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Cloning Companion Animals Is Wrong

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In principle, I have nothing against cloning either nonhuman animals or humans. If cloning were as safe as natural procreation and if those who chose to clone themselves or others completely understood cloning (in particular, how clones are related to their originals), I would not worry about cloning being tantamount to, in Hawthorne’s words, “playing God” or “cheating death” (Hawthorne, 2002/this issue, p. 228). I would view it simply as a complicated and expensive way of producing an identical twin born at a different time and from a different mother than the original. In fact, however, neither of these things is true. Cloning is not safe, and it is not widely understood. Nonetheless, I suppose that some extremely compelling reason might justify our cloning animals. However, there is no such justification for the Missyplicity Project.

SUFFERING AND COMPLICATIONS

Cloning causes animals to suffer. Egg donors must have their ovaries artificially stimulated with hormone treatments and their eggs surgically harvested. Given the unusually high rates of late-term miscarriages and high birth weights among clones, the surrogate mothers are at greater risk of dying or suffering serious complications than animals who become pregnant naturally. The clones, themselves, however, suffer the most serious problems: They are much more likely than other animals to be miscarried, have birth defects, develop serious illnesses, and die prematurely.

Hawthorne (2002/this issue) acknowledges that this is “the ethical issue of greatest concern” (p. 229) raised by animal cloning. However, he greatly under-
states its seriousness. He claims, for instance, that 20% of cattle clones detectable in utero experience some sort of physical problem resulting in miscarriages, early deaths, or later health problems. In fact, to go by the published reports of cloning surveyed by the National Academy of Sciences (2002) in its recent report on cloning, the numbers are much higher: Of at least 242 pregnancies from cloned adult cattle cells, at least 174 were miscarried. Of the 68 calves born alive, only 42 were still alive at the time of publication, and investigators reported that 5 of those had significant health problems other than high birth weight. This means that the number of cattle clones detectable in utero who go on to experience serious health problems is not 20% but at least 85%.

In a recent study, Ogonuki et al. (2002) compared the lifespan of 12 cloned mice, 7 genetically matched, naturally conceived mice, and 6 mice produced by a process of spermatid injection performed under the same laboratory conditions as the cloning but resulting in natural conception. Eight hundred days after their birth, 10 of 12 cloned mice had died, compared with 1 of the 7 mice conceived naturally and 2 of the 6 produced by spermatid injection. Autopsies performed on 6 of the cloned mice revealed that all had severe pneumonia, 4 had necrotic livers, and 2 had tumors. In addition, the cloned mice had reduced immune system function, which the researchers believed might account for their pneumonia. Here again, the number of clones with serious health problems is much higher than Hawthorne (2002/this issue) suggests: In Ogonuki et al.’s study, two thirds of the animals who were born alive died prematurely as a result of physical problems associated with their being clones.

REAL PROBLEMS, UNKNOWN SOLUTIONS

Hawthorne (2002/this issue) suggests that these problems may be species specific and that researchers do not know whether dogs and cats will exhibit them. This is disingenuous. It is true that researchers do not yet know what problems cloned dogs and cats might have. No one has yet cloned a dog, and it is too early to tell whether the one cloned cat in existence will develop the kinds of health problems seen in other species. We do know, however, that these problems have turned up in every other species cloned, including goats. Therefore, there is every reason to expect that they will turn up in cats and dogs as well.

Hawthorne also suggests that some test yet to be developed might detect abnormalities prior to implantation. It seems extremely unlikely that in the foreseeable future someone will develop a reliable preimplantation test for problems with gene expression comprehensive enough to ensure that the clones we produce will be healthy. The number of genes whose expression would have to be tested is enormous, and researchers do not now understand the effects of various possible differences in their expression on an animal’s subsequent development. In addition,
many of these genes are not active before implantation; therefore, it is unclear how one could test their expression at that stage. For these reasons, it is unlikely that such a test will be developed in the near future.

In the meantime, cloned animals will continue to suffer serious health problems at much higher rates than other animals of the same species. Some will be suffocated when their lungs do not inflate, some will be poisoned because of liver or kidney failure, and some will be eaten away by cancer. Some will die from heart failure, and some will have only such “minor” problems as gross obesity or premature arthritis. Almost all clones will suffer and die, and they will do so, not because of some natural illness or misfortune but because researchers have chosen to bring them into existence using a process that is not understood well enough to use safely.

Of course, the only way researchers can learn enough about cloning cats and dogs to do it safely is by trying and learning from their mistakes. This, however, does not justify conducting this process of trial and error on the bodies of dogs and cats, absent some reason to think that learning how to clone dogs and cats is worth the cost in animal suffering. One must ask whether enabling humans to clone their pets is important enough to justify the considerable suffering involved in learning how to do so.

WHY CLONE PETS?

As the caregiver for two cats, I can easily understand why persons who do not understand what cloning involves might be tempted to clone their pets. Pet owners love their pets. When an animal one loves dies, the most natural thing in the world is to want that animal back. Just as a parent whose child has died is unlikely to be comforted by the thought that there are plenty of other children waiting for adoption, most grieving pet owners are not consoled by the thought that they can always adopt another dog or cat. This is not because pet owners are unduly sentimental or confused about the differences between pets and children. It is because, like parents, they love individuals, and adopting another dog or cat will not replace the individual they have loved and lost.

