

## Embryonic Stem Cell Research And Therapeutical Cloning in the U.S. – A Never-Ending Story

by Stephan Neuhäuser

*“Voices on U.S. Science & Technology Policy” reported on the debate regarding embryonic stem cell research in February 2002 (Philipp Steger, Zur US-amerikanischen Stammzellendebatte). With new legislation pending in the U.S. Congress, in various state legislatures and around the world, it is once again time to review the ongoing debate in the U.S.*

During a hearing of the Senate’s Subcommittee on Labor, Health and Human Services, Education, overseeing the budget of the National Institutes of Health (NIH) on May 22, 2003, two senators recently lambasted Elias Zerhouni, the NIH’s director. Subcommittee Chairman Arlen Specter (R-Pennsylvania) and Tom Harkin (D-Iowa), the panel’s ranking Democrat, accused Mr. Zerhouni of having misinformed the subcommittee about certain embryonic stem cell lines eligible for federally funded research, and also for not doing enough to make them available widely enough for research. “Their tone was at times testy and challenging, with Mr. Harkin voicing ‘extreme frustration’ about the NIH’s responses,” the Chronicle of Higher Education reported in June 2003 (Chronicle of Higher Education, Volume 49, Issue 36, Page B13, June 6, 2003). Dr. Zerhouni admitted to discrepancies in NIH spending priorities. In 2002, only \$ 11 million was earmarked as funding for research on embryonic stem cells compared to a hefty \$148 million spent by the NIH for studies on stem cells derived from adult human tissue in the same timeframe. In contrast to Harold Varmus, former NIH Director, it should be mentioned that Dr. Zerhouni takes a rather critical approach to embryonic stem cell research and therapeutical cloning. President Bush supported Dr. Zerhouni when he said: “Dr. Zerhouni shares my view that human life is precious, and should not be exploited or destroyed for the benefits of others. And he shares my view that the promise of ethically conducted medical research is limitless.”

However, most researchers feel that embryonic stem cells hold much more potential than their adult counterparts. It is believed that new treatments designed to halt the effects of aging, incapacitating, degenerative and sometimes fatal illnesses like Alzheimer or Parkinson’s Disease can be garnered from research on embryonic stem cells. Stem cells are capable of continuously reproducing themselves and renewing tissue throughout an organism’s life. Embryonic stem cells are the most adaptable of all since they are not yet differentiated like adult stem cells. Hence, they are not committed to any particular function. Embryonic stem cells are usually derived from blastocytes, umbilical cord blood or bone marrow, and are cultured in “stem cell lines.” As soon as enough cells have developed, batches of cells may be distributed to research laboratories. The ethical debate stems from the fact that embryonic stem cells can - for the time being - only be “harvested” from blastocytes. Blastocytes are defined as embryos, only a few days old, that are left over from in-vitro-fertilization procedures. “Harvesting” ultimately destroys them. For those who believe that an embryo has the moral status of a person from the moment of conception, research involving its destruction is considered unethical.

What further fuels the debate is the fact that embryonic stem cells can also be derived from embryos created through *somatic cell nuclear transfer*, better known as “cloning.” In fact, some scientists believe that deriving stem cells from therapeutic cloning might be the most promising avenue towards developing tailored to individuals treatments as this treatment would involve using the recipient’s own DNA.

- Hearing of the Subcommittee on Labor, Health and Human Services, Education on May 22, 2003 <http://appropriations.senate.gov/subcommittees/record.cfm?id=204165>
- National Institutes of Health <http://www.nih.gov>
- Senator Arlen Specter <http://www.senate.gov/~specter/>

- Senator Tom Harkin <http://harkin.senate.gov/>
- Remarks by the President in Announcement of the Director of the National Institutes of Health and the Surgeon General  
<http://www.whitehouse.gov/news/releases/2002/03/20020326-3.html>

