Pact of such laws. Prior to Multnomah’s revised dangerous-dog law, 25 percent of all biting dogs had bitten someone else within one year. Under the new regulations, that rate fell to 7 percent. The number of bites in the community has dropped by about 8 percent since 1987 and the number of dangerous-dog cases presented to animal-control officers has dropped by 18 percent. Mr. Oswald notes that the pro-
gram has also been an outstanding vehicle for educating the public and community leaders to the need for responsible pet ownership and responsive animal control. He observed, “We were facing a 75 per-
cent cut in funding, but being able to doc-
ument the effectiveness of our program helped lead to full reinstatement of our budget in a very competitive fiscal arena.”

Despite the dramatic rise in awareness of the problems caused by dangerous dogs, the widespread adoption of dangerous-dog laws, and continued successes against dog-fight-
ting, there seems to be little evidence in most areas that the dangerous-dog situa-
tion is improving. What is preventing ef-
fective solutions? We know from the experience of Mult-
nomah County and others that strong dan-
gerous-dog laws with good enforcement can work. However as cities are increas-
ingly facing fiscal crises, animal-control budgets are usually among the first to be cut. John Snyder, past president of the Na-\ntional Animal Control Association, said, “In the last year, I have heard many horror tales about governments taking away what little resources those agencies have. The public demands and expects animal-con-
trol services, but they have no idea of what is needed to do it right.”

Perhaps the main reason why progress has been limited is that animal-control agencies and local humane societies, with sparse and often diminishing resources, are attempting to deal with dangerous-dog problems that have very deep human roots. The underlying causes are the ways people breed, raise, train, socialize, and supervise their animals. It is time to look at what in-
dividuals, rather than governments, can do to end the dog-bite epidemic.

Puppy mills and many other breeders continue to engage in widespread breeding of dogs without concern for their inborn temperament. As more people have ac-
quired dogs primarily for protection, there has been a rapid rise in the number of questionable animals from guarding and fighting breeds finding their way into naive or irresponsible hands. The result has been an increase in problems associ-
ated with protective breeds such as chows and rottweilers that have traditionally shown few problems in the past.

Not all bite problems can be blamed on those people seeking or breeding animals for protection. For example the traditional “family” dog breeds—Labrador and golden retrievers and cocker spaniels—were in-
volved in more than 12 percent of the se-
vere attacks in Palm Beach County, Flori-
da, in 1991. This may be in part due to breeding that ignores temperament, but aggression problems can also result from improper socialization, training, and care. People in individual dog owners, as well as shelters and humane societies, prevent the dogs they love from becoming part of the dog-bite problem!

If you are among the growing number of people seeking a dog for protection, you should carefully assess your needs and motives. Few people really need a guard dog. For most families an “alert” or “min-
age” dog who will sound the alarm or look intimidating without actually showing ag-
gression can provide protection without the risk. Nearly any dog provided with love, care, and proper training can develop the kinds of bonds to people that allow him/her to fill this need while remaining a safe family companion, so follow the HSUS suggestion to “adopt one” from your local shelter.

Be sure your pet is spayed or neutered. Statistics show that unsterilized animals make up a majority of the biting popula-
tion.

Urges those who continue to breed dogs to exercise care and restraint to preserve the breeds they love. A high rate of breed-
ing of any breed, particularly one with a guarding or fighting history, is not only con-
tributing to pet overpopulation but can also quickly lead to declines in health and tem-
perament standards. The damage that has been done to the reputation and quality of today’s “problem” breeds such as rottwei-
ers, Doberman pinchers, and chows may take years to undo.

All dog owners should socialize and train their dogs early and well. Training
need not be aimed at meeting some com-
petitive standard. For most pet owners, the primary goal of training should be to build a bond of trust and understanding, to set appropriate limits, and to help the dog become a trustworthy member of the family.

If one establishes a firm foundation of basic obedience, correcting most dog-be-
havior problems at an early stage becomes much easier.

