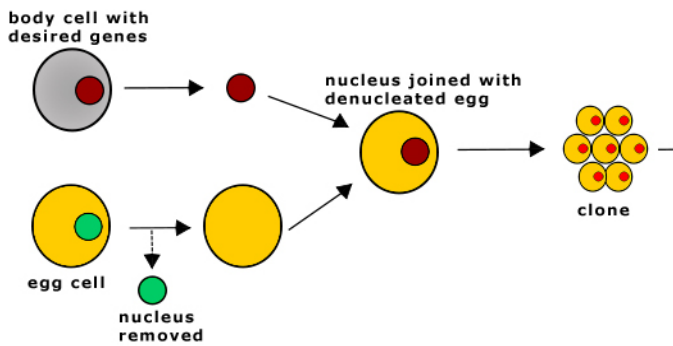


## ANIMAL CLONING

At present the meat sector is not directly affected by cloning technology, it is indirectly involved in the debate due to the technological advancements for the replication of elite animals in other sectors, such as the milk sector in some parts of the world. There are a number of forms of animal cloning. However, cloned animals are not genetically modified organisms (GMOs).

**Cloning animals means** creating animals by using a form of asexual reproduction performed in a laboratory. The most frequently used technique (Cell Nuclear Transfer) involves removing the nucleus from an egg or oocyte (recipient) and replacing it with the nucleus of a cell from the animal to be cloned (donor). The cell develops into an embryo which is implanted into a surrogate mother for rearing. Following successful transfer, the animal born from that embryo will have desirable traits, as the donor animal.



**Why using animal cloning?** Currently, cloning is used for research purposes in the EU. Cloning may be used to multiply animals which have shown important traits, like higher milk yields or ability to thrive in a changing climate, resistance to disease, etc. Even if cloning were to be more widely used, this would rather be to reproduce high-value, elite animals such as top-performing breeding animals and/or endangered species.

**Are there cloned livestock in the food chain?** It is important to underline that, for the moment, cloning an animal is very expensive and therefore it is not commercially viable to clone animals for direct use as food. At present cloning is not a commercial practice in Europe. There is no information suggesting that products from cloned animals would be on the market in other parts of the world. In the US there has been a voluntary moratorium on the sale of such products since July 2001.

**Livestock reproductive technologies** - Livestock reproductive technologies - In farming, animals vary widely in their genetic features and commercial value. To rapidly multiply animals selected for valuable traits, reproductive technologies such as artificial insemination (AI), embryo transfer and in-vitro fertilisation (IVF) are already used worldwide. Animal cloning is an advantageous reproductive technology.



Unlike other reproductive technologies, cloning allows the direct copying of animals with high genetic or resale value, with less unpredictability than other breeding techniques. The advantage of cloning is that the sex, genetic traits and therefore likely commercial value of the animal are known before birth.

**Is food from clones or from their off-spring safe to eat?** According to EFSA's opinions there is no indication that differences exist in terms of food safety between food products from healthy cattle and pig clones and their off-spring, compared with those from healthy conventionally-bred animals. This position is supported by risk assessments published by the US Food and Drug Administration (US FDA) and other food safety authorities around the world.

**Is cloning used in other industries?** While animal cloning using Somatic Cell Nuclear Transfer is a relatively recent technology, propagation techniques to produce clones have been used in horticulture for hundreds of years with grapes, potatoes, strawberries and many other food plants. Although the same outcome is achieved (producing an organisms virtually identical), animal cloning is much more ethically complex, with animal welfare considerations.

### OFFSPRING OF CLONES ARE NOT CLONES:

A clone produces offspring by sexual reproduction just like any other animal. A farmer or breeder can use any other reproductive technology, just as they do for other farm animals. The offspring are not clones, and are the same as any other sexually-reproduced animals.