Approved: March 30, 2005
Date

MINUTES OF THE HOUSE FEDERAL AND STATE AFFAIRS COMMITTEE

The meeting was called to order by Chairman John Edmonds at 1:30 P.M. on March 16, 2005 in Room 313-S of the Capitol.

All members were present. Representative Candy Ruff - Excused

Committee staff present:

Athena Andaya, Kansas Legislative Research Department
Dennis Hodgins, Kansas Legislative Research Department
Mary Torrence, Revisor of Statutes Office
Carol Doel, Committee Secretary

Conferees:

Representative Mary Pilcher-Cook
Mary Kay Culp, Executive Director of Kansans for Life
Wesley Smith, Attorney/Author
John Morris, Professor at rockhurst University
Chelsea Zimmerman
Bill Neaves, Stowers Institute, K.C.
Rick Lucus, Overland Park
Bob Vancrum, Greater Kansas City Chamber
Barbara Atkinson, Ph.D. , Kansas University

Others attending:

See attached list.

Chairman Edmonds opened the meeting for bill introduction. Hearing no bill introductions, The Chair opened the public hearing on **HB 2355** concerning human cloning; related to criminal and civil penalties and introduced Representative Mary Pilcher-Cook as a proponent of the bill. Representative Pilcher-Cook explained that **HB 2355** does not allow scientists to manufacture human life, or use manufactured human life as a commodity and urged passage of the bill. (Attachment 1)

Wesley J. Smith, attorney, author, and consumer advocate addressed the committee supporting **HB 2355**. Mr. Smith has been deeply engaged in public policy debates about the most important bioethical issues which our nation and our state face. Mr. Smith stated that he came before the committee to urge them to outlaw all human somatic cell nuclear transfer cloning in Kansas. He further stated in his testimony that by passing the proposed cloning ban, Kansas can lead the way to a biotech sector that is both robust and remains within proper ethical parameters. (Attachment 2) An article entitled *The U.N. on Cloning: Ban It* was also included in Mr. Smith's testimony. (Attachment 3)

Delivering testimony supporting **HB 2355** was Chelsea Zimmerman from Holts Summit, Missouri. Ms. Zimmerman is a 22 year old female who is paralyzed from the chest down from a spinal cord injury received in an automobile accident in 1999. She is concerned that the SCNT process involves the destruction of human life and as much as she would like to walk again and regain control of her bodily functions, she could never accept the harvesting of another human life for her own comfort. (Attachment 4)

John Morris Ph.D. from Rockhurst University, Kansas City, MO. also supports **HB 2355**. Doctor Morris relates that he is a philosopher with specialties in ethics and bioethics and is active in the public discourse of issues in medical ethics. Dr. Morris presented a briefing on the basics of stem cell research. In his testimony, he named the states that have banned human cloning as well as the more than 60 countries that have also banned human cloning. Dr. Morris related that even if one sets aside the ethical arguments, based upon the measures and standards of science there is little reason to continue with embryonic stem cell research. (Attachment 5) Also include in his testimony, was a chart showing the Somatic Cell Nuclear Transfer (SCNT) process as the same process used to create the cloned sheep Dolly. (Attachment 6)

Written testimony supporting **HB 2355** was submitted by Mary Kay Culp, Executive Director, Kansans for Life (Attachment 7); Marsha Strahm, Concerned Women of America (CWA) (Attachment 8); Mike Farmer, for Kansas Catholic Conference (Attachment 9); Mr. Farmer also included an article entitled *Don't be fooled -*

MINUTES OF THE House Federal and State Affairs Committee at 1:30 P.M. on March 17, 2005 in Room 313-S of the Capitol.

Cloning Kills. (Attachment 10)

With no other proponents for **HB 2355**, the Chair opened the floor to the opponents.

Dr. Bill Neaves from the Stowers Institute in Kansas City came before the committee in opposition to **HB 2355**. Dr. Neaves gave the opinion that somatic cell nuclear transfer (SCNT) offers hope to hundreds of thousands of Kansas with devastating disease. He urged that it not be outlawed. Dr. Neaves related that he was raised in a Southern Baptist Church where his father was a Baptist deacon for 50 years of his life. Dr. Neaves has been a born again Christian for 47 years and his wife of 40 years is an ordained Methodist minister, a certified hospital chaplain and a trained bioethesist. He went on to state that if he felt that SCNT meant creating a human being in a lab dish and destroying it for the purpose of research, he would not be able to condone the process. He is secure in his religious belief that the SCNT blastocyst is not a person. (No Testimony)

Rick Lucas of Overland Park is a 58 year old man with Parkinson's disease who opposes **HB 2355**. He does not hold the belief that human life begins with the first division of cells. He respects the proponents religious and moral convictions in this regard, but his beliefs differ. He further related that the mass of cells in a Petri dish is not, will not, and cannot be a human. Therefore, he urges, that they let the scientists do their jobs as that is the only hope those with devastating disease have. (Attachment 11)

Representing the Greater Kansas City Chamber of Commerce was Robert Vancrum, Governmental Affairs Specialist. They have no problem with, and would support fully, a bill that criminalizes human reproductive cloning or the implantation of any product of stem cell research in a human uterus. However, **HB 2355**would do much more than that: it would criminalize a research procedure that holds enormous potential in the search for cures of diseases such as Alzheimer's disease and Parkinson's disease. (Attachment 12)

Dr. Barbara Atkinson, Executive Vice-Chancellor of the University of Kansas Medical Center, who stated that SCNT or somatic cell nuclear transfer is not meant to create life; it literally extends life. SCNT works with the cells of an already-living person to create an environment where these cells can multiply to produce stem cells. SCNT is also essential to help scientists understand how stem cells and other cells develop including how cancer cells grow and develop. In SCNT there is no fertilization of the egg by sperm, no implantation and no pregnancy. The goal is to produce cells. She stands in opposition to **HB 2355**. (Attachment 13) Dr. Atkinson also included a chart showing the promise of stem cell research. (Attachment 14)

Written testimony in opposition to **HB 2355** was submitted by Representative Annie Kuether (Attachment 15), Wes Ashton, Director of Government Relations Overland Park Chamber of Commerce (Attachment 16); Ashley Sherard, Vice-President Lenexa Chamber of Commerce (Attachment 17); Reginald Robinson, President and CEO Kansas Board of Regents (Attachment 18); Linda and Bob Davis, Parkinson's patient (Attachment 19); and Sheila Pearman, recently diagnosed diabetic patient (Attachment 20)

With no other person wishing to address **HB 2355** the Chair closed the public hearing.

There was no further business before the committee and Chairman Edmonds adjourned the meeting.

FEDERAL AND STATE AFFAIRS
GUEST LIST
Date 3-16-05

Jack Lavely Topeka	
Robin Lehman	GKCCF
Kathleen McCluskey Fawcett	KU
Teresa Mulligan	KU
Ellis Dempsey	Parkinson Support Group Lawrence
Sheila Pearman	Individual
Mary Ann Clement	Parkinson's Support Group Lawrence
Linda Davis	Parkinson Support Group Lawrence
Robert E. Davis	" " " "
Doralee J. Rogers	" " " "
Elaine Penny	" " " Lawrence
Bob Vernon	Greater KC Chamber
Rob Peppel	Parkinson Support Group
Maryann Lloyd	PSG - K.C.
Barbara Jordan	O.P.
Patt Kadle	O. Park
Mrs Suggs	Parkinson
Judy Tuttle	Parkinson
Janis Bowser	Parkinson
Gary Bowser	Parkinson
Marsha Strahm	CWA of KS
Mary Ann Phillips, RN	self
Ron + Barb Nesheim	OP KS
Carol Stahl	KS Parkinson's disease Support
Ernest Goldstein	Right to Life of KS
Ledgee Correno	Intern Rep. Craft.
Calysta MacDonald	intern Rep Kuether

MARY PILCHER COOK
REPRESENTATIVE, 18TH DISTRICT

Testimony in Support of **HB 2355**

March 16, 2005

Mister Chairman and honorable members of the committee, thank you for this opportunity to ask for your support of the Human Cloning Ban.

As legislators, we cannot excuse ourselves from understanding new technology and science, as it is our duty to stay informed and educate others. We also should not allow ourselves be swayed by big business or the threat of businesses to "go elsewhere" or by the media's hype of the collapse of economic development. Even if it were true, which you will hear testimony today clearly indicating that it is not, there are simply times when money should not come first.

Today technology is moving very rapidly and we are in an information age that is moving at breakneck speed, and it can be used for good, as well as for evil. The opportunities for good are endless, yet if we ignore true science by changing terminology and confusing the public so a valid debate can't take place, this is a real threat to our democracy.

This bill does NOT ban stem cell research. It doesn't even ban embryonic stem cell research – or "early" stem cell research. It does not ban the cloning of cells or DNA.

HB 2355 does give complete freedom to the science that has already shown huge success today – adult stem cell research. What this bill does NOT allow is for scientists to manufacture human life, or use manufactured human life as a commodity. Human cloning, also called SCNT, manufactures a self-integrating human life, also known as an embryo.

It is the nature of a scientist to want complete freedom to experiment on anything they want, and for the most part, we do give them that freedom. However, we know from history that we cannot give them a blank check. We need the whole truth and nothing but the truth when we are discussing experimentation with human life.

We must be careful of scientists who are willing to change the terminology to avoid the science. There needs to be honesty and calm but sensible judgment which shows the moral gravity of some of the methods being discussed.

I have great interest in biological research because of the Huntington's Disease in my family. Even though I have struggled to change things in our family, earlier generations were taught that this disease was never to be talked about in private, let alone in public. The suicide rate is extremely high and my children's biological father committed suicide after being diagnosed with it. Each of my children have a 50-50 chance of having the gene, and the average age of onset is about 35 years of age. My oldest daughter will be 30 next year. Do I want research? You better believe I want research – and I want the research that works, and I want it fast. And we don't want to destroy other human lives to get it.

Thank you Mr. Chairman and committee members for your consideration.

Rep. Mary Pilcher Cook
785-296-7672
174-W

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 1

Testimony in favor of legislation to ban human cloning in Kansas (HB 2355)

Good afternoon. My name is Wesley J. Smith. I am an attorney, author, and consumer advocate. I have attached my biography to my testimony.

For more than ten years I have been deeply engaged in public policy debates about the most important bioethical issues our nation and our states face. These include researching and writing about the ongoing erosion of the sanctity/equality of life ethic and the concomitant undermining of Hippocratic medical values in bioethics involving areas such as assisted suicide, end of life medical treatment, and cloning and embryonic stem cell research, among other areas of concern. My most recent book, *Consumer's Guide to a Brave New World*, explicitly makes the ethical argument as to why human cloning should be outlawed. My work in the fields in which I advocate 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 somatic cell nuclear transfer cloning in Kansas. I will not address the science of these issues, but will focus on the ethics and politics with which you will have to contend.

First, let me set out the stakes of this debate. The debates over human cloning and embryonic stem cell research funding are not so much science controversies as they are ethical debates over potential avenues of scientific inquiry. This means that we should not merely leave these matters "to the scientists" to decide. Rather, it is the right and duty of the people, through their elected representatives, to regulate this emerging field that is becoming so consequential and powerful that it is developing the means to literally alter human nature at the molecular level.

With the prospect of human cloning we face what may be the most fundamental issue that any legislative body will ever have to confront: **Does human life have intrinsic moral value simply and merely because it is human?** If the answer to this crucial question is yes—which I believe it must be—then we will outlaw all cloning of human life. This would not mean an end to biotechnological research. To the contrary, it would free researchers to focus exclusively on the incredible scientific potential presented by adult stem cells, umbilical cord blood stem cells, and other non controversial areas of biotechnological inquiry that offer tremendous promise to alleviate human suffering without falling prey to the moral risk of dehumanization that is an inescapable byproduct of human cloning.

The Politics of the Debate

The politics of this debate has 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 the cloning debate is that the media have often confused these issues with the burning controversy over abortion. But the issue of abortion is **factually irrelevant** to the issue of human cloning. Whether one agrees or disagrees with abortion, the reason it is legal is that the courts 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 **But in the issues of human cloning, there is no woman being forced to do anything with her body.** Thus, any references to abortion or the politics of abortion are, in my view, entirely misplaced. The decision whether or not to outlaw human cloning should be judged on its own merits and not be viewed through a distorting abortion prism.

2. Human cloning creates a new human life: It is often said by cloning proponents that we should outlaw "reproductive cloning" but permit "therapeutic cloning" (somatic cell nuclear transfer). This implies that there is one kind of cloning for reproduction and another kind for research, and that the embryos created for different cloning purposes are somehow different biologically. This is a false distinction. Somatic cell nuclear transfer, the primary method of cloning, creates a cloned human embryo.[1] Once the cloning process has been completed, a new individual human organism has come into being. Thereafter, there are no further acts of cloning.

At that point, the only question is what to do with the new human life that has been created. When used for research, a process popularly known as therapeutic cloning, the cloned nascent human will be destroyed for use in research or in medical treatments. If the same cloned embryo is to be implanted and gestated toward the birth of a cloned baby, it is often called reproductive cloning. But these are not meaningful distinctions: Cloning is cloning is cloning. As Woo Suk Hwang, the South Korean researcher who created the first cloned human embryos admitted, "This technique [somatic cell nuclear transfer cloning] cannot be separated from reproductive people cloning..."[2]

Human therapeutic cloning is immoral in my view because it reduces nascent human life to the status of a mere commodity and natural resource ripe for the harvest, thereby reducing its moral status to that of penicillin mold. Moreover, should Kansas only prohibit reproductive cloning while permitting therapeutic cloning as some advocate, the state would have taken the truly radical step of legally *requiring* one category of human life, e.g. unborn cloned humans, to be destroyed so that they cannot be born. For example, California law requires destruction of cloned embryos after the 14th day of development, while New Jersey, as I will discuss below, permits gestation of cloned fetuses through the ninth month—but not all the way to completed birth. Until the advent of human cloning, I know of no previous law in human history which ever required that each and every member of a specified category of humans be destroyed.

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[1] *Human Cloning and Human Dignity: the Report of the President's Council on Bioethics*, (2002, Public Affairs, New York), pp. 62-63. The President's Council unanimously defined human cloning as "The asexual production of a new human organism that is, at all stages of development, genetically virtually identical to a currently existing or previously existing human being.

[2] Australian Broadcasting Corporation, ""Korean Stem Cell Research Labeled Recipe for Cloning," February 13, 2004.

3. Cloning could lead to the exploitation of women for their eggs:

There is an aspect of the entire cloning debate that receives far too little attention: The potential for cloning to lead to the exploitation of women, particularly poor women. Here's the issue: The basic idea behind therapeutic cloning is to make cloned embryos of each patient to be treated, develop these embryos for about a week until they reach the "blastocyst" stage, and then destroy them to derive embryonic stem cells for use in medical treatments.

To perform human somatic cell nuclear transplant cloning, the biotechnologist would remove the nucleus from a mature human egg and replace it with the nucleus taken from a cell of the DNA donor. The genetically modified egg would then be stimulated with electricity or a chemical. If the cloning "worked," a new embryo would come into being and begin dividing and developing in the same way as an embryo created through fertilization.

Asexual reproduction via cloning, as this process is known, thus requires one human egg for each cloning attempt. This means that even if the technology can be perfected—which is a big if—it would require tens of millions of human eggs to make therapeutic cloning widely available to the general public. Indeed, according to the National Academy of Sciences, tens of millions of Americans have afflictions that could theoretically benefit from regenerative medicine.[3] This means that it would require tens of millions of human eggs to treat these patients with therapeutic cloning—and that's if *the cloning procedure only takes one egg per patient.*

However, cloning is very difficult to accomplish. Thus, it is very unlikely that an efficiency ratio of one egg per cloned embryo will be achieved in the foreseeable future. Indeed, according to a paper published in the Proceedings of the National Academy of Sciences, authored by a pro therapeutic cloning researcher named Peter Mombaerts, because of the inefficiencies of both cloning and the extraction of ES cells, it would likely take about *100 eggs per patient* just to obtain *one* cloned embryonic stem cell line. (It took Woo Suk Hwang 242 eggs to derive one cloned human embryonic stem cell line.)

The numbers of eggs that would be thus required to make therapeutic cloning widely available to the general public boggles the mind. It would take 10 billion eggs to treat 100 million patients—a number that is beyond comprehension. If only the sickest 100,000 patients were treated with therapeutic cloning, biotechnologists would still require *10 million eggs*. To provide these eggs, hundreds of thousands, if not millions, of women would have to undergo egg retrieval, and as a consequence, face potentially serious risks to their health.

The cost of therapeutic cloning would be likely to bankrupt Medicare, Medicaid, and private health insurance. Today, eggs sell for approximately $1000-$2000 each for use in fertility treatments. According to Mombaerts, this means that the expense for eggs alone in therapeutic cloning would likely range between $100,000 and $200,000—and that doesn't take into account the likely increase in price if demand for eggs increased

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[3] Source: *Stem Cells and the Future of Regenerative Medicine*, Report of the National Academy of Sciences (2001, Washington DC: National Academies Press), p. 6.

dramatically due to therapeutic cloning, nor does it take into account the charges for hospitals, doctors, technicians, etc. No wonder the researcher reluctantly concluded that "This is a prohibitively high sum that will impede the widespread application of this technology in its present form."[4]

One potential way to reduce the price of eggs might be to scour the developing world and pay destitute women a small amount of money to undergo the rigorous and potentially dangerous procedure of egg extraction (even more dangerous in countries with inadequate medical assistance in the event of side effects). So, here too, we see the potential for cloning technology to dehumanize certain human populations. Indeed, it is not alarmism to worry that therapeutic cloning could become a rich man's medicine facilitated on the body parts of the world's most destitute women.

4. Kansas should not join the "Oklahoma Land Race" competition that has begun among several states to attract cloning companies to the state:

Therapeutic human cloning is not only morally problematic, but it is highly speculative, and would be very expensive to develop, most likely taking many years of research. This is a prime reason why venture capitalists have been very reluctant to invest in companies conducting human cloning research. Thus, an article first published in the *Seattle Times* noted that investors "aren't committing billions of dollars" into cloning research, "because society hasn't clearly decided whether the research is moral, the field is too risky, the business model too vague. Researchers don't know how to control embryonic stem cells...and they don't how now to do so cheaply, conveniently, or consistently enough to make it a viable business."[5]

Unable to garner significant private funding, and with no pending proposals at the federal level to fund human cloning research, the biotechnology industry decided to seek billions in corporate welfare from state taxpayers. Thus, proponents of California's Proposition 71—my home state--spent $25 million convincing voters to *borrow* $3 billion over ten years ($6 billion including interest) to fund therapeutic cloning research and experiments with embryonic stem cells.

With passage of Proposition 71, states around the country have begun a pell-mell competition to attract companies engaged in cloning and embryonic stem cell research. Currently, Wisconsin, Massachusetts, New York, and other states are debating funding research within their borders in the hundreds of millions of dollars. For Kansas to remain competitive in this "sellers market," it would have to revoke its existing law preventing public funds from being used in human cloning research and agree to dip deeply into public coffers to entice companies to settle here.

