Name _____ Date _____ Period _____

LEGO Protein Synthesis

Purpose:

To understand that different cells build different proteins because they use *different* genes of the *same* DNA molecule.

Stamp of Approval

Pre-lab Questions:

Use your notes to answer the following questions:

1. If you were looking for DNA in a eukaryotic cell, where would you go to find it?
2. What is transcription and where does it occur?
3. What are the DNA-RNA base-pairing rules?
4. What is the name of the 3 nucleotide segments of mRNA?
5. Which organelle is responsible for making proteins?
6. What is translation and where does it occur?
7. During translation, what pairs up with the mRNA codons?
8. What do tRNAs carry to the ribosome, and what do they form as they link up to form a chain?

Materials:

At each Lab Station:

- ☐ Lego "protein" recipe
- ☐ Lego genetic code

At a shared location:

- ☐ Black Lego blocks
- ☐ Blue Lego blocks
- ☐ Green Lego blocks
- ☐ Red Lego blocks
- ☐ White Lego blocks
- ☐ Yellow Lego blocks

Posted at the front of the classroom:

- ☐ Lego DNA

Procedure:

1. Write your cell type on your data sheet.
2. Copy your "recipe" onto your data sheet.
3. Copy the genes you will use onto your data sheet in groups of three.
4. Transcribe the DNA nucleotides into RNA nucleotides on your data sheet.
5. Decode the RNA codons into the correct Lego blocks.
6. Build your Lego polypeptide chain.
7. Draw and color your Lego polypeptide chain.
8. Answer the questions.

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LEGO Protein Synthesis

Data Sheet

Cell Type: _____

Recipe																							
DNA																							
RNA																							
Blocks																							

Recipe																							
DNA																							
RNA																							
Blocks																							

Model

Questions:

1. What does each of the following represent?

- Front of the classroom: _____
- Table with the blocks: _____
- Lab station: _____
- Lego blocks: _____
- Lego tower: _____
- The person in your group building the tower: _____
- The person in your group getting the blocks: _____
- The person in your group copying the genes from the front of the class onto his/her paper: _____

Look at all the Lego towers made by the different groups:

2. How are they similar? _____
3. How are they different? _____
4. Do different cells (liver, nerve, bone, etc.) have the same DNA? _____
5. Why do these different cells have different proteins? _____

_____

6. What do you think about the process of Protein Synthesis? _____

_____