

“Cures not Clones” Briefing
Sponsored by Americans to Ban Cloning
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Five years ago I was climbing Mount Shavano in Colorado with my wife. A month later I fell asleep on a warm afternoon while driving across Montana. I've been paralyzed ever since.

Every year, twenty-six million Americans are diagnosed with diseases or suffer injuries that stem cells might help cure. Ten thousand of these Americans will have my condition, spinal cord injury (SCI). I never thought I'd end up like this when I was healthy and climbing mountains, yet here I am. I'm saying this because I want you to understand that this issue's outcome will eventually affect your future as much as mine. To drive this point home, my chances of having SCI were one in thirty thousand. Your chance of waking up someday to find that your life might depend on the course this issue takes is one in eleven...*every year*. For all our sakes, we need to learn about cloning and make the right decision.

Since everyone has an agenda, let me be upfront about mine. I don't belong to a political party. I don't belong to an organized religion. And I don't have views on abortion. My sole interest in the cloning debate is that its outcome not needlessly slow the advance of cures. I say *cures*, not just *a cure for spinal cord injury*. Knowing as I do one form of Hell, my skin crawls at the thought of pulling others into a similar pit just so I can get out of mine. Because of my *pro-cures* priority I'm 100% in favor of Senator Brownback's cloning legislation. Here are my reasons:

A. Cloning is too expensive to be part of a medically available therapy.

Dr. Wise Young of Rutgers is a well known SCI researcher who supports all *scientifically* valid neuroscience, including cloning. Yet he says: "*In my opinion, it will probably not be politically or economically feasible to clone stem cells for every individual.*" In simple terms, even if cloning's genetic mutation and reliability problems can be overcome, it will still be too expensive to use on an individual patient basis. So where's the therapy in therapeutic cloning? Either we need stem cells with our own DNA or not. If we do, cloning is too expensive, so why waste resources on it when adult stem cells already fit our DNA needs? If we don't, what is cloning good for? As Dr. Young says: "If adult stem cells prove to be as potent and as efficacious as embryonic stem cells, they will be a cheaper and safer source of stem cells for therapy."

B. Cloned embryonic stem cells are not needed to cure spinal cord injury.

The primary obstacle to reversing paralysis due to SCI has nothing to do with replacing specialized cells, which adult, fetal, and embryonic stem cells have shown they can do. Most scientists today consider reconnecting broken nerve connections at the injury site as the main challenge. Depending on the level of injury some neurons may need to be replaced, and axons below the injury may need to be remyelinated -- but unless we overcome the inhibitory "glial scar" at the injury site, all the stem cells in the world won't help. Several avenues are being developed today to address this pivotal issue, none of which involve cloning or embryonic stem cells. No peer-reviewed study has shown a use for cloning in *any* SCI application, including neuron replacement and remyelination; and no one claims it has anything to offer regarding the bridging of the injury site.

C. Cheaper, safer, and further developed avenues already exist to address the conditions that cloned embryonic stem cells someday *may* address.

The NIH, the Christopher Reeve Paralysis Foundation, and most scientists advocate a "leave no stone unturned" policy for curing SCI and other conditions. And if we were in the stone age of medical research this might be a logical course. But we're not. We know why the spinal cord's broken connections won't reconnect, and we have several promising ways to address this problem. At least four genetically matched adult cell types have been shown in animals to remyelinate the brain and spinal cord (with one of these already in MS clinical trials at Yale). Three of these cell types (neural, bone marrow, and skin stem cells) can replace damaged central nervous system neurons. *None* of

these adult cells is beset by the safety and performance problems inherent in cloned embryonic stem cells - genetic mutations, tumor formation, and (according to a recent study in trying to treat immune deficiency in mice using cloned embryonic stem cells) even immune response rejection. Yet advocates of “therapeutic cloning” say we should embark on years of expensive, highly speculative research that may have no therapeutic value -- in order to “leave no stone unturned.”

Adult stem cells (that already have the patient’s DNA) have also been shown to replace heart cells, blood cells, liver cells and pancreatic tissue. They’ve been successfully used to treat leukemia, traumatic brain injury, heart disease, stroke, Parkinson’s disease, and immune deficiency syndrome. More research is needed to expand and perfect their use, and to develop other avenues with more immediate clinical potentials than cloning. But *expanding* and *perfecting* are a far cry from embarking on new, expensive, highly speculative research with the *potential* to someday *duplicate* what’s already being done more cheaply, more safely, and more efficiently by adult stem cells and other avenues.

D. The medical availability of these avenues could be slowed or blocked if valuable resources are wasted on cloning.

Resources spent on one line of research cannot be spent on others. And contrary to the fantasies of those who say we can support *all* research, including adult cells, embryonic stem cells, and now *cloned* embryonic stem cells, America doesn’t have a bottomless pit of money begging to be spent on science for the sake of science. If a major effort is made to advance cloning, other avenues will inevitably suffer. More promising research in SCI has been abandoned in the past because of willful development of an inferior avenue. As a result, it may be that half of those paralyzed by SCI today are needlessly so. In cloning we have the sickening possibility of repeating this grave mistake on a colossal scale.

E. I don’t like being used.

I think it’s highly immoral for researchers to encourage the sick, crippled, and dying to cut their own throats by supporting cloning, a research avenue whose extremely speculative potential lies somewhere in a distant and hazy future, to the detriment of proven avenues that offer more than futile hope.