

Education Required for Animal Biotechnology
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The much-anticipated report from the National Academy of Sciences on Genetically Modified (GM) animals has ignited a long-overdue societal debate. It is time that we analyze and agree on how our newfound powers will be used and regulated. The NAS was not asked to address the public perceptions or emotional aspects of GM animals. But these will be the main factors that determine which products will meet with acceptance or rejection in the market place.

The many benefits of animal biotechnology will only be realized if people accept the products as beneficial, ethical, and safe. As we have learned with GM crops, such acceptance is not guaranteed; but must be carefully cultivated through open communication and trust. Social science research over the past decade has systematically evaluated consumer perceptions of biotechnology. Results are clear that we are less likely to embrace animal biotechnology than plant-based technologies. Education is the key to exploring the benefits that these advances could bring.

Several reasons can be given for this differential reaction to animal biotechnology. First, some people are concerned over animal welfare and accept that animals have some basic rights. Research has shown that emotional bonds people have with companion animals and cartoon characters leads them to anthropomorphize animals (they recall Babe and Porky the Pig).

Another reason for greater concern over animal biotechnology relates to the fact that animals are closer to humans in an evolutionary sense than are plants or microbes. Some people worry that once scientists are able to modify or clone animals that humans will be next. This type of concern is reinforced through media coverage of human cloning. This is related to concerns over a “slippery slope” that may result from breaking down perceived species barriers. The public gets upset when they sense that scientist cross ethical and emotional lines.

Concerns are also related to the fact that animals are much more mobile than plants. People mention fears that these animals may get loose in the environment and mix with other animals. In fact, the NAS concludes that these risks are potentially serious. In fact, survey results also show relatively low public acceptance of fish that have been engineered to grow faster or larger (in part due to concerns over environmental release and associated impacts on natural populations).

One of the more challenging applications of biotechnology involves the use of pigs and other animals to produce human organs or other body parts. People express support for the medical application per se (which they recognize as a potential benefit). However, the thought of consuming meat from such animals is unsavory and unacceptable to the vast majority of people. Even if the meat is completely wholesome and safe, most people do not want to eat it (especially if they perceive that it contains “human DNA.”). Public policy and production systems must keep such animals off the table.

Research has confirmed that public confidence in the government is a major determinant of how likely people are to view biotechnology as safe and acceptable. Unfortunately, the NAS concluded that the federal regulatory system for animal biotechnology is inadequate. In fact, regulations for cloned and genetically modified animals are not yet established, but the animals are knocking on the barn door. The agricultural community and food industry are concerned about the impact of animal biotechnology on their markets.

The FDA and USDA have been working on regulations for GM animals for many years. They are trying to fit this complex and emotional area into an existing regulatory framework that may not be adequate to serve the broader public interest. The recent NAS report focused on the science and safety of the products for human consumption and the environment. The fact that the products must be safe is a given – that’s the price of admission to the market. Citizens will also demand that the applications be morally and emotionally acceptable.

Regardless of the science, some people will perceive GM animals as unacceptable additions to the food supply. Activist groups are ready to use any approach to scare the public about these issues. Products from some genetically modified animals (especially those from xenotransplantation) won’t be considered substantially equivalent. The FDA has been able to build public confidence in plant biotechnology through that approach, but it is not clear what people think about these and other issues.

Science and public policy should be able deal more effectively with animal cloning (as opposed to the actual genetic modification). In this case the concept of substantial equivalence makes intuitive and scientific sense. The products will be basically the same. However, we should not assume that the public will immediately see it that way. There needs to be credible and independent scientific research -- but that will still not be enough.

Government and industry need to recognize that they are at the beginning of a long and difficult educational process. Public concerns must be better understood and addressed. Public education is paramount to understanding these technologies and their applications. Hopefully, the animal biotechnology industry will take steps to address consumer concerns in order to pave the way

for these significant innovations. Any initiatives will require a much greater commitment to social science research and ethical deliberation.

The bottom line is that animal biotechnology will only deliver the promised benefits if the industry and government can establish and abide by ethical and emotional boundaries that will not be crossed. Scientific curiosity and potential profits are not persuasive when it comes to public acceptance. Society may deny scientists the freedom to operate if they are not careful, transparent, and humble. Our public policies must be based on better understanding and appreciation for the power of the market place and the rights of the public to feel secure about their food supply.

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