### **“I Believe Human Life Is A Sacred Gift From Our Creator” (President G. W. Bush) – Current Federal Rules**

The ongoing debate in the U.S. Congress, of which the above mentioned hearing was a part, circles around the unclear situation created by President George W. Bush. Originally, President Bush was strictly opposed to research on embryonic stem cells based on religious grounds. However, he issued an Executive Order on August 9, 2001, for the first time in the U.S. history, legally allowing federal funding for this type of research, but limiting it to embryonic stem cell lines already in existence worldwide at that time. The Executive Order also stated that no federal money would be available for research on cell lines created after the deadline of August 9, 2001, 9 PM. In his “Radio Address to the Nation” on August 11, 2001, President Bush said that “embryonic stem cell research offers both great promise and great peril. So I have decided we must proceed with great care. As a result of private research, more than 60 genetically diverse stem cell lines already exist. They were created from embryos that have already been destroyed, and they have the ability to regenerate themselves indefinitely, creating ongoing opportunities for research. I have concluded that we should allow federal funds to be used for research on these existing stem cell lines where the life and death decision has already been made.” Secretary of Health and Human Services Tommy G. Thompson, an avid supporter of embryonic stem cell research, testified in a Senate Committee hearing on September 5, 2001, and interpreted the President’s decision from his point of view: “The principle that the federal government should not encourage or sanction the destruction of embryos was a cornerstone of the President’s decision.”

Since no federal legislation is in place, private and state supported research is not affected by President Bush’s policy. However, NIH, itself funded from federal R&D funds has issued eligibility criteria for federal funding of research on human embryonic stem cells based on the President’s Executive Order. Aside from the August 2001 deadline, the eligibility criteria stipulate that: 1.) the stem cells must have been derived from an embryo that was created for reproductive purposes only; 2.) the embryo is no longer needed for these purposes; 3.) consent was obtained for the donation of the embryo, and 4.) no financial incentives were provided to encourage donation of the embryo. In addition to publishing these criteria, the NIH also created a “Human Embryonic Stem Cell Registry.” It lists all cell lines that fulfil the eligibility criteria. Currently, 78 qualified cell lines should be available worldwide.

- August 11, 2001 Radio Address by the President to the Nation  
<http://www.whitehouse.gov/news/releases/2001/08/20010811-1.html>
- Statement of Tommy G. Thompson, Secretary, U.S. Department Of Health And Human Services, before the Committee on Health, Education, Labor and Pensions, United States Senate, September 5, 2001  
<http://www.hhs.gov/asl/testify/t010905a.html>
- Stem Cell Fact Sheet (White House)  
<http://www.whitehouse.gov/news/releases/2001/08/print/20010809-1.html>
- NIH’s Role in Federal Policy <http://stemcells.nih.gov/fedPolicy/NIHFedPolicy.asp>
- NIH’s Human Embryonic Stem Cell Registry (<http://stemcells.nih.gov/registry/>)

### **Missing Funds and Mad Mouse Disease?**

Providing sufficient quantities of cell lines for distribution can take up to one year or even longer for each cell line. As a result of this, only five of the 78 lines approved were available to researchers in the U.S. as of last September, the NIH’s director Elias Zerhouni said at the hearing on May 22<sup>nd</sup>. To make things even more complicated, most of these human cell lines were grown on mouse feeder cell layers. This means that they had been in direct contact with mouse cells. Therefore, the human cells may have been damaged or may even carry mouse

viruses. The Food and Drug Administration, fearing *xenotransplantation* (transplantation of animal tissue into human recipients), has asked scientists to conduct extensive testing of cells before using any of them in human clinical trials. In Singapore, a country at the forefront of embryonic stem cell research, the Straits Times even drew a “Mad Mouse Disease” scenario. The scenario pointed out the unpredictability of the consequences of stem-cell transplants that may carry mouse genes or viruses. Furthermore, intellectual property rights issues have to be resolved before government-funded researchers can work with the eligible cell lines which all happen to be privately owned.

