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Veterinary Medicine

*The transition towards animal-free
science and regulations
Phasing in new approach methods and
phasing out animal testing*

Bern 27 November 2025

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Prof Evidence-Based Transition Animal-Free Innovations

Institute for Risk Assessment Sciences (IRAS) Toxicology, Utrecht University, NL

Honorary Skou professor, Clinical Medicine, Aarhus University, DK

Steps in my career

3Rs Replacement, Reduction, Refinement



Systematic reviews



Transition to animal-free



Transdisciplinary research



<https://www.youtube.com/watch?v=jFK-u7YZEAK&t=690s>

Overview

- What categories of Replacement / New Approach Methods (NAM)?
- Examples on rephrasing research questions
- What is transition science?
- Case studies on phasing out and phasing in
- Transition developments in EU and worldwide



EU learning module 52

What are the different types of Replacement that can be distinguished?

***1. One on one Replacement:
Monocyte Activation Test is a
validated replacement of the
Rabbit Pyrogen Test***

***2. Complex Replacement:
combining datasets (in vitro and
in silico) and evidence streams***

***3. Reformulating research
questions***



Next Generation Risk Assessment (NGRA)



Helping animal free innovation



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Examples rephrasing research questions

Priority setting partnerships – patients and funders, James Lind Alliance UK. Start with the human disease and ask patients what is important



Asthma
example

Thomas M, et al. Health Technology Assessment [Internet]. 2017 Sep;21(53):1–162.
Available from: <https://www.journalslibrary.nihr.ac.uk/hta/hta21530>



Animal Free Innovation > What TPI does

Helpathon for animal-free methods

How can animal-free methods help in understanding and combatting human diseases? That is the central question posed in the various 'helpathons' organised through the TPI programme. Through 'organised chance', participants think up creative solutions for animal-free research methods.

Creative solutions

During a helpathon, teams think up creative solutions for a single central question raised by someone planning to conduct animal-free research. The events are derived from 'hackathons', the purpose of which is to develop software or hardware in a short period of time. [These Lush award winning helpathons](#) were developed by [M. de Leeuw](#).

Burn wound in a test tube

How can burn wounds and the circulation of blood in the area surrounding a wound be examined without the use of laboratory animals? That was the central question for the first TPI helpathon held in November 2018 at the Netherlands Burns Foundation (Nederlandse Brandwonden Stichting). Burn researchers and the Amsterdam UMC are now putting the solution devised in the helpathon to use, together with healthcare professionals and staff at the Pharming medicine company. This solution involves burns being simulated on human skin in a test tube and examined.

Vaccine against arteriosclerosis

The [second helpathon took place at the Dutch Heart Foundation \(Hartstichting\)](#) in May 2019. The topic was testing a vaccine against arteriosclerosis, testing this possible vaccine on humans would involve a lengthy process. How could animal-free alternatives accelerate this? Another question related to using vesicles from milk as a medicine against joint inflammation like rheumatism. This works in mice, but how can the effect on humans be tested without using animals?



What are your ambitions? Do you share ours?

Organizing Coincidence

We help to create coincidence by organizing HELPATHONS. A Helpathon is a 24 hour online and real live transformative venue organised around a particular human health research question.

Special Dutch Citizens HELPATHON, November 2025



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More info on TPI tv

Helpathons



Questions

Helpathon #12 – Can you help Erica?

01:09



Questions

Helpathon #11 – Can you help Terry?

01:14



Questions

Helpathon #11 – Can you help Francesca?

01:55





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What is transition science?

