

Is genetic
engineering ethically
right philosophy
essay



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Is genetic engineering ethically right? Ethics are standards of right and wrong, good and bad. Ethics is the system of moral principles. They influence how people make decisions and guide their lives. Ethics are concerned with what you must do to fulfill your moral duty. There are two aspects to ethics which are being able to determine what is right or wrong, good or bad and Committing to doing what is right and good. Furthermore being ethical is more than understanding what is the right thing to do therefore you should avoid wrong and bad.

Genetic engineering was discovered in 1970. It involves changing the genetic material form organisms. It often involves taking a gene from one organism and inserting it into the genetic structure of another organism. It gives the power to change many aspects of nature and could result in a lot of life saving treatment. Genetic engineering is also known as genetic modification or genetic manipulation.

There are several areas of genetic engineering for example genetic engineering of animals, crops, embryos, human cells and cloning.

Cloning a human performed by taking genetic materials from one or more human and genetically engineering them into the genes of another human, the first mammal to be cloned is Dolly the sheep. Researchers grow some cells from the organism to be cloned, and remove the nucleus from an unfertilized egg cell. They then take one of the cultured cells and implant it in its entirety into the coating around the egg. Then electroshock the egg to cause the two cells to fuse, and implant the new embryo into a surrogate mother. When the baby is born, two genetically identical individuals of

different ages and with different birth parents will exist, therefore the original human will have been cloned. Cloning can be useful if there was a situation a couple has one child and they become infertile and cannot have any more children. Cloning would help them to have a second child but it will be a younger twin of the child they already have. Moreover if child is lost soon after birth or in a tragic accident they could have their baby or child back by cloning them but it would be like a twin unique individuals they will not have the same characteristics.

There are small group of people that support cloning. Supporters of cloning that cloning is unethical than growing a plant from a cutting or giving birth to identical twins, both of which involve two separate and distinct organisms with identical genomes. Since identical twins have the exact same genome, but still grow up with different personalities, clones are raised in entirely different time periods and social backgrounds will be entirely individual despite identical genes. Therefore for the supporters cloning is just another scientific topic and they assume it will become a reproductive choice, and those who wish to clone themselves must have the rights to do.

Finally the large majority of people argue that cloning humans is both unnatural and unethical. For instance the cloned child wouldn't have a genetic mother or father it would have a single nuclear donor. For instance if a man cloned himself that child would be a new category of relationship to him as his clone, the child cannot be his son or his twin brother therefore the child would face lots of problems when growing up, other children's at school will have parents but this child wouldn't. Many religions such as Hindu and Islam also object to cloning, they claim that it is playing God.

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Genetic engineering of animals includes manipulation of genes in animals of any species. Genetic engineering of animals could have been taking place for thousands of years as humans have chosen which characteristics they like in an animal and its appearance. They have performed this in the form of selective breeding they have then breed these animals in a variety of ways. There are three types of genetic engineering that can be used on animals, these are Xenografting- this is performed by using the human DNA to supplement an animal or vice versa and example if this is animal valves and tissue been used in humans. The human body accepts pig valves and hearts this is because the scientists believe that the DNA of pig heart valves was similar enough to humans and that they were interchangeable under some circumstances. They are hoping to make pigs grow human hearts that were coded by the DNA from humans which has not yet reached for clinical trials. If this was successful many of the people lives can be saved using the pigs' heart therefore the clients no longer need to wait for human heart.

Cloning of animal using the DNA of one animal to another animal with the identical genetic information an example of this is Dolly the sheep. This is done by inserting the DNA of one animal into the foetus of the same species. There are benefits on it has great potential as a money making industry and also in producing genetically identical animals for testing and reproduce and clone for example cloning the best cows that produce the most milk or meat this can be quick and cheap for farmers. Finally manipulation this is the changing of animal DNA. An example of this is when scientists had a successful attempt where they genetically engineered a pig to produce

human insulin that can be used to treat diabetes, this is very beneficial to humans and it is being used medically to treat type one diabetes.

Another type of genetic engineering is genetic modification of embryo also known as designer baby.