To make matters worse, some states are doing more than merely throw money at the industry. New Jersey has broken virtually all moral constraints by legalizing cloned

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[4] Peter Mombaerts, "Therapeutic Cloning in the Mouse," *100 Proceedings of the National Academy of Sciences*, September 30, 2003.

[5] Luke Timmerman, "Stem Cell Research is Exciting, but Not to Investors," *Miami Herald*, March 30, 2004, reprinting an article that originally appeared in the *Seattle Times*.

"fetal farming."[6] The law explicitly permits the creation of human embryos via somatic cell nuclear transfer cloning and does *not* prohibited implantation of cloned embryos into wombs. This is significant because that which is not illegal, is by definition, legal. And while the law outlaws "the cloning of a human being," that term's definition is so broad that the only act actually prohibited is the actual birth of a cloned baby. Here is the crucial sentence:

> As used in this section, "cloning a human being" means the replication of a human individual by cultivating a cell with genetic material [somatic cell nuclear transfer] through the egg, embryo, fetal *and* newborn stages into a new human individual. (My emphasis.)[7]

The word "and" emphasized in the above quote means that if the cloned human is brought through the embryo and fetal stages, but not into "newborn stages," the law has not been broken. In other words, in New Jersey, cloned fetuses can be literally gestated up to the moment prior to actual birth without legal consequence so long as they are destroyed before exiting the birth canal.

Lest anyone consider this "anything goes" legal license a mistake, other states have seen variously worded legislation introduced that would have also permitted cloning and gestation through the ninth month.[8] Indeed, Illinois came within one vote last year of passing a cloning licensing law that would not have even explicitly outlawed reproductive cloning.[9] Currently, the legislatures of Washington and Minnesota, if not others, have bills pending that would similarly permit cloning through the ninth month.[10]

The only way for Kansas to compete in this hyper-heated political atmosphere would be to race over the edge of an ethical precipice by erasing almost all moral parameters limiting cloning research and then raiding the public coffers to pay for that research.

5. Adult/Alternative Stem Cells Offer Great Hope without the Moral Cost

One of the great underreported stories of the debate over therapeutic cloning are the many amazing breakthroughs that have occurred in using adult stem cells, umbilical cord blood stem cells, or tissues from other sources. Here is a very partial list.

- Stem cells from bone marrow have been found to repair damaged muscle. The researchers involved believe that the results are promising for the future use of adult stem cells in the treatment of neuromuscular diseases such as muscular dystrophy.[11]

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[6] Correspondence from four members of the President's Council on Bioethics to Hon. James E. McGreevey, Governor of New Jersey, January 27, 2003..

[7] New Jersey Senate Bill S. 1909. For more complete discussion of the New Jersey law, see: Wesley J. Smith, *Consumer's Guide to a Brave New World*, (2004, Encounter Books, San Francisco), pp. 85-86.

[8] For example, Texas SB 1034, a bill virtually identical to the New Jersey legislation. Also, the 2003 Delaware bill SB 55.

[9] Illinois, HB 3589, "The Stem Cell Research Act."

[10] State of Washington Senate Bill 5594, 2005 Regular Session; State of Minnesota, S.F. No 730.

[11] Muscular Dystrophy: Blood Cells Could Build Muscle in Neuromuscular Diseases," *Health and Medicine Week*, December 1, 2003.

- Bone marrow stem cells were induced in vitro (in the lab) to differentiate into islet cells, the kind in the pancreas that produces insulin. The researchers claimed that their findings "show that human bone marrow-derived stem cells may serve as a potential source for cell therapy in the treatment of type 1 diabetes. This means that we may one day be able to use a person's own stem cells to reverse diabetes."[12] Meanwhile, juvenile diabetes was cured in mice using cells from the spleen. The cells migrated to their pancreases, "prompting the damaged organs to regenerate into healthy, insulin-making organs," curing their diabetes.[13]
- Adult stem cells extracted from a patient's muscles repaired damage to the heart after a heart attack. Such treatment may not even require surgery, as Dutch investigators reported success delivering the cells by a catheter inserted into an artery. Six months after the treatment, an MRI shows "a significant thickening of the heart wall near the injection sites." This was but one of a series of successful experiments using adult stem cells to treat heart disease reported around the world. (Still, caution should be our watchword until more is known. Researchers still need to determine whether the treatment could cause arrhythmias.[14] Researchers in two mouse experiments failed to "replicate earlier studies that seemed to show they could be coaxed into making new heart muscle.")[15]
- In Lisbon, Portugal, Dr. Carlos Lima has used stem cells and nerves obtained patients' own nasal passages in the treatment of spinal cord injury-caused paraplegia and quadriplegia. So far, the results are very encouraging. While the research has not yet been published in a peer-reviewed journal—which means we cannot yet state that an effective treatment for spinal cord injury has been discovered—there is no question that the procedure looks very promising in early research. Dr. Lima has treated over two dozen patients and all have shown improved sensation and movement. For example, two of Dr. Lima's patients testified before a United States Senate Subcommittee in July 2004 to report that after receiving adult stem cell therapy using their own olfactory tissues, they have begun to regain feeling in their bodies and even been able to stand using a walker or walk with braces.[16]

Adult stem cell and related therapeutic approaches are in current clinical trials or use for the treatment of cancers, autoimmune diseases, anemia, bone and cartilage deformities, corneal scarring, stroke, and skin grafts. Indeed, the thrust of the research now seems indisputable: While not a sure thing, and noting that much research work remains to be done in animal and controlled human studies, barring unforeseen problems, adult stem

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[12] American Society of Hematology, "Derivation of Functional Insulin Producing Cells from Human Bone Marro-Derived Stem Cells," Press Release, December 8, 2003.
[13] Shota Kodama, et al, "Islet Regeneration During Reversal of Autoimmune Diabetes in NOD Mice," *Science*, Vol. 302, November 14, 2003, p. 1223.

[14] "Muscle-Cell Injections by Catheter Repair Heart, "Journal of American College of Cardiology, December 17, 2003.
[15] Sabin Russell, "Adult Stem Cell Transplants Fail in 2 Studies," *San Francisco Chronicle*, March 22, 2004.
[16] See Testimony of Laura Dominguez and Susan R. Fajt before the Senate Commerce Subcommittee on Science, Technology, and Space, July 14, 2004.

cell and related therapies look to be potent sources of new and efficacious medical treatments and cures in the years to come. (A complete listing of such advances would consume many hours. I urge the committee to research this issue further by contacting the Do No Harm Coalition—www.stemcellresearch.org.)

6. The States Need to Take the Lead: There is no federal statute that outlaws human cloning. Federal law merely forbids using taxpayer money to engage in destructive embryo research (the Dickey Amendment). Six states have banned human cloning within their jurisdictions: Michigan; Iowa; N. Dakota; S. Dakota; Arkansas; and, Virginia. Kansas will offer important national leadership by adding its name to this important list. And it will be joining "progressive" nations such as Canada, Australia, Norway, and France in doing likewise. Meanwhile, only two weeks ago, the General Assembly of the United Nations voted overwhelmingly to urge member states to "prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life."[17]

The Stakes in the Debate

The ethical debates about human cloning now raging throughout the world could not be more important. Yes, biotechnology researchers hope to use these technologies to alleviate human suffering. But, by what means? Would it really be wise and prudent for Kansas to countenance the creation of human life solely for research and destruction within its borders? To stay competitive, would that not set this state on the same immoral course already blazed by New Jersey, ultimately permitting stem cell research to move beyond early embryos in the Petri dish and toward experimenting on cloned embryos and fetuses implanted in natural or artificial wombs?

There is a better way. Kansas can help thwart this "Brave New World" agenda by outlawing all human cloning. At the same time, it can encourage robust science and biotechnology within its borders that remain on the right side of the ethical divide. Leon Kass, the Chairman of the President's Council on Bioethics put it this way:

> It is our difficult task to find ways to preserve society from the soft dehumanizations of well-meaning but hubristic biotechnical "recreationism"—and to do it without undermining biomedical science or rejecting its genuine contributions to human welfare.[18]

This *is* a difficult task, but it can and must be done. By passing the proposed cloning ban, Kansas can lead the way to a biotech sector that is both robust and remains within proper ethical parameters.

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[17] "The United Nations Declaration on Human Cloning," approved in the General Assembly, March 8, 2005, document A/59/516/Add. (The official vote was 84 for the ban, 34 opposed, with 37 abstaining, although 90 nations have officially listed themselves as supporting the ban.) The Declaration is not binding.

[18] Leon R. Kass, "Preventing a Brave New World," *The New Republic*, May 21, 2002.

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

WESLEY J. SMITH

Award winning author Wesley J. Smith is a senior fellow at the Discovery Institute, an attorney for the International Task Force on Euthanasia and Assisted Suicide, and a special consultant for the Center for Bioethics and Culture. In May 2004, because of his work in bioethics, he was named by the *National Journal* as one of the nation's top expert thinkers in bioengineering.

Smith left the full time practice of law in 1985 to pursue a career in writing and public advocacy. He has authored or co-authored eleven books. He formerly collaborated with Ralph Nader, co-authoring four books with consumer advocate: *Winning the Insurance Game* (1990), *The Frugal Shopper* (1991), *Collision Course: The Truth About Airline Safety* (1993) and *No Contest: Corporate Lawyers and the Perversion of Justice in America* (1996). He also co-authored (with Eric M. Chevlen, MD), *Power Over Pain*, a consumer's guide to obtaining good pain control.

His book *Forced Exit: The Slippery Slope from Assisted Suicide to Legalized Murder* (1997), a broad-based criticism of the assisted suicide/euthanasia movement was published in 1997 and in paperback in 2003. Smith's *Culture of Death: The Assault on Medical Ethics in America*, a warning about the dangers of the modern bioethics movement, was named one of the Ten Outstanding Books of the Year and Best Health Book of the Year for 2001 (Independent Publisher Book Awards).

Smith's most recently published book is *Consumer's Guide to a Brave New World*, in which he explores the morality, science, and business aspects of human cloning, stem cell research, and genetic engineering. He is also conducting research for a book about the animal liberation movement.

Smith's writing and opinion columns on assisted suicide, bioethics, the morality of human cloning, the dangers of animal liberation, legal ethics, and public affairs have appeared nationally and internationally, including in *Newsweek*, *New York Times*, *The Wall Street Journal*, *USA Today*, *Forbes*, *The Weekly Standard*, *National Review*, *The Age* (Australia), *Western Journal of Medicine*, and the *American Journal of Bioethics*. He has also been published in regional publications throughout the nation.

Smith appears regularly on television and radio talk/interview programs, including having appeared on such national programs as ABC Nightline, Good Morning America, Larry King Live, CNN Crossfire, CNN World Report, the CBS Evening News, Coast to Coast, CSPAN-Book TV, Fox News, and CNN Talk Back Live. He has also appeared internationally on Voice of America, CNN International, and on programs originating in Great Britain (BBC), Australia (ABC), New Zealand, Germany, China, and Canada.

Smith is an international lecturer and public speaker, appearing frequently at political, university, medical, legal, disability rights, bioethics, religious, and community gatherings across the United States, Europe, Canada, South Africa, and Australia.

The U.N. on Cloning: Ban It

The United Nations speaks out against human cloning.

by Wesley J. Smith

03/15/2005 12:00:00 AM

YOU PROBABLY DIDN'T HEAR ABOUT IT, since it received such little media coverage, but last week, by a nearly 3-1 vote, the United Nations General Assembly urged the world to "*prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life.*"

True, "The United Nations Declaration on Human Cloning," is not legally binding. Still, with 90 members on record as supporting the resolution and only 34 against (with the rest abstaining or absent) the lopsided vote sends a powerful message that the international community overwhelmingly opposes human cloning for any purpose.

Taken aback, supporters of therapeutic cloning are already on spin patrol. The *Scientist*, for example, asserted ludicrously that only "reproductive cloning" is banned under the resolution. The extremely slender reed cloning advocates have grasped to make this desperate claim was the use of the word "inasmuch" in the Declaration's declarative statement.

This assertion forces us to hit the dictionaries, where we find that "inasmuch" means "seeing that." The word is generally used to introduce a phrase which, according to one source, "explains why or how much something described in another part of the sentence is true." The primary synonyms for inasmuch are "because" or "since." Thus the clear meaning of the declarative sentence in the U.N. Declaration is to ban all forms of human cloning (reproductive and therapeutic) because (or since) they are incompatible with human dignity and the protection of human life.

However, the word "inasmuch" can occasionally be used to mean "to the degree that." pro-cloners grasped this less common usage as a weasely way out of the clear purpose of the declaration--much in the same way that Bill Clinton sought to declare different meanings for the word "is" during his legal difficulties. Thus, they asserted, the crucial sentence means that cloning should be banned to the degree that it violates human dignity. And, since pro-cloners do not believe that therapeutic cloning violates human dignity, they argue that only reproductive cloning is referenced in the resolution.

Baloney. The whole point of the declaration, as every delegate knew, was to ban "all forms" of human cloning. Moreover, if the sentence only castigated reproductive cloning, countries like United Kingdom, the People's Republic of China, and Belgium, which bitterly opposed the declaration, would instead have been all for it. Indeed, the United Kingdom has angrily condemned the declaration precisely because it knows that it applies to therapeutic cloning.

Adding heft to the argument that the declaration opposes all human cloning is the recognition in the document that cloning could lead to the exploitation of women. Here's the problem: Each act of cloning requires an egg. Obtaining eggs entails an uncomfortable and potentially dangerous procedure that can lead to infection, infertility, or even death.

Therapeutic cloning would use vastly more eggs than reproductive cloning, and hence, would have a much higher likelihood of leading to the exploitation of women. Indeed, as I have written here previously, if therapeutic cloning were ever to become widely available as a medical treatment, biotechnologists would literally require billions of eggs, creating an insatiable demand that could result in millions of women being exploited and commoditized as so many egg farms. This danger was undoubtedly a primary reason why so many poor countries such as Kenya, Sierra Leone, Ethiopia, and Equatorial Guinea, stood firm in support of a total ban on human cloning.

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 3

The U.N. on Cloning: Ban It

The United Nations speaks out against human cloning.

by Wesley J. Smith
03/15/2005 12:00:00 AM

Page 2 of 2 < Back

Put all of this together and we see that The United Nations Declaration on Human Cloning, even though non-binding, is a political document of crucial import. First, the successful four-year drive to put the United Nations on record as opposing human cloning succeeded thanks to the coming together of a broad and diverse international coalition that successfully bridged the political divide between left and right, secular and religious, East and West, developed societies and those which are developing. As this coalition gains strength and confidence, its influence to mould the world's views on biotechnology will grow exponentially. The declaration should also positively impact our domestic debates. For example, pro-cloners frequently claim that their adversaries are merely a collection of Taliban-like religious fanatics seeking to impose their religious views on science. But the diverse and multicultural coalition which came together in the U.N. vote proves that assertion isn't true. And with the realization here at home that it isn't only the dreaded "pro-lifers" who oppose human cloning, the domestic coalition to ban the technology can only prosper.

Beyond the purely political, the U.N. declaration could also have an important impact on American constitutional jurisprudence. There is a quiet but growing movement within the bioethics, biotechnology, and legal establishments to have the Supreme Court declare a therapeutic cloning *Roe* v. *Wade*. With the Supreme Court increasingly applying international views in its decisions, the U.N. declaration will make it much harder to convince justices that an international consensus favoring therapeutic cloning should be read into the text of the Constitution.

The United Nations Declaration on Human Cloning is a breakthrough document with enormous potential to lead to tremendous human good. For it is only by banning all human cloning that we can, in the words of Leon Kass, "preserve society from the soft dehumanizations of well meaning but hubristic biotechnical recreationism–and do it without undermining biomedical science or rejecting its genuine contributions to human welfare."

Wesley J. Smith is a senior fellow at the Discovery Institute, and a special consultant to the Center for Bioethics and Culture. His current book is *Consumer's Guide to a Brave New World*.

< Back 1 2
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Testimony to the Kansas House Committee on Federal and State Affairs
In Favor of H.B. 2355: A Ban on Human Cloning
March 16, 2005
By Chelsea Zimmerman

My name is Chelsea Zimmerman, from Holts Summit, Missouri. I am 22 years old and am paralyzed from the chest down from a spinal cord injury received in a car accident in 1999. My injury is considered complete, that means, there is little or no medical chance that I will ever regain the use of my lower body.

Ever since the topic of embryonic stem cell research became an issue, I have been asked what I think about it, as someone who would hypothetically benefit from such research.

My answer is simply that the end in this case does not justify the means.

Many opponents of the bill argue that this research must go forward because it has the potential to improve the heath of millions of people. To date, embryonic stem cell research has not found a cure for a MOUSE, much less a human being. There is no concrete evidence to suggest that this research will even produce the results that it is promising. Promoting this research as something that has definite potential to cure various diseases and ailments without any evidence irresponsibly gives a false sense of hope to the people you were elected to serve. As we speak, adult stem cell research is treating 56 different diseases and disabilities and new breakthroughs are happening everyday – these treatments include Spinal Cord Injury, Parkinson's Disease, Multiple Sclerosis, Brain Cancer, in humans not mice. The bottom line is that research for these diseases can be done, and indeed is being accomplished today without cloning. If you want to give hope to those of us dealing with these various disabilities, it only makes sense to promote the research that is actually producing positive results.

Belief that human life begins at conception is not a religious or philosophical one, but simply a biological fact. ESC research, specifically Somatic Cell Nuclear Transfer (SCNT) involves not only the destruction of human life, but the creation of human life with the direct intent to destroy it! It has become widely accepted these days that embryos, especially in their earliest stages, are not entitled to the same protection afforded to other human beings. It does not take much to realize that the only thing that separates us from them is time

If we can justify the destruction of human life in its most vulnerable stages, when does that justification end? How far do we go in the process of "bettering" science and mankind? Where will we draw the line in defining significant vs. insignificant human life, useful vs. useless, desirable vs. undesirable?

The other question this research has raised is the definition of what human life actually is. Proponents of this research claim since it is creating life without the use of sperm that it is not actually human life. You have all heard how the process of SCNT works and know that through this process a new being has been created that is a carbon copy of the source from which the somatic cell was derived – which in this case is a human person. With all due respect, if you believe that SCNT does not create human life, then what is it, and how does it produce human stem cells?

Human life is human life, manufactured or otherwise. Human beings in the embryonic stage are not lab rats. They are humans made in God's image. When we fail to see the beauty and dignity of the human person from its very beginning and turn humanity into a science experiment, then we diminish what it is to be human. I ask you again, if we can justify the destruction of human life in its most vulnerable stages, when does that justification end?

I would love to be able to walk again, to regain control of my bodily functions. And my greatest hope is relief for those who are suffering. But, I could never accept the harvesting of another human life, no matter how small, for my own comfort. Blessed Mother Theresa once said, "It is a poverty to decide that a child must die so that you may live as you wish."

Thank you for letting me testify.

Stem Cells, Cloning and What It Means To Be Human

Testimony in support of HB 2355
House Federal & State Affairs Committee
by John F. Morris, Ph.D.
Rockhurst University, Kansas City, MO
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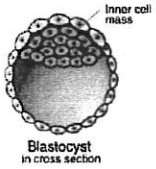
I. Stem Cell Basics

A. Stem cells are undifferentiated cells that have the ability to divide for indefinite periods in culture, and give rise to more specialized cells.