Multilevel perspective transition science

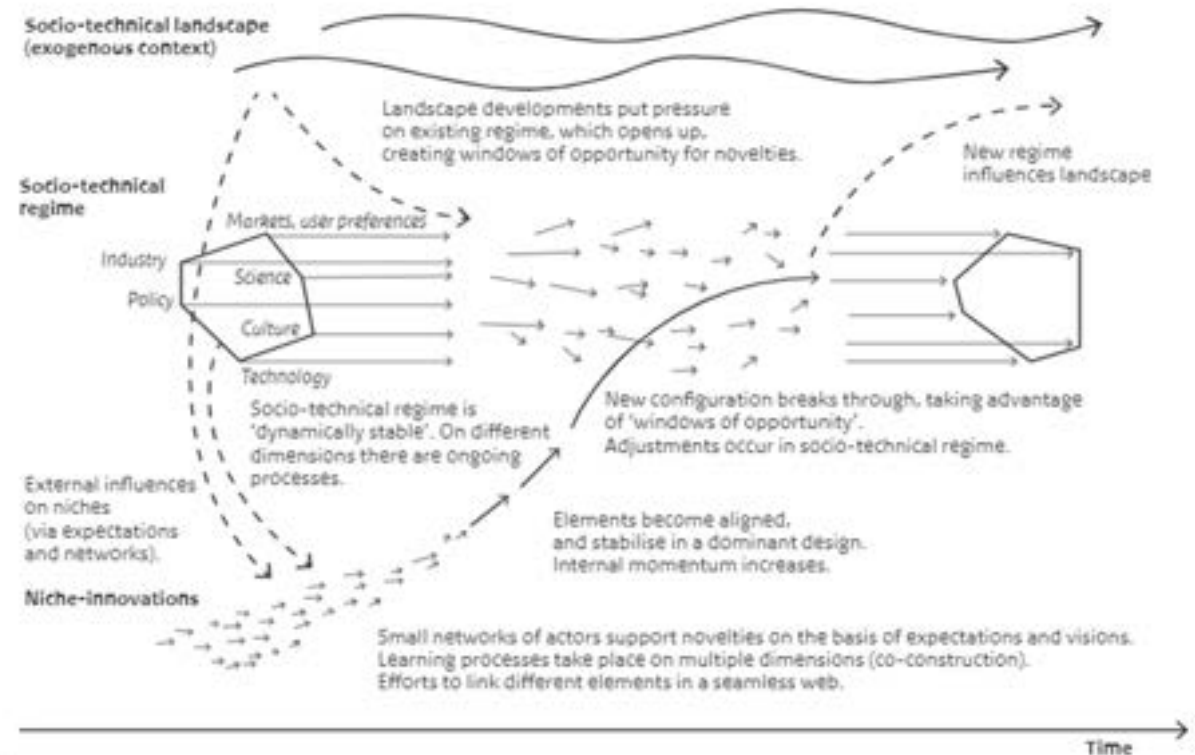
Identify:
Barriers, leverages and opportunities