Since the news spread in late 2001 of human embryonic stem-cells possibly containing mouse-genes, scientists began looking for ways and means to grow stem cells without using animal feeder cells. Finally, in the fall of 2002, researchers in Sweden, Singapore and at Johns Hopkins University/U.S. reported separately that they had succeeded in growing new lines of embryonic stem cells not mingled with animal cells. However, under President Bush’s policy, research using these cell lines is not eligible for federal funding. Although some pharmaceutical companies have supported studies on embryonic stem cells, U.S. scientists argue that the field will take off only once access to the larger stream of funds that the U.S. Federal Government is uniquely positioned to supply is provided.

- FDA Approach To The Regulation Of Xenotransplantation  
<http://www.fda.gov/cber/xap/xap.htm>
- Save The World From Mad Mouse (Straits Times, September 9, 2001)  
<http://straitstimes.asia1.com.sg/columnist/0,1886,56-69316,00.html>

### **Pending U.S. Legislation**

Whilst the the U.S. Congress has not been able to reach a decision on whether to use federal funds for embryonic stem cell research or not since 1996, the U.S. Department of Health & Human Services announced in 1999 that it intended to provide financing for research on stem cells derived from embryos left over from in-vitro fertilization procedures. This decision was taken under Dr. Zerhouni’s predecessor as director of the NIH, based on the belief “that human embryonic stem cells are not a human embryo within the statutory definition” since “the cells do not have the capacity to develop into a human being even if transferred to the uterus, thus their destruction in the course of research would not constitute the destruction of an embryo” (Congressional Research Service Report for Congress – Stem Cell Research, September 19, 2000). Therapeutic cloning, i.e. transferring the nucleus of an adult cell into an unfertilized human egg, stimulating it to begin dividing and then harvesting the stem cells for therapeutic purposes, stayed out of the scope of federal funding. However, therapeutical cloning itself and the use of private funds for this type of research was not affected by the NIH’s decision.

There is currently a total of six bills touching upon embryonic stem cell research and therapeutical cloning that are in discussion in Congress, with four of them in the House of Representatives and two in the U.S. Senate. Senate Bill S.245 and House Bill H.R.534 as well as H.R. 938, would prohibit reproductive and therapeutic cloning altogether and impose criminal and civil penalties of up to 10 years in prison and six-figure fines. Whilst also banning reproductive cloning, i.e. cloning babies, Senate Bill S.303 and the House Bills H.R.801 and H.R. would allow the production of embryonic stem cells including therapeutical cloning.

- U.S. Department of Health & Human Services <http://www.hhs.gov/>
- Senate Bill S.245 [http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:s245is.txt.pdf](http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:s245is.txt.pdf)
- House Bill H.R.534 [http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:h534pcs.txt.pdf](http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h534pcs.txt.pdf)
- House Bill H.R. 938 ([http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:h938ih.txt.pdf](http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h938ih.txt.pdf))

- Senate Bill S.303 ([http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:s303is.txt.pdf](http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:s303is.txt.pdf))
- Congressional Research Service Report for Congress – Stem Cell Research, September 19, 2000 (<http://www.senate.gov/~budget/democratic/crsbackground/stemcell.pdf>)
- House Bill H.R.801 ([http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:h801ih.txt.pdf](http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h801ih.txt.pdf))
- House Bill H.R.916 ([http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:h916ih.txt.pdf](http://thomas.loc.gov/cgi-bin/t2GPO/http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h916ih.txt.pdf))

## Deadlocked

President Bush made his point quite clear in a speech on April 10, 2002: "I believe all human cloning is wrong, and both forms of cloning ought to be banned for the following reasons. First, anything other than a total ban on human cloning would be unethical. Research cloning would contradict the most fundamental principle of medical ethics, that no human life should be exploited or extinguished for the benefit of another."