We need to teach children and others how to behave around unfamiliar families to reduce the likelihood of a bite. Educational materials dealing with bite prevention are available from The HSUS and many local organizations.

Animal-control agencies and humane societies can also focus on prevent-
ing dog-aggression problems rather than dealing only with their aftermath.

Counseling during the adoption process should educate new and prospective pet owners about animal behavior so that they can have realistic expectations and learn how to avoid problems. Shelters must try to provide resources to deal with minor problems that can escalate to serious ag-
gression. While only a handful of shelters currently employ full-time trainers or ani-
mal behaviorists, such services can pay for themselves in the form of better adoption counseling and prevention or correction of common behavior problems that otherwise lead to the return, abandonment, or impoundment of the dog as a result of a bite incident. If shelters cannot directly provide these resources, they can assist in contacting people in the community who can provide puppy kindergartners and group basic obedience training, and ani-
mal-behavior counseling.

Animal-protection and animal-control groups can work together for fair danger-
ous-dog legislation with strong enforce-
ment that is designed not simply to respon-
s to dangerous-dog problems, but also to educate the public about responsible pet ownership.

At a time when stories of dog attacks continue to fill the media, it is often easy to forget that most of our more than 50 mil-
lion dogs never bite anyone. However, the problems caused by the highly visible mi-
nority of animals and their owners have far-reaching consequences for all of us who care about the special relationship be-
tween people and dogs. Each of us must re-
new his/her commitment to seeing that safe and healthy animals share their lives with understanding and responsible owners.

Randall Lockwood, Ph.D., is HSUS vice president, Field Services.

Several recent developments in gene-
Researchers at the University of California at Davis opted to splice extra growth-regulating genes from sheep into lambs to avoid the use of animal tissue samples. James Murray and colleagues have been busy developing a strain of sheep whose lambs would efficiently convert their feed and rapidly grow to marketable size. But the technology has been developed by others and other severe health problems that killed them before they ever reached puberty. Dr. Murray concluded, “The cause of death varied, but there is clear evidence that the overexpression of GH [growth hormone] adversely affects liver, kidney, and cardiac function.”

Merk and Company, an international pharmaceuti­cal firm, applied for a patent in Europe on a “superchicken” it called Macro-Chicken. In the hopes of cor­pering the worldwide poultry market with highly feed­efficient, fast-growing birds, Merk developed the Macro-Chickens, a line of broiler chickens that carry the growth gene from cattle. The chickens may well have a variety of health problems, but if the birds eat well and grow quickly, they may be ready for slaughter before severe health problems ever develop. What will happen to the reserve stock of transgenic chickens, the ones not raised for slaughter? Will they suffer?

Because such information is proprietary, corpora­tions are not likely to reveal the problems and risks of their new products. Researchers secretly note the standing, creating transgenic farm animals has social and economic consequences for farmers, agribusiness distributors, and consumers—consequences that have been given scant attention. Critics of the genetic engineering of farm animals have noted that the use of public funds to make these animals produce more meat (even if it is leaner) when the short- and long-term costs of such research are not considered is not sustainable. A 1990 U.S. News & World Report article noted that “the problem of modern intensive animal agriculture is overproduction. In many nations, meat and milk overproduction is a common phenomenon.” It is unlikely that the creation of transgenic farm animals will help feed the hungry of the world, since meat-production efficiency has its limitations and inevitable environmental costs.

Genetic engineers are now attempting to alter milk from farm animals to make it more suitable for people who are lactose intolerant. Researchers are inserting into calf embryos the genes responsible for the production of proteins in mother’s milk. They hope to create a new generation of cows able to produce human milk. Researchers continue trying to identify the genes responsible for various inherited diseases (especially those found in horses) and insert them into farm animals. They hope to create transgenic farm animals that carry the genes that play a role in development, growth, milk, or egg production, disease resistance, and other physio­logical processes in animals. U.S. Department of Agri­culture (USDA) scientists have recently been given $2 million to start mapping the genes of cattle and pigs. The result of such gene mapping research may eventually benefit animals in terms of their health and overall well-being, but the benefits will be limited if the focus of the research is on improving milk and beef. The DNA-mapping research is integrated with a more holistic approach to improving animal health and well-being.

