

results. It was stated that whatever the extent of abuse of animals in the laboratory, it is far less than the number of animals killed or mistreated in cities and on farms. In 1980, as an example, 189,000 dogs were used in research while 13 million dogs that year were killed as unclaimed by public pounds and humane societies.

"Congress cannot legislate human kindness, but it should continue its vigilance in the treatment of animals," Dr. Knobil told the panel. "The most restrictive laws will not insure the perfection of human behavior. They (laws) may, however, severely obstruct the very efforts designed to benefit mankind by the eradicating of disease and the relief of suffering."

In a discussion of live animals studies and the duplication of research in some experiments to verify previous results and to perform accurate studies, Dr. Knobil added, "In the testing of polio vaccine, where a small error could paralyze hundred of children, I would not want to have my child or grandchild inoculated with a product that had not been submitted to the most rigorous testing procedures which include administration of the vaccine to rhesus monkeys and the careful examination of their brains and spinal cords afterwards."

In its statement, the American Physiological Society supported the concept of the use of alternative methods, but questioned the wisdom of H.R. 556 as being the proper approach.

"The APS supports the concept of the use of alternative research methods whenever possible to replace the use of live animals and still obtain new knowledge to improve the health and well being of both humans and animals. However, the use of animals is essential to the continuous advancement of biomedical research, and in many instances alternatives to the use of animals have not been developed, e.g. research in cardiovascular disease, hypertension, liver disease, nervous system damage, brain function, alcohol and drug abuse, nutrition, reproduction and genetics, the development of life saving medicine, and surgical procedures for animals as well as humans.

"However, the APS questions the establishment of an entire NIH Institute to study one type of research methodology. All institutes utilize a variety of research techniques which include those mentioned specifically in H.R. 556 as well as whole animal experiments; it is quite common for research to include tissue culture, modeling, animal use, isolated organ systems, computer simulations, etc.

"The modern biological scientist is taught and already uses the latest methods of chemistry, physics, electronics, mathematics, statistics, and computer technology to solve many problems and develop new procedures without the use of animal experimentation. In fact, the modern biological scientist...is able to perform fewer animal experiments and to extrapolate his findings from a limited number of experiments to new working hypotheses that need not employ continuous animal experiments.

"The APS questions the value of the Center, as proposed in H.R. 556, to further research accomplishments, and is concerned that the methods proposed by the sponsors of H.R. 556 may be detrimental to the progress of biological and medical science, and to the betterment of all animal life. To support the Center, the bill proposes to redirect 30-50% of appropriations for all research and testing programs involving the use of live animals.

"Although only a small part of the national budget supports biological research, diverting such a large percentage of monies from animal research would hinder those programs established to improve human health, environmental quality, and agriculture animal production and also those which assure the safety of food as well as human and animal drugs."

As a result of the hearing the Subcommittee is proposing to draft a single bill that would respond to the concerns of the Subcommittee. Such a proposal, however, is not expected until after the first of the year.

William Samuels

Testimony of
ERNST KNOBIL
Presented before the
Science, Research and Technology Subcommittee
House of Representatives
October 14, 1981

DR. KNOBIL: Mr. Chairman and members of the subcommittee: I am Ernst Knobil, the Chairman of the Department of Physiology of the University of Pittsburgh School of Medicine and the Past President of the American Physiological Society and of the Endocrine Society.

On this panel I represent the University of Pittsburgh, the American Physiological Society and the Endocrine Society, but I appear before you also as a concerned citizen, a husband, and a father and one who has had animals in his household since boyhood.

As such I am profoundly concerned about the health and safety of my family, as well as about the welfare of animals.

I am most grateful, therefore, Mr. Chairman, for this opportunity to comment on legislation which, if enacted, will, I believe,

have dire consequences on the health and safety of our people without significant impact on animal welfare.

This is not because the so-called Research Modernization Act, H.R. 556 proposes alternatives to the use of live animals in research and testing, but because it is the intent of this bill to divert as much as 50 percent of appropriations for biomedical research using animals, to other purposes. And this comes at a time when support for biomedical research is already diminishing at an alarming rate and our highly successful enterprise in this realm is being seriously compromised.

I remind the subcommittee that the alternatives to whole animal research, such as the use of isolated cells in culture or computer simulations which are mentioned in the Research Modernization Act have been developed and validated by

biomedical scientists because they are simpler to use as has already been said, are less liable to variability, and are far less expensive.

