Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Have Your DNA and Eat It Too!**

**DNA Structure**

1. What is the shape of the DNA molecule?

2. What two molecules form the “backbone” of a DNA molecule?

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. The four nitrogenous bases of DNA are:

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What are the base pairing rules (i.e. Chargoff’s Rule)?

**Activity Instructions:**

1. Using the provided materials, assemble a strand of DNA with the following

sequence:

T A C G C A G G C A T T

o Red Vines=DNA backbone

o Marshmallows=nitrogenous bases (use toothpicks to attach to backbone)

o A=Green

o T=Pink

o C=Yellow

o G=Orange

2. Create the complementary DNA strand (you may want to write the base pairs in above first).

**Transcription**

1. What are three differences between DNA and RNA?

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

o \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What type of RNA is the product of transcription?

3. Where in the cell does transcription take place?

4. The enzyme that helps in transcription is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Activity Instructions:**

1. Unzip the DNA strand (using scissors).

2. Use the part of the DNA with the following

sequence:

T A C G C A G G C A T T

o Black Vines=RNA backbone

o Marshmallows=nitrogenous bases

o A=Green

o C=Yellow

o G=Orange

o U=White

3. Create the mRNA strand (you may want to write the base pairs in above first).

4. What happens to the mRNA strand after transcription has occurred (Where does it go, and how does it get there. Be specific!)?

**Translation**

1. Where in the cell does translation occur?

2. How many nucleotides are in a codon?

3. What does each codon specify?

4. What is the job of tRNA in translation?

5. What amino acids are coded for?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What is the end product of translation?

