

**SUMMARY:** The National Institutes of Health (NIH) is hereby publishing final "National Institutes of Health Guidelines for Human Stem Cell Research" (Guidelines).

On March 9, 2009, President Barack H. Obama issued Executive Order 13505: *Removing Barriers to Responsible Scientific Research Involving Human Stem Cells*. The Executive Order states that the Secretary of Health and Human Services, through the Director of NIH, may support and conduct responsible, scientifically worthy human stem cell research, including human embryonic stem cell (hESC) research, to the extent permitted by law.

These Guidelines implement Executive Order 13505, as it pertains to extramural NIH-funded stem cell research, establish policy and procedures under which the NIH will fund such research, and helps ensure that NIH-funded research in this area is ethically responsible, scientifically worthy, and conducted in accordance with applicable law. Internal NIH policies and procedures, consistent with Executive Order 13505 and these Guidelines, will govern the conduct of intramural NIH stem cell research.

**EFFECTIVE DATE:** These Guidelines are effective on July 7, 2009.

**SUMMARY OF PUBLIC COMMENTS ON DRAFT GUIDELINES:** On April 23, 2009 the NIH published draft Guidelines for research involving hESCs in the Federal Register for public comment, 74 Fed. Reg. 18578 (April 23, 2009). The comment period ended on May 26, 2009.

The NIH received approximately 49,000 comments from patient advocacy groups, scientists and scientific societies, academic institutions, medical organizations, religious organizations, and private citizens. The NIH also received comments from members of Congress. This Notice presents the final Guidelines together with the NIH response to public comments that addressed provisions of the Guidelines.

#### **Title of the Guidelines, Terminology, and Background:**

*Respondents felt the title of the NIH draft guidelines was misleading, in that it is entitled "National Institutes of Health Guidelines for Human Stem Cell Research," yet addresses only one type of human stem cell. The NIH notes that although the Guidelines pertain primarily to the donation of embryos for the derivation of hESCs, one Section also applies to certain uses of both hESCs and human induced pluripotent stem cells. Also, the Guidelines discuss applicable regulatory standards when research involving human adult stem cells or induced pluripotent stem cells constitutes human subject research. Therefore, the title of the Guidelines was not changed.*

*Respondents also disagreed with the definition of human embryonic stem cells in the draft Guidelines, and asked that the NIH define them as originating from the inner cell mass of the blastocyst. The NIH modified the definition to say that human embryonic stem cells "are cells that are derived from the inner cell mass of 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."*

#### **Financial Gain**

*Respondents expressed concern that derivators of stem cells might profit from the development of hESCs. Others noted that because the stem cells eligible for use in research using NIH funding under the draft Guidelines are those cells that are subject to existing patents, there will be insufficient competition in the licensing of such rights. These respondents suggested that this could inhibit research, as well as increase the cost of any future clinical benefits. The Guidelines do not address the distribution of stem cell research material. It is, however, the NIH's expectation that stem cell research materials developed with NIH funds, as well as associated intellectual property and data, will be distributed in accordance with the NIH's existing policies and guidance, including "Sharing Biomedical Research Resources, Principles and Guidelines for Recipients of NIH Grants and Contracts" and "Best Practices for the Licensing of Genomic Inventions."*

<http://ott.od.nih.gov/policy/Reports.html> Even where such policies are not directly applicable, the NIH encourages others to refrain from imposing on the transfer of research tools, such as stem cells, any conditions that hinder further biomedical research. In addition, the Guidelines were revised to state that there should be documentation that "no payments, cash or in kind, were offered for the donated embryos."

*Respondents were concerned that donor(s) be clearly "apprised up front by any researchers that financial gain may come from the donation and that the donor(s) should know up front if he/she will share in the financial gain."* The Guidelines address this concern by asking that donor(s) was/were informed during the consent process that the donation was made without any restriction or direction regarding the individual(s) who may receive medical benefit from the use of the stem cells, such as who may be the recipients of cell transplants. The Guidelines also require that the donor(s) receive(s) information that the research was not intended to provide direct medical benefit to the donor(s); that the results of research using the hESCs may have commercial potential, and that the donor(s) would not receive financial or any other benefits from any such commercial development.