Niche: Alternative system

Regime: Dominant system

Landscape: Societal trends

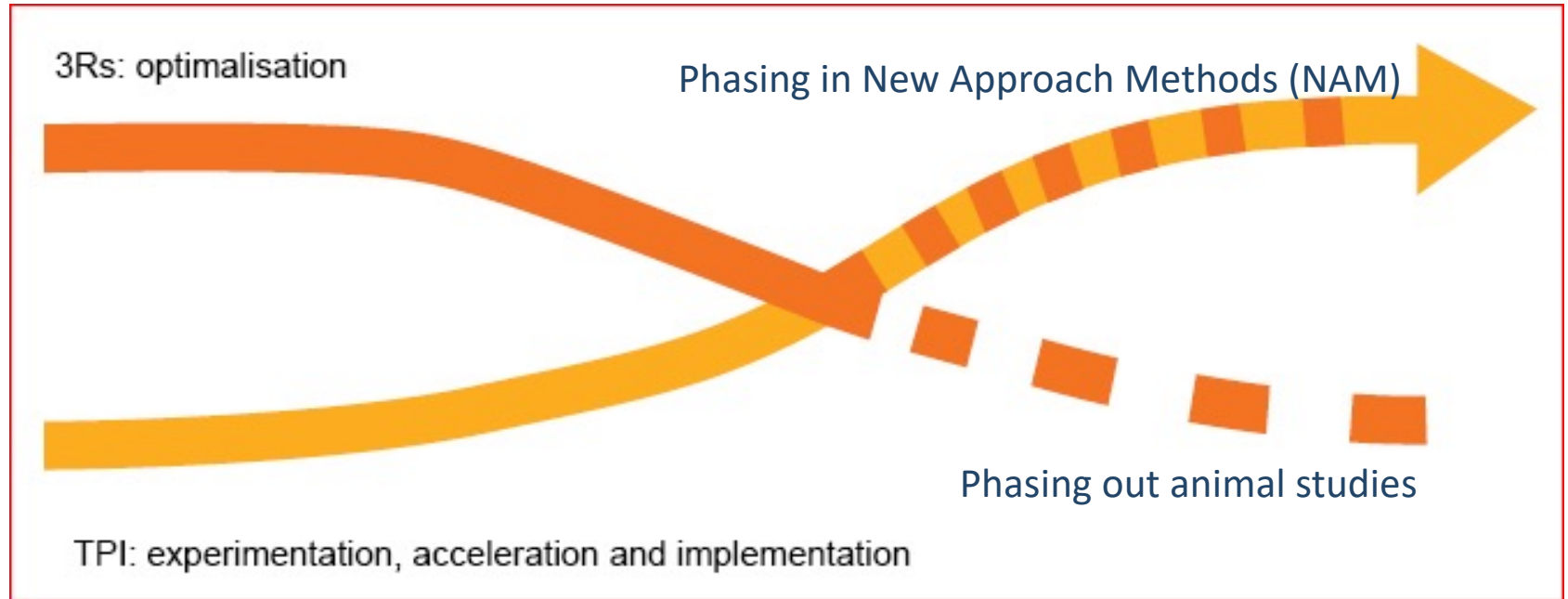
Goal:
Identify
opportunities
to accelerate
the transition



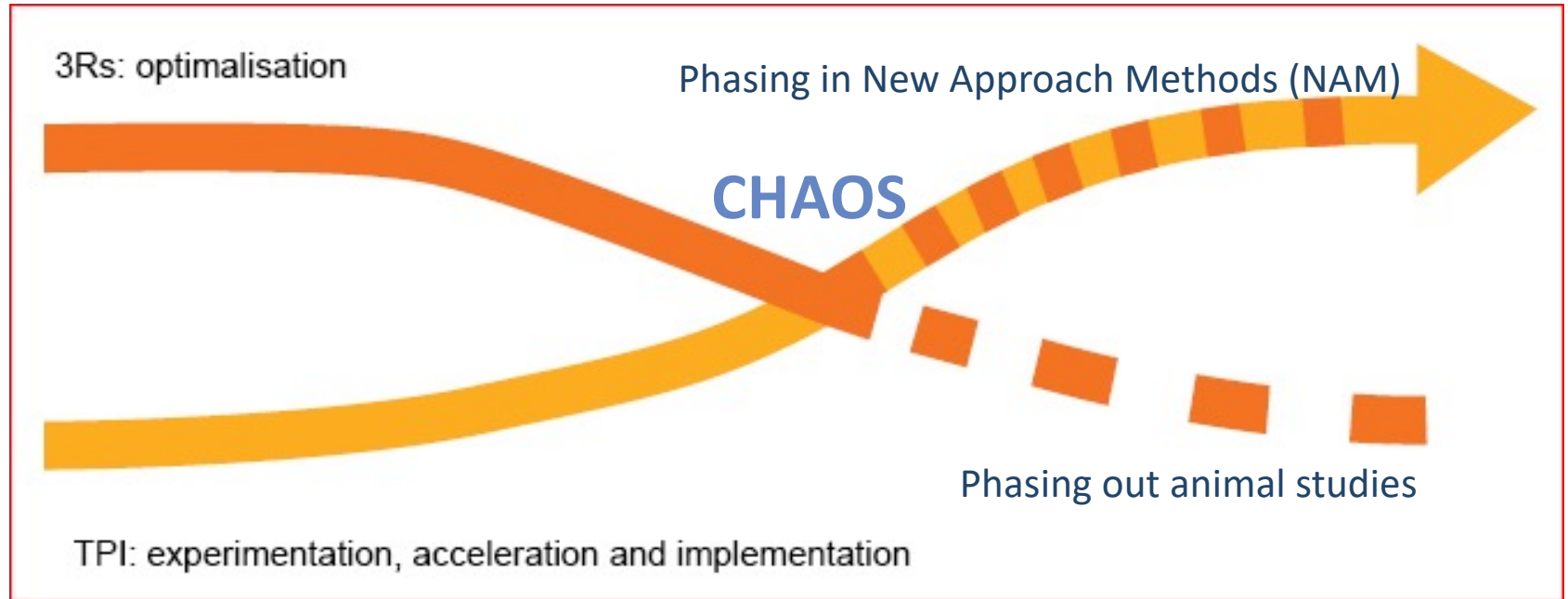
Multi-level perspective transition analysis



