RSPCA

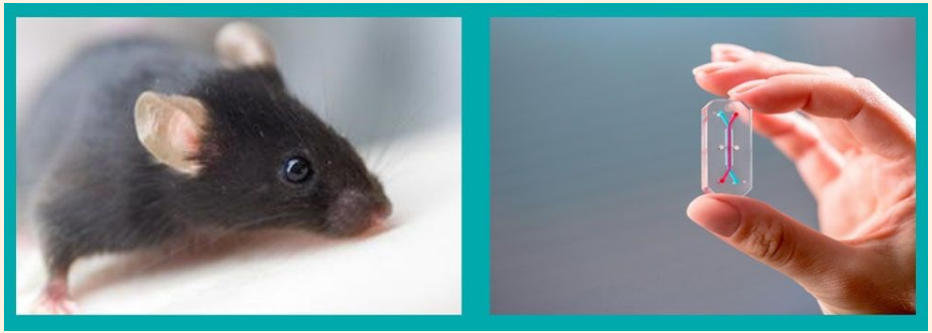
What's happening with animal research in Europe? Successes and ongoing challenges

Animals in Science Department

RSPCA's PRINCIPAL GOAL:
Champion the global replacement of animals in science with humane, New Approach Methodologies (NAMs)

Immediate aims:

- **Challenge whether and how animals are used**
- **Reduce animal numbers and suffering, and improve welfare**

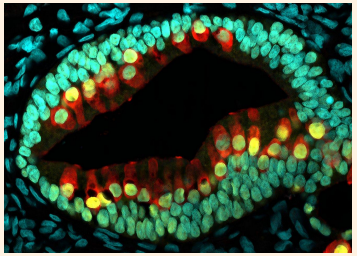


RSPCA
ANIMALS IN SCIENCE

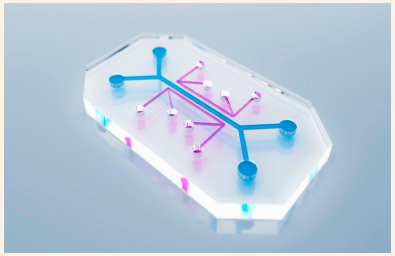
rspca.org.uk/animalsinscience

What's happened over the last decade?

- Brexit
- Significant advances in NAMs
- Replacement Strategies
- Wider recognition of animal sentience
- Greater recognition of emotional labour
- Increased efforts to address issues with experimental design, conduct and reporting
- Development of AWB networks

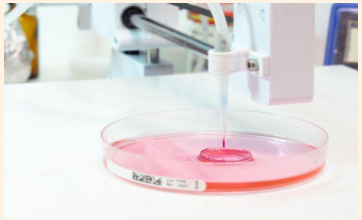


Organoids

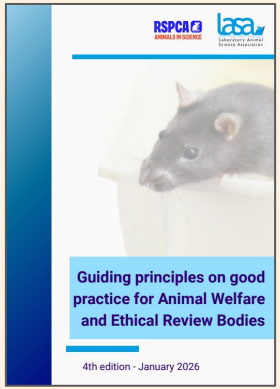


Organs-on-chips

Predictive modelling

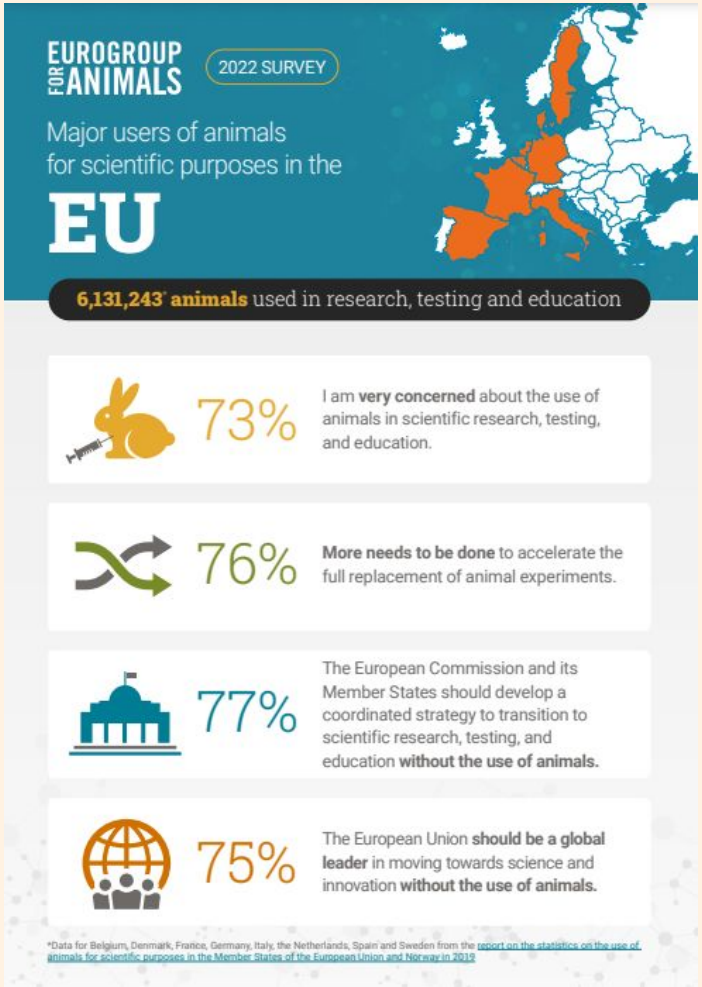


Human tissues



RSPCA ANIMALS IN SCIENCE

science.rspca.org.uk/documents/d/science/guiding-principles-on-good-practice-for-awerbs



RSPCA ANIMALS IN SCIENCE

eurogroupforanimals.org/news/77-eu-citizens-want-transition-non-animal-science

Our top five priorities for lab animals

- Phase out animal use
- End severe suffering
- Strengthen laws and regulation
- Challenge whether and how animals are used
- Promote animal welfare worldwide

RSPCA
ANIMALS IN SCIENCE

PHASING OUT
LAB ANIMALS

We want to reach a point where important science is done without causing harms to animals

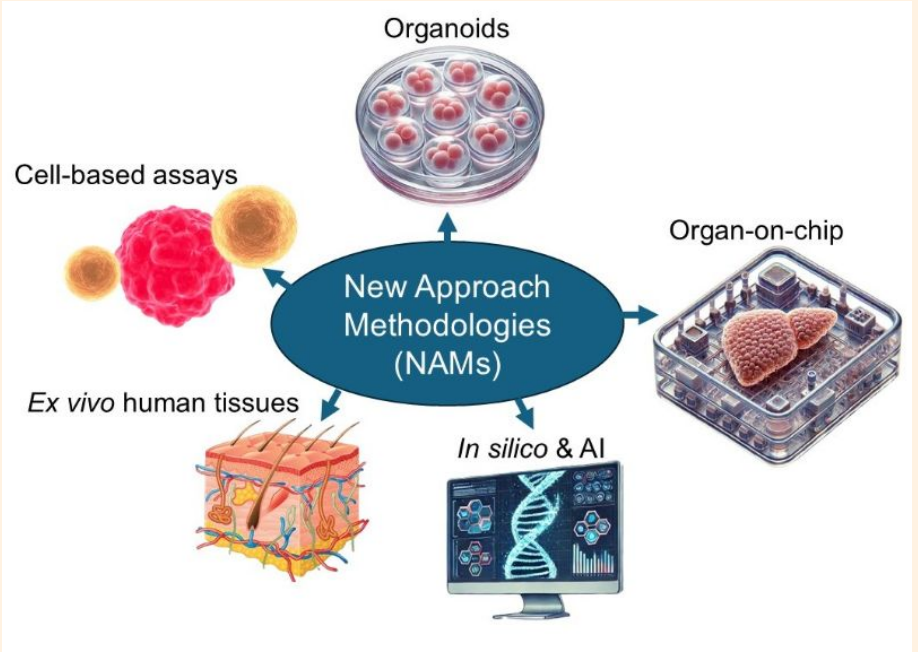
The aim is to persuade governments, politicians, regulators, industry, scientists and other stakeholders that ‘phasing out’ the use of animals in science:

- is **a desirable goal**
- and to **commit to work to achieve this**

This includes putting in place **clear and co-ordinated strategies** for increasing the development, validation, and use of **New Approach Methodologies**

RSPCA
ANIMALS IN SCIENCE

- Non-Animal Technologies (NATs)
- Non-Animal Methods (NAMs)
- New Approach Methodologies (also NAMs)



RSPCA ANIMALS IN SCIENCE

European Commission

Energy, Climate change, Environment

Environment

Home > Topics > Chemicals > Animals in science

Animals in science

EU actions for the protection of animals used for scientific purposes

PAGE CONTENTS

Overview

The protection and welfare of animals is a priority for the EU. This includes wildlife, zoo animals, farm animals, animals in transport and animals used for scientific purposes. Regarding animals in science, EU legislation is unique as it sets a final goal of full replacement of all animals used for scientific and educational purposes and is taking concrete action towards that goal.

