organism. For many years, the DNA to RNA to protein pathway was believed to be the only means by which genetic information controls traits. In recent years, however, this belief has been challenged by findings that point to more complex roles for RNA.

Works Cited

Simon, E. J., Reece, J. B., & Dickey, J. L. (2010). Campbell Essential Biology with Physiology, Third Edition. Pearson Education, Inc.