

Name: _____

Due Date: _____

Summative 3 – Impact of Cell Biology

Your Goal: You will state the viewpoint you are taking on the use of scientifically modified organisms and write an expository writing piece to defend your viewpoint.

Overall Expectation(s): 1. Assess the impact of cell biology on individuals, society, and the environment. Specific Expectation(s):

8s10	use appropriate science and technology vocabulary, including organelle, diffusion, osmosis, cell theory, selective permeability, membrane, stage, and eyepiece, in oral and written communication
8s11	use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using the conventions of science, make a labelled drawing of a cell; create a slide show to explain the results of investigations into the processes of osmosis and diffusion)
8s4	assess the role of selected technologies in enhancing our understanding of cells and cellular processes. Sample questions: How have electron microscopes helped our understanding of cells and cell processes? What are some disadvantages of using this technology that might affect its availability or effectiveness? How might infusing dye into cells be a useful tool for diagnosing and/or treating diseases, or for understanding how cells work? How might the understanding of cells and cell processes help in treating disease?
8s5	assess the potential that our understanding of cells and cell processes has for both beneficial and harmful effects on human health and the environment, taking different perspectives into account (e.g., the perspectives of farmers, pesticide manufacturers, people with life threatening illnesses).

Understanding cells and cell processes can help prevent/cur diseases and can also create “super” modified foods. Human understanding of cellular processes has potential for both benefit and harm to human health and the environment.

Scientifically modified plants are developed for specific purposes. For example, *Bacillus thuringiensis*, or Bt, corn was developed to save corn crops that were being destroyed by an insect called the European corn borer. Scientists altered the cells of the plant to add a toxin that kills the insect. A number of people have concerns about these kinds of modifications, fearing that the new product may cause unintended harm or become an invasive species. How can we decide if modifying plants scientifically is a safe practice?



A field of Bt corn looks much the same as a field of non-Bt corn. Do you think it should be labelled?

Background Information

The larvae of the European corn borer eat the leaves and ears of corn. Bt corn contains a toxin that allows lethal bacteria such as *E. coli* to enter the larvae’s digestive tracts and kill them. Some people do not support the development of new varieties of plants such as Bt corn. They believe that natural cross-pollination of the modified plants and native plants may affect the seeds of native plants.

Some countries have banned the import of grains and other foods that have been modified scientifically. Officials in others have suggested that such grains and foods must be labelled so that consumers can decide whether to buy them or not.

Some researchers are concerned that there may be unintended consequences of the scientific modification of plants, such as the development of new allergies, or there could be an unknown, longer-term harmful animal or human health impact resulting from consuming these plants.

Part A – Expository Writing Piece

1. Consider one of the following three viewpoints about the use of scientifically modified organisms.
 - (a) The practice **should be banned** because of known or potential environmental and social risks.
 - (b) Scientifically modified plants **should be used** wherever possible.
 - (c) The use of scientifically modified plants can be approved for social benefit, but it **should be closely regulated**.

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2. Consider the 3 best arguments that would support your viewpoint.
3. Compose an Expository writing piece that assesses the impact of cell biology on individuals, society, and the environment. It should include the following:
 - a. Title
 - b. Paragraph 1 – The argument (thesis) plus you view (view a, b, or c)
 - i. Details about your view and 3 main arguments)
 - c. Paragraph 2, 3, 4 – The firstsecondthird argument plus some supporting evidence
 - d. Paragraph 5 – Repeat thesis, repeat arguments, concluding statement.

Modified Plants Expository Writing Rubric

1	2	3	4
Knowledge and Understanding			
Has a limited understanding of the impact of cell biology on individuals, society, and the environment	Has some understanding of the impact of cell biology on individuals, society, and the environment.	Has a considerable understanding of the impact of cell biology on individuals, society, and the environment.	Has a high degree of understanding of the impact of cell biology on individuals, society, and the environment.
Thinking and Investigation			
Does not include three arguments to defend viewpoint.	Includes simple arguments to defend viewpoint with few details.	Includes three thoughtful arguments to defend viewpoint.	Includes three comprehensive arguments to defend viewpoint and considers several perspectives.
Communication			
Student uses vocabulary and terminology of the discipline with limited effectiveness	Student uses vocabulary and terminology of the discipline with some effectiveness	Student uses vocabulary and terminology of the discipline with considerable effectiveness	Student uses vocabulary and terminology of the discipline with a high degree of effectiveness
Application			
Has difficulty relating the impact of modified foods to cell biology.	Can somewhat relates the impact of modified foods to cell biology.	Relates the impact of modified foods to cell biology.	Relates the impact of modified foods to cell biology, using technical terms.

Expository Writing Checklist

	Met	Not Yet Met
Content		
Title is interesting and appropriate.		
My report uses 5 paragraphs		
Paragraph 1 states my thesis and point of view.		
Paragraph 1 states 3 main arguments		
Paragraph 2 states my 1st argument and contains related information.		
Paragraph 3 states my 2 nd argument and contains related information.		
Paragraph 4 states my 3 rd argument and contains related information.		
Paragraph 5 restates thesis, point of view and restates my 3 main arguments.		
Details are logically developed and specific.		
Ending leaves the reader with a clear understanding.		
Style and Organization		
Format is clear and easy to read.		
Conventions		
Information is easy to read, with clearly marked divisions.		
Sentences are complete.		
Punctuation is appropriate.		