Nevertheless, cloning and stem cell research divide the Republican Party, as well as the Democratic Party. Whilst most Republicans support the President's policy, Democrats generally take a more liberal approach to the ethical issues underlying embryonic stem cell research and therapeutical cloning. Nonetheless, all related bills that are currently under discussion in Congress are sponsored by prominent Republicans, the restrictive bills including also those that would explicitly allow embryonic stem cell research and therapeutical cloning. Republican congressional representatives supportive of embryonic stem cell research include Senators Orrin Hatch (R-Utah), Jim Greenwood (R-Pennsylvania), Cliff Stearns (R-Florida) and Arlen Specter (R-Pennsylvania). These Republicans are supported by well-known Democrats such as Dianne Feinstein (D-California), Senator Edward Kennedy (D-Massachusetts) and Senator Tom Harkin (D-Iowa).

On the other hand, a few Democrats are opponents of embryonic stem cell research and therapeutical cloning. One of them is Senator Mary Landrieu (D) from Louisiana. She is co-sponsor of the Brownback-Landrieu bill (S.245) that would prohibit both reproductive and therapeutic cloning. In a press release on March 5, 2002 she claimed: "In the past several weeks there has been a movement to the Brownback-Landrieu bill by opinion leaders on the political right, the political left and from those of us in the center. Our reasons may all be slightly different, but the conclusion is the same – creating human life simply for the purpose of destroying it – is immoral, unethical and should be illegal." Other co-sponsors of S.245 include staunch social conservatives like Senators Chuck Grassley, Rick Santorum and George Voinovich. President Bush "wholeheartedly" endorsed S.245 in public.

In February 2003, the House of Representatives, historically more conservative than the Senate, voted in favor of a bill which would make illegal any form of human cloning (H.R.534, the Human Cloning Prohibition Act of 2003). However, it is likely that H.R.534 will die in the Senate, as many of the Senate's 49 Democrats oppose the bill, as does at least one prominent Republican, Orrin Hatch of Utah. Overall, approximately 50 senators are likely to vote against the proposal. Senate rules stipulate that 41 votes are needed to hinder any bill from passing into law. This means, no legislation is to be as long as the stand-off between the House of Representatives and the Senate continues.

- Remarks by the President on Human Cloning Legislation, April 10, 2002, <http://www.whitehouse.gov/news/releases/2002/04/20020410-4.html>
- Senator Orrin Hatch (R- Utah) <http://www.senate.gov/~hatch/>
- Senator Jim Greenwood (R-Pennsylvania) <http://www.house.gov/greenwood/>
- Senator Cliff Stearns (R-Florida) <http://www.house.gov/stearns/>
- Senator Arlen Specter (R-Pennsylvania) <http://www.senate.gov/~specter/>

- ❑ Senator Dianne Feinstein (D-California) <http://www.senate.gov/~feinstein/>
- ❑ Senator Edward Kennedy (D-Massachusetts) <http://www.senate.gov/~kennedy/>
- ❑ Senator Tom Harkin (D-Iowa) <http://harkin.senate.gov/>
- ❑ Senator Mary Landrieu (D-Louisiana)  
<http://landrieu.senate.gov/newsite/biography.cfm>
- ❑ March 5, 2002, Landrieu Testifies: "Total Human Cloning Ban is Only Way to Go"  
<http://www.senate.gov/~landrieu/releases/02/2002305B44.html>
- ❑ Senator Chuck Grassley (R-Iowa) <http://grassley.senate.gov/>
- ❑ Senator Rick Santorum (R-Pennsylvania) <http://santorum.senate.gov/>
- ❑ Senator George Voinovich (R-Ohio) <http://voinovich.senate.gov/>
- ❑ Remarks by the President on Human Cloning Legislation, April 10, 2002,  
<http://www.whitehouse.gov/news/releases/2002/04/20020410-4.html>
- ❑ Alliance for Aging Research <http://www.agingresearch.org>

