

# Animal-Human Stem Cell Chimeras and Moral Status

Robert Streiffer, Ph. D.

The German Ethics Council, Berlin

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University of Wisconsin, Madison

Philosophy, College of Letters and Sciences

Medical History and Bioethics, School of Medicine and Public Health

Affiliate Appointments

Medical Sciences, School of Veterinary Medicine

Agricultural and Applied Economics, College of Agricultural and Life Sciences

The Nelson Institute for Environmental Studies

UW Neuroscience and Public Policy Program

UW Stem Cell and Regenerative Medicine Center



# The Moral Status Framework

- Could chimera research result in a nonhuman animal acquiring the biological or psychological properties that ground the distinctive moral status of human beings? And, if so, what are the ethical implications?
1. What effects would the introduction of human material into an animal need to have in order to be status-enhancing?
  2. What research would have those effects?
  3. Under what conditions would status-enhancing research be morally permissible?
  4. What research would satisfy those conditions?



# What Grounds Moral Status?

1. What effects would the introduction of human material into an animal need to have in order to be status-enhancing?
2. What research would have those effects?
  - Cognitive Capacity Views: Research that confers high-level cognitive capacities
  - Potentiality Views: Research that confers the potential for high-level cognitive capacities
  - Species Membership Views: Research that confers membership in the human species



# Epistemic Difficulties

- Predicting effects and interpreting their significance for moral status
  - Stage of development at the time of transplant
  - Species of recipient; length of gestational period
  - Proportion of human cells being introduced
  - Aggregation or disaggregation of the cells
  - Plasticity of the cells; possibility of specialized cells dedifferentiating
  - Ability of cells to survive and integrate
  - Effects on brain and cognitive capacities
  - Disposition/viability of chimeric research subject



# Current Research Is Unlikely to Enhance Status

- Reasons to think the status-enhancing effects will not obtain in most cases:
  - Smaller skull size
  - Already fixed brain architecture
  - Surrounding non-human cellular environment
  - Shorter gestational periods
  - Small numbers of human cells being introduced, compared to the number of animal cells
  - Poor viability and integration of cells
  - Early termination/non-viability of altered embryo



## But It Is Theoretically Possible

- Reasons to think the status-enhancing effects are theoretically possible:
  - Introducing large numbers of hPS cells into a nonhuman primate embryo that will be brought to term
    - NAS (2005): “It is not now possible to predict the extent of human contribution to such chimeras”
  - Research with the goal of creating animals with the relevant cognitive capacities to use for research on those capacities, or for use as disease or injury models



## Evaluating Status Enhancements

3. Under what conditions would status-enhancing research be morally permissible?
  - The Millian/Kantian View: An enhancement in moral status is always ethical.
  - The No-Enhancing View: An enhancement in moral status is always unethical.
  - Intermediate Views: It depends on how the individual is subsequently treated.



# Evaluating Status Enhancements

- The Millian/Kantian View: An enhancement in moral status is always ethical.
  - John Stuart Mill: "It is better to be a human being dissatisfied than a pig satisfied..."
  - Immanuel Kant: The good will is "to be esteemed much higher than all that can be brought about by it in favor of any inclination, nay even of the sum total of all inclinations."
- Wouldn't explain people's concerns





# Evaluating Status Enhancements

- The No-Enhancing View: An enhancement in moral status is always unethical.
- Not plausible
  - Cognitive Capacity Views: Normal human psychological development
  - Potentiality Views: Fixing a genetic defect that severely limited potential
  - Species Membership Views: Normal human fertilization



# Evaluating Status Enhancements

- Intermediate View: Whether or not an enhancement in moral status is ethical depends on whether researchers provide reasonable assurances that the individual's newly enhanced moral status will be adequately respected.
  - It's not enough to treat it the same.
  - It's not even enough to treat it slightly better.
- Principle of Procreative Ethics



## The Outcome to be Avoided

- A situation in which a transplant of human material into an animal really does render the individual the moral equivalent of a normal adult human ...
- ... and the individual continues being treated as animals are usually treated in biomedical research.

# Evaluating Status-Enhancing Research

4. What research satisfies the condition that the researchers provide reasonable assurances that the individual's newly enhanced moral status will be adequately respected.
  - In all plausible research contexts, satisfying this condition will be incompatible with the research objectives that motivated the use of an animal.
    - Unwilling subjects
    - Non-therapeutic, significantly risky interventions
    - Life-long confinement
  - Thus, while status-enhancements are not inherently wrong, they are likely to be unethical in the actual circumstances.



## Conclusion

- What kind of effects would research need to have in order to confer upon an animal the same moral status as a normal human adult?
  - Depends on the correct view of moral status



## Conclusion

- What kind of effects would research need to have in order to confer upon an animal the same moral status as a normal human adult?
  - Depends on the correct view of moral status
- What research will have those effects?
  - Existing research is reassuring, but experience is limited and the literature already contains calls for research that would result in animals with a greater degree of human chimerism.
- Would researchers provide reasonable assurances that the individual's newly enhanced moral status will be adequately respected?