Approved: May 6, 2002
Date

MINUTES OF THE HOUSE FEDERAL & STATE AFFAIRS COMMITTEE

The meeting was called to order by Chairperson Doug Mays at 1:35 p.m. on February 6, 2002 in Room 313-S of the Capitol.

All members were present except: Representative Joanne Freeborn, Excused

Committee staff present: Mary Torrence, Revisor of Statutes
Shelia Pearman, Committee Secretary

Conferees appearing before the committee: Representative Mary Cook
David Prentice, Ph.D.
Wesley J. Smith, Lawyer/Author
Mike Farmer, Kansas Catholic Conference

Others attending: See attached list

Without objection bill was introduced as requested by Representative Rehorn amending emergency vehicles definition to include SWAT vehicles as it relates to licensing requirements. [HB 2799]

Without objection bill was introduced as requested by Representative Ruff permitting retired police officers. [HB 2796]

Without objection bill was introduced as requested by Representative Peterson amending PEERA act process to include binding arbitration following 40 days of mediation. [HB 2825]

Chairman Mays opened the hearing on **HB 2736 - Human cloning, criminal and civil penalties.** Representative Cook sponsored this bill which would prohibit human cloning and the shipping or receiving of the product of human cloning. She stated this legislation is patterned after the legislation currently pending in Congress. (Attachment #1)

Dr. Prentice clarified that human cloning is asexual reproduction which creates a new developing human. He discussed the variance of therapeutic or experimental cloning from reproductive cloning. He also cited that 95 - 99 percent of clones die before or soon after birth. He stated human experimental cloning is unnecessary for medical progress inasmuch as adult stem cell research is more successful than embryonic stem cell research in other animals. A visual presentation (detailed in Attachment #2) covering embryo development was presented by both Dr. Prentice and Mr. Smith. He urged the committee to support **HB 2736**.

Mr. Smith supported the proposed legislation as well as **HB 2737** and questioned whether the law should permit the biotech industry to make vast profits from the creation and destruction of human life. He stated many of the theoretical medical miracles being pursued via embryonic stem cell research are already being achieved utilizing adult stem cell research and more funding and/or emphasis should be placed in this area of research. He cited nine states have taken the lead in banning cloning and encouraged the committee to pass this important legislation. (Attachment #3)

Mr. Farmer rose in support of **HB 2736** asking the committee to take this positive step in outlawing all human cloning and destructive embryonic stem cell research. (Attachment #4)

The hearing on **HB 2736** was closed.

The committee meeting adjourned at 2:55 p.m. The next scheduled meeting is February 7, 2002.

House Federal and State Affairs Committee
Guest List

DATE: 2/6/02

Victor C. Von Hee	KU Med
Brian Olsen	KU Med
Chris Collins	Kansas Medical Society
Julie Sherrin	Intern
Rich Guthrie	Health Midwest
Mike Farmer	Kansas Catholic Conference
Bruce Dimmitt	Kansans for Life
Matt Bergman	Pat Hubbell Assoc.
Leonore Rowe	HWVK
Elmer Feldkamp	Right to Life of Kansas
Nick Meyring	
Keith Haxton	SEAK
Bettie Thompson	
Jennifer Greever	
Alex Kerr	
Tony Wiseman	

House Federal and State Affairs Committee
Guest List

DATE: 2/6/02

Jon Josserand	University of Kansas
Dick Carter	KBOR
Philip Bradley	KLBA
Harriet Lange	Ks Assn of B Coaches

Human Cloning Ban

- A total ban on human cloning does NOT prohibit any viable and valuable medical research.
- Those who are pushing "therapeutic cloning" are relying on OLD INFORMATION. Most scientists now believe that this technique will not work.
- A conservative estimate of the number of human eggs needed to treat 16 million diabetes patients would be... minimum of 800 million human eggs. A minimum of 80 million women OF CHILDBEARING AGE would have to donate their eggs.
- **Adult stem cells show pluripotent capacity in generation of virtually all adult tissues.**
- Scientific textbooks explain that human life begins when there is complete genetic information. Throughout that person's lifetime, nothing more is added and nothing is taken away. After that, human life ceases only when the person dies a natural death, or is killed. Human life cannot be legitimately divided into stages in which one stage is more "human" than another stage. There is no other logical place you can draw the line, except when there is complete and self-directed genetic information. Any other definition of human life would be extremely problematic.
- If human life is ordered instead of being conceived, society will never be the same. Our genetics will be molded and changed to agree with what the rest of society believes to be acceptable. If that changes or something goes wrong, the new life will be thrown away. People who are living today will be graded and compared to those that can be created.
- If we allow human cloning or embryonic research to go forward without question or debate, the floodgates will be opened and the devaluation of human life will vastly increase. The culture of death will accelerate at a much greater pace than it ever has before, and life will be considered as property, and those lives that are not deemed as "worthy" or "adequate" will be destroyed.
- It is the nature of a scientist to want complete freedom to experiment at will, and for the most part, we gladly give them that freedom. However, we must insist that scientists accept the core ethic of our country and the need for limits when that ethic is threatened. Scientists can always find bioethicists to justify their desires, but they must not be allowed to avoid ethical responsibilities. Just because research can be done, doesn't mean it should be done.
- There is always a limited amount of resources (money, scientists, etc.). That is why we must allocate these resources to the research that gives us the greatest return in the shortest period of time. Adult stem cells are cheaper, easier to attain, do not have the tumor risks or the tissue rejection factor, and are currently curing diseases in human patients today. There are also no ethical considerations to be taken into account. Everyone benefits from this research. Every dollar used for embryonic research takes away a dollar that could have been used for adult stem cell research.

Testimony of Dr. David A. Prentice, Ph.D.
Professor of Life Sciences, Indiana State University
Adjunct Professor of Medical and Molecular Genetics, Indiana University School of Medicine
Founding Member, Do No Harm: The Coalition of Americans for Research Ethics

Department of Life Sciences
Indiana State University
Terre Haute, IN 47809
812-237-2421

Kansas State Legislature
House Federal & State Affairs Committee
Hearing on Human Cloning Ban, HB2736
February 6, 2002

Mr. Chairman, distinguished Members of the Committee, thank you for the opportunity to testify today regarding human cloning.

