



Food Safety *Fact Sheet*

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Cloned Food: Coming to a Supermarket Near You?

The Food and Drug Administration (FDA) is poised to approve the sale of milk and meat from cloned animals and their offspring. If approved, cloned food would not be required to be labeled, eliminating consumers' right to avoid eating these experimental foods. While no binding rules exist to prevent companies from selling meat or milk derived from cloned livestock, FDA has asked industry to voluntarily withhold the sale of their cloned products. FDA's impending decision flies in the face of massive public opposition to animal cloning, widespread scientific concerns about the risks of eating food from clones, and troubling animal cruelty and ethical concerns associated with the cloning process.



Dolly suffered from premature arthritis and lung disease which caused her to be euthanized at the age of six, about halfway through her expected lifespan.¹

FDA justifies its rush to approve cloned animals in food, claiming that advances in animal cloning have resolved issues related to poor animal health, animal suffering, and food safety. This is simply untrue. One of the world's leading cloning scientists, Rudolph Jaenisch of MIT, stated in an

article in 2006 that: "You cannot make normal clones. The ones that survive will just be less abnormal than the ones that die early. There has been no progress—none—in the last six years in making cloning more safe."²

The Center for Food Safety supports a *mandatory* ban on the use of clones in food production until the food safety and animal cruelty problems in cloning have been resolved, and until public discussions have redressed consumer rights issues, and the disturbing moral and ethical dilemmas that cloning raises.

Tell FDA to ban the use of cloned animals in food. Let your voice be heard by writing a letter to FDA via our website:

www.centerforfoodsafety.org

WHAT IS ANIMAL CLONING?

A sheep named Dolly made headlines in 1997 when she became the first successfully cloned mammal. The cloning technology used to create Dolly—somatic cell nuclear transfer (SCNT)—involves fusing the genetic material of a cell from an existing animal into an egg removed from an animal. Once the egg is fertilized in the laboratory, it is implanted into the uterus of a "host mother." Dolly has become the poster-child for biotechnology companies keen to exploit cloned animals for the production of meat, dairy products, pharmaceuticals, and for use in growing animal parts for human organ transplants. Yet, the "Dolly miracle" hype has eclipsed more sobering news about the exceedingly high failure rates and adverse health effects inherent in animal cloning. Like so many others,

ANIMAL WELFARE ISSUES

Animal cloning represents a fundamental change in our relationship with animals. Instead of humans assisting or acting as midwives in animal reproduction, cloning allows humans to become wholesale creators of genetic "replicas" of existing animals. Problems associated with cloning include:

- ▲ *Pre-Natal Failures:* Only a small percentage of cloned pregnancies result in live births. A 2007 study found that animal cloning failure rates remain as high as 90 percent.³
- ▲ *Surrogate (Host) Suffering:* "Host mothers" face grave suffering, much of which is caused by inordinately high rates of spontaneous abortions. Cloning often leads to a condition known as "large-offspring syndrome," whereby cloned offspring grow abnormally large, causing early-term and stressful caesarian deliveries.⁴ In one cattle cloning project, 3 out of 12 surrogate mothers died during pregnancy.⁵
- ▲ *Post-Natal Animal Health:* Most cloned animals born on a farm, outside a veterinary hospital, have little chance of surviving.⁶ Those animals that manage to survive until birth are likely to suffer a wide range of health defects and deformities including: enlarged tongues; squashed faces; intestinal blockages; immune deficiencies; diabetes; high rates of heart and lung damage; kidney failure; and brain abnormalities.⁷

FOOD SAFETY CONCERNS

Defects in cloned animals can escape detection but they still present food safety risks. The National Academy of Sciences (NAS) has stated that no method exists to detect subtle health problems in clones.⁸ Ian Wilmut, lead scientist responsible for creating Dolly, has warned that even slight imbalances in a clone's hormone, protein, or fat levels can compromise the safety of its milk or meat.⁹ FDA claims that defective clones will be removed from the food supply with no explanation of how inspectors intend to identify hidden or subtle defects in clones.

High doses of hormones and antibiotics used in cloning present another significant safety concern. Host mothers are often given massive doses of hormones and their sickly offspring are often treated with high levels of antibiotics and other veterinary drugs to increase their chances of survival. Although the commercialization of cloning would likely increase hormones and drugs in the human food supply, FDA has failed to address this important food safety issue.

