



Stem Cell Secrets

“What you have done in that petri dish, you have done unto me.”

IF YOU HAVE SEEN NEWS articles or television reports on stem cells and the ethical puzzles they present, you may wonder what all the fuss is about. There are at least two things you can be sure of: There will be more wonder, and there will be more fuss. The wonder is related to their origin and their possibilities. So is the fuss.

“Stem” is a key word. These cells are sources from which stem all the “branches” of an organism. They have potential that is either *toti-* (capable of becoming any tissue or structure of the organism) or *pluri-* (open to diverse development). Totipotent and pluripotent stem cells, then, might be used to develop neural tissue, liver cells or skin cells, which are strategic for treating diseases and disabilities ranging from spinal cord injury to cancer.

In a way, the stem cell of all stem cells is the fertilized egg, a zygote having a unique 46-chromosome endowment, half of which is contributed by a genetic father and half by a mother. This is an utterly unique cell, endowed with all the information that marks the launching of an individual career. (If any of the other 100 million or so sperm present in an act of intercourse had penetrated the ovum, it would not have become you, but someone else.)

As this zygote replicates geometrically after conception, in the early stages, each matching cell of a cluster that looks a little like a mulberry—let’s say a mulberry of 16 little sacs—has the totipotent magic. One of these microscopic cells can be removed without affecting the rest and that one cell will have the entire genetic complement that could become an individual—or any sort of tissue into which it might be directed to develop.

Now, every cell in a human body has

the individual’s entire and unique genetic code. That’s why someone can be identified from a skin, blood or semen cell. But most of these cells are committed, or differentiated, in such a way as to replicate only as skin or liver or neural tissue. Stem cells do not have this limitation.

Even mature organisms have stem cells, usually in the bone marrow. It is thought that these might be as serviceable as embryonic stem cells; but because of questions largely related to the age of an organism, they are not as desirable as the fresh cells of an embryo. (The latest research suggests, however, that there is also the possibility that *any* cell of an organism might be coaxed into the totipotent stage.)

So this is the problem: Why not use embryonic stem cells for treatment of heart disease, parkinsonism or the kind of spinal cord injury suffered by Christopher Reeves?

At present, there is a ban on using federal funds to create human embryos for the purpose of harvesting their cells; but don’t count on that in the future. The National Institutes of Health has recommended lifting the ban, and such research is surely already done by private corporations. Right now the issue is what to do with all the “unwanted” embryos that were once created by in vitro fertilization for fertility purposes. Why throw these embryos away? They will never be implanted, supposedly, to grow as they might. Rather than destroy them or throw them into the garbage, why not use them for therapeutic miracles?

These questions seem eminently reasonable, I suppose. But, depending on just *what* these embryos are, such questions are also profoundly disturbing. The point at issue here is perhaps more easily seen if we first consider another group of

living beings who are destined to be “thrown away,” namely criminals who have been condemned to death. If they are going to die anyway, why not put their bodies to some use—harvesting their hearts and lungs, collecting their corneas, liberating their livers, maybe even using their hair or skin? Perhaps we could experiment on them (administering the appropriate painkillers, of course) to help us understand the nature of various diseases.

Most people would be opposed to this, perhaps on humanitarian grounds, but probably not on utilitarian grounds. Great good indeed could come from experimentation on prisoners who are going to be terminated anyway. The nub, it seems to me, is that we grant humanity status to the capital criminal. This is what deters us from the sheer exploitation of their bodies.

But what is the humanity status of the fertilized egg and the early-stage embryo before implantation? As I have suggested, I believe my own unique existence as an individual personal life began at *my* conception, not only because any other genetic combination would have “started” some other person than me, but because my personhood is one with my organic and genetic development. If I had been conceived by in-vitro fertilization, then what you have done in that petri dish, you have done unto me.

There is evidence that can be used to contest my position. Before implantation, twinning is possible—a phenomenon related to the fact that the tiny “mulberry” is a collection of totipotent cells—the very characteristic that makes them so serviceable for research. What is more, that “mulberry” does not seem to act as a unified organism, as one living being. Does this indicate that we cannot yet be dealing with a unified individual person?

I respect such questions, since they are at least concerned with the problem of *what* we are exploiting. But if we are in fact cultivating personal beings with awesome possibilities (not just “possible” persons) only to “harvest” them, then we have embarked upon a most dangerous path of technical cannibalism, wherein we consume our most helpless brothers and sisters for our own enhancement.

John F. Kavanaugh, S.J.