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Workshop Report

The workshop began with a wide-ranging discussion about the concept of well-being. To what extent does it overlap with productivity? Does it take into account the sentience of the animal, the exercise of its cognitive capacities and its ability to cope with its environment? It was asserted that at the least, well-being involves an ability to express a range of normal behaviors. It was remarked that well-being is not a single, precisely defined state. The indicators of well-being are not linear. In some cases, more of something may be better, but in other cases there may be thresholds such as optimal body weight. Perhaps well-being should be defined negatively rather than positively: the failure of some system may imply a lack of well-being, but the presence of something (e.g., normal blood glucose levels) may not indicate an acceptable level of well-being. Productivity (e.g., growth, milk production, reproduction) has been used as one measure of well-being for agricultural animals although it was noted that such measures often will be inappropriate for determining the well-being of pets and research animals. It was also remarked that the notion of well-being applies to individuals, but indices of well-being are relative to populations.

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Participants, faced with a vast scope of issues in animal well-being, decided that the discussions should be limited to the well-being of animals involved in biotechnology: farm animals and experimental animals. What are the factors that we should look for to measure well-being in transgenic animals? What about the integrity or intrinsic value of the animal? It was suggested that there were two problems in proceeding this way. First, not all concerns about the use of animals involve inadequate well-being during these uses. Rather, some individuals object to specific uses of animals. Perhaps harms that animals may suffer as a result of biotechnology should be considered. Discussion could focus on whether infliction of these harms can be justified, or whether there are alternative procedures. Secondly, it was pointed out that biotechnology involves much more than just transgenic procedures. Selective breeding, artificial insemination and embryo transplantation are other examples. Different forms of biotechnology may raise different issues. Animals may be harmed deliberately in order to create disease models for

research purposes, whereas any harms animals suffer in production are incidental and usually not intended.

These points led to a discussion of why older forms of biotechnology did not stimulate as much public concern as newer forms. Selective breeding has been going on for centuries without serious well-being objections. Many people feel that new technologies create new problems. Furthermore, societal views of animals are changing. Technology is colliding with changing morality. In addition, lay people are increasingly skeptical of scientific ethics, due in part to recent negative publicity associated with a few famous scientists.

Some people are upset about biotechnology because it is perceived as “unnatural.” This connects to general cultural attitudes about the human relationship to nature. Against this it was suggested that people are part of nature, so everything we do is natural. The objection to this, however, is that this concept eludes the distinction between the natural and unnatural.

It was suggested that one new thing about contemporary biotechnology is that we can create animals who may have no potential for “happy” lives. Can we be said to have wronged such animals?

Some participants suggested that biotechnology gives us the capability to create animals that are adapted to a closed-confinement system in which they cannot move or otherwise express some movement-related behaviors. We may be able to imagine creating animals that would delight in confinement—to some extent this has been done already. Some thought that it would be wrong to do this because it would be exploiting the animals, although it was remarked that this objection was not an objection on grounds of animal well-being.

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QUESTIONS RAISED ABOUT BIOTECHNOLOGY AND ANIMAL WELL-BEING

Individual participants listed questions about biotechnology and animal well-being during the workshop. In no specific order they are:

- Will the farm community compensate for bad environments by creating new animals?
- Will genetic engineering arbitrarily be singled out from other forms of genetic manipulation (e.g., pet breeding, spaying, castration)?
- Will biotechnology be used to reduce and replace animals used in painful and invasive research?
- Are we changing our attitude and relationship towards nature, e.g., from the standpoint of mastering nature?
- Will a concern with animal well-being lead us to overlook the important human issues involved in the use of biotechnology?
- Whose interests are being served by biotechnology?
- Does biotechnology raise new issues about animal well-being? How much has the technology changed and how much have we changed?

- Are societal needs or scientific needs driving the development of biotechnology?
- What do we want the future animal production system to be like and how can biotechnology be used to forward our vision?
- Why is it difficult to pose fundamental questions about biotechnology?
- Why do people respond so strongly to biotechnology?
- Are there nonbiotechnological alternatives to what we want to do?
- Is biotechnology different in kind from what we have been doing?
- How does money flavor the issue?
- What are the larger beliefs about the relations between humans and animals that drive the differences in opinion about biotechnology? (It was observed that the emergence of biotechnology coincides with greater concerns about animals, increasingly cognitive views of animals, increased distance from agricultural and draft uses of animals, and urbanization and romanticization of animals. Genetic engineering feeds into these concerns because of the general concern that the manipulation of genes could lead to unnatural beings).