1) These are the body's **master cells**, from which all other cells "stem."



B. A crucial distinction in the debate is there are <u>two</u> categories of stem cells.

1) <u>Embryonic stem cells</u>: these are extracted from a developing embryo (around 5-7 days) – ***harvesting these destroys the embryo!***

2) <u>Adult stem cells</u>: all other "stem cells" are referred to as "adult" (regardless of donor age) – ***the key point is these cells have undergone some degree of maturation.***

a) Adult stem cells have been found in: bone marrow, umbilical cord blood, placentas, the mouth & nose, baby teeth, and fat cells -- ***harvesting these does <u>not harm</u> the donor!***

II. The Current State of Embryonic Stem Cell Research

A. Proponents of ESCR claim that it holds great "promise" for fighting many human diseases.

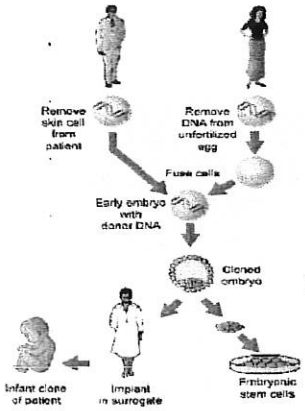
1) However, embryonic stem cell research has <u>not</u> lead to a single therapy for human beings:

a) after 20+ years of research in animal models;

b) even in the private sector where there have been no restrictions;

c) ESCR has not moved beyond the laboratory.

2) Indeed, embryonic stem cell research faces many serious obstacles: tumor formation; difficulty obtaining pure cell cultures; unstable genetic expression; and, immune rejection.



III. SCNT/Cloning

A. **<u>Somatic cell nuclear transfer</u>** = takes the nucleus of a <u>somatic</u> or "body" cell (like a skin cell) and <u>transfers</u> it into an <u>egg cell</u> whose nucleus has been removed.

1) If this works, the clone is allowed to develop for 5-7 days to the blastocyst stage when the stem cells are harvested -- this is called ***<u>therapeutic cloning</u>.***

2) Supporters claim **SCNT** is different from "reproductive" cloning, but the first part of both procedures is identical.

IV. What does it mean to be Human?

A. The science of embryology tells us that human development is a <u>continuum</u>.

1) Biologically speaking, an embryo containing human DNA is a human being.

B. A self-developing being possessing a human genetic code has a RIGHT to LIFE!

V. The Ethical Argument

A. In general, cloning reduces human beings to the status of things or products.

1) This reduces human dignity overall.

2) Cloning is also unsafe for women because of all the human eggs it needs.

B. The argument against "therapeutic" cloning is even clearer: *it destroys human life!*

VI. Conclusions: **ESCR** and **SCNT** are unethical because they destroy human beings – ***we can't kill one innocent human being to save another!***

A. 6 states ban human cloning: Arkansas, Iowa, Michigan, North & South Dakota, and Virginia.

B. Over 60 countries have banned human cloning including Canada, Germany, & France.

VII. Addendum: "Therapeutic" Cloning is <u>not</u> even necessary!

A. Successful therapies have been developed for a number of human diseases using **<u>ADULT STEM CELLS</u>** including Parkinson's, heart repair, & spinal cord injury.

1) Go to www.stemcellresearch.org to learn more!

Testimony of John F. Morris, Ph.D.
Associate Professor of Philosophy
Philosophy Department
Rockhurst University
Kansas City, MO.

Kansas State Legislature
House of Representatives – Committee on Federal and State Affairs
Hearing on HB 2355
March 16, 2005

Distinguished Members of the Committee, my name is John F. Morris, Ph.D. I am a philosopher with specialties in ethics and bioethics, and am active in the public discourse of issues in medical ethics. It is a privilege to be here today and to have the opportunity to provide this testimony in support of HB 2355 calling for a ban on human cloning in all forms.

I. The Basics of Stem Cell Research

To begin, we need to understand what a "stem cell" is, and clarify why these special cells have become the focus of so much research and controversy.

A. What is a stem cell?

As noted by *The National Institutes of Health* as published on their official web page in their primer "Stem Cell Basics":

> Stem cells have two important characteristics that distinguish them from other types of cells. First, they are unspecialized cells that renew themselves for long periods through cell division. The second is that under certain physiologic or experimental conditions, they can be induced to become cells with special functions such as the beating cells of the heart muscle or the insulin-producing cells of the pancreas.[1]

Because these undifferentiated cells are what give rise to more specialized cells, they are what all other cells in our body "STEM" from. Now some want to label these special cells as "generic" or "blank" cells, since they have not undergone any differentiation. The choice of rhetoric here is important – after all, a "generic" cell cannot represent a unique human person, right? However, if these cells truly were "blank," then they would be of no value to the researchers who are working with them. It is precisely the fact that these cells are loaded with human genetic information that they are of value. Rather than being "generic" cells, then, stem cells are more properly understood as "master" cells, containing all of our complex biological information.

B. The Two Categories of Stem Cells: Embryonic and Adult

The first key distinction to be made regarding stem cells involves the source from which they are derived.

1. Embryonic Stem Cells

Perhaps the most familiar source of stem cells to the general public are those harvested from human embryos, which are thus referred to as **embryonic stem cells**. As the *NIH* primer explains:

> The embryos from which human embryonic stem cells are derived are typically four or five days old and are a hollow microscopic ball of cells called the blastocyst. The blastocyst includes three structures: the trophoblast, which is the layer of cells that surrounds the blastocyst; the blastocoel, which is the hollow cavity inside the blastocyst; and the inner cell mass, which is a group of approximately 30 cells at one end of the blastocoel.[2]

The important issue here is how these embryonic stem cells are obtained. All the *NIH* primer says is this: "Human embryonic stem cells are isolated by transferring the inner cell mass into a plastic laboratory culture dish that contains a nutrient broth known as culture medium."[3]

This sounds very nice, and relatively simple. And yet, the crux of the ethical objection to embryonic stem cell research lies in this act of harvesting the "inner cell mass" from the embryo. When the "inner cell mass" is "transferred," a pipette is inserted into the trophoblast – which is a delicate structure at this point – and ends up breaking it apart. Thus, the act of harvesting embryonic stem cells *destroys* the embryo itself. In fact, there is no way to obtain embryonic stem cells without destroying the embryo due to its delicate structure at this phase of development.

As the embryonic stem cells replicate in the culture medium, they are removed to other culture dishes as the process of subculturing continues. Finally, as explained in the *NIH* primer: "After six months or more, the original 30 cells of the inner cell mass yield millions of embryonic stem cells. Embryonic stem cells that have proliferated in cell culture for six or more months without differentiating, are pluripotent, and appear genetically normal, are referred to as an embryonic stem cell line."[4] These stem cell lines can then be frozen and transferred anywhere in the world for further research and experimentation.

2. Adult Stem Cells

In addition to stem cells from embryos, it is now known that there are stem cells in every major organ of the human body – but stem cells can also be obtained from umbilical cord blood, placentas, amniotic fluid, the mouth, the nose, baby teeth, human cadavers, and even human fat tissue. All of these other types of stem cells are generally referred to as **"adult" stem cells**. Unfortunately, this often causes confusion. For instance, most of us would not think of stem cells obtained from the placenta and umbilical cord after a birth in terms of something "adult." Nor would we commonly think of using a 12-year-old's bone marrow in a transplant to save her brother as being part of "adult" stem cell research. Nonetheless, all stem cells not derived from embryos fall into this category and are therefore part of adult stem cell research. The term "adult" refers to the fact that these cells have undergone some degree of differentiation and maturation.

Research on adult stem cells has actually been going on for much longer than that on embryonic stem cells. In fact, bone marrow transplants have been in therapeutic use for almost 40 years now.[5] It was not originally understood that it was the presence of "stem" cells in the bone marrow that made such transplants successful. However, with increased research the medical and scientific communities are gaining clearer insights into the role of our adult stem cells as the root of the body's own natural healing processes.

One potential drawback of adult stem cells is that even though researchers are finding adult stem cells in every major organ of the body, those cells are not necessarily present in large numbers.[6] Of course, this is not the case with stem cells harvested from umbilical cords and placentas, which yield a much higher number of stem cells than even embryo harvesting in a simpler and more efficient manner. And, with the progress being made in helping adult stem cells to proliferate in culture, the "numbers" issue may not be important for much longer.[7]

C. The Potency/Plasticity of Stem Cells

A second key distinction to be made regarding stem cells involves the ability of these cells to become other cells. This is referred to as the *potency* or *plasticity* of the stem cell. The most "potent" stem cells are referred to as totipotent – the idea being that such cells have the potential to become not only every cell in the human body, but a whole human being on their own. These refer to the cells of a zygote up to about the fourth day of development. Between days 4 and 7, the cells of the embryo are described as pluripotent. A cell that is pluripotent can become any of the more than 200 different types of cells in the human body. Finally, after the first 8 days of development, the stem cells that remain in the human body are referred to as multipotent. A multipotent cell is only supposed to be able to become a limited number of other cell types. Embryonic stem cells are considered pluripotent, while adult stem cells are thought only to be multipotent.[8] The implication is that after a certain amount of differentiation, stem cells lose their ability to be pluripotent, are less "plastic," and therefore have less therapeutic benefit.

However, current research shows clear evidence that adult stem cells – even if not technically labeled as "pluripotent" – are indeed "plastic," and therefore just as "useful" for therapeutic purposes, as embryonic stem cells. As David Prentice, Ph.D., founding member of *Do No Harm – The Coalition Of Americans for Research Ethics*, a group that opposes embryonic stem cell research and human cloning, noted in a paper presented to *The President's Council on Bioethics* in July of 2003:

> … our current knowledge regarding adult stem cells has expanded greatly over what was known just a few short years ago. Results from both animal studies and early human clinical trials indicate that they have significant capabilities for growth, repair, and regeneration of damaged cells and tissues in the body, akin to a built-in repair kit or maintenance crew that only needs activation and stimulation to accomplish repair of damage. The potential of adult stem cells to impact medicine in this respect is enormous.[9]

II. Current Therapeutic Applications of Human Embryonic Stem Cell Research

To date there have been no therapeutic applications for human subjects using embryonic stem cells.

There are several reasons for this lack of therapeutic application using embryonic stem cells. First and foremost, the bulk of research using embryonic stem cells – whether human or non-human – has been conducted on mice. This is true even in cases where the stem cells are from a human embryo – the research subject is still a mouse or some other animal! And, as noted by the *NIH*:

> Most of the evidence that stem cells can be directed to differentiate into specific types of cells suitable for transplantation—for example, neurons, heart muscle cells, or pancreatic islet cells—comes from experiments with stem cells from mice. And although more is known about mouse stem cells, not all of that information can be translated to the understanding of human stem cells. Mouse and human cells differ in significant ways, such as the laboratory conditions that favor the growth and specialization of specific cell types.[10]

And so, current research is still at the stage of developing what researchers call a "proof of concept" for possible therapeutic applications of embryonic stem cells.[11]

Second, there are serious technical problems impeding the successful development of embryonic stem cell research into therapies that can actually be applied to human patients:

1) tumor formation – "… if undifferentiated embryonic stem cells are removed from the culture dish and injected into a mouse with a compromised immune system, a benign tumor called a teratoma can develop;"[12]
2) obtaining pure cultures – "Depending on the culture conditions, embryonic stem cells may form clumps of cells that can differentiate spontaneously to generate many cell types;"[13]
3) unstable genetic expression – "Once the purity profile has been established for a population of human stem cells generated using standardized procedures, derivations that occur outside what is expected due to normal biological variation serve as a harbinger that significant, and possibly deleterious, changes nay have occurred. Such alterations could reflect the introduction of genetic mutations as a consequence of culture conditions used to promote expansion and to induce differentiation of the progenitor cell population."[14] [15]
4) immune rejection – "Another important aspect of developing therapies based on stem cells will be devising ways to prevent the immune system of recipients from rejecting the donated cells and tissues that are derived from human pluripotent stem cells. Modifying or evading the immune rejection of cells or tissues developed from embryonic stem cells will not be able to be done exclusively using mouse models and human adult stem cells."[16]

Although research continues and small steps of progress continue to be touted by those in favor of embryonic stem cell research, these obstacles are formidable.

III. Cloning as a Solution to Problems with Embryonic Stem Cell Research

When discussions about the limitations and problems of embryonic stem cell arise – especially immune rejection and obtaining pure cultures of cells – one of the most often mentioned

"solutions" is "therapeutic cloning." On the one hand, developing clones as a source for harvesting embryonic stem cells would provide an opportunity to create new stem cell lines. These new lines could then be developed under better, standardized procedures in order to attain pure cultures of cells for "eventual" human therapeutic application. As it is right now, most of the existing stem cell lines that President Bush allowed federal money for research upon are unsuitable for use in human treatment, in part because they were grown on mouse feeder cells or using other animal based serums that contaminated the lines.[17] Thus, new stem cell lines, it is argued, need to be created – and cloning is held up as the best method for developing the new lines.

The other major advantage of using cloned cells is that if a patient is cloned, and then the stem cells are harvested from the developing embryo, those cells should be able to be transplanted back into the patient without any immune rejection.

Thus, cloning in both cases is referred to as "therapeutic" because someone will benefit from these stem cells. Much has already been written on what a glaring misnomer it is to call such a procedure "therapeutic," since the clone will obviously not benefit here, as well as pointing out that "therapeutic" cloning uses the exact same methods as "reproductive" cloning, therefore leaving no meaningful distinction between the two actions. [18] This is, in part, why some are wanting to refer to this in some other fashion, such as The President's Council on Bioethics, whose members have chosen to call this "Cloning-for-Biomedical-Research," while "reproductive cloning" is called "Cloning-to-Produce-Children."[19] But moving beyond the rhetoric, it will help to clarify the ethical issues at stake by briefly reviewing how a clone is developed.

The cloning method that is most often discussed in the news media, and which is most often held up as the best solution for problems with embryonic stem cell research, is called **Somatic Cell Nuclear Transfer**, or SCNT for short. At present, there are three techniques for SCNT. The basic procedure was first explored by Hans Spemann in the 1920's.[20] Second is The Roslin Technique, named after The Roslin Institute in Edinburgh which brought us Dolly.[21] The third technique currently in use is the Honolulu Technique developed at the University of Hawaii.[22] With SCNT, two cells are used: an egg cell, or oocyte, and any other somatic (non-reproductive) cell. The nucleus is removed from the egg cell (i.e., it is enucleated). Then the nucleus from the somatic cell is "transferred" into the empty egg cell. Since the nucleus of the somatic cell had a complete genetic code, the egg cell reacts as if it has been fertilized. However, since the egg cell does not contribute any original genetic material to the new nucleus (because its own material was removed), the new embryo is now a clone – or genetic replica – of the person from whom the somatic cell was obtained. The variations in methods noted above arise from varying techniques involving the transfer of the nucleus.

The purported reason for pursuing this so-called "therapeutic" cloning is, therefore, to produce embryos for the sole purpose of destroying them for their prized "inner" cell mass – i.e., their stem cells. The advantage that this offers in terms of stem cell research, as noted above, is that stem cells derived form one's clone would not trigger – it is hoped – an immune rejection response. As noted by the *NIH* in their report on the scientific progress of stem cells:

> The potential immunological rejection of human ES-derived cells might be avoided by …using nuclear transfer technology to generate ES cells that are genetically identical to the person who receives the transplant. It has been suggested that this could be accomplished by using somatic cell nuclear

> transfer technology (so-called therapeutic cloning) in which the nucleus is removed from one of the transplant patient's cells, such as a skin cell, and injecting the nucleus into an oocyte. The oocyte, thus "fertilized," could be cultured *in vitro* to the blastocyst stage. ES cells could subsequently be derived from its inner cell mass, and directed to differentiate into the desired cell type. The result would be differentiated (or partly differentiated) ES-derived cells that match exactly the immunological profile of the person who donated the somatic cell nucleus, and who is also the intended recipient of the transplant – a labor intensive, but truly customized therapy.[23]

Given the "hope" and "promise" of embryonic stem cell research, and the advantage of using cells obtained from a genetically matched donor (your clone) for reducing immune rejection, the call for therapeutic cloning has been slowly rising from various sectors in the medical field over the past several years, including the *American Medical Association.*[24]

IV. The Reality of "Therapeutic" Cloning/SCNT

Perhaps one of the more contentious issues in the debate over cloning embryos as part of embryonic stem cell research is the suggestion that such cloning is "therapeutic," and completely different from "reproductive" cloning. Some people have even gone to great lengths to play around with these terms offering various alternative ways of clarifying this distinction.[25] So, to understand the ethical dilemma at hand, we need to clarify what an embryo is and when human life begins. As a society, we cannot understand our obligations towards an embryo, cloned or otherwise, until we understand what it is, and determine its ethical status.

Some people in this debate want us to believe that a zygote, blastocyst, pre-embryo, embryo, and fetus, represent only "potential" human life. But contemporary embryology tells us that this is not the case. While a zygote, blastocyst, pre-embryo, embryo, or fetus – whether from cloning, *in vitro* fertilization, or natural reproduction – may potentially one day be an astronaut, a musician, or a future President of the United States, what it IS is quite clear – *it is ACTUAL human life!*

To exist, something has to be in ACT – that is, it must actually be something. Further, while it is true that an actual being also possesses many future possibilities, those possibilities must relate to *real* potencies within the being in question. What this means, practically speaking, is that if one were to say that a human embryo was only "potential" human life, then that embryo must also at the same time have the potency to become something else entirely – which contemporary genetics points out is not the case with human (or any other type of) embryos. From the very moment a single-celled human zygote is formed, that human is distinguishable from a pig, a cow, and even from a chimpanzee – which we are told bears only a 5% genetic difference from a human being. It is simply inappropriate to refer to a human embryo as "potential" human life as if it could become something else. A fertilized ovum possessing a complete human genome is from the beginning something actual – *and what it IS, is actual human life!* Keep in mind that if the being in question was not "human," researchers would have no interest in its cells – their interest is precisely because these cells contain human DNA.[26] And so, the embryos we are talking about are "human" because of their human genetic material, and they represent "life" because they are *self-developing* entities.

Therefore, the argument that a single-celled human zygote is only "potentially" human life rests upon the mistaken notion that human development goes through "ontological" stages – that is, stages in which the being is actually changed when it passes through. Embryologists point out that while terms like zygote, blastocyst, pre-embryo, embryo, and fetus have become convenient for discussing the progress of human development, they do not refer to what could be called actual stages of development except in an artificial or figurative sense. Our growing knowledge of genetics, fostered by the Human Genome Project, affirms that human development is a ***continuum*** – not a series of stages.

