

Name: _____ Date: _____ Per: _____

Lab: DNA Keychains

DNA (deoxyribonucleic acid) is the genetic material that allows information to be passed from parent to offspring using a CODE.

Our Alphabet	Amino Acid Name	Simplified Nucleotide
A	Alanine	GCT
B	Alanine2	GCA
C	Cysteine	TGC
D	Aspartic acid	GAT
E	Glutamic acid	GAG
F	Phenylalanine	TTT
G	Glycine	GGG
H	Histidine	CAT
I	Isoleucine	ATA
J	Isoleucine2	ATC
K	Lysine	AAG
L	Leucine	CTC
M	Methionine	ATG
N	Asparagine	GAC
O	Asparagine2	GAT
P	Proline	CCC
Q	Glutamine	GAG
R	Arginine	CGT
S	Serine	TCA
T	Threonine	ACT
U	Threonine2	ACG
V	Valine	GTC
W	Tryptophan	TGG
X	Valine2	GTA
Y	Tyrosine	TAC
Z	Tyrosine2	TAT

Directions:

1. Write your initials for your first, middle, and last names below. If you don't know or don't have a middle name, make one up.
2. Find the nucleotides from the chart that go with each of your initials and write those below.
3. Find the amino acid for each of your nucleotides from the chart on the left and write that below.
4. Color the DNA parts on the back the following colors:
Adenine = Blue
Thymine = Orange
Guanine = Purple
Cytosine = Green
5. Color the correct sequence of nucleotide bases on the diagram on the back for your initials. Start at the top left and go down the left column until you color all of the bases in order for your initials.
6. Color the corresponding nucleotides on the right that match up with the bases that you already colored on the left.
7. Collect the correct amount of each color base that you need for your project from the teacher. Get 18 phosphate molecules (black beads). Get 18 sugar molecules (white beads), Get 4 total wires, 2 of one color and 2 of another color. Connect similar colors to make 2 long wires.
8. Assemble each side of your DNA molecule by threading the black, white, and colored beads to match your pattern on the back. The black beads represent the phosphate molecules and go on the side, the white beads represent the sugars and go on the sides, and the colored beads are your bases and go in the middle.
9. Attach your DNA bases to the sugar molecules on your DNA molecule according to your colored diagram attaching the bases together in the middle.
10. You now have a DNA model of your initials.

It is the **order of the NITROGEN BASES** that determine the amino acid, or CODE.

USE the Alphabet Chart to code your initials into the DNA model you will build:

Your initials: _____

The amino acids: _____

The nucleotides: _____

What would we call it if you accidentally wrote the wrong order of nucleotides? _____

Nucleic Acids (Nitrogen Bases)

Color Key – select colors	
Adenine =	
Thymine =	
Guanine =	
Cytosine =	



= Deoxyribose Sugar (White bead)



= Phosphate (Black bead)

Use CHARGAFF's RULE (A=T; C=G) to figure out what base goes on other side

Fill in the symbols A, C, G, and T to match your initial code, color according to your key, and use the supplies provided to make a 3D model of a segment of DNA.

Initials	Nucleotide	Partner Nucleotide	Amino Acid

Thread your DNA model according to the picture below. Make sure to go through each bead twice, once from below, and once going up.

