**SBI3U: Genetics Assignment**

1. Go to [www.ncbi.nlm.nih.gov/projects/mapview](http://www.ncbi.nlm.nih.gov/projects/mapview) , under Primates, click on Homo sapiens “Annotation Release 106”.
2. In the “search” area, type in each of the following diseases. Once the program reloads, you should see under some of the representative chromosomes red numbers identified as “Hits”. This represents the number of mutations identified to date for that specific chromosome for that disease, in other words a person with the disease may have only one or a couple of the identified mutations. For each of the three diseases below, **identify the chromosome number(s) it is located o**n and **the number of hits in total**. Place your answers in a neat PROPER table. (COMM (for the table), A/2)
   1. Sickle Cell anemia

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| **Application** | **/23** |
| #2 chromosomes affected | /2 |
| #2 scientists difficulty | /2 |
| #3 Importance of free | /2 |
| #4 research costly & timely | /2 |
| #5 Gene therapy | /4 |
| #6 a. | /4 |
| #6 b. | /4 |
| #6 c. | /3 |

* 1. Phenylketonuria (PKU)
  2. Diabetes Mellitus

**Why might scientists have difficulty studying or even finding a cure for disease(s) such as cystic fibrosis or diabetes Mellitus? (A/2)**

1. If you clicked on one of the effected chromosomes, you would get information on its exact location on the chromosome and links to **all** available scientific research associated with this particular chromosomal aberration (diagnosis information, treatment research, quality of life information of patients, etc.).

The above website is available for free for anyone on earth. **Discuss the importance of this**. (A/2)

1. Assuming that most research takes a long time to conduct and is very costly, do you think it’s more important to conduct research into:
   * 1. finding a cure for a particular disease, OR
     2. assisting those living with a particular disease to increase their lifespan or increase their quality of life OR
     3. diagnosing the disease before birth or in its early stages to prevent people from getting it OR
     4. slowing its progression in individuals?

**You must pick ONE of the above, discuss your answer thoroughly in a paragraph. (A/2, Comm-see below)**

1. Gene therapy is a promising treatment for some inherited disorders such as cystic fibrosis. However, the technique remains risky and unproven, and there are ethical questions associated with its use and related research. Analyze, on the basis of research, some social and ethical implications of this research, use concrete examples in your answer (you may relate the social & ethical implications to financial, political, religious, etc. issues). If you are unaware of what gene therapy is, you will need to research this, before you can begin your answer. **Your answer should be between 2-3 proper paragraphs in length. (A/4, Comm-see below)**
2. A company has developed a transgenic soybean plant that secretes a pesticide that makes it resistant to being eaten by insects. Place EACH of your answers into proper paragraphs. (section 4.3 may help to get you started)
   1. **What are some of the risks and benefits that you think the Canadian government should consider when deciding whether to approve this plant for agricultural use? (provide 2 of each-explain each specifically) (A/4, Comm)**
   2. **If approved, identify two advantages that this transgenic soybean will offer to farmers? What are two of the potentials drawbacks to farmers? (A/4, Comm)**
   3. **Do you believe that foods produced with genetically modified ingredients should be labelled so that consumers can make informed choices? (A/3, Comm)**
3. You are asked to include a **REFERENCE for one website/book** that you used in this assignment. A proper reference can be found at the end of a scientific research paper indicating the sources used when writing a paper (like you would see in a bibliography). Go to the class weebly (vanosscienceworld.weebly.com) and find the tab for “Semester Reference Documents”, and download the “How to reference in SBI3U” document. Follow the “rules” on how to reference using this particular APA style, pay close attention to punctuation, spacing, etc., and make ONE proper reference for a website/book that you used in this assignment. **(Comm /3)**

Evaluation:

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| **Communication** | **/12** |
| * Expression & organization of ideas & information | /4 |
| * Uses proper scientific vocabulary & terminology | /4 |
| * Communicates for a proper audience and is sensitive to the nature of the question/answer | /4 |
| * Table structure-follows all the rules for proper construction | /4 |
| * Reference for one website/book used for this assignment | /3 |