



### **BIOETHICAL DEBATES – Version #1**

“Bioethics” is a term that has been coined to describe the study of decision-making as it applies to moral decisions that need to be made because of advances in biology, medicine, and technology. Many of the new biotechnologies are controversial because they force people to think about what they believe is right or wrong. New technologies generate ethical questions that cannot be answered using scientific methodologies. Ethical questions cannot be tested. The position one takes on ethical issues are based on personal feelings and beliefs. A person can learn more about a technology, but determining whether it is moral to use is not an objective decision with a clear right or wrong answer. It is a subjective decision where a wide range of positions could be argued.

You have been introduced to the concept of bioethics in class and will now select a topic to further research and debate with a partner. You will research both the affirmative and the negative sides of the debate and you will not know which side you will be defending until the day of the debate. Your position will have to be supported by more than just “feelings” and opinions and should consist of sound scientific knowledge, and research.

Choose one of the following topics for your debate:

- a) Should your genetic fingerprint be made available to interested parties (e.g., prospective spouse, insurance companies, military)?
- b) Rats have been used by scientists to develop a nasal spray gene therapy for cystic fibrosis. Mice can manufacture some human proteins in their blood. Dogs were important in developing treatments for hemophilia and bone marrow transplants would not be possible without the earlier work done with dogs. Many people object to the use of mammals in experiments. Do you feel that animal models of human genetic disease are necessary? Should treatments be allowed on laboratory mammals before attempting the treatment on humans?
- c) Take the pro and con sides for the following: Parents should be held accountable by law for their care of children with known genetic defects. Example: An infant who is tested for P.K.U. at birth and found to be positive must be provided with a phenylalanine free diet by their parent. A child of parents in a high risk group for a known genetic defect (such as sickle cell anemia) must be tested at birth and take antibiotic drugs throughout childhood to prevent infections which can be deadly to children with sickle cell anemia. Parents who do not provide for testing and treatment of their children are punishable by law.
- d) Government is currently involved in health care reform. Debate the following: With limited numbers of transplants available rationing systems must be established for determining who will receive transplants. Pro or con - those with genetic defects favoured over those whose unhealthy lifestyle has produced organ failure?

- e) Gender selection is highly controversial. Many parents say that as long as their baby is healthy, they do not care whether it is a boy a girl. But, some parents do care. IS gender selection justifiable?
- f) *Pseudomonas syringae* is a bacterium found in raindrops and in most ice crystals. Researchers have been able to cleave the frost gene from its genome, thereby preventing the bacteria from forming ice crystals. By spraying the bacteria on tomato plants, scientists have been able to reduce frost damage. However, environmental groups have raised serious concerns about releasing genetically engineered bacteria into the environment. Do you think that genetically engineered microbes should be introduced into the environment?
- g) Biotechnology should only be used if it has positive global effects as opposed to personal effects.
- h) Scientists in New Jersey have recently inserted a gene to create a mouse with increased capacity for learning and memory-basically, a gene that increases the animal's intelligence quotient (IQ). Normal, average human IQ is about 100. Sometimes it can go as high as 130s, 140s, 150s etc. An IQ of about 70 or below is considered to indicate mental disability. Although currently highly theoretical, it might in the far future become possible to insert a gene identified through the Human Genome Project to increase human IQ by 30 points. Consider this scenario. A couple has a 5-year-old son who has Down syndrome with an IQ of 70. They want to use gene therapy to insert a gene to increase it to 100. This is considered gene therapy, where gene technology is used to help a person function better. Should gene technology be used for gene therapy?
- i) The Johnsons married and their first child is born. The baby boy, at birth, seems perfectly normal. A few days later the doctor calls and asks them to bring the baby for further tests. Once in the office the doctor explains that the baby might have a genetic disease called phenylketonuria (PKU). However, more tests were needed. The Johnsons were told not to worry because there was a treatment for the condition. If all newborns are going to be screened, should parents have a chance to refuse?
- j) Humans have had a long history of using animals in agriculture and industry for the following purposes:
- As a source of food
  - As a source of raw materials (suede, leather, collagen...)
  - As a source of medicine (insulin from pig pancreas, growth hormone from cow pituitary)
  - As transportation and labourers (horse, donkeys...)
  - As laboratory test animals (rats, mice...)
  - As educational tools (zoos)
  - As companion/pets

Some people believe animals should be used to improve the quality of human life. Others question whether it is ethical to use any species of animal in any or every application.

k) Many biotechnology companies are focusing product development on AIDS therapies and vaccines to prevent the symptoms of AIDS. Several challenges exist including the following:

- The need is great. Over 39 million are now living with HIV, the virus that causes AIDS.
- Patients are distributed world-wide.
- The majority of HIV-infected individuals are extremely poor.
- The cost of producing products are astronomical, and biotech companies need to make money.
- There are religious, societal, or political obstacle to administer medications.

Statement: People that can afford to pay for treatments are the only ones that should be treated.

**The following standard debate format will be used:**

- 1. 3 minutes Affirmative (1st person of team)**  
**3 minutes Negative (1st person of team)**
- 2. 1 minute Affirmative (2nd person of team)**  
**1 minute Negative (2nd person of team)**
- 3. 2 minute recess to prepare rebuttals**
- 4. 30 seconds Negative (any person of team)**  
**30 seconds Affirmative (any person of team)**

Your final evaluation for the debate will be based on a combination of teacher, peer, and self-evaluation.