



Exploring the Grand Challenges: Research and Neuroethics

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Challenge 1: A Culture of Conspiracy

Much medical research
excites paranoid
fantasies

Neuroscience research
is uniquely suspect



Challenge 2: Just because you're not paranoid...

- As moderns we tend to view the brain, rather than the liver or the heart, as the seat of personal identity
- The notion of technologically mediated access to the self excites deep concerns as well great curiosity

Challenge 3: The Economy of Neuroscience Research

Who sets the research agenda?

Whose interests are served and whose are not?

The economy of science

Challenge 4: Research vs. Innovation

- There is a recognized moral framework for “research”
- Not so for “innovative procedures”

Challenge 5: Adapting to standards of clinical research ethics

- Consent and personal identity
- Capacity assessment
- Surrogate decision making
- Risk-benefit assessment
- “Therapeutic misconception”
- Unanticipated data

Challenge 6: Anticipating societal implications

The IRB system is specifically excluded from considering public policy questions

- Forensics
 - Domestic policing
 - Legal processes
- Screening and intervention
- The “enhancement” debate
- National security applications
- Following slides:
 - National intelligence applications
 - Commercial, pop, vanity neuroscience
 - Chimeras and congress

National Intelligence Applications

- National Research Counsel “Committee on Military and Intelligence Methodology for Emergent Physiological and Cognitive/Neural Science Research in the Next Two Decades”
- Likely report release July 2008
- Client: Defense Intelligence Agency

Public Neuroscience

- Commercial (marketing)
- Pop (e.g., political candidates and neural scans)
- Vanity (current *Atlantic Monthly* article)



Chimeras and Congress

IN THE SENATE OF THE UNITED STATES

March 17, 2005

A BILL

To amend title 18, United States Code, to prohibit human chimeras.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the `Human Chimera Prohibition Act of 2005'.

SEC. 2. FINDINGS.

Congress finds that--

(1) advances in research and technology have made possible the creation of chimeras, which are beings with diverse human and non-human tissue;

(2) serious ethical objections are raised to some types of chimeras because they blur the lines between human and animal, male and female, parent and child, and one individual and another individual;

(3) respect for human dignity and the integrity of the human species may be threatened by chimeras;

(4) the uniqueness of individual human beings is manifested in a particular way through their brain and their reproductive organs/cells; and

(5) with an increase in emerging zoonotic infection threatening the public health, both domestically and abroad, chimeras present a particularly optimal means of genetic transfers that could increase the efficiency or virulence of diseases threatening both humans and animals.

- **SEC. 3. PROHIBITION ON HUMAN CHIMERAS.**

(a) In General- Part I of title 18, United States Code, is amended by inserting after chapter 15 the following:

CHAPTER 16--HUMAN CHIMERAS

Sec.

301. Definitions.

302. Prohibition on human chimeras.

Sec. 301. Definitions

In this chapter the following definitions apply:

(1) HUMAN CHIMERA- The term 'human chimera' means--

(A) a human embryo into which a non-human cell, or any component part of a non-human cell, has been introduced;

(B) a human embryo that consists of cells derived from more than 1 human embryo, fetus, or born individual;

(C) a human egg that has been fertilized by a non-human sperm;

(D) a non-human egg that has been fertilized by a human sperm;

(E) a human egg into which a non-human nucleus has been introduced;

(F) a non-human egg into which a human nucleus has been introduced;

(G) a human egg or a non-human egg that otherwise contains haploid sets of chromosomes from both a human and a non-human life form;

(H) a non-human life form engineered such that human gametes develop within the body of a non-human life form; or

(I) a non-human life form engineered such that it contains a human brain or a brain derived wholly or predominantly from human neural tissues.

(2) HUMAN EMBRYO- The term 'human embryo' means an organism of the species Homo sapiens during the earliest stages of development, from 1 cell up to 8 weeks.

- **Sec. 302. Prohibition on human chimeras**

`(a) In General- It shall be unlawful for any person to knowingly, in or otherwise affecting interstate commerce--

`(1) create or attempt to create a human chimera;

`(2) transfer or attempt to transfer a human embryo into a non-human womb;

`(3) transfer or attempt to transfer a non-human embryo into a human womb; or

`(4) transport or receive for any purpose a human chimera.

`(b) Penalties-

`(1) IN GENERAL- Whoever violates subsection (a) shall be fined under this title, imprisoned not more than 10 years, or both.

`(2) CIVIL PENALTY- Whoever violates subsection (a) and derives pecuniary gain from such violation shall be subject to a civil fine of the greater of \$1,000,000 and an amount equal to the amount of the gross gain multiplied by 2.