

Scientists get official backing to 'edit' genes in human embryos

By Sarah Knapton SCIENCE EDITOR

BRITISH scientists have been granted permission to genetically modify human embryos by the fertility regulator.

The Francis Crick Institute could begin experiments as early as next month after the Human Fertilisation and Embryology Authority (HFEA) gave its approval yesterday.

The scientists want to deactivate genes in leftover embryos from IVF clinics to see if it hinders development. It will only be the second time in the world that such a procedure has been undertaken and the first time it has been directly approved by a regulator. A Chinese team was widely criticised last year for carrying out similar experiments.

Currently around 50 per cent of fer-

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tilised eggs do not develop properly and experts believe that a faulty genetic code could be responsible.

If scientists knew which genes were crucial for healthy cell division, then they could screen out embryos in which the DNA was not working properly, potentially preventing miscarriages. The initial pilot, which will also have to pass an ethics evaluation, will involve up to 30 embryos and the team would like to work on a further three genes, which could bring the total number of embryos used to 120.

Critics warn that the development opens the door to designer babies and genetically modified humans.

But Dr Kathy Niakan, the lead scientist, said that the research could fundamentally change our understanding of human biology and give hope to prospective parents.

"We would really like to understand the genes that are needed for an embryo to develop into a healthy baby," she said. "Miscarriage and infertility

are extremely common but they are not very well understood."

The team at the Francis Crick Institute is already in talks with fertility clinics to use their spare embryos.

Currently it is not illegal to edit human embryos for research purposes although it has never been done.

A spokesman for the HFEA said its licence committee had added a condition that no research using gene editing may take place until the research has received research ethics approval.

The spokesman added: "As with all embryos used in research, it is illegal to transfer them to a woman for treatment."

All cells in a human embryo have the same DNA code, but they divide into specialised cells.

Between day five and seven of human development an embryo has around 200 cells of three different types. One set will go on to form the foetus, while another type becomes the placenta, and the third kind the yolk sac which nourishes the growing baby.

The aim of the new project is to find out what causes the cells to turn into different kinds, a process known as "lineage specification".

The new genetic editing technique, called Crispr, acts like molecular scissors to snip out part of the DNA code so that scientists can see if it was needed.

British scientists were among 150 experts who in November called for a worldwide ban on genetic editing of embryos claiming the practice could open the door to "irrevocably altering the human species".

Dr Calum MacKellar, from the Scottish Council on Human Bioethics, said: "Allowing the gene editing of embryos opens the road to genetically modifying all the descendants of a person as well as full-blown eugenics which was condemned by all civilised societies after the Second World War."

Nola Lean, from the Christian charity CARE, said: "The sanctity and equality of human life is under threat as never before, it would seem, as we push ahead crossing one ethical boundary after another."