

Cassidy Lane

Professor Sterrantino

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### Identifying the Issues Related to Animal Testing

92% of experimental drugs that are ruled safe and effective in animal trials fail in human clinical trials because they are either too hazardous or don't work (Brewer). Not only are animal tests unreliable, but they are also archaic, cruel, and unnecessary. Advances in technology and science have created better alternatives to animal testing that are more dependable and cost effective. I believe that this is an issue not only among the animal rights community, but also among people who want effective and reliable medical treatments. Growing segments of the population want to purchase products with the security in knowing that they are not a result of cruel and inhumane animal tests.

Supporters of animal testing would say that animals are appropriate research tools because of their similarities to humans. However, the fact remains that animals are not humans. "The history of cancer research has been a history of curing cancer in the mouse. We have cured mice of cancer for decades – and it simply did not work in humans." This statement was made by Dr. Richard Klausner, the former director of the National Cancer Institute in 1998 (Pippin). Scientists have known for at least 16 years the futility of further cancer tests in mice, yet continue to do so. Another example is the 195 published methods that prevented the development of type two diabetes in mice. Though, none of these discoveries were ever used in human medicine, because they were not applicable for humans (Pippin). An additional study demonstrated that over 100 stroke drugs that were effective on animals failed in humans

(Akhtar). While animals have the same basic biological structure of a human such as the brain, heart, lungs, and circulatory system, they have very different anatomic, metabolic, and cellular structures. Some examples of these differences in animals to humans: sheep can swallow enormous amounts of arsenic and remain healthy (LCA). Morphine causes extreme excitement in cats and mice, but will calm and anesthetize a person (Szybel).

Many that promote animal testing say animals must be used in cases when ethical considerations prevent the use of humans. How trustworthy are these animal tests? The 1950's prescription sleeping pill Thalidomide, was tested on animals preceding its release. It is now infamous as the cause of approximately 10,000 human babies born with severe deformities (Kelsey). The arthritis drug Vioxx, proved to have a protective effect on the hearts of mice, but went on to cause more than 27,000 heart attacks and sudden cardiac deaths in humans (NBC). Even though a drug may be safe for animals, does not make it safe for humans. In contrast, drugs that are unsafe for animals may be perfectly safe for humans but will never benefit us because of the results found while animal testing. Case in point, aspirin is unsafe for cats and dogs, but has multiple benefits for human. The drug Tacrolimus, which is used to lower the risk of organ transplant rejection, was almost completely dismissed because of its failure during animal tests (Akhtar). Animals are unnecessarily suffering for drugs that should have been used to treat humans, but were shelved instead.

Animal tests are not only defective, but tremendously cruel. The Draize test exams the irritability to skin that a product can cause. This test is most often done to rabbits where toxic products that burn are rubbed into the rabbit's skin and eyes to see the effect (NEAVS). Vivisection is a procedure where surgery is done on live animals, mostly rats, mice, rabbits, dogs, cats and primates. The primary purpose of vivisection is for medical research, entailing

surgical operations to study the structure and function of living organs and parts, and to investigate the effects of diseases and therapy (Webster's). A prime example of vivisection's unreliability is tobacco research for cancer. Animal experimentation did not link lung cancer with cigarettes. Meanwhile hundreds of thousands of people died from lung cancer without the knowledge of the harmful effects that could have been detected through better science (Cameron).

How often are animals really mistreated in these settings? The University of Pennsylvania conducted an experiment in which live primates were strapped into a machine to take high-impact blows to the head for researchers to study the consequences of head trauma (McLean). Video footage caught vivisectionists taunting and abusing primates who were left with severe brain damage. Harvard Medical School was fined for the death of four monkeys. Two of the monkeys were deprived of water, one died of strangulation, and another died by being given too much anesthetic resulting in liver failure (Abrams). The United States Army conducts experiments on live pigs to examine the effects of flamethrowers on skin. Their scorched flesh was then removed in large pieces for study. Another study conducted at Emory University sought to display that the eyes' protein levels are the same in sight-deprived primates as in ones with average eyes. To demonstrate this, experimenters sewed the primates eyes shut (LCA). In a North Carolina testing lab, lab workers were caught on film throwing a cat, pulling a dog's teeth without proper pain medication, and trying to pull a cats' claws off by yanking it from a wire cage (Elder).

