

Genetically Modified Embryos

Background

- Genetic diseases derive from errors in the genetic code (DNA).
- Many cells contain mitochondria that house their own DNA, which is different than our chromosomal DNA in the nucleus. Mitochondria is passed down from a mother to all of her children.
- Genes have different versions called alleles. Genes are responsible for coding for a protein.
- Proteins have many important functions in the body and there are several types of proteins.
- An error in the genetic code could mean an error in the function of the protein.

SOURCES:

1. -The National Center for Biotechnology Information
2. -CNN
-ScienceDirect.com

Study I

Geneticists claim to have successfully created a baby with 3 parents. The baby had the chromosomal DNA from her mother and father and the mitochondrial DNA from an egg donor. Her chromosomal (original) mother had a problem with her mitochondrial DNA, thus she needed a donor.

Proposal I

Instead of trying to gain mitochondrial DNA from an egg donor, why not try to extract mitochondria from a somatic cell (body cell) of the father?

Benefits

If we were able to extract healthy mitochondria from a somatic cell and use it for reproduction, the baby would 100% only be from the couple - no donor required.

Study II

Scientists claimed to have injected plasmid DNA into a rodent embryo and then extracted the embryo from the uterus. They injected the DNA into the neural tube in hopes of it reaching all areas of the body. 10-100% of cells in the transfer area showed the DNA that was injected.

Proposal II

Although seen as immoral by many, it could be very beneficial if we could successfully transfer healthy genes into human embryos that may be fatal due to a genetic disorder.

Benefits

People find that augmenting human embryos is completely immoral. Some women have a very hard time conceiving. The cell cycle can tell if there is an error in the genetic code and if it is serious enough, the developing embryo will not survive. If it does, it will be born with a genetic disease. If the baby has seemingly no survival rate, why not try performing gene therapy on it? There could be a chance to save a life and help seemingly infertile women.

