

## ■ Of Mice and Men: Controversy Rages over the Use of Animals in Medical Research: Antagonists Are Polarized in Their Views

Keith D. Smith, a 29-yr-old diabetic, received a kidney transplant from a suitable donor in 1988. In danger of losing his eyesight and surviving on expensive daily dialysis prior to the operation, he now leads a healthy and productive life. Such organ transplants, now considered routine medical procedures, are the culmination of years of research that began with experiments done on animals. Mr. Smith notes that the first kidney transplants were successfully accomplished on dogs and cats in the 1950s. "This led to the first human kidney transplant in 1954," says Mr. Smith. "In the 1960s and 1970s, many kidney transplants failed because the host body rejected the new kidney." It was not until the advent of anti-rejection drugs in the early 1980s that kidney transplants from appropriate donors became a viable medical procedure. "This operation saved my life and the lives of thousands of others," comments Mr. Smith. "And none of it would've been possible were it not for initial test studies done on animals."

A Massachusetts medical research facility recently conducted a drug addiction study whereby monkeys were strapped to a chair and forcibly injected with amphetamines in order to examine the mechanism by which they develop a narcotic habit. "We have drug treatment clinics that have proven techniques for curing addictions, but are turning people away from their programs," protests Scott Vanvalkenburg, Program Director for the New England Anti-Vivisection Society (NEAVS), an organization that seeks the banning of all animal research activities. "And yet we are spending enormous amounts of money to see how a helpless monkey behaves when he becomes addicted to amphetamines!" He adds, "We do not have the right to imprison another species and

subject them to scientific tests and experiments, most of which imperil their lives. They did not volunteer to be subjected to these things. It is a moral question."

The emotionally charged issue of using animals in biomedical research has placed the scientific community squarely at odds with animal rights activists. While scientists claim that animals need to be sacrificed in order to promote the improved health and welfare of human beings, animal rights supporters maintain that animals are needlessly and callously killed often for research of dubious value to humans.

This conflict has yielded violent confrontations at research laboratories across the country. While government regulations that ensure the safety and humane treatment of research animals are already in place, neither side is satisfied with their requirements. Advocates of science and medicine fear that further limitations on the use of animals in research projects could seriously erode the advancement of medical science, while animal rights proponents demand that such experi-

ments be outlawed altogether on humanitarian grounds.

### Statistics

According to data from the Public Health Service's (PHS) Office of Health Technology Assessment, an estimated 17 to 22 million animals are used each year in biomedical research in the U.S. The overwhelming majority (85%-90%) of these animals consist of mice and rats, 1%-2% are dogs and cats, and the remainder include non-human primates, rabbits, birds, and other creatures. "But that is a very conservative estimate," claims Michael Bello, PhD, Director of Education for the National Anti-Vivisection Society (NAVS) in Chicago, Illinois. "Researchers are actually not required to report how many rats and mice they use. Furthermore, only federally funded research activities are required to report what animals they use, while privately funded research groups do not. So, we estimate that perhaps as many as 75,000,000 animals are killed every year in this country in the name of progress."

According to the American Medical Association (AMA), the bulk of the



**Fig. 1.** Animal rights activists demonstrate outside a research facility at the University of California at San Francisco in November 1989. (Courtesy UCSF)

rats and mice used in medical research are purposely bred by licensed commercial suppliers. However, many of the cats and dogs used in research are abandoned creatures obtained from pounds and shelters. The AMA estimates that over 20 million abandoned dogs and cats are put to death each year, while only about 200,000 are used in research studies. Animal rights activists, however, contend that euthanizing the animals with an intravenous administration of barbiturates is more humane than subjecting them to scientific experiments.

### Value and Benefit of Animal Research Upon Humans

"Research with animals has made historical advances possible, from curing tuberculosis to the discovery of insulin for diabetics," wrote former U.S. Surgeon General C. Everett Koop, MD, ScD, in a publication produced by the Foundation for Biomedical Research (FBR), a Washington-based scientific organization which promotes research endeavors. "Research using animal models has led to better treatments for heart disease and has enabled patients to survive organ transplants... Virtually every major medical advance for both humans and animals has been achieved through biomedical research by using animal models... and through animal testing to prove safety and efficacy of a new treatment."

Joseph Spinelli, DVM, Director of Animal Care and Veterinary Medicine at the University of California at San Francisco, adds that while animal research is primarily intended to benefit humans, the techniques discovered often result in ultimately helping the animals themselves. "There are many such examples," says Dr. Spinelli, "from medications developed to treat parasites, feline leukemia, hepatitis, rabies, distemper, etc., to treating kidney failure." To punctuate the crucial nature of animal research in medical progress, the FBR notes that 57 Nobel Prizes in physiology and medicine have been bestowed upon research work done on animals.

