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Senate

The Senate met at 9 a.m. and was called to order by the President pro tempore [Mr. STEVENS].

PRAYER

The Chaplain, Dr. Barry C. Black, offered the following prayer:

Let us pray.

Eternal spirit, the author and finisher of our faith, as the days blend together and the August recess beckons, we pause to simply praise You. We praise You for Your glory and strength, for You are majestic and powerful. We praise You for keeping us from falling when we have walked in slippery places. We praise You for the gifts of borrowed heartbeats or a fresh sunrise. We praise You for our Senators who labor with faithfulness for freedom.

Lord, teach us today how to master ourselves that we may honor You. Give us wisdom to number our days and maximize the opportunities presented by the passing minutes. Strengthen our resolve to nurture our families and to leave an exemplary legacy for those who follow us. Empower each of us to meet life's vicissitudes with the calm assurance that You rule in the affairs of humanity.

We pray this in Your loving Name. Amen.

PLEDGE OF ALLEGIANCE

The PRESIDENT pro tempore led the Pledge of Allegiance, as follows:

I pledge allegiance to the Flag of the United States of America, and to the Republic for which it stands, one Nation under God, indivisible, with liberty and justice for all.

RESERVATION OF LEADER TIME

The PRESIDENT pro tempore. Under the previous order, the leadership time is reserved.

DEPARTMENT OF THE INTERIOR, ENVIRONMENT, AND RELATED AGENCIES APPROPRIATIONS ACT, 2006—CONFERENCE REPORT

The PRESIDENT pro tempore. Under the previous order, the Senate will proceed to the consideration of the conference report to accompany H.R. 2361, which the clerk will report.

The legislative clerk read as follows:

The committee of conference on the disagreeing votes of the two Houses on the amendment of the Senate to the bill (H.R. 2361) making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2006, and for other purposes, having met, have agreed that the House recede from its disagreement to the amendment of the Senate and agree to the same with an amendment, and the Senate agree to the same, signed by a majority of the conferees on the part of both Houses.

(The conference report is printed in the House proceedings of the RECORD of July 28, 2005.)

RECOGNITION OF THE MAJORITY LEADER

The PRESIDENT pro tempore. The majority leader is recognized.

SCHEDULE

Mr. FRIST. Mr. President, we have several unanimous consent requests with respect to our schedule today. Following the time for the two leaders, we will consider the Interior appropriations conference report under a 20-minute time limit. Following that debate, we will return to the energy conference report for final closing remarks. At the conclusion of that debate, we will have a series of rollcall votes on these measures. I would anticipate those votes occurring sometime around 10:45 or so this morning.

After those votes are completed, we will return to the gun manufacturers liability bill. We have an agreement for a limited number of amendments, with time agreements on each of those. Therefore, we will have votes throughout the afternoon until passage of that legislation.

Finally, we will also consider the highway conference report when it becomes available from the House. It is not yet here. All Senators should be aware that we will have a substantial number of rollcall votes today, as many as 13 over the course of the day. Therefore, we ask that Senators remain close to the Chamber throughout the day to facilitate the votes and our remaining business.

VITIATION OF UNANIMOUS-CONSENT AGREEMENT—H.R. 2985

Mr. FRIST. Mr. President, I ask unanimous consent that the order with respect to the Legislative branch appropriations conference report be vitiated.

The PRESIDENT pro tempore. Without objection, it is so ordered.

The PRESIDENT pro tempore. The majority leader is recognized.

STEM CELL RESEARCH

Mr. FRIST. Mr. President, since 2001 when stem cell research first captured our Nation's attention, I have said many times the issue will have to be reviewed on an ongoing basis—and not just because the science holds tremendous promise, or because it is developing with breathtaking speed. Indeed, stem cell research presents the first major moral and ethical challenge to biomedical research in the 21st century.

In this age of unprecedented discovery, challenges that arise from the nexus of advancing science and ethical considerations will come with increasing frequency. How can they not? Every day we unlock more of the mysteries of human life and more ways to promote and enhance our health. This compels profound questions—moral questions that we understandably struggle with both as individuals and as a body politic.

How we answer these questions today—and whether, in the end, we get them right—impacts the promise not only of current research, but of future research, as well. It will define us as a

● This "bullet" symbol identifies statements or insertions which are not spoken by a Member of the Senate on the floor.

civilized and ethical society forever in the eyes of history. We are, after all, laying the foundation of an age in human history that will touch our individual lives far more intimately than the Information Age and even the Industrial Age before it.

Answering fundamental questions about human life is seldom easy. For example, to realize the promise of my own field of heart transplantation and at the same time address moral concerns introduced by new science, we had to ask the question: How do we define ''death?'' With time, careful thought, and a lot of courage from people who believed in the promise of transplant medicine, but also understood the absolute necessity for a proper ethical framework, we answered that question, allowed the science to advance, and have since saved tens of thousands of lives.

So when I remove the human heart from someone who is brain dead, and I place it in the chest of someone whose heart is failing to give them new life, I do so within an ethical construct that honors dignity of life and respect for the individual.

Like transplantation, if we can answer the moral and ethical questions about stem cell research, I believe we will have the opportunity to save many lives and make countless other lives more fulfilling. That is why we must get our stem cell policy right—scientifically and ethically. And that is why I stand on the floor of the U.S. Senate today.

Four years ago, I came to this floor and laid out a comprehensive proposal to promote stem cell research within a thorough framework of ethics. I proposed 10 specific interdependent principles. They dealt with all types of stem cell research, including adult and embryonic stem cells.

As we know, adult stem cell research is not controversial on ethical grounds—while embryonic stem cell research is. Right now, to derive embryonic stem cells, an embryo—which many, including myself, consider nascent human life—must be destroyed. But I also strongly believe—as do countless other scientists, clinicians, and doctors—that embryonic stem cells uniquely hold specific promise for some therapies and potential cures that adult stem cells cannot provide.

I will come back to that later. Right now, though, let me say this: I believe today—as I believed and stated in 2001, prior to the establishment of current policy—that the Federal Government should fund embryonic stem cell research. And as I said 4 years ago, we should Federally fund research only on embryonic stem cells derived from blastocysts leftover from fertility therapy, which will not be implanted or adopted but instead are otherwise destined by the parents with absolute certainty to be discarded and destroyed.

Let me read to you my fifth principle as I presented it on this floor 4 years ago: No. 5. Provide funding for embryonic stem cell research only from blastocysts that would otherwise be discarded. We need to allow Federal funding for research using only those embryonic stem cells derived from blastocysts that are left over after in vitro fertilization and would otherwise be discarded (CONG. REC. 18 July 2001: S7847).

I made it clear at the time, and do so again today, that such funding should only be provided within a system of comprehensive ethical oversight. Federally funded embryonic research should be allowed only with transparent and fully informed consent of the parents. And that consent should be granted under a careful and thorough Federal regulatory system, which considers both science and ethics. Such a comprehensive ethical system, I believe, is absolutely essential. Only with strict safeguards, public accountability, and complete transparency will we ensure that this new, evolving research unfolds within accepted ethical bounds.

