

GENETICS

LESSON 13: GENETIC TECHNOLOGY CONCERNS

Learning Outcomes

- I can explain the concerns of using different technologies used to manipulate genes.

Scientific Gene Manipulation

1. Cloning

- replacing a dead child
- resurrection of extinct species (wooly mammoth, Neanderthal man)

2. Transgenic Organisms

- herbicide resistant plants
 - promote the use of stronger herbicides that get into water or soil systems
- creation of superweeds or superbugs
 - pests being treated for may evolve stronger strains
- long-term effects of consuming GMO's
 - still a relatively new technology, so there may be unknown long-term effects from ingesting GMO's (increased allergies?)
- food labelling
 - no strict rules on the labelling of processed foods that contain GMO products
 - loss of consumer personal choice
- GMO animals
 - transferring diseases from animals to humans
 - creation of new kinds of animals solely for organ harvesting
- financial cost
 - Is the benefit of the research outweighing the cost of the research?
 - Could the money have been better spent?

3. Reproductive Technologies

- multiple baby births
 - extra stress and physical demands to the mother carrying and growing a large number of babies
 - increased financial cost of caring for multiple babies

4. Gene Therapy

- negative results
 - still in the experimental stage and not all results are positive
 - the vector may target wrong cells causing inflammatory responses, organ failure, new diseases or tumors

- Should all disorders be treated?
 - sickle cell anemia decreases oxygen carrying capacity of blood, but also decrease the likelihood of contracting malaria
- designer babies
 - ability of parents to pick and choose what their baby will look like

Assignment

1. Read the article “What are the ethical issues surrounding gene therapy?”
2. In a small group, pick one of the 5 ethical questions. Discuss how this question could be answered. Record some of your main ideas so that they can be presented to the class.

<https://www.ctvnews.ca/video?playlistId=1.4747923>

CTV News story of illegal gene editing of embryos.