What’s a Trait?

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Simulating Protein Synthesis – Follow Up

**Phase One – Constructing the DNA**

1. Where is DNA is stored in the cell?
2. How many strands made up your DNA molecule?
3. What are the complementary base pair rules you used to construct your top and bottom stands?
4. What type of bond is holding the base pairs together?

**Phase Two – Transcribing the DNA (Transcription)**

1. Why did you have to separate the DNA strands before transcribing it?
2. What important information is found in the sequence of the nitrogen bases (the rungs of the double stranded DNA ladder)?
3. If you only want the information from one gene (only one chapter in the book), do you have to copy the entire DNA molecule (the entire book)? Explain.
4. What was different about your mRNA strand compared to the DNA? What was the same?
5. What base pair rules did you use to make the complementary mRNA strand from the bottom strand of DNA during transcription?
6. Where does transcription take place?

**Phase Three – Assembling the Amino Acid Sequence (Translation)**

1. What are the building blocks (monomers) of a protein?
2. What other type of RNA molecule did you need to assemble your amino acid sequence?
3. The sequence of bases within your mRNA copy gives the cell instructions on how to assemble the amino acids. What is the *function* of the tRNA?
4. More generally, where does translation take place? More specifically, on what organelle does translation occur?
5. Why did you move the DNA cards aside during this part of the activity?
6. Using your knowledge from the activity, what can you conclude about how many strands RNA has compared to DNA?
7. When assembling your amino acid sequence, some of your sequences may not have made sense. This was due to a tRNA carrying a “Stop” signal. Where in the sequence should this signal have been? *Why?*
8. How did you know which tRNA molecule to choose during translation?
9. This activity was used to simulate the formation of a protein. Do you think the actual sequence of a protein is made of this number of amino acids? Could the number be smaller? Larger? What do you think and why?