My comprehensive set of 10 principles, as outlined in 2001 (CONG. REC. 18 July 2001: S7846–S7851) are as follows: (1) ban embryo creation for research; (2) continue funding ban on derivation; (3) ban human cloning; (4) increase adult stem cell research funding; (5) providing funding for embryonic stem cell research only from blastocysts that would otherwise be discarded; (6) require a rigorous informed consent process; (7) limit number of stem cell lines; (8) establish a strong public research oversight system; (9) require ongoing, independent scientific and ethical review; (10) strengthen and harmonize fetal tissue research restrictions.

That is what I said 4 years ago, and that is what I believe today. After all, principles are meant to stand the test of time—even when applied to a field changing as rapidly as stem cell research.

I am a physician. My profession is healing. I have devoted my life to attending to the needs of the sick and suffering and to promoting health and well being. For the past several years I have temporarily set aside the profession of medicine to participate in public policy with a continued commitment to heal.

In all forms of stem cell research, I see today, just as I saw in 2001, great promise to heal. Whether it is diabetes, Parkinson's disease, heart disease, Lou Gehrig's disease, or spinal cord injuries, stem cells offer hope for treatment that other lines of research cannot offer.

Embryonic stem cells have specific properties that make them uniquely powerful and deserving of special attention in the realm of medical science. These special properties explain why scientists and physicians feel so strongly about support of embryonic as well as adult stem cell research.

Unlike other stem cells, embryonic stem cells are ''pluripotent.'' That means they have the capacity to become any type of tissue in the human body. Moreover, they are capable of renewing themselves and replicating themselves over and over again—indefinitely.

Adult stem cells meet certain medical needs. But embryonic stem cells—because of these unique characteristics—meet other medical needs that simply cannot be met today by adult stem cells. They especially offer hope for treating a range of diseases that require tissue to regenerate or restore function.

On August 9, 2001, shortly after I outlined my principles (CONG. REC. 18 July 2001: S7846–S7851), President Bush announced his policy on embryonic stem cell research. His policy was fully consistent with my ten principles, so I strongly supported it. It federally funded embryonic stem cell research for the first time. It did so within an ethical framework. And it showed respect for human life.

But this policy restricted embryonic stem cell funding only to those cell lines that had been derived from embryos before the date of his announcement. In my policy I, too, proposed restricting number of cell lines, but I did not propose a specific cutoff date. Over time, with a limited number of cell lines, would we be able to realize the full promise of embryonic stem cell research?

When the President announced his policy, it was widely believed that 78 embryonic stem cell lines would be available for Federal funding. That has proven not to be the case. Today only 22 lines are eligible. Moreover, those lines unexpectedly after several generations are starting to become less stable and less replicative than initially thought; they are acquiring and losing chromosomes, losing the normal karyotype, and potentially losing growth control. They also were grown on mouse feeder cells, which we have learned since, will likely limit their future potential for clinical therapy in humans (e.g., potential of viral contamination).

While human embryonic stem cell research is still at a very early stage, the limitations put in place in 2001 will, over time, slow our ability to bring potential new treatments for certain diseases. Therefore, I believe the President's policy should be modified. We should expand federal funding—and thus NIH oversight—and current guidelines governing stem cell research, carefully and thoughtfully staying within ethical bounds.

During the past several weeks, I have made considerable effort to bring the debate on stem cell research to the Senate floor, in a way that provided colleagues with an opportunity to express their views on this issue and vote on proposals that reflected those views. While we have not yet reached consensus on how to proceed, the Senate will likely consider the Stem Cell Research Enhancement Act, which passed

the House in May by a vote of 238 to 194, at some point this Congress. This bill would allow Federal funding of embryonic stem cell research for cells derived from human embryos that: (1) are created for the purpose of fertility treatments; (2) are no longer needed by those who received the treatments; (3) would otherwise be discarded and destroyed; (4) are donated for research with the written, informed consent of those who received the fertility treatments, but do not receive financial or other incentives for their donations.

The bill, as written, has significant shortcomings, which I believe must be addressed.

First, it lacks a strong ethical and scientific oversight mechanism. One example we should look to is the Recombinant DNA Advisory Committee—RAC—that oversees DNA research. The RAC was established 25 years ago in response to public concerns about the safety of manipulation of genetic material through recombinant DNA techniques. Compliance with the guidelines—developed and reviewed by this oversight board of scientists, ethicists, and public representatives—is mandatory for investigators receiving NIH funds for research involving recombinant DNA.

Because most embryonic stem cell research today is being performed by the private sector—without NIH Federal funding—there is today a lack of ethical and scientific oversight that routinely accompanies NIH-Federal funded research.

Second, the bill doesn't prohibit financial or other incentives between scientists and fertility clinics. Could such incentives, in the end, influence the decisions of parents seeking fertility treatments? This bill could seriously undermine the sanctity of the informed consent process.

Third, the bill doesn't specify whether the patients or clinic staff or anyone else has the final say about whether an embryo will be implanted or will be discarded. Obviously, any decision about the destiny of an embryo must clearly and ultimately rest with the parents.

These shortcomings merit a thoughtful and thorough rewrite of the bill. But as insufficient as the bill is, it is fundamentally consistent with the principles I laid out more than four years ago. Thus, with appropriate reservations, I will support the Stem Cell Research Enhancement Act.

I am pro-life. I believe human life begins at conception. It is at this moment that th organism is complete—yes, immature—but complete. An embryo is nascent human life. It is genetically distinct. And it is biologically human. it is living. This position is consistent with my faith. But, to me, it isn't just a matter of faith. It is a fact of science.

Our development is a continuous process—gradual and chronological. We were all once embryos. The embryo is human life at its earliest stage of development. And accordingly, the human embryo has moral significance and moral worth. It deserves to be treated with the utmost dignity and respect.

I also believe that embryonic stem cell research should be encouraged and supported. But, just as I said in 2001, it should advance in a manner that affords all human life dignity and respect—the same dignity and respect we bring to the table as we work with children and adults to advance the frontiers of medicine and health.

Congress must have the ability to fully exercise its oversight authority on an ongoing basis. And policymakers, I believe, have a responsibility to reexamine stem cell research policy in the future and, if necessary, make adjustments.

This is essential, in no small part, because of promising research not even imagined four years ago. Exciting techniques are now emerging that may make it unnecessary to destroy embryos—even those that will be discarded anyway—to obtain cells with the same unique ''pluripotential'' properties as embryonic stem cells.

For example, an adult stem cell could be ''reprogrammed'' back to an earlier embryonic stage. This, in particular, may prove to be the best way, both scientifically and ethically, to overcome rejection and other barriers to effective stem cell therapies. To me—and I would hope to every member of this body—that's research worth supporting. Shouldn't we want to discover therapies and cures—given a choice—through the most ethical and moral means?

