

The Development of Non-animal Models for Infectious Disease Research

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Abstract

In August 2023, CSIRO, in collaboration with government, research and industry partners released a report on non-animal models. The report, *Non-animal models: A strategy for maturing Australia's medical product development capabilities*,¹ assessed the potential of emerging non-animal models to complement or replace traditional animal models over the next 15 years.

Non-animal models use **animal** or **human-derived cells, tissues** or **data**. They can be used to determine the safety and efficacy of medical products prior to their use in humans (or animals). They can also be used in basic and fundamental research, to replace the use of animals.

In addition to ethical drivers, non-animal models have a range of characteristics that offer complementary benefits to animal models such as:

- enhanced biological relevance
- provide an alternative when using an animal model is challenging
- enables high throughput screening
- cost savings
- increased productivity
- social license benefits

Several factors are driving an escalation in the pace of development and adoption of non-animal models. This includes changes to international policy, limited and vulnerable access to animals, maturing global capability and industry shifts.

Highlighting Australia's strengths and aligning them with global needs, the report emphasises four key opportunities, namely (1) complex in vitro models for drug discovery, (2) organ-specific models for preclinical development, (3) personalized models for trial participant and clinical treatment selection, and (4) onshore production of model components.

This talk will elaborate on the report, as well as show examples of how non-animal models are being used for the study of infectious diseases such as Lumpy Skin Disease and rabies.

Reference

1. CSIRO (2023) Non-animal models: a strategy for maturing Australia's medical product development capabilities. CSIRO, Canberra. <https://www.csiro.au/en/work-with-us/services/consultancy-strategic-advice-services/csiro-futures/health-and-biosecurity/non-animal-models>