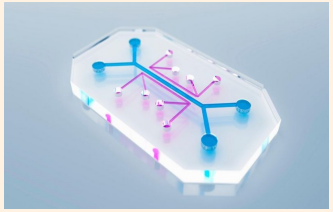
Studies that still need to be carried out on animals must be done in compliance with specific regulations that aim to improve the welfare of those animals. This includes studies on increasing the basic understanding of human or animal biology, developing or producing new medicines, physiological studies, environmental effects or testing chemicals or new food additives.

RSPCA ANIMALS IN SCIENCE

environment.ec.europa.eu/topics/chemicals/animals-science_en#overview

Ethics and societal interest - public think more needs to be done to reduce the impacts of science on animals

Economics - animal research is expensive and there's increasing concerns about scientific limitations; the medicines development process is lengthy, costly and frequently involves late-stage failures - not sustainable



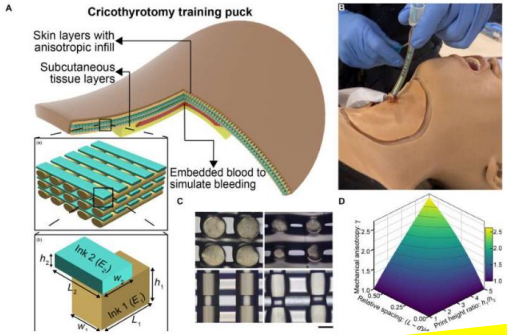
Technological advances - models being developed using human cells and tissues are advancing rapidly and raising ambitions for what is, and could be, possible

Scientific and technological progress

3D-printed tissue brings new realism to medical training

by University of Minnesota

edited by Gaby Clark, reviewed by Robert Egan Editors' notes



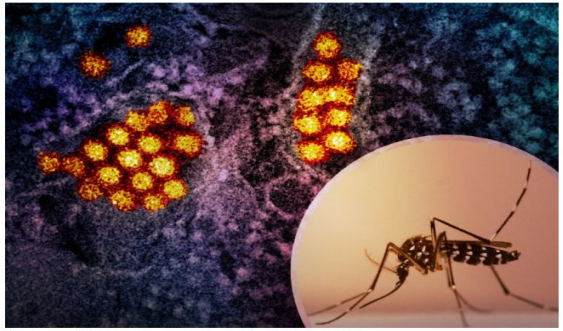


Image source: NIAID, Aedes Mosquito and Dengue Virus Particles, (CC BY 2.0)

News • Mechanopathology

'Dengue-on-a-chip' to study infection mechanism

Researchers at Leiden University

mimics how di

NASA News & Events

2 MIN READ

Tissue Chips Accurately Model Organs in Space

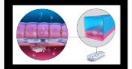
NASA astronaut Jessica Meir conducts cardiac research using tissue chip platforms in the Life Sciences Glovebox aboard space station in March of 2022.
NASA

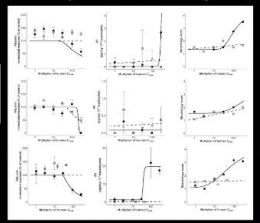
emulate GEN

Wyss Institute

Human Liver Chips are Better Predictors of Drug-Induced Liver Injury (DILI) than Animal Models

(Ewart et al. *bioRxiv* 2021; led by Emulate, Inc.)





- 780 Human Liver Chips analyzed (cells from 2 donors)
- Tested blinded set of 27 hepatotoxic and non-toxic drugs identified by pharma IQ Consortium
- Human toxicities of many drugs had been missed in animal models
- *Predicted human DILI with sensitivity = 87% and specificity = 100%*

...ies River and Sanofi collab to replace animals with virtual controls in preclinical research

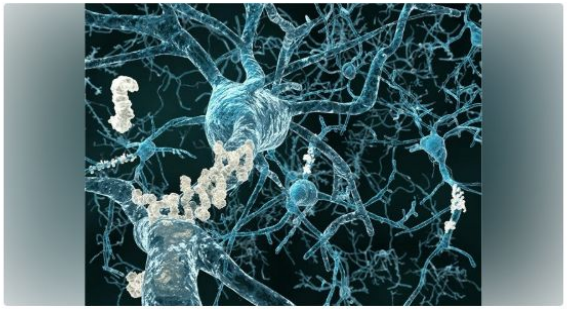
By **Helen Floersh** · Jun 5, 2024 5:40pm

Sanofi | Charles River Laboratories | contract research organizations | animal testing

The idea behind virtual control groups is that because there are plenty of control data already from previous studies, data from treatment groups can simply be compared to that historical information. (Adobe Stock)

Neural organoids offer insight into mechanisms of dementia

5mo • 1 min read



Some areas of science will be more challenging

For example, studies:

- Investigating the working and diseases of the brain
- Trying to understand the function of different genes
- Requiring a complete and functioning immune system
- Assessing bioaccumulation, reproductive and chronic toxicity
- Involving wild animals looking at behaviour or interactions within complex ecosystems

Global non-animal testing market is growing

Global market for non-animal technologies = **$29.4 billion** by 2030

AxoSim · emulate · CN-BIO INNOVATIONS · TISSUSE Emulating Human Biology
insphero · 4Dcell EXPLORE BETTER. · ASCENDANCE · BEOnChip
Cherry Biotech · CN-BIO · ELVEFLOW PLUG & PLAY MICROFLUIDICS
HEMOSHEAR THERAPEUTICS · uFluidix · BiomimX THE BEATING ORGANS-ON-CHIP

Science Ticker
Apr 11, 2024 | Charles River Laboratories

Charles River Launches Alternative Model Project

Charles River Laboratories has announced the launch of the Alternative Methods Advancement Project (AMAP), which is a continuation of the company's investment in finding and researching alternatives to animal models wherever possible.

The initial investment of $200 million will be bolstered with an additional $300 million over the next five years to develop alternative methods. For example, the Endosafe® Trillium™ bacterial endotoxin test was developed to replace some of the need for blood-based testing, while also being compatible with existing instruments to reduce physical waste.

Dec 17, 2024 8:00 AM Eastern Standard Time

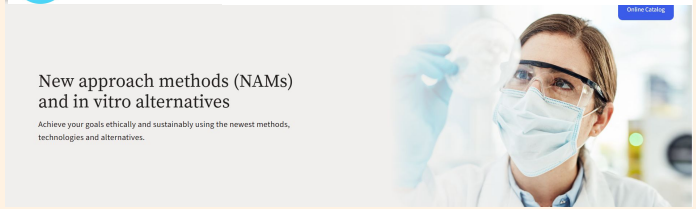
Merck to Acquire HUB Organoids Holding B.V., Advancing Next Generation Biology Portfolio

MERCK

Share

- HUB internationally recognized pioneer in organoid development
- Acquisition expands Merck's 2D and 3D cell culture portfolio
- Organoids part of fastest growing cell culture segment; hold potential to speed up drug development, reduce animal testing

labcorp



RSPCA ANIMALS IN SCIENCE

pharmiweb.com/press-release/2024-05-08/non-animal-alternative-testing-market-size-to-achieve-usd-294-billion-by-2030-fueled-by-a-cagr-of

European Commission

EN

Search

Search

Home > Press corner > Commission accelerates transition away from animal testing in chemical safety assessments

Available languages: English

PRESS RELEASE | Jun 1, 2026 | Brussels | 2 min read

Commission accelerates transition away from animal testing in chemical safety assessments

PAGE CONTENTS

Top

Quote(s)

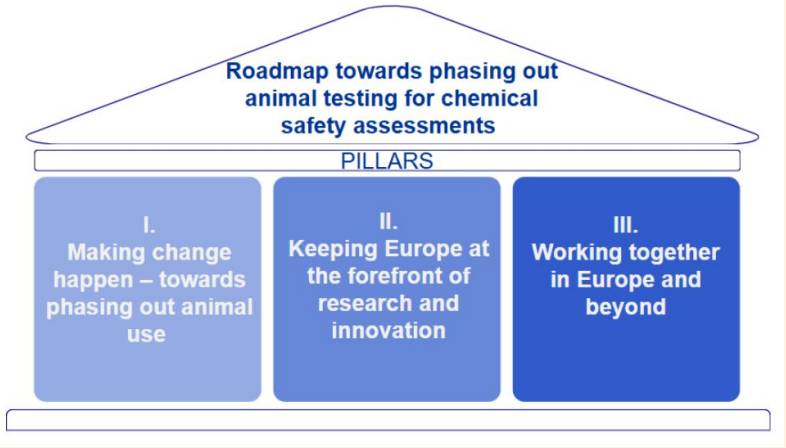
Related topics

Print friendly pdf

Contacts for media

Today, the European Commission presented a **roadmap towards phasing out animal testing for chemical safety assessments**, which lays out clear, tangible steps to ensure the transition to innovative non-animal approaches. The roadmap will also preserve the integrity of safety evaluations, which ensure a high level of protection for human and animal health and the environment.

