

Max Kimbrough
BIOE 555
Fiester
7/30/06

Take-Home Final Exam

1.) Not much has happened on the news front regarding the FDA and cloned milk and meat since fall 2003, when the agency first ruled that there was no evidence that the food was unsafe, and then shortly thereafter ruled that there was no evidence the food *was* safe to eat and drink. An October 6, 2005 Washington Post article claimed that the FDA was expected to make a decision soon, but since then there has been little to no information on the news front. The article notes that, “While milk from clones might reach grocery shelves, clones themselves are not likely to be eaten, since they cost thousands of dollars apiece to produce. They'd be used as breeding stock, so the real question is whether their sexually produced offspring would be safe.” However, the article also mentions that “The agricultural industry has observed a voluntary FDA moratorium on using the products of clones, but it has recently become clear that a few offspring of cloned pigs and cows are already trickling into the food supply.”

The article fails to give evidence as to why it “has become clear” that food from offspring of clones has entered the food supply; nor is it mentioned whether meat and milk has entered the supply, or just milk. Furthermore, despite the article’s assurance that the FDA would make a decision “soon,” the article quotes Stephen F. Sundlof, chief of veterinary medicine at the FDA, as saying that the FDA “really can't provide a reliable estimate on the time frame” for releasing a policy.

The article mentions that the FDA has made it clear it won’t require special labels for cloned food, which is perhaps one of the reasons for the foot-dragging, as many consumers—many of whom are leery of eating food from clones or offspring of clones—would have little ability to be certain of the heritage of the animal that produced the food they eat. Later, I will argue that special labels for cloned food may actually be to the industry’s benefit if it can work to convince consumers that cloned or transgenic food is a luxury item, much like organic food.

Infigen (<http://www.infigen.com>), which developed genetically-modified pigs as potential organ donors for humans, closed down in early 2004 because of lack of funds. A Wisconsin State Journal article notes that Infigen's research "included developing cows that would produce milk with proteins for use in the manufacture of pharmaceutical drugs for humans," and that nine of Infigen's ten cows were sent to the US Department of Agriculture for use in the agency's research into cloned animals.

Another animal cloning company, ViaGen (<http://www.viagen.com>), has seen better financial success. From the Washington Post article:

One recent morning, two cloned calves pranced around a field outside Austin. Their progenitors were not living animals, but rather cattle that had already been butchered and hung on a hook in a slaughterhouse. The calves were selected for cloning after receiving high grades for meat quality and yield, judgments that couldn't have been made while the originals were still alive.

Priscilla, born in April, and Elvis, born in June, were created by ViaGen. They're destined to be bred together in an effort to create prime stock. If it works, ViaGen will clone a large population of once-dead cattle, aiming to sell them or their offspring for breeding. It's just one aspect of an ambitious plan to create a commercial cloning market.

In March, 2006, ViaGen announced a partnership to create the first commercial horse cloning operation in the US. The operation would replace the need for more traditional forms of selective animal breeding, as ViaGen identifies desirable genetic traits so as to take the guesswork out of breeding. ViaGen maintains that it does not engineer the DNA of animals by transposing some genes for others, but rather simply just finds "prime stock" and perpetuates the DNA by making exact clones.

While it's unclear when or if the FDA will rule on cloned animals for food, there seems to be enough of a market for other uses of cloning, *e.g.* for commercial breeding, that the process is here to stay. And it seems inevitable that offspring from cloned animals will wind up in the general food supply. I believe this is ultimately a good thing, so long as the animals are modified in such a way that they are healthier, more disease-resistant, and offer benefits to consumers such as vitamins and nutrients.

2.) (a) Is it ethical to clone cattle for their milk and meat? Disregarding the debate about the ethics of using *non*-cloned cattle for food—we’ll assume here for the sake simplicity that this is morally acceptable—we run into the problem of whether or not it’s acceptable to clone cattle in order to use them for such a purpose. The question that immediately springs to mind is what purpose would cloning the animals serve? Exact clones—that is, clones without anything added to “beef up” (pardon the pun) their genetic structure *a la* Omega-3 pigs—seem to fail the test here. After all, cloning involves suffering on the part of at least the surrogate mother; the act of creating an exact clone in lieu of natural reproduction creates unnecessary suffering without adding any benefits. If there is no tangible benefit to the cloning, it’s hard to rationalize around the pain and suffering inflicted on the animals. Further—and it’s hard not to sound callous with this argument—cloning a “normal” cow is more costly than simply breeding them naturally, and without any benefits for the trouble.

But what if the clones are modified such that, for example, their milk contains supplemental vitamins and nutrients that increase the health and well-being of humans? This seems to be a case where using cloned cattle for food could be considered acceptable: in famine-ravaged areas of the world, cheap nutrient-rich milk could mean the difference between life and death. That this benefit entails a sort of “one-and-done” type of suffering on the part of the research cows (that is, they will suffer in the process of researching and perfecting the transgenic technique, but once the DNA has been modified the cows will pass along the genes through natural reproduction and will no longer suffer directly from the research) makes this argument more enticing.