Now, when specifically discussing a clone, all of the above would also be true. Life is exhibited in the activity of *self-development* – which a clone exhibits. Like all organisms, embryos of all types (cloned or not) depend upon their environment for sustenance. But the program of development is internal, although still capable of being influenced externally. Thus, what a clone IS, is also clear – *a human clone is actual human life!*

At this point, proponents of SCNT raise a number of "arguments" to demonstrate that the product of this technology is not a human embryo or a human being. They have argued that it is not really human because it is just a "clump of cells," an unfertilized egg, that is no larger than the period at the end of this sentence. They further claim that this is not a human embryo because it is just a clone or copy of someone else's DNA, and that it will never be implanted in a uterus.

However, as explained by a group of America's most prestigious doctors and researchers in an article titled, *Stem Cell Research: Why Medicine Should Reject Human Cloning*, published in the *Mayo Clinic Proceedings* from August of 2003, the "evasive language" being used to cloud the issue of "therapeutic" cloning does not alter the reality of what is happening:

> To speak of a distinction between "reproductive" cloning and "research" cloning is to neglect an important commonality between both forms of cloning. Regardless of intent, both generate in the same manner a human embryo. Therefore, both methods of human cloning are reproductive in that they give rise to new individual human lives.22 A partial ban clearly understood would not truly be a ban against cloning but against the implantation—and hence the survival—of human clones.
>
> The choice of language applied to cloning should recognize that, on biologic grounds alone, the human embryo is a living human organism. Structurally, the embryo is genetically complete. What is necessary for continued growth is suitable nurture and environment, 2 conditions that live human beings need as much in their adult stage as in their embryonic stage. Metabolically, at every cell division the embryo copies the complete human genome with nearly perfect fidelity and, in transcribing his or her genetic code, has begun the journey toward actualization of all the functional capacities that uniquely typify a being of the species *Homo sapiens*.
>
> Some well-intentioned thinkers will defend research cloning and human embryo research in general on the grounds that, rather than being fully present at conception, human worth develops gradually as the nervous system reaches a stage of maturation when certain functional capacities are

> demonstrable. We consider such a gradualist view to be an inadequate account of the value of human life. To suppose that human life consists only in functional capacities is to mistake the *detection* of life for its *existence*. Life ontologically precedes biologic function, and one must first *be* a human being to develop and possess human capacities. Similarly, although some have argued that the embryo fertilized in vitro must enter the womb to count as human, we maintain that the moral status of a human being is independent of age or geographical location.[27]

The same point was made by Dr. Leon Kass, Chair of The President's Council on Bioethics, in his testimony before the Senate Judiciary Committee on March 19, 2003 regarding S. 303, The Human Cloning Ban and Stem Cell Research Protection Act of 2003:

> Whether undertaken for the ultimate purpose of producing children or for the purpose of extracting stem cells for research, the deed of nuclear transplantation is itself an act of cloning (it is the deed that produces the genetic replica), and its product is in both cases identical: a cloned human embryo. This is the view of both the earlier National Bioethics Advisory Commission and the current President's Council on Bioethics—including those members who favor cloning-for-biomedical-research—which unanimously adopted this terminology as accurate and fair. When identical cloned embryos are grown to the blastocyst stage, their different fates depend solely on the purposes of the human users: baby-making or research. The National Academy of Science report on Scientific and Medical Aspects of Human Reproductive Cloning (January 2002) also shares this opinion. S. 303's term "unfertilized blastocyst" is confusing and has no scientific currency or basis; and its definition as "intact cellular structure" hides the fact that this "structure" is a self-developing, embryonic, human organism. We should, of course, listen to scientific or ethical arguments about why it would be important or permissible to create such cloned human blastocysts solely for research. But if we are to do so forthrightly, we should not hide from ourselves or others what we are doing. And we should not try to win the argument by definitional sleight of hand. This understanding of the status of a cloned embryo as a human organism is further supported by common definitions of "clone" and "cloning."[28]

Now it is true that, like <u>all</u> organisms, embryos of all types (cloned or not) depend upon their environment for sustenance. But the program of development is internal, although still capable of being influenced externally. In sum, once a complete genetic code is actuated, a new, self-developing entity begins to unfold. On this point, there is definite agreement among embryologists – regardless of the claims raised by other researchers, ethicists, and politicians. Size, location, and origin of its genome are not relevant for determining the status of a cloned human embryo. And so, an analysis of both "therapeutic" and "reproductive" cloning reveals SCNT for researcher purposes for what it really is – the destruction of human life in the name of scientific progress.

V. Call for a Total Ban on Human Cloning

Based upon the above reasoning, I now argue for a total ban on all forms of human cloning, regardless of the *motives* offered or the "hoped for" therapeutic benefits of this research.

First, we have to recognize that any form of cloning is a technological process. The goal of all technology is to artificially produce something – a car, a computer, a new medicine, etc. In the case of cloning, the goal is to artificially produce a human being. Thus, the process of cloning gives the illusion of reducing human beings to products. Now, this is a point that becomes difficult for some to recognize: ***a human being is simply not a thing or product!*** But the crucial point is simple to state: a human being, as a unique, individual, rational being, is from the moment it is a single-celled zygote possessed of an inherent dignity and worth that is immeasurable. The ethical implication here is that each unique human embryo should be treated in a manner that fosters her or his best interests. But developing a human being through a process that treats human beings as products is not in the best interests of that individual – nor is this good for humanity as a whole. Thus, human cloning, in general, is an **unethical** procedure.

In this light, the more specific issue of developing a clone or embryo specifically for research purposes – even if called "therapeutic" – is also **unethical**. Taking the needed stem cells from a cloned embryo will destroy it. This is tantamount to taking the heart from a living person, resulting in death, in order to transplant that heart into another person to save their life. In this specific case, cloning and embryonic research are never truly "therapeutic," because the clone and the embryo never benefit from the procedures done to it. Simply put, we cannot actively and directly harm or kill one human life to save another. And so, the process of developing a clone or embryo and destroying it for the sole purposes of using its tissue in research or therapy is **unethical**.

None of the arguments offered to support cloning – either "therapeutic" or "reproductive" – stand up under ethical scrutiny. Thus, even if there were no other promising technologies in development at this time, even if adult stem cell research was not showing better results than therapies developed using cloned cells or embryonic stem cells, cloning and destructive embryonic research would still be **unethical**. *We simply cannot harm or kill one human life to save another.*

In conclusion, a total ban on cloning is the only appropriate way to protect human society.

Thank you.

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Addendum:

1) Current Therapeutic Applications of Adult Stem Cell Research

Whereas embryonic stem cell research has yet to yield any direct therapeutic applications for human patients, but instead has only provided a few "proof of concept" results, adult stem cell research has made concrete advances towards curing and alleviating human diseases. The actual results that have been achieved up to this point in time are simply too long to review in this testimony.[29] Just listing the headings of a few stories from 2003 discussing successes in adult stem cells gives one a sense of the genuine "promises" that are being fulfilled by such research: Muscle Stem Cells May Cure Incontinence; Chemotherapy Plus Stem-Cell Transplantation May Reduce Relapse of High-Risk Breast Cancer; Bone Marrow Holds Promise in Treatment of MS; New Hope for Children with Eye Tumors Using Own Stem Cells; Successful Implantation of Neuralo Stem Cells For a Patient with Brain Injury; Mouth Cells Treat Eyes; Adult Stem Cell Transplants Offer New Hope in Some Cases of Blindness; Stem Cells Repair Brain after Stroke; Bone Marrow Found to Have Cells to Repair the Pancreas; Stem Cell Surprise: Blood Cells form Liver, Nerve Cells; Tests of Cell Transplants Offer Hope To Diabetics; Cure for Baldness a Step Closer.[30] These stories do not just represent "hype," nor are they reflections of an "idealistic" hope. These are stories of real people, with real families, who have suffered tremendously. Yet, in all these cases genuine therapeutic benefit has been gained from adult stem cell treatments. These studies provide more than just "proof-of-concepts." They have saved lives!

And so, even if one sets aside the ethical arguments, based upon the measures and standards of science there is little reason to continue with embryonic stem cell research. The demarcation between the actual therapeutic benefits of adult stem cells versus that of embryonic stem cells is patently clear. Indeed, when one examines all of the obstacles facing the move to human trials and applications with human embryonic stem cells, one begins to wonder why any money or effort is being spent on such research at all. The only response seems to be that we need to try "everything possible." But why? Isn't this just throwing our tax dollars away, especially when there are proven therapies available? Trying to "do everything" in this case is not a rational position to take – instead, given our limited resources, we should be focusing in on what is working. After more than 20 years, the best solution is clear, and it is not found in somatic cell nuclear transfer and the subsequent destruction of human embryos for their stem cells.

2) States that have banned human cloning in the U.S.

Arkansas, Iowa, Michigan, North Dakota, South Dakota, and Virginia

3) Countries that have banned human cloning – more than 60, including:

Germany, Canada, France, Norway, Scandinavia, Switzerland, Australia

NOTES

[1] *The National Institutes of Health* (*NIH*), official web site, "Stem Cell Basics," at accessed at http://stemcells.nih.gov/infoCenter/stemCellBasics.asp#2, on August 6, 2003.
[2] *Ibid*, accessed at http://stemcells.nih.gov/infoCenter/stemCellBasics.asp#3, on August 6, 2003.
[3] *Ibid.*
[4] *Ibid*, accessed at http://stemcells.nih.gov/infoCenter/stemCellBasics.asp#4, on August 6, 2003.
[5] *NIH*, "Stem Cell Basics," accessed at http://stemcells.nih.gov/infoCenter/stemCellBasics.asp#4, on August 6, 2003.
[6] *Ibid.*
[7] The issue of whether or not adult stem cells can be made to proliferate efficiently is one of the most hotly contested problems in the debate between using *embryonic* versus *adult* stem cells. Proponents of embryonic stem cell research insist that adult stem cells are simply not able to provide an adequate supply of cells for actual therapeutic application. However, as noted, continued advances in this area are clearly showing that adult stem cells can indeed replicate efficiently enough for therapeutic purposes. See: 1) D. Colter, *et al.*, "Rapid Expansion of recycling stem cells in cultures of plastic-adherent cells from human bone marrow," *Proceedings of the National Academy of the Sciences USA*, Volume 97, March 28, 2000, pp.3213-3218; 2) G.L. Gilmore, *et al.*, "Ex vivo expansion of human umbilical cord blood and peripheral blood CD34(+) hematopoietic stem cells," *Experimental Hematology*, Volume 28, November 1, 2000, pp.1297-1305; 3) G. Bhardwaj, *et al.*, "Sonic hedgehog induces the proliferation of primitive human hematopoietic cells via BMP regulation," *Nature Immunology*, Volume 2, February 2001, pp.172-180; 4) D.S. Krause, "Multipotent human cells expand indefinitely," *Blood*, Volume 98, November 1, 2001, p.2595; 5) M. Reyes, *et al.*, "Purification and ex vivo expansion of postnatal human marrow mesodermal progenitor cells," *Blood*, Volume 98, November 1, 2001, pp.2615-2625; 6) P. Menasche, *et al.*, "Myoblast transplantation for cardiac repair," *Lancet*, Volume 357, January 27, 2001, p.279; 7) Y. Jiang, *et al.*, "Pluripotency of mesenchymal stem cells derived from adult marrow"; *Nature*, Volume, 418, July 4, 2002, pp.41-49; and, 8) Jennifer Jaroscak, *et al.*, "Augmentation of umbilical cord blood (Ucb) transplantation with ex-vivo expanded UCB cells: results of a phase I trial using the Aastrom Replicell system," *Blood*, prepublished online as a Blood First Edition Paper on February 20, 2003; DOI 10.1182/blood-2001-12-0290, accessed at http://www.bloodjournal.org/cgi/content/abstract/2001-12-0290v1, on August 30, 2003. In particular, it has been shown that lithium, a common anti-depressant, also helps stimulate adult stem cells to grow faster in culture: 1) G. J., Moore, *et al.*, "Lithium-induced increase in human grey brain matter" *Lancet*, Volume 356, 2000, pp.1241-1242; 2) R. Hashimoto, *et al.*, "Lithium induces brain-derived neurotrophic factor and activates TrkB in rodent cortical neurons: An essential step for neuroprotection against glutamate excitotoxicity," *Neuropharmacology*, Volume 43, 2002, pp.1173 - 1179; and, 3) R. Hashimoto, *et al.*, "Lithium stimulates progenitor proliferation in cultured brain neurons," *Neuroscience*, Volume 117, 2003, pp.55-61.
[8] For more on the issue of stem cell potency, see WebMD's page "Q&A on Stem Cells," accessed at http://my.webmd.com/content/article/16/1728_86306.htm?lastselectedguid={5FE84E90-BC77-4056-A91C-9531713CA348}, on August 6, 2003.
[9] David A. Prentice, Ph.D., "Adult Stem Cells," presented to *The President's Council on Bioethics*, July 2003, *draft*, accessed at http://bioethics.gov/background/prentice_paper.html, on August 30, 2003.
[10] *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," Executive Summary, p.3, accessed at http://stemcells.nih.gov/stemcell/pdfs/execsummary.pdf, on August 30, 2003: "Most of the basic research discoveries on embryonic and adult stem cells come from research using animal models, particularly mice."
[11] See the testimonies of Elias A. Zerhouni, M.D., Director, *The National Institutes of Health*, and Mark B. McClellan, M.D., Commissioner, *Food & Drug Administration*, speaking before *The President's Council on Bioethics* from the official meeting transcript, "Stem Cells: Moving Research from the Bench Towards the Bedside: The Role of NIH and FDA," Thursday, September 4, 2003, accessed at http://www.bioethics.gov/transcripts/sep03/session3.html, on October 6, 2003.
[12] *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," Executive Summary, p.9, accessed at http://stemcells.nih.gov/stemcell/pdfs/execsummary.pdf, on August 30, 2003. It is interesting to note that the *NIH* report goes on to add: "A teratoma typically contains a mixture of partially differentiated cell types. For this reason, scientists do not anticipate that undifferentiated embryonic stem cells will be used for transplants or other therapeutic applications." This is an incredibly significant point. The whole force behind using embryonic stem cells is their pluripotency – which proponents of this research argue adult stem cells lack. However, the *NIH* points out that researchers are having trouble controlling these pluripotent stem cells derived from embryos – because of their pluripotent nature, they tend to form all sorts of tissues in addition to the ones being sought, and there is some indication that these cells may be attempting to turn back into stem cells once transplanted. All of which means that "pluripotency" is not all it was thought to be, and that already differentiated cells – i.e., multipotent cells like adult stem cells – are what will be needed for actual therapeutic applications. As noted by University of Pennsylvania bioethicist Glenn McGee in an interview with MIT's *Technology Review*, "The emerging truth in the lab is that pluripotent [embryonic] stem cells are hard to reign in … The potential that they would explode into a cancerous mass after a stem cell transplant might turn out to be the Pandora's box of stem cell research" quoted by Richard Miniter in, "Hard Cell," The WallStreetJournal.com Opinion Journal, posted on July 23, 2001, accessed at http://www.opinionjournal.com/columnists/rminiter/?id=95000857, on October 13, 2003.
So, again, one must ask, do we really need embryonic stem cell research? It appears, when one carefully examines the findings being presented in the literature, that embryonic stem cells will never be useful for actual therapeutic benefit. For more on the problem of tumor formation, see J.S. Odorico, *et al.*, "Multilineage differentiation from human embryonic stem cell lines," *Stem Cells*, Volume 19, 2001, pp.193-204: "[T]he possibility arises that transplantation of differentiated human ES cell derivatives into human recipients may result in the formation of ES cell-derived tumors," posted on the *Do No Harm* website, accessed at http://www.stemcellresearch.org/facts/quotes3.htm, on September 6, 2003.
[13] *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," Executive Summary, p.4, accessed at http://stemcells.nih.gov/stemcell/pdfs/execsummary.pdf, on August 30, 2003. Also see, J.S. Odorico, *et al.*, "Multilineage differentiation from human embryonic stem cell lines," *Stem Cells*, Volume 19, 2001, pp.193-204: "Rarely have specific growth factors or culture conditions led to establishment of cultures containing a single cell type," accessed at http://www.stemcellresearch.org/facts/quotes3.htm, on August 30, 2003. Also see, Wolfgang Lillge, M.D., "The Case for Adult Stem Cells," *21st Century: Science & Technology Magazine*, Winter 2001-2002, "So far there has been no solution to the problem of developing in the laboratory an unmistakable identifier for stem cells that can distinguish them unequivocally from cancer cells. For this reason, it is also not possible to produce sufficiently pure cell cultures from stem cells. So far, with embryonic mouse stem cells, a purity of only 80 percent has been achieved. That is in no way sufficient for cell transplantation as a human therapy. In a cell culture for therapeutic purposes, there must not be a single undifferentiated cell, since it can lead to unregulated growth, in this case to the formation of teratomas, a cancerous tumor derived from the germ layers. This problem would not be expected with adult stem cells, because of their greater differentiation," accessed at http://www.21stcenturysciencetech.com/articles/winter01/stem_cell.html, on August 30, 2003. Also see, M. J. Shamblott, *et al.*, "Human embryonic germ cell derivatives express a broad range of developmentally distinct markers and proliferate extensively in vitro," *Proceedings of the National Academy of Sciences USA*, Volume 98, January 2, 2001, pp.113-118. There has been one recent report, from April of 2003, that some pure cultures of embryonic stem cells have been obtained by *Geron*, a biopharmaceutical company in California; see, "Geron Reports Advances in Its Human Embryonic Stem

Cell Programs" posted on Boiexchange.com: "Geron scientists presented new data showing that cardiomyocytes (heart muscle cells) can be derived from hESCs and enriched by a serum-free culture formulation that prevents the growth of unwanted cell populations," accessed at http://www.bioexchange.com/news/news_page.cfm?id=16801, on October 6, 2003. Nevertheless, developing pure cultures remains one of the key obstacles in pushing towards human application with embryonic stem cell research.

[14] *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," 10. Assessing Human Stem Cell Safety, p.96, accessed at http://stemcells.nih.gov/stemcell/pdfs/chapter10.pdf, on August 30, 2003. Also see, D. Humphreys, *et al.*, "Epigenetic Instability in ES Cells and Cloned Mice," *Science*, Volume 293, July 2001, pp.95-97: "The epigenetic state of the ES cell genome was found to be extremely unstable," from the *Abstract*, accessed at http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?holding=npg&cmd=Retrieve&db=PubMed&list_uids=11441181&dopt=Abstract, on September 6, 2003. Also, Rachel B. Cervantes, *et al.*, "Embryonic stem cells and somatic cells differ in mutation frequency and type," *Proceedings of the National Academy of Sciences USA*, Volume 99, March 19, 2002, pp.3586–3590: "Therefore, the possibility that ES cells suffer UPD involving multiple chromosomes should be of concern. Because UPD allows all recessive loci on a given chromosome to manifest, including alleles encoding tumor suppressors, the accumulation of UPD in cultured stem cells raises a concern regarding clinical use of stem cells continuously maintained in culture. This concern does not constitute an argument against the therapeutic use of stem cells but rather indicates the need for screening such cultures to ensure the absence of UPD," accessed at http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=122567, on September 6, 2003. And, W. Dean, *et al.*, "Altered imprinted gene methylation and expression in completely ES cell-derived mouse fetuses: association with aberrant phenotypes"; *Development*, Volume 125, May 19, 1998, pp.2273-2282. However, it should be noted that some researchers do not think that embryonic germ cells, which seem to have the same general properties as embryonic stem cells for proliferation and differentiation of other tissues, do not have epigenetic problems. See, Carmen Sapienza, *et al.*, "Imprinted gene expression, transplantation medicine, and the 'other' human embryonic stem cell," *Proceedings of the National Academy of Sciences USA*, published online before print July 30, 2002, 10.1073/pnas.172384299, August 6, 2002, Volume 99, number 16, pp.10243-10245, accessed at http://www.pnas.org/cgi/content/full/99/16/10243, on October 6, 2003.

