**SBI4U Molecular Genetics Assignment**

To begin this assignment, I suggest you start with your textbook by reading section 7.2-this will provide you with a brief overview and some examples of genetic engineering. I have also placed other documents that you will need on the class portal. Please use full sentences to answer the questions below. Remember this is a 4U course, answer the questions accordingly, put forth the effort! There is an overall communication mark based on your answers to ALL three questions as well, each question has an associated application rubric. All three applications will be added together and scored out of 30.

All three questions will be assessed **together** using the following communication rubric:

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| --- | --- | --- | --- | --- |
| **Criteria** | **Level 1 Mark**  **(50% - 59%)** | **Level 2**  **(60% - 69%)** | **Level 3**  **(70% - 79%)** | **Level 4**  **(80% - 100%)** |
| Communication | | | | |
| communicate  information clearly | Communicates information with limited clarity | Communicates information with some clarity | Communicates information with considerable clarity | Communicates information with a high degree of clarity |
| communicate  information using  appropriate  paragraph format | Demonstrates limited ability to communicate information using appropriate paragraph format | demonstrates some ability to communicate information using appropriate paragraph format | Demonstrates considerable ability to communicate  information using  appropriate paragraph format | demonstrates a high level of ability to communicate  information using  appropriate paragraph format |
| select and use  appropriate  vocabulary to  communicate  scientific information | Communicates scientific ideas and plans using little  appropriate vocabulary;  inappropriately uses scientific representations and notations; brief | Communicates scientific ideas using some  appropriate vocabulary;  incomplete use of scientific representations; conclusions not supported or are only partially supported by data | Communicates scientific ideas, results using appropriate SI units and language; appropriately uses  data to support conclusions and a clear explanation is presented | able to clearly and effectively communicate scientific ideas, results and conclusions;  precisely and appropriately uses scientific representations to organize and display information; interpretation of data raises new questions |

**Question #1: Genetically Engineered Pets:**

Watch the “TED talks” video from the class portal. One of the questions that presenter Paul Root Wolpe asks is “should we be allowed to genetically engineer our pets?” Using information from this video, **as well as other unbiased sources**, form an educated opinion to answer this question, **ALSO** identify and support the role that you think government and academic experts play in the use of these types of biotechnologies. Your answer should be **NO** longer than two paragraphs in length.

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| **Application** |  |  |  |  |
| assess topic  information | assessment of topic information to determine main ideas demonstrates limited understanding | assessment of topic information to determine main ideas demonstrates some understanding | assessment of topic information to determine main ideas demonstrates considerable understanding | assessment of topic information to determine main ideas demonstrates thorough understanding |
| Evaluate information to  support opinions | evaluation of information  provides limited support of opinions | evaluation of information  provides some support of opinions | evaluation of information  provides considerable  support of opinions | evaluation of information  provides thorough support of opinions |
| assess the impact  of topic on society  and the environment | demonstrates little  understanding of the impact of topic on society and the  environment | demonstrates a partial  understanding of the impact of topic on society and the  environment | able to analyze, assess and discuss the impact of the  topic on society and the  environment | able to analyze, assess and  evaluate the impact of the topic on society and the  environment, extrapolates  predictions |

**Question #2: Genetically Modified Seeds**: David vs. Goliath

The safety of consuming genetically modified foods is a concern that has been explored and continues to be debated amongst people. However, it is not the only hot topic surrounding genetically modified products.

To produce genetically modified plants requires genetically modified seeds. These seeds are produced in labs by large corporations that own the patent on the modified seed and plant. Some of these modified seeds generate plants that cannot produce seeds. As a result, the farmers are dependent upon the company to supply them with the seeds each growing season.

But, what happens if the genetically modified seeds produce plants that release pollen and the pollen is carried by the wind and fertilizes the egg of non-modified plant? What is the possible environmental impact of releasing the modified gene into the natural population? Would the company that produced the modified plant be able to collect money from farmers who grow the wind blown seeds?

A scenario similar to the one outlined above occurred in Saskatchewan in 1997 and was recently settled by the Canadian Supreme Court.

Use the **class portal** to access a summary (mostly from news/magazine articles) of the case of Monsanto Canada Inc. versus Schmeiser. Answer the following questions in a **MAXIMUM** of 3 paragraphs using specific examples from the readings or further research.

* Should private companies (like Monsanto) be able to patent life forms, including genetic material? Explain your answer.
* These genetically modified seeds/plants have not been around a long time, and their future environmental impacts are unknown, identify a possible future issue we (farmers and/or consumers) might encounter, and thoroughly discuss it.

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**Question #3: EnviroPig-Close to Home:** University of Guelph

Read the links provided on the class portal-keep in mind the source for each reading.

In a paragraph or two, discuss your thoughts on these articles (feel free to use other sources as well).

Do you think this is “useful” research? Who benefits most from this type of research? If these pigs are allowed to be grown commercially and therefore their meat will end up on the grocery store shelf- do the unknown risks to humans/other organisms outweigh the environmental benefits? Does the Catholic Church support this type of research? Is this type of research important?

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**REFERENCE: FOR ONE OF the websites or books that you used (whether I gave it to you, or you found it yourself) provide a PROPER reference for it (you may NOT use your textbook!!!!). This will be given a communication mark under the “communicates information clearly” section.**

**DUE: TBA**