### **The Case of Orrin Hatch: A Pro-Life Advocate In Favor Of Cloning**

Senator Orrin Hatch (R), a Mormon from Utah, is sponsoring a bill that would allow therapeutic cloning (S.303). Senator Hatch is an outspoken supporter of therapeutic cloning and embryonic stem cell research. What appears to be somewhat of a contradiction is that the conservative Republican is also a long-standing opponent of abortion and shares the same pro-life views as President Bush. "I also strongly believe that a critical part of being pro-life is to support measures that help the living. ... At the core of my support for regenerative medicine research is my belief that human life requires and begins in a mother's nurturing womb," Orrin Hatch said explaining the apparent contradiction. He supports the view that blastocytes resulting from cloning should not be considered human life. In the case of therapeutic cloning, genetic material is taken from adult human tissue and injected into a female egg cell whose own genetic material has been removed. In the next step, the cell is electrically stimulated to make it divide, thus making it possible to harvest stem cells. Since the egg is not fertilized with sperm, and will never be implanted in a woman's womb, there is no chance of birth which makes this procedure acceptable for some pro-life advocates like Orrin Hatch.

Recently, Senator Hatch was joined by a group of 38 House Republicans in his uphill battle for federal funding of embryonic stem cell research. In a Senate Hearing on therapeutic cloning, he even presented a supportive letter by Nancy Reagan whose husband, former U.S. President Ronald Reagan, at age 92 suffers from Alzheimer's disease. Ms. Reagan concluded her letter with an emotional plea: "I believe that embryonic stem cell research, under appropriate guidelines, may provide our scientists with many answers that are now beyond our grasp. Orrin, there are so many diseases that can be cured, or at least helped, that we can't turn our back on this. We've lost so much time already. I can't bear to lose any more."

- ❑ American Association for the Advancement of Science  
(<http://www.aaas.org/spp/cstc/stc/stc02/02-05/cloning.htm>)
- ❑ Hatch Holds Hearing On Cloning, Stem Cell Research Bill
- ❑ [http://www.senate.gov/~hatch/index.cfm?FuseAction=Statements.Detail&PressRelease\\_id=191528&Month=3&Year=2003](http://www.senate.gov/~hatch/index.cfm?FuseAction=Statements.Detail&PressRelease_id=191528&Month=3&Year=2003)
- ❑ The Pro-Life Case For Cloning (Editorial, New York Times On The Web, May 2, 2002  
[http://www.nownj.org/News\\_Clippings/ClippingArchive/The%20Pro-Life%20Case%20for%20Cloning.htm](http://www.nownj.org/News_Clippings/ClippingArchive/The%20Pro-Life%20Case%20for%20Cloning.htm))
- ❑ The Bottom Line (CNN's fact sheet on embryonic stem cell research)  
<http://edition.cnn.com/2001/HEALTH/07/11/stem.cell.fact>

### **Shifting Ground**

It is quite obvious that advocacy groups for research on aging support therapeutic cloning in hope for life-prolonging treatments and cures for diseases that usually afflict older people (Alzheimer's, Parkinson's disease, etc...). Though groups like the Washington-based Alliance for Aging Research might have some influence on Congress, they have not succeeded in convincing lawmakers to go ahead with an explicit *placet* for embryonic stem cell research

and therapeutical cloning. Also, the deadlock in Congress seems to prove that there is an even split between the advocates and opponents of the disputed research.

Two recent polls suggest that there is wide-spread support in the U.S. for research in these controversial fields. The polling institute Opinion Research Corporation International surveyed more than 1,000 Americans and found that 67 percent said they favored Congress allowing research in therapeutic cloning to continue. This poll produced results very similar to one the Council for the Advancement of Medical Research (CAMR) conducted last year, United Press International (UPI) reported in March 2003. People with a college education were more likely to favor therapeutic cloning. About 75 percent of those who had a college degree were in favor of continuing research, compared with 63 percent of those with a high school degree.

Even the Bioethics Council, whose members were chosen by the Bush Administration and which is led by Leon Kass who opposes all forms of cloning and embryonic stem cell research, seems to be moving towards a more favorable view on embryonic stem cell research and therapeutical cloning. In fact, in a vote on whether to recommend a moratorium on therapeutical cloning to the President, seven out of 17 members opposed a moratorium.

