

cloning

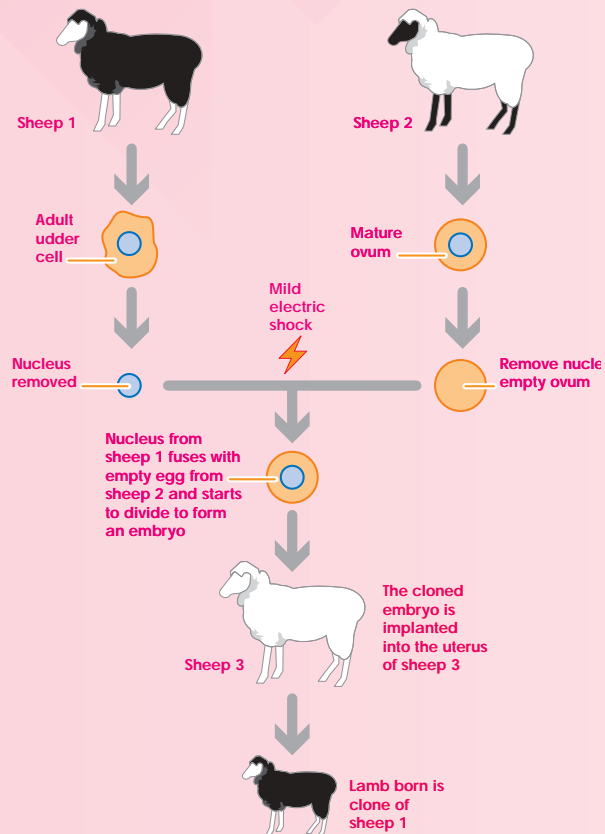
new horizons in medicine

A clone is a group of cells or organisms which are genetically identical and have all been produced from the same original cell. Identical twins are natural clones, but over the last 50 years we have developed the ability to produce clones artificially. There are three main types of cloning, each with the potential to deliver great medical breakthroughs – but there are some ethical dilemmas attached.

Adult cell or reproductive cloning

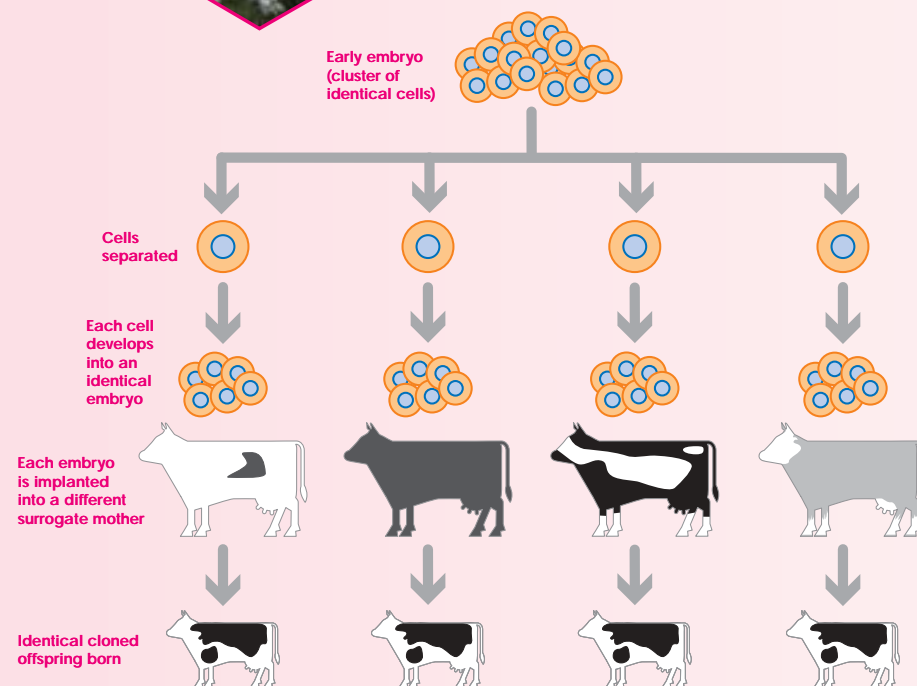


The nucleus from a normal body cell of an adult animal is placed into an empty ovum and allowed to develop into an 'identical twin' of the original animal. The first and most famous adult cell clone of a large mammal was Dolly the sheep. The great medical hopes for this technology are to be able to reproduce many genetically engineered organisms to make therapeutic proteins, and possibly to help overcome human infertility problems.



Embryo cloning

Individual cells are taken from an early embryo and encouraged to develop into more identical embryos – it is a form of artificial twinning. This technique is used to make lots of identical copies of original embryos which have been genetically modified to produce human proteins. The adult animals which result provide life-saving treatments for thousands of people.



Therapeutic or biomedical cloning



Also known as **somatic cell nuclear transfer** or **research cloning**, the idea is not to produce a new animal or plant. The hope is to produce new tissues or organs for people who are seriously ill with problems ranging from diabetes and Parkinson's disease to heart attacks and spinal injuries. The technique still needs a lot of development, but the medical potential is enormous.