### **IRB Review under the Common Rule**

*Respondents suggested that the current regulatory structure of IRB review under the Common Rule (45 C.F.R. Part 46, Subpart A) addresses the core ethical principles needed for appropriate oversight of hESC derivation. They noted that IRB review includes a full review of the informed consent process, as well as a determination of whether individuals were coerced to participate in the research and whether any undue inducements were offered to secure their participation. These respondents urged the NIH to replace the specific standards to assure voluntary and informed consent in the draft Guidelines with a requirement that hESC research be reviewed and approved by an IRB, in conformance with 45 C.F.R. Part 46, Subpart A, as a prerequisite to NIH funding. Respondents also requested that the NIH create a registry of eligible hESC lines to avoid burdensome and repetitive assurances from multiple funding applicants. The NIH agrees that the IRB system of review under the Common Rule provides a comprehensive framework for the review of the donation of identifiable human biological materials for research. However, in the last several years, guidelines on hESC research have been issued by a number of different organizations and governments, and different practices have arisen around the country and worldwide, resulting in a patchwork of standards. The NIH concluded that employing the IRB review system for the donation of embryos would not ameliorate stated concerns about variations in standards for hESC research and would preclude the establishment of an NIH registry of hESCs eligible for NIH funding, because there would be no NIH approval of particular hESCs. To this end and response to comments, these Guidelines articulate policies and procedures that will allow the NIH to create a Registry. These Guidelines also provide scientists who apply for NIH funding with a specific set of standards reflecting currently recognized ethical principles and practices specific to embryo donation that took place on or after the issuance of the Guidelines, while also establishing procedures for the review of donations that took place before the effective date of the Guidelines.*

### **Federal Funding Eligibility of Human Pluripotent Cells from Other Sources**

*Respondents suggested that the allowable sources of hESCs potentially available for federal funding be expanded to include hESC lines from embryos created expressly for research purposes, and lines created, or pluripotent cells derived, following parthenogenesis or somatic cell nuclear transfer (SCNT). The Guidelines allow for funding of research using hESCs derived from embryos created using in vitro fertilization (IVF) for reproductive purposes and no longer needed for these purposes, assuming the research has scientific merit and the embryos were donated after proper informed consent was obtained from the donor(s). The Guidelines reflect the broad public support for federal funding of research using hESCs created from such embryos based on wide and diverse debate on the topic in Congress and elsewhere. The use of additional sources of human pluripotent stem cells proposed by the respondents involve complex ethical and scientific issues on which a similar consensus has not emerged. For example, the embryo-like entities created by parthenogenesis and SCNT require women to donate oocytes, a procedure that has health and ethical implications, including the health risk to the donor from the course of hormonal treatments needed to induce oocyte production.*

*Respondents noted that many embryos undergo Pre-implantation Genetic Diagnosis (PGD). This may result in the identification of chromosomal abnormalities that would make the embryos medically unsuitable for clinical use. In addition, the IVF process may also produce embryos that are not transferred into the uterus of a woman because they are determined to be not appropriate for clinical use. Respondents suggested that hESCs derived from such embryos may be extremely valuable for scientific study, and should be considered embryos that were created for reproductive purposes and were no longer needed for this purpose. The NIH agrees with these comments. As in the draft, the final Guidelines allow for the donation of embryos that have undergone PGD.*

