



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

Per: \_\_\_\_\_

### Protein Synthesis Children's Book

Protein synthesis is one of the most important processes in an organism. As you've learned, it creates proteins needed for an organism to function. It is also a multi-step process that some students find difficult to remember. However, as you are a scholar you are going to have no problem mastering it! To simplify the process of protein synthesis, you will create a children's book which explains protein synthesis in a way simple enough for a child to understand. One great way to explain something to children is to create an analogy. Think of an analogy that children can relate to. Be sure to include pictures of each description and keep words and written explanations to a minimum, as any good children's book does. Be sure to follow the rubric on the back as well as the outline listed below. All work needs to be done by hand. No copy and pasting anything from the internet.

#### STORY OUTLINE

All good novelists plan out a book before creating the final product. Use this spreadsheet to plan out your book. This will help guide you in the story-making process. This sheet with **completed** outline must be turned in in order to receive full credit on the project.

You must include:

|   | Real explanation | Story explanation/Analogy | √ |
|---|------------------|---------------------------|---|
| Explanation of what a protein is          |                  |                           |   |
| Importance of DNA (mention central dogma) |                  |                           |   |
| Explanation of RNA and DNA                |                  |                           |   |
| TRANSCRIPTION                             |                  |                           |   |
| • What it is                              |                  |                           |   |
| • Where it happens                        |                  |                           |   |
| <b>mRNA</b>                               |                  | Character:                |   |
| • What it is                              |                  |                           |   |
| • How it's made                           |                  |                           |   |



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|   |  |                    |  |
|---|--|--------------------|--|
|   |  |                    |  |
| <b>RNA Polymerase</b>   |  | Character:         |  |
| <b>Bases</b>  |  |                    |  |
| <ul style="list-style-type: none"><li>• Complementary pairs</li></ul>     |  |                    |  |
| <ul style="list-style-type: none"><li>• Substitution of U for T</li></ul> |  |                    |  |
| <b>TRANSLATION</b>  |  |                    |  |
| <ul style="list-style-type: none"><li>• What it is</li></ul>              |  |                    |  |
| <ul style="list-style-type: none"><li>• Where it happens</li></ul>        |  |                    |  |
| <b>tRNA</b>   |  | Character:         |  |
| <ul style="list-style-type: none"><li>• What it is</li></ul>              |  |                    |  |
| <ul style="list-style-type: none"><li>• What it does</li></ul>            |  |                    |  |
| <ul style="list-style-type: none"><li>• What a codon is</li></ul>         |  |                    |  |
| <ul style="list-style-type: none"><li>• What an anticodon is</li></ul>    |  |                    |  |
| <b>Protein</b>  |  | Character/Product: |  |
| <ul style="list-style-type: none"><li>• What it is</li></ul>              |  |                    |  |



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|   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"> <li>• How it's made</li> </ul>               |  |  |  |
| <ul style="list-style-type: none"> <li>• What happens once it's made</li> </ul> |  |  |  |
| Pictures included   |  |  |  |
| Minimal words & clear explanations  |  |  |  |
| Creativity and Quality  |  |  |  |

**Cell Picture Overview**

**Story Picture Overview**

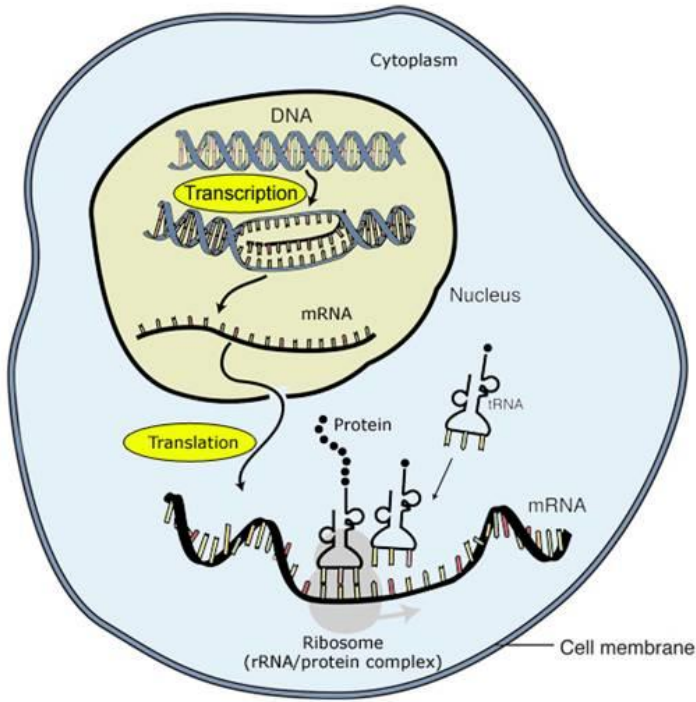


Image adapted from: National Human Genome Research Institute.



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**Protein Synthesis Project Scoring Rubric**

| Required Components  | 10 Points  | 5 Point  | 0 Points  |
|--|--|--|---|
| <i>Explanation of a protein.</i>   | X  | Explanation given  | No explanation.   |
| <i>Importance of DNA</i>   | X  | Central Dogma explained  | No description  |
| <i>Explanation of RNA and DNA</i>  | X  | Explanation of two nucleic acid  | Explanation of one or fewer nucleic acids   |
| <p><i>Transcription</i></p> <ul style="list-style-type: none"> <li>• Where it happens</li> <li>• mRNA—what it is and how it’s made. This will need to include an explanation of what bases and their complementary pairs are and the substitution of U for T in RNA.</li> <li>• RNA Polymerase</li> <li>• Bases</li> </ul> | 4 components completed   | 3 components completed   | 0-2 components completed  |
| <p><i>Translation</i></p> <ul style="list-style-type: none"> <li>• Where it happens</li> <li>• tRNA—what it is and what it does.</li> <li>• What a codon &amp; anticodon are.</li> <li>• How an amino acid chain is made and what it is.</li> </ul>  | 4 components completed   | 3 components completed   | 0-2 components completed  |
| <i>What happens to the protein once it is made?</i>  | X  | Description included   | No Description  |
| <i>Each explanation includes pictures and minimal words and explanations are clear (i.e. Children’s Book format)</i>   | Pictures for each description, minimal words, clear descriptions | Pictures for most description, and/or unnecessary words, and/or unclear descriptions | Most pictures missing for each description, and/or unnecessary words, and/or unclear –no descriptions |
| <i>Creativity and Quality</i>  | Above and beyond in creativity/ quality                          | Average creativity/ quality  | Little or no creativity/ quality  |
| <i>Story Outline</i>   | All categories are complete                                      | Most categories are complete   | Few to no categories are complete   |

**Total Points Earned:** \_\_\_\_\_ /70