Stem cell research essay

Technology, Development

Stem cells are immature and unspecialized cells that that possess both the capacity to renew themselves indefinitely as well as the capability to differentiate themselves into specialized and mature cells. Mature cells, such as the heart's myocytes or the liver's hepatocytes, stop dividing after several dozen divisions, while stem cells can keep on dividing indefinitely, either renewing themselves or bringing out specialized cells (Kiessling, Anderson 2003). There are four types of stem cells in the human body 1) adult stem cells, 2) fetal stem cells 3) embryonic stem cells, and 4) nuclear transplant stem cells. For the first three months of pregnancy, a fertilized cell, or zygote, divides and grows in the mother's womb and is referred to as an embryo.

The embryo's stem cells are the precursors of the development of a complete human baby. They produce all of the body's various 100 trillion cells. It should become possible to use embryonic stem cells to regenerate any type of cell that the body needs (Bova 2000). When the embryo assumes an apparent human body form, it becomes a fetus.

Because the fetus is growing rapidly, all tissues and organs, including the brain, contain stem cells. It is for this reason that stem cell researchers are interested in studying fetal tissues (Viegas 2003). Adult stem cells from bone marrow have so far provided most of the examples of successful therapies for replacement of diseased or destroyed cells. However, studies suggest that human embryonic stem cells have much more potential in terms of developing into multiple tissue types and long-term self-renewal. The importance of stem cells in medicine arises from the fact that they are very essential in forming and maintaining tissues (Parson 2004). Research in all

the various types of stem cells will be required to effectively realize their full therapeutic potential.

Experiments in mice and other animals are necessary, but not sufficient, for realizing the potential of stem cells to develop tissue-replacement therapies that will heal and restore function in damaged organs. This is so because there are substantial biological differences animal and human stem cells (National Research Council 2002). Studies with human stem cells are essential to advance the efficacy of our modern medical science.

However stem cell research involving embryonic stem cells is mired in controversy, as many people think using embryos which are potential human beings for research purposes, and subsequently discard them, is unethical and unacceptable (Holland, Lebacqz 2001). Conflicting ethical perspectives surround the use of the embryonic stem cells in medical research, as well as process of genetic manipulation of embryos. However, the subject of genetic engineering involves significantly much more complexity in terms of both social implications and ethical considerations. Stem cell research involving embryos, on the other hand, becomes almost a non-issue if an individuality is not ascribed to the embryo and the fetus in early stages. Personally, I think that though we can trace back the development of our body to the stage of embryo, an embryo is us only as much as is a sperm or an ovum is us, since it is possible, in theory, to trace back the conception and birth of a human child to the original sperm. But we do not regard each sperm or ovum as potential human beings, then why should we regard so the product just formed from the coming together of these two? I think individuality is not

created magically at the moment of conception but develops over time during the process of gestation. Hence there should not be any unnecessary restrictions placed on stem cell research, which will likely bring about a revolution in our medical technology. References: Bova, Ben.

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