## Donation and Informed Consent

*Respondents commented in numerous ways that the draft Guidelines are too procedurally proscriptive in articulating the elements of appropriate informed consent documentation. This over-reliance on the specific details and format of the informed consent document, respondents argued, coupled with the retroactive application of the Guidelines to embryos already donated for research, would result in a framework that fails to appreciate the full range of factors contributing to the complexity of the informed consent process. For example, respondents pointed to several factors that were precluded from consideration by the proposed Guidelines, such as contextual evidence of the consent process, other established governmental frameworks (representing local and community influences), and the changing standards for informed consent in this area of research over time. Respondents argued that the Guidelines should be revised to allow for a fuller array of factors to be considered in determining whether the underlying ethical principle of voluntary informed consent had been met. In addition to these general issues, many respondents made the specific recommendation that all hESCs derived before the final Guidelines were issued be automatically eligible for Federal funding without further review, especially those eligible under prior Presidential policy, i.e., "grandfathered." The final Guidelines seek to implement the Executive Order by issuing clear guidance to assist this field of science to advance and reach its full potential while ensuring adherence to strict ethical standards. To this end, the NIH is establishing a set of conditions that will maximize ethical oversight, while ensuring that the greatest number of ethically derived hESCs are eligible for federal funding. Specifically, for embryos donated in the U.S. on or after the effective date of the Guidelines, the only way to establish eligibility will be to either use hESCs listed on the NIH Registry, or demonstrate compliance with the specific procedural requirements of the Guidelines by submitting an assurance with supporting information for administrative review by the NIH. Thus, for future embryo donations in the United States, the Guidelines articulate one set of procedural requirements. This responds to concerns regarding the patchwork of requirements and guidelines that currently exist.*

However, the NIH is also cognizant that in the more than a decade between the discovery of hESCs and today, many lines were derived consistent with ethical standards and/or guidelines developed by various states, countries, and other entities such as the International Society for Stem Cell Research (ISSCR) and the National Academy of Sciences (NAS). These various policies have many common features, rely on a consistent ethical base, and require an informed consent process, but they differ in details of implementation. For example, some require specific wording in a written informed consent document, while others do not. It is important to recognize that the principles of ethical research, e.g., voluntary informed consent to participation, have not varied in this time period, but the requirements for implementation and procedural safeguards employed to demonstrate compliance have evolved. In response to these concerns, the Guidelines state that applicant institutions wishing to use hESCs derived from embryos donated prior to the effective date of the Guidelines may either comply with Section II (A) of the Guidelines or undergo review by a Working Group of the Advisory Committee to the Director (ACD). The ACD, which is a chartered Federal Advisory Committee Act (FACA) committee, will advise NIH on whether the core ethical principles and procedures used in the process for obtaining informed consent for the donation of the embryo were such that the cell line should be eligible for NIH funding. This Working Group will not undertake a *de novo* evaluation of ethical standards, but will consider the materials submitted in light of the principles and points to consider in the Guidelines, as well as 45 C.F.R. Part 46 Subpart A. Rather than "grandfathering," ACD Working Group review will enable pre-existing hESCs derived in a responsible manner to be eligible for use in NIH funded research.

In addition, for embryos donated outside the United States prior to the effective date of these Guidelines, applicants may comply with either Section II (A) or (B). For embryos donated outside of the United States on or after the effective date of the Guidelines, applicants seeking to determine eligibility for NIH research funding may submit an assurance that the hESCs fully comply with Section II (A) or submit an assurance along with supporting information, that the alternative procedural standards of the foreign country where the embryo was donated provide protections at least equivalent to those provided by Section II (A) of these Guidelines. These materials will be reviewed by the NIH ACD Working Group, which will recommend to the ACD whether such equivalence exists. Final decisions will be made by the NIH Director. This special consideration for embryos donated outside the United States is needed because donation of embryos in foreign countries is governed by the laws and policies of the respective governments of those nations. Although such donations may be responsibly conducted, such governments may not or cannot change their national donation requirements to precisely comply with the NIH Guidelines. The NIH believes it is reasonable to provide a means for reviewing such hESCs because ethically derived foreign hESCs constitute an important scientific asset for the U.S.