For these reasons scientists employ them enthusiastically whenever possible and appropriate, but unfortunately they do not serve many of our needs at the present time.

In the testing of polio vaccine, for example, where a small error could paralyze hundreds of children, I would not want to have my child or grandchild inoculated with a product that had been submitted to the most rigorous testing procedures which include the administration of the vaccine to rhesus monkeys and the careful examination of their brains and spinal cords afterwards.

The issue here, as in many others like it, is not whether to use animals or nonliving alternatives in toxicity testing of this kind, but whether to test powerful drugs and vaccines in animals or in human beings.

We all remember the tragic consequences of thalidomide as administration to pregnant women in Europe some years ago. This drug produces the same deformities in animals as it does in human infants. Because we paid attention to this fact in the United States our children were spared these unforeseen catastrophic effects of a supposedly harmless drug. How could a drug prevent the development of arms and legs of a computer, or an isolated cell system?

In seeking remedies for high blood pressure, as Dr. Levey has already mentioned, and other cardiovascular diseases, including stroke, for example, one must first understand the normal functioning of the circulation of the blood and how it is controlled. Then various drugs must be administered and other procedures utilized to alter the system.

Animals must be used to conduct this type of vital medical research. Clearly, the alternative here is not a mathematical model or a cell culture system, although these might help, but the use of human beings as experimental animals.

The need to develop, refine and perfect new surgical procedures in experimental animals before applying them to humans is almost too obvious to mention. Again, the only other alternative is not to use humans for this purpose.

Much has been said about the unnecessary duplications of animal studies and the performing of unnecessary or poorly designed experiments. As you know, in research supported by the National Institutes of Health and by the National Science Foundation, all proposals are subjected to rigorous peer review mechanisms, and less than 20 percent of approved projects are funded because of severe budgetary constraints.

These review mechanisms albeit not perfect do eliminate in large measure unnecessary research or poorly-thought-through experimental designs. Research proposals involving animals

which are excessive, unnecessary, uneconomic or inappropriate have essentially no chance of being funded, although some do slip through. The system is not perfect.

In fact, the ever increasing cost of animal research has caused a reduction in the use of animals by some 40 percent in the last 10 years as estimated by the National Research Council—the same information that Mr. Weber mentioned.

But it must be remembered that some experimental duplication and replication is actually required by the scientific process. Fundamental new observations must be repeated and confirmed in other laboratories to rule out the possibility that some unsuspected factor may have influenced the results of a particular experiment.

As already stated the scientific community is hard at work in developing alternatives to the use of whole animals. But it can use some help in moving forward at a more rapid rate. For this reason we support legislation such as H.R. 220 and H.R. 930 which have been introduced to provide additional support for the development and validation of these new research methodologies.

They do not now exist in other than very limited areas of medical research and testing and then only as adjuncts, which eventually require confirmation in animals.

Lastly, we abhor as much as anyone the abuse and neglect of animals as well as the infliction of pain and suffering. Each granting agency and each major scientific society and most scientific journals have explicit guidelines for the care and use of experimental animals.

The Animal Welfare Act has stringent provisions for the overseeing of animal facilities, and in my view no new legislation will provide significant new protection against abuse. Although the current activity, as pointed out by Mrs. Stevens, is indeed woefully underfunded. Scientists are only human, and far from perfect.

Some, like the occasional physician or nurse or clergyman, become callous and negligent and insensitive, but peer and societal pressures, as well as the the actions of Animal Care Committees usually rectify the problem.

Unfortunately, Mr. Chairman, the Congress cannot legislate human kindness and compassion, but it should continue its vigilance in the treatment of animals. As in all other human activities, however, the most restrictive laws will not ensure the perfection of human behavior. They may, however, severely obstruct the very efforts designed to benefit mankind by the eradication of disease and the relief of suffering.

The Congress must also be vigilant that this does not come to pass.

Thank you, Mr. Chairman.

MR. WALGREN: Thank you very much, Dr. Knobil.

FASEB PRESIDENT EARL H. WOOD IN STATEMENT DECLARES RESEARCH ANIMALS NECESSARY IN WAR ON DISEASE

Earl H. Wood, President of FASEB, presented written testimony to the House Subcommittee on Science, Research and Technology. See *FASEB Newsletter* 14(6): 2-4, 1981.