

Name: _____

LT: I can present and analyze data on the 4 nitrogenous bases in order to determine the relationship between organisms. Standard: 2.1f

DNA was first discovered in 1869 but not much was known about the molecule until the 1920s. It was then discovered that it consisted of repeated subunits. Each subunit contains a part called a nitrogen base. There are 4 bases found in DNA: **Adenine (A)** **Cytosine (C)** **Thymine (T)** **Guanine (G)**

In the 1920s it was believed that these bases occurred in all living things in the same repeated pattern ATGC ATGC ATGC. But, if this were true, how could DNA carry the genetic code? That would mean humans would have the same genetic code as a worm! If all species have the same repeated pattern, DNA could not provide the variety needed for the genetic code.

After World War II the biochemist Chargaff made major discoveries about the DNA bases. Chargaff obtained DNA samples from different organisms, and counted the DNA bases for each one. Now you will have the opportunity to make the same discovery Chargaff made 70 years ago.

Data Table

Organism	%A	%G	%C	%T
Chicken	28.5	21.5	21.5	28.5
Rat	28.6	21.4	21.4	28.6
Human	29.3	20.7	20.7	29.3
E. coli	24.7	25.3	25.3	24.7
Octopus	33.2	16.8	16.8	33.2

Task 1: Graph

1. Make a graph that illustrates the information on the data table above.
Remember that the objective is to present data on the 4 nitrogenous bases in order to determine the relationship between organisms.

Task 2: Conclusion/Analysis

1. Describe the relationship between the 4 nitrogen bases for each organism.
Which nitrogen bases exist in similar proportions?
2. Describe the relationship between the organisms.
Which organisms seem to be more closely related?

	3	2	1
Graph	The graph clearly shows the relationship between both variables. The graph accurately includes all of the following: -a title -axes labels (with units of measure) -units following constant scale -bars/lines represent correct values -a key (or labels) identify all lines/bars	The graph shows the relationship between both variables. The graph accurately includes most of the following: -a title -axes labels (with units of measure) -units following constant scale -bars/lines represent correct values -a key (or labels) identify all lines/bars	The graph partially shows the relationship between both variables. The graph accurately includes few of the following: -a title -axes labels (with units of measure) -units following constant scale -bars/lines represent correct values -a key (or labels) identify all lines/bars
Conclusions/Analysis	Conclusion/analysis is thorough. Specific data evidence and reasoning are included.	Conclusion/analysis is general. Specific data evidence/reasoning is limited.	Conclusion/analysis is incomplete. Specific data evidence/reasoning is not used.