Human cloning is human asexual reproduction. It may be accomplished by introducing the nuclear material from one or more human somatic cells into a fertilized or unfertilized egg cell whose nuclear material has been removed or inactivated, producing a human embryo who is virtually genetically identical to an existing or previously existing human being.

Proponents of human cloning hold out two hopes for its use: (1) creating live born children for infertile couples or those grieving over the loss of a loved one, so-called "reproductive cloning", and (2) promises of medical miracles to cure diseases by harvesting embryonic stem cells from cloned embryos created from patients, euphemistically termed "therapeutic cloning".

First let us be clear on the terms. All human cloning is reproductive, in that it creates – reproduces – a new developing human intended to be virtually identical to the cloned subject. In point of fact, both "reproductive" (or live birth) cloning and "therapeutic" cloning (more properly termed experimental cloning) use exactly the same techniques to create the clone, and the cloned embryos are indistinguishable. The process, as well as the product, is identical. The only distinction between the embryos is what comes next—either implantation in the hopes of a live birth, or destruction in the hopes of a medical miracle.

The National Academy of Sciences panel report released Jan. 18, 2002 describes it this way:

> "The method used to initiate the reproductive cloning procedure is called either nuclear transplantation or somatic cell nuclear transfer."…
> "If the procedure is successful, the cell will divide several times to produce a pre-implantation embryo – "blastocyst" -- that is composed of about 150 cells."…
> "If the blastocyst is placed in a uterus, it can implant and form a fetus, which then may develop further and result in a newborn."…
> "Unlike reproductive cloning, the creation of embryonic stem cells by nuclear transplantation does not involve implantation of a blastocyst in a uterus. Instead, cells are isolated from a blastocyst about five days after the nuclear transplantation procedure and used to make stem cell lines..."

Thus, the only difference in the procedure is whether the embryo is implanted or destroyed. A ban only on implantation of the embryos is completely unenforceable. Once cloned embryos are available, it is almost inevitable that some will be implanted. And will the law then mandate an abortion, the destruction of a born child, or incarceration of the mother and/or child?

In fact, the embryo at that stage, whether produced by cloning or by the old-fashioned method of joining egg and sperm, is the same—embryos produced by the different methods could not be distinguished under the microscope. (Please see diagram appended to my written submission.) And despite the attempts to employ various euphemisms, scientifically, genetically, what is created is a human being; its species is *Homo sapiens*, it is neither fish nor fowl, monkey nor cow—it is human.

There are good scientific reasons why live birth cloning should be banned. It has an enormous failure rate—95-99% of clones die before or soon after birth. Out of 277 cloned embryos, one Dolly the sheep was produced, and even this "successful" clone is beset with abnormalities—it was recently disclosed that she has developed early arthritis and may need to be put down. This past summer a group at the Whitehead Institute achieved 5 born mice from 613 cloned embryos, and all of the born mice showed abnormalities in expression of their genes.
We can expect that of those few cloned humans who survive to live birth, most will die shortly thereafter and the others be plagued by abnormalities due to the cloning process. In addition, the surrogate mothers of clones experience physiological problems. Because of the clone's abnormalities, carrying a clonal pregnancy to term will pose unique threats to the woman involved. In short, this whole notion is fraught with peril, constitutes an unethical form of human experimentation, and should be banned.

No human cloning is therapeutic cloning. In medical ethics, "therapeutic research" is defined as research that could provide therapeutic benefit to the individual subjected to research risks. Thus "therapeutic cloning" is obviously not therapeutic for the embryo—the new human is specifically created in order to be destroyed as a source of tissue. For clarity's sake this practice should be called human experimental cloning.

Creating new human life solely to destroy it for the potential benefit of others is unethical. It turns human life into a commodity, creating a caste system of lesser humans for scientific sacrifice, what the renowned biochemist Erwin Chargaff calls "a kind of capitalist cannibalism." The real question which much be addressed: Is the young human a person or a piece of property?

Human experimental cloning is also unnecessary for medical progress. Theoretically the embryonic stem cells from the cloned human embryo would be used to generate matched tissues for transplant into the patient from whom the embryo was cloned. However, the promises put forth for therapeutic use of embryonic stem cells are not supported by the scientific literature, and numerous promising non-embryonic alternatives, including adult stem cells, are available for producing the therapies about which cloning advocates can only speculate. Furthermore, an enormous supply of human eggs will need to be made available to treat even a small group of patients, subjecting a large population of women of childbearing age to unethical health risks inherent in harvesting the necessary quantities of eggs for cloning.

The National Academy of Sciences report also spoke of the risk to women's health from cloning:

> "Because many eggs are needed for human reproductive cloning attempts, human experimentation could subject more women to adverse health effects -- either from high levels of hormones used to stimulate egg production or because more women overall would be sought to donate eggs, which involves surgery with its own inherent risks, the panel noted."

But since the same procedure is used to create embryos for the harvest of embryonic stem cells, the same problem applies. In fact, the problem will be even greater, because the procedure used to create embryonic stem cell lines is itself inefficient.

On examining the promises, premises, and published data regarding embryonic stem cells, the claims for embryonic stem cell advantages over adult stem cells are unsubstantiated, and remain speculative, a fad. There are no current clinical treatments based on embryonic stem cells, and in fact very few published successes using animal models of disease. In fact, those who work with embryonic stem cells even have difficulty obtaining pure cultures of specific cell types in the laboratory dish. For example, an Israeli group reported this past summer that they had obtained insulin-secreting cells from human embryonic stem cells. While this might initially sound like a potential treatment for diabetes, what the popular press did not report, and what was revealed by the scientific paper, was that only 1% of the cells in the culture dish secreted insulin. The remaining 99% of the cells were a mixture of other cell types, including nerve, muscle, a few beating heart cells, and also cells which continued to proliferate. Those growing cells point out another problem with embryonic stem cells—the potential for tumor formation. Proponents of embryonic stem cell research readily admit that when injected, embryonic stem cells tend to form tumors. In a report in January 2002 on the possibility that embryonic stem cells could treat Parkinson's disease in rats, 20% of rats injected with embryonic stem cells died from tumors formed in their brains. A treatment which kills one-fifth of the patients is not very promising. And this past summer, a group from the Whitehead Institute reported that embryonic stem cells are genomically unstable, meaning that the expression of their genes is unstable. This might in fact explain why there is such difficulty in obtaining pure cultures and why they tend to form tumors.

