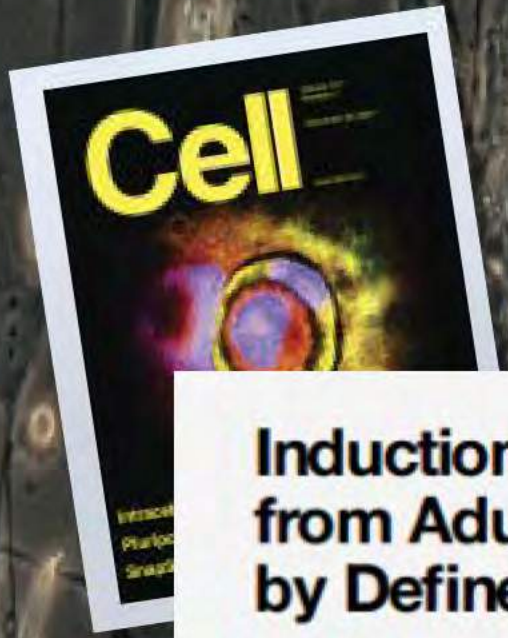
November 2007



Induction of Pluripotent Ste
from Adult Human Fibrobla
by Defined Factors

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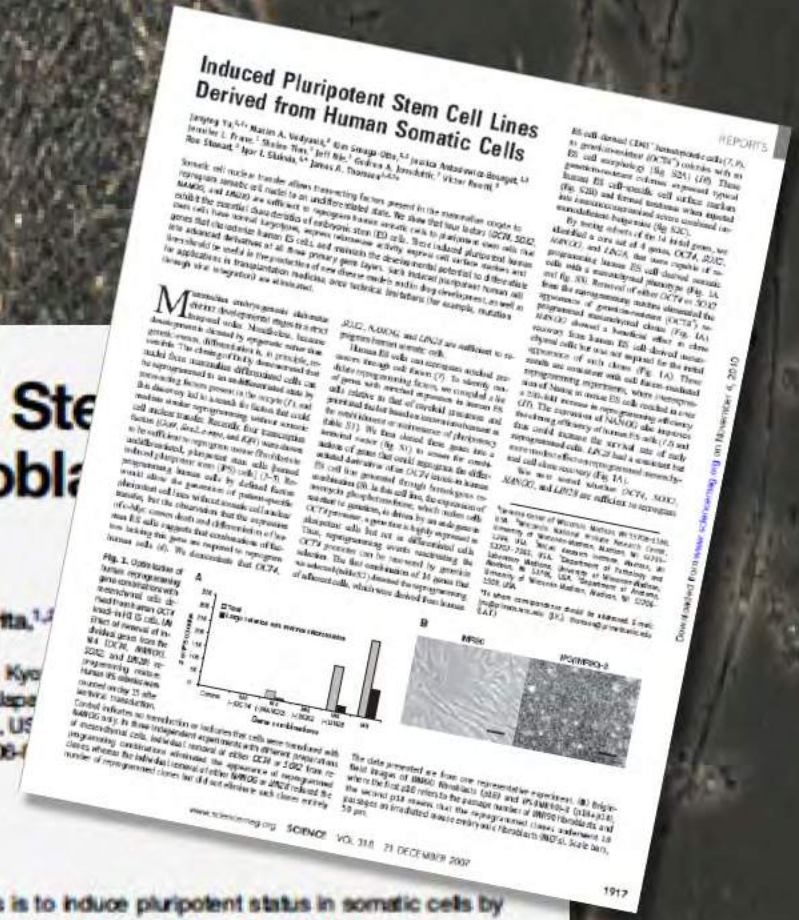
DOI 10.1016/j.cell.2007.11.019

SUMMARY

Successful reprogramming of differentiated human somatic cells into a pluripotent state would allow creation of patient- and disease-specific stem cells. We previously reported generation of induced pluripotent stem (iPS) cells, capable of germline transmission, from mouse somatic

issues is to induce pluripotent status in somatic cells by direct reprogramming (Yamanaka, 2007).

