

## Three parent babies

Professor Shima Gyoh reflects on the ethical dilemmas of scientific progress. Isn't interfering with nature what medicine is all about?



I cannot understand why anyone should make a fuss of a new method that could possibly avoid producing babies with inheritable mitochondrial diseases. The technique called pronuclear transfer involves removing a fertilised nucleus from an ovum with faulty mitochondria to replace the nucleus of a new ovum with healthy mitochondria. The method, developed in Newcastle upon Tyne in 2010, was placed in the public domain in April this year for debate on its ethics.

Two parents provide the nucleus of the ovum and the sperm that fertilises it. This nucleus, with 21 000 genes codes for 99.9% of the tissues of the new baby. The publication said 0.1% of the protein in the new baby is derived from the woman who donated the ovum with the healthy mitochondria (the percentage given in the press is 0.2%).

I fail to see the point for any possible violation of ethics. I heard statements that such 'interference with nature' could eventually lead humanity away from natural reproduction into the slippery slope of the science of designer babies. I suppose that the unfortunate attempt of the Nazi government of Germany to produce the perfect Caucasian Germans informs this fear, but we shouldn't allow the occasional wrong use of any knowledge or technology to bar humanity from legitimate ethical application of science to enhance human health. 'Manipulating children's characteristics in such a manner makes them into consumer commodities.' Such arguments forget the universally accepted slogan that 'prevention is better than cure'. This is a case of preventing very distressing diseases, such as muscular dystrophy, that do not have an effective cure.

'Interfering with nature' is what medicine is all about. If we didn't, we would subject humanity to the slow fearful statistical game of evolution, which looks after the species but not the individual. In nature, the individual is always dispensable. All living species produce a huge number of young, and nature is happy if a small percentage survives to reproduce the next generation. Fish produce millions of eggs, thousands are fertilised and a few hundred survive to reproduce their kind. The human baby girl is equipped with 400 000 ova, each capable of developing into an egg that could produce an adult human, though in her fertile years she

would present only about 400 for fertilisation. With no interference with nature, she might produce 12 to 20 babies if she does not die of the complications much earlier. For each one of these babies, her male counterpart spends billions of sperms. The very people who do not want nature interfered with love their children and would like them to live long healthy lives. This would be one way of ensuring it happens where nature's way might have denied this wish. Others fear that such babies might face as yet unforeseen dangers. All life is full of unforeseen dangers, as each one of us has no idea when, whether or how we will be victims of fate. There are all sorts of potential threats, from various diseases, heart attacks to cancer, or violent deaths from road traffic accidents to plane crashes; we are in danger of being struck by lightning or even a meteorite.

I also feel that the sensational statement that the baby has three genetic parents is no more than sensational rhetoric. The relationship of the donor of the egg with healthy mitochondria can be likened to any other donors common in medical procedures from blood transfusion, to skin grafting. People receive kidney, liver, limb, lung, and even heart transplants. These represent the acquisition of large chunks of third-party protein, but they are not regarded as having suddenly expanded their parental base, nor are they called chimera after the procedures, yet they may have more tissues from third persons than the baby of pronuclear transfer. People with face transplants look nothing like their former selves. Theoretically, it is a designer operation, but we do not regard it as such because it is a treatment.

One man suggested on a BBC presentation that adoption is an option for women who have inheritable mitochondrial disease. He has probably never known how desperate a woman can be to have a child of her own. Where there is no hope, adoption can be accommodated, but where there is hope, some women would like to take the chance no matter how complicated the process might be.

With the advance in knowledge, man's interference with nature is going to increase. Screening people for genetic predisposition to certain conditions will increase, and taking steps to avoid such catastrophes will become attractive options. This arena is usually crowded with religious people who think the will of God must be allowed free reign. That should include the new technologies God allows man to discover to counteract the distressing diseases that are obviously of the devil, surely?

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Prof Shima Gyoh has held many posts ranging from village doctor to DG of Nigeria's Federal Ministry of Health and Chair of the Medical and Dental Council of Nigeria.

# Malaria

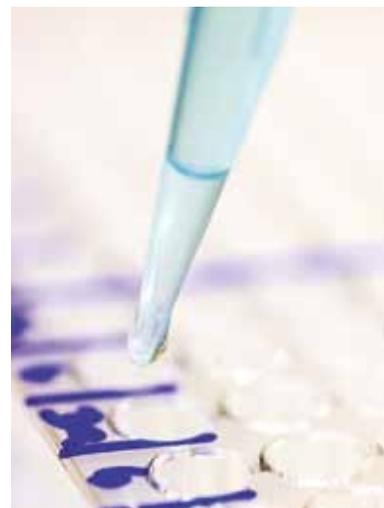
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