Alternatives to animal testing gaining ground [The Baltimore Sun]

(Baltimore Sun (MD) Via Acquire Media NewsEdge) Aug. 27--New drugs and consumer products are almost always tested for safety on rats, rabbits, chimpanzees and other animals, but advances in technology could bring an end to such experiments.

Testing on animals could be phased out over the next couple of decades -- putting to rest ethical, efficiency and reliability questions -- if new systems are accepted by researchers and government regulators, according to several experts gathering to debate the subject this week.

"We're trying to find out how we can save animals and make risk assessment of consumer products more reliable," said Dr. Thomas Hartung, director of Johns Hopkins University's Center for Alternatives to Animal Testing, a co-sponsor of the Washington conference called Animals, Research, and Alternatives: Measuring Progress 50 Years Later. "We're learning as science gets better." Estimates of animals used globally for experiments range from tens of millions to 100 million or more annually. Between 80 and 800 animals are now needed per drug. And there isn't universal agreement among scientists that ending testing on animals will ever be possible or should stop, considering the life-saving advances that have come from such studies, according to the Physicians Committee for Responsible Medicine.

But the nonprofit animal advocacy group notes that most animals used in experiments, such as rodents and birds, are not even covered by the main federal legislation governing animal use in research and entertainment, called the Animal Welfare Act.

Many mainstream researchers are now more strictly adhering to a concept called the Three Rs: reduction in use of animals, refinement of the tests and replacement with new technology when possible. Researchers say it had been largely ignored through the 1970s and '80s but has now been codified in many groups' policies, such as the American Medical Association, even as they officially say continued testing on animals is critical to research.

Although animal testing is required by federal law for all drugs and some chemicals, such as those used in food production, a growing number of manufacturers of home and beauty products have pledged not to test on animals.

These companies, including the major brand names Aveda, Bath & Body Works and Estee Lauder, have won the stamp of approval from animal rights groups such as the People for the Ethical Treatment of Animals. Further, some charities that fund medical research, such as the Doris Duke Charitable Foundation, will not fund tests on animals.

The corporate move away from animal testing in some cases may be a response to consumers: A July 2009 survey by the Pew Charitable Trust found that scientists are still largely behind animal testing -- 93 percent -- but only about half of the public supports it.

In the educational arena, most medical schools report that they have ended their animal labs, including the University of Maryland Medical School. Johns Hopkins' medical school does use animals.

Bolstering the move away from animals is new technology, including tests that use human or animal cells, virtual tissue and computer modeling, said Dr. Hope Ferdowsian, research policy director for the Physicians Committee, which is hosting the animal conference. The event in Washington ends Friday.

"In recent years, we've seen some pretty significant advances in critical areas," she said. "There has been development of alternatives to animal research." For many, the main reason not to test on animals is the impact it has on them. Ferdowsian's studies show that in addition to pain and discomfort, chimpanzees can suffer mood and anxiety disorders similar to humans who suffer post traumatic stress disorder.

But Hopkins' Hartung is more concerned with other practical issues, including efficiency and effectiveness.

There are some 100,000 chemicals in consumer products, and only about 5,000 have had significant testing so far because no one has the capacity for experiments using standard methods involving animals, he said.

Further, the testing methods don't always separate the good from the bad.

For example, Hartung said, aspirin, one of the oldest and most reliable drugs on the market, might not pass today's testing. That would involve giving a pound of the substance to animals every day to ensure that high doses are not toxic, even though that would not be close to an actual dose.

And rats may process drugs differently than humans do, so animal testing doesn't always reveal the harmful effects on people.

"Billions are being spent," he said. "Current methods are expensive and not working. We need a new approach." Hartung said the federal government, including the Food and Drug Administration and the Environmental Protection Agency, which oversee drug and chemical approvals, has started to look at non-animal testing.

He points to a 2007 National Academy of Sciences report that outlined the limitations of animal testing and proposed a new focus on technology. The EPA, the National Institutes of Health's National Toxicology Program and Chemical Genomics Center, and recently the FDA signed on to fund and study non-animal testing.

For example, the government agencies are developing a computer system that could eventually be used by pharmaceutical companies to weed out harmful drugs by gauging their toxicity based on the toxicity of failed drugs. So far, the database has information on 10,000 drugs.

The EPA will soon begin using the computer program, called Tox21, to test other chemicals for their potential as cancer-causers or endocrine-disruptors, which mimic hormones and disrupt normal body functions, said Robert J. Kavlock, director of the EPA's National Center for Computational Toxicology.

Once those with potential to cause disease are identified, they can jump to the head of the line for the normal course of testing. This could help clear the worst offenders from the backlog of untested chemicals already used in products.

Kavlock said pharmaceutical companies could also drop dangerous chemicals and drugs faster, before they get to human clinical trials, saving time and money. A chemical used in food production, for example, costs $6 million to $10 million to test. Computer tests would cost more like $20,000, he said.

This system could become the norm -- and the law. Prioritizing chemicals for testing has been included in a bill making its way through Congress to revamp the Toxic Substances Control Act. The bill generally gives the EPA more authority to regulate existing and new chemicals.

Kavlock said if the computer modeling eventually proves reliable, and other high-tech means of testing drugs and chemicals continue to be developed, it will mean fewer or no animal tests.

"Now the gold standard is using animals," he said. "But there is a collective recognition that we need to do better than we're doing. ... We're working on the science. And we're getting people comfortable with it." meredith.cohn@baltsun.com http://twitter.com/baltsun/health To see more of The Baltimore Sun, or to subscribe to the newspaper, go to http://www.baltimoresun.com.