

## A Humane Deal: Transitioning to a new era of science, together

Society has become increasingly dependent on the use of chemical and biological substances to improve human health and well-being. However, this requires research into new therapeutic targets, and testing of the efficacy and safety of these substances, which has traditionally been based on animal studies. There is growing recognition of the limitations of animal-based methods in research and testing, and the need for more predictive approaches based on human biology [1,2]. Recent technological advances in human-based science offer the potential to replace animal-based models with innovative non-animal solutions that better predict the effects of new drugs and chemicals, and provide new, biologically-relevant mechanistic insights [3,4]. In spite of this, there has been no sustainable reduction in the number of animals used for scientific purposes in the EU and worldwide [5].

The traditional reliance on animal-based research and testing is still deeply enshrined within current policies and practices, but attitudes and actions are progressively changing. The call for a shift towards more fit for purpose, biologically-relevant science has repeatedly been expressed by EU agencies [6], citizens [7], academia [8], industry [9] and Members of the European Parliament [10]. Commitments to reduce reliance on animals and move towards animal-free science have also been made by a number of EU countries in recent years [11-13]. The European Commission itself has recognised that animal testing should be phased out in Europe, and has recently committed to develop a roadmap for phasing out animal testing for chemical safety assessment, and to explore the possibility of developing a European Research Area (ERA) policy action to reduce the use of animals in biomedical research and regulatory testing [14].

The EU and its Member States have the necessary academic and industrial strengths to pave the way for a new era of humane science, but it needs a clear and comprehensive coordinated strategy to facilitate this transition and effectively embed new non-animal technologies into scientific and regulatory practices. This presentation will explore some of the key elements needed in a roadmap to accelerate the transition to non-animal science, what can be learned from Member State initiatives aimed at reducing the use of animals, and what are the future needs and opportunities for the short- and long-term replacement of animals used in science.

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