Animal Research Is Unethical and Scientifically Unnecessary

Animal Experimentation, 2013

The American Anti-Vivisection Society (AAVS) is a nonprofit animal advocacy and educational organization dedicated to ending experimentation on animals in research, testing, and education in the United States. AAVS also opposes other forms of cruelty to animals.

It is wrong to treat animals as objects for the purpose of scientific research, and to cause them pain and suffering. It is not possible to use animal outcomes to predict results in humans. The current emphasis on animal “models” in biomedical research should be replaced by more relevant and effective alternatives and by an emphasis on clinical research and attention to preventative measures.

Scientists use animals in biological and medical research more as a matter of tradition, not because animal research has proved particularly successful or better than other modes of experimentation. In fact, animal ‘models’ have never been validated, and the claim that animals are necessary for biomedical research is unsupported by the scientific literature. Instead, there is growing awareness of the limitations of animal research and its inability to make reliable predictions about human health.

The biomedical research community and its affiliated trade associations routinely attempt to convince the general public, media, and government representatives that the current controversy over the use of animals is a life-and-death contest pitting defenders of human health and scientific advancement against hordes of anti-science, anti-human, emotional, irrational activists. Such a deliberate, simplistic dichotomy is not only false, but ignores the very real and well-documented ethical and scientific problems associated with the use of animal experiments that characterize modern biomedical research, testing, and its associated industries.

The biomedical community would instead be better served by promoting increased funding and research efforts for the development of non-animal models that overcome the pressing ethical and scientific limitations of an increasingly archaic system of animal experimentation.

Ethical Concerns of Using Animals in Research

Animals are living, sentient beings, and animal experimentation by its very nature takes a considerable toll on animal life. In most cases, researchers attempt to minimize the pain and distress experienced by animals in laboratories, but suffering is nonetheless inherent as animals are held in sterile, isolated cages, forced to suffer disease and injury, or euthanised at the end of the study.

Obvious and subtle differences between humans and animals in terms of our physiology, anatomy, and metabolism make it difficult to apply data derived from animal studies to human conditions.

While the majority of scientists are well-intentioned, focused on finding cures for what ails us, some biomedical researchers fail to recognize or appreciate that laboratory animals are not simply machines or
little boxes that produce varieties of data. Once consideration of animals is reduced to this level, callousness and insensitivity to the animals’ pain, suffering, and basic needs can follow.

Indeed, animals in laboratories are frequently treated as objects that can be manipulated at will, with little value for their lives beyond the cost of purchase. AAVS [American Anti-Vivisection Society], however, believes that animals have the right not to be exploited for science, and we should not have to choose between helping humans and harming animals.

**Scientific Limitations of Using Animals**

In addition to the ethical arguments against using animals in research, animal advocates, as well as many scientists, are increasingly questioning the scientific validity and reliability of animal experimentation. Some of the main limitations of animal research are discussed in detail below:

- Animal studies do not reliably predict human outcomes.
- Nine out of ten drugs that appear promising in animal studies go on to fail in human clinical trials.
- Reliance on animal experimentation can impede and delay discovery.
- Animal studies are flawed by design.

*Animal studies do not reliably predict human outcomes.* Obvious and subtle differences between humans and animals in terms of our physiology, anatomy, and metabolism make it difficult to apply data derived from animal studies to human conditions. Acetaminophen, for example, is poisonous to cats but is therapeutic in humans; penicillin is toxic in guinea pigs but has been an invaluable tool in human medicine; morphine causes hyper-excitement in cats but has a calming effect in human patients; and oral contraceptives prolong blood-clotting times in dogs but increase a human's risk of developing blood clots. Many more such examples exist. Even within the same species, similar disparities can be found among different sexes, breeds, age and weight ranges, and ethnic backgrounds.

Furthermore, animal 'models' are seldom subject to the same causes, symptoms, or biological mechanisms as their purported human analogues. Indeed, many health problems currently afflicting humans, such as psychopathology, cancer, drug addiction, Alzheimer's, and AIDS, are species-specific.

As a result, accurately translating information from animal studies to human patients can be an exercise in speculation. According to [D.G.] Hackam and [D.A.] Redelmeier (2006), "patients and physicians should remain cautious about extrapolating the findings of prominent animal research to the care of human disease," and even high-quality animal studies will replicate poorly in human clinical research.

Alternatively, drugs and procedures that could be effective in humans may never be developed because they fail in animal studies.