Too often a false choice has been put forth—that we must either destroy embryos or allow patients to die. However, there are other choices and alternatives, in particular adult stem cells. Those who say adult stem cells are not a valid alternative are relying on obsolete, outdated information. A wealth of scientific papers published over the last few years documents that adult stem cells are a much more promising source of stem cells for regenerative medicine. They do show capacity to generate virtually all adult tissues. Most, if not all, tissues appear to contain stem cells, or can be formed from stem cells from other body tissues. Even fat has been found to contain stem cells that can be transformed into other tissues. Frankly, this could constitute an unlimited supply of stem cells. In point of fact, any time someone has looked in a tissue for stem cells, they have found them. Adult stem cells are easy to find and easy to isolate.

Many published references now also show that adult stem cells can multiply almost indefinitely, providing sufficient numbers for clinical treatments. Adult stem cells have been shown to be effective in treating animal models of disease, including such diseases as diabetes, stroke, Parkinson's disease, and heart disease. Moreover, adult stem cells are already being used clinically to treat many diseases, including various cancers, autoimmune diseases such as multiple sclerosis, lupus, and arthritis, and anemias including sickle cell anemia. Adult stem cells are being used to form new cartilage, grow new corneas to restore sight to blind patients, treat stroke patients, and repair damage after heart attacks. The patient's own stem cells can be

used for the treatment, preventing the problems of immune rejection, and there is no tumor formation. More scientists now admit that adult stem cells will be the ones to provide therapeutic benefits to patients. Attached to my written submission I have provided an abbreviated list of references regarding scientific advances in adult stem cell research for the Committee. An extensive reference list can be found at the web site of Do No Harm (http://www.stemcellresearch.org).

Given the significant negatives associated with embryonic stem cells, and the proven successes of adult stem cells, there is no valid medical reason to clone human embryos to obtain embryonic stem cells, avoiding the ethical quandary of destroying some human beings for the potential benefit of others.

Indeed, the obstacles to human cloning as a source of medical benefits may well prove insurmountable. Recent overviews in the journals *Nature, Science, Stem Cells* and *New Scientist* all point out that the idea of therapeutic cloning is falling from favor because researchers are finding it to be too costly, inefficient, and unnecessary—those who still support it are relying on obsolete information. (Please see quotes appended to my written submission.)

It should also be emphasized that the proposed ban on human cloning does not restrict any vital or viable medical research. Cloning and nuclear transfer techniques for production of DNA, other molecules, cells other than human embryos, tissues, organs, plants, and animals <u>are all allowed</u>. The proposed prohibition only restricts human cloning, for which there have been no federal funds and for which there will be no federal funds in the foreseeable future.

In summary, human cloning is unsafe, unethical, and unnecessary. There are no valid or compelling grounds—ethical, scientific, or medical—to proceed with human cloning. A comprehensive ban on human cloning is the only sufficient answer.

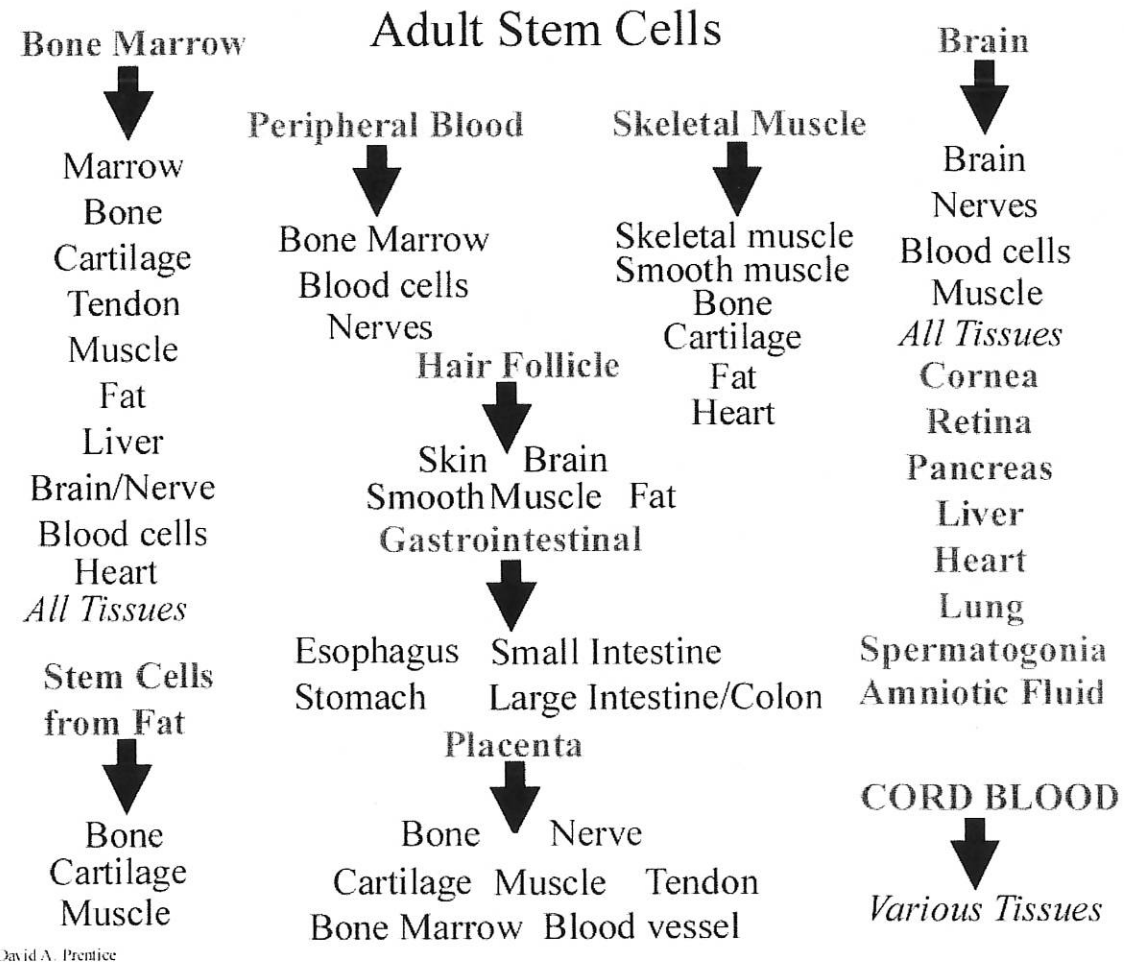
Mr. Chairman, distinguished Members, I thank you for the opportunity to provide testimony on this important issue, and I would be pleased to answer any questions.

