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Premature death

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Although mice cloned by somatic-cell nuclear transfer appear relatively normal, the long-term consequences of cloning are now becoming apparent. In an Advanced Online Publication from Nature Genetics, Ogonuki *et al.* report that cloned mice die earlier than normal animals (11 February 2002, DOI:10.1038/ng841). They followed 12 male mice cloned from immature Sertoli cells, together with genetically matched controls and mice generated by spermatid injection. The cloned mice grew normally, but they began to die significantly earlier than the others. By 800 days ten of the cloned mice were dead, compared to just one death among the mice produced by natural mating. Analysis of the cloned animals revealed necrosis of the liver, the presence of tumours and pneumonia; the hepatic damage resulted in increases in circulating metabolic enzyme levels and in serum ammonium. The cloned mice also had reduced antibody levels and reduced phagocytic activity. These observations provide a caution about the safety of current cloning procedures and may encourage the development of improved cloning techniques.

References

1. Full-term development of mice from enucleated oocytes injected with cumulus cell nuclei.

2. *Nature Genetics*, [http://genetics.nature.com]

3. Production of male cloned mice from fresh, cultured, and cryopreserved immature Sertoli cells.