The last consideration is whether or not the cloning benefits the cattle in any way. Suppose cows could be genetically modified to be resistant to Mad Cow Disease. This would decrease their suffering by keeping them healthier; it would also have the added effect of raising human utility by keep *us* healthier. Or, say we cloned hornless bulls so that they could not gore each other: though this would have no effect on humans, it would greatly reduce the animals’ suffering; this seems to be sufficient to qualify as a

thumbs-up for cloning. It can also be argued that this type of cloning is analogous to conventional selective breeding: the end result is the same, though the means of achieving it are different.

In each of these examples, I've employed consequentialist reasoning to justify the cloning because I view it as the only practical solution to this issue. Through evolution, species are fluid and ever-changing, and as such I don't buy into the "naturalness" arguments that cloning and gene modification are either affronts to nature/God, or the so-called "yuck factor." What is "natural" is now and always has varied according to society: witness racial and sexual civil rights movements and, more on-subject, vegetarianism. Ideas that were once considered "unnatural" or "yucky" are now mainstream; perhaps that says more about our culture than about the social norms—I'll leave that debate for another time and place—but that's ultimately irrelevant when we're stuck in this world and have to play by these rules, and these rules are ever-changing.

Finally, to broach the question of whether or not cloning in and of itself is morally acceptable, I argue that it is if it will result in such positive benefits. While it's true that current technology results in much pain and suffering for the animals, this is something that will no doubt get better as the technology progresses and becomes more and more advanced. And some companies are already taking proactive non-technological steps to help curb suffering on the part of, for instance, the surrogate mother: Genetic Savings & Clone, for example, purchases eggs (in the form of whole ovaries) from spay clinics instead of extracting them painfully from an animal. Eventually, technology and general innovation may advance to the point where cloning is a pain-free process. However, until that happens, straight cloning without any genetic modifications to the animal that may endow it with a better life may be seen as unethical because the end result is no different than normal breeding, but the means involves much more suffering. Yet, I believe the future of animal cloning lies in transgenic modification. This will be ethical if (1) the animal is modified such that it possesses qualities (*e.g.*, disease-resistance) that give it a better life; and (2) if the animal is modified such that it has qualities that benefit human consumers.

(b) Assuming that cloning animals is ethical in and of itself, is it then also ethical to allow these animals to enter human food supply? Leaving aside the obvious question of whether or not using even “normal” animals for food is ethical, there seem to be two problems with the first question: (1) There hasn’t been enough testing to determine how safe the food is in the long run; and (2) many people already have negative gut reactions to the *existence* of cloned animals, let alone the prospect of *eating* them.

As for the first issue, it has been reported that many first-generation clones experience genetic defects and other abnormalities. Though research indicates that these problems are not passed along when the clones reproduce sexually, it may be too early in the history of cloning complex animals to say for certain that the problems will never return down the line. The pragmatic solution for this seems to be simply doing more testing and more cloning to try to determine what is the root of the original defects, and then to make sure that they truly go away after sexual reproduction. And until there is rock-solid proof that these problems are isolated and can be eliminated, I fear that cloning will never be accepted as “safe” by the general public.

As for the second issue, the so-called “yuck factor,” the conception that consuming cloned animal flesh and milk is abhorrent may be tied with the first issue—namely, that people who otherwise are fine with eating “normal” animals feel uneasy because they fear the cloned food is contaminated. More research would go a long way toward assuaging these fears. However, many who cite the yuck factor may experience it because they view clones as unnatural; either because it means humans have been “playing god” or simply because they are “unnatural,” these people will not be persuaded by utilitarian arguments for cloning. To accommodate this admittedly large section of the population, we may allow cloned food into the supplies so long as they are labeled. I’ll return to this idea in a moment.

Perhaps the biggest benefit to allowing cloned and transgenic animals into the food supply is that they can be engineered healthier for consumption. The possibilities for transgenic animals are endless, and provide authentic benefits. Much has been made of the Omega-3 pigs as being unnecessary examples

of the powers of transgenesis: you're getting nothing from the pork, critics argue, that you couldn't already get from a simple pill. While this is true, it overlooks the fact that Omega-3 pigs are meant to allow people to avoid pills and get their nutrients in one source; this is better understood in the context of a poor, famine-wracked country that may not have the luxury of being able to afford for its citizens both meat and pills. Instead, it merges the two together for a greater benefit.

Back to labeling, the idea of forcibly labeling cloned food seems at first to be negative: the food is immediately singled out as different, and, because social rhetoric has made cloning out to be a sort of Boogey Man, it therefore is seen as something to avoid. However, if cloners are smart they will be able to use labeling to their advantage after showing the positive benefits of cloned and transgenic food; in, ironically, much the same way that "organic" foods are labeled and considered luxury items, cloned food will take such a position. I believe people will be willing to pay a premium for disease-resistant food that is fortified with vitamins and nutrients, etc.; however, in a perfect world, these plusses would be made available by default and priced alongside "normal" food so as to broaden their reach.

