Old Myths
Die Hard

A New View
of Animal
Research
Questions
Its Scientific
Value

By Dr. Brandon Reines

Dur­ing the last week of
April each year, as pre­
dictably as the chirping of
ro­bins, the deputy direc­
tor of the Na­tion­al Insti­
tutes of Health sings
the praises of animal experimenta­tion. “Vir­
tually every medical innova­tion of the last
cen­tury,” claims Dr. William F. Raub, “has
been based to a signif­i­cant extent upon the
results of animal exper­i­men­ta­tion.” The in­
spiration for such ora­to­ry is the agita­tion of
animal­rights and animal-protec­tion groups,
mark­ing the observance of April 21-28 as
World Week for Laboratory Animals.

Dr. Raub is hardly alone in contending that
medical discover­ies usually come from
animal experi­ments. In fact, that con­tention
is an article of faith among thou­sands of
animal researchers the world over. Not only
scientists but the media and many mem­bers
of the public, as well, believe that no
breakthrough in treatment is possible without
experiments on animals. This is due in part
to the efforts of special-interest orga­ni­za­tions
whose sole purpose is the prom­o­tion of
animal research. For ex­ample, the Na­tion­al
Association for Biomedical Research
(NABR) repre­sents lab­o­ra­tory-animal-use in­
teres­ts, in­clud­ing animal breed­ers, dealers,
and researchers. For many years, NABR
spokes­men have utilized lobby­ing and pub­lic-rela­tions tech­niques to pro­mote the self­
serving dogma that cur­rent medical science
is a result of animal experi­menta­tion. A
grow­ing number of animal protectionists,
nonethe­less, are skeptical of Dr. Raub’s and
NABR’s claims. The HSUS lab­o­ra­tory
animals department regularly fields calls
from mem­bers and activists who ask: is it
possible that the usefulness of animal ex­per­i­men­ta­tion has been exagge­ra­ted?

An­swer­ing that ques­tion accu­rately has
been my occupa­tion for the past sev­eral
years.

The answer is an unqualified “Yes.” In
fact, animal-research inter­ests have been
engaged in a pro­pa­ganda cam­pa­ign every bit
as vigor­ous and dis­torted as that they at­tribute
to animal protectionists. An­i­mal-research in­ter­ests have con­sis­tent­ly taken anec­dotal in­for­ma­tion, “expert” opin­ion, and se­lected
case stud­ies to con­struct an allegedly airtight
case for the indis­pen­sabil­i­ty of animals for
medical discovery and test­ing. How­ever,
analy­s­is of the his­tory of mod­ern medical
miracles—won­der drugs, hor­monal ther­a­pies, and sur­gi­cal pro­ce­dures—re­veals that
animal research has of­ten not served a sci­en­tific func­tion at all. The pri­mary his­tor­i­cal
role of animal experi­menta­tion is forens­ic.
It is a method of “sell­ing” a fa­vo­red
hypothesis to the medical com­mu­ni­ty and/or
the public. Med­i­cal break­throughs almost
al­ways have arisen from de­tec­tive work done
by doctors in the context of clin­i­cal prac­tice
(with pa­tients). In the fields of re­search
The experience with human victims was too convincing to ignore. Researchers convinced doctors to try nitrogen mustard as a therapy by emphasizing its positive effects against certain mouse tumors. These positive results did more to reassure doctors than prove the accuracy of the original hypothesis. That was their value.

In studying the history of cancer chemotherapy, heart surgery, and several other areas, it becomes clear that animal experiments are often not even part of the scientific research process. They are a sales tool used to dramatize hypotheses. Of course, experiments in the modern view of science are supposed to test hypotheses—not dramatize them. If this new perspective is correct, then animal experiments are no more inherently scientific than is an inspirational speech.

Consider psychological research for a moment. The most famous experimental psychologist in the world, Harry Harlow, is immortalized for his mother/infant separation experiments utilizing rhesus monkeys. He ostensibly sought to answer the question of whether human infants love their mothers because they provide contact comfort or because they are a source of nourishment. To test various theories emanating from clinical observation, Harlow chose an animal species—the rhesus monkey—that has a highly-developed need to cling to its mother in order to survive. Ethnologists were already well aware that contact comfort is more important for rhesus infants than for human infants. "Anyone who has ever watched an infant monkey cling tightly to its mother as the latter swings through the trees can easily understand why," writes Dr. Dallas Pratt. By his choice of experimental

that have seen the most spectacular advances and milestones (cardiology, immunology, oncology, neurology, pharmacology, endocrinology, hematology), the role of animal experimentation in advancing progress has been grossly exaggerated. An increasing number of scientists share that view.

