

# Stem Cell Science Could Soon Make Sex Obsolete (or Largely Recreational)

Last year a Stanford law professor, Hank Greely, published a book, [The End of Sex And The Future of Human Reproduction](#). In it he predicted that in 20 to 40 years' time people would no longer have sex to make babies. Sex will be largely recreational and procreation will be subcontracted to IVF clinics to create designer babies.

Greely was not setting the scene for a dystopian science fiction novel but extrapolating from current trends in genetic testing and stem cell biology. It will soon be possible to sequence the entire genome of an embryo quickly and cheaply. This could allow companies to offer parents genetic dossiers on 100 of their own embryos. They will be able to flip through them to find their ideal child – a sportsman, a poet, a beauty queen, etc. The chosen one would be implanted and the others would probably be destroyed. It would be a kind of commercial eugenics.

However, to achieve this, huge quantities of human egg cells will be needed. At the moment, these are removed from women's ovaries in IVF clinics and so they are in short supply. But sometime in the not-too-distant future, a stem cell biology will make it possible to grow an "inexhaustible supply" of eggs and sperm from skin cells.

This technology has already been successfully tested on mice.

The time to regulate it is now, according to a recent article in a major journal, [Science Translational Medicine](#). IVF – *in vitro* fertilisation – was such a game-changing technology that its inventor, Robert Edwards, won a Nobel Prize.

IVG – *in vitro* gametogenesis – could revolutionise reproduction, according to Glenn Cohen, of Harvard Law School, George Q. Daley, of Harvard Medical School, and Eli Y. Adashi, of Brown University.

“Before the inevitable, society will be well advised to strike and maintain a vigorous public conversation on the ethical challenges of IVG,” they argue.

There is still a long way to go. “Copious preclinical evidence of safety” will be needed. The “artificial” eggs and sperm could have subtle defects and could even cause cancers. But scientists in several countries are working feverishly on this. Sooner or later, companies will offer it – perhaps in countries where medical researchers are very lightly regulated, like Cyprus, China or the Dominican Republic.

An “inexhaustible supply” of human gametes is a very scary concept. When a resource is infinite, people tend to misuse and squander it in all sorts of perverse ways. It opens up the possibility of turning children’s bodies into a business.

The academics list several uses for IVG eggs and sperm. Take note, because some of them will be highlighted when legislators start to debate the issue.

1. Scientists will be able to study germline disease at the cellular and molecular levels.
2. IVG gametes could be created when someone has lost fertility, perhaps through cancer treatment.
3. Prevention of mitochondrial disease, which is carried through the mother.
4. IVG sidesteps ethical barriers on obtaining human eggs. An unlimited supply of eggs makes it easier to generate stem cell lines from embryos created in the lab as cures for diseases.
5. IVF clinics could use the technique to create eggs instead of stimulating the ovary and retrieving eggs, which sometimes has nasty side-effects.

However, this creates a number of ethical and regulatory issues which need to be unravelled.

1. The US Food and Drug Administration (and health watchdogs in other countries) will scrutinise the process for safety and will probably insist on lifetime monitoring of children's health.

2. Large numbers of embryos will be created and destroyed merely as the raw material for research.

3. IVG will put the donor egg industry out of business, but it will also "raise the specter of 'embryo farming' on a scale currently unimagined, which might exacerbate concerns about the devaluation of human life".

4. IVG will bring human enhancement closer than ever before. Even if regulators resist a creeping transhumanism, they will often find it difficult to distinguish between eugenics and designer babies and therapeutic treatment.

5. Amongst the most controversial of IVG applications is that gay couples could create eggs and lesbian couples could create sperm so that they could have biologically-related children without having to resort to donor gametes.

6. Rogue scientists could create unauthorised eggs and sperm. "Imagine you are Brad Pitt. After you stay one night in the Ritz, someone sneaks in and collects some skin cells from your pillow," says an [article in MIT Technology Review](#) about IVG. "But that's not all. Using a novel fertility technology, your movie star cells are transformed into sperm and used to make a baby. And now someone is suing you for millions in child support."

7. Finally, "IVG's most disruptive impact might be on our very conception of parentage." If a child originates in a Petri dish, its genome can be spliced and diced. Part of the heritage of a third, or fourth, person could be added.

Indeed, as an Australian bioethicist, Robert Sparrow, pointed out a couple of years ago in the [Journal of Medical Ethics](#), generations of human beings could be created in the lab so that an IVG child would effectively have no relatives. He or she would be “orphaned at conception”: “they would have no genetic parents: there would be no living individual—or indeed individual that had ever lived—who could be described as the genetic progenitor of such embryos.”

And since there will be an almost infinite supply of gametes, Sparrow predicts that “Scientists will be able to breed human beings with the same (or greater) degree of sophistication with which we currently breed plants and animals.”

Cohen, Daley and Adashi are right to call for close government scrutiny and regulation. But we need something stronger than regulation: we need a ban on the development of in vitro gametogenesis cells. IVF was a cottage industry in the commodification of human life. IVG will enable this on an industrial scale.

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*Michael Cook is editor of MercatorNet. [This MercatorNet article](#) was republished under Creative Commons licensing.*