X-curve is central



X-curve is central





Radboud Universiteit Nijmegen



Universiteit Utrecht



Accelerating the transition to animal-free NGRA: a transformative governance approach

TNO

JOHNS
HOPKINS
UNIVERSITY

TENWISE

Unilever

Howard White

THE
good
LOBBY

EUROGROUP
FOR ANIMALS

PETA



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Case studies

Succes example EU

18.05.2022

PharmEuropa - Revision of Chapter 2.6.30 Monocyte Activation Test

Test with human blood
(Monocyte Activation Test (MAT)
replaces rabbit pyrogen test (RPT).

Successful
One-on-one Replacement.

MAT is even better than RPT.



<https://www.edqm.eu/en/-/european-pharmacopoeia-to-put-an-end-to-the-rabbit-pyrogen-test>

<https://www.edqm.eu/en/-/ph.-eur.-bids-adieu-to-rabbit-pyrogen-test-in-its-monographs>

<https://www.gmp-compliance.org/gmp-news/pharmeuropa-revision-of-chapter-2-6-30-monocyte-activation-test>

Succes example EU

Newsroom

European Pharmacopoeia to put an end to the rabbit pyrogen test

EDQM | STRASBOURG, FRANCE | 28/06/2021



<https://www.edqm.eu/en/-/european-pharmacopoeia-to-put-an-end-to-the-rabbit-pyrogen-test>

<https://www.edqm.eu/en/-/ph.-eur.-bids-adieu-to-rabbit-pyrogen-test-in-its-monographs>

<https://www.gmp-compliance.org/gmp-news/pharmeuropa-revision-of-chapter-2-6-30-monocyte-activation-test>

Why did it take so long?!

It turned out to be essential to remove all wording referring to animal tests from the European Pharmacopeia.



<https://www.youtube.com/watch?v=4IilHSlKo8&t=6s>

***Providing scientific evidence is clearly not sufficient
to make real changes fast:***

***validated Monocyte Activation Test replaces Rabbit Pyrogen test,
and is even better – it took ca. 35 years in EU! Outside the EU still
not happening.***

***Therefore: we need mixed methods research and flexible
evidence-based approaches for a better understanding:
combining quantitative and qualitative research;
inter- and transdisciplinary research***

Another ongoing case study – ‘Botox’ Severe mouse suffering for vanity?



1 (2025) 100040



Contents lists available at ScienceDirect

NAM Journal

journal homepage: www.sciencedirect.com/journal/nam-journal



Full Length Article

Botulinum neurotoxin: Tracking the transition from lethal dose to *in vitro* models

Justine C Watkins^{a,†,*} , Jordi Middelkoop^{a,†} , Katy Taylor^b , Dilyana Filipova^{b,c} ,
Thomas Hartung^{d,e} , Ingrid Visseren-Hamakers^f, Merel Ritskes-Hoitinga^a ,
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How politicians soured on one of Europe's biggest primate research centers

Some scientists hope animal work at the Biomedical Primate Research Centre can continue despite vote by Dutch Parliament to end the studies

6 NOV 2025 • 2:00 PM ET • BY MARTIN ENSERINK



Martin Enserink

Editor

Martin Enserink is a Deputy News Editor at Science.