We showed that induced pluripotent stem (iPS) cells can be generated from mouse embryonic fibroblasts (MEF) and adult mouse tail-tip fibroblasts by the retrovirus-mediated transfection of four transcription factors, namely Oct3/4, Sox2, c-Myc, and Klf4 (Takahashi and Yamanaka, 2006). Mouse iPS cells are indistinguishable from

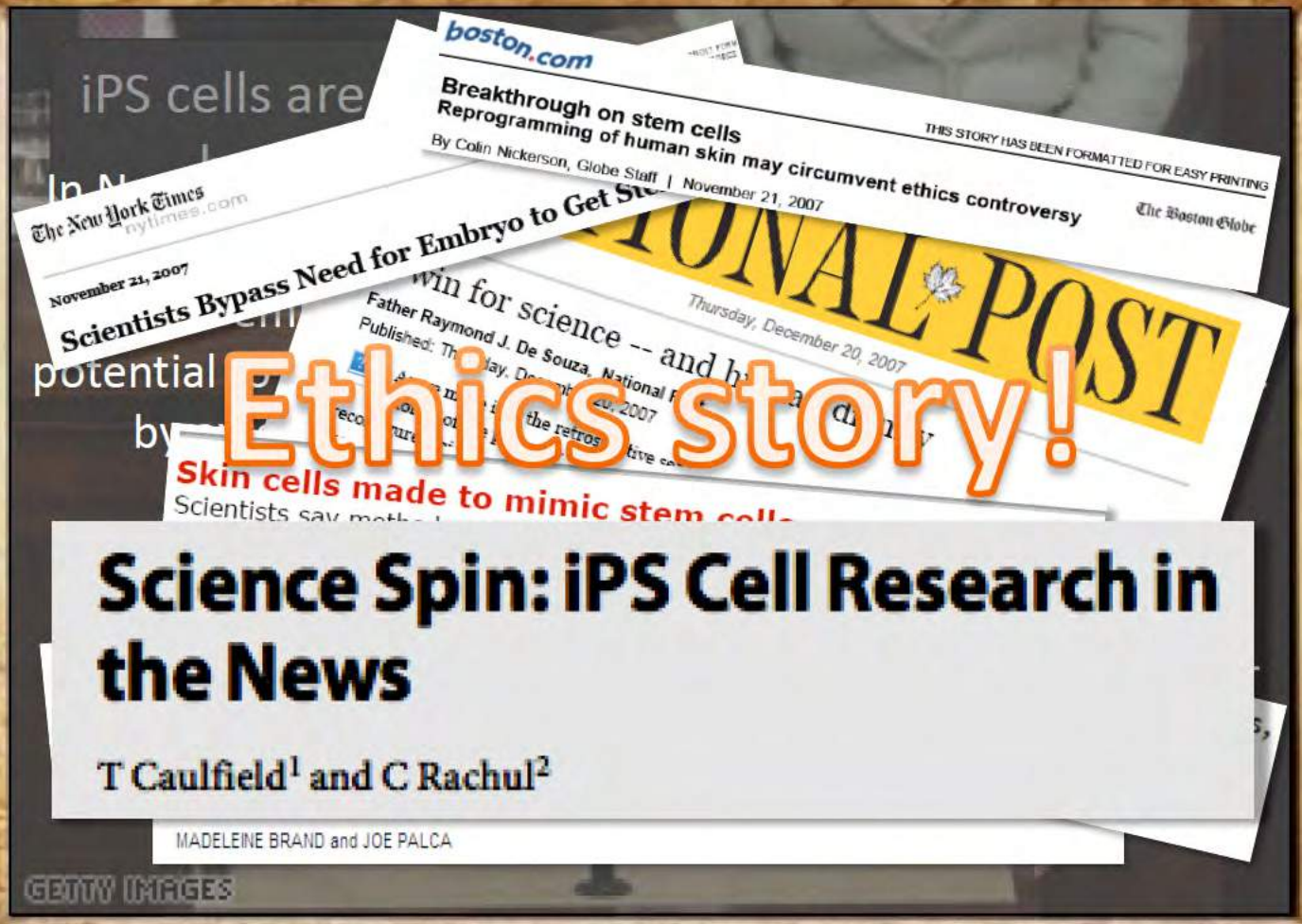


Induced Pluripotent Stem Cell Lines Derived from Human Somatic Cells

Junying Yu,[1,*] Marisa A. Vodyanik,[2] Kim Smuga-Otto,[1,2] Jessica Antosiewicz-Bourget,[1,2] Jennifer L. Frane,[1] Shulan Tian,[1] Jeff Nie,[1] Gudrun A. Jonsdottir,[1] Victor Ruotti,[2] Ron Stewart,[1] Igor I. Slukvin,[1,2] James A. Thomson[1,2,3,*]