[15] One other problem still brought up in the literature involves the fear of transferring animal viruses to humans via xenotransplantation. As noted by the *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," 10. Assessing Human Stem Cell Safety, p.95: "... the culturing of human embryonic stem and embryonic germ cells involves the use of mouse embryonic fibroblast feeder cells to keep the embryonic cells in a proliferating, undifferentiated condition.... Transplanting into humans stem cell preparations derived from founder cells that have been indirect, intimate contact with nonhuman animal cells constitutes xenotransplantation – the use of organs, tissues, and cells derived from animals to treat human disease. The principal concern of xenotransplantation is the unintended transfer of animal viruses into humans," accessed on August 30, 2003, at http://stemcells.nih.gov/stemcell/pdfs/chapter10.pdf. However, as the report from the NIH goes on to note: "Researchers are devoting considerable attention to developing culture conditions that do not use mouse feeder cells." The report specifically cites research conducted by *Geron Corporation*, a major biotech company based in California, that shows human embryonic stem cells can be proliferated under "feeder-free conditions. See, *Geron's* own press release posted on Geron.com, "Geron Develops and Files Patents on Feeder-Free Growth Conditions for Human Embryonic Stem Cells," *Backgrounder*, October 2001, accessed at http://www.geron.com/pr_20011001b.html, on August 30, 2003. Also see the related story posted on Bioexchange.com on April 3, 2003, "Geron Reports Advances in its Human Embryonic Stem Cell Programs," accessed at http://www.bioexchange.com/news/news_page.cfm?id=16801, on October 6, 2003. *Geron's* successful "proof of concept" is noteworthy regarding this major obstacle in advancing embryonic stem cell research. Nevertheless, the research has not been peer-reviewed, nor validated, thus keeping the problem of animal feeder cell transfer a genuine obstacle for most embryonic stem cell research at this point in time. For other efforts to solve the animal feeder cell problem, see: 1) Ariff Bongso, *et al.*, "Human feeders support prolonged undifferentiated growth of human inner cell masses and embryonic stem cells ," published online in *Nature Biotechnology*, Volume 20, number 9, pp.993-996, posted on August 5, 2002, accessed at http://www.nature.com/nbt/press_release/nbt0902.html, on August 30, 2003; and, 2) Cheng, *et al.*, "Human Adult Marrow Cells Support Prolonged Expansion of Human Embryonic Stem Cells in Culture," *Stem Cells*, Volume 2, 2003, pp.131–142. For more on the risks of animal to human viral transfer see: 1) Emma Young, "Stem cells face xenotransplantation risk," from New Scientist Online News, posted on August 24, 2001, and accessed at http://www.newscientist.com/hottopics/cloning/cloning.jsp?id=ns99991196, on August 30, 2003; and, 2) Justin Gillis and Ceci Connolly, "Stem Cell Research Faces FDA Hurdle : With Mouse Cell Base, Tough Rules Apply," posted on Washintonpost.com on August 24, 2001, and accessed at http://www.washingtonpost.com/ac2/wp-dyn/A53580-2001Aug23?language=printer, on August 30, 2003.

[16] *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," Executive Summary, p.6, accessed at http://stemcells.nih.gov/stemcell/pdfs/execsummary.pdf, on August 30, 2003. At this point in the research, large amounts of immunosuppressant drugs are required to ward of rejection of the transplanted cells – this is basically the same problem faced by all forms of transplant. Thus, even those these embryonic cells are often referred to as "generic" and "blank," they still trigger immune rejection because they carry the donor's DNA, which is recognized as foreign by the recipient's immune system. So, as the *NIH* notes later in Chapter 3 of its report, titled, "The Human Embryonic Stem Cell and The Human Embryonic Germ Cell": Human ES derived cells would also be advantageous for transplantation purposes if they did not trigger immune rejection," p.17, accessed at http://stemcells.nih.gov/stemcell/pdfs/chapter3.pdf, on August 30, 2003. Also see, Dr. Mae-Wan Ho, "Adult versus Embryonic Stem Cells," posted on the Institute of Science in Society web site, accessed at http://www.i-sis.org.uk/stemcells2.php, on August 30, 2003.

[17] For references to this issue, see Judith A. Johnson, Specialist in Life Sciences, Domestic Social Policy Division, "Report to Congress, Stem Cell Research," submitted on February 24, 2003, and posted through the Congressional Rsearch Service, accessed at http://www.house.gov/israel/issues/crs_hea_stemcells_022403.pdf, on October 6, 2003: "The human embryonic stem cell lines that have been isolated to date have all been grown on beds of mouse 'feeder' cells. The mouse cells secrete a substance that prevents the human embryonic stem cells from differentiating into more mature cell types (such as nerve or muscle cells). Infectious agents, such as viruses, within the mouse feeder cells could transfer into the human cells. If the human cells were transplanted into a patient, these infected human cells may cause disease in the patient which could be transmitted to close contacts of the patient and eventually to the general population. Public health officials and regulatory agencies such as the FDA are specifically concerned about retroviruses, which may remain hidden in the DNA only to cause disease many years later, as well as any unrecognized agents which may be present in the mouse cells." Also see, Ted Agres, "Senators urge stem cell expansion," posted on The-Scientist.com, April 25, 2003, accessed at http://www.biomedcentral.com/news/20030425/03, on September 6, 2003: "Under existing policy, federal funds for HESC research are available only for a limited number of cell lines established before August 9, 2001. Of some 78 stem cell lines initially identified as meeting the eligibility criteria, only 11 lines are presently available for researchers, Specter noted. Many scientists and politicians have argued that this number inhibits meaningful research. And because the currently qualified stem cell lines have been grown using mouse feeder cells, there is the potential for mouse viruses and other contaminating proteins to be passed to human cells, making potential clinical trials risky and difficult to conduct." And, Kevin Davies, Bio-IT World Online, "Stem Cell Suicide," posted on July 16, 2003, and accessed at http://www.bio-itworld.com/news/071603_report2919.html, on October 6, 2003: "According to the NIH, only 11 of the federally sanctioned ES lines are currently available for distribution. More importantly, all of the existing ES lines were produced with mouse 'feeder' cells, rendering them unusable in any

potential clinical context. Recent studies, however, have shown that human cells can substitute for the mouse feeder layer, leaving many researchers anxious to develop and characterize such lines."

[18] For a few noteworthy examples, see: 1) Amy Coxon, Ph.D., from the Department of Health and Human Services, "Therapeutic Cloning: An Oxymoron," posted on *The Center for Bioethics and Human Dignity* web site, 2002, accessed at http://www.cbhd.org/resources/cloning/coxon_2001-03-13_print.htm, on August 30, 2003; 2) *United States Conference of Catholic Bishops*, "What is Cloning?" copyright June 3, 2003, accessed at http://www.usccb.org/prolife/issues/bioethic/clonfact202.htm, on October 6, 2003; 3) John F. Kilner, "Human Cloning is Here," posted on the Access Research Network web site on January 9, 2002, and accessed at http://www.arn.org/docs/cloning_kilner.htm, on October 6, 2003; 4) Nigel M. de S. Cameron, Ph.D., "Human Cloning: The Necessity of a Comprehensive Ban," posted on the Comprehensive Christian World View web site, accessed at http://www.ccwv.net/EssayDisplay.asp?recordID=283, on October 6, 2003; and, 5) Therese M. Lysaught, Ph.D., "The New Eugenics: Cloning and Beyond," posted on United States Conference of Catholic Bishops web site, copyright June 3, 2003, accessed at http://www.usccb.org/prolife/issues/bioethic/clonfact202.htm, on October 6, 2003. Also, for a comprehensive discussion of the overall cloning issue see Dr. Patrick Dixon, *The Genetic Revolution*, (Kingsway, 1995), and available online at http://www.globalchange.com/books/Genesintro.htm.

[19] See *The President's Council on Bioethics* official web site, "Human Cloning and Human Dignity: An Ethical Inquiry," accessed at http://www.bioethics.gov/reports/cloningreport/index.html, on October 6, 2003 – see especially Chapter Three: On Terminology. Also see B. Vogelstein, *et al.*, "Please don't call it cloning!" *Science*, Volume 295, 2002, pp.1237, which has gotten a lot of play from the scientific/research side. And, see Dónal P. O'Mathúna's insightful commentary on this issue, "What to call human cloning: The technical terminology increasingly used in the cloning debate sidesteps the ethical questions raised," *EMBO Reports* 3, 6, 2002, pp.502–505. Or, Wesley J. Smith's pointed essay, "Closing in on Cloning – Don't expect an honest debate as the legislative fight heats up," *The Weekly Standard*, 01/14/2002, Volume 007, Issue 17, accessed at http://www.health.thechurch.com.au/scr_001.html, on October 6, 2003.

[20] Hans Spemann, *Embryonic Development and Induction* (New Haven, CT: Yale University Press, 1938). Also see the discussion of cloning techniques on Stanford University's web site, "Human Cloning," accessed at http://www.stanford.edu/~eclipse9/sts129/cloning/methods.html#scnt, on August 30, 2003, and the Kayotic Development web site for an explanation of Spemann's early contributions to the process of SCNT, accessed at http://www.abc.lv/thinkquest/tq-entries/24355/data/details/profiles/spemann.html, on August 30, 2003.

[21] For the original published reports of their research and methods, see I. Wilmut, *et al.*, "Sheep cloned by nuclear transfer from a cultured cell line, *Nature*, Volume 380, 1996, pp.64-66, and I. Wilmut, *et al.*, "Viable offspring derived from fetal and adult mammalian cells," *Nature*, Volume 385, 1997, pp.810-813. The Roslin Institute actually has two patents on its technique: PCT/GB96/02099, entitled "Quiescent cell populations for nuclear transfer," and PCT/GB96/02098, entitled "Unactivated oocytes as cytoplast recipients for nuclear transfer." See the discussion of cloning techniques on Stanford University's web site, "Human Cloning," accessed at http://www.stanford.edu/~eclipse9/sts129/cloning/methods.html#scnt, on August 30, 2003, and on the Kayotic Development web site, accessed at http://www.abc.lv/thinkquest/tq-entries/24355/data/details/techniques/roslin.html, on August 30, 2003.

[22] For the original published reports of their research and methods, see T. Wakayama, *et al.*, "Full-term development of mice from enucleated oocytes injected with cumulus cell nuclei," *Nature*, Volume 394, July 23, 1998, pp.369-374. This technique is also included in the discussion of cloning on Stanford University's web site, "Human Cloning," accessed at http://www.stanford.edu/~eclipse9/sts129/cloning/methods.html#scnt, on August 30, 2003, and the Kayotic Development web site, accessed at http://www.abc.lv/thinkquest/tq-entries/24355/data/details/techniques/honolulu.html, on August 30, 2003. Or, see the story posted by Kristin Leutwyler on ScientificAmerican.com on July27, 1998, "Send in the Clones: Using a new technique, scientists have cloned clones from clones," accessed at http://www.sciam.com/article.cfm?articleID=000186A6-697C-1CE2-95FB809EC588EF21, on August 30, 2003.

[23] *NIH*, "Stem Cells: Scientific Progress and Future Research Directions," 3.The Human Embryonic Stem Cell and the Human Embryonic Germ Cell, p.17, accessed at http://stemcells.nih.gov/stemcell/pdfs/chapter3.pdf, on August 30, 2003.

[24] *American Medical Association*, Report 5 of the Council on Scientific Affairs, (A-03, adopted policy from the 2003 meeting: "The AMA: (1) supports biomedical research on multipotent stem cells (including adult and cord blood stem cells); (2) supports the use of somatic cell nuclear transfer technology in biomedical research (therapeutic cloning); (3) opposes the use of somatic cell nuclear transfer technology for the specific purpose of producing a human child (reproductive cloning); (4) encourages strong public support of federal funding for research involving human pluripotent stem cells; and (5) will continue to monitor developments in stem cell research and the use of somatic cell nuclear transfer technology. (Policy)" posted on the AMA web site, accessed at http://www.ama-assn.org/ama/pub/article/2036-7819.html, on October 6, 2003. Also see: 1) the *AMA's* official policy E-2.147: Human Cloning (2-A-99), issued in December 1999, posted on their web site at http://www.ama-assn.org/apps/pf_online/pf_online?f_n=browse&doc=policyfiles/CEJA/E-2.147.HTM&&s_t=&st_p=&nth=1&prev_pol=policyfiles/CEJA/E-1.02.HTM&nxt_pol=policyfiles/CEJA/E-2.01.HTM&, accessed on October 6, 2003; 2) George Q. Daley, M.D., Ph.D., "Cloning and Stem Cells: Handicapping the Political and Scientific Debates," *The New England Journal of Medicine*, Volume 349, July 17, 2003, pp.211-121; 3) Konrad Hochedlinger, Ph.D., and Rudolf Jaenisch, M.D., "Nuclear Transplantation, Embryonic Stem Cells, and the Potential for Cell Therapy," *The New England Journal of Medicine*, Volume 349, July 17, 2003, pp.275-286; 4) Art Capalan, Ph.D., "Cloning ethics: Separating the science form the fiction," posted on MSNBC.com on August 14, 2003, accessed at http://www.msnbc.com/news/768366.asp?0si=-, on October 6, 2003; and 5) the joint article by Timothy Caulfield, Abdullah Daar, Bartha Knoppers, Peter A. Singer, David Castle, and Ron Forbes in *The Hill Times*, "Not All Cloning Is Alike: MPs must not let outrageous claims of Raelians drive national policy development," February 24, 2003, posted on the Genome Prairie web site, accessed at http://www.genomeprairie.ca/media/caulfield0203.htm, on August 15, 2003.

[25] For example, see the President's Council on Bioethics' Report: "Human Cloning and Human Dignity: An Ethical Inquiry, Washington, D.C., July 2002, available online at: http://www.bioethics.gov/reports/cloningreport/index.html.

[26] For two key examples see Lee M. Silver, *Remaking Eden: Cloning and Beyond in a Brave New World*, (1997, Avon Books, New York, NY), or Ronan O'Rahilly and Fabiola Muller, *Human Embryology & Teratology*, Third Ed. (2001, Wiley-Liss, New York, NY).

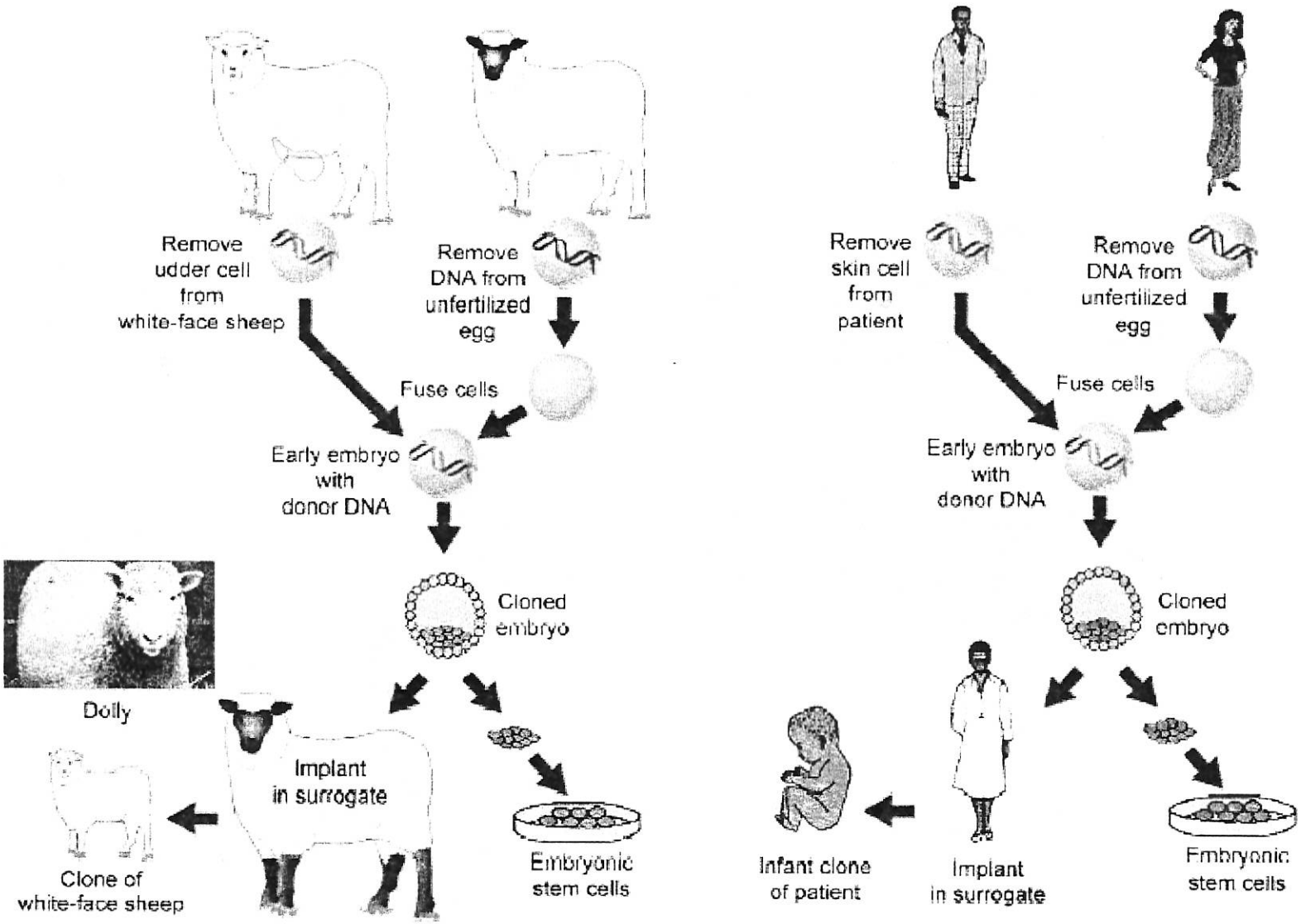
[27] William P. Cheshire, Jr., MD; Edmund D. Pellegrino, MD; Linda K. Bevington, MA; C. Ben Mitchell, PhD; Nancy L. Jones, Ph.D.; Kevin T. Fitzgerald, Ph.D., C. Everett Koop, MD; and John F. Kilner, PhD; *Stem Cell Research: Why Medicine Should Reject Human Cloning, © 2003 Mayo Foundation for Medical Education and Research, Mayo Clin Proc.* 2003;78:1010-1018. Accessed at http://www.mayo.edu/proceedings/2003/aug/7808c2.pdf.

