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Stirring the simmering 'designer baby' pot

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From genetic and genomic testing to new techniques in human assisted reproduction, various technologies are providing parents with more of a say about the children they have and "stirring the pot of 'designer baby' concerns," writes Thomas H. Murray, President Emeritus of The Hastings Center, in a commentary in *Science*.

Murray calls for a national conversation about how much discretion would-be parents should have. "Preventing a lethal disease is one thing; choosing the traits we desire is quite another," he writes.

He discusses public hearings two weeks ago by the United States Food and Drug Administration to consider whether to permit human testing of a new method of assisted reproduction – mitochondrial manipulation – that would prevent the transmission of certain rare diseases and perhaps address some causes of female infertility. At issue is the safety of the technology, as well as its ethical implications.

Mitochondrial manipulation creates an embryo with the nuclear DNA from the prospective mother and father (which contains most of the genetic material) and the mitochondrial DNA (containing 37 genes) from a donor without mitochondrial defects. Among the ethical concerns is that daughters produced by this procedure could pass down the mitochondrial DNA to their children. "Up to now, the United States has not allowed such genetic changes across generations," Murray writes.

He says that the FDA's discussion is the latest development that "tapped into a simmering controversy over what it means to have a child in an era

of increasing convergence among genetic, genomic, and reproductive technologies." Those technologies include preimplantation genetic diagnosis (genetic analysis of embryos before implantation via in vitro fertilization) and prenatal screening to detect health problems in the fetus, including the prospects of a blood test of a pregnant woman to screen fetal DNA in her blood.

"Of all the possible choices prospective parents might make, sex selection for non-medical purposes has prompted the strongest policy response, "Murray writes. "It is prohibited in at least 36 countries, but not in the United States." He notes that "conflicts over the legal and moral status of embryos and fetuses have discouraged American legislators from proposing sensible regulations, lest they be drawn in to the abortion debate."

The absence of federal legislation has left the regulation of sex selection up to professional societies. But they have different guidelines, reflecting "clashing ethical frameworks for thinking about parenthood in the genomic era."

Murray calls for a national conversation about current and emerging technologies shaping the choices that parents have, beginning with an examination by the U.S. Presidential Commission for the Study of Bioethical Issues. "It will not be easy to avoid the quicksand of the abortion debate," he writes, "but it would be a great public service to provide a sober assessment of the choices that would-be parents increasingly face, and to encourage a respectful dialogue about the meaning of parenthood and the worth of a child so that parents and children can flourish together."

More information: "An Inheritance Calculator Patent and the Meaning of Parenthood," by T.H. Murray et al. *Science*, 2014.

Provided by The Hastings Center