



Ethics behind Embryonic Stem Cell Research

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Abstract

Advancement in embryonic stem cell research can cure the world of sicknesses in ways that were only imagined. Out of all the stem cells, embryonic stem cells have the capabilities to develop into any cell and tissue type. Embryonic stem cell research is controversial due to how these cells are harvested. In harvesting these cells, the embryos are destroyed; further halting any development of a human being. We began our research by asking why this topic is an ethical issue. Using various media resources, we took key points from both sides and also looked into the latest advancements that may eliminate the need to continue developmental research in embryonic stem cells.

Introduction

Embryonic stem cells are cells that are considered "totipotent," meaning they have the ability to develop into any kind of body cell. This quality makes them more desirable than adult stem cells, which are "pluripotent" and cannot develop into all tissue types (Shannon, 23). ESCs also possess the ability to proliferate over and over through cell division; a trait that hasn't been seen in adult stem cells in research (Lindsey, 35). What makes this type of research controversial is how these cells are harvested. When a fertilized egg develops into a blastocyst, which is usually around day five, a scientist takes out the inner mass of cells (Panno, 19). This process halts any further development, therefore "killing" the early embryo. The inner mass contains embryonic stem cells and can then be coaxed into developing into the desired tissue type. Due to the mixed belief on what makes a human being, there are various views on embryonic stem cell research; from considering it to be a potential miracle to it being murder of a person.

Reasons to Support Research

- ESCs are taken from a five day old, or less, blastocyst(Panno).
- ESCs have the potential to save millions of lives, versus that embryo's potential to become one person.
- ASCs, adult stem cells, cannot differentiate into as many tissue types as ESCs can(Lindsay).
- ESCs can renew themselves over and over through cell division(Lindsay).
- An early embryo is not a human; it only possesses the possibility to become one(Lindsay).
- A group of cells cannot think nor have a moral campus, basic attributes given to a human(Lindsay).
- In Roe v. Wade, it was determined that fetuses and embryos have no legal rights and were not considered to be a person yet.
- Two possible sources or ESCs would be spare embryos from in vitro fertilization and somatic cell nuclear transfer; the embryos given would have either been thrown away or frozen, so they would not develop into a person anyway(Lindsay).

Alternatives to Embryonic Stem Cells

- A new technique in obtaining stem cells has been developed; instead of taking all the stem cells from a blastocyst, the scientist would only take one and culture it. The embryo would then be able to further develop(Coghlan).
- Use of stem cells from umbilical cords and menstrual blood cells instead of fertilized eggs(Cryo-Cell).
- Cloning therapies; involves replicating one's own DNA to develop new stem cells(Morley).

Reasons Against Research

- It ends the potential of a human being unnaturally(Shannon).
- It is morally wrong to create something for the purpose of destroying it.
- It is natural for there to be genetic mutations; it keeps populations in check.
- There are alternatives now available to using embryos.
- It is very hard to determine what stage an embryo is in(Shannon).
- Not everyone would have the financial capabilities to undergo stem cell therapies, so why should their tax dollars fund them(Shannon)?



Fig. 1 Advanced Fertilization Center of Chicago. Embryonic blastocyst on day five of fertilization.



Fig. 2 NMI. Cells being taken from fertilized egg.

Conclusion

The question of ethics concerning embryonic stem cell research remains very controversial around the world. Both opposing arguments have key points and both stand passionately behind their beliefs. Embryonic stem cells can open the door to extraordinary breakthroughs in medical care. With the recent lift of the federal funding ban for research in 2009; scientists are one step closer to curing various sicknesses. Yet the million-dollar question still remains, is it more ethical to save a life or a potential one? A question that may never be answered.

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