So let me make it crystal clear: I strongly support newer, alternative means of deriving, creating, and isolating pluripotent stem cells—whether they are true embryonic stem cells or stem cells that have all of the unique properties of embryonic stem cells.

With more Federal support and emphasis, these newer methods, though still preliminary today, may offer huge scientific and clinical pay-offs. And just as important, they may bridge moral and ethical differences among people who now hold very different views on stem cell research because they totally avoid destruction of any human embryos.

These alternative methods of potentially deriving pluripotent cells include: (1) extraction from embryos that are no longer living; (2) non-lethal and nonharmful extraction from embryos; (3) extraction from artificially created organisms that are not embryos, but embryo-like; (4) reprogramming adult cells to a pluripotent state through fusion with embryonic cell lines.

Now, to date, adult stem cell research is the only type of stem cell research that has resulted in proven treatments for human patients. For example, the multi-organ and multi-tissue transplant center that I founded and directed at Vanderbilt University Medical Center performed scores of life-saving bone marrow transplants every year to treat fatal cancers with adult stem cells.

And stem cells taken from cord blood have shown great promise in treating leukemia, myeloproliferative disorders and congenital immune system disorders. Recently, cord blood cells have shown some ability to become neural cells, which could lead to treatments for Parkinson's disease and heart disease.

Thus, we should also strongly support increased funding for adult stem cell research. I am a cosponsor of a bill that will make it much easier for patients to receive cord blood cell treatments.

Adult stem cells are powerful. They have effectively treated many diseases and are theoretically promising for others. But embryonic stem cells—because they can become almost any human tissue (''pluripotent'') and renew and replicate themselves infInitely—are uniquely necessary for potentially treating other diseases.

No doubt, the ethical questions over embryonic stem cell research are profound.They are challenging. They merit serious debate. And not just on the Senate floor, but across America—at our dining room tables, in our community centers, on our town squares.

We simply cannot flinch from the need to talk with each other, again and again, as biomedical progress unfolds and breakthroughs are made in the coming years and generations. The promise of the Biomedical Age is too profound for us to fail.

That is why I believe it is only fair, on an issue of such magnitude, that senators be given the respect and courtesy of having their ideas in this arena considered separately and cleanly, instead of in a whirl of amendments and complicateliamentary maneuvers. I have been working to bring this about for the last few months. I will continue to do so.

And when we are able to bring this to the floor, we will certainly have a serious and thoughtful debate in the Senate. There are many conflicting points of view. And I recognize these differing views more than ever in my service as majority leader: I have had so many individual and private conversations with my colleagues that reflect the diversity and complexity of thought on this issue.

So how do we reconcile these differing views? As individuals, each of us holds views shaped by factors of intellect, of emotion, of spirit. If your daughter has diabetes, if your father has Parkinson's, if your sister has a spinal cord injury, your views will be swayed more powerfully than you can imagine by the hope that cure will be found in those magnificent cells, recently discovered, that today originate only in an embryo.

As a physician, one should give hope—but never false hope. Policymakers, similarly, should not overpromise and give false hope to those

suffering from disease. And we must be careful to always stay within clear and comprehensive ethical and moral guidelines—the soul of our civilization and the conscience of our nation demand it.

Cure today may be just a theory, a hope, a dream. But the promise is powerful enough that I believe this research deserves our increased energy and focus. Embryonic stem cell research must be supported. It is time for a modified policy—the right policy for this moment in time.

The PRESIDING OFFICER (Mr. ISAKSON). The Democratic leader.

Mr. REID. Mr. President, before the distinguished majority leader leaves the floor, I want to, through the Chair, express to him my appreciation for the courageous statement he made. It was a moral decision made by the majority leader of the Senate. His decision will bring hope to millions of Americans who face these terrible diseases, and it has even more meaning as a result of the medical background the Senator from Tennessee has.

I know there is still a long way to go legislatively, but a large step has been taken by the majority leader today to give hope to the people of Nevada who suffer from these diseases, the people from Georgia, Pennsylvania, Tennessee, and all over America. I admire the majority leader for doing this.

The PRESIDING OFFICER. The Senator from Pennsylvania.

Mr. SPECTER. Mr. President, I congratulate my distinguished colleague, Senator FRIST. I believe the speech which he has made on the Senate floor is the most important speech made this year and perhaps the most important speech made for many years because this issue of embryonic stem cell research is the difference between life and death.

When Senator FRIST says what he has stated this morning, it has an enormous impact as to science because of his unique position and respected position as a scientist, as a doctor, as a medical researcher, but enormous impact on Government. I use the word ''government'' instead of ''politics'' because this has an impact on Government when the majority leader is taking the position which he has taken. I believe it is especially weighty because of the thoughtfulness, the deliberation, and the time he has utilized bringing all of his abilities to bear—his considerable abilities to bear. The thoughtfulness and deliberation emphasizes the importance of what he has said.

On a personal note, I have had an opportunity to talk with Senator FRIST about it many times over the course of the past 4 years. I know how he has wrestled with this issue and how conscientious he is in his judgment.

One final comment, and that is, Dr. FRIST, Senator FRIST, Majority Leader FRIST's comments will reverberate far and wide, around the world. This is a speech which will be heard around the world, including at the White House. I have had the opportunity to talk with the President on this issue on a number of occasions. He was in Pennsylvania 44 times last year, and I had a good opportunity to talk with him in the car and on the plane. The President made a very important decision on August 9 of 2001 on liberating some 63 stem cell lines. There is some discussion as to how many there were. Sixty-three was the initial line. I know the President will listen to what Senator FRIST has to say. I am not saying he is going to agree with it. But what Senator FRIST has had to say is weighty and I think may bring us all together on this issue. So I congratulate my distinguished leader.

The PRESIDING OFFICER. The Senator from Kansas.

Mr. BROWNBACK. Mr. President, I, too, wish to recognize the comments made by the majority leader this morning and to thank him for his call for a ban on human cloning, which was one of the principles that he outlined when he spoke this morning. I am interested in bringing this important topic to the Senate floor for debate.

I would note a couple of points about the different issues we face when we consider the many new aspects of evolving science. Yesterday morning's Washington Post found pluripotent adult stem cells being able to make eggs. Also, the June edition of the Science journal talks about the antibodies and the alleged problems with embryonic stem cell lines that are currently being developed. This article states that the concern with the lines being built on mouse feeder cells is overblown, and that those concerns are overstated. In addition, I think more of these lines may end up being available.

I note for my colleagues and the Majority Leader, whom I regard very highly—he is a brilliant individual and works very hard—that he articulated 10 principles regarding ethics in research and medical treatment, and I appreciate them. I was there 4 years ago when the Majority Leader articulated the 10 principles—this is before he was Majority Leader—and he has stuck by them today.

