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NIH Guidelines Rewritten: Loosening Restrictions for Embryonic Stem Cell Research Funding

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Introduction:

The embryonic stem cell research federal funding controversy has been the basis for a long-standing debate, arising from the ethical issues regarding the sanctity of human life debate—specifically the funding of the creation, use, and destruction of embryos for research purposes. While it has been argued by many scientists that embryonic stem cell research would provide potentially immeasurable, profound, and lifesaving benefits to the health and well-being of mankind, there are nonetheless many opponents. I maintain that the views of such opponents are not only unsubstantiated, but are even unethical, and that revising the current National Institute of Health guidelines is an obligation necessary to abide by bioethical principles.

Embryonic stem cells are pluripotent, as opposed to adult stem cells which are of the more limited mulitpotent type. This pluripotent ability allows embryonic stem cells to differentiate not only into the type of tissue they were derived from, as adult cells are often times limited to, but also to differentiate into any of the three germ layers, and therefore any kind of tissue and, consequently, any kind of stem cell, as well as the germ line. This malleable plurality is extremely important, especially because some organs, such as the lungs, kidneys, liver, and heart do not have adult stem cells of their own. This makes embryonic stem cells indispensible not only to researchers, but to transplant recipients. While some people argue that since induced pluripotent stem cells (which are adult cells that have been genetically altered, causing them to express genes the way an embryonic stem cell would) have many of the same qualities as embryonic stem cells—and should therefore replace embryonic stem cell use—they

overlook significant discrepancies between the two. There are still many uncertainties surrounding the capabilities of induced pluripotent stem cells, including whether or not they have the same capacity to differentiate into all cell types in a fully functional manner. There is a chance they could resist complete differentiation due to cell memory. This enormous shortcoming underscores the critical need for embryonic stem cell use.

While the longstanding question of when life truly begins may be the heart of the debate, a utilitarian look at embryonic stem cell research, along with previous Supreme Court rulings, provides a compelling argument that using an embryo for research purposes contributes to—as opposed to violates—the sanctity of life. When dealing with such controversial topics that affect so many people, a utilitarian perspective is the best way to decide which actions to take. A utilitarian perspective produces the best option which "from all available alternatives, has the consequences which maximize the well-being of affected agents, i.e. the best action is that which produces the greatest improvement in well-being." A utilitarian approach, Peter Singer argued, extends moral concern to all sentient creatures, which in the case of human embryonic stem cell research, is all of the people potentially benefitted from the treatments. An embryo is not considered sentient because it is not yet a person that can feel or perceive *(see II.a.ii. for more on embryos not yet qualifying as human).* A moral concern is not given to the embryos, because they should not, in fact, be considered sentient creatures, which I will address later. If the benefits of the action(or gains in welfare) outweigh the costs of the action(or loss in welfare), then the action

should be taken with respect to the whole. Human embryonic research encompasses exactly this approach, and the governmental policy (and therefore NIH policy) should be based on maximizing benefits—utilitarianism is the best policy for public entities in a democracy.

It is an insufficient defense for opponents to pit the viability of a five-day-old embryo against the life-saving potential of embryonic stem cells and the ethical imperative to save a human life whenever possible. The precious, potentially life-saving resources that are wasted while unused embryos are stored in fertility banks demonstrate an egregious ethical disgrace. The number of lives that could be saved through well-funded research is more than ample reason for more lenient guidelines regarding the federal funding of embryonic stem cell research. According to New York State Stem Cell Science, regenerative medicine can help repair cardiovascular damage and also has the potential to improve cancer treatments. In fact, "diseases and afflictions that stand to be positively impacted by stem cell research including: stroke, respiratory disease, diabetes (respectively 3, 4 and 7 on the CDC list of causes of death), neurological disorders, spinal cord injuries, and some birth defects." Medical research should be based on the principle of measured decisions that benefit the majority, while, by definition, causing no harm. Those who disagree, using the "sanctity of life" premise, should consider this: according to Raymond Devettere, author of *Practical Decision Making in Health Care Ethics: Cases and Concepts*, over one-third of zygotes fertilized naturally are lost within the first few days of their "life." He argues, then, that if each of these zygotes lost naturally

are thought of as a tragic death, then using embryos for research would actually in fact be considered saving lives due to the fact that there is a much lower frequency of embryonic destruction in labs compared to that of natural fertilization.

Although the presidential terms of Clinton, Bush, and Obama have brought some progressive changes and improvements in the NIH policy regarding embryonic stem cell research, it is still far too limiting, preventing research and medical solutions from reaching their full potential. Clinton was the first to deal with the controversial topic supporting embryonic stem cell research on the grounds that he did not see it as a moral evil, but instead as an opportunity to help the sick. However, his opinion did not correspond to existing legislation on the matter, also known as the Dickey Amendment. Passed in Congress in 1995, the Dickey Amendment prohibited federal funding for both the creation of embryos made for research as well as any research leading to the destruction of the embryo. Finding a small loophole in the wording of the amendment in 2000, Clinton attempted to uphold the integrity of the law while at the same time increasing federal funding of embryonic stem cell research, with an interpretation stating that as long as the embryos were not specifically harmed using federal funds, the stem cells would be eligible for funding. For example, if private funds were used in the destruction of the embryo, the stem cells derived from the already destroyed embryo would then be fair game. Many saw this is a sly way to ratify the destruction of embryos.

When Bush took office, he found a sort of middle-ground that abided by

both his moral and political principles and announced the policy that made federal funds eligible for embryonic stem cell research, but only to cell lines that had already been destroyed, taking the controversial life and death definition decision out of the equation. Although some people were satisfied with this new policy, few cell lines existed at the time, and they came from limited ethnicities and were not genetically diverse, severely limiting research potential for various diseases.