This initiative supports and strengthens the existing REACH framework, the EU's chemicals legislation, and is a concrete deliverable under the Chemicals Action Plan presented by the Commission in July 2025. With 22 actions under three pillars, the roadmap envisages **gradually replacing animal testing for chemical safety assessments** in 15 domains, including chemicals for industrial and consumer uses, pesticides and biocides, pharmaceuticals, and food and feed additives. The roadmap sets out indicators that will help to monitor progress in the implementation of the actions and recommendations.



RSPCA

ec.europa.eu/commission/presscorner/detail/en/ip_26_1214

The 3Rs in Horizon Europe

- Cluster 1 (Health): organoids, organs-on-chips, in silico toxicology, AI-based prediction, and human-relevant disease models
- Cluster 6 (Food, Bioeconomy, Natural Resources): animal-welfare innovation, refinement tools, and sustainable livestock systems
- European Partnerships:
  - Animal Health & Welfare Partnership (EUPAHW) – ~€360 million (2024–2030)
  - Agroecology Partnership – includes welfare and reduction-focused research
- Mission-oriented calls supporting NAMs for chemical safety, environmental health, and One Health

Commitments to phasing out animal use, including UK

GOV·UK

Menu

Home > Business and industry > Science and innovation > Animal research and testing

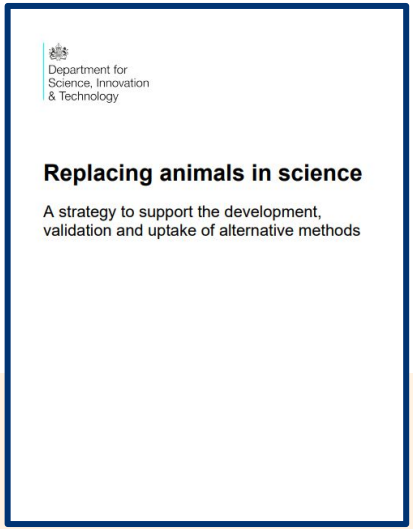
Press release

Animal testing to be phased out faster as UK unveils roadmap for alternative methods

New plan backs researchers to seize on new and developing opportunities to phase out animal tests with specific commitments for the coming years.

November 2025

26 'actions'
with relevance across ALL areas of animal use in research and testing


Department for Science, Innovation & Technology

Replacing animals in science

A strategy to support the development, validation and uptake of alternative methods

£75m

RSPCA ANIMALS IN SCIENCE

RSPCA ANIMALS IN SCIENCE

merckgroup.com/en/sustainability/business-ethics/animal-ethics/the-merck-approach-for-a-roadmap-to-phase-out-animal-testing.html

tpi.

*"The Netherlands **aims to become an international frontrunner in creating innovations that make animal testing obsolete**. For this reason, the national government is encouraging the development and application of research methods that do not involve animal testing. This is being conducted through the partner programme **Transition Programme for Innovation without the use of animals**."*

"TPI's partners are active in government, society, academia and the business community"

"The TPI partners want to accelerate the transition to animal-free innovation"

RSPCA
ANIMALS IN SCIENCE

www.animalfreeinnovationtpi.nl

In the statement, the Experimental Animals Committee recommends that an initiative be taken for a Norwegian public study (NOU) that can map the potential for a transition to research without experimental animals, formulate clear objectives, and present a concrete plan for the transition.

September 2020

Norway establishes a 3R Centre

The Norwegian Government has provided 6 million kroner (approx. 550,000 euros) in 2026 to start the work of establishing a national 3R Centre. This year, half of the money will be used by the Norwegian Veterinary Institute, in collaboration with experts in the field, to produce an overview of our knowledge today regarding the 3Rs and the resources available to implement them. The other half will be used by the Norwegian Food Safety Authority (NFSA, Mattilsynet) to start the work of establishing a Centre.

In 2027, the NFSA will receive 6 million kroner to run the Centre.

"The establishment of a 3R center is therefore an important breakthrough. But without a national roadmap for phasing out, with clear goals, deadlines and investments, we risk the center becoming mostly symbolic."
Anton Krag & Helle Haukvik,
Animal Welfare Alliance

RSPCA ANIMALS IN SCIENCE

forsoksdyrkomiteen.no/behov-for-utredning-om-forskning-uten-forsoksdyr-og-et-nasjonalt-3r-senter

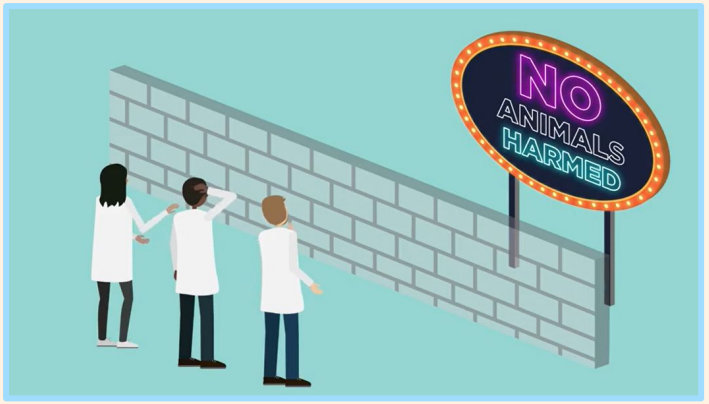
Barriers to replacing animals

Wider use of New Approach Methodologies is currently limited by:

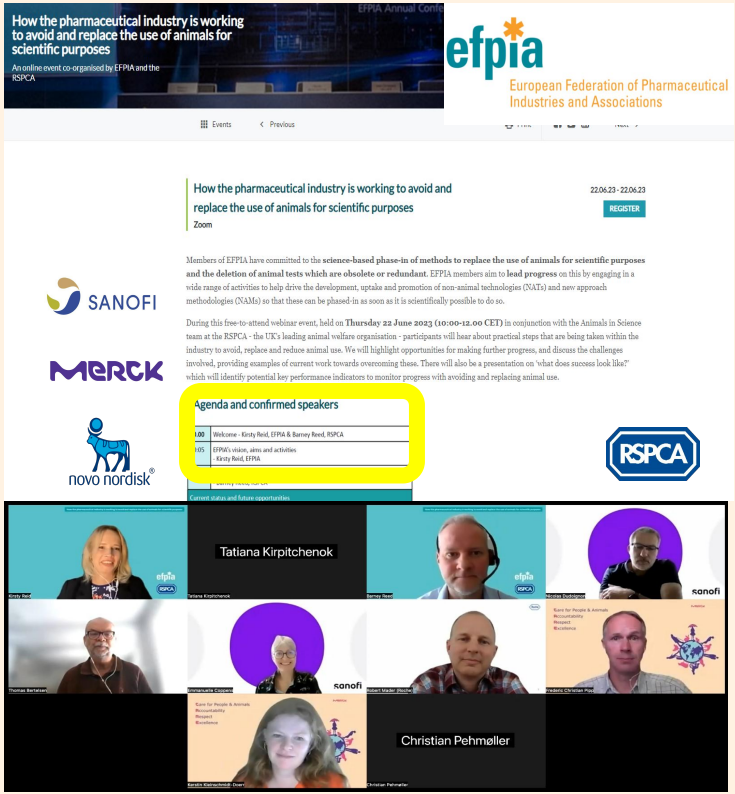
Development: overcoming scientific and technological challenges

Acceptance: recognition of and confidence in NAMs by scientists, regulators of medicines, vaccines and chemicals etc, journal editors and reviewers

Uptake: awareness, knowledge and skills, willingness to move away from traditional approaches, access and availability



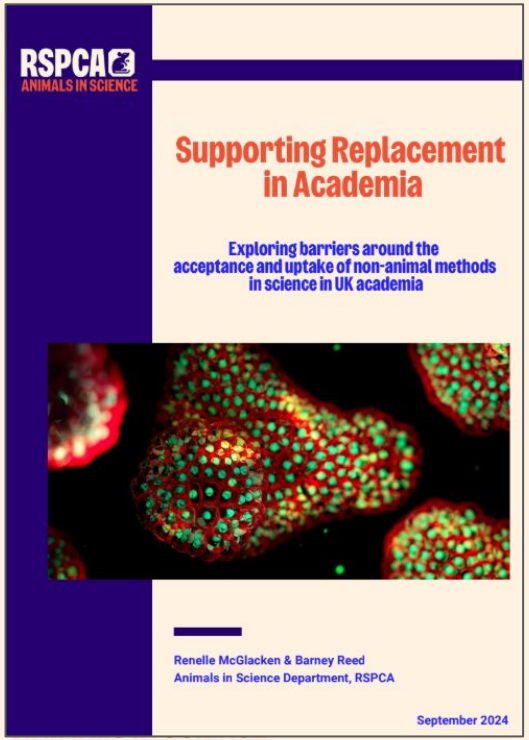
RSPCA
ANIMALS IN SCIENCE



eurogroupforanimals.org/library/action-plan-accelerate-transition-non-animal-science-pharmaceutical-sector

RSPCA ANIMALS IN SCIENCE

Working with the pharmaceutical industry



SUPPORTING THE REPLACEMENT OF ANIMALS IN ACADEMIA

Challenges to replacing animals in science not only include **technological** progress, but also **social**, **cultural**, and **economic** factors. These need to be addressed to ensure that non-animal approaches are used where they exist and to support their wider development and uptake in the future.

