Commentary

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Advantages of Stem Cells vs. Marketing

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Description

Stem cell news dominates the front page almost every day. The situation is now complicated by the announcement of some scientist-entrepreneurs of their plans to undertake human cloning to assist infertile couples, despite clear opposition from scientists and lawmakers. The issues of stem cell research and human cloning initially seem to be unrelated, but actually are more complex. Take the case of Advanced Cell Technology, a biotech company whose chief officer, Michael D. West, has publicly stated that his company would really like to make human clones for stem cell research. The idea is to collect a nucleus from the patient's dermal cell, transfer it to an egg whose nucleus has been removed, and permit the egg to make a blastocyst in a petri dish.

This blastocyst contains 200-250 stem cells (each a kind of “blank slate” cell) which will be coaxed to become many various cells within the body. Use of this sort of “designer” stem cell will possibly avoid immunological rejection, a fate that always awaits other transplanted cells. This approach makes medical sense, but would require the procedures involved in human cloning. Most scientists understand the difference between therapeutic human cloning and reproductive human cloning, but will the general public distinguish between these subtleties? The sad reality is that the newest hoopla and furor generated by Dr. Severino Antinori, Dr. Panayiotis Michael Zavos, and Dr. Brigitte Boisselier, who are hell-bent on human cloning, will undoubtedly influence lawmakers to propose even more stringent legislation.

On embryonic stem cell research, scientists, advocates, and journalism are touting the good medical benefits of this technology for humankind. It is not common to read that stem cells are often used to recreate a whole new pancreas for a diabetic patient, generate a “brand new” healthy heart to replace the damaged old heart, make a new liver to exchange the non-functional liver, repair medulla spinalis injuries, create dopaminergic neurons for curing Parkinson's or maybe Alzheimer's, and on and on, stopping just in need of generating a new brain. Proponents of adult stem cell research insist that hematopoeitic stem cells are often trans-differentiated into muscle cells, neurons, hepatocytes, and so on, although the efficiency of this process is so low as to be impractical. Patients read these news items attributed to scientists and are excited at the prospect of a cure.

It is true that adult and embryonic stem cells have tremendous potential to alleviate human suffering, but we are running the danger of overhyping the promise. Even the foremost ardent practitioners of stem cell therapies don't expect stem cells to be converted into a pulsating, functional, three-dimensional heart any time soon. In our zeal to undertake research on the potential benefits of stem cells, we must lookout to not give false hope. It is cruel to the patient and, by the end of the day, detrimental to the public's support of science.

I see some parallels between stem cell hype and therefore the earlier days of gene therapy, when curing genetic diseases, ameliorating cancer, slowing down the progression of degenerative diseases, and other claims often made the headlines stem cells are making now. I still believe the potential of gene therapy: the twenty-first century is already referred to as the “century of the gene” and there's great promise of alleviating suffering from disease and improving human health. But new and highly experimental technologies have inherent risks and uncertainties. Scientists must find a balance between excitement and eagerness, problem and promises, and hopes and hypes. The reality is that the timeline of promises kept is unpredictable, but the reaction to unfulfilled expectations is predictable.