*Respondents expressed concern that it might be difficult in some cases to provide assurance that there was a "clear separation" between the prospective donor(s)' decision to create embryos for reproductive purposes and the donor(s)' decision to donate the embryos for research purposes. These respondents noted that policies vary at IVF clinics, especially with respect to the degree to which connections with researchers exist. Respondents noted that a particular clinic's role may be limited to the provision of contact information for researchers. A clinic that does not have any particular connection with research would not necessarily have in place a written policy articulating the separation contemplated by the Guidelines. Other respondents noted that embryos that are determined not to be suitable for medical purposes, either because of genetic defects or other concerns, may be donated prior to being frozen. In these cases, it is possible that the informed consent process for the donation might be concurrent with the consent process for IVF treatment. Respondents also noted that the initial consent for IVF may contain a general authorization for donating embryos in excess of clinical need, even though a more detailed consent is provided at the actual time of donation. The NIH notes that the Guidelines specifically state that consent should have been obtained at the time of donation, even if the potential donor(s) had given prior indication of a general intent to donate embryos in excess of clinical need for the purposes of research. Accordingly, a general authorization for research donation when consenting for reproductive treatment would comply with the Guidelines, so long as specific consent for the donation is obtained at the time of donation. In response to comments regarding documentation necessary to establish a separation between clinical and research decisions, the NIH has changed the language of the Guidelines to permit applicant institutions to submit consent forms, written policies or other documentation to demonstrate compliance with the provisions of the Guidelines. This change should provide the flexibility to accommodate a range of practices, while adhering to the ethical principles intended.*

*Some respondents want to require that the IVF physician and the hESC researcher should be different individuals, to prevent conflict of interest. Others say they should be the same person, because people in both roles need to have detailed knowledge of both areas (IVF treatment and hESC research). There is also a concern that the IVF doctor will create extra embryos if he/she is also the researcher. As a general matter, the NIH believes that the doctor and the researcher seeking donation should be different individuals. However, this is not always possible, nor is it required, in the NIH's view, for ethical donation.*

*Some respondents want explicit language (in the Guidelines and/or in the consent) stating that the embryo will be destroyed when the inner cell mass is removed. In the process of developing guidelines, the NIH reviewed a variety of consent forms that have been used in responsible derivations. Several had extensive descriptions of the process and the research to be done, going well beyond the minimum expected, yet they did not use these exact words. Given the wide variety and diversity of forms, as well as the various policy, statutory and regulatory obligations individual institutions face, the NIH declines to provide exact wording for consent forms, and instead endorses a robust informed consent process where all necessary details are explained and understood in an ongoing, trusting relationship between the clinic and the donor(s).*

*Respondents asked for clarification regarding the people who must give informed consent for the donation of embryos for research. Some commenters suggested that NIH should require consent from the gamete donors, in cases where those individuals may be different than the individuals seeking reproductive treatment. The NIH requests consent from "the individual(s) who sought reproductive treatment" because this/these individual(s) is/are responsible for the creation of the embryo(s) and, therefore, its/their disposition. With regard to gamete donation, the risks are associated with privacy and, as such, are governed by requirements of the Common Rule, where applicable.*

*Respondents also requested clarification on the statement in the draft Guidelines noting that "although human embryonic stem cells are derived from embryos, such stem cells are not themselves human embryos." For the purpose of NIH funding, an embryo is defined by Section 509, Omnibus Appropriations Act, 2009, Pub. L. 111-8, 3/11/09, otherwise known as the Dickey Amendment, as any organism not protected as a human subject under 45 C.F.R. Part 46 that is derived by fertilization, parthenogenesis, cloning or any other means from one or more human gametes or human diploid cells. Since 1999, the Department of Health and Human Services (HHS) has consistently interpreted this provision as not applicable to research using hESCs, because hESCs are not embryos as defined by Section 509. This long-standing interpretation has been left unchanged by Congress, which has annually reenacted the Dickey Amendment with full knowledge that HHS has been funding hESC research since 2001. These guidelines therefore recognize the distinction, accepted by Congress, between the derivation of stem cells from an embryo that results in the embryo's destruction, for which federal funding is prohibited, and*

research involving hESCs that does not involve an embryo nor result in an embryo's destruction, for which federal funding is permitted.

