

**Submission
No 289**

**INQUIRY INTO USE OF PRIMATES AND OTHER ANIMALS
IN MEDICAL RESEARCH IN NEW SOUTH WALES**

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Medical experimentation is one of the most hidden animal-use industries – despite the use of public funds, we have never been able to obtain from the NSW Government how much taxpayer money is being given to this industry or what sort of experiments are being funded.

MILLIONS OF VICTIMS

Unlike some other countries, Australia maintains no national compilation of animal use statistics. Even at the state and territory level, there are sometimes long delays in reporting the use of animals – or just no reporting at all.

Humane Research Australia estimates that around 6 million animals are used for experiments and teaching in Australia every year. More than 25,000 of them were subjected to experiments with “death as an endpoint”, in which the animals were purposely killed during the experiment, not euthanised later.

Monkeys are addicted to drugs, and holes are drilled into their skulls. The skin of sheep and pigs is burned off, and the spinal cords of rats are crushed. Tiny mice are made to grow tumours as large as their own bodies, kittens are purposely blinded, and rats are forced to endure seizures. In archaic medical training courses, pigs and dogs are cut open and killed, rats are dropped into containers of water and forced to swim for their lives, and hard plastic tubes are forced down the delicate throats of cats and ferrets.

All these animals have the capacity to feel pain and fear, and they suffer intensely when they are poisoned, cut open, blinded, electrocuted, or infected with deadly diseases in barren, windowless prisons.

ANIMAL EXPERIMENTATION IS BIG BUSINESS

The public perception that experimenters primarily use animals to make necessary advances in the field of medicine is a false one. Animal testing is a highly profitable industry, allowing universities, breeders, and equipment suppliers to make millions.

Laboratories and their affiliated universities often receive federal government grants (yes, your tax dollars) and private funding from “health charities” to perform animal studies. The Government of Australia’s National Health and Medical Research Council funds three primate breeding facilities and hands out ludicrous amounts of money for obscene tests.

In one federally funded study at Monash University aimed at understanding the organisation of the marmoset brain, the skulls of three live monkeys were cut open so that electric shocks could be delivered to their brains.

Meanwhile, the University of Western Australia, Monash University, and the University of Melbourne have dropped weights onto the brains of mice and rats in an attempt to replicate traumatic brain injuries in humans, without producing any useful results. All three universities' projects received government funding.

Humane Research Australia estimates that around 15% of animals used in experiments are used for stock-breeding, animal-management, or production purposes. Much of this involves the study of animals kept in intensive housing systems or the genetic engineering of farmed animals, such as cattle and sheep, to increase productivity and the profit margins of farmers.

Of course, the research industry wouldn't collapse if testing on animals stopped, but people are often reluctant to change – even though this is something of a paradox with respect to the culture of discovery and progress that should characterise the scientific community.

EXPERIMENTS ON ANIMALS DELAY PROGRESS FOR HUMANS

“Ask experimenters why they experiment on animals, and the answer is: ‘Because the animals are like us.’ Ask experimenters why it is morally okay to experiment on animals, and the answer is: ‘Because the animals are not like us.’ Animal experimentation rests on a logical contradiction.” – Prof Charles R Magel

Setting aside the ethical arguments against using animals in experiments, there are biological differences between humans and other animals that make most experiments scientifically redundant. The world's foremost medical research funder, the National Institutes of Health in the US, has noted that 95% of all new medications that are shown to be safe and effective in animal tests fail in human trials because they don't work or are dangerous. And of the small percentage of drugs approved for human use, half end up being relabelled because of side effects that weren't identified in tests on animals. Studies show that 90% of basic research, most of which involves animals, fails to lead to human treatments.

In addition to producing misleading results, animal tests are also costly – since they often involve breeding, feeding, housing, and, eventually, disposing of, living, feeling beings for studies that almost never help humans.

BETTER RESEARCH METHODS

Human clinical and epidemiological studies, human tissue- and cell-based research methods, cadavers, sophisticated high-fidelity human-patient simulators, and computational models have the potential to be more reliable, more precise, less expensive, and more humane alternatives to experiments on animals. Advanced microchips that use human cells and tissues to construct fully

functioning postage stamp-size organs – known as “organs-on-chips” – allow researchers to study diseases. A model “microbrain”, which can be used to study tumours and new medications, has been developed, along with artificial skin and bone marrow.

Imagine if all the time and money spent on archaic tests on animals were funnelled into finding modern, meaningful solutions to diseases that are actually relevant to humans.

ALTERNATIVES TO ANIMAL TESTING

During a government meeting about funding for research, former U.S. National Institutes of Health director Dr. Elias Zerhouni admitted to his colleagues that experimenting on animals to help humans has been a major failure:

“We have moved away from studying human disease in humans. ... We all drank the Kool-Aid on that one, me included. ... The problem is that [animal testing] hasn’t worked, and it’s time we stopped dancing around the problem. ... We need to refocus and adapt new methodologies for use in humans to understand disease biology in humans.” —Dr. Elias Zerhouni

Today—because experiments on animals are cruel, time-consuming, and generally inapplicable to humans—the world’s most forward-thinking scientists are developing and using animal-free methods that are actually relevant to human health for studying diseases and testing products. These alternatives to animal testing include sophisticated tests using human cells and tissues (also known as *in vitro* methods), advanced computer-modeling techniques (often referred to as *in silico* models), and studies with human volunteers. These and other non-animal methods are not hindered by species differences that make applying animal test results to humans difficult or impossible, and they usually take less time to complete.

