Intervention: From DNA to Protein

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Click the link on our website. Use the DNA to Protein module to find the answers to the questions below.

**Build a DNA Molecule:**

1. What are the base pairing rules for DNA?

2. How is DNA replicated?

**Transcribe and Translate a Gene:**

3. The two-step process by which cells can read a gene and produce a string of amino acids that will eventually become a protein is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. How is mRNA different from DNA? (Hint: read the sidebar on this page for help.)

5. What is the correct starting position for translation?

6. Write the amino acids used to assemble your protein in order below.

7. Summarize the differences between transcription and translation in the chart:

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Beginning Material | Ending Material | Location |
| Transcription |  |  |  |
| Translation |  |  |  |

**What Makes a Firefly Glow?**

8. On the back side of the page, explain in several sentences what makes a firefly glow by using all the terms below:

RNA polymerase LUC gene Transcription mRNA

Luciferase enzyme Ribosome Translation Amino Acids

Three dimensional Luciferin Oyxluciferin

Functional Luciferase Enzyme

**Word List:**

|  |  |  |  |
| --- | --- | --- | --- |
| Adenine | Thymine | Covalent Bond | Three Types |
| Guanine | Deoxyribose | Hydrogen Bond | Stays in Nucleus |
| Cytosine | Ribose | Double Helix | Moves All over cell |
| Uracil | Phosphate | One Type | Nucleotides |
| Stable | Unstable | Triplet | Helicase |
| Codon | Anticodon | Replication | RNA Polymerase |

**RNA**

**DNA**

**both**

Using what you have learned thus far, relate how DNA and RNA’s structures allow for the functions of transcription and translation:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Structure | Function in  transcription/translation | How does the structure allow for this? |
| DNA |  |  |  |
| mRNA |  |  |  |
| tRNA |  |  |  |
| rRNA |  |  |  |