54% of animal use for scientific purposes in the UK takes place in universities or medical schools

Latest available data.
Source: Home Office 2020.

POTENTIAL CHALLENGES TO REPLACING ANIMALS IN ACADEMIA

- Limited interaction across scientific disciplines, and between scientists within and outside of academia
- Researchers may develop skills, status, and networks around particular animal 'models' which encourage their continued use
- Perceptions that using non-animal methods may pose risks
- Inefficient review processes in assessing Replacement opportunities
- Biases towards animal methods in publishing processes
- Limited funding encouraging research into, and dissemination of, non-animal methods
- Limited education and training involving non-animal methods
- Access to infrastructure and resources needed to use non-animal methods
- Limited institutional support and strategy around Replacement

tinyurl.com/SupportingReplacement2024

In academia

Cultures of ‘doing science’ currently lead to *inertia*

- Animal models taught as ‘gold standard’
- ‘Traditional’ methods passed on
- Lack of ‘value’ placed on development and use of NAMs
- Insufficient inter-disciplinary collaboration
- Lack of support for changes in career direction

RSPCA
ANIMALS IN SCIENCE

Our top five priorities for lab animals

Phase out animal use

End severe suffering

Strengthen laws and regulation

Challenge whether and how animals are used

Promote animal welfare worldwide

RSPCA
ANIMALS IN SCIENCE

Our aim is to end severe suffering for animals in science

10% of animals used in experiments worldwide*

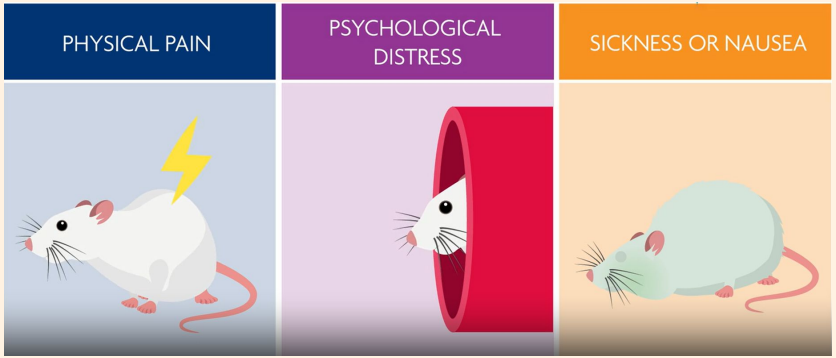
Around 1 million procedures within the UK and EU each year

+10 million animals across the world each year*

FOCUS ON SEVERE SUFFERING

"Any level of suffering is obviously a concern for everyone, but tackling severe suffering should be a top priority."

Dr Penny Hawkins, RSPCA



RSPCA ANIMALS IN SCIENCE

*estimated

focusonseveresuffering.co.uk

Causes of severe suffering

1. **Some procedures** are likely to cause severe suffering in themselves (e.g. if they are to study painful diseases in humans or other animals)
2. A combination of less severe factors can lead to increased overall suffering: **'cumulative severity'**
3. Where **animals die**, this may involve severe suffering – including both unexpected mortality, and 'death as an endpoint'

