**Biology/Biology Honors RNA, Protein Synthesis, & Genetic Engineering Research Project**

**100 Points Possible**

**Project Requirements:**

1. Each group must completely answer the lesson guiding questions for your assigned subject (20 points)
2. Your group must create a **10 MINUTE** presentation to teach the class about your assigned subject (40 points)
   1. Examples: PowerPoint, Prezi, 3-Modeling, Song, Informational, Sales Pitch…. **BE CREATIVE!**
   2. Must include all of the lesson guiding questions. (Answer clearly stated)
3. Create a Presentation Poster (20 points)
   1. Poster is an accumulation of all your information (Think broad ideas, major themes, highlighted points) **DO NOT INCLUDE LESSON GUIDING QUESTIONS**
   2. An illustration of your assigned subject
   3. All group members’ names
4. Test Your Knowledge (20 points)
   1. Each group must ask the presenting groups a minimum of 3 questions.
   2. The first three questions must come from different members of the group.
   3. Extra credit points with be added to the group grade for any additional quality questions.
5. Peer Review (Extra 30 points)
   1. Sheets will be given when projects have been presented to determine the effort of teammates

**RNA & PROTEIN SYNTHESIS**

**(Chapter 13 – pgs. 360-371)**

**Standard:**

SC.912.L.16.5

Explain the basic processes of transcription and translation, and how they result in the expression of genes.

SC.912.L.16.9

Explain how and why the genetic code is universal and is common to almost all organisms.

**Lesson Guiding Questions**

1. How can we compare and contrast the structure and function of DNA & RNA?

2. How do transcription and translation work together to result in gene expression?

**GENETIC ENGINEERING**

**(Chapter 15 – pgs.416-445)**

**Standard:**

SC.912.L.16.10

Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues.

**Lesson Guiding Questions**

1. What impact does biotechnology have on the individual, society and the environment?

2. What influence do the ethics have on research and use of biotechnology?

**Unit 6 Research Project:**

**Nucleic Acids – *RNA and Protein Synthesis***

**Directions: Complete the following information as you and your group members prepare the presentation on your topic.**

**Standard:**

SC.912.L.16.5

Explain the basic processes of transcription and translation, and how they result in the expression of genes.

SC.912.L.16.9

Explain how and why the genetic code is universal and is common to almost all organisms.

**Lesson Guiding Questions**

1. How can we compare and contrast the structure and function of DNA & RNA?

2. How do transcription and translation work together to result in gene expression?

1. Compare and contrast the structures and functions of RNA and DNA.

2. List the three types of RNA and describe the primary functions of each.

3. Explain the process of how the cell makes RNA?

4. Explain the genetic code and how to read codons.

5. Explain the process of translation and how the mRNA strand is used by ribosomes to assemble chains of amino acids needed for protein synthesis.

6. Be able to explain both transcription and translation in relation to gene expression A visual aid is recommended but not required.

**Unit 6 Research Project:**

**Nucleic Acids – *Genetic Engineering***

**Directions: Complete the following information as you and your group members prepare the presentation on your topic.**

**Standard:**

SC.912.L.16.10

Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues.

**Lesson Guiding Question**

1. What impact does biotechnology have on the individual, society and the environment?

2. What influence do the ethics have on research and use of biotechnology?

1. Explain how people increase genetic variation. Be sure to address *biotechnology*.

2. Explain how DNA can be copied or changed. Be sure to address *recombinant DNA*.

3. What are transgenic organisms? Provide/ display examples of each type mentioned in the text.

4. Provide examples of how genetic engineering is used in the world today. (i.e. List and briefly describe the applications of genetic engineering).

5. What influence do the ethics have on research and use of biotechnology?