Dr. Irwin D. J. Bross, former director of biostatistics at Roswell Park Memorial Institute for Cancer Research in Buffalo, New York, maintains that none of the major drugs for the treatment of childhood leukemia was discovered through animal experimentation. He claims that the drugs were actually developed in the clinic by direct observations of human patients. This conclusion seems to contradict the findings of scientists such as Dr. C. G. Zubrod, who has written repeatedly that all of the major anti-cancer drugs were discovered by animal experimentation. Based on my historical research, it has become clear that Drs. Zubrod and Bross have been "talking past each other." The apparent contradiction is due to a lack of semantic precision in Dr. Zubrod's published statements. Although his formal claims in the literature imply that the main antileukemic drugs were discovered in animal experiments, in a personal communication, Dr. Zubrod conceded, "I guess the role of the animal experiments was to convince the clinicians to allow the tests in man." That is a very different conclusion from the one he has championed in print for years—that the drugs were actually discovered by animal experiments. Most of the main drugs for cancer treatment were discovered in human studies and, only later, tested on animals.

One of the main anti-leukemic drugs is nitrogen mustard. It became of interest to oncologists when a surgeon treating victims of mustard-gas poisoning showed that it knocked out the white blood cells of those victims. Since leukemia is a proliferation of white blood cells, the surgeon argued, any substance that kills white blood cells should be effective against leukemia. With that rationale, researchers proceeded to test nitrogen mustard on a variety of mouse and rat tumors. The results were mixed; nitrogen mustard was actually ineffective against most of the strains tested. The researchers discounted the largely negative studies because

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species, Harlow stacked the deck in favor of contact comfort as the preferred stimulus. Lo and behold, infant rhesus monkeys preferred the cloth surrogate mother to the wire surrogate mother equipped with a milk nipple.

Regardless of whether or not Harlow had a personal bias towards the contact comfort theory, his experimental design itself favored a particular result. Rather than a scientific breakthrough, Harlow’s experiment, extremely cruel in its many variations, emerges as nothing but a dramatic illustration of an old hypothesis. As far as human infants are concerned, however, the relative importance of contact comfort and nursing remains unsettled. Nonetheless, Harlow, named president of the American Psychological Association, was revered for his research for decades.

In case after case, animal experiments are used merely to dramatize a clinical hypothesis. If one strain does not respond in the “right” way, some other strain surely will. Given the thousands of possible combinations of species, experimental manipulation, and environmental circumstances, someone with a vested interest in a particular result can almost always either cite or produce an experimental finding that will justify almost any public-health decision—even a dangerous one. In fact, some scientists prefer to base public-health decision on highly-variable animal data, even when reliable data on human exposure is available!

For example, on occasion, it is virtually impossible to find an experimental species whose reactions mimic those of the human body. Take the rodent—and later beagle—experiments conducted to determine the safety of cigarette smoking. When attempts to develop cancer in rodents through smoking failed, public-health actions against cigarette smoking were stalled for more than a decade. While human population studies had clearly shown that smoking caused cancer in people by 1950, experimenters could not produce cancer in animals, no matter how many different animal strains they tried. Tobacco apologists marshalled leading laboratory scientists to defend the accuracy of the rodent data. No less a scientist than Dr. C. C. Little, the founder of Jackson Memorial Laboratories in Bar Harbor, Maine, insisted that the negative findings in rodents were absolutely conclusive for man; there was no evidence that cigarette smoking causes cancer because human studies are “merely statistical.” Dr. Little maintained that only animal experiments could prove that cigarette smoking causes cancer in humans. By sheer persistence, the American epidemiologist who had already shown that cigarettes cause cancer in man managed to find a strain of mouse whose skin would become cancerous after painting it with tobacco tars. In desperation, Dr. Ernest Wynder appeared on national television to hold up the mouse he had rendered malignant with cigarette tars. Dr. Wynder’s statistician at the time was the aforementioned Irwin Bross, who, after witnessing that demeaning display of scientific showmanship, developed a profound distrust of animal experiments.

Dr. Bross maintains that the dogma that clinical hypotheses must be “proven” by animal experiments dates back to the late nineteenth century. “At that time, the dogma made sense,” he asserts.

That was the heyday of the germ theory of disease, when it appeared as if all diseases were caused by bacteria (or viruses). The analogy between an animal innoculated with a germ and a human being with a germ disease is pretty straightforward. If they absolutely couldn’t find an animal strain that would contract the disease no matter how many times they infected it, then it wasn’t too likely that the germ caused human disease either, although there were many exceptions even at that early date. In the early 1950s, when I was involved in the cigarette/lung-cancer controversy, most scientists still believed in the old nineteenth century dogma known as “Koch’s postulates.” The postulates just don’t have any applicability at all to the noninfectious diseases such as cancer and heart disease. The biochemical differences between human and animal tissues are simply too great. When they started making beagles smoke cigarettes in the late ’60s, I wrote a letter to the Buffalo Courier pointing out how foolish it was. “I’m no animal lover, but it was a real waste of money.”

The evidence that cigarette smoking caused a kind of cancer in dogs finally convinced most of the skeptics although a few holdouts remain. They still reject the cigarette/lung-cancer theory because the dogs did not contract the human form of lung cancer.

There are still scientists who attribute the discovery that tobacco causes cancer to experiments on beagles. The image of beagles hooked up to smoking machines is certainly indelible, but its dramatic impact should not be confused with its scientific content. Like the earlier rodent studies, the beagle experiments were not performed for scientific but political reasons. Beware of NIH administrators who parrot the old party line that “Virtually every medical advance of the past century arose from animal experimentation.” Look out for the songbirds of NIH and NABR.

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