

Road map for addressing ethical concerns tied to research on human-animal embryos

30 August 2016

A new bioethical framework for addressing concerns surrounding potentially revolutionary research on human-animal embryos is publishing on Aug. 30, 2016 in the open-access journal *PLOS Biology*.

Human-animal embryos, called chimeras, can be produced when human stem cells are transplanted into animal embryos. By creating these types of embryos scientists could potentially grow human organs in large [animals](#), such as pigs and sheep, to help ease the chronic shortage of [human organs](#) available for transplantation. This research could also be used to study the causes of many human diseases. But the use of the human cells in this work is controversial and last September, the National Institutes of Health imposed a moratorium on funding the research in response to ethical concerns (private funding was unaffected). Then, in early August, the NIH announced plans to lift the moratorium after a 30-day comment period on proposed regulations that require heightened review of the research under certain conditions.

In the *PLOS Biology* opinion piece, Insoo Hyun, PhD, associate professor of bioethics at the School of Medicine of Case Western Reserve University, argues that most, if not all, concerns tied to such research can be reasonably addressed in a way that prioritizes animal welfare while enabling scientific progress to help patients who need organ transplants.

While some researchers and bioethicists worry that a developing animal with a human organ could attain something like human moral status, especially if the central nervous system is involved, Hyun argues that these concerns—while understandable—are overstated. The appearance of [human](#)-like self-consciousness is needed to elevate the moral status of a research animal, but this distinctive psychological characteristic is not likely to emerge in a chimeric animal's brain, Hyun says. Instead, the much more likely outcome of

neurological chimerism is an increased chance of animal suffering and biological dysfunction and disequilibrium, if past experience with transgenic animals can serve as a guide. "This is why," says Hyun, "focusing on animal welfare principles is crucial."

Hyun's arguments reflect the ethical standards for chimera research established by the Ethics and Public Policy Committee of the International Society for Stem Cell Research, which he helped develop.

More information: Insoo Hyun, What's Wrong with Human/Nonhuman Chimera Research?, *PLOS Biology* (2016). [DOI: 10.1371/journal.pbio.1002535](https://doi.org/10.1371/journal.pbio.1002535)

Provided by Public Library of Science

APA citation: Road map for addressing ethical concerns tied to research on human-animal embryos (2016, August 30) retrieved 30 September 2022 from <https://medicalxpress.com/news/2016-08-road-ethical-tied-human-animal-embryos.html>

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