President Obama removed the restriction Bush put into place prohibiting funding on new stem cell lines, and deemed that privately funded stem cell lines already created could be eligible for federal funding for further research. Although clearly a step in the right direction, the constraints on how federal money can be used to create new cell lines are still too restrictive.

Opponents of federal funding suffer under the delusion that since not everyone in the country supports embryonic stem cell research, the government should not support it. This argument is severely flawed. It would be a difficult task to come up with a single thing that the government funds which everyone supports. We live in a country where the majority rules. Morality is, by its very definition, subjective and ambiguous. Our laws cannot and should not be based on the unquantifiable and shifting authority of personal moralities. The fact that sixty-eight percent—a clear majority—of Americans support embryonic stem cell research should be reason enough to increase federal funding and loosen guidelines. We must no longer allow federal neutrality on such an important issue.

Currently, the NIH guidelines are way too strict. I propose a drastic change and rewrite of these regulations, as well as the contracts involved; from allowing made-for-research embryos eligible, to offering monetary incentives for donations of eggs/sperm. Autonomy is essential for embryo donors, as it is for all living persons. Decisions regarding involvement in embryonic stem cell research need to originate from the most deliberate, informed, and utilitarian principles and sources. I submit that the new, more lenient guidelines and the contracts for embryonic banks, healthcare providers, and research facilities will include evaluations in relation to what are, according to Insoo Hyun in his book *Bioethics and the Future of Stem Cell Research*, accepted requirements for ethical research: beneficence, respect for persons, and justice. The regulations that I propose will be in strict keeping with these ethical requirements.

(Proposed) National Institute of Health Guidelines on Human Stem Cell Research:

Effective Date: These guidelines are effective on June 1, 2014

I. Scope of Guidelines:

a. These guidelines apply to the allocation of the National Institute of Health's (NIH) funds for research involving human embryonic stem cells (hESCs) with the intended purpose of improving our understanding of human health and illness in order to prevent or treat disease. They will not only pertain to

hESCs harvested after the effective date, but to any pre-existing cell lines as well. All research facilities, embryo banks, donors, and doctors involved in any federally funded research involving hESCs must follow any and all rules and regulations.

i. Why is public funding so important? Why not just leave it to the private sector and avoid the argument altogether? There are many answers to these questions, most of which are related to perceived morality. Those answers will be answered in the following guideline narratives. The detail that requires no debate, however, is the fact that federal funding is much likelier to alleviate human suffering than private funding because it is better equipped to produce actual results. In Dena Davis' article *Why Respect for the Human Embryo Requires Public Funding of Human Embryonic Stem Cell Research,* the author discusses the benefits of public funding and makes the claim that "for-profit corporations are required by law to focus on maximizing profits for shareholders and are also driven to maximize their own corporate survival…. Public funding is focused on other goals. The mission of the National Institute of Health, for example, is 'to seek fundamental knowledge about the nature and behavior of living systems and the application

of that knowledge to enhance, lengthen life, and reduce the burdens of illness and disability.'" The NIH does not care about the "targeted patient base" or about the potential financial risks posed by undertaking the research, as the private sector does, because it does not have the pressure from investors and shareholders to make a profit. (Davis) Instead, it attempts to find cures for the diseases that plague people no matter their quantity or social status. Further, public funding for and oversight of hESC research would better monitor ethics in research practices. Much of the ethical debate centers on whether or not the stem cells from the embryos are derived in what is considered a respectful way. Proprietary procedures and decision-making standards are much more difficult to access and therefore oversee. If there were public money involved, researchers would have no choice but to make every decision and action subject to public scrutiny, ensuring both transparency and accountability, and therefore respect for the embryos.

*Guidelines are based on the current NIH guidelines and contain some of the same wording of claims when applicable.

II. Eligibility of Human Embryonic Stem Cells for NIH Funding:

a. Stage of embryo

i. Stem cells derived from an embryo in the blastocyst stage of early development up to five days old are eligible for funding. For the purpose of these guidelines, "human embryonic stem cells (hESCs) are cells that are derived from the inner cell mass of the blastocyst stage human embryos, are capable of dividing without differentiating for a prolonged period in culture, and are known to develop into cells and tissues of the three primary germ layers. Although hESCs are derived from embryos, such stem cells are not themselves human embryos."

ii. According to the Belmont Report, which was issued in 1978 and was created by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, there are three basic principles that one must use to justify actions as ethical. Those three principles are: respect for persons; beneficence; and justice.

When justifying embryonic stem cell research, one must first understand that five-day old embryos are not and should not be considered persons. A full, scientific understanding makes it evident that the embryo at this

stage is not a person, and should therefore not be given the same moral status of one. In his article “From the Micro to the Macro”, Thomas Shannon gives three reasons defending this view. To begin, he explains that the cells at zygote and blastomere stages are totipotent or pluripotent, therefore the cells do not even “know” which part of the body they would even become. Secondly, he points out that the organism is not even yet an individual and that “its cells can still be separated through twinning or divided through embryo division”. Finally, he states that an embryo before differentiation is not a human life form but rather simply a biological expression of human nature. Essentially, unindividualized cells that happen to come from a human genome should not automatically be granted moral privilege. They are not an individual being, and the research that could potentially be done on the stem cells derived would not be “research on a human person; it is research on human nature and in principle it is morally permissible”. Further, the widely accepted principles of the United Kingdom’s Warnock Committee include the statement that the limit on embryo research should be at fourteen days after fertilization because prior “to the formation of the primitive streak, a human embryo in vitro is

not yet a distinct individual but rather retains the biologic potential to fuse and divide into differential cellular masses." A five-day maximum, therefore, is arguably overly respectful and cautious. It is not using human life as a means to an end. Rather, this research is comparable to doing research on human body parts, a practice that is commonly accepted as being morally permissible.

