

# Genetically Modified Organisms

## Summary

After this lesson students will understand the differences between selective crossing and genetic engineering. Students will learn how genetically modified organisms are produced by using an interactive web site. Students will also learn some of the concerns and benefits of genetically modified organisms and will be asked to form an opinion.

## Main Core Tie

Science - Biology

[Standard 4 Objective 2](#)

## Time Frame

1 class periods of 90 minutes each

## Group Size

Individual

## Life Skills

Thinking & Reasoning

## Materials

Computer for presentation and video clips  
Computer lab for students

## Background for Teachers

Humans have been genetically modifying organisms for centuries. This has been done by selectively breeding organisms with a desired trait from another organism in hopes that the desired trait will be expressed. One major restriction to selective breeding is that the organisms must be able to reproduce by natural means whereas genetically engineered organisms can have traits from unrelated organisms, such as a bacterial gene expressed in corn (Bt corn).

Some of the benefits of producing GMOs are the agricultural crops can have enhanced pesticide resistance and an increase in size. GMO's are also used in the medical field by producing pharmaceuticals, for gene therapy, and in transgenic animals used in studies. Lastly, GMOs are also used in the pet industry in glow fish.

Additional benefits include an increase of yield, reduced use of pesticides, and reduced use of fossil fuels since fewer pesticides are needed.

There are, however, some concerns with GMOs, such as proprietary issues, creating super weeds or pests, and the consequences of GMOs crossing with wildlife.

## Student Prior Knowledge

Students should be familiar with sexual reproduction and understand inheritance of traits through DNA.

## Intended Learning Outcomes

3. Demonstrate Understanding of Science Concepts, Principles and Systems
  - a. Know and explain science information specified for the subject being studied

## 5. Demonstrate Awareness of Social and Historical Aspects of Science

- a. Cite examples of how science affects human life.

### Instructional Procedures

The teacher should start by providing background for the students and discussing material that is provided in the attached power point.

The teacher should also show the videos from bioengineered food.

After the presentation and discussion, students should complete the assessment worksheet in the computer lab. There is an interactive web site on how GMOs are produced.

### Assessment Plan

Students knowledge will be assessed by the completion of the attached worksheet.

### Bibliography

Bioengineered food

[http://www.teachersdomain.org/resource/tdc02.sci.life.gen.lp\\_bioengfood/](http://www.teachersdomain.org/resource/tdc02.sci.life.gen.lp_bioengfood/)

PBS: Genetically modified foods: from the lab to the dinner table

<http://www.pbs.org/newshour/extra/teachers/lessonplans/science/gmofoods.html>

Global distribution of GMO crops

<http://chartsbin.com/view/578>

Engineer a crop

<http://www.teachersdomain.org/resource/tdc02.sci.life.gen.engineeracrop/>

Advantages and disadvantages of genetically modified crops

<http://csanad.hubpages.com/hub/GMO-advantages-and-disadvantages>

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