www.sciencemag.org SCIENCE VOL 318 21 DECEMBER 2007

SOURCE: Junying Yu, University of Wisconsin-Madison; Science Progress


iPS cells are
potential
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boston.com
Breakthrough on stem cells
Reprogramming of human skin may circumvent ethics controversy
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By Colin Nickerson, Globe Staff | November 21, 2007
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Scientists Bypass Need for Embryo to Get Stem Cells
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T Caulfield[1] and C Rachul[2]
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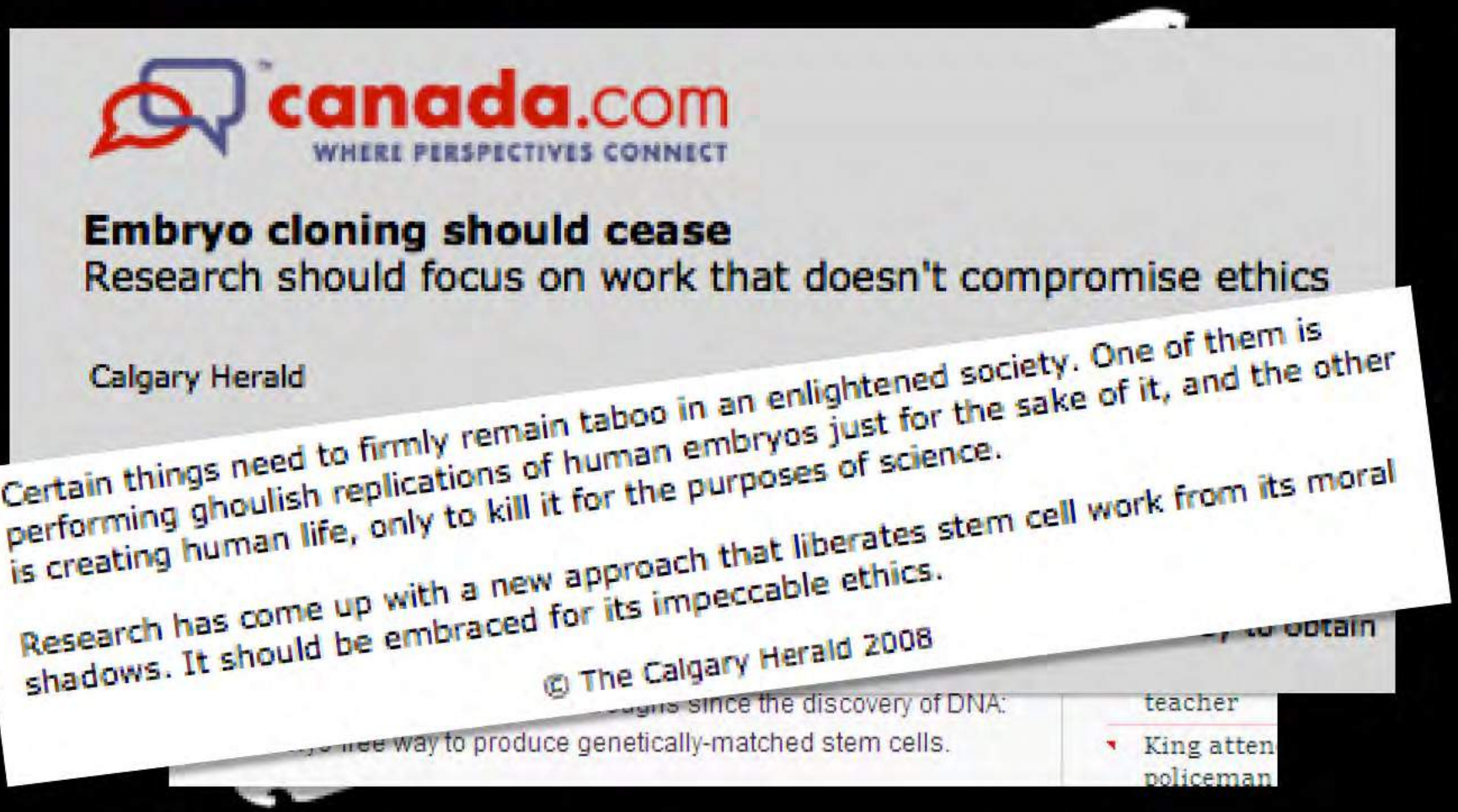
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WHERE PERSPECTIVES CONNECT

Embryo cloning should cease

Research should focus on work that doesn't compromise ethics

Calgary Herald

Certain things need to firmly remain taboo in an enlightened society. One of them is performing ghoulish replications of human embryos just for the sake of it, and the other is creating human life, only to kill it for the purposes of science.