*Some respondents wanted to ensure that potential donor(s) are either required to put their "extra" embryos up for adoption before donating them for research, or are at least offered this option.* The Guidelines require that all the options available in the health care facility where treatment was sought pertaining to the use of embryos no longer needed for reproductive purposes were explained to the potential donor(s). Since not all IVF clinics offer the same services, the healthcare facility is only required to explain the options available to the donor(s) at that particular facility.

*Commenters asked that donor(s) be made aware of the point at which their donation decision becomes irrevocable. This is necessary because if the embryo is de-identified, it may be impossible to stop its use beyond a certain point.* The NIH agrees with these comments and revised the Guidelines to require that donor(s) should have been informed that they retained the right to withdraw consent for the donation of the embryo until the embryos were actually used to derive embryonic stem cells or until information which could link the identity of the donor(s) with the embryo was no longer retained, if applicable.

### **Medical Benefits of Donation**

*Regarding medical benefit, respondents were concerned that the language of the Guidelines should not somehow eliminate a donor's chances of benefitting from results of stem cell research. Respondents noted that although hESCs are not currently being used clinically, it is possible that in the future such cells might be used for the medical benefit of the person donating them.* The Guidelines are meant to preclude individuals from donating embryos strictly for use in treating themselves only or from donating but identifying individuals or groups they do or do not want to potentially benefit from medical intervention using their donated cells. While treatment with hESCs is one of the goals of this research, in practice, years of experimental work must still be done before such treatment might become routinely available. The Guidelines are designed to make it clear that immediate medical benefit from a donation is highly unlikely at this time. Importantly, it is critical to note that the Guidelines in no way disqualify a donor from benefitting from the medical outcomes of stem cell research and treatments that may be developed in the future.

### **Monitoring and Enforcement Actions**

*Respondents have expressed concern about the monitoring of funded research and the invocation of possible penalties for researchers who do not follow the Guidelines.* A grantee's failure to comply with the terms and conditions of award, including confirmed instances of research misconduct, may cause the NIH to take one or more enforcement actions, depending on the severity and duration of the non-compliance. For example, the following actions may be taken by the NIH when there is a failure to comply with the terms and conditions of any award: (1) Under 45 CFR 74.14, the NIH can impose special conditions on an award, including but not limited to increased oversight/monitoring/reporting requirements for an institution, project, or investigator; and (2) under 45 CFR 74.62 the NIH may impose enforcement actions, including but not limited to withholding funds pending correction of the problem, disallowing all or part of the costs of the activity that was not in compliance, withholding further awards for the project, or suspending or terminating all or part of the funding for the project. Individuals and institutions may be debarred from eligibility for all Federal financial assistance and contracts under 2 CFR Part 376 and 48 CFR Subpart 9.4, respectively. The NIH will undertake all enforcement actions in accordance with applicable statutes, regulations, and policies.

## **National Institutes of Health Guidelines for Research Using Human Stem Cells**

### **I. Scope of Guidelines**

These Guidelines apply to the expenditure of National Institutes of Health (NIH) funds for research using human embryonic stem cells (hESCs) and certain uses of induced pluripotent stem cells (See Section IV). The Guidelines implement Executive Order 13505.

Long-standing HHS regulations for Protection of Human Subjects, 45 C.F.R. 46, Subpart A establish safeguards for individuals who are the sources of many human tissues used in research, including non-embryonic human adult stem cells and human induced pluripotent stem cells. *When research* involving human adult stem cells or induced pluripotent stem cells constitutes human subject research, Institutional Review Board review may be required and informed consent may need to be obtained per the requirements detailed in 45 C.F.R. 46, Subpart A. Applicants should consult <http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm>.