The second principle, beneficence, is also exemplified when doing embryonic stem cell research. Not only are people not harmed by this research, but by endeavoring to maximize possible benefits and minimize possible harm, as called out highlighted in the Belmont Report, a moral obligation is fulfilled. It would unethical to not do the research. The potential to improve and save so many lives proves ethical debate immaterial. A government is obligated to do what is best for the majority of its people, as long as those actions do not violate autonomy or one's right to make informed and un-coerced decisions. Governmental support of hESC research conforms to these parameters distinctly.

The third principle of justice does not pertain to a blastocyst stage embryo because, as explained, it is not yet an individual. However, it could certainly be argued

that justice—which is defined as fairness or reasonableness in the way decisions are made, or the act of applying or upholding the law—will certainly be served by the utilitarian application of federal funding to effect, to the best of our ability, life-saving treatments for all citizens.

b. Unused in-vitro fertilization embryos: *(See Appendix A)*

i. Human embryonic stem cells derived from embryos that were created with the intention of being used for reproductive purposes using in-vitro fertilization that were voluntarily donated or sold by the individuals who sought said reproductive aid are eligible for federally funded research.

1. If a couple has any intention of ever selling or donating their unused in-vitro embryos, before starting the process there must be an ironclad contract stipulating what exactly will happen to the embryos if the couple no longer expresses the same wishes. The question of what to do with unused embryos is not a new one, and cases such as *Davis v. Davis* and *Kass v. Kass* are just a couple of examples of the predicaments that can occur when there is any indecisive language in a

contract. In my opinion, unlike the court involved in Kass v. Kass, the "intentions" of the donors are moot if the contract they signed contradicts them. While changes in circumstances may be relevant when a divorced couple is having a dispute regarding procreation, such changes should have no effect on the agreement to donate the embryos to research. Another case, A.Z. v. B.Z. had similar conditions. The couple signed a consent form stating that the wife would get the pre-embryos if the couple ever divorced. When later the couple did indeed separate, the court had to get involved to decide whether or not the contract should be honored. Among other findings, the court found that the contract was not meant to be between the two of them as well as the fact that there was no duration provision and therefore wasn't enforceable. I submit, however, that any contract involving the couples' decisions as to what to do with the pre-embryos will be binding unless they *both* wish to retract the arrangement. In addition, unless stated in the contract, the agreement will not only be valid and enforceable for a limited

time. The court's decision that contract law has little bearing when it comes to reproductive technology cases is exactly the opposite of what their stance should have been—when dealing with such a controversial issue, contract law void of any indecisive clauses is the only way to ensure fair and legal regulation.

Take, for instance, the hypothetical couple John and Jane Smith. John and Jane started the process of in-vitro fertilization and signed a contract that the unused embryos will be donated to research when they are either successful or decide to stop treatments. Five years after they had a successful pregnancy, they decided to get a divorce. Neither of them were able to use the embryos to procreate against the other ones wishes. John then made it clear that his wish was to have the embryos destroyed. Jane, however, did not agree and wanted to honor the contract and donate the unused embryos. Without her concurrence to have them destroyed, John had no basis to take it to court because the contract

had to be honored.

ii. One of the main Belmont Report principles—respect—is carefully adhered to by deriving stem cells for research from unused zygote and blastomere embryos. In fact, the act of not using these embryos—wasting all of their potential for research—would be disrespectful. Respect literally means “to look again”. In her book *The Human Embryonic Stem Cell Debate: Science, Ethics, and Public Policy*, author Karen Lebacqz submits that because embryos lack rational will and self-determination, they instead deserve respect in a context other than that described by a Kantian personhood. Respect of embryos should be present, but it is a different type of respect than that deserved of people. Lebacqz makes the analogy to the respect deserved of animals. It is not generally considered disrespectful to kill animals if we use them as food—a practical necessity which sustains life. The same reasoning can and should be used to justify the use of an embryo to derive stem cells. To squander the value of a thing is, according to Lebacqz, disrespectful. This is exactly what happens when a perfectly good embryo, with the potential to help researchers and mankind, is thrown away instead of

donated. We cannot, in good conscience, allow the valuable, life-saving potential of these embryos to be destroyed. The dismissal of this potential is disrespectful, rendering it unimportant. If we believe an entity is worthy of respect, we should make every effort to ensure that there is purpose in the decision and the outcome. Why should there be outright destruction, with no positive and impactful results? "We should make every effort to ensure that its destruction is for morally important reasons, and with the best possible likelihood of success." In accordance with the Belmont Report's systematic assessment of risks and benefits, the National Bioethics Advisory Commission could not be more correct when they stated in their 1999 Stem Cell Report that the "lower probability of benefits from research uses of embryos is balanced by a much higher ratio of potential lives saved relative to embryonic lives lost." Essentially, the NIH believes that "the embryo is entitled to 'special respect,' but may be used and destroyed in "worthwhile" research protocols."