However, there is a basic principle involved that is here, and that is whether or not a young, living human embryo is a life or a piece of property. And how is it going to be treated? I think we have to deal with the precursor principles before we can go ahead with unrestricted research on this issue. Even as carefully as such research may be drawn, one has to make this determination: Is it life?

Is it person or property? It is one or another. If it is person, respect it as a person. If it is property, it can be done with as its master chooses. That is the principle we have to dig into first. I hope we can get into that in the upcoming debate we will conduct on the entire range of these issues, hopefully on the entire range of human cloning and adult stem cell research—adult stem cell research, where we have 65 human treatments currently taking place.

I appreciate the comments of my colleagues. I do differ on the need to expand embryonic stem cell research.

I ask unanimous consent to print in the RECORD the three items that I referenced.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

BENEFITS OF STEM CELLS TO HUMAN PATIENTS—ADULT STEM CELLS V. EMBRYONIC STEM CELLS (PUBLISHED TREATMENTS IN HUMAN PATIENTS)

ADULT STEM CELLS: 65—ESCR:0

Cancers

1. Brain Cancer
2. Retinoblastoma
3. Ovarian Cancer
4. Skin Cancer: Merkel Cell Carcinoma
5. Testicular Cancer
6. Tumors abdominal organs Lymphoma
7. Non-Hodgkin's lymphoma
8. Hodgkin's Lymphoma
9. Acute Lymphoblastic Leukemia
10. Acute Myelogenous Leukemia
11. Chronic Myelogenous Leukemia
12. Juvenile Myelomonocytic Leukemia
13. Cancer of the lymph nodes: Angioimmunoblastic Lymphadenopathy
14. Multiple Myeloma
15. Myelodysplasia
16. Breast Cancer
17. Neuroblastoma
18. Renal Cell Carcinoma
19. Various Solid Tumors
20. Soft Tissue Sarcoma
21. Waldenstrom's macroglobulinemia
22. Hemophagocytic lymphohistiocytosis
23. POEMS syndrome

Auto-Immune Diseases

24. Multiple Sclerosis
25. Crohn's Disease
26. Scleromyxedema
27. Scleroderma
28. Rheumatoid Arthritis
29. Juvenile Arthritis
30. Systemic Lupus
31. Polychondritis
32. Sjogren's Syndrome
33. Behcet's Disease.
34. Myasthenia
35. Autoimmune Cytopenia
36. Systemic vasculitis
37. Alopecia universalis

Cardiovascular

38. Heart damage

Ocular

39. Corneal regeneration

Immunodeficiencies

40. X-Linked hyper immunoglobuline-M Syndrome
41. Severe Combined Immunodeficiency Syndrome
42. X-linked Iymphoproliferative syndrome

Neural Degenerative Diseases/Injuries

43. Parkinson's disease
44. Spinal cord injury
45. Stroke damage

Anemias/Blood Conditions

46. Sickle cell anemia
47. Sideroblastic anemia
48. Aplastic Anemia
49. Amegakaryocytic Thrombocytopenia
50. Chronic Epstein-Barr Infection
51. Fanconi's Anemia
52. Diamond Blackfan Anemia
53. Thalassemia Major
54. Red cell aplasia
55. Primary Amyloidosis

Wounds/Injuries

56. Limb gangrene

57. Surface wound healing
58. Jawbone replacement
59. Skull bone repair

Other Metabolic Disorders

60. Osteogenesis imperfecta
61. Sandhoff disease
62. Hurler's syndrome
63. Krabbe Leukodystrophy
64. Osteopetrosis
65. Cerebral X-linked adrenoleukodystrophy

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[From Science Magazine, June 10, 2005]

READY OR NOT? HUMAN ES CELLS HEAD TOWARD THE CLINIC

Shortly before Congressman James Langevin cast his vote last month to relax federal rules on funding of stem cell research, the Rhode Island Democrat told his colleagues, ''I believe one day I will walk again.'' Langevin, who has been paralyzed since a gun accident at age 16, pleaded with his colleagues to vote with him. ''Stem cell research gives us hope and a reason to believe. . . . We have a historic opportunity to make a difference for millions of Americans.''

With impassioned pleas like this, high-stakes battles in Congress, and billions of private and state dollars pouring into research on human embryonic stem (hES) cells, it often seems their therapeutic applications must be just around the corner. But a careful parsing of the claims from even the strongest advocates reveals the caveat ''someday.''

How soon that someday might arrive is far from clear. Scientists are nearly unanimous that the study of hES cells will illuminate human development and disease. But whether the cells will actually be used to cure patients like Langevin is less certain. Cell therapies are more complicated than drugs, and hES cells, which have the potential to become any cell type in the body, carry special risks.

''The most sobering thing about [hES] cells is their power,'' says neuroscientist Clive Svendsen of the University of Wisconsin, Madison, who works with both fetal and embryonic stem cells. The extreme flexibility and capacity for growth characteristic of ES cells makes them ideal for producing large quantities of therapeutic cells to treat, say, diabetes or spinal cord injuries. But these same traits also increase the risk that renegade cells could, as they have in animal studies, cause unwanted side effects, ending up in the wrong place or even sparking cancerous growth. ''You have to learn to control that power in the dish'' before thinking about putting the cells into patients, says Svendsen.

For that reason, most groups say they are at least five or, more likely, 10 years away from clinical trials. But one company is challenging that timeline. Geron in Menlo Park, California, says its animal studies suggest that stem cell therapy can be safe and might be effective for a select group of patients. The company hopes to start clinical trials of hES cells to treat spinal cord injuries as early as summer 2006. Already, the company is in discussions with the Food and Drug Administration (FDA), which is attempting to set safety standards for the field. Potential treatments with human ES cells face the same difficulties as all cell therapies, notes Malcolm Moos of FDA's division of cellular and gene therapies: There are few standardized techniques to measure the purity or potency of a cell population that would be delivered to a patient.

Most stem cell researchers view Geron's plans with hefty skepticism and caution that a premature rush to patients could seriously damage the already-controversial field. And it is far from clear whether FDA will allow the trial to proceed. But Geron, which funded the researchers who isolated the first hES cells in 1998, has several reasons to push ahead; the company holds a number of patents and exclusive licenses that give it more freedom—and more incentive—to develop possible products from hES cells. And whatever the outcome, scientists agree, Geron's ambitious plans will offer a test case of the hurdles scientists will have to overcome to prove that hES therapies are both safe and effective.

Even the skeptics say Geron chose a plausible target for the first trial, as spinal cord injuries may be significantly easier to tackle than diseases such as diabetes or Parkinson's. The trials would be based on work led by Hans Keirstead, a neuroscientist at the University of California, Irvine, who proved a persuasive spokesperson for the field during the campaign for California's Proposition 71, which provides $3 billion in funding for hES cell research.