It is also important to note that the HHS regulation, *Protection of Human Subjects*, 45 C.F.R. Part 46, Subpart A, may apply to certain research using hESCs. This regulation applies, among other things, to research involving individually identifiable private information about a living individual, 45 C.F.R. § 46.102(f). The HHS Office for Human Research Protections (OHRP) considers biological material, such as cells derived from human embryos, to be individually identifiable when they can be linked to specific living individuals by the investigators either directly or indirectly through coding systems. Thus, in certain circumstances, IRB review may be required, in addition to compliance with these Guidelines. Applicant institutions are urged to consult OHRP guidances at <http://www.hhs.gov/ohrp/policy/index.html#topics>

To ensure that the greatest number of responsibly derived hESCs are eligible for research using NIH funding, these Guidelines are divided into several sections, which apply specifically to embryos donated in the U.S. and foreign countries, both before and on or after the effective date of these Guidelines. Section II (A) and (B) describe the conditions and review processes for determining hESC eligibility for NIH funds. Further information on these review processes may be found at [www.nih.gov](http://www.nih.gov). Sections IV and V describe research that is not eligible for NIH funding.

These guidelines are based on the following principles:

1. Responsible research with hESCs has the potential to improve our understanding of human health and illness and discover new ways to prevent and/or treat illness.
2. Individuals donating embryos for research purposes should do so freely, with voluntary and informed consent.

As directed by Executive Order 13505, the NIH shall review and update these Guidelines periodically, as appropriate.

## II. **Eligibility of Human Embryonic Stem Cells for Research with NIH Funding**

For the purpose of these Guidelines, "human embryonic stem cells (hESCs)" are cells that are derived from the inner cell mass of 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. All of the processes and procedures for review of the eligibility of hESCs will be centralized at the NIH as follows:

- A. Applicant institutions proposing research using hESCs derived from embryos donated in the U.S. on or after the effective date of these Guidelines may use hESCs that are posted on the new NIH Registry or they may establish eligibility for NIH funding by submitting an assurance of compliance with section II (A) of the Guidelines, along with supporting information demonstrating compliance for administrative review by the NIH. For the purposes of this Section II (A), hESCs should have been derived from human embryos:
  1. that were created using in vitro fertilization for reproductive purposes and were no longer needed for this purpose;
  2. that were donated by individuals who sought reproductive treatment (hereafter referred to as "donor(s)") and who gave voluntary written consent for the human embryos to be used for research purposes; and
  3. for which all of the following can be assured and documentation provided, such as consent forms, written policies, or other documentation, provided:

- a. All options available in the health care facility where treatment was sought pertaining to the embryos no longer needed for reproductive purposes were explained to the individual(s) who sought reproductive treatment.
  - b. No payments, cash or in kind, were offered for the donated embryos.
  - c. Policies and/or procedures were in place at the health care facility where the embryos were donated that neither consenting nor refusing to donate embryos for research would affect the quality of care provided to potential donor(s).
  - d. There was a clear separation between the prospective donor(s)'s decision to create human embryos for reproductive purposes and the prospective donor(s)'s decision to donate human embryos for research purposes. Specifically:
    - i. Decisions related to the creation of human embryos for reproductive purposes should have been made free from the influence of researchers proposing to derive or utilize hESCs in research. The attending physician responsible for reproductive clinical care and the researcher deriving and/or proposing to utilize hESCs should not have been the same person unless separation was not practicable.
    - ii. At the time of donation, consent for that donation should have been obtained from the individual(s) who had sought reproductive treatment. That is, even if potential donor(s) had given prior indication of their intent to donate to research any embryos that remained after reproductive treatment, consent for the donation for research purposes should have been given at the time of the donation.
    - iii. Donor(s) should have been informed that they retained the right to withdraw consent for the donation of the embryo until the embryos were actually used to derive embryonic stem cells or until information which could link the identity of the donor(s) with the embryo was no longer retained, if applicable.
  - e. During the consent process, the donor(s) were informed of the following:
    - i. that the embryos would be used to derive hESCs for research;
    - ii. what would happen to the embryos in the derivation of hESCs for research;
    - iii. that hESCs derived from the embryos might be kept for many years;
    - iv. that the donation was made without any restriction or direction regarding the individual(s) who may receive medical benefit from the use of the hESCs, such as who may be the recipients of cell transplants.;
    - v. that the research was not intended to provide direct medical benefit to the donor(s);
    - vi. that the results of research using the hESCs may have commercial potential, and that the donor(s) would not receive financial or any other benefits from any such commercial development;
    - vii. whether information that could identify the donor(s) would be available to researchers.
- B. Applicant institutions proposing research using hESCs derived from embryos donated in the U.S. before the effective date of these Guidelines may use hESCs that are posted on the new NIH Registry or they may establish eligibility for NIH funding in one of two ways:
1. By complying with Section II (A) of the Guidelines; or
  2. By submitting materials to a Working Group of the Advisory Committee to the Director (ACD), which will make recommendations regarding 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.