The Animal Welfare Act is the only Federal law in the United States to regulate the treatment of animals in research, exhibition, and transport (USDA: NAL). Advocates for animal experiments argue that there are laws and regulations put in place to protect animals from

mistreatment. What about the 95% of animals used in experiments that are not protected by the Animal Welfare Act? Animals that are not protected include rats, mice, fish, birds and cold-blooded animals (USDA: NAL). Only 1,134,693 animals were covered by the Animal Welfare Act in 2010, while 25 million were left defenseless to pain and mistreatment (USDA: APHIS). Even the Animal Welfare Act does not always protect the safety of animals that are covered. In 2009, the federally funded New Iberia Research Center in Louisiana had primates that were under such psychological stress, they had been found on video engaging in self-mutilation in which the primates would scratch gaping wounds in their arms and legs (The Humane Society). Video recordings also exposed infant chimps being harshly removed from their mothers as they were screaming, and another recording they would wake up and become alert during painful experiments. In addition to other primates being intimidated and unreasonably shot with a dart gun (The Humane Society).

The Animal Welfare Act's section on violations by research facilities says,

If the Secretary has reason to believe that any research facility has violated or is violating any provision of this Act or any of the rules or regulations promulgated by the Secretary hereunder and if, after notice and opportunity for hearing, he finds a violation, he may make an order that such research facility shall cease and desist from continuing such violation. Such cease and desist order shall become effective fifteen days after issuance of the order. Any research facility which knowingly fails to obey a cease-and-desist order made by the Secretary under this section shall be subject to a civil penalty of \$500 for each offense, and each day during which such failure continues shall be deemed a separate offense (USDA: NAL).

Granting these penalties have been put in place, it is often hard to prove animal cruelty and misconduct without video footage or hard evidence.

There are many alternatives to animal testing that are more accurate, humane, and cost effective. One of these alternatives is in vitro and human cell studies. This is when scientists isolate a specific cell, bacteria, or virus in a test tube. In vitro studies do not always translate well to “real-life” since humans and animals are not test tubes. However, in vitro studies are faster, less expensive and can be done with fewer ethical and safety concerns (Boskey). In vitro and cell cultures have provided significant findings. These include cancer-screening treatments, testing drugs with biochips, and replicating human skin (NEAVS).

While there is controversy over the use of human cells, there are infinite prospects in using them. A woman named Henrietta Lacks died of an aggressive form of cervical cancer in 1951. Controversially, researchers decided to harvest her cells without the consent of her family. Lacks cells have played an immense role in researching genes that cause cancer and suppress it. Lacks cells have also assisted researchers in learning new treatments for herpes, leukemia, influenza, hemophilia, and Parkinson’s disease (NEAVS).

Epidemiology is the study of naturally occurring diseases, instead of experimentally induced diseases, in human populations. Epidemiology provides researchers with data collected over years to better help health practitioners in understanding the causes, treatments, and prevention of human illnesses (NEAVS). Epidemiological studies have revealed that smoking is associated with lung cancer. It was also the first area of study to research AIDS when it began surfacing in the late 1970’s (NEAVS). Other alternatives include clinical studies, post-mortem and cadaver studies, computer models and simulators, and non-invasive imaging techniques.

If animal testing has been proven to be erratic and cruel, then why is it still used?

Researchers are given large grants regardless of the merit of their work. Money that could better serve prevention programs to avert diseases. Instead our tax dollars help government funded programs, such as the \$1,329,332 spent on a study done by Boston University that basically starved rats to then study their mentally retarded offspring (LCA). Leading medical schools such as Dartmouth and Stanford have done away with using animals to train their students. However, other laboratories continue to strap cats, dogs, and other animals to tables to then inject them with drugs. These labs, such as the University of Colorado, cost taxpayers approximately 40 thousand dollars for each lab dog. Animal testing can also be more expensive than alternative methods. An unscheduled DNA synthesis animal test costs \$32,000, while the in vitro alternative costs \$11,000. A rat photo-toxicity test costs \$11,500, while the non-animal equivalent costs \$1,300. A two-species lifetime cancer study can cost from \$2 million to \$4 million. The US National Institutes of Health spends \$14 billion of its \$31 billion annual budget on animal research (The Humane Society).

With alternatives available in the place of animal testing, it is bewildering that such cruel, ineffective, and expensive methods are still used. To phase out the barbaric use of animals in experiments, we need to continue funding and supporting other methods. Such research as in vitro, human cell cultures, epidemiology, clinical trials, cadaver studies, computer modeling, and advanced imaging techniques such as CAT, PET and MRI scans, as well as purchasing the cruelty-free options to cosmetic and household products. As Jeremy Bentham wrote in the introduction to "Principles of Morals and Legislations", "The question is not, can they reason? Nor, can they talk? But, can they suffer?" (Bentham).

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