

PublisherInfo		
PublisherName	:	BioMed Central
PublisherLocation	:	London
PublisherImprintName	:	BioMed Central

## Gene targeting in sheep

ArticleInfo		
ArticleID	:	3712
ArticleDOI	:	10.1186/gb-spotlight-20000629-00
ArticleCitationID	:	spotlight-20000629-00
ArticleSequenceNumber	:	149
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2000-06-29 OnlineDate : 2000-06-29
ArticleCopyright	:	BioMed Central Ltd2000
ArticleGrants	:	
ArticleContext	:	130591111

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PPL Therapeutics Ltd of Roslin, Scotland, show in the 29 June issue of *Nature* how they succeeded a year ago (the delay was to secure a patent) in targeting a gene to a chosen location in embryonic sheep fibroblasts (*Nature* 2000, **405**: 1066-1099). They then transferred the nucleus from cultured fetal cells to stem cells to create gene-targeted sheep. Cloning sheep, goats, cows, pigs and mice has succeeded, but gene targeting has not previously been achieved except in mice. But it is proving difficult to clone whole animals efficiently, as the science involved is obscure, and of some 100 attempts to clone an animal, typically just two or three live offspring result (see *Science* 2000, **288**: 1722- 1727). Even when an embryo does successfully implant in the womb, pregnancies often end in miscarriage. A significant fraction of the animals that are born die shortly after birth. And some of those that survive have serious developmental abnormalities. So there is still much work to do before this technology yields herds of animals producing therapeutically important proteins.

## References

1. Nature magazine, [<http://www.nature.com>]
2. Viable offspring derived from fetal and adult mammalian cells.
3. Extension of cell life-span and telomere length in animals cloned from senescent somatic cells.
4. Science magazine, [<http://www.sciencemag.org/>]