iii. If the law allows the private sector to do hESC research, then the debate cannot be entirely about morality. It isn't against the law; it is deemed appropriate

if privately funded. This “incoherent policy on health research”, as Suzanne Holland puts it in *The Human Embryonic Stem Cell Debate: Science, Ethics, and Public Policy*, is about avoiding the obvious moral dichotomy in the law. The National Bioethics Advisory Commission (NBAC) in 1999, explained this, stating: “In the United States, moral disputes—especially those concerning practices in the area of human reproduction—are sometimes resolved by denying federal funding for those practices (e.g. elective abortions), while not interfering with the practice in the private sector. In this case, investigative embryo research guided only by self-regulation is a widespread practice in the private sector, and the ban on embryo research has served to discourage the development of a coherent public policy, not only regarding embryo research but also regarding health research more generally.” I submit that this inconsistency of policy can be resolved. For public policy on health research, anything that is *legally* allowable to the private sector should be accessible and supported by the public sector as well. This would not only grant much-needed public support for essential medical research and practice, but also monitor possible ethical

abuses.

c. Full disclosure *(See Appendix B)*

i. The donors or sellers must be informed of the following:

1. All options available in the health care facility where treatment was sought pertaining to the embryos no longer needed for reproductive purposes.
2. The extent of which the derived hESCs would be used for research.
3. The potential longevity of the derived hESCs.
4. The research will not necessarily lead to successful results;
5. What would happen to the embryos in the derivation of hESCs for research i.e. the procedures done, how they are used, etc.;
6. That hESCs derived from the embryos might be kept for many years and they cannot rescind their offer to allow the research to occur once research has begun;
7. The researcher obtaining the embryos may subsequently sell the derived stem cells to another researcher as long as there is no net profit for the

original researcher (i.e. he/she does not sell it for more than he/she invested in it, including the price of the embryo in the case of a sale as well as any time and money invested during the derivation of the stem cells)

a. Although some may see this as controversial, there is no reason stem cells already derived from an embryo should be restricted for use by only one researcher. As long as the researcher is not profiting off of the sale of the stem cells derived, then the morally responsible thing to do would be to get the maximum use out of the embryo.

8. That the donation was made without any restriction or direction regarding the individuals(s) who may receive medical benefit from the use of the hESCs, such as who may be the recipients of cell transplants;
9. That the embryo will potentially be destroyed;
10. That the research was not intended to provide direct medical benefit to the donor(s) or seller(s) and they cannot request such treatment;

11. That the results of research using the hESCs may have commercial potential, and that the donor(s) would not receive any financial nor any other type of compensation;

12. Whether information that could identify the donor(s) would be available to the researchers and what type of information would be provided.

d. Made for research embryos *(See Appendices C and D)*

i. The same disclosure and voluntary consent guidelines apply to the donor(s) or seller(s) of made for research embryos (seen above), as well as:

1. How much experience the doctor(s) have with the procedures being done.

2. The risks of all procedures as well as what will happen if complications occur.

ii. Currently, the guidelines and law in general refer to unused embryos that are going to be disposed of because they are no longer needed for reproduction. "The primary objection to creating embryos specifically for research is that there is a morally relevant difference between generating an embryo for the sole purpose of creating a child and producing an embryo with no such

goal."

I submit that another class of embryos should be included for research potential: Made-for-research embryos. Made-for-research embryos would come from male and female sperm and egg sellers or donors and, after the appropriate consent and disclosure is given, the embryos produced would be eligible to be used for hESC research.

There are many opponents to this idea, most of which adhere to the aforementioned "sanctity of life" argument. However, regarding those objections, the same defense used for leftover in-vitro embryos can be used for Made for Research embryos states in *II.b.ii* and *iii*.

Another flaw in the rationale of the opponents of public support is the failure to see that without strict, unbiased oversight, there is ample opportunity for violation. This is illustrated by Insoo Hyun in his book *Bioethics and the Future of Stem Cell Research*. He cites "creative overestimation" when making embryos for in-vitro fertilization. If a doctor or researcher simply overestimates how many embryos a couple would need for in-vitro fertilization, then there would be conveniently ample leftover embryos eligible for research. What is the point of

disallowing made-for-research embryos when the equivalent is impossible to enforce?

The most obvious fault in the argument of the opposition is illuminated by the fact that morality is by definition subjective. For those claiming that embryonic creation may have "immoral intentions," I stand on reason. We cannot base the federal funding eligibility of blastocyst cells, stem cells that are scientific defined as NOT human embryos, on a subjective measure of emotion. Morality is not science. It is an elusive, intangible, variable, inconstant, personal point of view.

Not only is there not a good argument against made-for-research embryos, but there enormously important arguments for them. "First, it is possible that the creation of research embryos will provide the only way in which to conduct certain kinds of research, such as research into the process of human fertilization. Second, as IVF techniques improve, it is possible that the supply of embryos for research from this source will dwindle." In 2004, only 2.8 percent of the embryos that were currently in cyrostorage were designated to be donated to research. With such low amounts available to researchers, preventing the creation of Made for Research embryos is a

distinct injustice to humanity.

e. Embryos sold for financial gain

i. Both made-for-research embryos and leftover embryos created for reproductive purposes can be sold to researchers by the individuals responsible for the embryo. Said individuals would not be considered donors, but “sellers” of embryos.

1. The same disclosure and voluntary consent guidelines of made-for-research embryos apply to the seller(s) of the sold embryos

2. The monetary value of embryos must be consistent for all sellers in the same year, no matter the background of the biological parents.

3. The sellers do not have to be a couple—the egg and sperm can be donated individually

4. Donors responsible for already created cell lines are not eligible for compensation.

ii. Paying people for their embryos, both leftover from in-vitro fertilization as well as made-for-research, should be included in the expanded guidelines for hESC research federal funding eligibility, based on the premise that our country functions on a market economy; selling a thing that one owns in its entirety is a basic right. An exception

prompts the argument that this is equivalent to selling an organ, which is illegal. However, this argument is invalidated by the fact that donating an organ can be detrimental to one's own health, while donating an egg or sperm is not. Further, it is not illegal for women or men to sell their eggs or sperm for reproductive purposes. Everything that goes into producing an egg or sperm also goes into producing an embryo. As such, precedent has been set.