Research has come up with a new approach that liberates stem cell work from its moral shadows. It should be embraced for its impeccable ethics.

since the discovery of DNA:

free way to produce genetically-matched stem cells.

teacher

King atten

policeman

Reality

Published online 13 May 2011 | Nature | doi:10.1038/news.2011.286

News

Reprogrammed cells trigger immune reactions in mice

Medical applications of induced pluripotent stem cells called into question.

Erika Check Hayden

Cells that have been reprogrammed to gro different types of tis might be rejected b body — even when transplanted into t individual from w are made, resea report in a study today in Nature

Technical challenges in using human cells to model disease

Krishanu Saha[1] and Rudolf Jaenisch[1,2]

pluripotent stem

Published online 2 February 2011 | *Nature* 470, 13 (2011) | doi:10.1038/470013a

News

Cell Stem Cell

Perspective

Cell PRESS

Inducing iPSCs to F ish

Bonnie Barrilleaux[1,2,3] and Pa

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alter
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Induced pluripotent stem cells (iPSCs) hold great promise for autologous cell therapies, but significant roadblocks remain to translating iPSCs to the bedside. Fo

ving paths of

Pluripotency

The field of induced pluripotent stem cells has grown up fast. Now it is entering the difficult stage.

BY ERIKA CHECK HAYDEN

Sean Caulfield

iPS Cells ELSI Challenges

Banned/Regulated?

Gold Standards in the Diamond Age
The Commodification of Pluripotency

Douglas Sipp[1,*]
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DOI 10.1016/j.stem.2009.09.005

Human embryonic stem cells have been characterized as a rare and precious resource because of the scarcity of the materials used in their derivation and the many restrictions that have been placed on their derivation and use. With the advent of induced pluripotent stem cells, however, pluripotency stands to become a plentiful and unencumbered commodity.

April 2008

raise more debate in Canada, experts say

By Ian [illegible] Postmedia News

Stem Cell Rev (2009) 5:135–139
DOI 10.1007/s12015-009-9059-z

Product Regulation and the Clinical Translation of Stem Cell Research

Barbara von Tigerstrom

Transla

Triploid "Clones"

Health care on msnbc.com

By Arthur Caplan, Ph.D.

The New York Times

Don't fear the cloned human stem cells: They're not people

a New

After Setbacks in Harvesting
Approach Shows Promise

By NICHOLAS WADE

Published: October 5, 2011

, Kathleen Crumm Satriani[3,4], Robert Prosser[3,4], Kiboong Oum[3,4], , Ellen Greenberg[5,6], Kun Zhang[2], Robin Goland[5,6], Mark V. Sauer[3,4],

By a lucky accident as part of a control experiment, they left an oocyte's nucleus in place when they implanted an adult nucleus. They noticed that in the presence of the oocyte nucleus, embryos with an inserted adult cell nucleus developed much further than usual. They progressed, in fact, to the blastocyst stage, the point at which embryonic stem cells can be harvested, the researchers report in the Wednesday issue of Nature.

abnormalities. In contrast, added, the resultant triploid cells develop to the blastocyst stage. Stem cell lines derived from these blastocysts differentiate into cell types of all three germ layers, and a pluripotent gene expression program is established on the genome derived from the somatic cell. This result demonstrates the feasibility of reprogramming human cells using oocytes and identifies removal of the oocyte genome as the primary cause of developmental failure after genome exchange.

Sean Caulfield

Banned by our (hype informed) law?

Assisted Human Reproduction Act

5. (1) No person shall knowingly

(*a*) create a human clone by using any technique, or transplant a human clone into a human being or into any non-human life form or artificial device;

(*b*) create an *in vitro* embryo for any purpose other than creating a human being or improving or providing instruction in assisted reproduction procedures;

"human clone" means an embryo that, as a result of the manipulation of human reproductive material or an *in vitro* embryo, contains a diploid set of chromosomes obtained from a single -- living or deceased -- human being, foetus or embryo.