Selected References Documenting the Scientific Advances in "Adult" Stem Cell Research (Post-Natal or Tissue Stem Cells, not derived from embryos)

Adult stem cells show pluripotent capacity in generation of virtually all adult tissues

A single adult bone marrow stem cell (multipotent adult progenitor cell) can form all body tissues and proliferate indefinitely in culture.
Westphal SP; "Ultimate stem cell discovered"; *New Scientist*; Jan 23, 2002
A single adult bone marrow stem cell could repopulate the bone marrow of mice. Formed functional marrow and blood cells, and also differentiated into liver, lung, gastrointestinal tract, and skin, as well as heart and skeletal muscle.
Reference: Krause DS *et al.*; "Multi-Organ, Multi-Lineage Engraftment by a Single Bone Marrow-Derived Stem Cell"; Cell 105, 369-377; May 4, 2001
Adult stem cells from brain can grow into a wide variety of organs—heart, lung, intestine, kidney, liver, nervous system, muscle, and other tissues.
Reference: Clarke *et al.*; "Generalized potential of adult neural stem cells"; Science 288, 1660-1663, June 2, 2000.

Post-Natal (non-embryonic) Stem Cells and their Known or Possible Derivatives
(not an all-inclusive list)



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Adult stem cells can multiply almost indefinitely, numbers sufficient for clinical treatments

References: Westphal SP; "Ultimate stem cell discovered"; *New Scientist*; Jan 23, 2002
Reyes M *et al.*; "Purification and ex vivo expansion of postnatal human marrow mesodermal progenitor cells"; *Blood* 98, 2615-2625; Nov 1, 2001
Krause DS; "Multipotent human cells expand indefinitely", *Blood* 98, 2595; Nov 1, 2001
Gilmore GL *et al.*; "Ex vivo expansion of human umbilical cord blood and peripheral blood CD34(+) hematopoietic stem cells"; *Experimental Hematology* 28, 1297-1305; Nov 1 2000
Colter D *et al.*; "Rapid Expansion of recycling stem cells in cultures of plastic-adherent cells from human bone marrow"; Proc. Natl. Acad. Sci. USA 97, 3213-3218; March 28, 2000

Adult stem cells are effective in treating animal models of disease.

Diabetes—Pancreatic stem cells grown in culture formed insulin-secreting islets. When injected into diabetic mice, the mice survived without further need of insulin injections.
***Reference*:** Ramiya VK *et al*, "Reversal of insulin-dependent diabetes using islets generated *in vitro* from pancreatic stem cells," *Nature Medicine* 6, 278-282, March 2000.
Stroke—Adult bone marrow or umbilical cord blood stem cells, delivered intravenously to brain tissue which has suffered stroke damage in rats, provide therapeutic benefit after stroke. The cells appeared to "home" to sites of damage.
***References*:** Chen J *et al.*, "Intravenous administration of human umbilical cord blood reduces behavioral deficits after stroke in rats," *Stroke* 32, 2682-2688; November 2001
Chen J *et al.*, "Therapeutic benefit of intravenous administration of bone marrow stromal cells after cerebral ischemia in rats," *Stroke* 32, 1005-1011; April 2001
Heart Disease—Bone marrow stem cells injected into heart or which migrate to site of heart damage can regenerate heart tissue.
***References*:** Orlic D *et al.*, "Mobilized bone marrow cells repair the infarcted heart, improving function and survival," *Proceedings of the National Academy of Sciences USA* 98, 10344-10349, August 28, 2001
Jackson KA *et al.*, "Regeneration of ischemic cardiac muscle and vascular endothelium by adult stem cells," *Journal of Clinical Investigation* 107, 1395-1402; June 2001
Orlic D *et al.*, "Bone marrow cells regenerate infarcted myocardium," *Nature* 410, 701-705; April 5, 2001
Kocher AA *et al.*, "Neovascularization of ischemic myocardium by human bone-marrow-derived angioblasts prevents cardiomyocyte apoptosis, reduces remodeling and improves cardiac function," *Nature Medicine* 7, 430-436; April 2001.