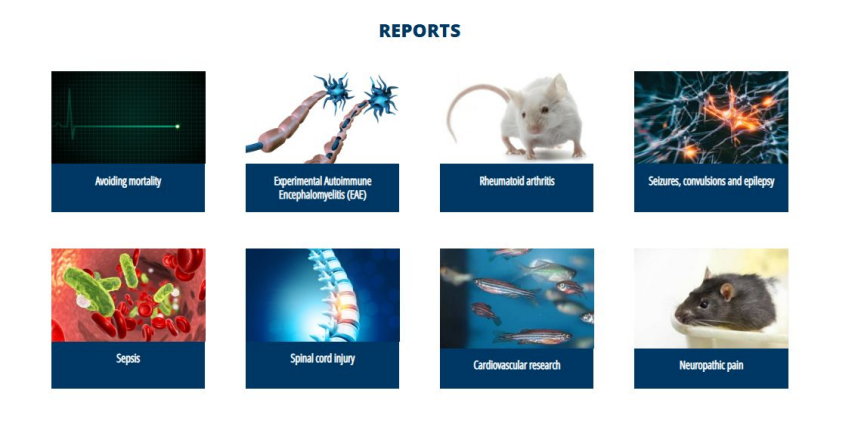
RSPCA
ANIMALS IN SCIENCE

Website with Roadmap

Roadmap steps

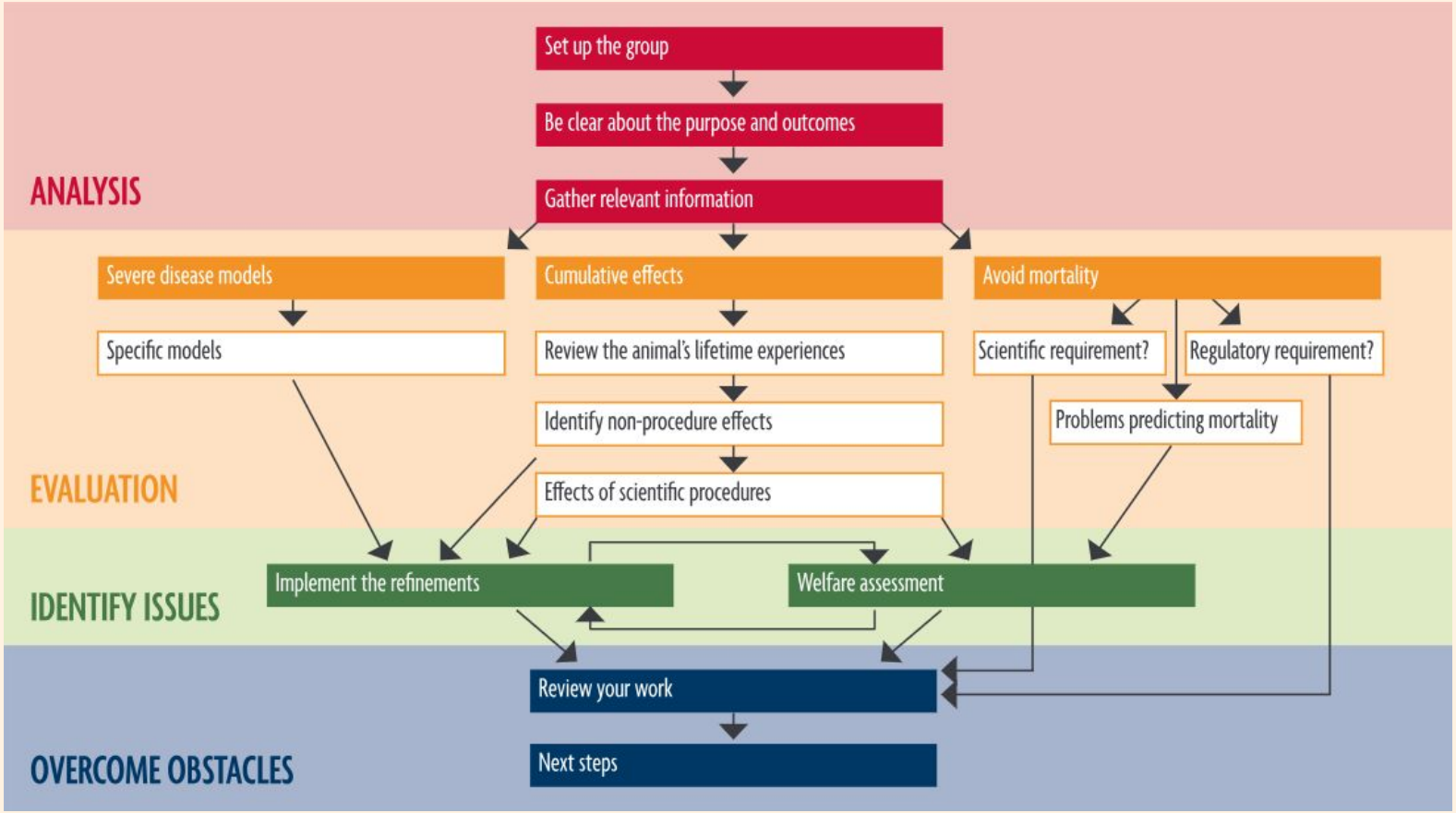
UK and international meetings

Expert working groups



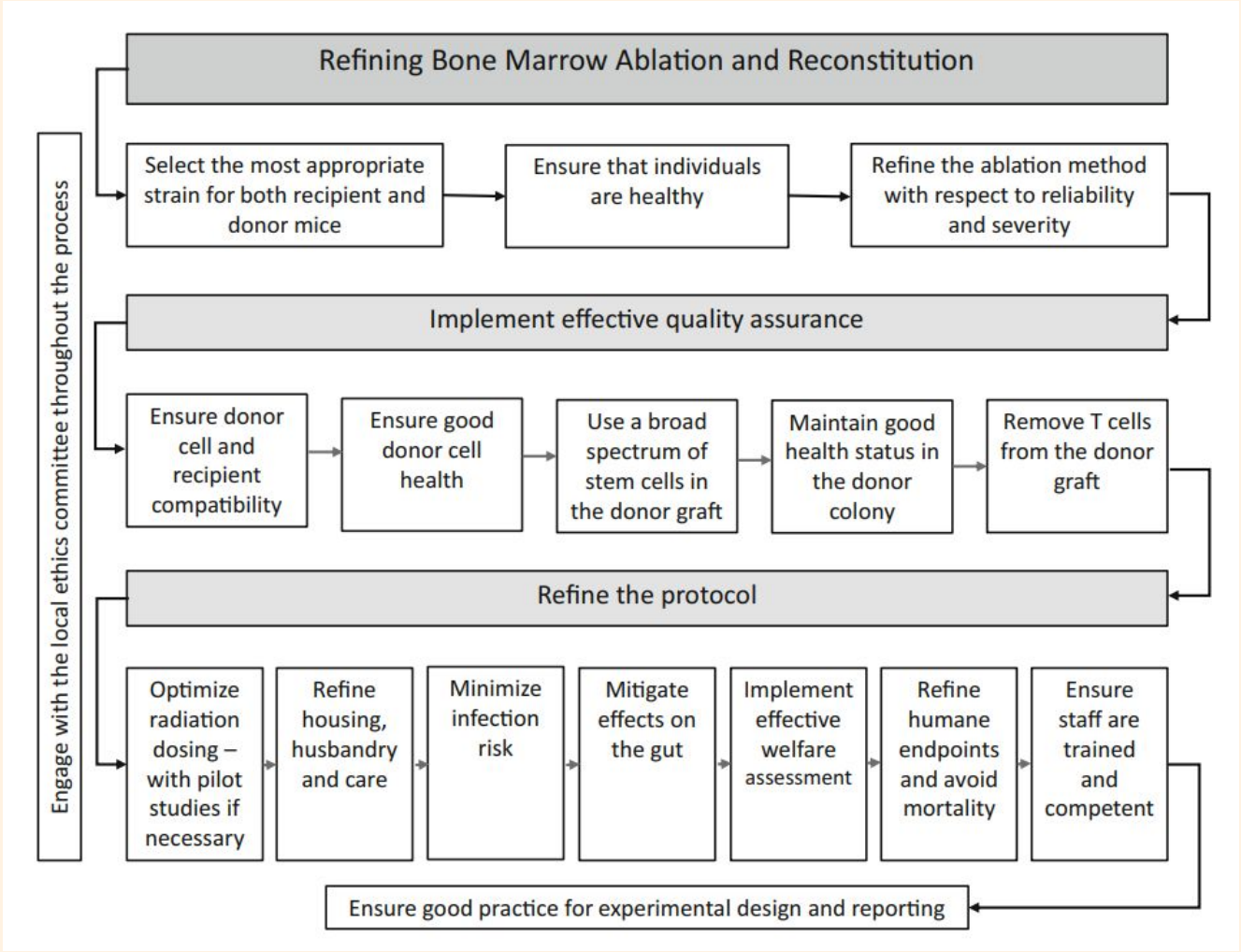
RSPCA ANIMALS IN SCIENCE

focusonseveresuffering.co.uk

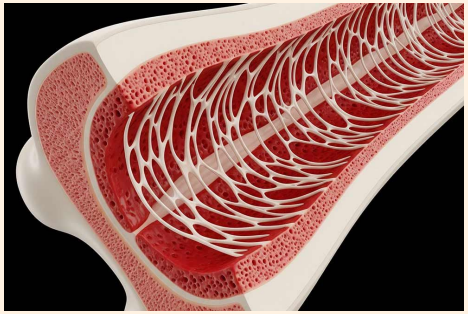


RSPCA ANIMALS IN SCIENCE

focusonseveresuffering.co.uk/roadmap



Bone marrow ablation and reconstitution in mice



focusonseveresuffering.co.uk/causes/reports

International Focus on Severe Suffering events

2026	**Spain**
2025	**Greece** (within FELASA)
2024	**France**
2023	**Netherlands**
2022	**Sweden**
2019	**Greece**
2017	**Germany**
2016	**Belgium**