Here are just a few examples of the numerous state-of-the-art, non-animal methods available and their demonstrated benefits:

IN-VITRO TESTING

Researchers have created “organs-on-chips” that contain human cells grown in a state-of-the-art system to mimic the structure and function of human organs and organ systems. The chips can be used instead of animals in disease research, drug testing, and toxicity testing and have been shown to replicate human physiology, diseases, and drug responses more accurately than crude animal experiments do. Some companies, such as AlveoliX, MIMETAS, and Emulate, Inc., have already turned these chips into products that other researchers can use in place of animals.

A variety of cell-based tests and tissue models can be used to assess the safety of drugs, chemicals, cosmetics, and consumer products. For example, MatTek Life Sciences’ EpiDerm™ Tissue Model is a 3-dimensional, human cell-derived model that can be used to replace rabbits in painful, prolonged

experiments that have traditionally been used to evaluate chemicals for their ability to corrode or irritate the skin.

The PETA International Science Consortium Ltd. helped fund the development of MatTek Life Sciences' EpiAlveolar, a first-of-its-kind 3-dimensional model of the deepest part of the human lung. The model, composed of human cells, can be used to study the effects of inhaling different kinds of chemicals, pathogens, and (e-)cigarette smoke.

Devices made by German-based manufacturer VITROCELL are used to expose human lung cells in a dish to chemicals in order to test the health effects of inhaled substances. Every day, humans inhale numerous chemicals—some intentionally (such as cigarette smoke) and some inadvertently (such as pesticides). Using the VITROCELL machines, human cells are exposed to the airborne chemical on one side while receiving nutrients from a blood-like liquid on the other—mimicking what actually occurs when a chemical enters a human lung. These devices, as well as EpiAlveolar, can replace the current method of confining rats to tiny tubes and forcing them to inhale toxic substances for hours before they are eventually killed.

Researchers developed tests that use human blood cells to detect contaminants in drugs that cause a potentially dangerous fever response when they enter the body. The non-animal methods replace the crude methods of bleeding horseshoe crabs or restraining rabbits, injecting them with drugs or extracts from medical devices, and taking their temperature rectally to monitor if they develop a fever.

Through research funded by the PETA International Science Consortium Ltd. and carried out at the Institute for Biochemistry, Biotechnology and Bioinformatics at the Technische Universität Braunschweig in Germany, scientists created fully human-derived antibodies capable of blocking the poisonous toxin that causes diphtheria. This method can end the practice of injecting horses repeatedly with the diphtheria toxin and draining huge amounts of their blood in order to collect the antibodies that their immune systems produce to fight the disease.

COMPUTER (IN SILICO) MODELLING

Researchers have developed a wide range of sophisticated computer models that simulate human biology and the progression of developing diseases. Studies show that these models can accurately predict the ways that new drugs will react in the human body and replace the use of animals in exploratory research and many standard drug tests.

Quantitative structure-activity relationships (QSARs) are computer-based techniques that can replace animal tests by making sophisticated estimates of a substance's likelihood of being hazardous, based on its similarity to existing substances and our knowledge of human biology. Companies and governments are increasingly using QSAR tools to avoid testing chemicals on animals.

RESEARCH WITH HUMAN MODELLING

A method called "microdosing" can provide vital information on the safety of an experimental drug and how it is metabolized in humans prior to large-scale human trials. Volunteers are given an extremely small one-time drug dose, and sophisticated imaging techniques are used to monitor how the drug behaves in the body. Microdosing can replace certain tests on animals and help screen out drug compounds that won't work in humans so that they are never tested in animals.

Advanced brain imaging and recording techniques—such as functional magnetic resonance imaging (fMRI)—with human volunteers can be used to replace archaic experiments in which rats, cats, and monkeys have their brains damaged. These modern techniques allow the human brain to be safely studied down to the level of a single neuron (as in the case of intracranial electroencephalography), and researchers can even temporarily and reversibly induce brain disorders using transcranial magnetic stimulation.

HUMAN-PATIENT SIMULATION

Strikingly lifelike computerized human-patient simulators that breathe, bleed, convulse, talk, and even “die” have been shown to teach students physiology and pharmacology better than crude exercises that involve cutting up animals. The most high-tech simulators mimic illnesses and injuries and give the appropriate biological response to medical interventions and medication injections. All medical schools across the U.S., Canada, and India have completely replaced the use of animal laboratories in medical training with simulators as well as virtual reality systems, computer simulators, and supervised clinical experience.

For more advanced medical training, systems like TraumaMan—which replicates a breathing, bleeding human torso and has realistic layers of skin and tissue, ribs, and internal organs—are widely used to teach emergency surgical procedures and have been shown in numerous studies to impart lifesaving skills better than courses that require students to cut into live pigs, goats, or dogs.

Although scientists have state-of-the-art, effective, non-animal methods available, experimenters continue to torture countless animals anyway. “Without Consent,” PETA’s interactive timeline, features almost 200 stories of twisted experiments from the past century, including ones in which dogs were forced to inhale cigarette smoke for months, mice were cut up while still conscious, and cats were deafened, paralyzed, and drowned. Visit “Without Consent” to learn about more harrowing animal experiments throughout history and how you can help create a better future for living, feeling beings.

Animals are sentient beings, they feel and have needs like us, for shelter, food, sleep, family, connection to each other and a natural environment.

Please, it's time for animal experimentation to end. Thank you for all you can do.