> Oftentimes, more affluent, educated white women are of higher demand when it comes to egg donations compared to women of lower social status. Adversaries of the concept of paying for eggs or embryos may make the argument that "[e]ggs destined for laboratory research could be viewed as disposable and therefore likely to command far less than eggs used for implantation", leaving the "eggs of non-Caucasian, less-educated, non-affluent women" to be of less value and therefore marginalizing such women. However, it is patently obvious that our laws do not follow this speculative line of reasoning. Under the above hypothesis, low-wage jobs that are less appealing and even dangerous, which may also target

non-Caucasian, less-educated, non-affluent women, should be considered “coercive.” But they are simply jobs. They put bread on the table. Financial impetus has no basis in determining the “correctness” of a practice. Further, putting the process under the sponsorship of the public sector would provide oversight to the fee and payment structure, ensuring fair, equal, and reliable financial transactions. In addition, in the case of unused in-vitro fertilization embryos, the couple would have had to invest large sums of money throughout the entire process. Why should they not be able to defray some of those costs with compensation from a researcher?

iii. Paying people for human research is not a new concept—in fact, paying people for *stem cell* research is not even a new concept. In June of 2009, the Empire State Stem Cell Board in New York decided to allow stem cells that were derived from embryos of which the oocytes had been paid for to be eligible for state funding. They stated that the donor could be paid for the “expense, time, burden and discomfort” or out of pocket expenses related to the donation process, as long as the

oocytes were in excess of the in-vitro fertilization process. Their reasoning, similar to that of which I stated above, is because the guidelines mandate that all payments made for oocytes for research must equivocate to the payments given for an oocyte for reproductive purposes. Regarding their decision, the board stated: "Sources of recently-harvested oocytes are necessary for certain stem cell research pursuing medical advances to alleviate pain and suffering by people afflicted with debilitating and life-threatening diseases. Experiences in other jurisdictions indicate that lack of reasonable compensation to women who donate their oocytes to stem cell research has created a significant impediment to such donation, limiting the progress of stem cell research. Accordingly, over the past year, the ESSCB has intensively examined and discussed the issue of whether it is ethically appropriate to provide women who donate their oocytes to stem cell research with any form of reimbursement, in recognition of the considerable financial and physical burdens associated with the donation process." Ethical issues that are then addressed include limiting financial recompense to prevent the possibility of coercion—there are no

additional risks nor differing payment policies when donating to research compared to donating for reproductive purposes—as well as what is arguably most important issue: that "donating oocytes to stem cell research arguably confers a greater benefit to society than does oocyte donation for private reproductive use." Although an oocyte is not an embryo, these same justifications can apply when taking into account the qualities of zygote and blastomere cells.

f. Voluntary consent

i. Informed voluntary consent free of coercion must be given by all donor(s) or seller(s).

1. Both parties responsible for the creation of the embryo must give their full voluntary consent, which means signatures on any documentation necessary, including a universal consent form for all donations/sales which must be obtained either prior to donation or prior to the commencement of any research done to the embryo and stem cells derived from that embryo.

a. All documentation involved must be free of exculpatory language, which is defined by the Department of Health and Human

Services section 45 CFR 46.116 as: “No informed consent, whether oral or written, may include any exculpatory language through which the subject is made to waive or appear to waive any of the subject's legal rights, or releases or appears to release the investigator, the sponsor, the institution, or its agents from liability for negligence.”

2. In the case of a donated egg/sperm in order to create the embryo, stipulations of the agreement of the donation regarding the donated element before the donation or sale will be honored. Donors or sellers must be informed that they retain the right to withdraw consent for the donation [or sale] of the embryo until the embryos are actually used to derive embryonic stem cells or until information which could link the identity of the donor(s) or seller(s) with the embryo is no longer retained, if applicable.
3. Policies and/or procedures are in place at the healthcare facility where the embryos are donated ensuring that neither consenting nor refusing to donate embryos for research will affect the quality

of care provided to potential donor(s).

ii. The complexity of the voluntary process is inherent and a vitally important factor. All possible measures will be taken to ensure that the process is consistent and fair for all, and unequivocally voluntary. The contracts provided will be universally adopted and loophole-free, to the utmost possible extent. As long as these guidelines are met, then the hESCs from those embryos would be eligible for federal funding.

Three opposing claims I am compelled to address are: coercion by guilt being; coercion by providing the donor or seller with all options; and accepting donations or sales from marginalized people such as the poor and persons of color. To begin with, guilt, like morality, is a subjective, often fleeting, and even whimsical emotion. To pit scientific argument against such an ephemeral factor is irrational. Consider the premise from the opposite perspective: Donors may feel guilt if they do *not* donate or sell their embryos. Should this be an impediment to the terms of acceptance? Is it coercive to allow people the freedom to follow their hearts? Secondly, some critics claim that “potential donors should be asked to provide embryos for research only if they have decided to have

those embryos discarded instead of donating them to another couple or storing them." I maintain that this criticism in not only unreasonable but unethical. It is taking a moral high-ground—a presumption of moral superiority in deciding the motivational correctness on behalf of others. By not allowing people to consider all options, the government disregards individual philosophy and preempts personal choice. Beyond this, it outright robs those in desperate need of stem cells, costing untold damage in the tolls of sickness and death. Lastly, there is the claim that "the poor, who are largely female, and most persons of color will simply be marginalized from these therapies, even as it is possible that their eggs are commercialized downstream for profit". This claim no longer holds up as it once may have. While being poor is ground enough to be considered a coercive factor in donating eggs, and while plenty of poor people have donated blood for financial gain, successful healthcare reform is on the horizon with the goal of aiding these ever-marginalized populations so that these very women will be able to include themselves in the ranks of those benefitting from the potential medical advances of stem cell research.