CONCERNS ABOUT BIOTECHNOLOGY AND ANIMAL WELL BEING

Individual workshop participants had concerns which were then listed as follows (again in no special order):

- Some of the public believe that there are more costs than benefits to biotechnology;
- Biotechnology could increasingly depersonalize the relationship between people and animals;
- Everything we do to animals biotechnologically could eventually be done to humans (and thought to be acceptable because of the previous animal work);
- Politicians frequently do not understand the social ramifications of their actions;
- Scientists and farmers want to make decisions about the use of biotechnology (even though they do not always understand the implications of their decisions) and some resent the intrusion of lay people into routine decision-making;
- People like us (well-educated, predominantly urban, well-placed) are making certain decisions for rural farmers and there is little they can do about it. Biotechnology and its regulation are being driven by intellectual power rather than by people who work with animals on a daily basis;
- Uncertain, and by some interpretations frivolous, restrictions may be imposed that will prevent society from reaping the benefits of biotechnology;
- Uncertain, and by some interpretations frivolous, use of biotechnology may limit the options of society to have a just and sustainable future;
- There is a risk that biotechnologists will defend the use of animals so avidly that they will evoke a huge counter-reaction;
- Some critics of biotechnology want to stop all human uses of animals;

- The rate of change goes beyond our ability to anticipate it and to respond to it;
- People do not understand that animal biotechnology could eventually lead to the elimination of animal food production (through fermentation technologies, etc.);
- There is a lack of effective communication between science and the public;
- Genetic engineering may eventually make the discussion of animal well-being a nonissue;
- The failure to use animals in genetic engineering will deprive people of the benefits of medical pharmaceuticals;
- If we cannot predict the impacts of genetic engineering on animal well-being, should we still undertake it?

By this point in the discussion the participants were quite polarized and it was remarked that some people who hold very strong views were not even represented. It was suggested that some of the fundamental questions might concern whether it is ever acceptable to utilize animals for human use, whether animal biotechnology poses unique questions about animal well-being and whether biotechnology is qualitatively or quantitatively different from what has come before.

POSSIBLE HARMS OF BIOTECHNOLOGY TO ANIMAL WELL-BEING

Participants decided to identify some possible harms and benefits to animal well-being that arise in the context of biotechnology. Possible harms elicited from participants were:

- Loss of genetic diversity;
- Proliferation of genetically defective animals who suffer as disease models;
- Thinking of domestic animals as human artifacts;
- Diverting resources away from improving traditional husbandry practices;
- Leading us away from sustainable agriculture which might be better for animals;
- Leading to ecological devastation through the introduction of genetically altered animals;
- Narrowing the concept of well-being to merely biological health;
- Strengthening corporate agribusiness with long-term negative consequences for animal well-being;
- Creating animals who do not feel pain and may still damage themselves.

POSSIBLE BENEFITS OF BIOTECHNOLOGY TO ANIMAL WELL-BEING

Following a listing of harms to animal well-being, workshop participants then listed possible benefits biotechnology could bring to animal well-being:

- Removal of genetic defects from animal populations more rapidly;
- Permitting increased disease resistance;
- More efficient production leading to the use of fewer animals;

- Better understanding of animal well-being;
- Better well-being through the creation of animals less susceptible to environmental conditions;
- Creating animals so existing resources can be used as food;
- Using fewer animals both in research and in farming;
- Increasing genetic diversity;
- Increasing understanding of and solutions to the medical problems of both humans and nonhumans;
- Enhancement of wildlife management and growth of nonhuman populations as hunting becomes obsolete;
- The end of factory farming through the redesign of farm animals;
- Driving small producers out of business who mistreat animals.

A highly unrepresentative straw poll was then done in order to see which of these possible harms and benefits the participants most wanted to discuss. As listed, the first four possible harms and the first four possible benefits received the most support along with the possibility that animal biotechnology may lead to healthier products for both humans and animals. They formed the basis of much of the remaining discussions.

CONSENSUS STATEMENTS

Weighing the broad spectrum of issues related to biotechnology and animal well-being, participants were able to reach agreement on four consensus statements:

1. *Biotechnology may contribute to animal well-being, but it is not the only approach to improving animal well-being.*
2. *There should be responsible, systematic investigation of the benefits and harms to animals that may be associated with biotechnology.*
3. *It is acceptable under some conditions to use animals for human use.*
4. *Animal biotechnology has the potential to contribute to the “three Rs” in animal experimentation: reduction, refinement and replacement.*

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RECOMMENDATIONS

1. *With respect to animal well-being, criteria should be developed for responsible research and application of specific biotechnologies in animals. The full spectrum of opinion should be represented in the development of these criteria. These criteria should be periodically reconsidered in the light of changing circumstances.*
2. *The benefits and harms noted should be taken into account in developing these criteria.*
3. *Animal biotechnology should not be used in ways that impose great costs in animal well-being, while achieving only minor human or animal benefits. When there is the likelihood that a procedure will cause great suffering to animals, alternatives should be sought.*