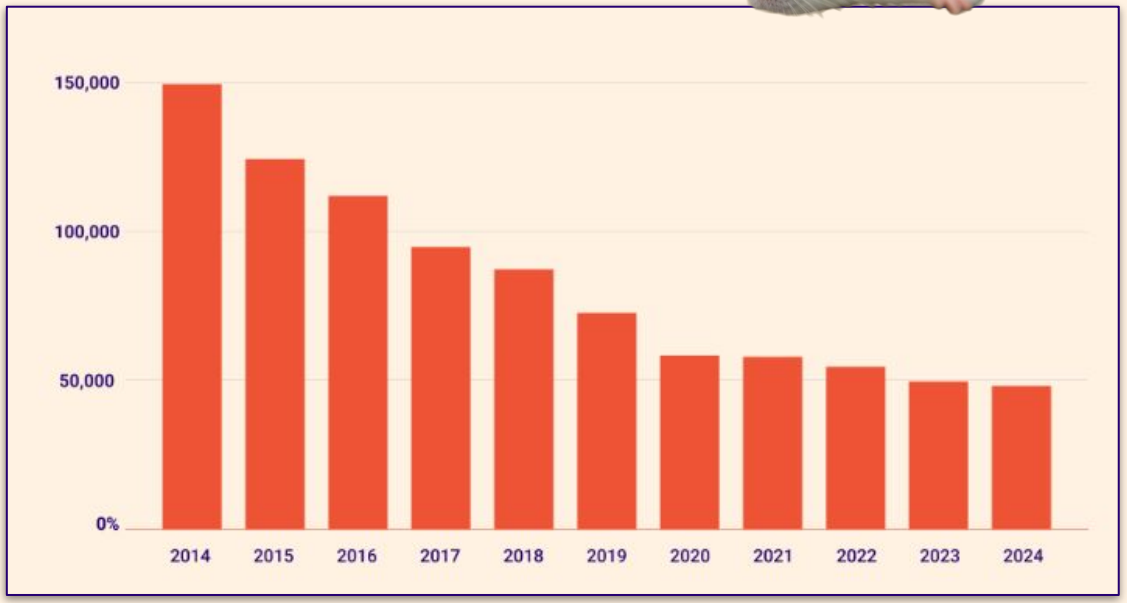
RSPCA ANIMALS IN SCIENCE

focusonseveresuffering.co.uk/work/events

Progress so far - UK

68%
reduction

in experimental procedures causing severe suffering in the UK since 2014



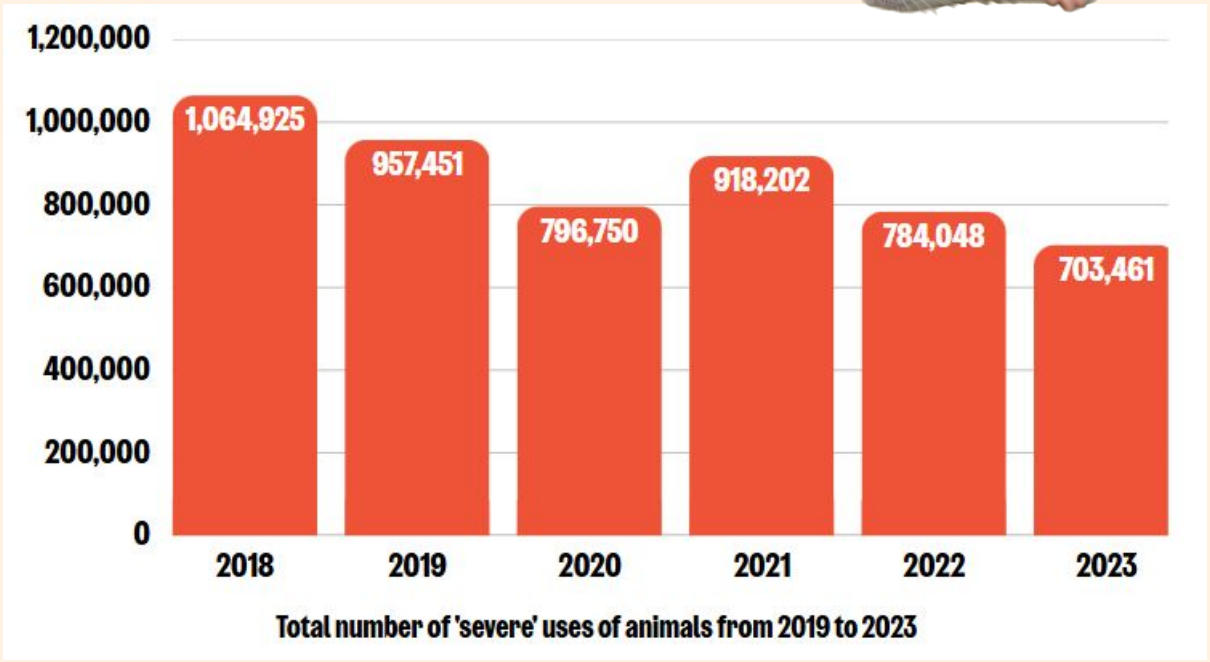
RSPCA
ANIMALS IN SCIENCE

focusonseveresuffering.co.uk

Progress so far - EU and Norway

33%
reduction

In the EU and Norway, 8.7% of procedures were classified as severe in 2023



RSPCA
ANIMALS IN SCIENCE

How this was achieved

Experimental design

- Earlier scientific and humane endpoints
- Better screening of animals and strain selection
- Use of animals at earlier disease stages
- Better husbandry and support
- Use of technology

Cultural factors

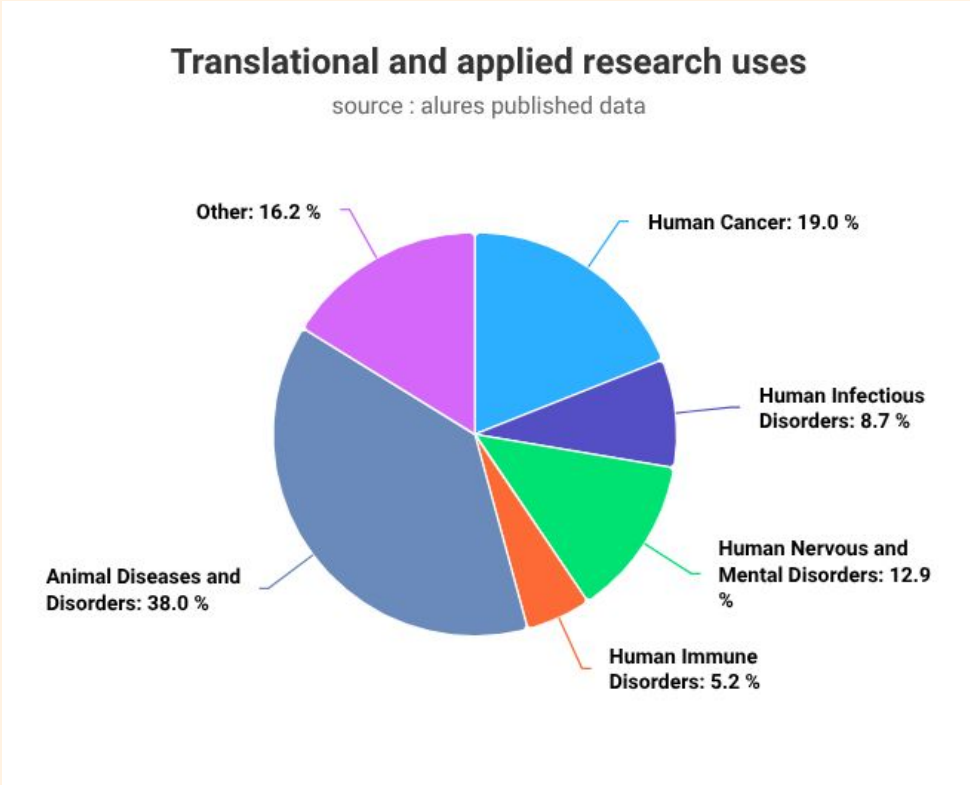
- Better communication within teams, more project review meetings, analysis of records
- More involvement of animal technologists, especially around identifying clinical signs*
- AW(ER)B involvement

*Building bridges: Involvement of animal care staff and laboratory technicians in experimental planning and conduct of animal studies for better job satisfaction and science (here)

RSPCA ANIMALS IN SCIENCE

Challenges

- Mice used for monoclonal antibody production via the ascites method
- Fishes used for batch potency testing
- Fishes used for studies on the immune system
- Fishes used for acute toxicity testing
- Rodents used for studies on human immune disorders
- Rodents used for LD50/LC50 testing

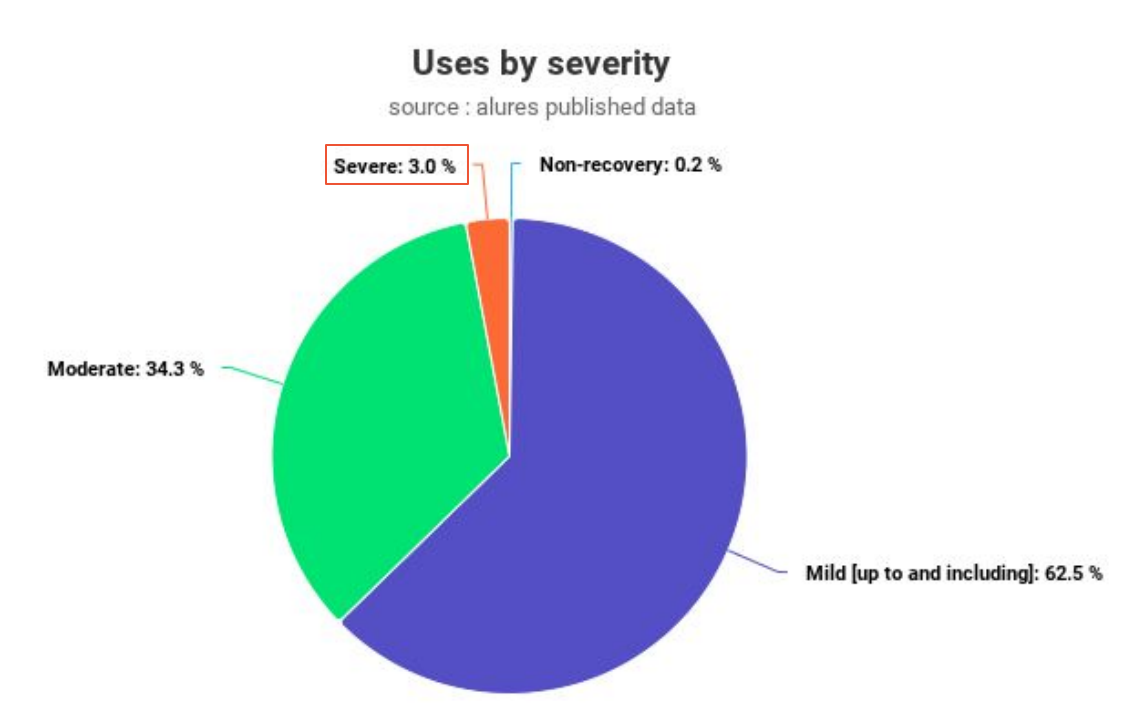


RSPCA ANIMALS IN SCIENCE

webgate.ec.europa.eu/envdataportal/content/alures/section2_number-of-uses.html

Norway 2023

- 46,000 severe procedures
- 96.6% of these on salmon, trout, char and grayling
- Of these, 74% are for animal diseases and disorders
- 15% for batch potency testing



RSPCA ANIMALS IN SCIENCE

Photo by Brandon on Unsplash

Fishes in acute toxicity testing - 2023 humane endpoints meeting (UK)

- Define and implement a standardised approach to **identify sub-lethal clinical signs** and apply humane endpoints
- Establish standardised approaches to **staff training on identifying clinical signs** and education in fish behaviour and welfare
- Promote collaboration and information-sharing networks within the scientific community to facilitate the **generation and dissemination of resources**

NC3Rs

RSPCA ANIMALS IN SCIENCE

Meeting report here: focusonseveresuffering.co.uk/w/work/events/humane-endpoints-in-regulatory-toxicology

See also NC3Rs webinar: nc3rs.org.uk/3rs-resource-library/developments-and-future-directions-regulatory-fish-acute-toxicity-testing

Retrospective Assessment

- Has the work been carried out?
- Were the objectives achieved?
- How much harm was caused to the animals?
- What 3Rs lessons are there?