In genetic engineering ethical issues involved.

Ethics

Xenografting deals with both human and animal there are ethics involved with both groups. Xenografting gives animals human DNA and human animals DNA. This can question people because an animal cannot contain human DNA as it would not be an animal if it did. Furthermore animals are a step down from human in the food chart therefore if a chicken contain human DNA human might not want to eat something that has the same DNA.

What are the current and potential benefits that make genetic engineering of animals worth while?

How does the chemical based genetic modification differ from the age old process of selective breeding?

Should companies be allowed to patent the genetic modification of an animal? If not, what steps can they take to protect their research?

There are endless amounts of questions involved in genetic engineering in general but I think the decisions are particularly jarring with animals because they are very similar to humans; more so than plants. Are humans ready to

handle a future where their bloodlines may include animal genes from someone who got a pig/human heart transplant?

For genetic engineering of animals to be useful and practical humans must come to grips with coming into contact with animals that contain human genes and vice versa. There may be humans with pig hearts in the very near future. There are also risks associated with any kind of genetic engineering, but if society can agree with it on a basic level it will lead to a lot of good. There is a huge amount of money invested already and even more waiting for a chance. Genetic engineering is the thing of the future. Religious beliefs may be tested, genetic engineering of animals may not be part of the future, but in some form genetic engineering as a whole will have a profound impact on our future.

Once genetic engineering of animals is accepted a big issue is the relationship between science and money. Genetic engineering is advancing thanks to the large amounts of green given by corporations who see it as an investment. If they can increase milk production in cows or make animal/human organs that are not susceptible to rejection they will be rich.

This kind of research and development has potential as a money making device, a research tool, and in medicine.

Conflicts Between Industry and Medicine

The battle is between private investments and other money, government and private, looking to advance the science. On one hand genetic engineering of animals has great promise. It could solve the shortage of

organs which kills thousands of people each year as they wait in line for an organ they may receive too late. This is something that has great promise as an investment and an asset to society. There are other more short termed money making research projects that debase the scientific community and hurt the welfare of society. These are things associated seldom with the medical field but more often with production. For example the use BGH (Bovine Growth Hormone) in cows to increase their milk production. This was not an medical concern and it has few benefits, except for cutting down on grazing land, but enough milk was already being produced. These production minded projects taint the medical promise of genetic engineering and turn it into a dangerous money making scheme. There are many risks associated with genetic engineering. It is a field that is not completely understood and there are many risks involved; disease (both for one generation or genetically based), infection from animal genes, and a restriction of the genetic base (like inbreeding) with more to come. Genetic engineering will be a part of our future and DNA from non-human animals has already been useful. Soon this explosive new industry will find its limits within society's moral's.

Cloning

Cloning in animals can be accomplished by inserting the DNA of one animal into the fetus of the same specie along with a vector which gets cleans out the DNA already in the embryo. Sometimes the vector does not get rid of the original DNA of the fetus or the fetus does not adopt the new DNA.

It took 277 attempts for the scientists to clone Dolly from the skin cell of a six year old. This shows some of the shortcomings of cloning that are likely to change with time. Currently scientists have trouble cloning embryos without miscarriages. The embryos that do take to the new DNA also have a greater likelihood of mutations. An additional problem stems from the fact that the cells come from other animals. Dolly's DNA came from a six year old lamb. Now some of the worries, based on chromosome tests of Dolly's cells, relate to the fact that while Dolly is only one year old some of her chromosomes have mutations that are common in much older sheep. This means that while Dolly is only one year old she may also have characteristics or cells that are seven years old. There are also questions about whether or not the cloned animals will be fertile. Dolly is almost old enough to reproduce now and this will be one test of whether or not cloned animals can be fertile. However, scientists will still want to look at a larger sample size before they decide whether or not cloned animals are infertile.

There have been other instances where animals have been successfully cloned. Cloning has great potential as a money making industry and also in producing genetically identical animals for testing. Much of the cloning research in animals thus far has been focused on cattle. There would be great demand for a technology that could reproduce the best cows (produce the most milk, or meat, etc.) quickly and cheaply.