Advertentie

PUBLIJK GELD MOET NAAR MENSGERICHT BIOMEDISCH ONDERZOEK IN PLAATS VAN APENPROEVEN



Ondertekend door:

Prof. dr. Muel Ritken-Hottings, Evidence-Based Transition to Animal-Free Innovations, Universiteit Utrecht
Em. prof. dr. Huub Schellekens, Pharmaceutical Biotechnology, Universiteit Utrecht

Samen met:

Dr. Benno Bovenkerk, Philosophy Group, Wageningen University & Research / Prof. dr. Peter J. Bogaard, Ongerichtgevoelend & Humane Etensoverleving, Wageningen University & Research / Prof. dr. Femke M. van den Broek, Hologram Planetary Governance, Universiteit Maastricht / Prof. dr. Lennik G. van den Broek, Humanities Cluster (KHAW) & Universiteit Maastricht / Dr. Yvonne de Jong, Eastern Africa Primate Diversity and Conservation Program, Kinshasa / Drs. Mariëtte Kerkstra, Nutsin, voorzitter Physicians Association for Nutrition the Netherlands (Pant Nederland) / Prof. dr. Philip Macnaghten, Technology and International Development, Wageningen University & Research / Drs. Arno Kivimäki, delft cardiology en reumatologie, delft onderzoek, Soale Revolutie en Reumatologie (Amsterdam) / Dr. Eva Meijer, Planetary Fellow, Forest for Planetary Thinking, Justus Liebig University Gießen / Dr. Carlo Alberto Pizzi, co-founder en managing director, Chiron / MSc. Mag. Nathalie de Ridder, onderzoekslaboratorium, Jholland University of Applied Sciences / Dr. Antoine A.J. de Vries, Universiteit Radboudum Cardiology, Lohd Universiteit Medical Centrum / Dr. Carine van Schel, manager zorginnovatie en onderzoek, Nederlandse Brandweer Stichting / Dr. Ben van Balkom, onderzoeker proefdiervrije technologieën

Deze oproep wordt getekend door Proefdiervrij en PETA, die het belangrijk vinden dat deze stemmen gehoord worden.
Proefdiervrij.nl / PETA.nl

PROEFDIERVRIJ



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<https://www.science.org/content/article/how-politicians-soured-europe-s-biggest-primate-research-center>

Heated scientific discussions

Political decision making:
5 year transition period non-human primate center

Phase out NHP studies
Phase in NAMs



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Transition developments



Transitie Proefdiervrije Innovaties = Transition to Animal-Free Innovations NL



Mission: Better predictions without laboratory animals

TPI is coordinated by the Ministry responsible for the Dutch Animal Experimentation Act and assembles 'all' stakeholder organisations to work together



Centre for Animal-free Biomedical Translation

Ombion is a national centre for valorizing and disseminating animal-free innovations and expertise. It aims to improve and accelerate the transition of new biomedical innovations to patients and users, at lower costs, and without the use of animals. This will lead to safer, more effective, and better medicines while reducing animal testing.

Together with a large number of national and international partners, Ombion will work on the development and dissemination of animal-free biomedical innovations and expertise. The initial transition projects will focus on ALS, cystic fibrosis, osteoarthritis/rheumatic diseases, and asthma/COPD. Ombion will implement the available and

BUDGET



PARTNERS



<https://site.ombion-cpbt.nl/>

Winning the Willy van Heumen 3R prize in NL in 2025



Young TPI Conference 2025

Oct 23-24, Amsterdam



THE LUSH PRIZE SUPPORTING ANIMAL-FREE TESTING

CONNECTING THE DOTS



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What challenges do you face working with NAMs as an early-career researcher?

