

Embryo sexing

Cattle now, people next?

DR ROBERT EDWARDS, who with Mr Patrick Steptoe pioneered *in vitro* fertilization techniques in the treatment of human infertility, has high hopes that recent advances in molecular biology will soon provide a means of sexing human embryos before implantation in the uterus. This, he says, would be a first step towards an effective programme for the treatment of inherited diseases.

Rabbit embryos have been sexed and reimplanted by excising a piece of trophoblast at a comparatively late stage of embryological development, but the small size of human embryos makes this approach appear difficult if embryos are to be successfully reimplanted. In collaboration with Dr Jack Cohen, Dr Carol Fehilly and Dr Simon Fishel, Dr Edwards hopes shortly to start using DNA probes to identify human embryo cells containing the Y chromosome; however, this work will not begin until the ethical position in Britain has been clarified. The isolation of single copy DNA sequences specific for the human Y chromosome was reported in *Nature* last month (303, 831; 1983).

The technique would involve dividing embryos at around the eight-cell stage. One half would be sexed by autoradiography with labelled DNA while the other would be frozen for reimplantation in a subsequent cycle. The portion of the Y-chromosome determining sex in sex-reversed mice has been identified in single

cells by Dr Lalji Singh and Dr Kenneth Jones, at the University of Edinburgh. Their test, which used satellite DNA from the W chromosome of snakes, is unlikely to be applicable to human cells, but the principle has been shown to be workable.

By looking for sex-specific DNA sequences directly, problems over gene expression in early embryos are avoided. Later it may be possible to develop probes for other gene loci.

However, Genetic Engineering Inc., of Denver, Colorado, is already offering sexed cattle embryos for reimplantation. Rather than looking for DNA sequences, their test looks for a gene product expressed on the cell surface. The company will say of its test, for which a patent application has been applied, only that it does not in-

volve removing cells from the embryo and that it is based on a monoclonal antibody specific for the H-Y transplantation antigen. The technique is said to be quicker and cheaper than methods based on the karyotype of trophoblast cells.

The service has been offered in the United States since April, and the company is claiming an 80 per cent success rate for its test. The rate of successful reimplantation is no lower than is normal for embryo transfer — around 60 per cent. Furthermore, the company says, embryos can be sexed in groups, at around the 64-cell stage. Dr Edwards describes Genetic Engineering's results as "extremely interesting". The test is at present available only in the United States; it is thought that ambitious marketing plans for sexed embryos, which would command a high price from cattle breeders, are being held up by difficulties in making the test usable by those not qualified as embryologists. **Tim Beardsley**

Soviet nuclear energy

Accident at construction plant

SPECULATION continues about what may have been a serious accident at the Atomash plant in Volgodonsk, but without much help from Soviet sources. Indeed, the belief that there may have been some trouble at the plant stems only from an apparently routine report in *Pravda* of a meeting of the Volgodonsk city party under the headline *To increase responsibility*.

This format makes the report indistinguishable at first glance from standard "party page" criticisms of poor performance. A careful reading of the article reveals, however, that more was at stake than a failure to meet production targets — the Atomash management, says *Pravda*, had "failed to ensure the accident-free exploitation of engineering communications", a convoluted way of saying that some accident had occurred.

This admission is probably a setback for Soviet nuclear energy planners, whose current proposals include a network of twelve nuclear power-cum-district-heating stations to serve the major cities of the western Soviet Union. These stations will be on the outskirts of the cities but sufficiently near to allow their hot water to be used for heating. They will be surrounded by some 2 km of recreational parkland. An alternative scheme proposed a few years ago for large nuclear power complexes safely sited in remote Siberia and feeding the all-union power grid never won a hearing outside the pages of the party theoretical monthly *Kommunist*.

Just what happened at Volgodonsk is not clear, but it was evidently serious enough to merit censure in the weekly politburo meeting of 14 July and to require a site visit from politburo candidate-member Vladimir Dolgikh. A new State Committee to supervise Work Safety in the Atomic

Power Industry has also been established.

Radioactive material is almost certainly not involved in the accident. *Pravda* has stressed that the reactors and reactor components produced at Volgodonsk are not charged on the site but are sent for assembly to power stations throughout the Soviet Union. What will matter is the degree to which the accident interferes with the ambitious building programme.

Volgodonsk is essentially a boom-town, developed for and around the Atomash plant which, says *Pravda*, ought to be the "flagship" of the nuclear power industry. Any disaster, or even setback, at such a plant must inevitably have political overtones. Ironically, however, the accident — whatever it entailed — may bring some small benefit to the nuclear engineers by permitting a more open discussion of possible hazards and safety measures.

This has always been possible within the technical journals — last April, for example, the monthly *Atomnaya Energiya* carried several articles on the subject.

Vera Rich

Frozen embryo aborts

Canberra

HOPES for the birth of the first baby developed from an embryo fertilized *in vitro* and stored in a frozen state faded last week when a pregnancy achieved from such techniques ended in miscarriage. A streptococcal infection following rupture of the chorionic membrane led to a still-born birth at 23 weeks. The conceptus, weighing 560 grams, was a girl. Phenotypic and histological studies have shown the tissues to be normal but karyotypic data are not yet available. Professor Carl Wood, whose group was responsible for the *in vitro* fertilization and freezing techniques, believes the miscarriage is unlikely to be linked with the freezing techniques. Dr Alan Trolunson, who implanted the embryo six months ago, was "very disappointed, particularly because we were so close to success". They are pressing on with the embryo freezing programme.

Meanwhile, draft legislation affecting some *in vitro* fertilization procedures is being prepared by the standing committee of attorneys-general (states and federal) following a meeting of attorneys-general at Mackay, Queensland on 15 July.

Vimala Sarma

No cancer risk

A SURVEY of 15,000 workers employed by British Nuclear Fuels, the publicly owned operator of the Sellafield (previously Windscale) nuclear separation plant, has apparently shown that the incidence of fatal cancer is less than in the general population. This conclusion is based on 1,600 mortalities among previous members of the workforce, among whom the occurrence of various radiation-linked cancers was found to be either statistically indistinguishable from the general incidence or significantly less. The survey, the company said, is continuing. □