[28] Dr. Leon Kass, Testimony before the Senate Judiciary Committee, March 19, 2003, accessed at http://judiciary.senate.gov/testimony.cfm?id=622&wit_id=1853.

[29] For an excellent source of successes in adult stem cell research, visit the *Do No Harm—The Coalition of Americans for Research Ethics'* web site at http://www.stemcellresearch.org.

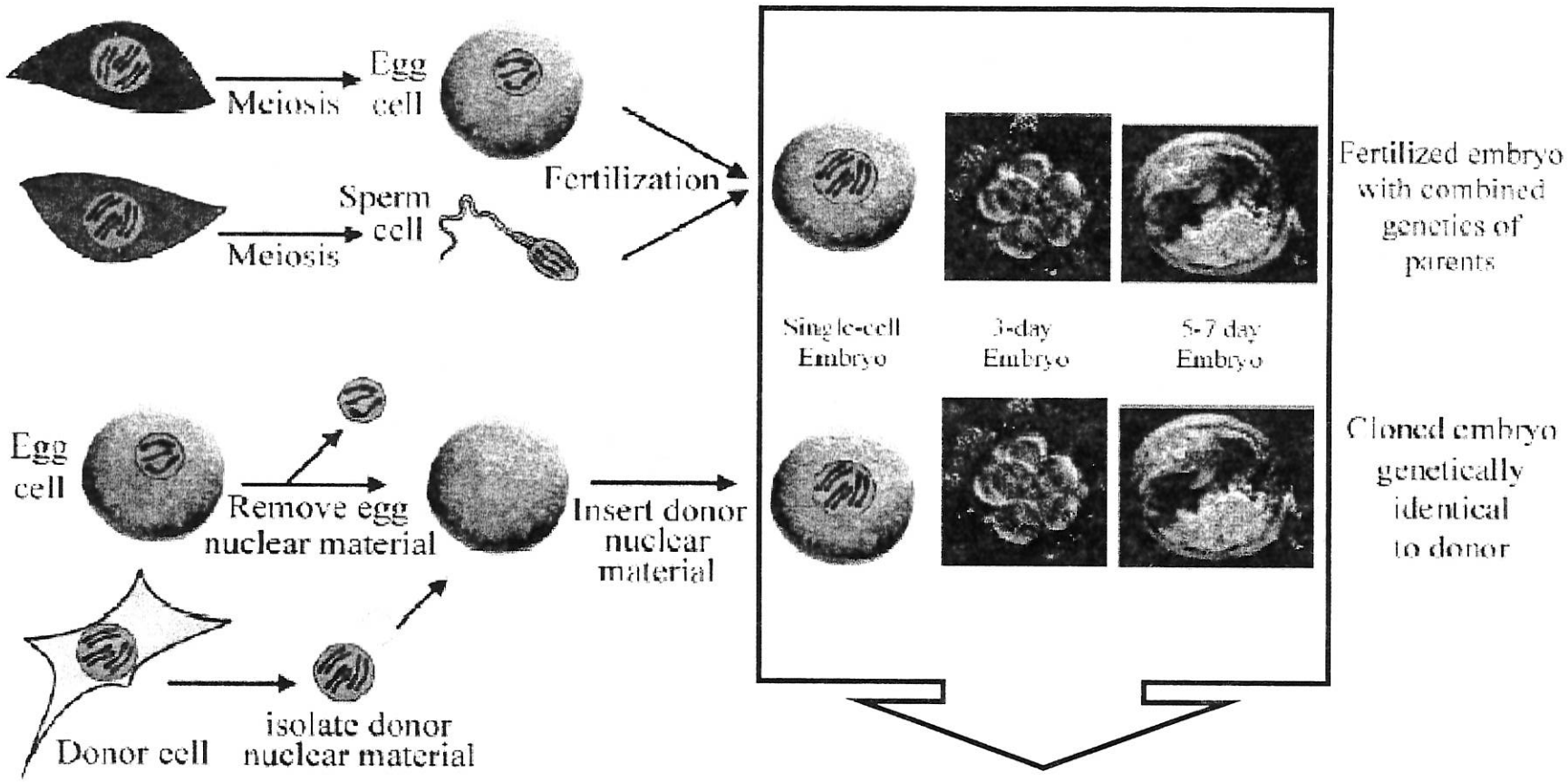
[30] *Ibid.*, "News," accessed at http://www.stemcellresearch.org/news/index.html, on October 6, 2003.

Somatic Cell Nuclear Transfer (SCNT) is the same process used to create the cloned sheep Dolly



Dr. David Prentice = http://www.stemcellresearch.org/testimony/prentice_03-02-05.pdf

Fertilization *vs.* Cloning (somatic cell nuclear transfer)



There is no way to tell these embryos apart!

Kansans for Life

State Affiliate of National Right to Life

Testimony to the Kansas House Committee on Federal and State Affairs
In Favor of H.B. 2355: A Ban on Human Cloning
March 16, 2005
By Mary Kay Culp, State Executive Director, Kansans for Life

Good afternoon Ladies and Gentlemen. My name is Mary Kay Culp. I am state executive director of Kansans for Life and I appreciate the opportunity to speak to you today.

My main point is to impress upon you that Kansans for Life feels as strongly about the issue of cloning as we do abortion for several reasons, including the fact that therapeutic cloning would require the killing, literally, the abortion, of millions of humans at the embryonic stage. We believe all human cloning should be banned.

Our constituency is just beginning to learn the facts surrounding cloning. To help them along we are in the process of producing a fact sheet that we plan to distribute to 50,000 families as part of the first printing.

I want to stress that every individual and organization that has come before you to testify against abortion, and every individual and organization that has supported pro-life candidates for office, favors a complete ban on human cloning.

Recently Missouri citizens against cloning held a rally in Jefferson City. The main organizations sponsoring the events were Missouri Right to Life, the American Family Association, Concerned Women for America, the Missouri Catholic Conference, the Missouri Family Network and the Missouri Baptist Convention's Christian Life Commission.

While we may lag a bit behind time-wise, it will be the same in Kansas.

Those of us from Kansas City are well aware of why a ban on human cloning needs to pass now. The Stowers Institute for Medical Research is located in Kansas City and has publicly expressed a desire to do research that would require the creation of human beings through cloning, for the express purpose of killing them for research.

Our hope is that the Stower's Institute will continue it's research on adult stem cells which every day seem to gain favor with research scientists. We also hope umbilical cord stem cell research will gain favor with Stowers. Kansas State University has recently gained global recognition for their research on this issue.

However, as you know, Missouri is in the throws of deciding whether or not to ban all human cloning and the Stowers Institute has been front and center fighting against the ban.

What is troubling is that rather than be honest about what human cloning for research entails, representatives of Stowers always refer to cloning as somatic cell nuclear transfer and then deny the entity created is a human being. As is the case for the abortion industry, an informed person can make them admit the truth, but left alone they continue to put forward this lie. When we do get a chance to challenge them, they admit it by changing the subject, saying that it doesn't matter anyway because they do not plan to place embryos they create through cloning inside a woman's womb.

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 7

929A S Kansas Ave Topeka, KS 66612 785-234-2
www.kfl.org kansansforlifetp@aol.com

I'm here to tell you it **does** matter. It matters whether or not we are talking about human beings. It matters whether the intention is gestation in a woman's womb or an artificial womb, or the intention is death—no matter how many good intentions. This is why it must be banned to begin with.

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Human being-hood is not beside any point. Biological determination that an entity is human being must be enough to insure it's worth and equal rights. Any other standard is subjective and dangerous to people who are dependent on others for their care, but ultimately to us all. If history has taught us anything, it has taught us that.

Stowers says they want to build a second facility in the Kansas City area. They would prefer it be in Missouri, but if Missouri bans cloning, you can bet they will turn their attention to Kansas, before looking out of state. They already have a relationship with K.U. Med Center.

France, Germany, and now the United Nations have banned all human cloning. Michigan and Pennsylvania have banned it and yet remain in the top ten tier of states in bio-medical research. Why in the world would Kansas allow it when these entities do not? The United Nations no, Kansas yes? France no, Kansas yes? Germany no, Kansas yes? Kansas is already known as the late-term abortion capital of the world. Do we want to also be the early term abortion capital as well?

Tom Frank's book, What's the Matter with Kansas, got many things wrong, but one thing right: there is a growing trend in Kansas to consider life more sacred than money. This is perhaps a direct result of citizens learning just how bad the late-term abortion situation is in Kansas. Kansans picking morals over money will be especially easy when it comes to a ban on cloning because there is the thriving moral alternative of adult and umbilical cord blood stem cell research now helping 56 maladies, and counting, while embryonic research has gone nowhere, and not for lack of money or opportunity as proponents suggest.

When you make your decision on these issues today, please remember the good people of Kansas.

RISKS TO WOMEN IN CLONING

Members of the committee:

The hype concerning human cloning or somatic cell nuclear transfer (SCNT) is enormous. People whose loved ones and whom themselves suffer from debilitating disease and injuries are being manipulated into believing that the cloning of embryos will produce cures in the very near future. As one who has a family member that awaits help from stem cells and their promise, I can identify with their expectations. However, I am putting my hopes on adult stem cell research as that is where the cures and therapies are being seen right now. Others will testify to this committee on the marvelous potential of adult stem cells. I urge Kansas to be at the forefront of this type research as it is the only stem cell research that is morally ethical and does not exploit women.

Besides the very real moral dilemma surrounding creating human embryos for research and then destroying them for their stem cells, there is another issue that needs to be addressed. As a women's organization, we are opposed to the exploitation of women.

In order to achieve somatic cell nuclear transfer or human cloning, human eggs must be available. In the recent flu vaccine shortage, one of the problems with producing more vaccine quickly was the unavailability of sterile chick eggs on which to grow the vaccine. This problem will be magnified in human cloning as millions of eggs will be needed to achieve any success and these will be obtained from women. Women are born with the number of eggs that they will produce in a lifetime. The only way to "harvest" those eggs is to extract large numbers of eggs from women through a surgical procedure after stimulating their ovaries to produce an average of 10 to 15 eggs. Substantial risks to women's health could result from either the extraction process or stimulation process. Pharmaceutical companies have not been required to date to collect safety data for the use of the drugs to shut down the ovaries before administering the ovarian stimulation drugs and the stimulation drugs themselves for possible long-term effects to women. Most women who undergo ovarian stimulation to have a child are informed of some "risk" but are willing to accept that risk in order to conceive.

The other issue is the massive quantity of eggs that would be needed to make somatic cell nuclear transfer (cloning) feasible. At a recent Senate Commerce Subcommittee on Science, Technology and Space, March 27, 2003, biotech researchers Jon S. Odorico, Dan S. Kaufman, and James A Thompson admitted the following in the research journal *Stem Cells:* "The poor availability of human oocytes (eggs), the low efficiency of the nuclear cell procedure, and the long population-doubling time of human embryonic stem cells make it difficult to envision this (therapeutic cloning to obtain stem cells) becoming a routine clinical procedure even if ethical considerations were not a significant point of contention."

It is estimated that 80 million women would have to donate an average of 10 eggs each in order just to treat the diseases those who favor cloning say will be cured or helped. Another estimate made for one patient group, the 17 million diabetics in the U.S., is that it will take 850 million to 1.7 billion human eggs to provide therapies and cures for diabetics... (William Saunders, JD, Senior Fellow and Director of the Center for Human Life and Bioethics at the Family Research Council "Human Cloning and the Abuse of Science") The cloning technique is not very efficient; in fact there is only a 20 per cent success rate in animal cloning, with stem cells being obtained from those that are successful at 10 percent. It is easy to see that massive quantities of eggs will be needed and those massive quantities will be obtained from women.

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 8

Who will donate or sell these massive quantities of eggs? Most people feel that the largest source of eggs will be from women who are disadvantaged; those who will be willing to undergo these dangerous pharmaceutical and surgical procedures for money. This means that an underground "egg-production" subculture may emerge that will put women at risk, particularly women in Third World countries. These women will be selling eggs to those who can afford these expensive procedures. The eggs will most likely be "harvested" in countries in which proper sanitation is scarce, and with little medical follow-up.

We urge you for ethical and practical reasons to ban human cloning (somatic cell nuclear transfer [SCNT]; therapeutic cloning) in Kansas.

Judy Smith, State Director, Concerned Women for America of Kansas
Presented by Marsha Strahm, Legislative Liaison for CWA of Kansas

House Federal and State Affairs Committee
March 16, 2005
HB 2355

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

Testimony in Support of H.B. 2355

Chairman Edmonds and members of the committee:

Thank you for the opportunity to give testimony in support of House Bill 2355 which would ban human cloning. My name is Mike Farmer and I am the Executive Director of the Kansas Catholic Conference, the public policy office of the Catholic Church in Kansas.

March 8, 2005 – headlines read: "U.N. General Assembly Adopts Declaration Urging Ban On All Forms Of Human Cloning." The U.N. General Assembly voted today to adopt a U.N. Declaration calling on member states to "prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life" and to "adopt all measures necessary to protect adequately human life in the application of life sciences."

January 28, 2003 – In his State of the Union speech President Bush said: "Because no human life should be started or ended as the object of an experiment, I ask you to set a high standard for humanity, and pass a law against all human cloning."

The Pontifical Academy for Life - Reflections on Cloning – "The 'human cloning' project represents the terrible aberration to which value-free science is driven and is a sign of the profound malaise of our civilization, which looks to science, technology and the 'quality of life' as surrogates for the meaning of life and its salvation."

Encyclical Letter THE GOSPEL OF LIFE, Pope John Paul II says: "The human being is to be respected and treated as a person from the moment of conception; and therefore from that same moment his rights as a person must be recognized, among which in the first place is the inviolable right of every innocent human being to life."

These are just a few examples of the condemnation of human cloning as a beneficial technology. Serious moral concerns about cloning have been raised by many religious and secular groups. The human cloning ban supported by the Catholic Church has been approved by the U.S. House of Representatives by an overwhelming bipartisan majority, and many other countries (including Canada, France, Australia, Germany and Norway) have passed similar bans. Opposition to the idea of treating

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 9

early human life as a mere object or commodity in the laboratory transcends religious and political divisions.

"Reproductive Cloning", "Therapeutic Cloning", "Somatic Cell Nuclear Transfer", "Fertilized Eggs", "Embryos", "Implantation", are all words used and oftentimes misused in the rhetoric to convince the public that cloning is a good thing for therapeutic reasons. I cannot begin to explain to you the science of it all, but I have attached a chart developed by Dr. David Prentice and distributed by Americans United for Life that I hope will in some way simplify the explanation of the process of human cloning as illustrated in the creation of "Dolly" the sheep, and cloning resulting in the creation of a human being.

The end result of cloning using human cells always results in a human being. Our Catholic teaching tells us that all humans born and unborn are made in the image and likeness of God. By their very nature they must be treated with dignity and their fundamental right to life must be strictly protected. They must not be exploited in the name of research or reduced to mere commodities for marketing. The reverence for the sacredness of human life is the cornerstone of a civilized society and a founding principle of this great country. This is not "potential life". This is life with potential.

Clearly, society should foster research to alleviate human suffering. But if research is not guided by the inalienable dignity of each human being, then research deteriorates into human rights abuses while masquerading as beneficial.

We therefore are unequivocally opposed to human cloning and stand firmly in support of this bill. We urge you to recommend HB2355 favorable for passage.

Thank you,

Mike Farmer

Michael P. Farmer
Executive Director

AMERICANS UNITED FOR LIFE

Don't be Fooled – *Cloning Kills*

By Dorinda Bordlee & Nikolas T. Nikas

We have found this chart invaluable in educating legislators and others about the fundamental ethical reality of cloning and embryonic stem cell research. Pro-cloning advocates – such as Ron Reagan, Jr. and other celebrities and scientists – work hard to confuse the issue by claiming that the cloned embryo is "just cells."

But don't be fooled. Once cloning occurs, the human embryo is just that – human. Just like a fetus or a newborn, the human embryo will continue to grow and develop unless it is killed or deprived of food and protection.

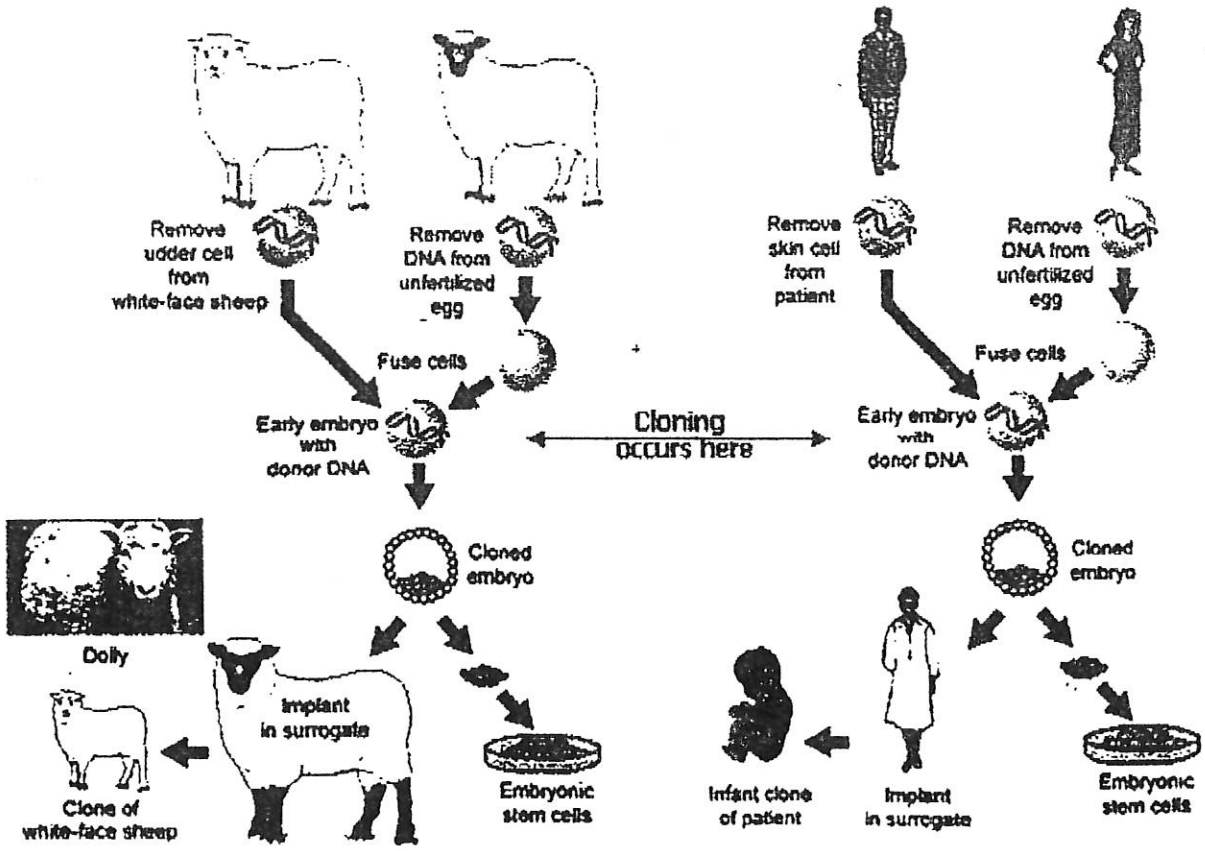
Despite what pro-cloning advocates will tell you, the humanity of the cloned human embryo does not depend on whether you intend to use the cloned human embryo for research or to give birth. It is human – and thus worthy of protection.