Current Clinical Uses of Adult Stem Cells

- **Cancers**—Lymphomas, multiple myeloma, leukemias, breast cancer, neuroblastoma, renal cell carcinoma, ovarian cancer
- **Autoimmune diseases**—multiple sclerosis, systemic lupus erythematosus, juvenile rheumatoid arthritis, rheumatoid arthritis, scleroderma, scleromyxedema, Crohn's disease
- **Anemias** (incl. sickle cell anemia)
- **Immunodeficiencies**—including first successful human gene therapy
- **Bone and cartilage deformities**—treating children with osteogenesis imperfecta
- **Corneal scarring**-generation of new corneas to restore sight
- **Stroke**—neural cell implants in clinical trials
- **Repairing cardiac tissue after heart attack**
- **Skin**—grafts; growth from hair follicle stem cells, after plucking a few hairs from patient

Quotes from major scientific journals regarding "therapeutic cloning"

•"…Ministers in Britain have too easily swallowed the line that cloning human embryos is essential to medical progress. It is not. …Like stuck records, ministers and policy makers continue to enthuse about therapeutic cloning even though the majority of bench scientists no longer think it's possible or practicable to treat patients with cells derived from cloned embryos. They have already moved on to investigating the alternatives."
Editorial, "Brave New Medicine", *New Scientist*, Dec 1, 2001

•"The idea of therapeutic cloning, which offers the potential of growing replacement tissues perfectly matched to their recipients, is falling from favour. But there are alternatives…"
"So to the casual observer, it may come as a surprise that many experts do not now expect therapeutic cloning to have a large impact. Aside from problems with the supply of human egg cells, and ethical objections to any therapy that requires the destruction of human embryos, many researchers have come to doubt whether therapeutic cloning will ever be efficient enough to be commercially viable. 'It would be astronomically expensive,' says James Thomson of the University of Wisconsin in Madison."
"Peter Mountford, chief scientific officer of Stem Cell Sciences, believes these problems can be overcome, and argues that it is too early to give up on therapeutic cloning—but his has become a minority view."
Peter Aldhous, "Can they rebuild us?", *Nature* 410, 622-625; April 5, 2001

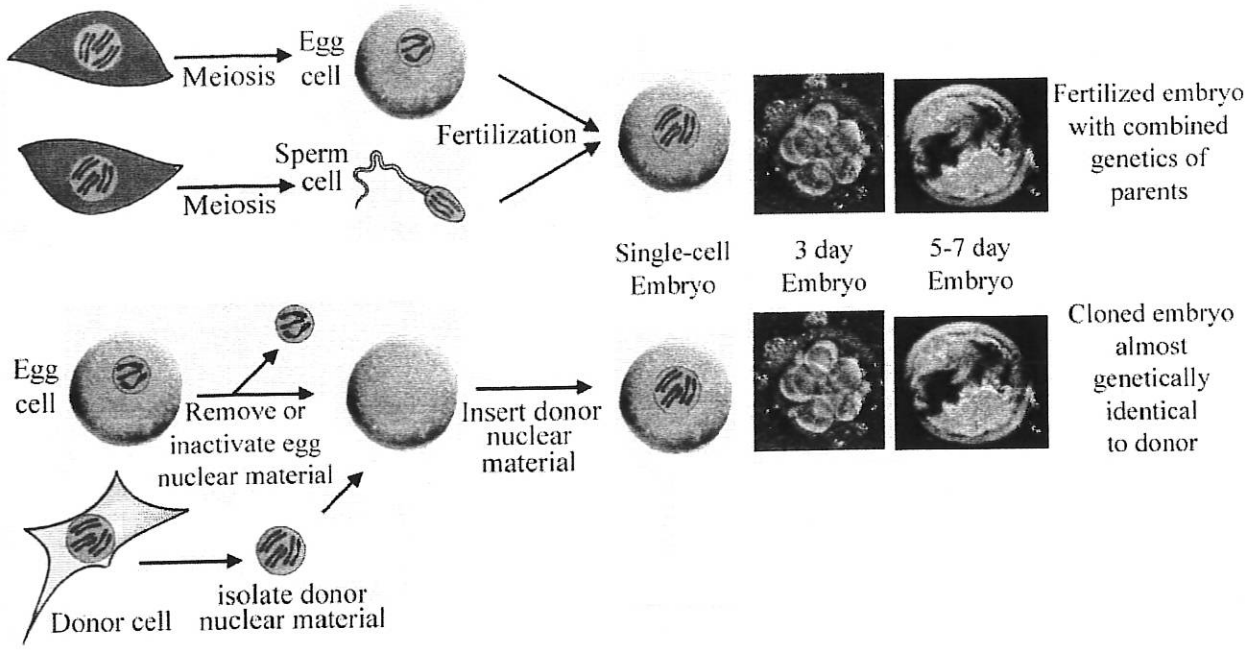
•"But the idea of 'therapeutic cloning' seems to be on the wane. By creating cloned human blastocysts, some experts have argued that it should be possible to derive ES cells perfectly matched to individual patients. But most now believe this will be too expensive and cumbersome for regular clinical use."
Peter Aldhous, "A world of difference", *Nature* 414, 838; Dec 20/27, 2001

•"[John] Gearhart [of Johns Hopkins University] also says that many scientists 'feel there are ways of getting around [the rejection problem] without the nuclear transfer paradigm.' "
Constance Holden, "Would cloning ban affect stem cells?", *Science* 293, 1025; Aug 10, 2001

•"[T]he poor availability of human oocytes, the low efficiency of the nuclear transfer procedure, and the long population-doubling time of human ES cells make it difficult to envision this [therapeutic cloning] becoming a routine clinical procedure…"
Odorico JS, Kaufman DS, **Thomson JA**, "Multilineage differentiation from human embryonic stem cell lines," *Stem Cells* 19, 193-204; 2001

Both Fertilization and Cloning (somatic cell nuclear transfer) Produce Embryos

The cloning process and the cloned embryo produced are identical for both "reproductive" (live birth) cloning and "therapeutic" (experimental) cloning. The only difference is the subsequent use of the embryo (implantation or destruction.)



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Human Cloning Ban
Destructive Embryonic Research

Good Morning. My name is Wesley J. Smith. I am an attorney, author, and consumer advocate. I have attached my biography to my testimony. I am here today to testify in support of **HB2736** and **HB2737**.

For more than eight years I have been deeply engaged in public policy debates over the most important bioethical issues our nation and our states face. These include the attack on the sanctity of life and Hippocratic medical values in bioethics, assisted suicide, proper end of life medical treatment, and most recently, cloning and embryonic stem cell research. My approach to my work is entirely secular, which I believe is appropriate to the creation of public policy in a nation governed by the rule of law.

