Name:_____ Period_____ Date_____

Dinosaur Project

Introduction: Your friend excitedly calls you to say he found a strange egg near the Amazon River in South America. He believes it is from a rare species of dinosaur, but does not know what the dinosaur would have looked like. He extracts DNA from the egg and figures out the sequence of bases, but does not know what to do from there. He asks you to help him figure out what this dinosaur looked like!

Pre-Activity Questions:

1. Where is DNA found in the cell? _____
2. What does DNA contain the instructions to make? _____
3. Where are proteins made in the cell? _____
4. How do the instructions in DNA get from the nucleus to the ribosome? (List the molecule involved and the name of this process)

5. If the original DNA strand is ATT-CGA-CCG, what will be the mRNA strand?

6. Circle the **codons** in your mRNA strand. How many codons are there? _____
7. After mRNA gets to the ribosome, _____ molecules find their complementary mRNA codons.
8. What do tRNA molecules transfer to the mRNA strand? _____
9. What are the three-nucleotide sequences on a tRNA molecule called? _____
10. What does this chain of amino acids become?

11. Why are proteins important? In other words, what do they give organisms?

Directions:

1) For each trait being examined in the mystery dinosaur creature, figure out the mRNA codons by transcribing your **DNA sequence into mRNA**. (Fill in column #1, but remember to separate the mRNA strand into sets of codons).
2) Use the codon chart to figure out the **amino acid protein sequence from the mRNA**. Abbreviate the amino acid name by just writing the first three letters. (Fill in column # 2).
3) Look on the genetic traits sheet to determine the **genetic trait** the amino acid protein sequence codes for. (Fill in column # 3).

- Note: All amino acid protein sequences begin with the start codon (AUG) which codes for **Methionine** and also end in one of the three **STOP** codons (UGA, UAG, or UAA). These **start** and **stop** codons have been eliminated from your sequences because it is **understood** that they are part of the amino acid protein sequence.

Creature #_____

Gene	mRNA strand	Amino Acid Sequence	Expressed Trait
Eye Color			
Skin Texture			
Skin Colors			
Horns			
Teeth			
Claws			

*For extra credit, you can draw your dinosaur at home.

Translation Practice

Need to Knows:

1) What does it mean to **translate** something?

2) Where does mRNA go after it leaves the nucleus? _____ Why does it go there?

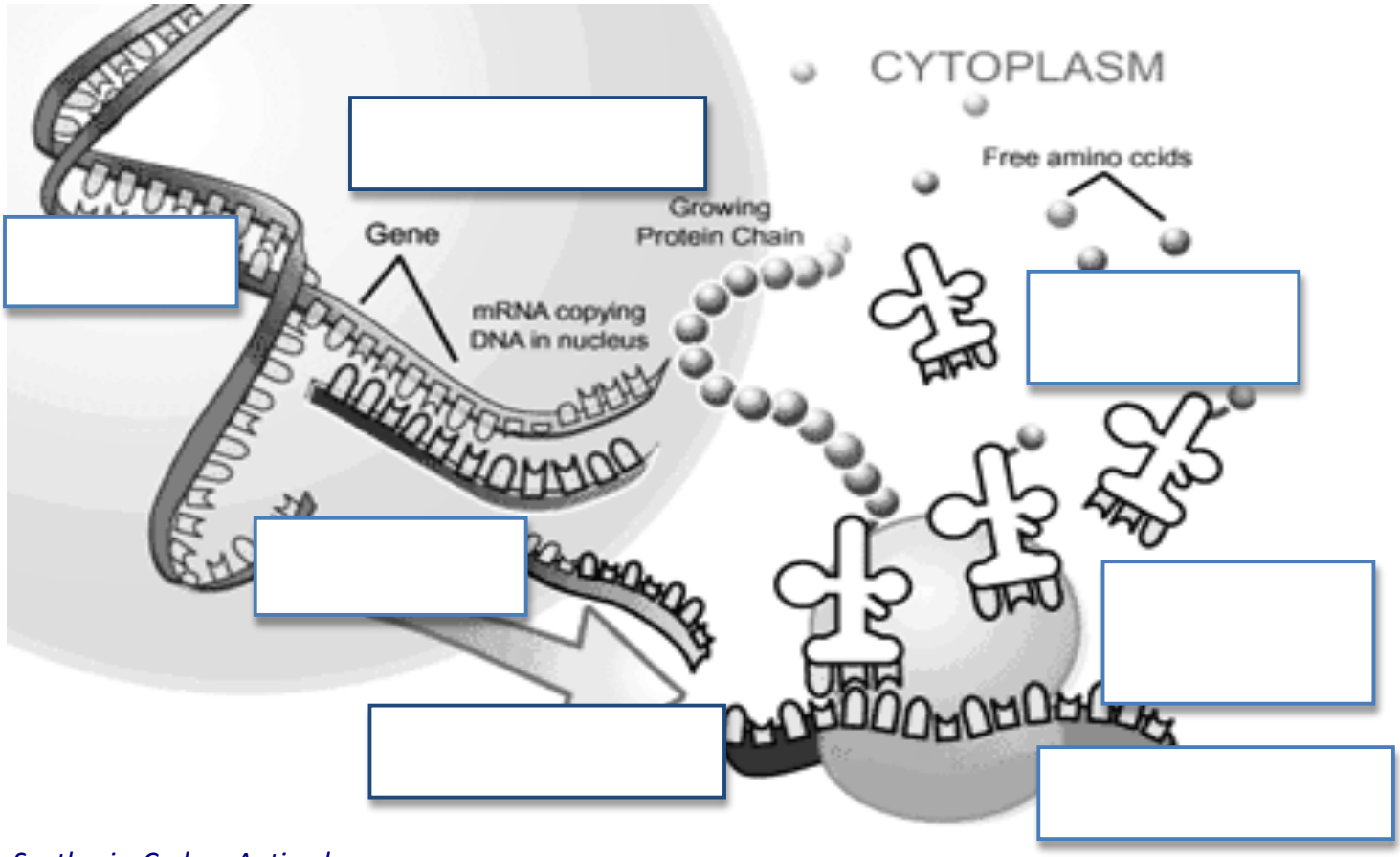
3) What are the monomers of proteins? _____

4) Write a codon: _____ Is a codon found on an **mRNA strand or a tRNA strand**? (Circle One)

5) Write the complementary anticodon: _____ Is this anticodon found on **mRNA or tRNA?**

6) What does tRNA bring to the ribosome? _____

Summing It Up: Fill in the boxes using these words: *DNA, mRNA, Ribosome, Nucleus, tRNA, Protein*



Synthesis, Codon, Anticodon

7) Write the complementary anticodons below the following codons:

AGC **UAA** **ACU** **AGU**

8) Use the codon chart to write the amino acids (just the three-letter abbreviation) the following codons code for:

UAC: _____ CCA: _____

GAU: _____ CAU: _____

CGC: _____ UUU: _____

9) List all of the codons that code for Valine (Val):

_____

10) List the "STOP" codons. These tell the ribosome to stop making the protein.

11) List the codon that codes for Methionine. This is the "START" codon that tells the ribosome to start making the protein.

12) Where in the cell does this process of translation take place?