During last fall's campaign, Keirstead described his then-unpublished work, showing videos of rats with spinal cord injuries that had regained some mobility after injections of cells derived from hES cells. ''I am extremely enthusiastic,'' Keirstead says. ''I am past the point of hope. In my mind the question is when. What we are seeing in these animal models is tremendous.''

Keirstead and his colleagues, with funding and technical support from Geron, have developed a protocol that encourages hES cells to differentiate into cells called oligodendrocyte precursors. These cells can form oligodendrocytes, the cells that, among other functions, produce the protective myelin sheath that allows neurons to send signals along their axons. This sheath is often lost during spinal cord injuries.

In a paper last month in the Journal of Neuroscience, Keirstead's team reported that these precursors, when injected into the spinal cord, could help improve recovery of rats that had suffered spinal cord injury. The cells aren't replacing injured neurons, Keirstead says, but are encouraging the natural healing process, presumably by restoring some of the myelination. Earlier studies in mice (Science, 30 July 1999, p. 754) showed that injecting mouse cells destined to form oligodendrocytes into injured or diseased animals could restore some myelination; Keirstead's team is the first to show that human ES cells can have similar effects.

For newly injured rats, the results are promising. In animals that received oligodendrocyte precursors 7 days after their injury, the cells survived and apparently helped repair the spinal cord's myelin. Within 2 weeks, treated rats scored significantly better on standardized movement tests than control animals, which had received human fibro-blasts or a cell-free injection.

But when the researchers injected cells 10 months after the injury, they saw no effect—sobering news for people like Langevin suffering from old injuries. The cells survived but were apparently unable to repair the long-term damage. For that reason, Keirstead says, Geron's proposed clinical trial would target newly injured patients.

The phase I trial, if it goes forward, will probably include only a handful of patients and, most importantly, Keirstead emphasizes, will not cure anyone. Its primary goal is to show that the treatment can be safe. ''The public and scientists must realize that these are the first attempts,'' Keirstead says. ''No one is expecting them to cure. We are expecting them to treat, but we have no idea what the level of response is going to be.''

Proving safety is a tall enough order. In numerous animal studies, ES cells from mice and humans have proved difficult to control, differentiating into the wrong kind of cell, for instance, or migrating away from the injection site.

In its spinal cord trial, Geron plans to inject ES-derived cells that can form just a single cell type, an approach that may circumvent some of these problems. For a full recovery, patients are likely to need new neurons as well as other support cells called astrocytes, but using precursors that differentiate into all three types of nerve cells can be problematic. In several rodent studies, partially differentiated mouse ES cells injected into the spinal cord have formed neurons, astrocytes, and oligodendrocytes and have helped animals recover from spinal cord injuries. But more recently, neural stem cells derived from adult animals which also differentiate into the three cell types—have caused problems. As Christoph Hofstetter of the Karolinska Institute in Stockholm, Sweden, and his colleagues reported in Nature Neuroscience in March, neural stem cell treatments led to some recovery in rats' paralyzed hind legs, but the animals also developed a chronic pain sensitivity in their forelegs, which had been unaffected by the injury. In other experiments, preventing the formation of astrocytes seemed to eliminate the side effect, highlighting the importance of proper differentiation, Svendsen says.

Perhaps the biggest worry is that hES therapies will spur tumor formation. One of the defining characteristics of ES cells is that they form disorganized tumors, called teratomas, when injected in undifferentiated form under the skin of immune-compromised mice. ''The ES cell is basically a tumor-forming cell,'' says neuroscientist Anders Bjorklund of Lund University in Sweden. ''This aspect has to be dealt with seriously before the cells are applied in the clinic.'' Even a benign tumor in the central nervous system would be serious, says Svendsen: ''Any sort of growth in the spinal cord is not good news.''

But Keirstead believes he has solved those problems. The key, he says, is a differentiation procedure that he claims produces cell populations in which 97% of cells express genes typical of oligodendrocyte precursors. ''Teratomas are a real possibility if you put in naive stem cells,'' he acknowledges. ''But that is the science of yesteryear. No one is even considering putting in any naïve ES cells.'' Keirstead and his colleagues say in their paper that they found no evidence that their specialized cells formed astrocytes or neurons after injection. The team is also checking whether any of the injected cells leave the spinal cord. So far, Keirstead says, they seem to stay close to the site of injection.

Keirstead's paper is promising, Svendsen says, but he's not convinced the work is ready for patients. ''It didn't go into the detail you'd like to see before a clinical trial,'' he says. The catch is that it's hard to be sure that a population of several million cells is free of any undifferentiated stragglers. To evaluate the risk of tumors, Keirstead and his colleagues are testing the differentiated cells in nude mice: animals bred to lack an immune system. If the animals live for a year without signs of teratomas, then Keirstead says he will feel confident that the cells are safe to try in humans.

Several teams are making headway addressing another problem: possible animal contamination. To date, almost all human ES cell lines have been exposed to animal products. Cultured cells are often kept alive with fetal calf serum, for instance, and most hES cell lines have been grown on layers of mouse cells called feeder cells, which provide the key proteins that prevent ES cells from differentiating.

These techniques have sparked worries that hES cell therapies could introduce exotic animal viruses into patients. In response, several teams, including Geron, have recently developed ways to grow new cell lines either on human feeder layers or without feeder cells at all.

But the older cell lines have the advantage of being better characterized, says Geron CEO Thomas Okarma. That's why the company plans to use one of the original lines derived by James Thomson of the University of Wisconsin, Madison, in its first clinical trial. To reduce the risk of contamination, the company has been growing these cells for more than a year without any feeder cells. That may suffice for FDA, which has said that past exposure to animal cells does not disqualify ES cell lines from clinical use as long as certain safety standards are met.

Okarma says Geron can demonstrate that its cells are uncontaminated. His claim is bolstered by a paper by another group published last week in Stem Cells. Joseph Itskovitz-Eldor of Technion-Israel Institute of Technology in Haifa and his colleagues tested five hES cell lines and several cultures of mouse feeder cells for signs of murine retroviruses, which lurk in the genome of all mouse cells. Although the team identified receptors for the so-called mouse leukemia viruses, they found no evidence that the virus had infected any of the human cells, even after growing on mouse feeders for years. Animal products still may pose a risk, says Itskovitz-Eldor. But the new work shows that ''the cells can be tested, and we believe it will be possible to use them clinically.''

More recently, researchers identified another potential downside to using mouse feeder cells. In February, Fred Gage and his colleagues at the Salk Institute for Biological Studies in La Jolla, California, reported that hES cells grown with mouse feeders expressed a foreign sugar molecule on their cell surface. Because humans carry antibodies to the molecule, the researchers suggested that it might tag the cells for destruction by the human immune system. If so, then any therapy created with existing cell lines was unlikely to succeed. But Keirstead, Okarma, and others now say that those concerns, widely reported, may have been overstated. Gage and his noted that the sugar gradually disappears once cells are removed from the feeder layers. Keirstead says that once cells are removed from mouse feeder layers for several months, the sugar disappears. Okarma adds that cells in Geron's feeder-free cultures have no sign of the foreign molecule.

