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In vitro gametogenes: Just another way to have a baby?

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New analysis by a George Washington University academic examines the possibility of using in vitro gametogenesis (IVG) for human reproduction and its ethical and practical implications. The paper is published today in the *Journal of Law and the Biosciences*.

IVG is the method, most advanced in mice, by which gametes are derived from pluripotent stem cells (capable of giving rise to several different cell types) or embryonic stem cells. IVG in humans could potentially allow for never-before used methods of procreation. Research suggests that whilst not yet advanced enough on human cells, IVG for reproduction may one day be possible in humans.

Using a relational autonomy framework, Professor Sonia Suter analyses the potential benefits and harms of IVG, which depend on the social, scientific, and legal contexts in which it is used. As enormous developments are necessary before IVG could be used in humans, Professor Suter comments that: "the ethical dilemmas about when and how such research should be done will be enormously challenging."

Several groups of people could potentially use IVG for reproduction: those who cannot conceive for physical reasons, same-sex couples, postmenopausal women or premenarche girls, and groups of more than two - multiplex parenting.

Same-sex couples must currently rely on gamete donors when using assisted reproductive technologies (ART) such as artificial insemination

or IVF with a surrogate. What distinguishes IVG from current ART is that it would allow such couples to have biologically related children without using gamete donors. For example, a gamete of the opposite sex could be derived from an individual's cells. This in combination with a naturally derived gamete from the other member of the couple could be used to produce an embryo.

Professor Suter also discusses the implications of 'perfecting reproduction' with IVG. She explains: "IVG could play a role in efforts to have a healthy or enhanced child" by making prenatal selection "much easier and more robust." It could, for example, be used to create many more embryos for preimplantation genetic diagnosis than we can today, vastly refining the ability to select embryos.

Perhaps most crucial to the future use of IVG, as she also points out, are the potential risks of the procedure. "We have minimal knowledge," Suter says, "about the implications of switching cell types from differentiated to undifferentiated states and the implications of erasing and resetting imprinting patterns to facilitate reproduction. The only way to demonstrate the effectiveness and safety of these techniques in humans is to use in vitro gametes to try to produce viable offspring in controlled settings - when and if we deem it sufficiently safe to do so."

Despite concerns over the risks and the fact that the technology is still a way off, Professor Suter concludes that, given that we support ART as a society, in many ways, IVG may be just another way to have a baby.

More information: "In Vitro gametogenesis: just another way to have a baby?" Sonia Suter, *Journal of Law and the Biosciences*, DOI: 10.1093/jlb/lsv057

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