3.) With the debate so intense, it's no wonder that the FDA has been reluctant to make any final decisions about the state of cloned and genetically engineered milk and meat. So what ought the FDA do? As the Pew Initiative notes, 66% of Americans polled are uncomfortable or very uncomfortable with the basic premise of cloning; 43% feel that food from clones would be unsafe (34% had no opinion on the safety question); and 63% feel that the government should consider ethical factors when making decisions regarding cloning. These numbers are high enough that they cannot be ignored or dismissed as frivolous. Although not all consumers can be expected to be fully informed about all issues all the time, these poll numbers should count for something and possibly indicate that the issue is deeper and more complicated than that those polled were merely ignorant of the full story of cloning. As an objection mentioned previously, we cannot know for certain yet whether or not food from cloned or modified animals is completely safe for human consumption. In fact, we may not know the answer to this question for some time, as it is possible genetic diseases may skip generations, which, if true, would throw a wrench in the argument that defects are corrected after the initial clone reproduces sexually.

As for the issue of the high unease with clones and cloned food, these can generally be ignored as irrelevant in this regard. Opinions change over time—slavery and white male supremacy were once considered morally acceptable by the majority of society (it may be a clichéd argument, but that doesn't discount its veracity), and now they are clearly beyond the pale. Going the other way, many biblical prohibitions, such as homosexuality and working on the sabbath, are still considered to be of moral importance to some people; disregarding any actual moral pronouncements, the moral “rightness and wrongness” of things has no bearing on this issue from a consequentialist standpoint because none of them affect overall utility in any meaningful way. Here, there is a distinction between being morally insulted and actually harmed: on the former, taken in context of overall society, there is so little injury—if any at all—that it isn't worth calculating. Put another way, though 40-60% of people may be morally outraged at the idea of

cloning and consuming cloned food, the psychological harm done pales in comparison to the vast benefits that cloning could endow on society.

That all being said, it has not traditionally been the government's role to legislate and enforce morality—at least, morality that is rooted in a “*just because*” justification: why is eating cloned food wrong? *Just because*. Indeed, there has always been a Libertarian streak running through the Constitution that has generally prevented the government from interfering too much in the day-to-day business of private citizens, unless the day-to-day businesses of private citizens encroach on each other. If someone wants to eat cloned meat and drink cloned milk, who is the government to say that he cannot? It may be argued that potential dangers from cloned food are sufficient to warrant government intervention; however, government regulations usually only prohibit products that may have a potential for harm wider than individual users: drugs like heroin and cocaine are illegal not because they are addictive and have the strong potential to harm the user, but because use of the drugs can often lead to crime. Similarly, drunk driving is not illegal because the driver has the potential to kill himself, but rather that he has the potential to kill more than just himself. Bungee jumping could potentially be regulated if it somehow posed a danger or some kind of detriment to society; the fact that it is dangerous to an individual is irrelevant. If it turns out that cloned food has the potential to cause diseases in humans that can be passed on to others who have never consumed cloned food, then there is a case for government regulations. But if it can be shown (and there already is strong evidence to support this) that cloned food poses no harm to individual consumers, let alone to a wider swath of society, then the argument is rendered moot.

Finally, I contend that if the products are safe, then it is immoral *not* to release them for general consumption. As outlined earlier, cloned and modified food has the potential to do wondrous things, such as be infused with vitamins and nutrients, be disease-resistant, and be generally healthier to eat. With these benefits possible, and with the safety of the products at least on par with “normal” food, the upside for human consumption of cloned and genetically modified foods greatly outweighs any “moral outrage.”

With all this in mind, the FDA should unequivocally come out in favor of the cloned and modified food, with the assumption here that the food poses no risk of disease or other harm for the greater society (no risk, that is, greater than that of un-modified food). It's also unnecessary for any policy-setting body to make any pronouncements regarding the morality, one way or the other, of such food, because, as mentioned before, it is not the role of government to rule on moral issues unless they affect utility. Therefore, the only ethical reviews necessary are those to determine whether or not the food and drink are suitably safe for human consumption. If they are found to be, then the food should be allowed into the general food supply—with or without special labeling. If they are found to be unsafe, then they ought not be allowed into the food supply until such time as they are found to be safe.

Citations

Gillis, Justin. "Clone-Generated Milk, Meat May Be Approved." The Washington Post. October 6, 2005.

<http://www.washingtonpost.com/wp-dyn/content/article/2005/10/05/AR2005100502074.html>

Gillis, Justin. "Shoppers Uneasy About Cloning." The Washington Post. November 16, 2005.

<http://www.washingtonpost.com/wp-dyn/content/article/2005/11/15/AR2005111501617.html>

Newman, Judy. "Infigen is shutting down." Wisconsin State Journal. January 24, 2004.

<http://www.madison.com/wisconsinstatejournal/local/65910.php>

"First Two Commercially Cloned U.S. Horses Thriving." Turner Strategies. March 30, 2006.

<http://turnerstrategies.com/RoyalBlueBoon.html>

"Ethical FAQ." Genetic Savings & Clone. Date viewed: July 30, 2006.

<http://www.savingsandclone.com/faqs/ethical.html>