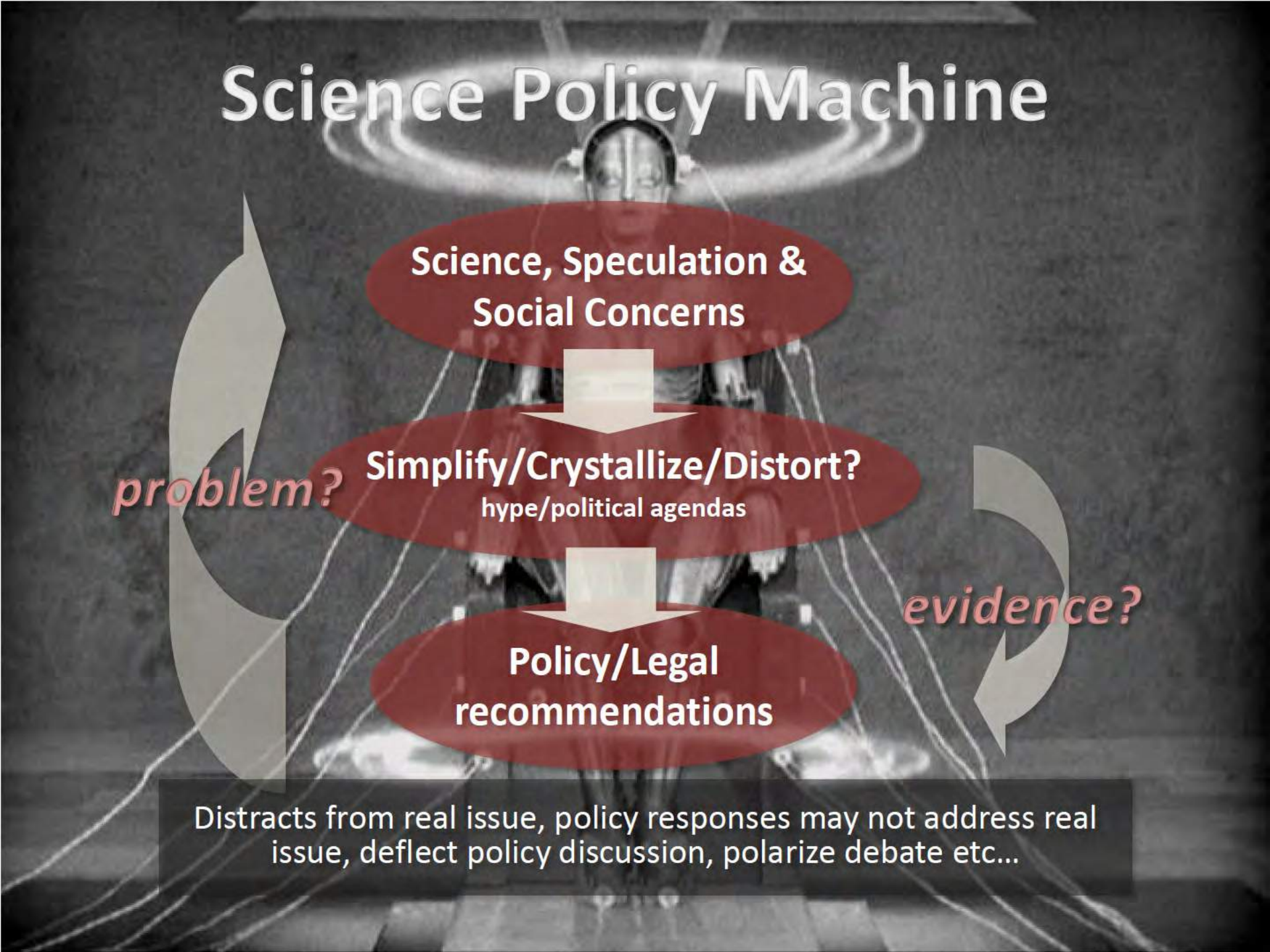
"embryo" means a human organism during the first 56 days of its development following fertilization or creation, excluding any time during which its development has been suspended, and includes any cell derived from such an organism that is used for the purpose of creating a human being.

Justifications for the ban?

Modest (important) research technique

Oliver, 2011


Give your eggs to science, get paid, suggests new report - October 10, 2011
Human bodies:
donation for medicine
and research
NUFFIELD COUNCIL ON BIOETHICS
Wilson, 2011


Science Policy Machine
Science, Speculation & Social Concerns
Simplify/Crystallize/Distort?
hype/political agendas
Policy/Legal recommendations
problem?
evidence?
Distracts from real issue, policy responses may not address real issue, deflect policy discussion, polarize debate etc…

Lessons?

Science moves at a snail's pace…

Is current policy based on hyped/distorted portrayals of harms/benefits?

If yes, do rationales still have relevance? Time to revisit?

Learn from and move beyond this era of "hype policy"….

Thank you!

Ubaka Ogbogu, Erin Nelson, Amy Zarzeczny, Zubin Master, Robyn Hyde-Lay, Christine Rachul, Nina Hawkins, and the UofA team!

Cancer Stem Cell Consortium (CSCC)

Stem Cell Network / Réseau de cellules souches

UNIVERSITY OF ALBERTA
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Health Law and Science Policy Group