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Advancements in Genetic Engineering

Commentary

Gene Cloning in Humans: Its Benefits and Uses

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DESCRIPTION

Gene cloning is a common practice in molecular biology labs where researchers create copies of a specific gene for downstream applications such as sequencing, mutagenesis, genotyping, or heterologous protein expression. The traditional method of gene cloning involves transferring an interest DNA fragment from one organism to a self-replicating genetic element, such as a bacterial plasmid. This method is widely used today for isolating long or unknown genes and protein expression. Polymerase Chain Reaction (PCR) is a more recent technique for amplifying a gene of interest. The advantage of using PCR over traditional gene cloning, as previously described, is the reduced time required to generate a pure sample of the gene of interest. Gene isolation by PCR, on the other hand, can only amplify genes with predetermined sequences. As a result, many unstudied genes necessitate initial gene cloning and sequencing before further PCR analysis.

Somatic cell nuclear transfer is the most commonly used technique in human cloning. The nucleus of an egg cell taken from a donor is removed using this technique. The original cell is then fused with another cell containing the same genetic material in order to be cloned. Parthenogenesis is another technique used. This method involves inducing an unfertilized egg to divide and grow as if it had been fertilized. Human cloning can benefit humanity in a variety of ways.

Cloning individuals

One of the main reasons why human cloning is a frightening prospect is that it would allow people to clone themselves. Parents who have lost a child to death may be compelled to clone their deceased child. Although the concept of cloning sounds appealing, there is no research and scientific evidence.

Treatment for a heart attack

Heart disease is now the leading cause of death in both developed and developing countries. Scientists believe they can treat heart attacks by cloning healthy heart cells and injecting them into the damaged heart area.

Human embryonic stem cells

It has been shown that nascent cells can be grown into human organs or tissues. This could be used to repair or replace damaged organs. A combination of human stem cell production and human cloning technology can be used to create tissues for patients whose immune systems would otherwise reject them.

Treatment for infertility

Current infertility treatments have a very low success rate. Furthermore, the couple must endure torturous procedures with a slim chance of having a child. Cloning technology will make it easier for infertile couples to have children than ever before.

In surgical procedures

Silicon gels and other cosmetics are currently used in surgery. These materials are not only comfortable for the patients, but they also cause immune disease. Human cloning allows doctors to grow cells, bones, and tissues that match the person receiving treatment rather than using foreign materials. Victims of terrible accidents with deformed faces can hope for safe technology to repair their features. Breast implants for cosmetic reasons are a similar case. People developed immune system illnesses as a result of the silicone implants.

Other benefits

It is estimated that the average person carries eight defective genes. People with faulty genes will develop illness even if they are otherwise healthy. Cloning allows for the creation of genes with no flaws. Cancer has been discovered to be curable by switching cells on and off *via* cloning. Scientists were perplexed by the phenomenon of cells differentiating into specific types of tissue. Cloning may hold the key to understanding differentiation and cancer. Cloning can also be used to treat Down's syndrome, liver failure, kidney failure, leukemia, spinal cord injury, and genetic diseases.

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