

## Is Medical Advancement Really Dependent Upon Using Animals?

## Is The Choice Really Between Your Dog and Your Child?

Research and testing on animals involves two very separate issues. The first, and most well known issue is whether the practice is ethical: “Do humans have the right to use animals in research and testing?” The second issue, the one we are concerned with, is whether animals can predict drug and disease response for humans.

Based on research involving fields as diverse as evolutionary biology, complexity, genetics, toxicity, comparative genomics, comparative medicine, personalized medicine, and pharmacogenomics we now understand that animals cannot predict human response to drugs and disease. Animal testing does not make new drugs safer or predict human response to disease.

# AMERICANS FOR MEDICAL ADVANCEMENT

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Science is on the verge of offering *personalized medicine*. This is medical treatment tailor made for you personally. Not for your mother or father or even your twin. This is in stark contrast to medical treatments based on and tested on animals. For more information please consider reading:

### *FAQs About the Use of Animals in Science: A handbook for the scientifically perplexed*

by

Ray Greek MD and Niall Shanks PhD

AFMA realizes that the science is complex and that not everyone has the background to fully comprehend all the controversies in science. This brochure is not meant as an all-inclusive examination of the topic but rather as a limited introduction to the issue. For the more scientifically inclined, we recommend the book *Animal Models in Light of Evolution* by Shanks and Greek.

Animal models are actually a very minor part of research. However, despite not allowing scientists to predict human response, they receive the lion's share of the research funding. There are two points that need to be made: 1. Society does not need new research methods it simply needs to fund the ones we already have. Society needs the knowledge that would come from underfunded research areas like physics, chemistry, genetics, epidemiology, clinical research, in vitro research using human tissues, autopsies, clinical research in general, more extensive clinical trials for new medications including gene-based trials, funding for human observation studies, and so forth. 2. Society needs to make a fundamental change from animal-based research to human-based research. If it is humans we are trying to help then scientists must study diseases and drug reactions in humans. This is already being done but again funding needs to be dramatically increased to these areas. Research that will lead to personalized medicine deserves priority.

**Q.** What is wrong, scientifically, with research and testing on animals?

**A.** In a word: genes. The process of evolution has resulted in species that do not react the same way to drugs and disease. This is because even though we share the same genes with animals, those genes are expressed differently. For example, human and mice share the gene that in mice allows them to grow a tail. Humans do not grow a tail because that gene is not turned on during development. Dogs have a genetic makeup such that they cannot eat chocolate. Humans can and do! Several mutations that cause genetic diseases in humans - such as phenylketonuria and Sanfilippo syndrome - are the normal form in macaque monkeys.

In fact, even individual humans do not react the same way. A drug that cures one person may harm another. Men react differently than women to drugs and diseases like cardiovascular diseases and myocardial infarction. Ethnic groups differ in how diseases manifest. Even monozygotic (identical) twins do not react the same way. One may suffer from multiple sclerosis while the other does not. Even though both are diagnosed with breast cancer the treatments may differ because of differences in their genes or in the genes of the cancer.

Testing new drugs on animals does not make those drugs less likely to harm humans. In fact, the National Cancer Institute has said that society has lost cures for cancer because the drugs either affected animals adversely or did not work in the animals. So animal testing does not keep dangerous drugs off the market but does keep cures off the market. This is one reason drugs cost so much. Instead of testing on animals we need to test drugs against a patient's genes to see whether the drug is good or bad for the individual.

Animal models have misled scientists in the past and this has resulted in human deaths. Penicillin stayed on the shelf for over a decade because the rabbits Fleming tested it on led him to believe it would be ineffective in humans. Scientists were misled about the way HIV enters the human cell because of studies on monkeys. The polio vaccine was delayed by decades because the way monkeys responded turned out to be very different from the way humans reacted. The cardiopulmonary bypass machine killed the first patients it was used on and it was only after human data was used that the machine was made safe. Studying strokes and brain hemorrhage in animals has led to multiple medical treatments that worked in animals but that resulted in harm to human patients. HIV vaccines that protected monkeys have actually increased the risk of contracting HIV in the volunteers that took the vaccine. The flip side of all this is the fact that society has also lost cures and treatments because scientists believed the results from animals.

Science is on the verge of offering personalized medicine. This is medical treatment tailor made for you personally. Not for your mother or father or even your twin. This is in stark contrast to medical treatments based on and tested on animals. If a woman suffers from breast cancer today, her physician will look at her genetic makeup and then determine which treatments are best. The treatment decision factors in the genetic makeup of the woman and the genetic makeup of the cancer. Two sisters that have identical cancers may have different treatments because of subtle genetic differences. Examples like this could be expanded if society stopped funding research with animals and instead funded human-based research. Would you rather take a medical treatment designed for you or one tested on a monkey?

There are a lot of reasons why every person should care about, and be involved in, this issue. First, money for medical research is finite and most of it goes to animal models. These models are not predictive and in fact are misleading. Second we have a limited number of scientists capable of performing medical research and these people's education and training are being wasted. Third, society is being bullied; not physically by the usual schoolyard variety of bullies but intellectually by bullies who make claims most people are not intellectually strong enough to challenge. Society is being bullied into acting according to the wishes of people unwilling to defend their actions in an open forum such as a debate on a college campus complete with the college's security force. Fourth, people are actively being harmed because results from animal models are being extrapolated to humans. The action of a drug in mice is irrelevant to its efficacy and toxicity in humans. Finally, people are suffering and dying because research options that are human-based are not funded. This animal-based research harms people both directly and indirectly.