There is even mounting support from religious leaders: Whilst most Christian Organizations in the U.S. oppose therapeutical cloning, the Union of Orthodox Jewish Congregations of America – the U.S.' largest Orthodox Jewish umbrella organization representing nearly 1,000 synagogues – and the Rabbinical Council of America have both endorsed the research in a joint statement and in a letter to President Bush.

- ❑ Coalition for the Advancement of Medical Research <http://www.stemcellfunding.org/fastaction/>
- ❑ Opinion Research Corporation International <http://www.opinionresearch.com/>
- ❑ United Press International (UPI) <http://www.upi.com>
- ❑ The President's Council on Bioethics <http://www.bioethics.gov/>
- ❑ Human Cloning and Human Dignity: The Report of the President's Council on Bioethics, Tuesday, October 29, 2002 ([http://www.aei.org/events/filter\\_.eventID.69/transcript.asp](http://www.aei.org/events/filter_.eventID.69/transcript.asp)), Presentation at the American Enterprise Institute (including a statement by Leon Kass)
- ❑ Cloning Research, Jewish Tradition & Public Policy; A Joint Statement By The Union Of Orthodox Jewish Congregations Of America And The Rabbinical Council Of America <http://www.ou.org/public/publib/cloninglet.htm>
- ❑ The Union Of Orthodox Jewish Congregations Of America's and The Rabbinical Council Of America's letter to President Bush regarding stem cell research <http://www.ou.org/public/statements/2001/nate34.htm>

### **State Legislation**

Faced with the *impasse* in Congress, a growing number of state legislatures have begun drafting their own rules on embryonic stem cell research and therapeutic cloning. Approximately half of the states are currently considering new legislation on cloning. Ten of them have bills pending that would explicitly prohibit all types of cloning (Alabama, Arkansas, California, Connecticut, Florida, Nebraska, North Dakota, Oklahoma, Oregon, West Virginia and Wisconsin). Nine states have draft bills pending that would either allow or ban therapeutical cloning (Illinois, Indiana, Kentucky, Massachusetts, New Jersey, New York, Tennessee, Texas and Washington). The only state proposing to allow therapeutical cloning is Vermont, renowned for its open-minded legislature when it comes to scientific and technological issues. Similar to the deadlocked bills in Congress, some of the bills put forward on the state level involve penalties of up to 10 years in prison and astronomically high fines.

However, for the time being, cloning for research purposes remains legal in most states. Only Iowa and South Dakota have explicitly banned it. California explicitly allowed therapeutical cloning in 2002. This could change, though, if a proposed ban on cloning is turned into state law. Research that includes the destruction of human embryos, i.e. embryonic stem cell re-

search and all forms of human cloning is currently illegal in Florida, Louisiana, Maine, Michigan, Minnesota, North Dakota, Pennsylvania and Rhode Island.

### **A Case In Fact: Embryonic Stem Cell Research In Wisconsin, “The Birthplace Of Human Embryonic Stem Cell Research” (Gov. Jim Doyle of Wisconsin)**

The University of Wisconsin at Madison pioneered embryonic stem cell research in 1998 when its biologist James Thomson was the first scientist to isolate and grow such cells from leftover embryos from in-vitro fertilization treatments. Currently, Madison – home to more than a dozen Nobel laureates – is one of the few sources of NIH approved embryonic-stem-cell lines world-wide.

In 2002, Wisconsin’s Republican-controlled State Assembly voted to ban all forms of human cloning. As in Congress, the bill stalled in the state’s Senate. However, during elections, three Senators who support therapeutical cloning were defeated and replaced by Republicans leaning towards a total ban.