Answer this survey for our research into this topic →

Contact: s.a.w.vanwijk@uu.nl



   You and 34 others

2 comments • 16 reposts

European Citizen Initiative – example landscape level

Save
Cruelty Free
Cosmetics

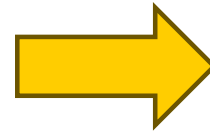
Commit to a Europe without animal testing

STAY UPDATED
#ENDANIMALTESTING



<https://www.eurogroupforanimals.org/campaigns/eci-save-cruelty-free-cosmetics>

EC roadmap



Home > Events > The Commission roadmap for phasing out animal testing in chemical safety assessments

TRAINING AND WORKSHOPS

The Commission roadmap for phasing out animal testing in chemical safety assessments

This hybrid workshop was organised in Brussels as part of the Commission's response to the European Citizens' Initiative (ECI) 'Save Cruelty-free Cosmetics - Commit to a Europe without Animal Testing'.

TRAINING AND WORKSHOPS

Roadmap for phasing out animal testing in chemical safety assessments: second workshop

A second workshop on the roadmap towards phasing out animal testing for chemical safety assessments will take place on Friday 25 October 2024

Registration for this hybrid workshop in Brussels will open in September. A draft agenda will be made available that month.

chemical industry | animal welfare | cosmetics industry

Friday 25 October 2024, 09:00 - 17:00 (CEST)

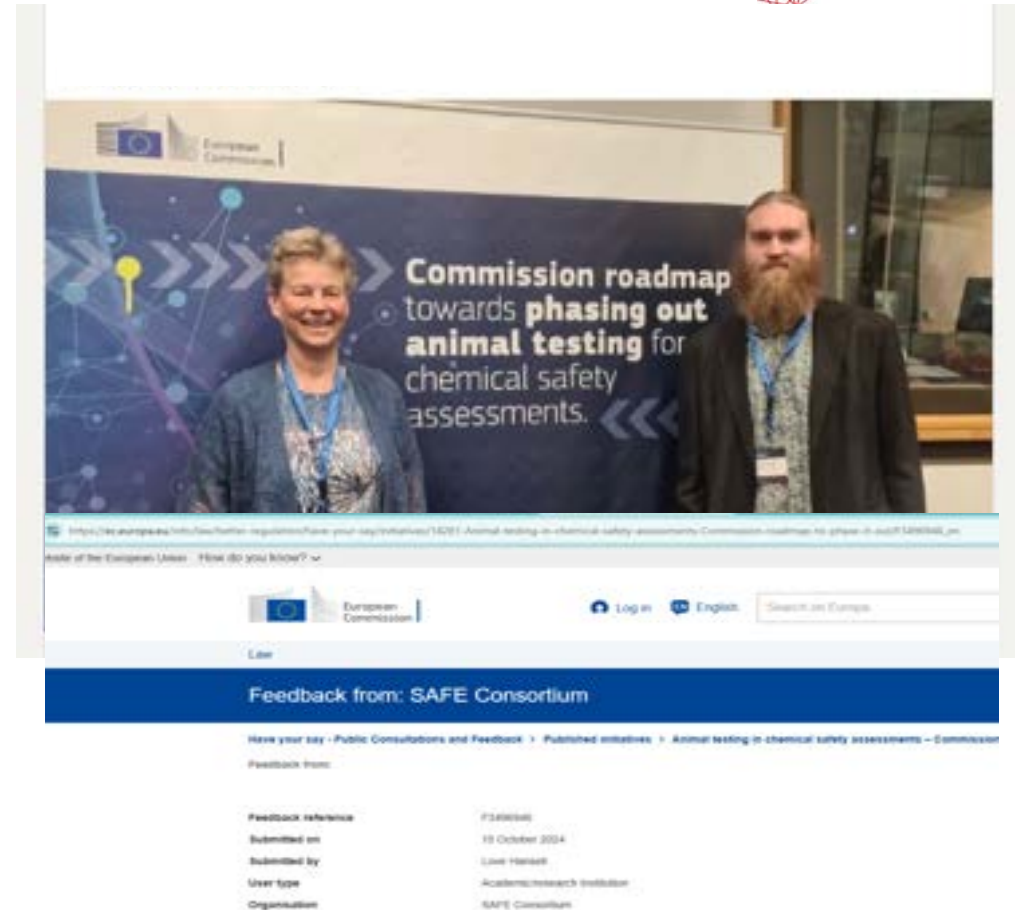
Brussels, Belgium



Wat is needed for phasing out?

