Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_\_\_\_\_

**Adopt-a-Chromosome 4th Marking Period Project**

The focus of this project will be on the information that was gained because of “The Human Genome Project.” There are two aspects to this project – The first portion will involve research and in the second portion you will need to express your knowledge and understanding in a ***colorful, visually interesting and informative way.***

1. A class lottery will help you to pick a human chromosome to get started. You will research the entire chromosome for the beginning of the project.
2. Utilize the following web-sites for the required information
   1. **Start here:** The following are some websites that can be helpful in finding out basic information about your chromosome.
      1. <http://web.ornl.gov/sci/techresources/Human_Genome/education/index.shtml>
      2. <http://vega.sanger.ac.uk/Homo_sapiens/index.html>
      3. <http://www.ncbi.nlm.nih.gov/sites/entrez?db=OMIM>
      4. <http://www.ornl.gov/sci/techresources/Human_Genome/posters/chromosome/chooser.shtml>
3. Research the following aspects about your chromosome:
   1. **Basic information on your chromosome** 
      1. Size in base pairs/physical characteristics (centromere, banding)
      2. # of genes assigned to this chromosome
      3. Notable genes on a chromosome map – give examples (i.e. protein produced/characteristic or trait associated with & show location on your chromosome map) - highlight it with a highlighter on the map and write the description next to it on the poster
4. Pick ONE genetic disease that has been sequenced on your chromosome to study in detail (it’s easiest to pick a gene that is associated with one disease/disorder, and that you are mildly interested in this disease/disorder):
   1. Hint: pick a disease/syndrome/disorder that is only associated with a mutation in that gene
      1. Research the disease using pubmed or pubmed health to find the gene associated with the disease you chose to focus on
      2. What kind of protein does this gene produce? What is its function? Who are the scientists who worked on this disease? Where did they do their research? In what year(s) was this research done?
         1. Using Google Scholar is a great way to find this type of information.
      3. A short summary of your disease in 1 paragraph or bullet point form.  Pictures are helpful!
      4. The protein sequence of the normal and the diseased version (mutation). Find the mutation that normally occurs (either in the nucleotide sequence or in protein production at the amino acid level) and explain or show in visual. What kind of mutation is it (inversion, deletion, substitution, repeat, etc)
      5. Visuals to help your reader understand the information you are providing; i.e. pictures of your disease, a picture of your folded protein in its active form, etc

Rubric:

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| --- | --- | --- |
| Section | Requirements | Points |
| Description of Chromosome | -Name of Chromosome in large font  -Size of Chromosome in # of basepairs  -Centromere location  -Banding Pattern  -Image of Chromosome | \_\_\_\_/10 |
| Genes on Chromosome | -Number of genes on chromosome  -Three examples of genes found on chromosome  -Description of each gene example (3 total descriptions)  -Image of chromosome map  -Highlight each example gene on the chromosome map | \_\_\_\_/22 |
| Description of Genetic Disease | -Name of genetic disease in large font  -Name of the gene affected by the disease and the name of the protein it produces  -Description of the protein the gene normally produces (i.e. its function)  -Names of Scientists responsible for working on gene  -When and where the research was done  -Paragraph summarizing key facts about the disease (must contain 7 facts in total, can be written as sentences or bullet points)  -Normal and Mutant protein sequence  -Description of the type of mutation | \_\_\_\_/32 |
| Images of Genetic Disease | -2 images relating to the genetic disease  -1 picture of the normal protein produced  -1 picture of the mutated protein produced | \_\_\_\_\_/8 |
| Formatting | -All items are legible and large enough to read  -Poster is visually appealing (organized, colorful, neat)  -Writing has been proofread and contains no spelling errors  -A list of all references (at least 3) is included in MLA format | \_\_\_\_\_/8 |
| Total Points | | \_\_\_\_/80 |