g. Somatic Cell Nucleus Transfer

i. Human embryonic stem cells derived from eligible sources are eligible for NIH funding if, when introduced into non-human primate blastocysts, those blastocysts are not involved in the breeding of animals with human cells contributing to the germ cell line.

h. Embryos that have undergone PGD

i. Embryos that have undergone Preimplantation Genetic Diagnosis are eligible for NIH funding as long as the couple was in no way coerced to donate or sell the embryo based on the knowledge acquired of any recessive diseases or any other condition that may make the embryo more valuable for research.

1. In fact, these embryos would arguably me even *more* ethically accepted to derive stem cells from due to the fact that the embryos with the recessive diseases would not wanted in the first place and would have inevitably been destroyed.

i. Donations outside the United States

i. Applicants seeking NIH funding for embryos donated outside of the United States may submit an assurance that the stem cells derived from the embryos fully comply with all guidelines, including all NIH contracts associated with the donated embryos. Seemingly equivalent foreign

procedural guidelines and contracts will not be accepted.

ii. Embryos sold, not donated, outside of the United States will not be eligible for NIH funding because of the uncertainty of the extent of coercion taking place in other countries, specifically towards impoverished women.

iii. When dealing with such a controversial and highly regulated topic, allowing unidentical guidelines from countries other than the country making such laws would be unethical due to the inability to regulate the validity behind the claims.

j. Grandfathering in policies

i. All hESCs derived prior to these guidelines are put into effect are automatically eligible for federal funding, no further review would be necessary.

k. Researcher and physician requirements

III. IRB Review: hESC Oversight

a. Ensuring adequate oversight

i. The U.S. Senate passed the National Research Act of 1974 when there became “widespread public revelations of exploitive scientific studies using vulnerable populations, such as the Tuskegee Syphilis Study and the Willowbrook State School hepatitis study.” The significance of the act was that it mandated that anyone

doing research on human subjects that applied for a federal grant would have to be reviewed by a committee called the Institutional Review Board. In addition, a group was assembled to identify what basic ethical principles should be maintained when doing research on human subjects. This report later became known as the Belmont Report. Both of these reports have become the cornerstone of ethics when dealing with any research of human subjects.

ii. According to the Health and Human Services Code of Federal Regulations Title 45 Public Welfare Part 46 “Protection of Human Subjects”, there are strict regulations when such research is being done. There are extensive guidelines explaining regulations regarding any and all research involving human subjects, including strict Institutional Review Board procedures, which ensure the subjects are not being violated.

The policy, which “applies to all research involving human subjects conducted, supported, or otherwise subject to regulation by any federal department or agency which takes appropriate administrative action to make the policy applicable to such research,” outlines all aspects of human research, ranging from IRB

membership to research involving neonates. As far as the regulations that are applicable to hESC research, with the assumption that the research is technically being done on the man and woman involved in giving the embryos, they prove that there is no violation of the protection of human research subjects as long as the researchers and research facilities abide by the guidelines set forth, which, as stated in the policy, must be heavily regulated by an IRB. In order to review the research being done, the IRB has the power to "review and have authority to approve, require modifications in (to secure approval), or disapprove all research activities covered by this policy." In order for the IRB to then approve the research, all of the following requirements must be satisfied:

1. Risks to the subject are minimized
2. Risks to subjects are reasonable in relation to anticipated benefits
3. Selection of subjects is equitable
4. Informed consent is sought from every subject involved
5. No coercion or undue influence has been put on a subject

The federal regulations code explicitly states that "federal funds administered by a department or agency may not be expanded for research involving human subjects unless requirements of this policy have been satisfied," and because all of the above requirements are also mandatory according to the guidelines, it is evident that the loosened guidelines are more than acceptable.

b. Monitoring and enforcement actions
    i. Penalties for researchers
        1. If all guidelines are not strictly followed, researchers are subject to losing all current and future federal funding
    ii. Penalties for doctors
        1. If all guidelines are not strictly followed, doctors are subject to losing their license

c. All protocols involving deriving hESCs must be reviewed and subsequently approved by the Institutional Review Board

d. A National Stem Cell oversight and review panel should be established for a fixed period of time and should be responsible for (based on NBAC 1999 recommendations):
        1. Reviewing protocols for the derivation of hESCs and approve those that meet the requirements described;

2. Certifying hESC lines that result from approved protocols;

3. Maintaining a public registry of approved protocols and certified hESC lines;

4. Establishing a database—linked to the public registry—consisting of information submitted by federal research sponsors that includes all protocols that derive or use hESCs;

5. using the database and other appropriate sources to track the history and ultimate use of certified cell lines as an aid to policy assessment and formulation;

6. Establishing requirements for and provide guidance to sponsoring agencies on the social and ethical issues that should be considered in the review of research protocols that derive or use hESCs;

7. Reporting at least annually to the DHHS Secretary with an assessment of the current state of the science for both the derivation and use of human embryonic stem cells.

ii. With good reason, oversight of hESC research is of utmost importance. In fact, it was one of the two

limitations the NBAC stated in their 1999 letter to President Clinton regarding their recommendations about hESC research. "A national mechanism to review protocols for deriving human ES and EG cells and to monitor research using such cells would ensure strict adherence to guidelines and standards across the country." With this national mechanism, which would enforce the policies taken from the NBAC stated in III.c.iii.1-7, the NIH would be able to ensure the research being done was both responsible and ethical, following the guidelines set forth.