- Targets: 2035
- Education
- Adapt legislation
- Governance
- Involve society: safety, animal welfare
- Communication and cooperation
- Global harmonisation
- Financing
- More...

<https://policylabs.frontiersin.org/content/commetary-recommendations-for-the-eu-roadmap-to-accelerate-the-transition-towards-phasing-out-animal-testing-for-chemical-safety-assessments>



https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14281-Animal-testing-in-chemical-safety-assessments-Commission-roadmap-to-phase-it-out/F3496946_en

Transition is ongoing globally

Sanofi-Aventis: 50% Reduction in animal use 2020-2030



Roadmap to Reducing Animal
Testing in Preclinical Safety Studies

FDA roadmap 2025: NAMs become the default instead of animal studies in 3-5 years

European Parliament also asks European Commission for a roadmap for phasing out animal testing for chemical safety

European Medicines Agency's 3R working party and Innovation Task Force

NRP'79 program and 3R implementation program

Australia – next slide



Australia's National
Science Agency

2038 goal
animal studies no longer
needed for medical
product development

Non-animal models

A strategy for maturing Australia's medical product
development capabilities

2023



Abstract

This report assesses the potential of emerging non-animal models to complement or replace traditional approaches in medical product development over the next 15 years. The analysis includes specific opportunities and recommendations for Australia to strategically enhance capability in this field, improve research quality and productivity, strengthen sovereign capability, and generate new national revenue streams. The report was informed by consultation with 103 individuals from 66 organisations across industry, research and government.

RECOMMENDATION 10

Conduct systematic reviews
of locally and internationally
developed non-animal models



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<https://publications.csiro.au/publications/publication/Plcsiro:EP2023-3601>



Policy paper

Replacing animals in science: A strategy to support the development, validation and uptake of alternative methods

Published 11 November 2025

<https://www.gov.uk/government/publications/replacing-animals-in-science-strategy/replacing-animals-in-science-a-strategy-to-support-the-development-validation-and-uptake-of-alternative-methods>



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***Switzerland examples
chairing the NRP'79 3R
Implementation Advisory Board***



NRP 79 «Advancing 3R – Animals, research and society»

The National Research Programme 79 investigates how to replace animal testing with alternative experimental approaches.

The value of systematic reviews

PLOS ONE

RESEARCH ARTICLE

Perceptions of 3R implementation in European animal research: A systematic review, meta-analysis, and meta-synthesis of barriers and facilitators

Edwin Louis-Maerten^{1*}, Aoife Milford¹, David M. Shaw^{1,2}, Lester D. Geneviève¹, Bernice S. Elger^{1,3}

1 Institute for Biomedical Ethics, University of Basel, Basel, Switzerland, **2** Care and Public Health Research Institute, Maastricht University, Maastricht, The Netherlands, **3** Faculty of Medicine, Center of Legal Medicine, University of Geneva, Geneva, Switzerland

* edwin.louis@unibas.ch

The meta-analysis revealed that scientists are skeptical about achieving replacement, even if they believe that 3R improve the quality of experimental results. They are optimistic concerning the impact of 3R on research costs and innovation, and see education as highly valuable for the implementation of 3R. The meta-synthesis revealed four barriers (systemic dynamics, reification process, practical issues, insufficient knowledge) and four facilitators (efficient use of animals, caring for animals, regulatory uptake, supportive workplace environment).