Transgenic “Molecular Pharming”

Genetic engineers have inserted human genes into farm animals to produce salable pharmaceu­tical proteins. Genetic-engineering techniques have been developed in the past decade that may allow for the production of pharmaceuticals, including human hormones, growth factors, and other substances. Genetic engineers are currently attempting to make transgenic farm animals that produce goods that can be sold commercially for the treatment of diseases. The use of transgenic farm animals to produce pharmaceuticals has been called “molecular pharming.” Genetic engineers have been cloning and inserting human genes into farm animals to produce pharmaceuticals, including human hormones, growth factors, and other substances. Genetic engineers are currently attempting to make transgenic farm animals that produce goods that can be sold commercially for the treatment of diseases. The use of transgenic farm animals to produce pharmaceuticals has been called “molecular pharming.”

Public Attitudes

While private-industry and government-funded research centers strive to create genetically engineered animals who can produce profitable agribusiness and to the medical-industrial complex, the public views such research with some apprehension. In a recent poll of Europeans: fewer than half thought biotechnological research on farm animals “to make them resistant to disease, or grow faster” should be encouraged. A third thought applying biotechnology to animals “to develop life­saving drugs or study human diseases” was morally acceptable. “Provided the animals’ welfare is safe­guarded,” 20 percent said it was morally wrong, and 27 percent said government should decide each case. Only 13 percent thought such work justified “some animal suffering.”

A national survey in Japan revealed that 67 percent of respondents were opposed to research that could lead to new forms of plant or animal life.

In 1985 opinion polls in the United States showed that 25 percent of the respondents were opposed to research that could lead to new forms of plant or animal life. In 1985 opinion polls in the United States showed that 25 percent of the respondents were opposed to research that could lead to new forms of plant or animal life.
Animal Patenting

The controversy over patenting genetically engi-
nered animals began on April 7, 1987, when the U.S. Patent and Trademark Office ruled that such inventions could be patented if they were naturally occurring "manufactures" and "compositions of matter," could be in-
derstood under Section 101 of the Patent Act, and were subject matter patentable. The patenting of animals was vigorously opposed by The HSUS and a coalition of other animal welfare groups. In 1987 Rep. Charlie Rose introduced legislation to impose a moratorium on the patenting of animals so that the potential adverse implications of such patenting could be carefully studied. In 1988 Sen. Mark Hatfield introduced a similar moratorium bill in the Senate and the U.S. Patent and Trademark Office issued patent number 4,736,866 to Harvard University and Du Pont Company for the "mouse," a genetically engineered, cancer-prone mouse. Since then no other animal patents have been awarded in the United States. But the U.S. Patent and Trademark Office has notified Genentech of its intention to patent the engineered mice, and the European Community's Commission on Biotechnology is trying to eliminate socioeconomic considerations in the li-
censing of new animal drugs. Clearly the biotechno-
logists of the industrialized world is proceeding neither prudently nor appropriately.

Despite the many documented health problems of transgenic mice carrying human, bovine, rat, and sheep growth genes, research continues on lines with farm animals. One must wonder how such suffering can ever be justified, when transgenic pigs, designed to be leaner and free of bovine carcasses; enlarged hearts, livers, and other internal or-
gans; enlarged and heavier bones; arthritis; diabetes; loss of appetite; serious reproductive abnormalities; and increased stress and disease susceptibility.24 Even if fu-
ture improvements in gene-insertion techniques reduce health problems suffered by farm animals genetically engineered for human consumption, the legacy of the suffering that animals endured in the early stages of the biotechnology's development is likely to endure for consuming such animals in good conscience.

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7. R. L. Furst, J. L. Morgan, and G. Quayle, will try to block this bill. The act is ac-
ively working to deregulate the entire biotechnology indus-
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