Project: DNA Structure, Chromosome Structure, and DNA Replication

Created by: Ms. Azua
Recognition for suggestions go to: Ms. Muniz-Alford & Ms. Yard

The goal of this project is for you to demonstrate a thorough understanding of DNA structure, an understanding of DNA’s relation to Chromosome structure, and a thorough understanding of how DNA replicates.

You will choose one of the following options below. Each project listed below is meant to fall under one of the BMIT categories you were tested on earlier in the year. Use your greatest strengths to do this project. There is no easy option, all parts of this assignment require a significant amount of time.

BMIT Strengths: Visual, Spatial, & Linguistic

Objective: Create an analogy that compares each portion of a DNA molecule to another object via its function. You will compare and contrast the functions of each portion of the DNA molecule with something else. You will then create a poster

1. Create the analogy and compare the functions of each portion of the DNA molecule to that of something else.
2. Create a picture, collage, diagram, mnemonic device, etc. in a 11X17 standard paper size. Make it colorful, and make it a good visual representation of the unique similarities that exist between the DNA molecule and the item you are comparing it to.
3. Create an analogy chart for each part in a chromosome, and create an analogy chart for each part involved during DNA replication.
4. You will also provide a written description of the analogy via a table as follows:

<table>
<thead>
<tr>
<th>DNA component</th>
<th>Description of Function</th>
<th>Analogy Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nucleotide</td>
<td>Attaches the double helix together via hydrogen bonds.</td>
<td>Just like a nucleotide a zipper binds two separate pieces together.</td>
</tr>
</tbody>
</table>

Items to turn in:

1. The 11 X17 visual depiction of the analogy.
2. The table of all analogy charts (there should be three, one for DNA structure, one for chromosome structure, and one for DNA replication parts involved).
3. Presented in class
BMIT Strengths: Kinesthetic, and Visual

Objective: To make a 3-dimensional image of a DNA molecule out of common household objects (beads, straws, etc.), and draw out an illustration of how a chromosome is created, and draw out how DNA replication occurs.

1. Create a three-dimensional of the DNA molecule.
2. Create an illustration of the Chromosome and how it is made using DNA, and create a detailed illustration of how DNA replication works.

Items to Turn in:
1. The 3-D DNA
2. The two illustrations
3. A key to the 3-D DNA.
4. Presented in class

BMIT Strength: Musical

Objective: To create a unique song detailing the structure of DNA, chromosomes, and the DNA replication process.

1. Create the lyrics to a song that incorporates the structure of DNA, chromosomes, and the DNA replication process. Be extremely detailed. Explain the DNA replication process throughout the song, and how it occurs in grave detail (include enzymes involved, etc.).
2. You are allowed to add sound to the background of your song, you may create it, or use a karaoke version of another song. The lyrics must be your own.

Items to turn in:
1. Song with lyrics written by you
2. Song presented in class, or recorded so that it could be presented in class (turned in via email attachment, or via USB).

BMIT Strength: Linguistic

Objective: To create a poem, or short story that describes DNA structure, chromosome structure, and DNA replication.
1. Create the poem, or short story with explicit details on DNA structure, chromosome structure, and the DNA replication process.
2. Type up the poem, or short story. Highlight each description of DNA structure, chromosome structure, and DNA replication process.
3. Add diagrams around the poem, or short story.

Items to turn in:
1. Poem or Short story typed
2. Highlighted all descriptions
3. Presented in class

BMIT Strength: Kinesthetic, Interpersonal

Objective: Create a skit to describe the structure of DNA, the structure of chromosomes, and the process of DNA replication.

1. Create a skit that details the structure of both DNA, and chromosomes. The skit must also describe the process of DNA replication in great detail.
2. The skit must be typed up and you must highlight the description of each of the aforementioned details.
3. The skit must be performed in class.

Items to turn in:
1. Typed Skit & highlighted descriptions
2. Act out the skit

BMIT Strength: Intrapersonal

Objective: Imagine that you are the DNA replication process, and describe in detail the actions you take throughout a normal day. Also describe what components make up the DNA and chromosomes.

1. By imagining you are the DNA process you can go about describing your actions specifically, and you will be able to go about describing what structures make up DNA and also compose chromosomes.

Items to turn in:
1. A typed journal entry of one days worth of events in the life of the DNA replication process. Highlight your descriptions.
2. Present in class.
BMIT Strength: Naturalistic, & Visual

Objective: Take photographs of nature, and compose them into an analogy much like the one listed as the first option.

Objective: Create an analogy using pictures of nature that compares each portion of a DNA molecule to another object via its function. You will compare and contrast the functions of each portion of the DNA molecule with something else. You will then create a poster

5. Create the analogy and compare the functions of each portion of the DNA molecule to that of something else found in nature.
6. Create a picture, collage, diagram, mnemonic device, etc. in a 11X 17 standard paper size. Make it colorful, and make it a good visual representation of the unique similarities that exist between the DNA molecule and the item you are comparing it to.
7. Create an analogy chart for each part in a chromosome, and create an analogy chart for each part involved during DNA replication.
8. You will also provide a written description of the analogy via a table as follows:

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Items to turn in:
4. The 11 X17 visual depiction of the analogy using photographs taken by you.
5. The table of all analogy charts (there should be three, one for DNA structure, one for chromosome structure, and one for DNA replication parts involved).
6. Presented in class

BMIT Strength: Kinesthetic, Visual, & Spatial

Objective: Create a baby crib toy made out of DNA molecules, chromosomes, and all items involved in the process of DNA replication.

1. Create a mobile crib toy (you could use a plastic hanger, and hang your DNA molecules on it, etc.) and add illustrated or designed by you DNA molecules, chromosomes, and all parts of the DNA replication process.
2. You must provide a key with your crib mobile device, and a description chart of all the functions of each structure in DNA, chromosomes, and the DNA replication process.
Items to turn in:
1. Mobile Crib Toy designed and constructed by you.
2. Paper documenting the structure, and the descriptions highlighted.
3. Presented in class.

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**BMIT DNA, Chromosome, and DNA Replication Project**  
**Evaluation Rubric**

**Score Meanings**

(4) = Weak  
(8) = Need to improve  
(12) = Average  
(16) = Strong  
(20) = Excellent

**Poster/Model Evaluation:**

*Complete information -*
Accurate depictions of DNA structure components: _
Accurate depictions of Chromosome structure: _
Accurate depictions of items involved in DNA Replication: _
Accurate depiction of how DNA replication occurs: _

*Information Organization -*
Clearly labeled, double spaced, Size 12 font, Times New Roman: _
The project is neat, organized, space is taken into account: _
Descriptions are clearly highlighted: _
Creativity is evident through color, use of space, materials, etc.: _
Analogies and/or descriptions are accurate and reflective of the component that needs to be described: _

Total Score ___/200 points  
(Under the Project Category, remember Projects are 15% of the grade.)

**Comments:**

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