NRP 79 «Advancing 3R – Animals, research and society»

The National Research Programme 79 investigates how to replace animal testing with alternative experimental approaches.

European Journal of Risk Regulation (2025), 16, 985–1016
doi:10.1017/err.2025.1



ARTICLE

Towards Non-Animal Testing in European Regulatory Toxicology: An Introduction to the REACH Framework and Challenges in Implementing the 3Rs

Katerina Stoykova

Faculty of Law, University of Zurich, Zurich, Switzerland
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<https://www.cambridge.org/core/journals/european-journal-of-risk-regulation/article/towards-nonanimal-testing-in-european-regulatory-toxicology-an-introduction-to-the-reach-framework-and-challenges-in-implementing-the-3rs/A6E22DA7D85EB03886BFDC121EA1E88A>

The value of legal analysis and interdisciplinarity

Alternatives to Laboratory Animals
Volume 33, Issue 2, March 2021, Pages 108–118
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<https://doi.org/10.1017/S26111828211217434>

Sage Journals

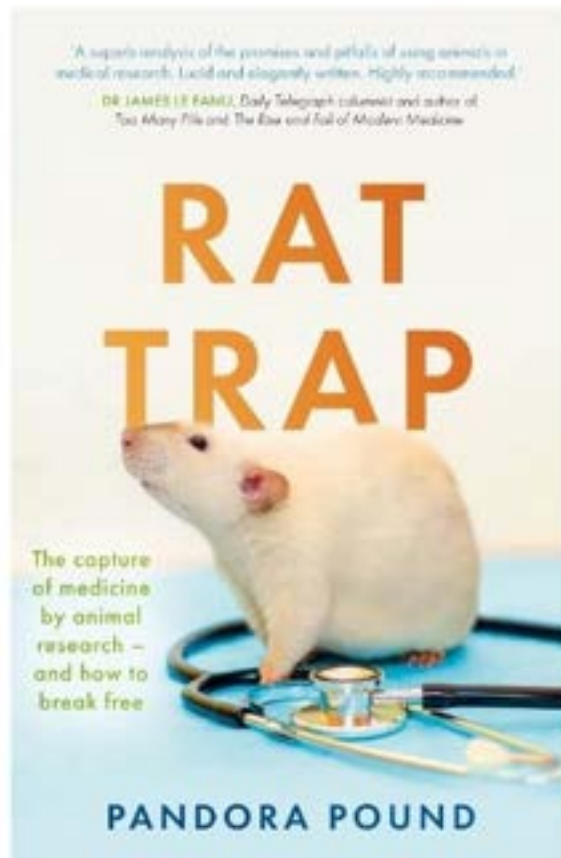
Workshop Report



Accelerating Animal Replacement: How Universities Can Lead — Results of a One-Day Expert Workshop in Zurich, Switzerland

Maneesha Deckha¹, Margot Michel², David Azilagbetor ³, Charlotte Blattner⁴, Rosa Maria Cajiga Morales ⁵, Gail Davies ⁶, Bernice Elger⁷, Sara Faizee ⁸, Marie Fox⁹, Vanessa Gerritsen¹⁰, Adrian Heuss¹¹, Laura Kämpfen¹², Edwin Louis-Maerten ¹³, Nicole Lüthi¹⁴, Aoife Milford¹⁵, Nico Dario Müller ¹⁶, Kirsten Persson¹⁷, Merel Ritskes-Hoitinga ^{18,19}, Barbara Rothen-Rutishauser ²⁰, Andreas Rüttimann²¹, Katerina Stoykova²², Saskia Stucki²³, and Miriam A. Zemanova ²⁴





Thank you for listening.
Happy to take questions.

Further reading tips to widen (y)our scope

Email:
j.ritskes-hoitinga@uu.nl



A sociological perspective on the challenges of displacing animal research within academia: the contribution of Bourdieu

Pandora Pound

Research Director, Super Medicines Trust, PO Box 122, Kingsbridge, TQ17 9AX, United Kingdom