Advocates of embryonic stem cell research like to focus attention on the potential for miracle cures.

But don't be fooled. They can only get those cures by killing a human embryo. And to satisfy the demands of researchers, they need a lot of embryos. That is why they want to use frozen embryos left-over from in vitro fertilization for research. That is why they want human cloning – so they can clone and kill thousands and millions of human embryos.

Don't be fooled. Educate yourself – and then educate others. Speak up and stand up to prevent human cloning and embryonic stem cell research.

Does the humanity of the cloned human embryo depend on the intended use (either for reproduction or for research)?



AMERICANS UNITED FOR LIFE

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 10

Testimony of Rick Lucas
12508 Russell Street
Overland Park, Kansas
House Federal and State Affairs Committee
March 16, 2005

My name is Rick Lucas. I am 58 years old, I have been married for 35 years, and have three children in their 20's. No grandchildren yet! I am a life-long Kansan: born in Wichita, raised in the small Southwestern Kansas community of Lakin in Kearny County, and I have lived most of my adult life in Johnson County. I am a small business owner, and a former Republican Precinct Committeeman. I am also a Commissioned Lay Pastor in the Presbyterian Church, serving two small rural churches in the Heartland Presbytery. Two years ago, I was diagnosed with Parkinson's disease.

Parkinson's is a relatively low profile disease—it doesn't get much publicity. Primarily, I suppose, because it's generally regarded as an "old person's disease". Other than Michael J. Fox and Mohammed Ali, you may not know anyone with Parkinson's. But there are over 1,500,000 people in the United States suffering from Parkinson's—14,000 of whom live in our state—touching thousands of Kansas families. Let me tell you a little about living with Parkinson's.

For me, it started with difficulty picking up small objects with my right hand. My handwriting, once a source of pride, grew tiny, and became illegible. I soon lost the ability to click a mouse or to type on a keyboard. I began to walk with a limp, and lose my balance. My voice has become weak, and you may notice that my speech is sometimes slurred. Soon I will have to give up my preaching. Simple tasks, such as cutting meat, eating soup with a spoon, turning a screwdriver, hammering a nail, buttoning a shirt, or tying my shoe laces, are now difficult or impossible for me. Some Parkinson's patients experience tremors or suffer from insomnia and hallucinations in their sleep. Thus far, I have been spared these symptoms. Last night, however, I dreamed that I was streaking down the basketball court once again and scoring the wining jump shot. I awoke to the harsh reality that though my brain could still imagine such wondrous things, it had lost its ability to communicate such commands to my body's muscles. Swallowing has become difficult, and eventually I will lose the ability to swallow altogether. Before that, however, I will suffer the most fearful and limiting indignity of all—incontinence; the loss of bladder and bowel control.

Parkinson's is an insidious disease. It is degenerative and incurable. It robs us of physical activities which we once enjoyed. Of social interactions and relationships. Of our livelihood. It robs us of our very dignity and self-esteem. Our *joi de vivre*. Our hope to dance at our daughter's wedding or to teach a grandson how to throw a curve ball. It robs us of our future. The only thing we have left is hope—hope that in a race against time, a cure can be found. In the meantime, we are doomed, in the words of Henry David Thoreau, to lives of "quiet desperation."

Except there are some things about which we cannot remain quiet. Like early stem cell research—the process called somatic cell nuclear transfer, or SCNT. You see, today's drugs can produce some dopamine-like effects in our bodies—enough to keep our muscles functioning at a basic level for awhile. But the only long term cure is to be able to replace the dopamine-producing cells that we have lost—through stem cells. That is our only hope.

House Bill 2355 would eliminate that hope. This legislation, under the guise of banning cloning, would ban the very research that can save our lives. In a uniquely cruel element, the legislation includes language that would even make it a crime for us be treated with the positive results of this research. I can't believe that my elected representatives would withhold from me the benefit of medical breakthroughs, whether they occur here in Kansas, within the United States, or in a foreign country. To deny us those treatments is to condemn us to a death made even more agonizing by the knowledge that a cure is out there, but just beyond our grasp.

I believe there are moral and ethical arguments to be made on both sides of this issue. Let me close by stating my position.

I read comments by a proponent of this legislation who postulated that people suffering from Parkinson's or ALS somehow were assigned their condition by God and they should just accept their fate. This is a characterization not unlike that attached to the Biblical lepers of 2000 years ago. I reject that characterization. I believe God works in wondrous and mysterious ways, and I see his hand in the discovery by humankind of DNA and stem cells. The God I know has allowed us to discover cures for polio, pneumonia, and other serious afflictions. Maybe Parkinson's is next.

I also hear opponents of early stem cell research make the argument that SCNT is tantamount to taking one human life to save another. That, I believe, is not true. Those who advance that position hold the belief that human life begins with the first division of cells. While I respect their religious and moral convictions in this regard, my beliefs differ.

This view that human life begins with the first cell division is an interpretation—an interpretation made appealing by its simplicity. While others in the Christian community may differ in their interpretation as to exactly when human life actually begins in this complex process, the majority agree that human life begins not at this stage, but later in the development process. They, and I, would argue that it is disingenuous to refer to the collection of stem cells growing in a Petri dish in a laboratory as a "tiny human". This mass of cells is not, will not, and cannot be a human. It is a mass of stem cells that will not ***be*** life, but can miraculously ***give*** life.

Please let the scientists do their jobs. What if legislators had shut down Jonas Salk's experiments? Or banned the first heart transplant?

Faith, and hope, are all we have. That's what gives us the strength to get out of bed in the morning. That's what sustains us during increasingly difficult days. I plead with you to not rob us of that hope—the hope that a cure can be found in this enormously promising research.

Please don't deny us this hope. Some days, it's all we have.

Thank you for allowing me to appear before this committee to express my appeal. And thank you for listening.

Testimony on HB2355
House Federal and State Affairs Committee
Robert J. Vancrum, Kansas Governmental Affairs Specialist for
The Greater Kansas City Chamber of Commerce

Chairman Edwards and Other Honorable Representatives:

As many of you will recall, our Chamber, which has over 3,000 members in Kansas, was a principal endorser of the Kansas Economic Growth Act and the Bioscience Authority it created. We think the agri-sciences and bioscience industries are great growth areas that could benefit all of Kansas. On behalf of the Greater Kansas City Chamber of Commerce, we must oppose HB 2355 as presently written. We have no problem with, and would support fully, a bill that criminalizes human reproductive cloning or the implantation of any product of stem cell research in a human uterus. HB 2355, however, would do much more than that: it would criminalize a research procedure that holds enormous potential in the search for cures of diseases such as Alzheimer's disease and Parkinson's disease. In addition, we'd make the following observations:

- HB 2355 would do much more than "ban human cloning." Please note carefully the definition on lines 30-36. Any introduction of nuclear material from donor adult human cell a fertilized or unfertilized egg is criminal. It would criminalize the kind of pre-embryonic stem cell research being undertaken by important research institutions such as the Stowers Institute in Kansas City. This kind of legislation targets somatic cell nuclear transfer (SCNT), a research procedure that holds great promise for unlocking our body's built-in genetic capacity for self-repair and self-healing.

- SCNT does not create new life—it is not the same thing as human reproductive cloning. In SCNT, a blastocyst is created by taking the nucleus of an ordinary body cell of an already living person and placing it in an unfertilized egg from which the nucleus has been removed. This procedure does not in any way involve the fertilization of an egg by a sperm. No embryo is created by the SCNT procedure.

- The SCNT procedure causes the nucleus of the ordinary body cell to multiply into a small cluster of early stem cells with the ability to develop into any type of cell or tissue in the adult body. This process for reawakening the potential of adult body cells in any individual is the cornerstone of research that seeks cures for such conditions as diabetes, Parkinson's disease, and spinal cord injury.

- In conclusion, this is a very complex, and still evolving area of scientific research. The Chamber doesn't purport to have all the answers but we do believe that rather than passing a criminal statute with less than full understanding, there should be an extensive dialogue involving legislators, researchers, eminent scientists. The Chamber is happy to act as a convener to put together such an informational program.

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 12

Testimony for Barbara Atkinson, MD
Executive Vice Chancellor
University of Kansas Medical Center
House Federal and State Affairs Committee, Room 313-S, Statehouse
March 16, 2005

Thank you to Chairman Edmonds, Vice Chair Siegfried, and the entire Committee for inviting me here this afternoon.

Serving as the Executive Vice Chancellor for the University of Kansas Medical Center, I am here to testify against House Bill 2355, an Act which, as now drafted, would restrict important medical research in the State of Kansas.

My opposition to this bill has nothing to do with the bill's professed objective, the banning of human reproductive cloning. Rather, it is grounded in my belief that the specific language of this bill as currently written will have significant unintended consequences, notably the restriction of medical research in the State of Kansas that holds the potential to alleviate much human suffering.

The issues surrounding stem cell research and therapeutic cloning have become highly politicized in recent weeks and months. As a physician, an educator, a researcher and a leader in the health care community, I believe it is my responsibility and the responsibility of all scientists and educators to be a resource, both to the public and to you, the lawmakers to whom the people of Kansas have entrusted responsibility to decide crucial issues such as this. Thank you for inviting me to testify before your Committee today.

Let me state clearly at the outset that I understand and appreciate the very serious moral and ethical considerations that have motivated lawmakers to propose this legislation. There can be no doubt that human reproductive cloning, which has as its goal the creation of a baby, is repugnant to our society at large and to the research and medical communities. Leading scientists, including those at the National Academy of Sciences and certainly the faculty of the University of Kansas Medical Center, unambiguously agree that human reproductive cloning should not be allowed. Further,
I strongly urge you to introduce and to adopt legislation that clearly prohibits human reproductive cloning.

Unfortunately, this particular bill is not that legislation. The critical problem that I and many others see with HB 2355 is that, while it aims to outlaw human reproductive cloning, the specific language of the bill does so at the expense of criminalizing the exploration of an entire category of research that holds the potential to profoundly ease human suffering—research that will allow us to study the molecular basis of diseases as they develop from conception to death. The ultimate hope is to eventually discover treatments and cures for such chronic diseases as Parkinson's, juvenile diabetes, ALS,

Alzheimer's, heart disease, cancer, and spinal cord injuries which affect millions of Americans.

Much of the controversy and misunderstanding centers on use of the emotional and highly-charged word "cloning." When most of us hear this word out of context, we tend to think of the process of creating genetically identical human beings—human reproductive cloning—a terrifying prospect to be sure.

In fact, taken literally, cloning simply refers to the process of growing a colony of genetically identical cells or producing millions of copies of a DNA fragment that have been inserted into a bacteria or cell. This commonly accepted practice spawned the biotechnical industry in the 1980s. The discoveries made in that industry have resulted in the development of powerful new drugs, and insulin to treat diabetes. Researchers also achieved other social benefits such as tracking the origins of biological weapons, catching criminals and freeing innocent people wrongly charges with crimes. In fact, all cloning is not equal.

There is another type of cloning, called "therapeutic cloning" that seeks to use these processes not to create a child but to create new cures for deadly and debilitating diseases.

One of the most promising forms of therapeutic cloning is called "somatic cell nuclear transfer" or SCNT for short. SCNT is the transplanting of a patient's DNA into an unfertilized egg in order to grow stem cells that could replace organs or pieces of organs in order to cure debilitating diseases. They could also be used to discover new drugs for the treatment of patients.

SCNT is not meant to create new life; it literally extends life. SCNT works with the cells of an already-living person to create an environment where these cells can multiply to produce stem cells. These stem cells can then replace damaged cells in the body, such as bone marrow for leukemia and chemotherapy patients, nerve cells for Parkinson's and Alzheimer's disease patients, heart muscle cells for diseased hearts and pancreatic islet cells for diabetic patients. I liken it to a transplant. None of us would object to a sibling giving up a kidney in order to save the life of a sister or brother. The difference with therapeutic use of SCNT is that the cells given up are then reintroduced to the donor himself in order to carry out potentially life-saving treatment.

SCNT is also essential to help scientists understand how stem cells and other cells develop. This includes understanding how cancer cells grow and develop, which is essential for ultimately finding a cure for cancer.

The goal of therapeutic cloning or SCNT is not to produce babies. There is no fertilization of the egg by sperm. No implantation in the uterus and no pregnancy. The goal is to produce cells. [See graph]

SCNT aims to treat or cure patients by creating tailor-made, genetically identical stem cells that the patient's body will not reject after transplantation. In other words, SCNT could allow patients to be cured using their own DNA and could, therefore, result in significant breakthroughs just as the use of stem cells in bone marrow transplants is saving lives today. Sadly, SCNT would be criminalized under the provisions of HB 2355.

At the Medical Center, we have researchers whose work includes the study of early stem cells. Currently, three researchers conduct research on the small number (15 lines) of NIH-approved early stem cell lines available to government supported researchers. This research has been approved and peer-reviewed by the NIH. Regrettably, the cells currently available to researchers are substandard in many ways. First, they are not direct models for genetically based human disease. Second, very few of these existing lines even grow. Even fewer of them have the adaptability needed for them to transform into other cell types. And finally, the cells are not derived from a sufficiently racially or ethnically diverse population.

We are very supportive of efforts to utilize adult stem cells – stem cells drawn from fetal cord blood or from other adult tissue sources -- for biomedical research. Both adult stem cells and early stem cells offer extraordinary potential for cures. It may be that one type of stem cell is the cure for one disease, while another is the treatment required for a different disease, much as one drug isn't the therapy for all diseases.

However, adult stem cells and early stem cells are not replacements for one another. Because early stem cells are pluripotent – meaning they can become any cell in the body – they can be applied to a far greater variety of contexts than adult stem cells and can also be grown in a lab indefinitely. Consequently, we believe that pursuing both avenues provides the best hope for achieving dramatic progress in discovering new cures.

I would also like to point out that there are other unintended consequences to HB 2355 beyond criminalizing SCNT. The spirit of discovery that fuels scientific advancement in our society would be lost. In addition, Kansas patients may be deprived of the benefits of currently accepted treatments and the science behind those treatments. And patients -- and perhaps physicians as well -- may leave our medical centers and hospitals to pursue the possibility of more innovative care provided in other states.

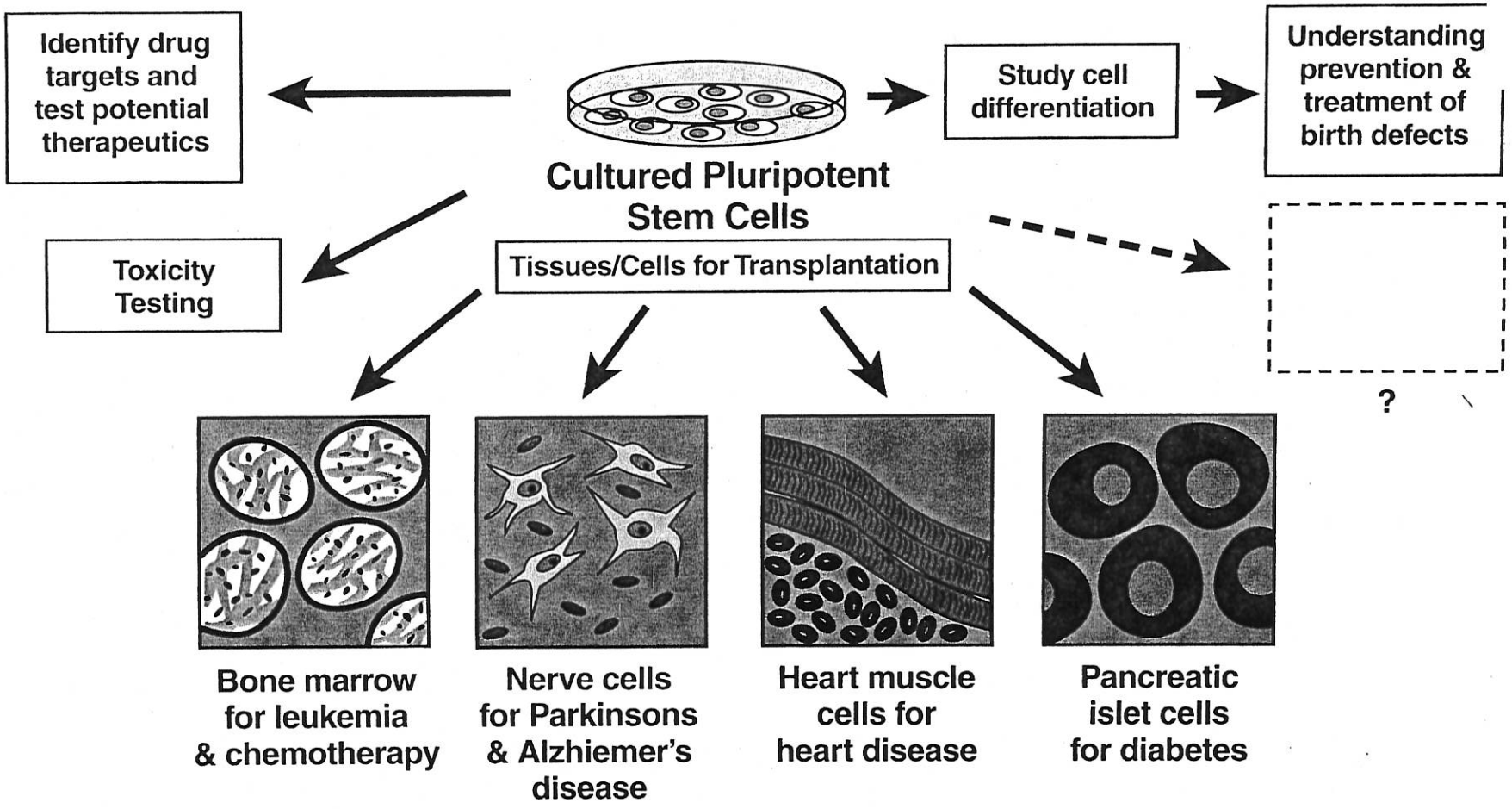
In summary, I understand and appreciate the deep moral and ethical considerations that motivate lawmakers to propose this legislation--but I remain convinced that laws that would prevent and criminalize the pursuit of research to discover life saving cures and treatments are inappropriate. I applaud and support your efforts to outlaw human reproductive cloning, as do all researchers at KU Medical Center – but I urge you to advance the cause of research, education, and health care by opposing legislation that limits the life-saving cures and treatments central to our shared mission and the overall quality of life of Kansans.

