

# Genetic engineering

## 2

Engineering



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## Genetic Technology

and the betterment of our world

What exactly is genetic engineering? A simple definition of genetic engineering is “ the ability to isolate DNA pieces that contain selected genes of other species”(Muench 238). Genetic engineering has been the upcoming field of biology since the early nineteen seventies. The prosperous field has benefits for both the medical and also the agricultural field. The diminishing of diseases, especially congenital disorders, reduction of pollution, eradication of world hunger, and increased longevity are just some of the possibilities which scientists foresee. Many of the benefits of biotechnology, another name for genetic engineering, have already been put into practice. The results are, in a number of cases, nothing less than astonishing. There are five classes of types of genetic engineering, agricultural treatment, somatic gene therapy, germline cell therapy, medical treatment, and eugenic therapy. Many people believe that genetic therapy is morally not right, but there are so many benefits for the world because of it. Some of scientist ideals of how to alter this new science to create the perfect human does in-fact sound crazy. But if genetic engineering was regulated to prevent such things the new science could bring wonders to many peoples lives.

The first form of genetic engineering began with a man named Mendel, a monk in the late nineteenth century. He was the first to even formulate the concept of the gene from his experiments on pea plants. Since Mendel, other scientists have continued in agricultural engineering, a type of engineering that deals with the cross breeding of plants and cattle to maximize their productivity. Through time geneticists have continued to find better methods

and strategies for improving the quantity of food from plants and improving the amount of milk and meat that cattle produce. With one respect to plant engineering, scientists are now working on splicing the genes needed for the production of L-lysine, an amino acid which has a nutritional value for humans. By enhancing the nutritional value of corn in some Third World countries, an expansion of food supplies would be unnecessary (Sylvester and Klotz 20). But not only would this benefit those people in the Third World countries, it would also be benefiting to wealthy nations. At this point in time the act of wealthy nations donating their food, time and money to help out Third World countries has become very popular. But with this new technology, the act of wealthy nations diminishing their own food supply, would be reduced. Therefore, this aspect of genetic engineering can prove to be essential from a theological as well as a philosophical viewpoint. Other possibilities of gene engineering that evolve from gene splicing is the manipulation of plants genes that regulate photosynthesis, which would increase plant productivity. As a direct consequence of a higher yield in plants, the demand for fertilizer will diminish (Sylvester and Klotz 21). The last use of genetic engineering in plants is to make plants that produce natural pesticides. Natural pesticides would cut food production cost and eliminate a major health hazard and cause of pollution. With all of the types genetic engineering on plants we can make plants that will grow and produce exactly what we want. Plants are no longer a mystery that our society is amazed in its being, but instead a simple organism that has very few secrets.

Another very essential type of gene engineering is somatic gene therapy. This type of therapy aims at correcting defects in specific cells in patients

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already born with a hereditary disease. It is done by the insertion of a single gene into the somatic cells of an individual with a life threatening genetic disease. Somatic gene therapy is intended solely to eliminate the clinical consequences of the disease; the inserted gene is not passed on to future generations (Nicols 10). So this type of gene therapy in no way is an attempt to create the perfect race. Somatic gene therapy is a way to help individuals who have genetic diseases that can either kill them or make their lives so painful to handle. The question being faced today about somatic therapy is if:

“ The incorporation of a gene to treat a disease in an individual seems morally no different even if it entails some risk it would be justified by the illness of the recipient” (Davis 82).

The scientists for gene therapy say that it is a risky procedure, but with the potential that it has, it can give many patients their lives back. However, many scientists are skeptical about somatic therapy and feel it will lead to abusive and gratuitous attitudes toward new therapy in the future. They also feel somatic therapy should be used on individuals who are certain to die or become paralyzed from their genetic defect. It should not be allowed to perfect or alter an individual's makeup or offspring.

The biggest type of genetic engineering used today is gene engineering is the manufacturing of pharmaceuticals. Insulin, a pancreatic substance that is responsible for the breakdown of glucose, is a hormone which diabetics lack in their digestive systems. Before 1982 the only means of getting insulin was through the extraction of cattle or pig pancreases (Cambell 407). With new technology scientists can manufacture human insulin. The advantage of

being able to manufacture insulin is that millions of pigs and cattle do not have to be killed for their insulin, which was usually useless to the diabetic human because they were usually allergenic to the extracted insulin. Manufactured insulin is also cheaper to produce. Another genetically pharmaceutical achievement is the human growth hormone. The hormone is used to prevent human dwarfism and can also induce healing of burns and other cuts. Besides hormones, several proteins are being studied and tested nation wide.

Another advancement in medicine, which is, nothing less than astounding is vitro fertilization or the fusion of the sperm cell and the ovum outside the woman's body.

“ In vitro fertilization is a useful tool for morphological and biochemical studies of sperm penetration of ova, of polyspermy, and other abnormalities of fertilization” (Lipken and Rowley 18).

These are just a few of many miracles that gene engineering has made possible to save a person's life.

Whether you use gene engineering for agricultural use or medical application, you must always realize that you are still altering and changing human nature. Sometimes the change is for the betterment of society such as vitro fertilization, insulin, or finding the cure for a fatal disease, but sometimes science goes to far and has the power to damage society in some of the negative types of genetic engineering. When using or discovering another use for genetic engineering the scientist should think whether their discovery would help the world or just their reputation. Science can either

help or destroy our world. We choose which path it will take by realizing our limitations.