Gene Manipulation

Thus far the scientists have had bad results trying to manipulate animal genes. There have been good results but many of the studies are still

pending. One successful attempt has been the engineering of a pig to produce human insulin that can be used to treat diabetes. Research is also being conducted at both Dartmouth and Duke University over using pigs hearts that have enough human characteristics to keep from being rejected by humans. These pigs would be used for heart and valve transplants. Some of the problems are the difficulty involved with doctoring the genes of a higher level organism and the differences that still exist between humans and animals. Even once pig hearts can be used in humans they will still have a different circulatory system and life expectancy to contend with among other problems.

Manipulation-The changing of animal DNA.

Genehis means that science can engineer farm animals to grow faster, have healthier meat and flesh, and be less able to feel the pain and suffering often associated with the conditions present in modern factory farms. Genetically engineered animals are also created to help medical researchers in their quest to find cures for genetic disease, like breast cancer. Finally, endangered animal species can be cloned, thus helping wildlife management in its goals of preserving wild populations of the earth's biological diversity, and by ensuring that endangered animals' genetic information will not be lost when the last of the species dies.

This use of modern technology is not without its drawbacks or its critics. By genetically engineering farm and research animals, critics argue, we may be undoing what nature has worked to create over millions of years. Natural animals are specifically adapted to a given environment and when science

manipulates the genes of a few species in the ecosystem, the entire balance of the ecosystem might fall completely apart causing an unknown number of natural animal species to grow ever extinct. Others argue that animals should possess, at a bare minimum, the right to be free of genetic manipulation or a reduction in their natural abilities.

Despite this debate, the law in both the United States and in Europe, tends to support genetic engineering research and development by allowing genetically engineered animals to be patented. Patents give scientists a monopoly over their genetically engineered animal species, something before unheard of in modern economic systems. Typically, animals could be owned, but never entire species.

Regardless, we must not wait and see what the effects genetic engineering animals will have on the earth. We must form educated opinions, lobby for government regulation, and hope that whatever direction that bioengineering takes us, is a positive step towards decreased animal suffering, increased environmental sustainability, and an overall compassionate regard for the earth and its precious life.

[http://www. animallaw. info/topics/tabbed%20topic%20page/spusgenengin. htm](http://www.animallaw.info/topics/tabbed%20topic%20page/spusgenengin.htm)

The ethical issue of cloning humans has been a debatable topic, for example the controversy over Dolly, the first cloned mammal. Supporters of cloning argue that it is no more unnatural than binary fission, the process by which bacteria reproduce to produce identical copies of themselves; they go on to state that cloning is no more unethical than growing a plant from a cutting or <https://assignbuster.com/is-genetic-engineering-ethically-right-philosophy-essay/>

giving birth to identical twins, both of which involve two separate and distinct organisms with identical genomes. Since identical twins have the exact same genome, but still grow up with different personalities, clones raised in entirely different time periods and social contexts will be entirely individual despite identical genes. In this view, cloning is just another scientific topic and will become just another reproductive option, and those who wish to research cloning or to be cloned should not be stopped.

There is a small group of people who oppose cloning or at least stop on it for the time being for practical, not moral or ethical, reasons. These people argue that cloning is ethically acceptable, but practically unsound because of the resultant decrease in the genetic diversity of the human gene pool. They also advise more extensive experiments on the effects of cloning on animals before human beings are cloned.

Finally, a large majority of people argue that cloning humans is both unnatural and unethical. They cite fears that include: people's individuality being impaired or ruined due to cloning technologies; aggressor nations creating armies of cloned soldiers to assault other nations; overpopulation due to sudden ease of reproduction; depletion of the human gene pool; and a number of concerns about the moral status of clones. Some go so far as to postulate a stratified society divided into the cloned and the uncloned, and fears about eugenics or of reserving cloning technology to the "genetically desirable" generally surface. Many religions also object to cloning, again by claiming that it is "playing God".

http://www.bbc.co.uk/ethics/introduction/intro_1.shtml

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http://www.sbctc.edu/public/trustees/what_are_ethics.pdf *****

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