*Nine out of ten drugs that appear promising in animal studies go on to fail in human clinical trials.* Indeed, because of the inherent differences between animals and humans, drugs and procedures that work in animals often end up failing in humans. According to Health and Human Services Secretary Mike Leavitt, "nine out of ten experimental drugs fail in clinical studies because we cannot accurately predict how they will behave in people based on laboratory and animal studies."
A significant amount of time and money, not to mention animal lives, is squandered in the process. Pfizer, for example, reported in 2004 that it had wasted more than $2 billion over the past decade on drugs that "failed in advanced human testing or, in a few instances, were forced off the market, because of liver toxicity problems."

In fact, there have been numerous reports recently of approved drugs causing serious and unexpected health problems, leading the Food and Drug Administration (FDA) to remove the products from the market or require black box warnings on their labels. The FDA has reported that "adverse events associated with drugs are the single leading contributor to preventable patient injury, and may cost the lives of up to 100,000 Americans, account for more than 3 million hospital admissions, and increase the nation's hospitalization bill by up to $17 billion each year." The agency estimates that drug-related injuries outside the hospital add $76.6 billion to health care costs.

Reliance on animal experimentation can impede and delay discovery. Alternatively, drugs and procedures that could be effective in humans may never be developed because they fail in animal studies. It is difficult to know how frequently this occurs, since drugs that fail in animals are rarely tested in humans. However, there have been some notable cases. Lipitor, for example, Pfizer's blockbuster drug for reducing cholesterol, did not seem promising in early animal experiments. A research scientist, however, requested that the drug be tested in a small group of healthy human volunteers, and it was only then that its effectiveness was demonstrated.

In many instances, medical discoveries are delayed as researchers vainly waste time, money, effort, and animal lives trying to create an animal model of a human disease. A classic example is the discovery that smoking significantly increases the risk of lung cancer. The finding was first reported in 1954 on the basis of an epidemiological study. The report was dismissed, however, because lung cancer due to inhalation of cigarette smoke could not be induced in animal models, and it wasn't until 30 years later that the U.S. Surgeon General finally issued the warning on cigarettes.

Another noteworthy example concerns the development of the polio vaccine. Researchers spent decades infecting non-human primates with the disease and conducting other animal experiments, but failed to produce a vaccine. The key event which led directly to the vaccine and a Nobel Prize occurred when researchers grew the virus in human cell cultures in vitro.

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Animal studies are flawed by design. In addition to the fact that animals make poor surrogates for humans, the design of animal experiments is often inherently flawed, making it that much more unlikely that results obtained from such studies will be useful. Researchers from the Vanderbilt University Medical Center [S.M. Williams, J.L. Haines, and J.H. Moore] described some of the problems with animal 'models' in their 2004 article: "... [T]he design of animal studies automatically controls many variables that can confound human studies"; "... [T]he phenotypes studied in animals are not truly identical to human disease but are limited representations of them"; and "In most cases, animal studies do not assess the role of naturally occurring variation and its effects on phenotypes."
Furthermore, in their effort to secure research funds, expand the territorial boundaries and influence of their laboratories, or simply maintain their employment, it is a common practice for biomedical researchers to generate an endless series of experiments by devising minor variations on a common theme, redefining previous work, subdividing one problem into multiple parts, or manipulating new technology and equipment to answer old or irrelevant questions. Such practices are endemic in such fields as experimental psychology, substance abuse/addiction, and most of the neuroscience and transplantation protocols, yet by their very design do little to improve human or animal lives.

**Promise of Alternatives**

In animal research, as with slot machines, if you pull the traditional levers enough times, a winner eventually appears. However, animal research, in addition to being ethically challenged, is also highly flawed and severely limited, and as such, the majority of such research has failed to translate into improvements in human health.

Despite the problems with animal research, there continues to be an over-reliance on questionable animal 'models,' and there has been [according to the FDA] "an unprecedented increase in funding for biomedical research" over the years, without much success.

If the goal of biomedical experimentation is the understanding and treatment of human clinical concerns, then the current emphasis on animal 'models,' constructed under multiple artificial conditions, should be replaced by more relevant alternatives and a return to an emphasis on clinical research and public health attention to preventative measures.

Even in areas that have come to rely on vivisection, ending animal experimentation would not halt research because experience shows that scientists quickly devise new techniques to achieve their objectives. Epidemiology, cell culture experiments, and human clinical studies, as well as recent advances in *in silico* biology (computational modeling), are all better suited to efficiently and safely uncovering the cause of a disease and its treatment than is animal experimentation.

**Further Readings**

**Books**


**Periodicals and Internet Sources**


Paul Root Wolpe "Ethical Limits to Bioengineering Animals," Gene Watch, April 2011.