

March 15, 2022

**COLUMBIA UNIVERSITY  
POLICY ON THE CONDUCT OF RESEARCH  
WITH HUMAN EMBRYOS AND HUMAN PLURIPOTENT STEM CELLS**

**I. INTRODUCTION**

Columbia University (**Columbia** or the **University**) believes that human embryo and human stem cell research is essential to the development of treatments for many human diseases. The University strongly supports the use of human embryos and human stem cells—embryonic, fetal and adult—for legitimate research and therapeutic purposes.

Columbia also believes that the use of somatic cell nuclear transfer (also known as “therapeutic cloning” or “research cloning”) offers promise in understanding the pathogenesis of disease and in developing therapeutic solutions to combat disease. Likewise, the University supports research with human organoids and similar self-organizing structures such as Blastoids or Gastruloids, which lead to an enhanced understanding of human development and disease.

The University opposes the use of either embryonic or stem cell technology or somatic cell nuclear transfer for human reproductive cloning. The University also opposes the clinical use of genome editing of human zygotes or embryos.

Human Embryonic and Human Pluripotent Stem Cell research at the University is overseen by the Columbia University Human Embryonic and Human Pluripotent Stem Cell Research Committee (the **Committee**).

**II. SCOPE OF POLICY**

This Policy covers research with Human Embryos and Human Pluripotent Stem Cells, including Human Embryonic Stem Cells as well as Induced Pluripotent Stem Cells and Human Expanded Potential Stem Cells. It also covers Cerebral Organoids that are initiated from adult stem cells or Pluripotent Stem Cells.

Capitalized terms used in this Policy are defined in Section III hereof.

**III. DEFINITIONS**

**Blastoid:** a blastocyst-like structure generated from Human Pluripotent Stem Cells or Human Expanded Potential Stem Cells containing extraembryonic endoderm, trophoectoderm and intraembryonic structures that could theoretically implant in the uterus.

**Cerebral Organoid:** an organoid consisting of neural tissue.

**Chimera:** an organism carrying cell populations derived from two or more different zygotes of the same or different species, obtained by complementation of early embryos or blastocysts with pluripotent or expanded potential stem cells from the same or another species.

**Committee:** as defined in Section I.

**Covered Research:** any research involving Human Embryos or Human Pluripotent Stem Cells.

**Gastrulation:** a process that transforms an early embryo into a multilayered structure composed of ectoderm (surface and neurectoderm), mesoderm and endoderm.

**Gastruloid:** a stem cell-derived multicellular *in vitro* model of an embryo undergoing gastrulation, but not containing or generating any extraembryonic tissues.

**Human Embryo:** any organism not protected as a human subject under 45 CFR Part 46 that is derived by fertilization, parthenogenesis, cloning or any other means from one or more human gametes or human diploid cells”.

**Human Embryonic Stem Cell (hESC):** a cell that is derived from the inner cell mass of blastocyst stage human embryos, is capable of dividing without differentiating for a prolonged period in culture, and is known to have the potential to develop into cells and tissues of the three primordial germ layers. Although hESCs are derived from Human Embryos, such cells are not themselves Human Embryos.

**Human Expanded Potential Stem Cell (hEPSC):** a cell generated from developmental stages earlier than the blastocyst stage that can give rise to both the three primordial germ layers and to extraembryonic tissues. Although Human Expanded Potential Stem Cells are derived from Human Embryos, such cells are not themselves Human Embryos.

**Human Pluripotent Stem Cell (hPSC):** An hESC or an iPSC.

**Induced Pluripotent Stem Cell (iPSC):** a cell that is derived from human somatic cells via genetic or chemical means or reprogramming, is capable of dividing without differentiating for a prolonged period in culture, and is known to have the potential to develop into cells and tissues of the three primordial germ layers.

**NIH Guidelines:** the NIH Guidelines for Human Stem Cell Research, effective July 7, 2009.

**Non-restricted Research:** as defined in Section IV(a).

**Organoid:** a stem cell-derived multicellular *in vitro* generated three-dimensional structure containing at least some of the cell types and tissue layers present in an adult organ.

