

# Science 10

## Issues21: Genetic Engineering

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Assignment Expectations:

- When answering the questions in this assignment, be sure to answer in full sentences. A good idea is to rephrasing the question as the opening sentence to your answer.
- Some of the questions have multiple parts, please be sure to answer all them.
- Some of the questions are opinion based. When answer such questions be sure to support your opinion with what you have learned. If you do outside research to support your answer please be sure to include the references.

## Step 1: The Issues

1. Read page 8-9. What are some of the drawbacks and benefits of each of these achievements?

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2. Read page 10-11. What is one additional question that you have about genetic engineering? How could you go about finding the answer to your question?

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3. Read page 12-13. Which of these issues concerns you most? Why?

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4. Look up and define the term **Genetic Engineering**:

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**Reference:**

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5. Read page 14-15. What do you think are the greatest concerns facing farmers growing crops for food? How could these problems be addressed using GE technology?

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6. Read page 16-17. Many people choose the facts they will believe based on what they already think. How can a person avoid doing this?

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7. Look up and define the word **bias**:

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**Reference:**

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8. What biases do you hold either for or against genetic engineering? How might these biases have affected your opinion of GE crops?

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9. Read page 18-19. Do you think that athletes should be allowed to use gene doping? Does using gene doping create a level playing field? Why or why not?

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10. Look up and define the term **ethical**:

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**Reference:**

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11. Read page 20-21. Do you think that three-parent babies are an ethical choice? Why or why not?

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12. Read page 22. Do you believe that Golden Rice is beneficial to society, or should its development be stopped? Why?

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**Step 2: Game Changers**

13. Read page 24-25. Glow-in-the-dark plants were created by introducing the light-emitting genes from marine bacteria into plants. What possible function do you think these plants might have?

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14. Which of these new GE organisms do you think is the most important to society? Why?

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15. Read page 26-27. Do you think it is reasonable to support the genetic engineering of pharmaceuticals but oppose the use of genetic engineering for other purposes? Why or why not?

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16. Read page 28-29. Would you like to know your personal genome? Why or why not?

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17. Read page 30-31. Prior to human trials, gene therapy techniques are tested on lab animals. Do you think it is ethical to test treatments on animals? What are other options?

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18. Look up and define the term **ideology**:

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**Reference:**

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19. Read page 32-33. Do you think that the genetic engineering debate is based on science or ideology? Has this helped or hindered the debate?

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20. Read page 34-35. Would you eat GE fish? Why or why not?

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21. Would you rather eat Super Salmon or Frankenfish? How might these names affect the public's perception of the GE fish issue?

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22. Read page 36. Should food containing GE crops be labelled? Would it be more or less important to label a food as being sprayed with pesticides? Why?

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23. Research what requirements are needed for a farm to be defined **organic**.

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**References:**

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24. Creston has a strong farming community. Use the internet to list 5 different commercial farms and include a list all of the goods (ex. fruits, vegetables, dairy, eggs, meat) that they grow there. If possible identify if the farm identifies as an organic farm.

	Name of Farm	Goods (ex. fruits, vegetables, dairy, eggs, meat)	Organic?
1			
2			
3			
4			
5			

### Step 3: Take Action

25. Read page 38. You will be completing this research as your final assignment for this unit. Follow the steps below to prepare your research and write your draft. Note: you will be required to prepare a final good copy as well.
26. Research: Choose a genetic engineering topic that interests you, such as gene therapy, designer babies, or GE foods. Research this topic using reliable and credible sources. Be skeptical of information. Don't believe everything you read. Use the Internet to come up with a few research topics that you may be interested in pursuing:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

27. Decide: Before taking a position, you must consider both sides of the issue. Recognize that your position is based on incomplete knowledge. Our understanding of genetic engineering is constantly changing. Don't make the mistake of being locked into a particular position – be willing to change your opinion based on new information that you gather. Which topic have you decided to complete your research on?

- \_\_\_\_\_

28. Take a Stand: When you feel confident in your knowledge, you can take a stand for what you believe in. Don't worry that you don't have all the information. You can still take a tentative (ie. temporary) position on the issue based on what you know now. In the future, you might change your mind. Briefly state what your current stand is on the topic you have chosen (ex. are you for or against it?):

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**References:**

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30. FINAL DRAFT. Now that you have completed the research and written your rough draft paragraphs, you need to complete your final draft. Your final draft must meet the following standards:

- Font Style: Calibri (Body)
- Font Size: 12 point
- Paragraphs must be double spaced and indented
- There should be a minimum of four paragraphs in your final draft. Do not include the questions from the rough draft, instead format your paragraphs to rephrase the questions as sentence openers.
- Include a title centred at the top of the page. The title needs to be descriptive (in other words what is your research about?).
- Your name and the date should be below the title
- The bibliography should be on its own page and should include a title, centred at the top of its page (Bibliography)
  - Your bibliography should be left aligned and double spaced
  - If your bibliography includes websites, be sure to list the date you accessed the website.