

Medicine beyond frontiers

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Cloning Technology in Mammals

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Cloning by nuclear transfer is the most efficient technique for producing copies of elite livestock and transgenic animals. This technique has been started at least 60 years ago in amphibian and later applied in mammals, especially in bovine species. At the beginning, blastomeres from preimplantation embryos were used; 8 cells to morula stage as donor cells had been achieved but the number of clones was limited. Since the breakthrough research conducted in sheep by Dr. Wilmut and collaborators in Roslin Institute, United Kingdom in 1997, by using adult somatic cells, the mammary gland cells as donor cells, various types of somatic cells nowadays, are used as donor cells. However, the efficiency of this process is poor, with less than one animal born per 100 reconstructed nuclear transfer embryos. The fetal abnormalities and postnatal loss were reported. The potential applications of cloning in agriculture, veterinary and human medicine and the propagation of endangered animal species clearly provide the commercial and conservational targets.