Outcomes:

- **Feedback to research group**
- **Dissemination of 3Rs lessons - positives and negatives, internally and externally**
- **Updates for Non-Technical Summaries**
- **Review effectiveness of project evaluation, training**

RSPCA ANIMALS IN SCIENCE

https://op.europa.eu/en/publication-detail/-/publication/e757f383-16ad-11f1-8870-01aa75ed71a1

Retrospective Assessment (RA) challenges

- FELASA workshop 2025
  - Confusion as to what RA actually is
  - Overwhelming need for better training (especially for researchers)
  - Need for feedback on RAs that are submitted
- Not all countries update NTSs (ALURES)
  - Belgium, Bulgaria, Greece, Croatia, Cyprus, Lithuania, Netherlands, Norway, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Sweden, Finland
- Issues with technical language …

Gemini on UK RA updates:

This document is **not easy to understand** for a general audience. While it is labelled as 'non-technical summaries,' a significant amount of **specialised scientific and medical terminology** is used throughout. A background in biology, medicine, or a related field is necessary to fully comprehend the content.

In some cases, the researchers **do explain** how they plan to share the advances they have made in the 3Rs. However, the **level of detail and the methods of sharing vary** between the different project summaries.

RSPCA ANIMALS IN SCIENCE

Our top five priorities for lab animals

- Phase out animal use
- End severe suffering
- Strengthen laws and regulation
- Challenge whether and how animals are used
- Promote animal welfare worldwide

RSPCA
ANIMALS IN SCIENCE

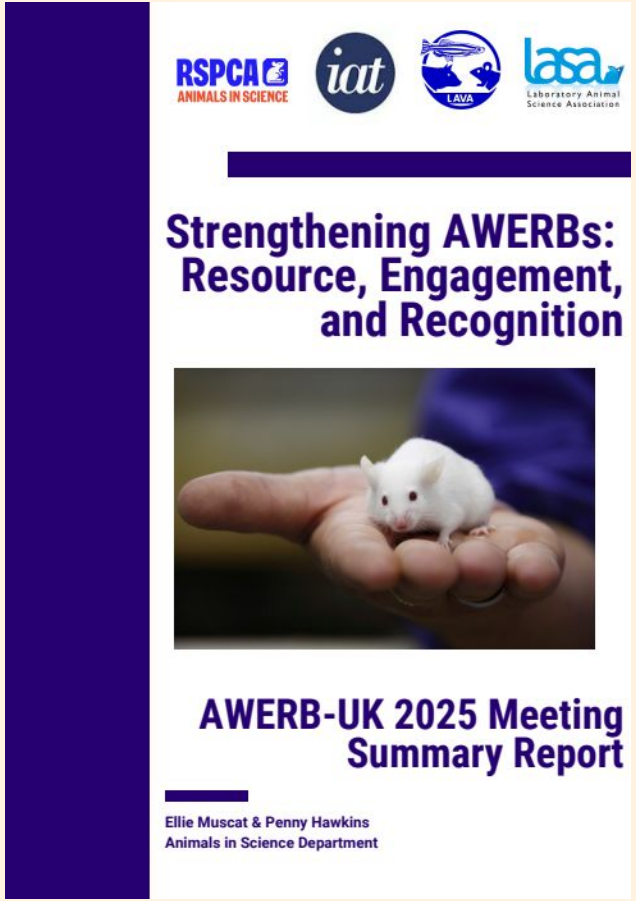
Our vision for AWBs and similar bodies

- Every AWB is **well-resourced, supported, valued** and **effectively challenges** whether and how animals are used
- They **fulfill all their tasks** including promoting all **3Rs**, providing **robust ethical advice** and developing a **good culture of care**
- Each one is committed to **minimising suffering** and **maximising welfare** across animals' lives

RSPCA
ANIMALS IN SCIENCE

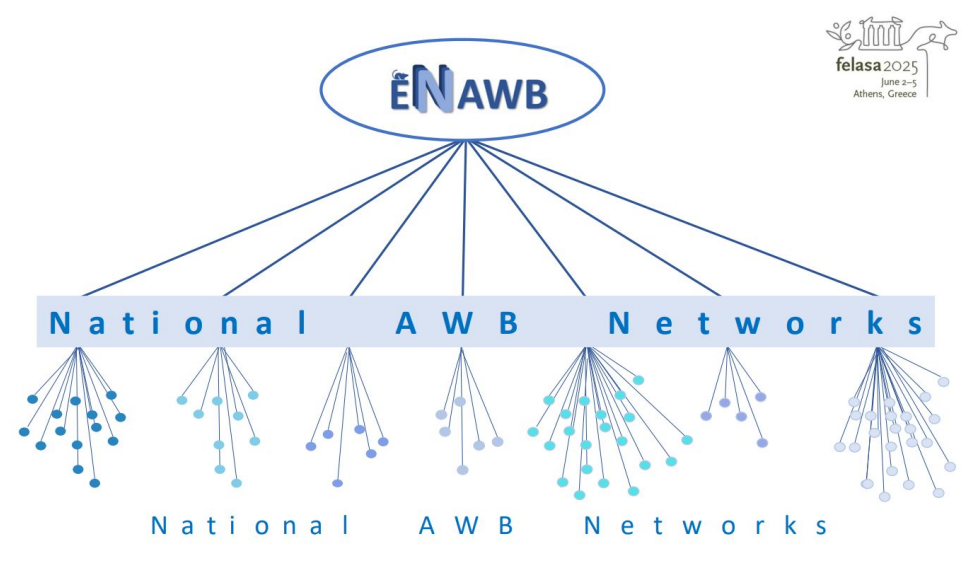
Top 5 operational challenges

1. Lack of recognition and reward for AW(ER)B members
2. Lack of training and Continuing Professional Development (CPD) for members
3. **Insufficient time** for all those directly and indirectly involved
4. Need for ‘professionalisation’ of the AW(ER)B (including career progression)
5. Lack of liaison with Research Integrity Committees and similar bodies



RSPCA ANIMALS IN SCIENCE

science.rspca.org.uk/documents/d/science/awerb-uk-report



ENAWB

RSPCA
ANIMALS IN SCIENCE

norecopa.no/enawb

Culture of care in animal research - The International Culture of Care Network

Thomas Bertelsen, Novo Nordisk A/S, Denmark; **Adrian Smith**, Norecopa, Norway and members of The International Culture of Care Network

Background

The EU working document on Animal Welfare Bodies and National Committees states:

- Ensuring an appropriate culture of care is in everyone's interests, as it will promote improved animal welfare.
- Simply having animal facilities and resources which meet the requirements of the legislation will not ensure that appropriate animal welfare, care and use practices will automatically follow.

The aims of the Culture of Care Network

To provide a forum for the quick and efficient dissemination of ideas and efforts to create a culture of care

- To promote a mindset and behaviour that continuously and proactively works to advance laboratory animal welfare and the 3Rs.
- To aim for more than a culture of compliance.
- To encourage a culture of challenge, rather than accepting established practice.

Interested in joining?
As a member, you are expected to work actively with culture of care.
Please write to: CultureOfCareNetwork@gmail.com

Our members

The Network consists of people with a large range of backgrounds:

- Laboratory animal scientists & technicians
- Laboratory animal veterinarians
- Members of Animal Welfare Bodies
- Representatives of National competent authorities
- Communications experts
- Members of animal welfare organisations

This diversity of competency and perspectives ensures that the network encourages a culture of care both for the animals used in research and for those working with them.

We are currently 38 members in 16 countries.

norecopa.no/CoC

References:

- The legal framework for a culture of care: https://ec.europa.eu/environment/chemicals/lab_animals/pdf/endorsed_awb-nc.pdf
- A Quick Start Guide:
- https://norecopa.no/CoC/quick-start-guide
- An overview of culture of care resources: https://norecopa.no/CoC/resources

RSPCA ANIMALS IN SCIENCE

norecopa.no/coc

EU3Rnet

A voluntary network of European 3R Centres dedicated to advancing the 3Rs in biomedical science

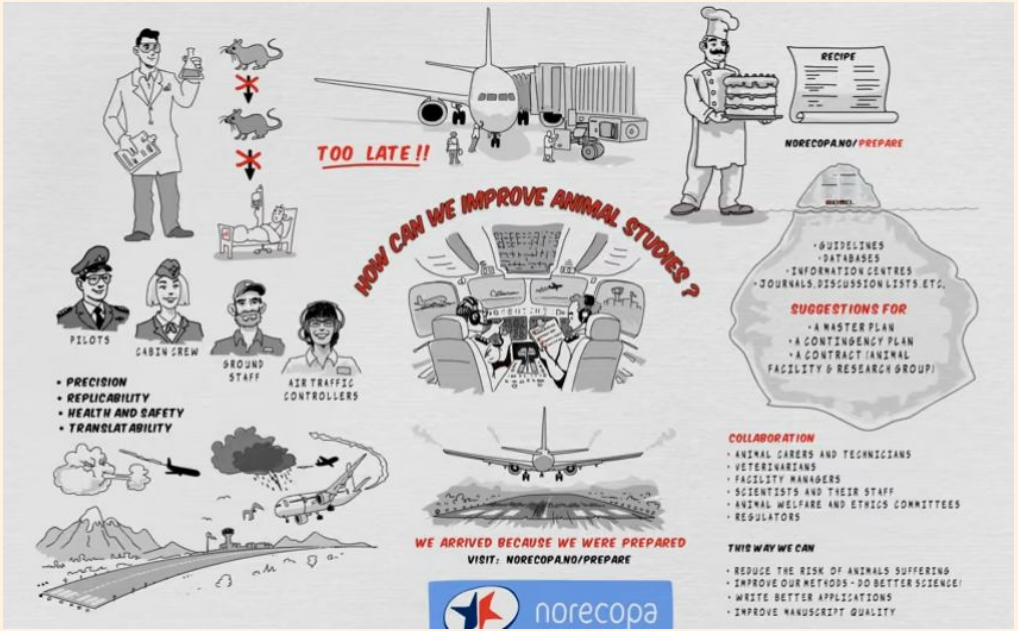
… but some Centres are currently under threat