**Registry:** the NIH Human Embryonic Stem Cell Registry established under the NIH Guidelines.

**Restricted Research:** as defined in Section IV(A).

**VPROP:** the University's Vice President for Research Operations and Policy.

#### **IV. REVIEW OF COVERED RESEARCH**

##### **A. Covered Research Requiring Review and Approval by the Committee**

The following Covered Research (**Restricted Research**) must be approved by the Committee prior to the commencement of any research procedures:

- Research involving Human Embryos, irrespective of their origin, including the genetic manipulation of Human Embryos or gametes used to make embryos in vitro and the generation of new hPSCs from Human Embryos;
- Research involving the generation of Blastoids;
- Research involving the generation of Cerebral Organoids or neural stem cells or tissues derived from hPSCs that are implanted into experimental animals; and
- Research involving human-animal blastocyst Chimeras.

To the extent that the sponsor of any research project has additional requirements with respect to approval by the Committee of such project, such requirements will be described in Annex A to this Policy.

##### **B. Covered Research Requiring Administrative Review**

All Covered Research other than Restricted Research (**Non-restricted Research**) may be administratively reviewed by the Chair of the Committee and is not required to be reviewed and approved by the Committee. For example, Non-restricted Research would include the following Covered Research:

- Research with established hESC lines that is confined to cell culture or involves routine and standard research practices, including studies of Organoids and models that do not attempt to integrate both extraembryonic and intraembryonic tissues;
- Research that (a) entails the reprogramming of human somatic cells to pluripotency, such as the generation of iPSC, or (b) produces Organoids or models that do not involve an attempt to integrate both extraembryonic and intraembryonic tissues, and in any case is confined to cell culture or involves routine and standard research practices, ; and
- *In vivo* studies using differentiated cells and Organoids other than neural Organoids or neural cells.

##### **C. Prohibited Research**

The following Covered Research is prohibited:

- In vitro culture of any intact human preimplantation embryo or organized embryo-like cellular structure with human organismal potential, regardless of the derivation method, beyond 14 days of formation or formation of the primitive streak, whichever occurs first;
- Research involving the implantation of such embryos or structures into animals;
- Research involving human reproductive cloning;
- Research in which Human Embryos that have undergone modification of their nuclear genome (**Genome-modified Human Embryos**) are implanted into or gestated in a human or animal uterus. Genome-modified Human Embryos include Human Embryos with engineered alterations to their nuclear DNA and/or embryos generated from a human gamete that has had its nuclear DNA modified, when such modifications will be inherited through the germ line; and
- Research involving the generation of human-animal Chimeras.

#### **D. Procedures**

##### **1. Restricted Research**

In order to obtain approval of any Restricted Research project, each principal investigator (**PI**) of such project should complete a Request for Committee Approval of Research Project (**Request for Approval**), a copy of which is attached as Annex B to this Policy, and send it to the VPROP, who will distribute it to the Chair of the Committee. The Chair or Committee may ask for additional information and the Committee will approve or disapprove the project in accordance with the provisions of Section VI(C) below. The VPROP will notify the PI of the project of the Committee's decision.

##### **1. Non-restricted Research**

In order to obtain approval of any Non-restricted Research project, each PI of such project should complete a Request for Approval and send it to the VPROP, who will forward it to the Chair of the Committee. The Chair may ask for additional information or submission of the project to the Committee or may approve the project without further action. The VPROP will notify the PI of the project of the Chair's decision.

#### **V. FEDERAL FUNDING OF HUMAN EMBRYO AND hESC RESEARCH**

##### **A. Federal Policy With Respect To Support For Human Embryo Research**

The following is a summary of current federal policy with respect to support for Human Embryo research:

1. Except in very limited circumstances, federal funds may not be used for:
  - the creation of a Human Embryo for research purposes or

- research in which a Human Embryo is destroyed, discarded or knowingly subjected to greater than minimal risk.

