

TOPIC CHOICES

Medicine	Example
Human Gene Therapy	Somatic and germline genetic engineering for treating or curing genetic diseases such as cystic fibrosis, haemophilia, muscular dystrophy, sickle cell anemic, or diabetes.
Recombinant Pharmaceuticals	For the production of insulin, human growth hormone (hGH), or blood clotting factors.
Vaccines	Genetically engineering viruses that can still confer immunity, but lack the infectious sequences.
Antisense Therapy	The development of antisense drugs to treat cancers, diabetes, asthma, arthritis, HIV/AIDS, high cholesterol, or hemorrhagic fever viruses.
Research	Example
Gene Function Discovery	
Loss of function experiments	Using gene knockouts in which an organism is engineered to lack the activity of one or more genes to determine the role of that gene.
Gain of function experiments	The logical counterpart of knockouts. These experiments are sometimes performed in conjunction with knockout experiments to more finely establish the function of the desired gene.
Tracking experiments	Seek to gain information about the localization and interaction of a desired protein. For example, using green florescent protein (GFP) to visualize the product of genetic modification.
Agriculture/Industry	Example
Genetically modified foods/transgenic crops	Genetically modifying foods or crops to be drought, temperature, or insect resistant. Creating pharmaceutical crops to incorporate edible vaccines or drugs.
Bioremediation	Using genetically engineered bacteria to clean up oil spills and other toxic waste.
Biofuels	Using genetically engineered organisms to produce renewable energy resources (e.g., GM bacteria to produce diesel fuel).

SUGGESTED RESOURCES – Do NOT count towards 5 required references.

BioCanada is a tool to help you locate information on biotechnology from the Government of Canada. Access policies, research activities and resources from the departments and agencies of the Government of Canada. Find information on research and development, health, ethics, the environment, and the business of biotechnology.

<http://www.bioportal.gc.ca/english/BioPortalHome.asp?x=1>

<http://www.biogateway.gc.ca/english/linksearch.asp?x=1&formAction=SubjectArea>

The National Human Genome Research Institute was established in 1989 to carry out the role of the National Institutes of Health (NIH) in the International Human Genome Project (HGP). The HGP was developed in collaboration with the United States Department of Energy and begun in 1990 to map the human genome. Access credible information regarding health, education, research, issues and news in genetics.

<http://www.genome.gov/>

Genetics Tutorial and Resource website - <http://learn.genetics.utah.edu/>

Nature Science Journal - <http://www.nature.com/genetics/index.html>

BIOTECHNOLOGY RAFT OPTIONS

ROLE (You choose)	AUDIENCE	FORMAT (You choose)	TOPIC (You choose)
Doctor	General public	Recorded song with typed lyrics and required written components of the assignment submitted.	See Table for topic choices
Scientist		Informative public poster (e.g., for washrooms, bus stops...). With required written components of the assignment submitted.	
TV or radio news reporter		Pre-recorded TV commercial or news broadcast (2-3 minutes) with the required written components of the assignment submitted.	
Newspaper or Magazine Journalist		Informative website (e.g., create a weebly or wiki website) with required written components of the assignment included.	
Student informing a class, parent, friend or family member		Podcast (3-5 minutes) with the required written components of the assignment submitted.	
Other (must be approved)		A social justice awareness product that could be marketed for sale (e.g., re-usable shopping bag, election pamphlet...) with required written components of the assignment submitted.	
		Infographic with required written components of the assignment submitted.	