Systematic reviews of animal experiments

The Dr Hadwen Trust for Humane Research supports calls for systematic studies of the predictiveness of animal research and toxicology. A few such studies have already been published and reveal numerous problems with animal models, including poor methodology and low translational success to human patients.

There are strong scientific, ethical and legislative imperatives to replace animal experiments, rather than focusing efforts on improving them. Therefore, the Dr Hadwen Trust advocates that when systematic reviews identify weaknesses in animal experiments, the priority should be their replacement with more relevant non-animal methods. Individual researchers, universities, companies, funders and regulators should be working together to achieve this goal.

List of most recent systematic reviews of animal experiments:


- BMJ. 2007 Jan 27;334(7586):197 - reviewed 221 animal studies using over 7,100 animals; it looked at six treatments for different human conditions: brain injury, haemorrhage, stroke, respiratory distress syndrome in newborn babies and osteoporosis. The review was called *Testing Treatment on Animals: Relevance to Humans* and was written by Professor Ian Roberts (London School of Hygiene and Tropical Medicine) commissioned by the NHS and published in May 2006. It was subsequently peer-reviewed and published in the British Medical Journal. The team conducted rigorous and detailed reviews of the treatments by comparing human, clinical data with predictions from animal experiments. The review concluded that in three-quarters of cases the animal studies were of a poor quality and in half the studies, the animal models did not accurately mimic human illness and failed to predict the human outcome. A 50% success rate is not considered impressive and certainly does not represent convincing scientific justification for animal models.

- Lindl T, Völkel M, Kolar R. (2005) [Animal experiments in biomedical research. An evaluation of the clinical relevance of approved animal experimental projects: no evident implementation in human medicine within 10 years]. [German]. ALTEX 22(3):143-51. This study was led by Dr Tony Lindl (formerly Professor of Biochemistry at the University of...
Bonn, and currently Director of the Institute of Applied Cell Culture in Munich). The researchers analysed 51 series of animal experiments conducted at the Universities of Wurzburg, Erlangen and Regensberg in Germany, and found that 99.7% of the results produced by research on 5,000 animals, were not applicable to humans, and that no medical use had been found for the remaining 0.3%.

- J Epidemiol Community Health 2003;57:(suppl 1): A1-21 involved 13 studies of stress and coronary heart disease. It concluded that the primate studies had been selectively cited in order to support the human evidence; when all the primate studies were systematically reviewed as a whole, the evidence didn’t support findings in humans.
- Annals of Neurology 2006. 59:467-77 involved 1,026 studies of acute stroke and concluded that the drugs selected to progress to human trials were no more effective in animals than those that had been abandoned.
- Perel P, Roberts I, Sena E, Wheble P, Briscoe C, Sandercock P, Macleod M, Mignini LE, Jayaram P, Khan KS. (2007) Comparison of treatment effects between animal experiments and clinical trials: systematic review BMJ 334:197. This review found discordance between animal and human results in 5 out of the 6 areas of medical research they looked at, having selected animal studies from those areas where there was unambiguous evidence of a treatment effect.
- Anon. (2006) Neuroprotection: the end of an era? The Lancet 368:1548 In the case of stroke research, 114 neuroprotective drugs have been effective in animal studies but all have failed in clinical trials, placing the use of animals as ‘models’ in stroke research in serious doubt.