e. Ineligibility for funding

i. Federal funding of the derivation of stem cells from human embryos in order to conduct research solely for the purpose of non-life altering or threatening conditions (i.e. for cosmetic purposes) is prohibited.

ii. Any stem cells derived from an embryo that does not meet all requirements are not eligible for federal funding

IV. Dickey Amendment

a. Loosening the guidelines for funding is further justified upon examination of the legislation responsible for such strict policies. In 1995, Congress passed a bill introduced by Representative Jay Dickey with a rider attached called the

Dickey-Wicker Amendment. It essentially states that the Department of Health and Human Services cannot appropriate funds for the creation of human embryos, nor can they use the funds in research in which the embryos are destroyed, including NIH funding. The amendment reads:

SEC. 509. (a) None of the funds made available in this Act may be used for--
(1) the creation of a human embryo or embryos for research purposes; or
(2) research in which a human embryo or embryos are destroyed, discarded, or knowingly subjected to risk of injury or death greater than that allowed for research on fetuses in utero under 45 CFR 46.204(b) and section 498(b) of the Public Health Service Act (42 U.S.C. 289g(b)).
(b) For purposes of this section, the term `human embryo or embryos' includes any organism, not protected as a human subject under 45 CFR 46 as of the date of the enactment of this Act, that is derived by fertilization, parthenogenesis, cloning, or any other means from one or more human gametes or human diploid cells.

This amendment should be abolished for a number of reasons. Most importantly, however, it should be abolished because a law of this much import and significance should not be based on such an ambiguously worded technicality—that is, whether it refers to stem cell research or embryo research. A case that clearly illustrates the ambiguity of this section of the amendment is *Sherley v. Sebelius*. In the case, Sherley argued that the "NIH guidelines violate existing federal law banning the use of federal funds for the destruction of human embryos." Professor Dena Davis, in her article "Not with a Bang, but a Whimper: *Sherley v. Sebelius*", explains that the case is riddled with "arcane points of law and procedure." Firstly, scientists Sherley and Deisher were attempting to sue on behalf of the embryos which caused the case to be

dismissed by the district court due to lack of standing. The District of Columbia Circuit Court then reversed this ruling, giving the researchers themselves standing due to their stake in research competition. Once Sherley and Deisher were finally able to take the issue to court, however, the confusion only continued, as the term "research" was then debated. Eventually the ruling held that hESC research does not harm embryos, as Judge Brown, the presiding judge in the case, articulated the obvious problem: "'Given the weighty interests at stake in this encounter between science and ethics, relying on an increasingly Delphic, decade-old single paragraph rider on an appropriations bill hardly seems adequate'". An amendment with such vague and subjective language should be discarded. Further, I submit that it need not even be replaced, as long as the hESC research being done is in accordance with the proposed NIH guidelines and all of the above requirements are met.

V. Obtaining federal funding

a. Researchers using hESCs obtained after the effective date of these guidelines that comply with all of the criteria are automatically eligible to apply

b. Any researchers using hESCs obtained before the effective date of these guidelines that comply with all of the criteria are automatically eligible to apply

c. Any researchers using hESCs obtained before the effective date of these guidelines that do *not* comply with all of the criteria may establish eligibility by submitting all materials to a Working Group of the Advisory Committee to the Director, which will make recommendations regarding the eligibility for NIH funding to its parent group, the ACD. The ACD will make recommendations to the NIH Director, who will make final decisions about eligibility for NIH funding.

Conclusion:

In order to demonstrate the increased flexibility of the proposed guidelines, let us consider two hypothetical human embryonic stem cell lines. The first stem cell line was derived from a leftover embryo a couple did not need for their in-vitro fertilization treatment—they only wanted one child and were successful on the first try. They both have a rare recessive gene for a disease

that many researchers have been trying to find out more about, so the stem cells were potentially extremely valuable for research. The couple, who loosely morally opposed embryonic stem cell research, decided to sell the leftover embryos to a researcher because the incentive of getting monetary compensation outweighed their moral opposition. Because of the ability to sell the embryos, extremely useful embryos that would have otherwise been disposed of were put to good use. The price was mutually agreed upon and all consent forms and contracts were fully understood and signed.

The second stem cell line was derived from an embryo that was created in-vitro after a man donated his sperm and a woman donated her eggs, independent of each other. They did so with the intent of the embryo being used for research purposes because they wanted to help the research and medical communities any way they could. No coercion took place, and all consent forms and contracts necessary were fully understood and signed before the process began. A hESC researcher then obtained the embryo and derived stem cells from it.

If considering the hypothetical stem cell lines with the current guidelines as mandatory criterion, the working group of the Advisory Committee to the Director (ACD) would have found these stem cell lines ineligible for federal funding. In fact, in the past the ACD has found lines ineligible for much less obviously substantial reasons, including undated protocols, lack of fully informed consent when the withdrawal information was in question, consent forms containing exculpatory language, etc. If the new proposed guidelines are strictly

followed and the contracts provided are used, however, no such issues would occur. Further, with significantly reduced restrictions ranging from sales of zygotes to made-for-research embryos, there would be considerably fewer reasons to deny federal funding.

To put it simply, with these new guidelines, many more human embryonic stem cell lines would be eligible for research, and therefore there would be that many more opportunities for research breakthroughs and subsequent medical advancements. Who doesn't want that?

