Gene Therapy Essay, Research Paper

What is Gene Therapy?

What types of gene therapies cure genetic diseases?

Many diseases seen today are the result of a defective gene in the DNA of thepatient and cannot be cured using the traditional methods such as antibiotics and antiviral medication. The victims are now looking to gene therapy as a potential cure for their problems. Gene Therapy is the process of replacing a defective gene inside a patient s DNA with a working gene that will produce the correct gene products. The genetic diseases, in which a single known gene does not function properly, such as sickle cell anemia is the most suitable to be treated with the gene therapy. There are two types of gene therapy in curing these diseases, patient therapy and embryo therapy.

In the process of the patient therapy, the first step is identifying the defective gene and isolating a normal counterpart. To obtain correct gene action, it may be necessary to put it into the correct site on the host cell chromosome, or even to delete the defective gene, and the DNA can then be replicated each time the host cell divided. But if the new cell is injected directly into the patient s body, it will be subject to the body s immune system that will recognize it as foreign and target it to be destroyed along with the healthy DNA that it is carrying.So the cells extracted from the patient are to be treated and adding the new gene in a test tube in the laboratory to make sure that the DNA is inserted inan appropriate place in the genome, and the cells can then be returned to the patient s body.

Now it is possible to offer the parents an antenatal diagnosis to look over if the fetus is affected by some single gene defects. If it does,the parents can choose embryo therapy to cure it rather then abortion. While the basic process is similar with the one of patient therapy, to do an embryo therapy is a little bit easier than a patient therapy, because the immune rejection system of the embryo is not fully developed. The new DNA will not be ejected, while the former DNA will be altered. Gene therapy seems to be a promising and positive step for the medical community, but ethical questions arise every day as we discover more and more about the contents of the human genome.

Gene therapy has a promising potential to improve the lives of those who have diseases that have until now been death sentenced, but to take it into real practice human beings still have a long way to go.