Name_____ Period___

Introduction: You are going to analyze one chromosome of a fictitious alien species. These aliens are called the Droids. The genes located on this one chromosome are listed on the chart below. This species contains the same 4 nitrogen bases in DNA as humans, as well as the same 20 amino acids. The amino acid sequences that result in each trait are shown in the charts.

Here are the DNA sequences for each of the Droid traits.

	Eye Number	Ear Shape	Hair	Freckles
DNA sequence	AGT-ACC-CGT	CTA-CGA-AGA	CCA-CTA-CCC	TTA-TTC-CAG
Amino Acids				
Trait that results				

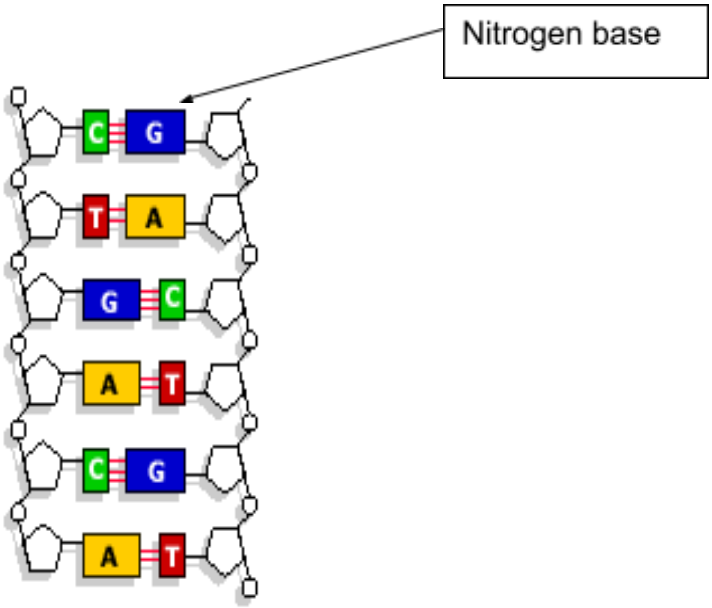
	Antennae	Teeth	Neck	Eyebrows
DNA sequence	TAC-TGT-TGG	CGA-CTC-CAC	GTG-ATA-ATT	GGC-CAT-AGA
Amino Acids				
Trait that results				

	Nose	Shoulders	Skin Color	Chin
DNA sequence	GCG-GAG-GAC	CCG-CCT-TCC	TTT-TTA-ATG	AAA-AAG-TCA
Amino Acids				
Trait that results				

*Sketch your Droid from the <u>shoulders up</u> in the box below (this should be completed last and with **<u>pencil</u>**). <u>It should also be colored in.</u>*

Questions

Label the following parts on the DNA molecule below: phosphate, hydrogen bond, sugar, a nucleotide.
A sample (nitrogen base) is done for you!



1. Suppose a mutation occurred in which the DNA sequence for Ear Shape changed to CTC-CGA-AGG. Would it change the way that the organism looked? Why or Why not?

2. Suppose a mutation occurred in which the DNA sequence for Eye Number changed to AGC-ATC-CGT. Would it change the way that the organism looked? Why or Why not?

3. Explain the meaning of the term "gene". Please be sure to look it up and be precise.

4. What is the relationship between a gene, a DNA molecule, and a protein?