Appendix A:

EMBRYO DONATION AGREEMENT/CONTRACT FOR DONATION OR SALE OF LEFTOVER IN VITRO FERTILIZATION EMBRYOS TO HESC RESEARCH ELIGIBLE FOR FEDERAL FUNDING

(Based on contract from Miracleswaiting.org)

THIS AGREEMENT ("the Agreement") is made as of the date set forth below by and between NAME OF DONOR/SELLER 1 and NAME OF DONOR/ SELLER 2, RESEARCH FACILITY DIRECTOR, human embryonic research program director. From here on, the embryo donors (or in the case of a sale, sellers) shall sometimes be referred to herein as "the Does" or "Donors" and the research director as "the Recipient", or "Rec".

RECITALS:

The MALE DONOR and FEMALE DONOR desire to donate NUMBER OF EMBRYOS DONATED leftover cryopreserved embryos to RECIPIENT, unused after in vitro fertilization success and/or decision to stop treatments ; and

WHEREAS, RECIPIENT desires to receive the NUMBER OF EMBRYOS cryopreserved embryos from the Does for use in human embryonic stem cell research; and

WHEREAS, the Rec is working with STATE DOCTORS AND MEDICAL CLINICS INVOLVED regarding the medical procedures involved with the in

Appendix B:

Consent Form for donating/selling embryo for research:

Before donating or selling an embryo, the following requirements in accordance with IRB stipulations should be understood:

- All options available for the unused embryos in the health care facility where treatment is being sought were explained to the individual(s) who sought reproductive treatment; the health care facility has made it clear that donating or lack thereof will in no way affect the treatment provided. No coercion of any kind took place.
- Clear instructions were given regarding the fate of the embryos in the event of changes in circumstances (i.e. death, divorce, etc.)
- When donating to federally funded human embryonic stem cell research, you will not be provided with any information regarding the research done
- Cells or tissue developed from the embryos may be used at some future time for human transplantation research

- Cells or tissues derived from the embryos may be kept indefinitely and only *before* any stem cells have been derived from the embryo can you rescind your offer to donate the embryo to hESC research
- If the research done from the derived stem cells from the embryos obtains any commercial value at any point, you will not be entitled nor will you receive any form of payment, monetary or otherwise
- You may contact the research clinic involved regarding any pertinent questions about the research or the research subjects' rights
- The researcher has the right to sell the derived stem cells as long as there is no net-profit from doing so
- You may be asked to undergo psychological testing before donating/ selling
- In the case of made-for-research embryos, you understand the risks associated with the necessary procedures
- The research performed on these frozen embryos is not intended to provide direct medical benefit to you
- The embryo will not be involved in cloning
- All contracts involved must be signed by you or, if applicable, both parties
- You are entitled to having a lawyer look over all documents before signing anything
- The donation/sale is completely voluntary
- While most aspects of the process will be kept confidential, if stem cells are later derived from the embryo, researchers could be privy to your

information regarding any familial diseases or recessive genes, although your identity will be kept confidential

- If you are selling rather than donating, the price set must be equal to the set price of that year. Make sure you agree upon a method of payment beforehand. If the payment is agreed upon outside of the program, we cannot enforce the agreement
- If you agreed upon compensation and the embryo does not end up getting used in research, you are still entitled to the full compensation
- You must pay taxes on the compensation you receive

Donor 1 Signature Date

Donor 2 Signature Date

Appendix C:

EMBRYO DONATION AGREEMENT/CONTRACT FOR DONATION OR SALE OF MADE-FOR-RESEARCH EMBRYOS TO HESC RESEARCH ELIGIBLE FOR FEDERAL FUNDING

(Based on contract from Miracleswaiting.org)

THIS AGREEMENT ("the Agreement") is made on the date set forth below by and between NAME OF DONOR/SELLER 1 and NAME OF DONOR/SELLER 2, RESEARCH FACILITY DIRECTOR, the human embryonic research program director. From here on, the embryo donors (or in the case of a sale, sellers) shall sometimes be referred to as "the Does" or "Donors" and the research director as "the Recipient", or "Rec".

RECITALS:

The MALE DONOR and FEMALE DONOR desire to donate NUMBER OF EMBRYOS DONATED made-for-research embryos; and

Whereas the RECIPIENT desires to receive the NUMBER OF EMBRYOS cryopreserved embryos from the Does for use in human embryonic stem cell research; and

Whereas, the Rec is working with STATE DOCTORS AND MEDICAL CLINICS INVOLVED regarding the medical procedures involved with the donation or sale; and

Appendix D:

EGG/SPERM DONATION AGREEMENT/CONTRACT FOR DONATION OR SALE OF MADE-FOR-RESEARCH EMBRYOS TO HESC RESEARCH ELIGIBLE FOR FEDERAL FUNDING

(Based on contract from Miracleswaiting.org)

THIS AGREEMENT ("the Agreement") is made on the date set forth below by and between NAME OF DONOR/SELLER and RESEARCH FACILITY DIRECTOR, the human embryonic research program director. From here on, the egg/sperm donor (or in the case of a sale, seller) shall sometimes be referred to as "the Doe" or "Donor" and the research director as "the Recipient", or "Rec".

RECITALS:

The DONOR desires to donate AMOUNT DONATED eggs/sperm; and

Whereas the RECIPIENT desires to receive the AMOUNT DONATED sperm/ eggs from the Doe for use in human embryonic stem cell research; and

Whereas, the Rec is working with STATE DOCTORS AND MEDICAL CLINICS INVOLVED regarding the medical procedures involved with the donation or sale; and

Whereas, the Doe promise to give all rights to the egg/sperm to the Rec as

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