Tenth anniversary issue 1

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EDITORIAL

Public objections to designer babies and cloning in USA: not quite what was expected

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Media coverage and scientific forums might leave one to conclude that near unanimity exists condemning certain reproductive medicine technologies – reproductive cloning, 'designer' babies and genetic modifications in particular. Witness the atmosphere at the August 2001 National Academy of Sciences hearing in Washington DC on the topic of human reproductive cloning, not entirely militated against by its concomitant scholarly document (National Academy of Science, 2002). It almost seems as if certain reproductive issues are not appropriate for scientific query or even polite conversation. Organizations providing forums for 'blacklisted' topics risk opprobrium. Presumably pickets are expected outside convention centres!

Yet is this firewall against scientific exploration really appropriate? Perhaps not, for the general public may be less closed to inquiry than scientists. This is highlighted in an interesting recent report that surveyed public attitudes towards new genetic technologies. Carried out by the Genetics and Public Policy Center at Johns Hopkins University, Baltimore, 1211 respondents replied to a questionnaire designed to elicit attitudes of the US public on reproductive cloning, designer babies and genetic modification (Harris, 2002). Of major interest to scientists and clinicians working in these areas of reproductive genetics, certain findings were unexpected; others were more predictable.

Approval was highest for reproductive technologies clearly aimed at improving public health, as compared with those having uncertain and not necessarily good outcomes. By a large majority (two-thirds), respondents supported methods to enable couples to deliver babies free of serious genetic disease. By implication, this applies to preimplantation genetic diagnosis (PGD) and doubtless extends to certain aspects of gene therapy. On the other hand, over 70% were against using such genetic techniques to interfere with more complex human traits such as intelligence or physical strength. These opinions probably do not differ greatly from the opinions of the biomedical fraternity, where many investigators are also appalled at some of the possibilities raised by authors and forecasters concerning the progress of modern reproductive genetics. Of course, many fanciful proposals reveal the scientific naïvety of their endorsers, particularly in not appreciating phenomena such as spontaneous mutations or genetic recombination.

Predictable also in the Johns Hopkins survey was the majority opposition to cloning human babies (reproductive cloning). However, the magnitude of opposition seemed less than expected. A total of 76% opposed reproductive cloning, but it follows that a quarter did not feel similarly. Since the official attitude of virtually all major official organizations and investigators worldwide has been to oppose this procedure, it is somewhat of a surprise that so many respondents did not completely object. Many more men than women accepted reproductive cloning in a ratio of 26%:11%. In fact, men outnumber women in supporting other arguable reproductive technologies, in a ratio of 25%:12%. Overall, these findings seem to us much more favourable toward reproductive cloning than the attitude espoused among professionals in the field. Virtually no professional publicly supports cloning using adult nuclei, citing untoward results

In citing this article please refer to the original:
Simpson, J.L., Edwards, R.G., 2002. Public objections to designer babies and cloning in USA: not quite what was expected. Reprod. BioMed. Online 6, 147–148.

reported in many animal clones. By contrast, the public seems more open-minded than scientists. Reticence might be further obviated if clones develop normally to full term, and especially if reproductive cloning helps some couples deliver their own child. Even more might join in support if new approaches to somatic cell hybridization enable somatic nuclei taken from husband and wife to both partake in establishing an embryo, enabling inherited characteristics of both to be transmitted and an end to the need for testicular aspirations of infertile men.

The US survey suggested support for governmental regulation to shape and control these new technologies, but even here the philosophical reasons underlying regulation were surprising. Presumably, respondents were thinking in terms of a codified organization resembling the UK Human Fertilization and Embryology Authority (HFEA), formed in response to legislation to regulate assisted reproduction technologies. Interestingly, no differences were observed among Republicans, Democrats and independents in the US. Moreover, respondents (54%) predominantly judged these new technologies in terms of health and safety; fewer (33%) judged in religious and moral terms. Charges of 'playing God' were voiced by only 34% of respondents, predictably among those who were likely to disapprove of the technology. In themselves, these findings are astonishing because it is fair to assume that established religion plays an ostensibly greater role in US society than in UK and most other European countries. Yet a wide majority of even US respondents favour a humanitarian view of the ethics of human conception, surely one of the most important aspects of human life itself. It would be interesting to discern the results of similar surveys in countries outside the USA, to determine if public opinions worldwide are now coalescing, just as they have done in relation to test-tube babies. It is fascinating, for example, to travel the world and see the same proportions in favour or against sex selection in so many different countries.

This survey comes at a time of considerable advance in reproductive genetics. Yet these advances were clearly foreseen long before the birth of the world's first test-tube baby. Scientific condemnation of the nascent IVF field was widespread in the 1970s and early 1980s, even while the public often seemed more disengaged from the debate (Edwards, 2001a,b). Only after initial success were scientists and public more in agreement. IVF, intracytoplasmic sperm injection, surrogate mothers, and PGD are today all widely accepted. Most ethical disagreements have been vaporized by the pragmatism of 1,000,000 IVF babies and 1000 PGD babies. IVF children are fully accepted and integrated into modern societies worldwide. They are part and parcel of soap operas, plays and television dramas. The vehemently intense objections made against the original researchers and clinical studies dissipated, even while some of the same ethicists who made such misjudgements in the 1970s to 1990s are rising, phoenix-like, to attack newer reproductive advances, often in the same hypercritical mode. Will not the acceptance earned by IVF repeat itself through clinical successes of the newer reproductive technologies? Could a substantial portion of the public actually be less concerned than a paternalistic scientific community? In their letter on recent reports of cloned human offspring, Schatten *et al*. (2003) call for cessation of news coverage until scientific evidence is provided, oversight of independent tests, and a ban on reproductive cloning. Yet there is no mention of the scientific community's obligation to provide an unbiased level playing field for open scientific discussion. Perhaps the public is even wary of scientific paternalism, wishing to arrive at their own decision in concert with providers who are in ethical agreement. If so, the current minority toward certain reproductive technologies could become the majority once children of the newer technologies are found to be as normal and happy as those conceived *in vivo*.

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