Wisconsin’s Governor Jim Doyle (D), however, supports the newly founded “Wisconsin Coalition to Support Stem Cell Research” and has vowed to veto any legislation that would put an end to embryonic stem cell research at Madison. At a press conference on April 23, 2003, he clearly voiced his support: “Legislation that would restrict or criminalize stem cell research would send a message not only to stem cell researchers, but to all biotechnology research companies that Wisconsin is not friendly to their businesses. It would be devastating to our efforts to build a high technology economy and attract and retain researchers, investors and entrepreneurs.... As Governor, I will do everything in my power to promote Wisconsin’s leadership in this promising field, foster the growth of this important industry, protect our great universities and help us maximize their usefulness as economic growth engines. Other states around the country – states that do not have the scientists or the infrastructure – are attempting to market themselves as stem cell centers. California, New Jersey, Pennsylvania, Massachusetts have all passed or are considering resolutions inviting companies to come to their states.” For example, Wisconsin’s neighbor, Michigan, is about to devote \$ 50 million a year for the next 20 years into a \$ 1 billion project called “Life Sciences Corridor.”

- University of Wisconsin at Madison <http://www.wisc.edu/>
- James Thomson  
[http://www.news.wisc.edu/packages/stemcells/index.msql?get=thomson\\_bio](http://www.news.wisc.edu/packages/stemcells/index.msql?get=thomson_bio)
- Governor Jim Doyle Prepared Remarks, News Conference on Stem Cell Research, Wednesday, April 23, 2003  
[http://www.winfoundation.org/winfoundation/upload/doyle\\_stemcell\\_press.pdf](http://www.winfoundation.org/winfoundation/upload/doyle_stemcell_press.pdf)
- Wisconsin’s Assembly Bill AB104 <http://www.legis.state.wi.us/2003/data/AB-104.pdf>  
(banning embryonic stem cell research and therapeutical cloning)
- Wisconsin’s Senate Bill SB 45 <http://www.legis.state.wi.us/2003/data/SB-45.pdf>  
(banning embryonic stem cell research and therapeutical cloning)
- University of Wisconsin Testimony at the Wisconsin Legislative Hearing on AB104 & SB45 on May 20, 2003  
<http://www.wicell.org/uploads/media/CharlesHosletTestimonyClon.pdf>
- States vie for biotech dollars – Delegations try to stand out at convention (National Association of Seed and Venture Funds)  
<http://www.nasvf.org/web/allpress.nsf/pages/4767>

### **“If I Will Walk Will Depend On Politics” (Christopher Reeve)**

The current situation – with Congress at a stalemate, while some state legislators rush ahead and others maintain a wait-and-see attitude – could become politically uncomfortable for George W. Bush with the 2004 Presidential elections approaching. Even now, new stem cell lines, obviously superior to those eligible for federal funding, have been developed in universities, private companies in the U.S. and overseas. They remain out of reach for U.S. researchers relying on federal funding. “I think the United States is not leading the world in the area of stem cell research, and it could be, and in my opinion it should be,” the famous actor

Christopher Reeve said on a TV show in July (CNN's Larry King Live, July 30, 2003). Christopher Reeve, who has been paralyzed from the neck down since an accident in 1995, is currently in Israel – a country that has no restrictions on therapeutical cloning – to study the country's treatment of spinal injuries. Mr. Reeve is Chairman of the Board of Directors of the Christopher Reeve Paralysis Foundation, an organisation that strongly supports stem cell research as well as therapeutical cloning.

With such star-studded support in mind, the pharmaceutical industry, advocacy groups and bioscience companies may pressure the President to reconsider his position on embryonic stem cell research and therapeutical cloning. These groups might even end up spending millions of dollars in political donations so that they get the right results in 2004.

- New Stem Cell Issue (New York Times, September 3, 2001)  
<http://www.nytimes.com/2001/09/03/health/03CELL.html>
- Christopher Reeve Paralysis Foundation  
<http://www.apacure.com/>

**Stephan Neuhäuser** works for the Department of International Cooperation within the Austrian Research Ministry. He is currently at the Office of Science & Technology as Senior Visiting Expert and can be contacted at [neuhaeuser@ostina.org](mailto:neuhaeuser@ostina.org).

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