2. Research involving Human Embryos may be conducted with non-federal funding.

## **B. Federal Policy With Respect To Support For hESC Research**

The following is a summary of current federal policy with respect to support for hESC research:

1. Research involving hESC may be conducted with federal support if such cells are derived from cell lines that are listed on the Registry or approved by the NIH pursuant to the NIH Guidelines.

2. The following research may not be conducted with federal support, but may be conducted with non-federal funding:

- Research in which hESCs (even if derived from embryos donated in accordance with the NIH Guidelines) or iPSCs are introduced into non-human primate blastocysts;
- Research involving the breeding of animals where the introduction of hESCs (even if derived from embryos donated in accordance with the NIH Guidelines) or iPSCs may contribute to the germ line;
- Research involving the derivation of hESCs from human embryos; and
- Research using hESCs derived from other sources, including somatic cell nuclear transfer, parthenogenesis and/or IVF embryos created for research purposes.

## **VI. THE COMMITTEE**

### **A. Membership**

The Executive Vice President for Research (**EVPR**) or his/her designee will select the members of the Committee, one of whom shall be named the Chair. The Committee shall include, in addition to University scientists, at least one ethicist, one representative of the Office of the General Counsel (**OGC**), one representative of the University Human Research Protection Office (**HRPO**) and one scientist and one non-scientist not affiliated with the University. The representative of the OGC will serve as a non-voting member of the Committee.

Each member of the Committee will be appointed for a term of three years from the date of appointment. Subject to the following paragraph, a member may serve for successive three-year terms.

Any member of the Committee may resign by delivering a written notice of resignation to the EVPR. The EVPR may remove any member at any time and for any reason.

### **B. Conflicts of Interest.**

Each member of the Committee will execute a Conflict of Interest Statement in a form approved by the Committee that provides that a member must excuse him/herself from any meeting or voting of the Committee where his/her presence or vote might pose a real or perceived conflict of interest. In the event that the Chair has a conflict of interest with respect to any Non-restricted Research, the EVPR or his/her designee will appoint another member of the Committee to review such Research.

### **C. Committee Actions**

All decisions of the Committee will be made by the affirmative vote of a majority of the voting members of the Committee. The Committee may approve a proposed research project by email as well as at a meeting of the members.

In addition to reviewing requests for approval of research projects, the EVPR may convene the Committee to consider any audit findings of research projects, the interpretation of applicable laws and regulations, amendments to this Policy or other related purposes.

### **D. Administration of the Committee**

The Committee will be administered by the VPROP.

All records pertaining to the activities of the Committee and the review of research projects will be maintained by the VPROP and will be retained for at least six years after completion of the research.

## **VII. TRANSFER OF HUMAN EMBRYOS OR hPSC.**

Human Embryos and hPSC lines may not be distributed by any investigator to any other investigator at the University or outside the University without the prior written approval of the Committee.

Any University investigator who distributes Human Embryos or hPSC outside the University should receive, prior to such distribution, a written acknowledgement from the recipient that any research involving such Human Embryos and hPSC will be conducted in accordance with applicable federal laws and regulations.

## **VIII. IRB REVIEW OF HUMAN EMBRYO AND hPSC RESEARCH**

Research involving Human Embryos or hPSC must be reviewed by the Committee prior to submission of the related protocol for review by the University's Institutional Review Board (**IRB**).

With certain limited exceptions relating to medical devices, research involving Human Embryos or hPSC lines where the source (donor) cannot be identified by the relevant Columbia investigator does not constitute Human Subjects Research and does not require IRB review.

Research involving Human Embryos or hPSC lines where the source (donor) may be identified by the applicable Columbia investigator, including cell lines that retain links (such as a code) to identifiable information, is considered to be Human Subjects Research that requires IRB review. Furthermore, research involving Human Embryos or hPSC lines where there is interaction or intervention with a living individual and information about such individual, or tissue from such individual, is obtained, is likewise considered to be Human Subjects Research that requires IRB review.

**Additional Sponsor Requirements with respect to Committee Approval**

**None**