

## Clones: It's What's For Dinner

On July 5, 1996, Dolly the Sheep became the first mammal clone. This amazing performance of genetic engineering sent shockwaves throughout the medical and agricultural world. People began to view the process of cloning in new, exciting, but also questionable ways. Could cloning be our long lost prayer, the sought after answer to global hunger and animal endangerment; or could this be the start of a long and painful road towards loss of genetic variation and complications? Although, many would argue that the use of animal cloning for human consumption would be beneficial, nevertheless, the cloning of animals would only do greater harm to the population because the practice has yet to be perfected.

On December 28, 2006 the Food and Drug Administration (FDA) issued a draft risk assessment on cloned animals and their offspring in Americans' food supply (Temple). The leaders of agricultural and medical fields have long awaited this decision. In the assessment, the FDA ruled that foods from healthy cloned animals and their offspring are as safe as those from ordinary animals, so long as they were from cloned cattle, pigs, or goats. However, the FDA said there was insufficient information on sheep clones to make a determination of food consumption risks (Temple). This would lead consumers to doubt whether or not the clones that the FDA deems safe, actually are. Furthermore, the FDA ruled that labels do not have to reveal if the food comes from cloned cows, pigs or goats, or the clones' offspring (Calamai). Many consumers find it odd that while requiring labels on other foods, the FDA will allow cloned food, made from a relatively new technology, to slip through the cracks. Despite this ruling, in November 2003, the FDA held a consultation on cloning that found problems such as developmental abnormalities; deaths before, during, and after birth; and major leg problems (Pacelle 207). The FDA's decision does not come without apprehension however. Jaydee Hanson of the Center for Food Safety in

Washington, D.C. said, "FDA dismissed studies that raised questions about safety" (qtd. in Clarren). This infers that the FDA has not actually ruled out all of the negative things that could go on during cloning. In a survey in 2007 performed by the International Food Information Council, found that 22% of U.S. consumers favor animal cloning while 50% opposed. With the FDA's support, favor grew to 46% (Kaplan). It is quite obvious that although scientists are thrilled with this new technology and the possibilities it could bring thereafter, consumers are still wary.

Many supporters of cloned animals recognize the benefits of the process because they view the animals as a way to increase profits. With the demand for beef, dairy, and general livestock growing everyday, though countries other than our own ask for most of these necessities, more supporters are pushing for cloned food. Moreover, genetic companies ViaGen and TransOva Genetics have devised a system to track every cloned animal with a unique electronic identification tag on the animal's ear (Kaplan). This would severely weaken the fear that citizens have of going to a grocery store and not knowing how many and which food products they purchase have been cloned. This does not, however, excuse the use of cloning for food by any means.

The cloning of animals should not be used to replenish or swell our food supply because the process of cloning itself is extremely expensive and has not been proven to occur without complications. Scientists clone animals by placing the genetic material of an animal into an egg that has had its DNA removed (Shmaefsky 58). Although this would seem to be a miracle, many eggs must be tried in order to produce a live offspring. In fact, only 1% to 3% of nucleated egg cells actually develop into live offspring (Van Eenennaam). This proves that not only is the use of animal cloning for food not able to be perfected, it is not practical either. Take Dolly the

Sheep for example; she was 1 of 277 eggs (Pinkerton). That means there could have been 266 successfully born lambs if they had been fertilized naturally. While trying to produce one animal, the lives of 266 others were destroyed. It is hard to imagine how much life would be decimated if cloning was to occur on a regular basis. The current efficiency of cloning is extremely low with many stillbirths and naturally aborted fetuses (Panno 67). Compared to other forms of reproduction, cloning has a success rate of 10% while in vitro fertilization and natural pregnancy have success rates of 25% and 20% respectively (Zavos 28). If the process of cloning is successfully completed however, the animal is "not out of the woods yet". Before cloning was "prevalent", the genetic manipulation of pigs to make them leaner resulted in animals that developed ulcers, lameness, and other physical problems (Breslin 47). Scientists should have taken what they learned from their experimentation on pigs and should not have pursued the technology any further. Often with clones, severe deformities occur along with distorted placentas, liver and kidney abnormalities, respiratory distress syndrome, and bacterial complications (Zavos 28). Fetal overgrowth is the major obstacle encountered in the cloning process (Zavos 21). This often causes the fetus to need more nutrients than is normally required which causes the animal to die in the womb. The adult cloning technique used on Dolly has never been used on a species other than sheep. The process of cloning is incredibly expensive with the genetic company ViaGen charging \$17,500 for a cow and \$4,000 for a pig (Kaplan). Based upon where our economy is headed, it is doubtful that many farmers will be willing to pay such a high price.

Cloning animals for food production would be major step forward for agribusiness owners, but would leave behind all the other small farmers who already struggle to keep up with increasing demand. Cloned farm animals would produce herds of genetically identical

individuals very quickly. The need for cloned animals is absent because all over the country too much cattle is contained in cramped, overcrowded feedlots with horrible conditions. Cloning more of these animals would only worsen this problem. With these feedlots, farmers are already producing so much meat that they must find export markets to turn a profit (Pacelle 206). Farmers should focus more on just what is needed now. Small farmers will be taken advantage of by corporate factory farms because they will constantly have to turn to them to receive the technology needed to clone their own animals. Moreover, small farmers would not be the only ones victimized. Some project that cloned farm animals will function as pharmaceutical factories (Panno 13). Scientists will produce transgenic animals in order to harvest their organs for donation.

Left to its own devices, the process of cloning is natural. Twins, who are clones of each other, naturally occur when the embryo splits into two separate eggs. The way cloning is done for food production, however, is not natural. When clones are made from the adult cells of an animal, the nuclei of the adult cells have genes from early development that are turned off (Zavos 27). This more often than not, causes the animal to have severe hormonal imbalances. Although, they are born a baby, the genes act as if it were already an adult. Bill Niman stated: "if cloning is...used widely, it could...reduce the genetic variation in livestock...could decrease natural resistance to disease" (qtd. in Temple). If cloning were prevalent, all of our animals would eventually have a relatively similar genetic code. If one animal were to possibly become ill, ultimately, every animal would become ill because there would be no deviation to stop the disease from spreading from one creature to another. While we could possibly end global hunger with all the animals we would produce, with one bad strain, disease or virus our entire food supply would be wiped out in a matter of weeks.

Ever since the creation of Dolly the Sheep, scientists have been in a whirlwind in trying to figure out and master the mysteries of cloning. Those who are still skeptical of the process, however, find all of this to be moving along a little too fast. It was only 13 years ago that the first clone was created. It now appears that the product created for fun might one day end up on our dinner plates and in our lunch boxes. It seems that the supporters of animal cloning can't quite think of enough good reasons to continue on with animal cloning, considering a poll by the Pew Initiative found 64% of Americans to be "uncomfortable" with the prospect of having cloned meat in their systems (Temple). There still are many more tests, researches, and experiments to be had in order to gain the trust of the general public. Due to these facts, there is no way that the benefits that may result from animal cloning will ever overshadow the negatives. The cloning of animals should certainly never be used to replenish or grow our food supply, whether or not they are labeled, in order to protect future generations from the unforeseeable defects that may occur from the long-term use of this contemporary and potentially dangerous process.

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