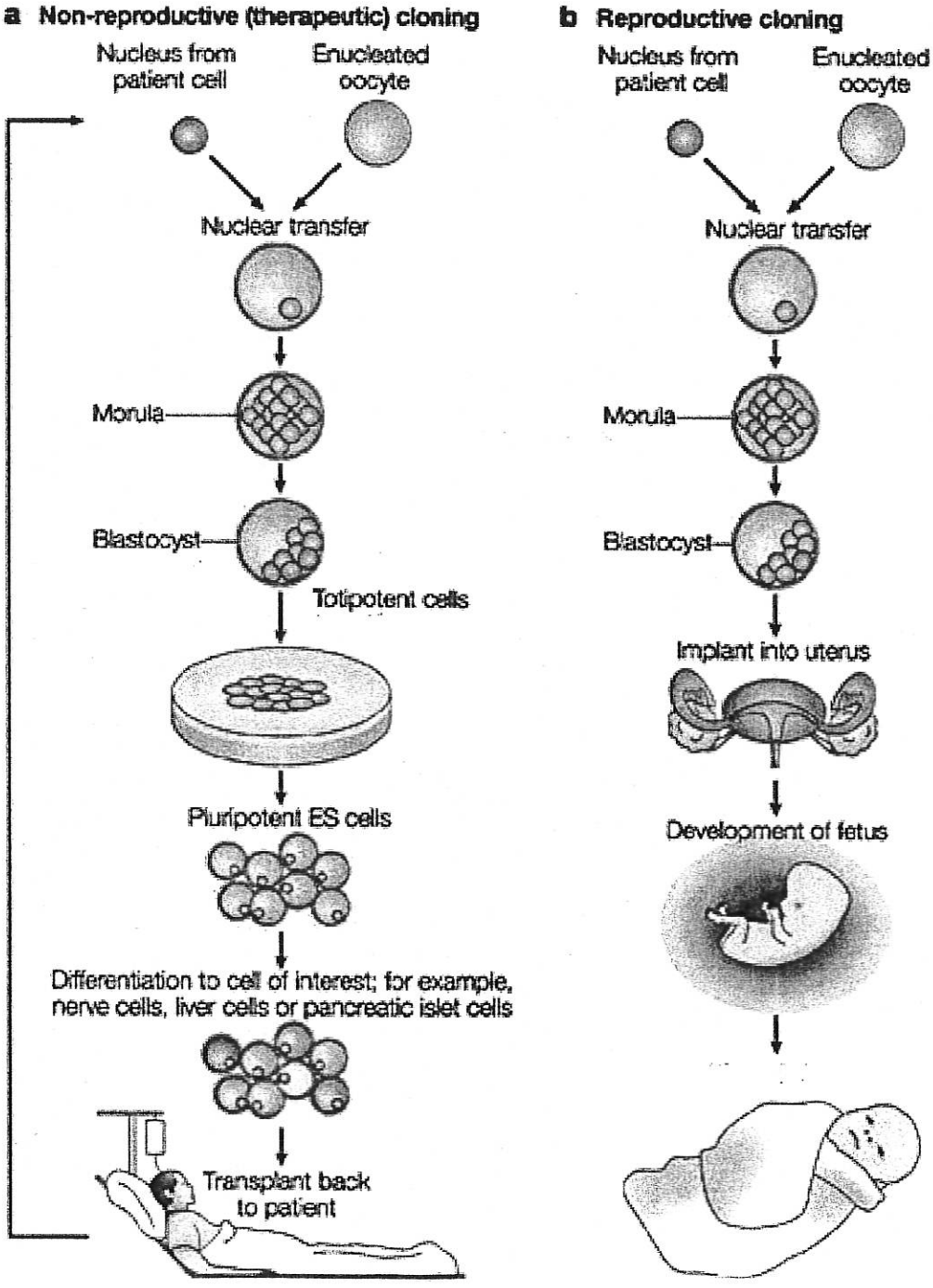
Thank you for inviting me to share my views with the committee today. I am pleased to introduce Dr. David Albertini – a nationally recognized researcher who is the Hall Family Foundation Professor of Molecular Medicine at KU School of Medicine. Dr. Albertini came to KUMC last year from Tufts University, where he served as Professor of Anatomy and Cellular Biology, and Obstetrics and Gynecology. His research focuses on factors regulating the development of healthy eggs, early fetal development, and infertility treatments.

Also with me today is Martha Montello, PhD, associate professor in the Department of History and Philosophy of Medicine. Dr. Montello is a noted bioethicist. She has held faculty positions at both Yale Medical School and Harvard Medical School before coming to KUMC in 1997. She chairs the Pediatrics Ethics Committee, directs and teaches courses in medical ethics, publishes research work in the areas of medical ethics, literature and medicine, and patient-physician relationship.

I invite you to ask me, Dr. Albertini and Dr. Montello any follow up questions from my testimony today.

The Promise of Stem Cell Research





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Testimony for Representative Annie Kuether
House Federal and State Affairs Committee
March 16, 2005
(Written)

Chairman Edmonds and Committee Members:

Thank you for allowing me to present written testimony in opposition to HB 2355.

This summer, a wonderful soul left this Earth. My Mother, Elizabeth S. MacGreevy, died. She suffered for many years from Alzheimer's disease. This terrible disease robbed me and my sisters of her voice, advice and comfort, long before her last day arrived. We must find a cure – to give hope to all of the families who are impacted by this terrible disease.

Research must continue in order to help other families impacted by this disease as well as Parkinson's disease, spinal cord injuries, heart disease, cancer, ALS, diabetes and others. What family hasn't been impacted by one of these? Or, will be?

My concern also centers on restricting medical research. Just last session, we passed out the Bioscience legislation. There will be little good to come from that if we continue to tell the science community what they can and cannot do.

Please consider your actions when you work this bill. I fear that in passing HB 2355, there could be profound ramifications...and **not** for the good.

Thank you,

Annie Kuether

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 15

FAX: (785) 296-0251 E-MAIL: KUET@AOL.COM

OVERLAND PARK
CHAMBER OF COMMERCE

LEGISLATIVE TESTIMONY

TO: Representative John Edmonds, Chairman
Members, House Federal and State Affairs Committee

FROM: Wes Ashton, Director of Government Relations
Overland Park Chamber of Commerce

DATE: March 16, 2005

RE: HB 2355- Restriction on human cloning

The Overland Park Chamber of Commerce would like to express its opposition to HB 2355, dealing with human cloning and stem cell research.

If the only consequence of HB 2355 were simply to restrict human cloning, the Chamber would obviously support this action, although it would not be necessary as federal law already prohibits it. The reason the Chamber opposes this bill is the remaining portions of section one, which would alter the current standard in Kansas dealing with stem cell research. The additional restrictions this bill would place on companies located in Kansas would have a significant negative economic impact as well as a chilling effect on future economic development.

The Overland Park Chamber's 2005 Legislative Agenda states:

> Life science programs lead to additional jobs and revenue for the state and the Chamber supports legislation to expand life science programs. The Chamber supports public policies that will improve the competitive position of Kansas in the life science industry.

The field of bioscience by almost any standard is still in its infancy stage. Most estimates state the life and biosciences will be a major sector of the GDP in the near future. There are approximately 150-160 bioscience companies located in Kansas, with about 100 of these companies located in Johnson County. These companies typically have high paid employees and generate significant revenue for the state.

The passage of this bill sends a clear message to any company considering relocation to pick anywhere in the country other than Kansas. This effect of this bill would force companies already located here to consider moving out of state, and would be a major deterrent to any company considering Kansas as their home. Just a year after passing legislation as powerful as the Kansas Economic Growth Act, this bill would essentially destroy any economic advantages we may have seen in the future.

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Companies in the life and biosciences are being lured to communities across the country. While many companies are already located in hubs on the coasts, the Kansas City metro region has a great chance at being the leader for the Midwest. While Kansas has many positive aspects to attract companies, it would be just as easy for these companies to pick another location if the business climate was better for them in other states.

One example of this chilling effect is occurring locally with a new bioscience company currently being attracted to Overland Park from out of the state. The Overland Park Economic Development Council and the Kansas Department of Commerce are working to bring a new company to Kansas that will soon employ approximately 25 workers, with an average wage of $80,000 a year. Attracting this company to Kansas will be much less likely with the passage of HB 2355. With virtually every other state in the union having more favorable laws in place, it shouldn't surprise anyone when Kansas loses out on attracting future companies.

This bill would also have a negative effect for the entire state of Kansas. Although many of the companies may headquarter in eastern Kansas, a number of companies in the animal science sector will locate in the central and western portions of the state. Companies headquartered in eastern Kansas are also likely to have production, lab and testing facilities in other parts of the state. These facilities would offer much needed new jobs and revenue.

The Chamber understands the concerns many legislators feel when dealing in this new ethical area of the law. The Chamber respectfully requests this committee to follow the federal guidelines already in place. This will keep our state from being in a competitive disadvantage with neighboring states and the rest of the country. The advancement of the life and biosciences are just beginning, and effectively shutting the door at this point would put Kansas in the very back of an economic development race just beginning.

For all of these reasons, the Overland Park Chamber strongly urges the committee not to recommend HB 2355 favorable for passage. Thank you.

Lenexa Chamber of Commerce

The Historic Lackman-Thompson Estate
11180 Lackman Road
Lenexa, KS 66219-1236
913.888.1414
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TO: Representative John Edmonds, Chairperson
Members, House Federal & State Affairs Committee

FROM: Ashley Sherard, Vice-President
Lenexa Chamber of Commerce

DATE: March 16, 2005

RE: **HB 2355—Prohibition on "Human Cloning"**

The Lenexa Chamber of Commerce would like to express its concerns regarding House Bill (HB) 2355, which would make it unlawful for any person or public or private organization to perform or attempt to perform "human cloning" or to knowingly receive the product of "human cloning." The bill also allows public officials to maintain a cause of action for civil penalties against any person or organization that violates this prohibition.

Our primary issue with HB 2355 is whether its definition of "human cloning" is unnecessarily broad—going beyond reproductive concerns—such that it further restricts bioscience stem cell research beyond the restrictions approved in last session's Kansas Economic Growth (KEG) Act. We believe it is critically important that HB 2355 not expand these restrictions.

First, we believe appropriate restrictions on stem cell research are already in place. Again, last year's KEG Act included restrictions on stem cell research written to mirror President Bush's federal limitations. We believe these restrictions strike an appropriate balance between ethics concerns and the potential benefits of medical advancement.

Second, we believe more broad restrictions on stem cell research could create a chilling effect that will damage the state's economy now and in the future. The emerging bioscience industry is already an important contributor to the Kansas economy. By January 2004, more than 20,000 Kansans held bioscience-related jobs, employed either as researchers and support staff at the state's universities or as researchers, management, technicians, and support staff at one of more than 160 bioscience companies currently operating in Kansas. In addition to these jobs, many of which pay substantially higher salaries than positions with similar educational backgrounds in other academic fields, bioscience companies also add to the state's tax base and provide significant capital investment. Placing additional broad restrictions on stem cell research – restrictions that go beyond reproductive concerns – would directly and indirectly put existing jobs, tax base and investment at serious risk.

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 17

In addition, further restrictions would also likely damage the state's competitiveness in attracting new bioscience-related industry, whether or not that industry is directly involved in stem cell research. The movement to further develop bioscience technology is rapidly accelerating nationwide. In June 2002, the Brookings Institute found that biotechnology companies have grown an average of 12.3% annually, and many forecasters are predicting that bioscience will become a major focus of the U.S. economy in coming years. Recognizing its economic value and significant growth potential, many states are already taking steps to ensure their ability to effectively compete for future bioscience-related opportunities. To remain a forerunner in the race to attract this important economic sector, the State of Kansas must demonstrate its serious commitment to creating a supportive environment. We believe further restrictions on stem cell research would send the wrong message and substantially damage Kansas's competitive position in attracting unique bioscience-related opportunities across the state—costing us investments that would encourage new economic growth, new businesses, new jobs, and new opportunities statewide.

These opportunities include a chance for the Kansas City metropolitan area to expand its existing bioscience facilities and continue to build its reputation as a leader in bioscience research. The Stowers Institute for Medical Research may build a second campus, a 600,000 sq. ft. addition employing 225 people with an estimated direct and indirect economic impact of $1.5 billion. In announcing its plans, Richard Brown, co-chairman of the Institute, said the decision to expand came as a direct result of efforts by civic leaders and lawmakers to push proposals to strengthen the area's bioscience research climate. Should additional broad restrictions on stem cell research be approved, such potential dividends of the KEG Act may never be realized.

Yet the potential impact of HB 2355 extends far beyond high-profile projects like the Stowers Institute. Lenexa is home to at least 33 bioscience-related businesses – about 1 in every 5 bioscience companies located in Kansas – most of which manufacture or provide goods or services associated with bioscience research. We believe the broad definition of "human cloning" contained in HB 2355 threatens not only these existing jobs and tax base, but also future growth and investment both in our community and statewide.

For these reasons, the Lenexa Chamber of Commerce strongly urges the committee not to expand the existing appropriate restrictions on bioscience-related stem cell research. Thank you for your time and attention to this issue.

KANSAS BOARD OF REGENTS

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Testimony for the House Federal and State Affairs Committee
Regarding HB 2355
State Capitol – Room 313-S
March 16, 2005

Reginald L. Robinson – President and CEO
Kansas Board of Regents

Chairman Edwards, Vice Chair Siegfried, Ranking Member Burroughs, and members of the Committee, thank you for giving me the opportunity to place this written testimony into the record. I write on behalf of the Kansas Board of Regents to express our strong opposition to House Bill 2355.

Let me be clear at the outset. The Board of Regents understands and supports the stated objectives of this proposed legislation. We unambiguously oppose human reproductive cloning. In fact, the Board of Regents would strongly support legislation that clearly prohibits human reproductive cloning.

Our concern is that while HB 2355 may seek to outlaw human reproductive cloning, the bill's specific language reaches beyond that practice to criminalize a broad category of important and ethically appropriate research that holds great promise for improving the quality of human life.

Mr. Chairman, neither I nor the members of the Kansas Board of Regents claim to be scientists who fully grasp the complex intricacies that are at the heart of the research implicated by this proposed legislation. But we do know two critical things that are at the heart of this discussion. First, we know that as scientists engage in their continuing effort to cure disease and ease human suffering, "somatic cell nuclear transfer" (also known as SCNT or early stem cell research) is among the most promising research areas. Second, we know that HB 2355 would criminalize SCNT. We strongly object to the prohibition of such research. Our opposition to HB 2355 is rooted in those realities.

During the course of your hearing today, Mr. Chairman, your Committee will hear testimony from researchers who understand the incredible promise of this research. As you listen to their testimony, you will also recognize that these researchers are deeply committed to the conduct of research within an appropriate ethical framework. I think you will also hear from Kansans with serious diseases who look with great hope to what SCNT stem cell research may have to offer. We hope the power of their words will guide you as you consider this legislative proposal.

The Kansas Board of Regents strongly urges you to reject HB 2355. This legislation would extinguish the hope embedded in the promise of the research that HB 2355 would criminalize. Thank you for your attention to this written testimony.

To Whom It May Concern:

We are writing to voice our support for protecting somatic cell nuclear transfer (SCNT)), which may be a vital component allowing scientists to fully develop the promise of embryonic stem cell research.

Somatic Cell Nuclear Transfer (SCNT), commonly referred to as therapeutic cloning, more accurately described as nuclear transportation to produce stem cells, has great potential to increase the understanding and treatment of many diseases and debilitating disorders, including Parkinson's, spinal cord injury, diabetes, Alzheimers's, rheumatoid arthritis, ALS, heart disease and cancer. Nuclear transplantation involves the following: DNA is taken from the body cell of a person suffering from a disease; it is injected into an unfertilized egg from which the nucleus has been removed; and the egg is stimulated to divide and produce stem cells. These stem cells can potentially grow into any organ or tissue.

SCNT is NOT the same as reproductive cloning. SCNT uses only unfertilized embryos.

Did you know 20 % of all people diagnosed with Parkinson's are under the age of 50? I was 48 years old when diagnosed so I am In the Young Onset or Early Onset group. Has Parkinson's affected my life? YES IT HAS! My diagnosis came in the summer of 1996, just after my husband and I celebrated our 25th wedding anniversary and our son was about to enter his sophomore year of high school. Even with the medications, there are still periods of time each day when I am unable to move, move more slowly, or need the assistance of a cane. The side effects of the medications are also bothersome, in particular the dyskinesia. This is an impairment in the ability to control movements, characterized by spasmodic or repetitive motions or lack of coordination. For me it is manifest in involuntary movements and there are times when I can't sit still. I seem to be perpetually moving, but not in an orderly fashion. It has also affected my ability (at times) to take care of my personal hygiene, dressing or even arising from a chair. I now allow additional time for all daily tasks. I come from a family with a history of longevity, with many family members living in to their 80's and 90's. If this form of research is taken away, it most certainly will affect me (and my family) emotionally. It will take away the hope and belief that this research might one day benefit all Parkinson patients. I find it difficult to envision the time when I would not be able to travel with my husband on his job related trips, follow our son as he embarks on his career in broadcasting and eventually even hold or care for a grandchild.

Given the enormous scientific potential in this area, we ask you to strongly oppose any legislative or regulatory action that would ban research related to SCNT. We do however, urge you to support legislation that would prohibit human reproductive cloning, while preserving important areas of medical research.

Thank you for your consideration.

Sincerely,

Linda Davis
Bob Davis

Linda and Bob Davis
4166 Blackjack Oak Drive
Lawrence, KS 66047

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 19

March 16, 2005

Chairman Edmonds, and honorable House Fed & State Committee Representatives,

Thank you for this opportunity to discuss my opposition to HB 2355. I believe it to be divine intervention to have set on the other side of the conferee's podium and learn from many of you the process of advocacy and legislation. Thus as a recently diagnosed Type II Diabetic, I would like to bring to this committee's attention the narrow aspects this proposed legislation applies to research.

Rep. Cook, I recall your family's increased risk for Huntington's disease. However, according to the National Institute of Neurological Disorders and Stroke website, in 1 to 3 percent of individuals with HD, no family history of HD can be found. With HD listed on the National Organization of Rare Diseases' list and estimates of its *prevalence* are about 1 in every 10,000 persons unlike Diabetes which is at near epidemic rates, please recognize how important it is not only health wise but economically for increased treatments to be available to the public for diabetes.

According to the American Diabetic Association, HB2355 will also ban a research procedure known as somatic cell nuclear transfer (SCNT). Many researchers believe SCNT research holds the most potential for cures of life threatening diseases like diabetes which will strike 1 of 3 Americans during their lifetime! More than one of every 10 health care dollars was spent on diabetes in 2002 according to National Institute of Diabetes and Digestive and Kidney Diseases website.

As a state employee who has had minimal pay increases during the past 3 years, my health insurance will not cover proven and FDA approved treatment for decreasing the neuropathy's affect on my feet. Thus, I have no idea what my walking ability will be in the upcoming future. I request the committee's opposition to this proposed legislation not just for myself but for approximately 18.2 million (or 6.3%) US individuals have diabetes.

Just 30 minutes east of the Capitol, sits a nationally recognized institution known this March for more than its basketball team. It is one of which has obtained more than $13 million of National Health Institute's research grants since 1995. Please do not unnecessarily impede the progress being made by this nationally recognized Kansas institution in researching treatments for numerous diseases.

Respectfully submitted,

Shelia Pearman

Shelia Pearman 785-273-1411 (home)

FEDERAL AND STATE AFFAIRS
Date 3-16-05
Attachment 20