I appear today to urge you to outlaw all human cloning and destructive embryonic stem cell research (ESCR) in the State of Kansas. I will not address the science of these issues, but the ethics, morality, and politics with which you will have to contend.

First, let me set out the stakes of this debate. With human cloning and embryonic stem cell research, we face perhaps the most fundamental issue that any legislative body will ever confront: **Does human life have intrinsic value simply and merely because it is human.** If the answer is yes, then our public policy surrounding the issues of cell therapy will outlaw the cloning of human life and destructive embryonic research. This would not mean an end to research but rather, would actually permit researchers in Kansas to focus exclusively on the incredible scientific potential presented by adult stem cells and alternative sources, such as the stem cells found in umbilical cord blood. I will discuss this issue later in my testimony.

The Politics of the Debate

The politics of this debate have often blurred vital distinctions and definitions. Such tactics must not be allowed to govern the public policy of the nation or the states.

1. Abortion is irrelevant:

One of the most unfortunate aspects of media coverage of the debate over cloning and ESCR is that the media has confused it with the abortion debate. But the issue of abortion is **utterly irrelevant** to the issues of ESCR and human cloning. Whether one agrees or disagrees with abortion, the reason it is legal is that the law has determined that a woman should not be forced to do with her body that which she does not wish to do, e.g. gestate and give birth should she become pregnant. **But in the issues of human cloning and destructive embryonic research, there is no woman being forced to do anything with her body.** Thus, any references to abortion or the politics of abortion are entirely misplaced in this debate. The decision whether or not to outlaw human cloning or ESCR should not be viewed through a distorting abortion prism.

The media often portrays opponents of cloning and ESCR as being almost exclusively opponents of abortion and/or religious conservatives. But that isn't true. My political pedigree is as a protégée of Ralph Nader, with whom I have coauthored four books. I take no part in the abortion debate one way or the other. Moreover, there are many prominent people on the political left, most of whom believe in abortion rights, who have come out strongly in support of outlawing human cloning. Indeed, recently more than 60 prominent liberals, many of them pro-choice, issued a Statement in Support of Legislation Prohibiting Cloning. Among the signatories are such notables as author Jeremy Rifkin, New York University Professor Todd Gitlin, Norman Mailer, *Commonweal* editor Margaret O'Brien, Director of the Abortion Access Project, Susan Yanow, New Age spiritual leader Matthew Fox, and Judy Norsegian, author of the feminist manifesto *Our Bodies Ourselves*. (This statement is attached to my written testimony.) Key to their opposition to human cloning is this statement, which I urge you all to take to heart:

> We are …concerned about the increasing bio-industrialization of life by the scientific community and life sciences companies and shocked and dismayed that clonal human embryos have been patented and declared to be human "inventions." We oppose efforts to reduce human life and its various parts and processes to the status of mere research tools, manufactured products, commodities, and utilities.

This deep concern, which I share as a signatory of the above statement, is not some paranoid fantasy. In October of last year, Geron Corp. a California biotech company issued a press release announcing a research breakthrough in embryonic stem cell research. Notice the company's utterly dehumanizing description of the import of their discovery: "The finding greatly facilitates the development of **scalable manufacturing processes** to enable commercialization of hES (human embryonic stem) cell-based **products**." (Emphasis added.)[1]

2. The Distinction between "reproductive" cloning and "therapeutic" cloning is bogus.

Public opinion polls demonstrate that most of the American public opposes the cloning of human life. For example, the *Time*/CNN Poll issued on February 19, 2001 found that 90 percent of the respondents thought it was a "bad idea" to "clone human beings." Similarly, a June 2001 poll by International Communications Research found 85 percent opposition to the use of cloning "to try to create children for infertile couples" and 86 percent opposed its use "to create a supply of human embryos to be destroyed in medical research."

To overcome this popular opposition, proponents of human cloning claim that reproductive cloning should be outlawed but that therapeutic or research cloning should be permitted to continue unimpeded. Human nuclear cell transfer cloning is accomplished by extracting the nucleus of an ovum and replacing it with the DNA from a somatic cell of the human being to be cloned. The genetically modified egg is then stimulated to begin embryonic growth and development. *At that point*—let's call it the

[1] Press Release, "Geron Grows Tem Cells Without Mice Feeder Cells," Geron Corp., October 1, 2001.

point of "inception"—the act of cloning is complete and a new human embryo exists possessing its own genetic makeup and gender. Moreover, the cloned embryo would be as much human life as an embryo created through fertilization, and would be identical in its organizational structure to its natural counterpart at the same stages of development.

Ironically, merely outlawing reproductive human cloning, while permitting research cloning would eventually lead to the very act that such a pseudo ban would seek to prevent. Should research cloning remain legal, hundreds and even thousands of human clones will soon be manufactured. This will lead inevitably to reproductive cloning, since researchers would, in addition to other research, be working on techniques to permit "safe" implantation of clone embryos. At that point, either the act of implantation of a clone into a willing woman's uterus would be made legal or some scientist somewhere would illegally implant a cloned embryo into a woman desiring to give birth to the first human clone. Once that occurred, reproductive cloning would be a *fait accompli*.

