Legal confusion over 'cloning' risks throwing baby out with bathwater

Sir — The UK Chief Medical Officer has supported the recommendation[1] that the 1990 Human Fertilisation and Embryology (HFE) Act should be amended to allow therapeutic cloning of humans, for research purposes only[2]. He also recommends: "The transfer of an embryo created by cell nuclear replacement into the uterus of a woman (so-called 'reproductive cloning') should remain a criminal offence" (recommendation 7 in ref. 3).

This recommendation implies that cell nuclear replacement and cloning are one and the same. They are not. If the recommendation is accepted as it stands, it risks perpetuating a confusion in UK law[4] — already found in the HFE Act: section 3 (3) (d) — and possibly thereby influencing laws elsewhere. If so, this might reduce the future treatment possibilities for some infertile couples.

Nuclear transfer constitutes reproductive cloning only when the individual so created is genetically identical to the nuclear donor. However, it is theoretically possible to use the nuclear transfer technique to generate a genetically biparental child. For couples in which one or both completely lack any germ cells or the means of producing them, the only current treatment option is gamete or embryo donation. However, one or both parents then lack a genetic contribution to their offspring. In the future, such couples may be able to overcome this problem by use of a nuclear transfer approach in which haploid nuclei are generated from parental diploid somatic cells and not via gametes.

Two types of approach might be used to achieve this outcome. In the first approach, a somatic cell from one parent or from each parent would be induced *in vitro* to undergo meiotic reduction to produce two haploid cells, nuclei from which would then be used as donors for transfer to a recipient oocyte. A second approach would be to generate a tetraploid egg by transfer of one diploid somatic nucleus from each parent to an enucleated pre-anaphase I oocyte capable of undergoing a reduction division and then subsequent activation, so as to establish diploidy.

Although several biological and technical problems must be solved before these approaches are available and safe, such therapy does not seem beyond the realm of eventual possibility. However, both these approaches use nuclear transfer and so would be prohibited under UK law.

We draw attention to these possibilities now, both to encourage discussion of their social desirability and ethical status, and to stimulate a more accurate and informed use of language in science, politics and law.

If legislation is being proposed, it must say what it means. If the legal intention is to prohibit production of an individual who is genetically identical or almost identical to another individual, then the law should use words that attain this objective, and this only. If it does not do so, potentially beneficial applications of nuclear transfer technology for human reproductive purposes may in future be prohibited accidentally.

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2. Dickson, D. & Smaglik, P. *Nature* **406,** 815 (2000).
3. Donaldson, L. *Stem Cell Research: Medical Progress with Responsibility* (Department of Health, London, 2000). http://www.doh.gov.uk/cegc/stemcellreport.htm
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'Benign neglect' of inner city led to TB epidemic

Sir — Thomas Dormandy's review and Richard Coker's book *From Chaos to Coercion: Detention and the Control of Tuberculosis* (*Nature* **405,** 995–996; 2000), about the late 1980s epidemic in New York City, both mention the socioeconomic context of tuberculosis (TB): "poverty, overcrowding, ignorance, homelessness, drug abuse and social alienation". But neither discusses the history of this particular epidemic.

The federal and local government response to inner-city problems in the 1970s was to try to clear out these communities with policies of 'benign neglect' and 'planned shrinkage'. This meant reducing essential services in areas of need. More than 10% of the fire-fighting units in poor minority areas of New York City were cut. This led to an epidemic of fires, destroying between 200,000 and 300,000 poor and working-class homes.

An estimated 600,000 poor people were displaced by the housing loss: the 1980 census showed that 1.3 million white people left New York between 1970 and 1980. This flight was their response to the deteriorating physical and social conditions caused by the burn-out. Among those who remained, the incidence of TB increased dramatically. TB is linked with overcrowded conditions, social marginalization, substance abuse and poor nutrition — all factors influenced by this forced migration. The increase was sharpest in communities with large populations of the precariously housed (people moving in to share rented accommodation with the existing tenants).

Inner-city neglect and loss of fire-fighting units did not happen by chance. If they had not been carried out as public policy, there would have been no New York TB epidemic and no need for coercion and detention of patients. The lack of regard for the populations targeted by 'benign neglect' and 'planned shrinkage' is clear from the length of time the epidemic was allowed to rage through these communities. Only when it spilt over into middle-class neighbourhoods and into the suburbs did a serious control effort begin.

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Loss of taxonomists is a threat to pest control

Sir — The cover of the issue reporting the landmark genome sequencing of the bacterium *Xylella fastidiosa* (*Nature* **406,** 151–157; 2000) shows a vector, but we are not told what sort of insect it is. Michael Bevan's accompanying News and Views article (*Nature* **406,** 140; 2000) reveals that the vectors are xylem-feeding leafhoppers, but no names are mentioned.

The culprit is, in fact, a species of *Acrogonia*, a member of the tribe Proconiini of the subfamily Cicadellinae. All members of this leafhopper subfamily are xylem feeders, and some species in several genera are known or potential vectors of both the citrus disease and Pierce's disease of vines in the southern United States. It is not possible to identify the *Acrogonia* species from the cover photograph: colleagues in Brazil confirm that it could be an undescribed species. There is much taxonomic work to be completed.

Insect taxonomists are a threatened species worldwide. Have we already reached the situation where more scientists can sequence a genome than can identify the potential vectors? Control measures against *Xylella* and other similar organisms will depend not only on such advances but also on being able to elucidate the biology of potential vectors once they have been identified by taxonomists.

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