Name: Date:

**Science 10: Applied Genetics and Ethical Considerations – Project**

***Learning Outcomes:*** Students can justify their opinion on the use of genetic engineering in society

***Task:***

1. Choose ONE of the following relevant and controversial applications of genetics and research it.

Possible applications of genetics to consider:

* Genomics (mapping of genomes)
* GMOs
* Gene therapy
* Genetic engineering
* ‘Designer babies’
* Other (check with your teacher first)

You need to collect the following information on your topic

* General description of what it is
* When this type of technology began being used
* Description of the scientific process of how it works
* Some recent **specific** examples of how it is being used

1. Once you have gathered information needed about the genetic application, you need to consider the ethics involved in this type of application. You must consider at LEAST 2 of the following. You can research these and come to any logical ethical implications you think this type of technology may have. Be sure to consider PROs and CONS of your considerations (for something to be controversial there has to be a pro and con side).
   * Health considerations
   * Environmental
   * Social
   * Political implications
2. Come up with **your own opinion** of the technology. Some things to consider: Should it be used? Should it be banned? Should there be constraints on how it is used, or available to the general public? Etc. You need to explain WHY you think this.
3. Create a 3 to 5 - minute presentation to share with a small group. You can use any format that works well for you with the requirement that there is some sort of visuals to help support your presentation. Be prepared to answer questions about your topic at the end.

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| **Criteria** | **Expert** | **Apprentice** | **Novice** |
| **6 5** | **4 3** | **2 1** |
| **General information**   * **General description** * **When tech started** * **Description of how it works** * **Recent specific examples** | You have described all the required criteria described above clearly and accurately, leaving the audience with no questions to verify the information. | You have described all of the required criteria described above. There may be some errors and/or omissions of key information. | You have attempted to describe at least 3 of the required criteria; however, the information seems incomplete. |
| **Ethical considerations**   * Health considerations * Environmental * Social * Political implications | You have considered 2 or more categories of ethical considerations examining both the PRO and CON side of the debate. The information is clearly described and is not bias in its delivery. | You have considered 2 categories of ethical consideration examining both the PRO and the CON side of the debate. The information is well described but could be further explained. | You have attempted to consider 2 categories of ethical consideration but the PRO and/or CON arguments are lacking some key ideas. |
| **Opinion on the use of the technology** | The opinion is well developed and justified using SCIENTIFIC FACTS. It is clear that you fully understand and have considered the implications of this technology. | The opinion is supported using SCIENTIFIC FACTS. There may be some errors or omissions in your explanation that leave the audience with follow up questions on to further understand your stance. | The opinion is minimally supported using SCIENTIFIC FACTS. There are major errors or omissions that leave the audience left with major questions about your stance on the use of the technology. |

**Temporary Timeline…subject to change**

Tuesday, Feb 26– choose topic and begin general research

Thursday, Feb 28 – Complete general research on the topic

Friday, March 1 – Investigate ethical considerations

Monday, March 4 – Come up with opinion on topic

Tuesday, March 5 – Create presentation

Wednesday, March 6 – Presentations need to be complete BEFORE class begins

**Tips for success on the project**

* Collect information in NOTE FORM (do not put directly into final presentation)
* Use multiple resources to gather information
* Synthesize and summarize the notes you have collected
* Only once you have enough information then create your presentation
* Presentations can easily become overwhelming with too much information, keep it simple, but be sure to cover all the required information.