Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Doc #:33**

**PROTEIN SYNTHESIS ACTIVITY:**

**Making A Protein Bracelet**

Fill out the chart below:

1. Transcribe your DNA strand into mRNA codons.
2. Use the codon circle to work out which Amino Acids this strand is coding for.
3. Use the bead conversion chart on the back of the page to record the color and order of beads in the strand, based on the amino acids.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DNA** | **TAC** | **TGG** | **TCG** | **CGT** | **ACG** | **GCA** | **GGG** | **CAG** | **ACC** | **CAC** | **TGT** | **AGT** | **CGT** | **ACA** | **GCA** | **GGT** | **CAA** | **ACC** | **ATC** |
| 1. mRNA
 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. Amino Acid
 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. Bead Color
 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bead Number |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 |  10 |  11 |  12 |  13 |  14 |  15 |  16 |  17 |  18 |  |

Next, use the supplies at the station and make a strand of beads. The beads represent amino acids and your bracelet represents a protein. The shape and therefore function of a protein is determined by the sequence of amino acids.



What is the color of the first bead you added? \_\_\_\_\_\_\_\_\_\_\_\_

5th? \_\_\_\_\_\_\_\_\_\_\_\_ 10th? \_\_\_\_\_\_\_\_\_\_\_\_

Your protein gives you a characteristic because,

remember, proteins are important in determining

who we are. When your bracelet is done, check

the Characteristic Key that your teacher has and

determine what characteristic your protein is giving you.

I made a protein that gives me \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Abbreviations for Amino Acids and Designated Colors**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ALA** | **ARG** | **ASN** | **ASP** | **CYS** | **GLN** | **GLU** | **GLY** | **HIS** | **ILE** |
| Alanine | Arginine | Asparagine | Aspartic Acid | Cysteine | Glutamine | Glutamic Acid | Glycine | Histidine | Isoleucine |
| **Lemon yellow** | **Coral** | **Blue** | **Brown** | **Red Violet** | **Neon Yellow** | **Orange Yellow** | **Light Purple** | **White** | **Black** |
|  |  |  |  |  |  |  |  |  |  |
| **LEU** | **LYS** | **MET** | **PHE** | **PRO** | **SER** | **THR** | **TRP** | **TYR** | **VAL** |
| Leucine | Lysine | Methionine | Phenylalanine | Proline | Serine | Threonine | Tryptophan | Tyrosine | Valine |
| **Dark Purple** | **Lime Green** | **Green** | **Red** | **Teal** | **Pink** | **Light Aqua** | **Tan** | **Gray** | **Light Blue** |