Finally, some scientists worry that ES cells might acquire harmful new mutations in culture, a common phenomenon with almost all cultured cells. Although ES cells ''are probably 100 times more stable than adult stem cells in culture, they're not perfect,'' cautions Mahendra Rao of the National Institute on Aging in Baltimore, Maryland. Such mutations would be particularly hard to detect ahead of time.

FDA, meanwhile, is trying to set safety standards for this burgeoning field. The agency announced in 2000 that cell therapies involving stem cells from embryos or adults would be regulated as drugs, not as surgical techniques. That means that researchers will have to meet certain standards of purity and potency. For most drugs, those standards are straightforward to set and easy to measure. Cellular products are much more complicated, * * *

STILL WAITING THEIR TURN

Even enthusiasts agree that Geron's goal—to begin testing a human embryonic stem (hES) cell therapy in patients with spinal cord injury within a year—is a long shot. Prospects are more distant for using stem cells to treat other diseases, such as diabetes, Parkinson's disease, amyotrophic lateral scleroris (ALS), and multiple sclerosis (MS). None is likely to reach the clinic for at least 5 to 10 years, most scientists in the field agree. And that's assuming abundant funding and faster-than-expected scientific progress.

Some of the strongest advocates for hES cell research are those hoping to find a cure for type 1 diabetes. The driving force behind California's Proposition 71, Robert Klein, says, for example, that his primary motivation is to find a cure for his diabetic son. Diabetes kills the pancreas's B cells, which regulate the amount of insulin in the blood. Patients have to take frequent insulin injections and face many complications, including kidney failure and blindness. Replacing the missing cells could cure the disease. Initial trials using B-cell transplant from cadavers have shown promise, but side effects and the transplants' limited life span has dampened enthusiasm (Science, 1 October 2004, p. 34). And even if the therapy worked perfectly, each transplant requires cells from multiple cadavers. So researchers are looking for renewable sources of cells that could treat the millions of patients who might benefit.

In theory, hES cells fit the bill nicely. In practice, however, although several groups have managed to coax mouse ES cells to differentiate into cells that make insulin, no one has yet managed to derive bona fide B cells from either mouse or human ES cells. One reason may be that unlike nerve cells or heart muscle cells, pancreatic cells are some of the last to develop during pregnancy. In mice, the cells appear on day 15 or 16, just a day or two before birth, and in humans, they appear in the 5th or 6th month. ''If the road is longer, the possibility of getting lost is much higher,'' explains Bernat Soria of Miguel Hernández University of Alicante, Spain, who has tried to produce B-like cells from both mouse and human ES cells. Fortunately , says Soria, the cells may not have to be perfect; several types of insulin-producing cells have helped alleviate diabetes symptoms in mice.

But there is no leeway when it comes to safety. Diabetes is a chronic but not inevitably deadly disease, so any cell therapy must be safer and more effective than insulin shots. ''We don't have a cure, but we have a treatment,'' Soria says. ''Despite the strong pressure we have from patients and families, the need for cell therapy is not as strong.

Scientists have already attempted to use cell therapies to treat Parkinson's disease, which attacks neurons in the brain that produce the neurotransmitter dopamine, leaving patients increasingly unable to move. In a handful or clinical trials in the last decade, physicians implanted dopamine-producing cells from fetal tissue—with decidely mixed results. Whereas some patients showed significant improvement, others show little or none. And some developed serious side effects including uncontrollable jerky movements. Scientists aren't yet sure what went wrong, although some suspect that patients may have received either too many or too few fetal cells, which are difficult to characterize in the lab.

Dopamine-producing neurons derived from ES cells could provide an unlimited and well-characterized source of cells. And a trial in monkeys from a team at Kyoto University found that dopamine-producing neurons grown from monkey ES cells could improve animals' symptoms. But before ES-derived cells are tested in Parkinson's patients, scientists need to understand more about how the transplanted cells are behaving in the brain, says neuroscientist Anders Bjorklund of Lund University in Sweden. ''The knowledge is just not good enough yet to justify any clinical trials'' with hES cells, he says.

Patients and doctors facing the nightmare of ALS may be willing to accept higher risks associated with early hES cell treatments. There is no effective treatment for this invariably fatal disease that kills motor neurons, and patients usually die within 5 years of a diagnosis. But ''ALS is an order of magnitude harder than other diseases'' to treat with cell therapy, says motor disease specialist Douglas Kerr of Johns Hopkins University in Baltimore, Maryland. Doctors still aren't sure what causes the disease, and even if scientists could coax stem cells to replace the lost motor neurons—''a pretty tall order,'' Kerr says—any new neurons could be subject to the same deadly assault. More promising, he says, would be a cell or a mixture of cells that might somehow help slow the damage, but no one is sure what that might look like.

Treating MS has similar challenges, says Hans Keirstead of the University of California, Irvine, who is working with Geron on its possible spinal cord injury trial. ''We're much farther away from treating MS with stem cells,'' he says. Like spinal cord injuries, the disease attacks the myelin sheath around nerve cells, and injected oligodendrocyte precursors have shown positive effects in animal models. But the human situation is more complicated, Keirstead says. Nerves damaged by MS are already surrounded by oligodendrocyte precursors, but something stops the cells from working. Indeed, Keirstead, who is relentlessly optimistic about the prospects of helping spinal cord injury patients, sounds much more sober about the prospects for other patients. ''When I look at the work with Parkinson's, MS, and stroke, I think spinal cord injuries are very amenable to these strategies. The rest of the central nervous system is not.''

[From the Washington Post, July 28, 2005]

SCIENTISTS CLAIM TO FIND CELLS THAT RESTORE EGG PRODUCTION

(By Rob Stein)

A team of Harvard scientists is claiming the discovery of a reservoir of cells that appear capable of replenishing the ovaries of sterilized mice, possibly providing new ways to help infertile women have babies.

While cautioning that more research is needed to confirm that similar cells exist in women and that they can safely restore fertility, the researchers said the findings could revolutionize the understanding of female reproduction and the power to manipulate it.

''This may launch a new era in how to think about female infertility and menopause,'' said Jonathan L. Tilly, a reproductive biologist at Harvard Medical School and Massachusetts General Hospital in Boston who led the research. It is being published in tomorrow's issue of the journal Cell.

Other researchers agreed that the findings could have profound implications, but several expressed caution and skepticism, saying many key questions remain about whether the researchers have proved their claims.

''This is really exciting and a revolutionary idea. The implications are potentially huge,'' said Lawrence Nelson of the National Institute of Child Health and Human Development. ''But before this could have any type of application to humans, a whole lot of work has to be done. We have to be careful not to get ahead of ourselves.''