3. An Embryo is human life, whether derived from fertilization or cloning: Another tactic of those who wish to go full speed ahead with ESCR and human cloning is to claim that an early embryo isn't really human life. Here are just a few examples of this disingenuous advocacy:

> A. The Myth of the Pre-Embryo: One of the most pervasive arguments made by promoters of human cloning—as well as embryonic stem cell research (ESCR)—is that embryos younger than two weeks development are really "pre-embryos." There is just one problem with that assertion: there is no such thing as a pre-embryo.
>
> Don't just take my word for it. Princeton biologist and cloning enthusiast, Lee M. Silver, admitted in his book *Remaking Eden: Cloning and Beyond in a Brave New World,* that the term pre-embryo has "been embraced wholeheartedly…for reasons that are political, not scientific." He further states that the term "is useful in the political arena—where decisions are made about whether to allow early embryo (now pre-embryo) experimentation…"[2]
>
> Or turn to basic embryology. The authors of the textbook, *Human Embryology & Teratology* (3rd ed.) (New York: Wiley-Liss, 2001), have refused to recognize the existence of a "pre-embryo," because:
>
> > (1) It is ill-defined; (2) it is inaccurate …; (3) it is unjustified because the accepted meaning of the word embryo includes all of the first 8 weeks; (4) it is equivocal because it may convey the erroneous idea that a new human organism is formed at only some considerable time after fertilization; and (5) it was introduced in 1986 'largely for public policy reasons. ...[3]
>
> We thus see that "pre-embryo" is merely an advocacy term employed by cloners and supporters of destructive embryonic research to obfuscate the truth: research

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[2] Lee M. Silver, Remaking Eden: Cloning and Beyond in a Brave New World, (1997, Avon Books, New York, NY), p. 39.

[3] Ronan O'Rahilly and Fabiola Muller, *Human Embryology & Teratology*, Third Ed. (2001, Wiley-Liss, New York, NY), p. 88.

on early embryos—whether the embryo is formed by fertilization or through cloning—destroys human life.

B. An embryo is really just a cell: A more recent attempt to strip the humanity from the clone claims that the embryo clone is nothing more than dividing somatic cells that are no different in kind or nature than the cells you lose everyday in your shower. A classic example of this subterfuge comes from pro-cloner Alan Russell, executive director of the Pittsburgh Tissue Engineering Initiative. In a recent opinion column in the *Pittsburgh Post-Gazette*, Russell wrote:

> All cells contain DNA, which gives them the ability to reproduce. But cloners have discovered that if one removes the DNA from mom's egg cell (producing an empty cell) and replaces it with her daughter's DNA, the newly produced cell can survive. …
>
> We then have in our hands a fresh cell, which from now on will look like her daughter's cell. … In a dish, technology will exist to take that cell and simply convince it to multiply—clone itself. …The process is called cloning because the new cell created in the laboratory has the ability to copy itself again and again before turning itself into the liver cell that your loved one so desperately needs.[4]

If there were an Academy Award given for disingenuousness in advocacy, Russell would be among the nominees. First, the entity is not called a clone because its cells divide. If that were true, all cells would be clones since all cells replace themselves through cellular division.

Second, a clone is so named because the cloned entity is virtually identical genetically to the provider of the genetic material used to replace the nucleus of the egg. (I say "virtually," because a minute amount of genetic material from the egg becomes part of the genetic makeup of the new cloned entity.)

Third, while it is true that replacing the egg nucleus with the DNA of the cloned person is the primary technique used to clone in the laboratory, this genetic transfer is not all that happens. As stated earlier, the cloner must next stimulate the genetically modified egg to grow in the same fashion as if it had been fertilized. Thus, just as Dolly the cloned sheep is not its mother, a cloned human embryo is not merely a somatic cell line derived from the person who was cloned; it is a separate and distinct living entity.

Finally, the "new cell" does not "copy itself again and again" until, as if by magic, it suddenly becomes various body tissues. Rather, if the cloned embryo survives long enough he or she would go through exactly the same stages of development as any other baby; from an embryo, to a fetus, to birth. Indeed, as the clone embryo nears two week's of development, its makeup has changed dramatically from what existed at the single cell stage. Like its naturally created counterpart,

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[4] Alan Russell, *Pittsburgh Post-Gazette*, "Human Therapeutic Cloning: Life-Saving Medicine, Not Scary Monsters," December 2, 2001.

he or she would now be made up primarily of undifferentiated stem cells that would, given the time to develop, become all of the tissues of the body, such a the liver tissue referenced by Russell. It is these stem cells that are the current targets of the biotech industry.

C. If it has the ability to twin, it isn't human: Some cloning supporters claim that an embryo isn't really human life until it can no longer become an identical twin. The idea seems to be that until the time in embryonic development when identical twinning cannot occur, the embryo isn't really a human individual. Since human research clones would be destroyed prior to that time, destroying the clone would not actually take a human life.

The argument is ridiculous. Naturally occurring identical twins originate from the same fertilized egg. (Fraternal twins develop from different fertilized eggs.) Twinning occurs early in gestation when the single embryo splits into two identical embryos—a natural form of cloning. These identical embryos are now siblings.

Before twinning an embryo, whether naturally conceived or cloned, is an individual, self-contained embryonic human life with a gender and an individual genetic makeup. After identical twinning, there are now two, individual, self-contained human lives, each having an identical gender and genetic makeup. In other words, there are now two human lives instead of one. However, even though they appear to be identical genetically, each life is unique. For example, should the twins ever be born, each would have different fingerprints.

Is an embryo human life? Clearly, the biological answer is yes. (It isn't Martian, after all.) Public policy decisions on these issues must be based upon this truth, not political spin, wishful thinking, or myth.

Adult/Alternative Stem Cells Offer Great Hope Without the Moral Cost

One of the great underreported aspects of the debate over ESCR and cloning are the many amazing breakthroughs that have occurred in using adult stem cells or other sources, such as those found in umbilical cord blood, in crafting future medical therapies. Here is a very partial list.