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MORE SCIENTIFIC RESEARCH NEEDED

While the biotechnology industry has proclaimed the safety of its cloned food products, few food safety studies have been conducted. While FDA argues clones that survive six months are healthy, MIT's Jaenisch disagrees. He notes that: "Problems appeared when cloned mice were 15 months old. You would have to wait 15 years to [assess such problems] in bulls."¹⁰ As this suggests, health problems can occur in older clones, and many years of study are needed to assess cloning safety. A 2004 NAS study concluded that small sample sizes, limited health and production data, and rapidly changing cloning protocols make it impossible to draw conclusions about the safety of food from cloned animals.¹¹

BIODIVERSITY THREATENED

While cloning companies promise the production of identical, high-quality animals, scientists warn that this is a recipe for disaster. In 2005, a university researcher cautioned that, "if there is no genetic variability, disease can affect all the animals simultaneously," potentially wiping out entire herds.¹² A herd

with naturally occurring genetic differences will typically include some animals that possess natural resistance to certain diseases, but with genetically identical clones the protections that diversity provides are lost. The commercialization of cloning would make it difficult if not impossible to reverse weaknesses or adverse effects bred into an animal population or species.

ETHICAL AND MORAL DILEMMAS

Americans have strong feelings about the moral and ethical implications of animal cloning, and these feelings have yet to be aired in a broad, public debate. More than 200 U.S. religious leaders have announced their opposition to patenting animal genes, tissue, organs, and organisms, due to their belief

that genetic manipulation and life patenting shifts authorship of life from God to scientists and lab-technicians. Animal cloners have also acknowledged that the technology will likely lead to human cloning attempts, despite the safety and ethical issues that surround such risky experiments. In fact, the two leading animal cloning companies (ViaGen and Cyagra) were created by

the companies most involved in human embryo cloning experiments.

CORPORATE CONTROL

Cloning will increase the hold that a few large corporations already have on our food supply. The technology benefits corporate factory farms at the expense of family farmers, who are less likely to afford the costly technology. Attempts to patent cloned offspring raise concerns that such patents will be used to control entire breeds. Monsanto, the leading producer of genetically engineered crops, has already filed global patents for the offspring derived from its pig breeding technology in an attempt to extend its patent beyond the reproductive technology to include an animal's genes and its offspring. The leading animal cloning company, ViaGen, has contracted with the world's leading pork producer, Smithfield Foods, to explore using cloned pigs in its products.¹³

For more information and to send comments to FDA, visit us at: www.centerforfoodsafety.org

¹ L. Young, et al. (2001) "Epigenetic Change in IGF2R Is Associated with Fetal Overgrowth After Sheep Embryo Culture," *Nature Genetics* 27, no. 2: 153-154; J. Travis. (2001) "Dolly Was Lucky," *Science News* 160, no. 16: 250.

² Lamb, Gregory M. (2005) "How Cloning Stacks Up," *Christian Science Monitor*, Aug. 23.

³ Panarace, et al. (2007) "How healthy are clones and their progeny: 5 years of field experience." *Theriogenology*, Vol. 67:142-151.

⁴ E. M. Hallerman. (2002) "Will Food Products From Cloned Animals Be Commercialized Soon?" *ISB News Report*, November, p. 1.

⁵ "Cloned Pigs Differ From Originals in Looks and Behavior," *Science Daily*, North Carolina State University, April 16, 2003. online at

<http://www.sciencedaily.com/releases/2003/04/030416085546.htm>

⁶ J. C. Cross. (2001) "Factors Affecting the Development Potential of Cloned Mammalian Embryos," in *Proceedings of the National Academy of Sciences*, Vol. 98, no. 11: 5949-5951.

⁷ Jorge Piedrahita, et al., "Somatic Cell Cloning: The Ultimate Form of Nuclear Reprogramming?" *J. Am. Soc. Nephrol.*, Vol. 15:1140-1144; see also Melissa Schorr. (2001) "Geneticists Warn Of Human Cloning Dangers," *Reuters Health*, March 29.

⁸ National Academy of Sciences. (2004) "Safety of Genetically Engineered Foods: Approaches to Assessing Unintended Health Effects. Subreport: Methods and Mechanisms of Genetic Manipulation and Cloning of Animals." Online at <http://www.nap.edu/books/0309092094/html/>

⁹ "Duplicate Dinner," *New Scientist*, 19 May 2001. <<http://www.newscientist.com/article.ns?id=dn752>> (9 February 2006).

¹⁰ "The Cloned Cow Coming to a Farm Near You," *Guardian Newspapers*, Nov. 15, 2002. <http://www.buzzle.com/editorials/11-15-2002-30394.asp>

¹¹ *National Academy of Sciences* (2004).

¹² Johnson, Steve. (2005) "Cloning prospects multiplying," *San Jose Mercury News*, Aug. 23.

¹³ See: <http://www.thenation.com/doc/20060911/schlosser> and <http://www.thenation.com/doc/20061023/infact> and <http://www.inmotionmagazine.com/consol.html>]