Gilbert Greenwald, PhD, Chairman

of the Department of Physiology, University of Kansas Medical Center, Kansas City, Kansas, explains that animal models provide information on the mechanism of disease and the organism's own defense responses. "We study animal models in order to determine how the disease is transmitted and how certain factors like genetic susceptibility might predispose an individual to a disease. The data we get from animal studies are imperative before new therapeutic techniques or surgical procedures can be tested in human patients," he says. "The Food and Drug Administration requires documented reports stating the efficacy and safety of a new drug before it can be approved for clinical trials in humans."

Dr. Greenwald reveals that while the use of animals in medical research has decreased in the past 20 years, he attributes that decline to the rapid development of in vitro technology, rather than to the protests of antivivisectionists. Dr. Greenwald points out, however, that while in vitro studies can provide good information on cell physiology, they only give information on body cells under optimum conditions. "In vivo studies are irreplaceable. There is such a complexity of factors affecting the physiology of cells that we have to use in vivo examinations."

### History of Animal Rights Movement

Animal protection groups have existed in the U.S. for over 100 years. The modern animal rights movement began in earnest in 1975 with the publication of a book entitled *Animal Liberation*, written by Australian philosopher Peter Singer, who equated animal rights with human civil rights. The book's central theme was that, like humans, animals possess the capacity to suffer and, consequently, should be accorded the same measure of dignity, compassion, and humanity. The publication spawned numerous animal rights groups in the U.S. and Europe. The early animal rights organizations scored legislative victories by persuading some cosmetic companies to

stop using animals to test the safety of their products.

According to FBR data, there are now over 7,000 animal protection groups in the U.S. alone, and their combined membership totals nearly 10 million with a combined budget of about \$50 million. While the majority of animal rights organizations conduct their crusade through peaceful means, some extremists within the movement have resorted to violence and criminal acts. According to the FBR, there have been at least 56 terrorist attacks committed against the research community during the past decade by proponents of animal rights, including vandalism, burglary, and arson. While most animal rights groups repudiate such confrontational and violent acts, the movement burgeoned during the 1980s.

There are essentially three schools of thought within the animal protection movement:

- "Animal Rights" adherents oppose any and all use of animals that is not in the animal's best interests, including the eating of meat, the maintaining of animal breeding facilities, and the use of animals in medical research.
- "Anti-Vivisectionists" are specifically concerned with the use of animals in medical research. They feel such research is tantamount to "bad science," and that research conducted for the benefit of humans should either be performed ethically on volunteer human subjects or by using alternative methods.
- "Animal Welfare" advocates do not object to all use of animals in research. Rather, they are opposed to inhumane and unnecessary use of animals. This moderate group proposes the "three Rs": *replacement* of animals through use of alternative methods of research, *reduction* in the number of animals used, and the *refinement* of practices to reduce the pain inflicted upon laboratory animals.

According to the FBR, the largest animal protection group in the country today is People for the Ethical Treatment of Animals (PETA), which is based in Washington, D.C., and

claims 250,000 members nationwide. PETA has targeted certain doctors and scientists who they feel are conducting extraordinarily pointless and sadistic research on animals.

On October 4, 1990, the AMA gathered top biomedical researchers in Washington, D.C. to discuss the personal and societal costs of the continuing harassment of the medical research community by animal rights activists. According to the AMA, "the biomedical research community has been the target of protest, theft, vandalism, and physical intimidation by 'animal advocates' whose intent is to halt all research involving animals. Research involving animals is absolutely necessary to enhance the medical care of the American people. We support responsible legislation to improve animal welfare, but we categorically reject the methods and goals of individuals who do not recognize the humanitarian efforts of the medical profession towards eliminating disease and human suffering."

However, Dr. Bello of NAVS claims that the scientific-medical community, by conducting its animal studies, is needlessly endangering the lives of millions of animals. Dr. Bello denies that his organization is anti-research and he adamantly disavows the activities of extremist animal rights groups. "We are not anti-science," he says. "We just want the scientific community to explore alternative ways of conducting their research. We object to their blatantly casual use of animals. [Animals] have become the 'kleenex tissues' of the research community."

While conceding that provocative acts are sometimes carried out by animal rights activists, Neal D. Barnard, MD, a practicing psychiatrist who founded Physicians Committed to Responsible Medicine (PCRM), a Washington-based organization comprised of over 2,000 practicing physicians throughout the U.S., contends that reports of such acts are exaggerated in order to discredit the movement. "Moreover," he adds, "the \$50 million or so that animal protection groups have in their budgets is minuscule compared to the billions of

dollars which the AMA, FBR, and pharmaceutical companies have at their disposal [to counteract the animal rights activists]."

### Scientific Value and Applicability of Animal Research Data

Gerald DeNardo, MD, Director of the Radiotherapy Section, Nuclear Medicine Department, University of California-Davis, Sacramento, California, a leading researcher of monoclonal antibodies who has used animals extensively and whose campus has been the site of violent demonstrations by animal rights activists says, "Animals that are used for research projects are painlessly sacrificed. The choice is clear. Do we use animals to test new drugs, or do we use human beings?"