But Tilly said he was confident of his findings, which could, for example, enable women to bank egg-producing cells when they are young in case they have health

problems that leave them infertile or they get too old.

''In theory, these cells could provide an insurance policy. We could harvest them and store them away for 20 years. Then you put them back in, and they are going to do exactly what they are supposed to—find the ovaries and generate new eggs'' to restore fertility, Tilly said.

The discovery could also lead to ways to prevent, delay or reverse menopause, perhaps by stimulating dormant cells in the bone marrow or ''tweaking'' the ovaries to accept them, Tilly said. It may also be possible to transplant them from one woman to another, he said.

In addition, because the cells appear to be a particularly versatile type of adult stem cell, they could provide an alternative to those obtained from embryos, avoiding the political and ethical debates raging around the use of those cells.

''The implications are mind-boggling, really,'' Tilly said.

The research is a follow-up to results the team reported in March 2004, when it claimed it had shown that mice can produce eggs throughout their lives. For decades, scientific dogma has been that female mammals such as mice and humans are born with a finite number of eggs. To alleviate doubts about their original claim, the researchers conducted another round of experiments, which they said confirm the findings and explain how it might work.

First, the scientists sterilized female mice with a cancer chemotherapy drug that destroyed eggs in the ovaries but spared any egg-producing cells elsewhere. They tested the animals' ovaries 12 to 24 hours later and found signs their egg supply was rapidly regenerating. Two months later, the animals' ovaries looked normal, and they remained that way for life.

After tests indicated the source of the cells may lie in the animals' bone marrow, the researchers infused marrow from healthy mice into those that were either genetically engineered to be infertile or had been made infertile with chemotherapy. Two months later, the recipients' ovaries looked normal, whereas those that had not received the transplants remained barren, the researchers reported. Blood transfusions produced similar results, they said.

The researchers then infused blood into infertile mice from animals that had been genetically engineered so that their reproductive stem cells glowed fluorescent green. Within two days, green egg cells appeared in the recipients' ovaries, which the researchers said indicated the cells had traveled through the blood to the ovaries.

Finally, the researchers screened human bone marrow and blood from healthy women and found that both tested positive for biological markers indicating the presence of immature reproductive cells.

''Mice and humans appear to be the same—they appear to have a set of genes in bone marrow consistent with . . . cells that can make themselves a new egg,'' Tilly said.

The findings could help explain previously mysterious cases of women sterilized by cancer treatment who spontaneously became pregnant after receiving bone marrow transplants, Tilly said. This may happen only rarely because some, but not all, techniques used to process bone marrow before transplantation may destroy the cells in some cases, he speculated.

The research triggered a mixture of excitement, caution and deep skepticism.

''It's quite amazing,'' said Hans Schoeler of the Max Planck Institute in Germany. ''The idea that cells from bone marrow may be a reservoir for egg cells would be quite astonishing.''

But Schoeler and other researchers cautioned that many crucial questions remained. Several researchers had doubts about some of the techniques the researchers used. Others were puzzled by the speed with which the ovaries appeared to be repopulated with eggs. Many pointed out that the researchers had failed to show the eggs were viable, the mice were ovulating or that they could give birth to healthy offspring.

''I'm very skeptical,'' said David F. Albertini of the University of Kansas Medical Center in Kansas City, Kan. ''There are a lot of holes in the research.''

Tilly attributed the skepticism to the radical nature of the findings and said he already had work underway to address the concerns, including breeding studies aimed at producing healthy offspring.

''We hope we will have the answers very soon,'' Tilly said.

The PRESIDING OFFICER. The Senator from Tennessee.

Mr. ALEXANDER. I ask unanimous consent to speak as if in morning business for 4 minutes.

Mr. President, this morning, the majority leader made some comments regarding stem cell research. I appreciate his comments. It was a statement of conscience. I think for each of us in the Senate this issue comes down to a statement of conscience. I believe we need to take additional steps in support of stem cell research and control it in an ethical way because it has the promise of saving lives. I therefore support the House-passed legislation that Senator SPECTER and Senator HATCH have introduced. I support the legislation that our Health, Education, Labor, and Pensions Committee has reported to the Senate for Federal support for cord blood research. I am looking forward to seeing more from Senator COLEMAN regarding his work to develop an alternative way of supporting Federal research for stem cells which already exist, but not in the future. In other words, I am looking for ways to support this important research because it has the promise of saving lives.

I am pro-life, Mr. President. I am opposed to human cloning. I will vote to criminalize human cloning. But I support this legislation that is offered by Senator HATCH and Senator SPECTER. President Bush has already said that Federal funds may be used in some cases for research on some stem cell lines derived from fertilized eggs. With the help of fertility clinics, some prospective parents use fertilized eggs to help them have children. Those excess eggs that these parents do not use are often thrown away. I support using some of those fertilized eggs that would otherwise be thrown away under carefully controlled conditions with the consent of the donors for potentially lifesaving research that may help cure juvenile diabetes, Parkinson's disease, spinal injuries, and other debilitating diseases.

I thank the Chair.

The PRESIDING OFFICER. The Senator from Illinois.

Mr. DURBIN. Mr. President, I thank the majority leader for his statement. I think it is extremely important that he has joined a bipartisan effort in the Senate to make progress on a critically important issue.

Senator FRIST and I have our differences politically, but I respect and admire him very much, particularly in his humanitarian efforts as a doctor. All of us in the Senate know while we may be back home in our States, he is off in some of the poorest places in the world using his medical skill to save lives. It says a lot about him. It says a lot about his heart, as does his statement this morning.

The fact he would come out and suggest that we need to move forward in stem cell research is going to give new hope to people who absolutely count on medical research for their future and for the life and well-being of members of their families.

I have had roundtable discussions in my State. I have invited people who are suffering from diabetes, Parkinson's, Lou Gehrig's disease, and from spinal cord injuries. They have all come forward to tell me how critically important stem cell research could be to making their lives whole and better.

Senator FRIST's decision today will move us toward a goal, a very important goal of establishing good lines for pursuing this research. The Castle-Degette bill, which comes from the House of Representatives, provides a conscience clause. It says neither the sperm nor egg donor can be asked to give up anything they put into the in vitro process without their consent. There must be a conscience clause included in this process. I agree with that.

We also must establish that we are opposed to human cloning, which I am, and I don't know of any Senator who disagrees. Human cloning is wrong, and we must draw strict ethical guidelines to make sure we do not cross that line.

Also, we never want to see the commercialization of this process. This is about scientific research. It is not about who is going to make a profit, and the Castle-Degette bill is very explicit in that regard.

My colleague from Kansas raises an important point. It is one he and I can debate and it can be debated for centuries about when life begins. I am not sure we will ever come to the same conclusion, but it is important we talk about it.