Cloning is not a way of bringing back the animal one loves. That is the point of loving an individual: Not even an exact replica can be the particular being one loves. Still, to a grieving pet owner an exact replica might seem to be the next best thing, and some pet owners might think that cloning could produce one. This misconception is easy to remove: One need only point out that clones will not have the same memories as their originals and that because their upbringing and environment will differ, their behavior and temperament will differ as well.

However, even after this mistake is corrected, one might still think that cloned animals will be identical to their originals in all respects except those that depend on environment and upbringing. One might, that is, think that although a clone of
one’s dog will not be a copy of that dog as an adult, the clone, when born, will be identical to the newborn puppy who grew up to be that dog. This is, I think, what many of those who are interested in cloning their pets believe. Unfortunately, they are wrong. Cloning produces animals who are genetically identical to their originals. However, genetic identity is not, and does not ensure, physical identity; the difference between the two is extremely significant.

The genes in an adult animal’s somatic cells are programmed not for directing embryonic development but for directing the activities of skin cells, liver cells, and so forth. If researchers tried to clone a cat by inducing one skin cell to divide without reprogramming its DNA, they would end up not with a kitten but with, at best, a kitten-sized mass of skin cells. That mass would be genetically identical to the original cat but, presumably, would not be what the owners had in mind when they asked to clone the cat. To produce not a mass of skin cells but a kitten, the skin cell’s DNA needs to be reprogrammed. To produce a kitten largely, although not entirely, similar to the kitten the cat once was, researchers would have to reprogram the cat’s DNA to exactly the state it was in when that cat was a fertilized egg.

In practice, it is extraordinarily unlikely that any animal’s DNA can be reprogrammed perfectly. Tens of thousands of genes might need reprogramming, and researchers do not know what they all are, let alone what would count as their correct expression. Nor is it known in most cases, what contribution they make to an animal’s subsequent development. Moreover, although the word reprogramming might suggest the existence of easily manipulable switches that could be reset one by one, in practice reprogramming is a messy and haphazard process that is neither understood nor controllable.

For these reasons, the likelihood that every gene will be reset correctly is minute. Some problems with reprogramming might be benign. Others might be so serious that any fetus who has them will be miscarried. There is, however, a middle group: problems serious enough to create significant physical differences between clones and their originals but not serious enough to prevent those clones from being born at all. Given the number of such mistakes that it is possible to make and the impossibility in practice of screening for any appreciable number of them, clones probably will differ in unpredictable and potentially significant respects from their originals.

Consider in this light that 85% of cattle clones detected in utero are miscarried, die prematurely, or suffer serious health problems. As far as is known, these cattle were cloned from healthy adults whose lungs, livers, and kidneys did not malfunction; who were born without serious cardiac problems or joint irregularities; and who did not have juvenile diabetes or severe anemia. All these problems appeared among their clones. This indicates three things. First, that clones are genetically identical to their originals does not mean that they will be physically identical to them. Second, the differences between clones and their originals will involve not only relatively unimportant things like coat coloring but also crucial ones like
whether their hearts work. Third, these differences are not rare or anomalous: They are the norm.

Cloning, then, is not a way for a pet owner to acquire, say, a puppy just like the puppy who grew up to be his or her dog. It is a way of acquiring a dog who is genetically identical to that dog, but who is much more likely to have major physical defects that cause real suffering and require serious medical care. Moreover, even if that dog is lucky enough not to have serious health problems, he or she is likely to differ from his or her original in subtler ways. In particular, there is no reason to think that the genes that underlie a dog’s temperament are less likely than other genes to be reprogrammed incorrectly and, therefore, no reason to think that cloned dogs will necessarily share their originals’ temperament and disposition. If pet owners want to get dogs similar to ones who have died, they are much more likely to succeed by adopting puppies of the same breed with similar dispositions than by cloning their pets.

The one goal pet owners might accomplish by cloning their pets is to make it possible for the genes of spayed, neutered, or otherwise infertile pets to be passed on to another generation. Although many clones have serious physical defects because these defects result mostly from problems with gene expression rather than with the genes themselves, clones are unlikely to pass these defects on to their offspring (Tamashiro et al., 2002). Cloning might make sense, then, as a very complicated way of reversing a spaying or neutering operation one had come to regret.

Although a pet owner might achieve this goal through cloning, it is clearly immoral. To clone a dog for this reason is to subject other dogs to hormonal treatments to stimulate their ovaries; surgically harvest their eggs; create hundreds of fetuses; implant them in dogs who will risk unusually dangerous pregnancies; and finally, bring into existence a clone who probably will suffer serious health problems, just to make it possible for this dog to have puppies genetically related to one’s original pet. This would display great callousness toward the suffering of animals and a willingness to sacrifice their interests to one’s whims.

If the arguments above are sound, then people who want to clone their pets must be either mistaken about what cloning is or immoral. In the first case, it would be wrong of the Missyplicity Project to take advantage of their misconceptions, especially at the expense of other animals. In the second, it would be wrong for the Missyplicity Project to collude in their wrongdoing. In no case is it morally justifiable either to clone one’s pet or to enable others to clone theirs.

REFERENCES