The materials submitted must demonstrate that the hESCs were derived from human embryos: 1) that were created using in vitro fertilization for reproductive purposes and were no longer needed for this purpose; and 2) that were donated by donor(s) who gave voluntary written consent for the human embryos to be used for research purposes.

The Working Group will review submitted materials, e.g., consent forms, written policies or other documentation, taking into account the principles articulated in Section II (A), 45 C.F.R. Part 46, Subpart A, and the following additional points to consider. That is, during the informed consent process, including written or oral communications, whether the donor(s) were: (1) informed of other

available options pertaining to the use of the embryos; (2) offered any inducements for the donation of the embryos; and (3) informed about what would happen to the embryos after the donation for research.

- C. For embryos donated outside the United States before the effective date of these Guidelines, applicants may comply with either Section II (A) or (B). For embryos donated outside of the United States on or after the effective date of the Guidelines, applicants seeking to determine eligibility for NIH research funding may submit an assurance that the hESCs fully comply with Section II (A) or submit an assurance along with supporting information, that the alternative procedural standards of the foreign country where the embryo was donated provide protections at least equivalent to those provided by Section II (A) of these Guidelines. These materials will be reviewed by the NIH ACD Working Group, which will recommend to the ACD whether such equivalence exists. Final decisions will be made by the NIH Director.
- D. NIH will establish a new Registry listing hESCs eligible for use in NIH funded research. All hESCs that have been reviewed and deemed eligible by the NIH in accordance with these Guidelines will be posted on the new NIH Registry.

III. **Use of NIH Funds**

Prior to the use of NIH funds, funding recipients should provide assurances, when endorsing applications and progress reports submitted to NIH for projects using hESCs, that the hESCs are listed on the NIH registry.

IV. **Research Using hESCs and/or Human Induced Pluripotent Stem Cells That, Although the Cells May Come from Eligible Sources, is Nevertheless Ineligible for NIH Funding**

This section governs research using hESCs and human induced pluripotent stem cells, i.e., human cells that 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 the cells may come from eligible sources, the following uses of these cells are nevertheless ineligible for NIH funding, as follows:

- A. Research in which hESCs (even if derived from embryos donated in accordance with these Guidelines) or human induced pluripotent stem cells are introduced into non-human primate blastocysts.
- B. Research involving the breeding of animals where the introduction of hESCs (even if derived from embryos donated in accordance with these Guidelines) or human induced pluripotent stem cells may contribute to the germ line.

V. **Other Research Not Eligible for NIH Funding**

- A. NIH funding of the derivation of stem cells from human embryos is prohibited by the annual appropriations ban on funding of human embryo research (Section 509, Omnibus Appropriations Act, 2009, Pub. L. 111-8, 3/11/09), otherwise known as the Dickey Amendment.
- B. Research using hESCs derived from other sources, including somatic cell nuclear transfer, parthenogenesis, and/or IVF embryos created for research purposes, is not eligible for NIH funding.

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