**Honors Biology Protein Folding Activity**

*Instructions:*1. You’ve been given an amino acid chain sheet with 15 amino acids linked together. Color each side chain either yellow, red, or green according to the following rules:

* You must color 8 side chains yellow, 4 red, and 3 green
* You cannot put 2 reds or 2 greens side-by-side
* Everyone at your table should have a different pattern of side chain colors

2. Cut out your amino acid chain.

3. Red side chains are positively charged, green are negatively charged, while yellow have no charge. Based on this info and what you know of chemistry, what’s the rule of side-chain attraction? Hint: What to opposite charges and like charges do when they contact each other?

4. Fold your protein according to the rule that you recited in #3. When 2 side chains should touch, staple or tape them.

*Questions:*

1. Compare the way that your protein is folded to that of someone else at your table. Why does everybody’s protein fold differently?
2. Is the way that you folded your protein the only way that it could be folded and still follow the attraction rule? Explain.
3. Describe in your own words the relationship between overall protein shape and the sequence of the amino acids in the protein.
4. Define, in your own words, Peptide Bond. Look at the backbone of your protein and circle a peptide bond?
5. Describe why “Polypeptide” is another name for protein?