



Media Release

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## New publication demonstrates the need to replace animal models in medical research.

### “Lessons from Toxicology: Developing a 21st-Century Paradigm for Medical Research”

A team of international authors expert in innovative toxicology and animal replacement, led by Dr Gill Langley of Humane Society International (HSI), states:

“[A] new paradigm is needed for fundamental research into human diseases and for drug discovery. The focus should move decisively away from preclinical animal studies and overly simplistic cell models toward a systems biology framework to integrate new types of scientific data, such as from omics, novel human-specific *in vitro* models, and clinical studies. Such a framework would help enable a comprehensive and dynamic understanding of disease causation and pathophysiology.”

According to Australian coauthor and HRA scientific advisor, **Dr. Brett Lidbury**, the article raises the following key issues:

- Closer scrutiny and analyses on the value of pre-clinical animal-models has revealed disappointment in terms of human translation from fundamental research;
- Twenty-first century innovation and technology is now available to provide animal replacement alternatives, particularly through systems approaches (e.g. Integration of external and internal disease-associated processes)
- Fundamental biomedical research can learn much from toxicology and the advances to find alternatives to animal models – a good example is the “adverse outcome pathway” (AOP).

The paper is welcomed by Humane Research Australia. **Helen Marston, CEO** who says: “*The current methods of using different species to obtain data for humans is simply not working. We need a different approach – one that focuses on the genetic, anatomic and metabolic intricacies of the species we are trying to study and not erroneous and misleading extrapolations from animal tests.*”

According to **Dr Langley**, “*It is essential we adopt and utilise human-species specific models in vitro, in vivo (clinical), and in silico (in computer). We need to entirely revise the medical research paradigm, so that novel techniques and their data aren't simply added piecemeal to the existing 'edifice' but are used strategically in a new framework that also eliminates failing animal models.*”

The article states: *“The key driver for a new paradigm in health research is the slow progress scientists have made in understanding human disease. This has resulted in a lack of success in drug discovery and translation of laboratory findings into effective therapies and in the spiraling investment of resources wasted by late-stage drug failures.”*

The full paper is available at <http://ehp.niehs.nih.gov/15-10345/#tab1>

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