The thing that troubles me about this debate is that those who oppose stem cell research apparently are not prepared to criminalize in vitro fertilization. They are prepared to allow the process to move forward knowing full well in the ordinary course of events in the laboratory, there will be stem cells that cannot be used to impregnate the woman who is seeking to have a baby.

Mr. BROWNBACK. Will my colleague yield for a comment on that point?

Mr. DURBIN. When I finish my remarks, I will be happy to do so.

The point I am making is this: I have a friend, a woman I have known since

she was a young girl. She is married. She and her husband were unable to bring a child into this world. They went to the doctor and said: Could in vitro be the answer? The doctor said: We can try.

They spent $40,000 trying unsuccessfully. Heartbroken, they went home and waited and saved up enough money and borrowed enough money to try again, and they were successful. They have a beautiful baby whom they love to pieces.

They went to those extraordinary lengths because of their love for one another and their desire to bring life into this world together. I cannot believe there is anything immoral about that motive or that effort by this couple and hundreds or thousands of other couples across America.

The Senator from Kansas knows and I know that in the course of in vitro fertilization for these good reasons, there will be stem cells that are not going to be used to impregnate the woman who is seeking to have the baby. Some of them are frozen for future use, many are currently discarded. If the argument from the Senator from Kansas is that they are life and, therefore, cannot be used for research, then I can't understand why the Senator is not calling for the criminalization of in vitro fertilization which necessarily leads to excess stem cells.

Mr. BROWNBACK. Mr. President, I will be happy to respond.

Mr. DURBIN. Without my yielding the floor.

Mr. BROWNBACK. If I could, Mr. President, and I thank my colleague from Illinois for engaging in the debate because I think that it is a debate that we have needed for a long time.

It appears we have agreement that life does begin at conception. Senator KERRY campaigned on that running for President.

I presume my colleague from Illinois agrees similarly. Others have argued, yes, an embryo is alive but it is not yet a life.

To say that a young human embryo is alive, but it's not yet a life, seems to be a bit of a legal fiction—if we are going that route. A young human embryo is biologically and genetically distinct. It is a separate entity. It is alive. It should be treated as either a person or a piece of property.

My colleague may know that in some countries in Europe on this IVF procedure, they are very careful about the number of eggs that can be harvested and fertilized before they are implanted. I think that would be a good process for us to pursue and to look at so that it is not a huge multiple set of lines but a much narrower group that are created—so that they are treated with the dignity and respect that life should merit and that life should have.

I think my colleague from Tennessee was saying this since he obviously referred to the entity in question as a nascent life. So let us look at that and let us start going at those areas. Would you try to lead to criminalization, and I recognize that may be a good point in the debate but that is not anywhere near where we are today. Let us begin with the young humans with respect and dignity that life merits.

Mr. DURBIN. If I could reclaim my time and respond, and then I would respond to a question from the Senator from North Dakota. The point I am making to the Senator from Kansas is—and I think probably Senator FRIST, even as a medical doctor, would say that we struggle to figure out at what moment this is life. When we are dealing with the sperm and semen and the ovum, are they live cells? Certainly, they are live cells. There is life in those cells. If they were not, they would have no value in this process.

So to say there is life in the cells does not necessarily say we are dealing with a person. At what point does this become a person? This has been debated for as long as humans have been on Earth.

The point I am trying to make is I believe we should protect life, but we better be careful that in protecting life we are not avoiding our responsibility to protect the living. What Senator FRIST is suggesting—I do not want to put words in his mouth. What I believe is that stem cell research helps us to protect the living.

I yield to the Senator from North Dakota for a question.

Mr. DORGAN. I looked forward very much to having a debate on stem cell research in the month of July. It now appears that that will not be the case. Nonetheless, I compliment the Senator from Tennessee, the majority leader, on his statement this morning.

I did want to make this point and ask a question of the Senator from Illinois. Is it not the case that those unused frozen embryos at in vitro fertilization clinics can become one of a couple of things? First and foremost, at the moment when they are unused and discarded, they become hospital waste. Second, and importantly, they can, if used in stem cell research, be used in the important medical research to preserve and to save lives.

I say to my colleague from Kansas, I have lost a daughter to heart disease—many of us have lost loved ones. I will never, ever, on the floor of this Chamber, be a part of those who wish to shut down promising medical research, especially when the ability to provide that research comes from embryos that otherwise would become hospital waste.

My colleague from Illinois asked the pertinent question, and perhaps when we have this debate some day we will have a greater description of that, but if in fact that is a human life which is now thrown in the waste basket as hospital waste, unused embryos that are discarded, if in fact that is a human life—it is not, by the way—should the destruction of that as hospital waste not be treated criminally? That would be the logical extension of some of those who are on the Senate floor wishing to shut down this promising area of research.

My hope is that we can thoughtfully, with ethical guidelines, proceed with research that is pro-life, that will save lives, that will give a lot of Americans greater hope for the future who suffer from dreaded diseases. I look forward to this debate. I wish very much it had been in the month of July, but nonetheless we will have this debate. When we do, I hope we will have a full and open discussion about it and advance the cause of saving lives in this country and around the world.

Mr. DURBIN. If I could, I will say very briefly in response, I am disappointed that we did not resolve this issue favorably in the month of July in the Senate, but I am heartened by the statement made by the majority leader today. It is my belief that we have set the stage to return in September and take up this important lifesaving issue, with a critical bipartisan debate on the Senate floor, for the good of medical research and to bring hope to a lot of people who watch every move we make on this issue.

I yield the floor.

The PRESIDING OFFICER. The majority leader is recognized.

Mr. FRIST. Mr. President, first, I appreciate the comments of my colleagues and the distinguished Senator from Kansas, really all of my colleagues who have spoken. This is a very important issue that we will come back and address, and I appreciate their comments.

PROVIDING FOR CORRECTION TO ENROLLMENT OF H.R. 3

Mr. FRIST. Mr. President, I ask unanimous consent that the Senate now proceed to the consideration of H. Con. Res. 226, which corrects the enrollment of H.R. 3; provided further that Senator BAUCUS be recognized to speak for up to 8 minutes, and following his remarks, the concurrent resolution be agreed to and the motion to reconsider be laid upon the table without intervening action or debate.

The PRESIDING OFFICER. Is there objection?

Without objection, it is so ordered.

The clerk will report the concurrent resolution by title.

The legislative clerk read as follows:

A concurrent resolution (H. Con. Res. 226) providing for a correction to the enrollment of H.R. 3.

The PRESIDING OFFICER. The Senator from Montana is recognized.

Mr. BAUCUS. Mr. President, I rise to address an issue of critical importance to my constituents in Montana. Early this morning, in the dead of night, the House of Representatives took an extraordinary action to delete a commonsense provision in the transportation conference report that would have reopened the runway at Malmstrom Air Force Base in Great Falls, MT. I am sorry the House acted as if it knows what is best for Great Falls, MT.