- As originally reported late last year in the medical journal *Blood*, Dr. Catherine M. Verfaillie and other researchers at the Stem Cell Institute, University of Minnesota, have discovered a way to coax an adult cell found in the bone marrow to exhibit many of the attributes that supposedly make embryonic stem cells irreplaceable to the development future "miracle" medical therapies. While there is still much research to be done, "multi-potent adult progenitor cells (MAPCs) appear to be versatile, that is, capable of transforming into different types of tissues. (In a culture dish, the cells can be coaxed into becoming muscle, cartilage, bone, liver, or different types of neurons in the brain.) They are also malleable, meaning they can do so relatively easily. They also exhibit the

"immortality" valued in embryonic cells, that is to say, they seem capable of being transformed into cell lines that can be maintained indefinitely. At the same time, these adult cells do not appear to present the acute danger associated with embryonic stem cells: the tendency to grow uncontrollably causing tumors or even cancers.[5]

- On July 19, 2001, The *Harvard University Gazette* reported that mice with Type 1 diabetes (an autoimmune disorder) were *completely cured* of their disease using adult stem cells. This was accomplished by destroying the cells responsible for the diabetes, at which point, the animals' own adult stem cells regenerated the missing cells with healthy tissue. Dr. Denise Faustman told the *Gazette*, that if the therapy works out in humans "we should be able to replace damaged organs and tissues by using adult stem cells, thus eliminating, at least temporarily, the need to harvest and transplant stem cells from embryos and fetuses."[6]
- On June 15, 2001, the *Globe and Mail* (Canada) reported a wonderful story that could provide great hope to people with spinal injuries. Israeli doctors injected paraplegic Melissa Holley, age 18, who became disabled when her spinal cord was severed in an auto accident. After researchers injected her with her own white blood cells, she regained the ability to move her toes and control her bladder. This is the exact kind of therapy that embryonic stem cell boosters only *hope* they can begin to achieve in ten years. Yet, is has been accomplished in the here and now.[7]

Human immune systems have already been restored using umbilical cord stem cells. People with severe heart disease are being treated with experimental therapies using adult stem cells. These are advances that supporters of embryonic sources of such therapies only hope to have available in ten years. A complete listing of such advances would consume many hours. But this much is true: we can achieve tremendous advances in medical research without sacrificing our morality or resorting to destroying human life to achieve those desired ends. I urge the committee to research this issue further by contacting the Do No Harm Coalition. http://www.stemcellresearch.org.

The Stakes in the Debate

The debates about human cloning and ESCR are crucial to the creation of a moral public policy in the Twenty-First Century. At stake is whether the law should permit what may be the most radical enterprise ever undertaken. Bluntly stated, the **biotech industry is determined to make vast profits from the creation and destruction of human life**.

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[5] *Boston Globe*, "Adult Bone Marrow Eyed as Source of Stem Cells," January 24, 2002.
[6] *Harvard University Gazette*, "Adult Stem Cells Effect a Cure," July 19, 2001.
[7] *Globe and Mail*, "Paraplegic Regains Movement After Cell Procedure," June 15, 2001.

That alone, is tremendously disturbing. But it is not the ultimate agenda. What is truly at stake is whether our laws will permit Big Biotech to actually seize control of human evolution.

The human cloning agenda is not limited to medical research or the development of new reproductive technologies. The ultimate goal for many proponents of human cloning is using scientifically produced and monitored clones to model and perfect genetic engineering techniques that really would permit scientist to seize control of human evolution.

Clone embryos are deemed superior for this purpose to embryos created through fertilization—each having a different genetic makeup—because through cloning, researchers could manufacture many genetically identical copies of the same embryo to be experiment upon. This would make it easier for researchers to eventually determine how to manipulate embryos so as to carry the genetic traits the experimenters want to foster. Once this was accomplished, many cell lines could then be extracted for further research simply by repeatedly remaking the same clone embryo. Eventually, this technology would be applied to embryos—whether cloned or natural—that are destined for implantation, gestation, and birth. In the end, as Princeton biologist Lee M. Silver has celebrated in *Remaking Eden*: *Cloning and Beyond in a Brave New World*, such practices will permit a new eugenics in which embryos are screened for genotype, leading eventually to genetically modified human beings.

This strikes me as the height of hubris and arrogance. We are, after all, the species that created the unsinkable ship *Titanic*. Moreover, as Jeremy Rifkin, author of *The Biotech Century*,[8] has stated, "Cloning would permit us to apply engineering standards to procreation. Our children would be selected based on quality controls, production outcomes, efficiency, and utility," in other words, the values of the assembly line. "Once we start engineering human life, we will lose our empathy. Should that happens, we will have lost the human equation."[9]

This is a compelling argument that people of all political stripes and religious sensibilities may be able to rally around regardless of their other differences. If they do, the political struggle in the coming years against human cloning and other eugenic agendas will not be a battle of left versus right but of right versus wrong, in which strange political bedfellows strive together to thwart scientific hubris and foster a deeper respect for the intrinsic value of human life.

Thank you for your attention and time. I will be happy to answer any questions you may have.

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[8] Jeremy Rifkin, *The Biotech Century*, (1998, Tarcher/Putnam, New York, NY).
[9] Jeremy Rifkin, Interview with Wesley J. Smith, January 28, 2002.

Kansas Catholic Conference

6301 ANTIOCH • MERRIAM, KANSAS 66202 • PHONE/FAX 913-722-6633 • WWW.KSCATHCONF.ORG

February 6, 2002

TESTIMONY IN FAVOR OF HB 2736

Representative Doug Mays, Chairman
House Federal and State Affairs Committee

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to testify this afternoon in favor of HB 2736. My name is Mike Farmer and I am the Executive Director of the Kansas Catholic Conference.

I had the opportunity last evening to hear both Dr. David Prentice and Wesley Smith give presentations on why we in Kansas should take positive steps to outlaw all human cloning and destructive embryonic stem cell research. To me their case appears irrefutable and I would hope that their message resonates throughout this building over the next several weeks and that this bill becomes law banning human cloning.

T.S. Eliot once said that human beings cannot bear too much reality. With regard to this issue many in public life including our media have avoided giving us the truth. When the truth is known about cloning and destructive stem cell research, the reality of it does become almost too much to bear. Man's inhumanity to man once again surfaces and its ugliness makes some just look away and pretend it isn't there instead of facing it head on and doing something about it.

Of the many hundreds of votes I cast as a legislator over the years, there is only a handful that I feel really made a significant difference in people's lives. This I would consider to be one of those kinds of votes. Please do the right thing for the citizens of Kansas by facing this issue head on and voting this bill favorably out of committee.

Thank you.

House Fed. &
State Affairs
Date 2/6/02
Attachment No. 4
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