

Who Needs Men?

Not only could new technology that enables the production of sperm from embryonic stem cells make men obsolete, it could accelerate the development of designer children.

Recently British scientists announced that they had created human sperm cells from embryonic stem cells for the first time. This provoked giggles around the globe about a future when men are no longer needed to propagate the species.

Fortunately, most women acknowledge that males are something more than ambulatory sperm banks. “Without men, there would be no one to read Joseph Conrad or Norman Mailer, to remove spiders from the bath, or (important one, this) to tell women they’re pretty. And say what you like, but they were the lion-hearted fools who invented the idea of ‘women and children first’,” *London Telegraph* columnist Rowan Pelling said condescendingly. “I say we keep them.”

Unsurprisingly, the media got it wrong. The real threat is not to male virility, but to the future of *Homo sapiens*. Here is what happened. Researchers led by Professor Karim Nayernia at Newcastle University and the NorthEast England Stem Cell Institute used embryonic stem cells with XY male chromosomes to create germline stem cells. When meiosis was complete – cell division with halving of the chromosome set – they appeared to be fully mature sperm.

On the other hand, stem cells with XX female chromosomes formed early stage sperm (spermatogonia) but could not progress further. This suggests that the genes on a Y chromosome are essential for creating sperm.

The practical implication of this is that women cannot create sperm. Pelling can breathe a sigh of relief.

While Nayernia tried to hose down the lurid prospect of lesbian reproduction by insisting that his work will be largely used for studying infertility, this is a bit disingenuous. Even if homosexual reproduction is out, the potential for creating viable male and female gametes in the laboratory raises a plethora of other ethical scenarios, as a recent article in the journal *Cell Stem Cell* by some prominent bioethicists points out.

First of all, researchers in artificial reproductive technologies and cloning need human eggs to create embryos. At the moment, they complain bitterly about a dearth of eggs. Women are reluctant to sell them for research and, in any case, there are serious potential health risks for donors. Animal eggs can be used to create hybrid human–animal embryos, but these are highly controversial and may not turn out to be very useful.

But *in vitro*-derived eggs could deliver virtually unlimited quantities for experiments. As a result, the number of embryos



created solely to be destroyed for research will multiply enormously.

Women could also store eggs more easily without resorting to uncomfortable and risky ovarian stimulation. In theory, this would allow women who slept through the alarm on their reproductive clock to extend their reproductive life long beyond menopause.

But the most controversial, and even sinister, scenario is genetic modification of children. With a bit of tweaking in the lab it will also be possible to alter the genetic make-up of children to create little Einsteins, Bradmans and so on. The commercial possibilities for opening a genetic supermarket are immense. Initially, this will be marketed by IVF clinics as a benign way of correcting genes that cause debilitating or lethal diseases.

So Nayernia’s discovery will be greeted warmly by fans of “human enhancement” who believe that evolution is too slow and that improving the human species can be accelerated by genetic engineering. Some have even speculated that gene-rich (and bank-rich) humans could even become a new species, unimaginably superior to the gene-poor masses. That day is still years away — the bioethicists writing in *Cell Stem Cell* reckon not for at least a decade – but its dawn is glimmering on the horizon.

The question for the public and for governments is whether modifying the human genome should be banned. At the moment it is taboo, but immediately parents know that the best children money can buy are available at their local IVF clinic, immense pressures will be brought to bear on regulators.

Welcome to the *Brave New World* of reproductive technology.

Michael Cook is editor of the bioethics newsletter *BioEdge* (www.BioEdge.org).