However, Tita Zierer, Director of the Animal Alliance of Canada, Toronto, Ontario, declares that the care and safety of animals prior to their killing in research labs is a superficial, irrelevant issue. "I don't think the animals care about how comfortable they are if they are eventually going to irradiated or decapitated," she says. "The question here is one of ethics. It is simply immoral to force innocent animals to submit to tests which may damage or kill them."

"Animal research studies are poorly suited to human applications," claims Dr. Barnard. "For example, the cancer rates have been steadily increasing in this country and all the cancer research studies that use animals have failed to make any progress toward finding a cure. It is more important to undertake things like epidemiological studies that identify risk factors, rather than subject mice and rabbits to cancer-inducing drugs and extrapolate information from that." Dr. Barnard adds that while the incidence of heart disease has decreased, he does not attribute that to animal research studies. "The decrease in heart disease can be credited to the identification of cholesterol as a risk factor. That's probably the most significant medical discovery in the past twenty years and that break-

through had nothing to do with animal studies whatsoever."

Mr. Vanvalkenburg questions the value of the scientific data generated by animal research studies. He notes that the scientific information gathered from examining animals in laboratory conditions is not valid, since the animals are being subjected to unnatural stresses by virtue of captivity. Dr. Greenwald disputes that argument by asserting that "lab animals are not subject to stress conditions if they are adequately housed, fed and properly anesthetized."

In response to the animal rights activists' charges that data used from animal studies are not necessarily applicable to humans, the FBR counters that "after humans, animals offer the most accurate means [of assessing] human biological reactions and responses." The FBR goes on to indicate that while non-animal research models—i.e., cell and tissue cultures and mathematical and computer modelings—are used in research laboratories whenever feasible, "these methods cannot mimic all the complicated interactions that occur in humans."

"One of their [animal rights activists] favorite expressions is that we 'torture' little animals, and that is just nonsense," says Dr. Greenwald. "We follow strict guidelines on the humane treatment of our experimental animals. For example, we specify which anesthesia to use on a particular species." Dr. Greenwald emphasizes that "no doctor worth his salt would employ inhumane practices on his animals. We practice good animal care for humanitarian reasons and also because it does us no good to use sick, abused animals. There are many safeguards in place to assure that animals are not abused or unnecessarily mistreated," he says.

Dr. Spinelli finds himself in the peculiar position of being entrusted with the care of animals while providing them to research labs for experimental studies. "As veterinarians, we are often caught in the middle of this animal rights issue," he says. "Whereas I can empathize with much

of the animal rights activists' perspective, I part company with them when they insist that the animals are abused and that the research studies done on them are uncalled for and unnecessary. An animal specialist's first priority is to preserve the safety and welfare of the animals."

### Legislative Issues Affecting Use of Animals in Research

Legislative debate over the value of animal research culminated with the 1966 passage of the Animal Welfare Act (AWA), which initially dealt with the sale and transportation of animals. Subsequent amendments to the AWA expanded its scope to regulate such issues as the treatment and care of laboratory animals, animal housing standards, animal care specialist training, proper use of sedatives, analgesics, and anesthetics. The care of laboratory animals in universities, hospitals, research facilities and pharmaceutical companies is now monitored by the U.S. Department of Agriculture (USDA) under the provisions of the AWA. The PHS branch of the National Institutes of Health (NIH) also has an

Animal Welfare Policy that oversees all NIH-funded projects involving animals. The NIH requires compliance with its *Guide for the Care and Use of Laboratory Animals*, a manual prepared by the Institute for Laboratory Animals Resources of the National Research Council. According to data from the USDA, about 95% of all lab animals in federally protected research facilities are not exposed to pain or distress during experimentation. However, Dr. Barnard comments that, "Even assuming that 5% of the animals are subjected to pain, we are still talking about at least a million, and probably many more, animals who are forcibly exposed to excruciating pain."

Furthermore, Mr. Vanvalkenburg adds that many research facilities in the U.S. are failing to meet even the minimum requirements of animal safety. "Basic things like enough light, exercise, and comfortable cages are not even being addressed at many institutions," he says. "Furthermore, the USDA has only 79 inspectors, and that simply is not enough to supervise what's going on in the hundreds of labs in the country where animal experiments are taking place."

Mr. Vanvalkenburg further alleges

that the animal care committees set up at each research institution are in-house councils that cannot be expected to render impartial decisions. "From my experience, I've seen that most of the abuses and infractions reported at research facilities come not from doctors or technologists, but from other employees," says Mr. Vanvalkenburg. Adds Dr. Barnard, "most animal care committees set up at these institutions are staffed by people who do animal research themselves and so they have a vested interest in approving almost all of the projects. Usually, only one member of these panels is unaffiliated with the institution in question. They are, in essence, committees which give rubber-stamp approvals to animal projects."

Dr. Spinelli denies that regulations governing research laboratories are lax. He asserts that there is a strong regulatory climate surrounding the use of animals in medical research. "Basically, there are two types of regulations," says Dr. Spinelli. "First, the [AWA], which authorizes the USDA to investigate reported abuses or infractions at research sites and prosecute if the need arises. Second, the

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