RSPCA ANIMALS IN SCIENCE

eu3rnet.org

Experimental design, conduct and reporting

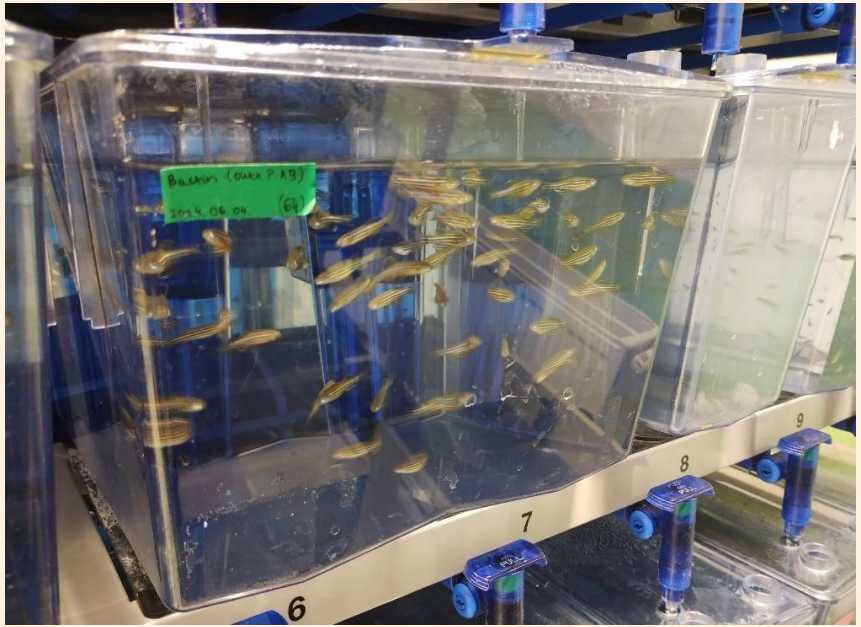
- PREPARE (now with specific guidance for fish researchers)
- ARRIVE
- Experimental Design Assistant
- Sex Inclusive Research Framework (SIRF)
- DRIVER (*in vitro*)



RSPCA ANIMALS IN SCIENCE

IMPROVE

cost-improve.eu


6
7
8
9

RSPCA Animals in Science

Scan for more information

Zebrafish enrichment

Natural environment

Wild zebrafish are found in habitats with a variety of vegetation, substrates and water flow rates.

Better for science... better for animal welfare

RSPCA ANIMALS IN SCIENCE

Animals in Science Department
Resources for AWERB members
September 2021

Refined methods of DNA collection in fishes

Aim of this resource

To help AWERBs discuss good practice for collecting DNA samples for genotyping from small laboratory fishes.

Relevant AWERB task

Advising staff on animal welfare and the application of the 3Rs.

Recommendation

Review current practices and discuss DNA collection techniques and training, as well as issues around different sampling method the most refined method is being used.

The issue

DNA samples for genotyping small laboratory fishes such as zeb frequently collected by fin clipping – removing a small portion of (tail) fin. However, this process is invasive and painful, and also fish to be handled, which can be stressful. There are a number o sampling techniques available which should be reviewed by the ensure the most refined method is used.

rspca.org.uk/awerb

RSPCA ANIMALS IN SCIENCE

Animals in Science Department
Resources for AWERB members
September 2021

Environmental enrichment for zebrafish

Aim of this resource

To help AWERBs discuss local practice for providing laboratory zebrafish with environmental enrichment.

Relevant AWERB task

Advising staff on animal welfare and the application of the 3Rs; supporting named persons and others dealing with animals.

Recommendation

Regularly review and discuss different forms of environmental enrichment that can be provided to laboratory zebrafish.

The issue

Zebrafish used in scientific research tend to be provided with relatively little environmental enrichment. This may be in part due to a belief that zebrafish do not benefit from enrichment. However, there is now plenty of evidence that providing enrichment can reduce stress and improve welfare in zebrafish. This sheet can be used as a resource to stimulate discussion of different forms of enrichment which can be provided to zebrafish.

science.rspca.org.uk/researchanimals/reportsandresources/housing

Focus on Fish

For updates about all our meetings:
science.rspca.org.uk/utilities/newsletter

RSPCA
ANIMALS IN SCIENCE

FOCUS ON FISH 2026

25 February 2026
Online
Agenda

11:00	Welcome
	Session 1
11:05	Fish cognition, sentience and welfare
11:30	Welfare effects of early-life enrichment in Atlantic salmon used in research
11:55	Influence of environmental enrichment in the husbandry environment on the results of an applied fish behavioural study
12:20 - 1:15	Break
	Session 2
1:15	Not deadly, but troublesome: addressing common fish discomforts
1:40	Assessing vitality and fitness for release in wild-caught species
2:05	An alternative approach to minimising harms
2:30 - 2:50	Break
	Session 3
2:50	Breeding Strategies and Genetic Integrity in Zebrafish Colonies
3:15	Lighting in the zebrafish facility
3:40	Facility design and management: maximising fish welfare
4:05-4:15	Take home messages, wrap up and close

Refining Basket 3 - wild animal use

- Non-lethal sampling
- *Ex vivo* studies (e.g. animals found dead)
- Environmental DNA sampling
- Refinements in biotelemetry devices
- Recognition of potential harms to non-target animals and species

RSPCA ANIMALS IN SCIENCE

surescreenscientifics.com/magnific.com

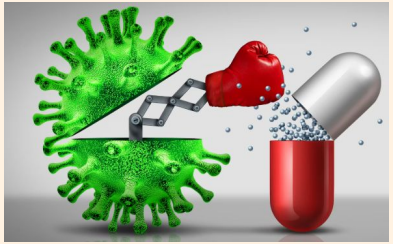
Looking to the future …

RSPCA
ANIMALS IN SCIENCE

Image by wirestock on magnific.com

Drivers of animal use

- Climate change
- Air and plastic pollution
- Ageing populations
- Chronic diseases
- Future pandemics
- Antimicrobial resistance
- Geopolitical upheaval
  - Animal models of injury and trauma
  - Challenges to ethical decision-making



Images: National Geographic/The Conversation

RSPCA
ANIMALS IN SCIENCE

Replacement strategy risks

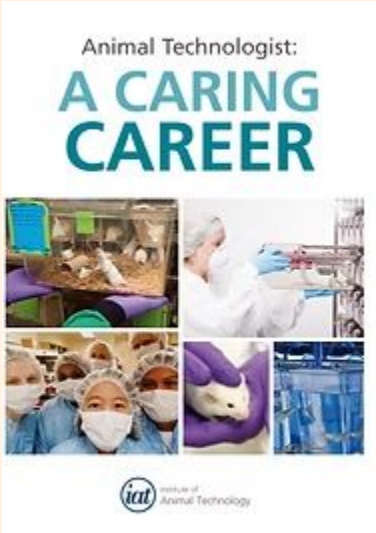
- **'3Rs-washing'** - *in vitro* models are presented as replacements when they are being developed in their own right and not replacing animal use at all
- **Lack of strategic thinking** around the focus for Replacement, e.g. lack of focus on:
  - models that cause most suffering
  - areas where the uptake of alternative approaches has been slow (e.g. non-animal derived antibodies)
  - ensuring collaboration between industry and academia
  - ensuring good standards for *in vitro* research (DRIVER)

RSPCA ANIMALS IN SCIENCE

nc3rs.org.uk/our-portfolio/driver-recommendations

Transitioning away from animal use should be integrated into the Culture of Care

- Transitioning to NAMs involves processes that will take place over many years
- Animal technologists, scientists, vets and all involved:
  - Support opportunities for reducing harms to animals
  - Understand that science continually evolves and that new models and technologies continually emerge
  - Want opportunities for career development in science
- - but in some cases this will involve significant change as NAMs progressively replace animals



RSPCA ANIMALS IN SCIENCE

iat.org.uk/animalwork

EFAT

Institute of Animal Technology

Sociedad Española para las Ciencias del Animal de Laboratorio

Dutch Association for Laboratory Animal Science

Association Francaise des Sciences et Techniques de L'Animal de Laboratoire

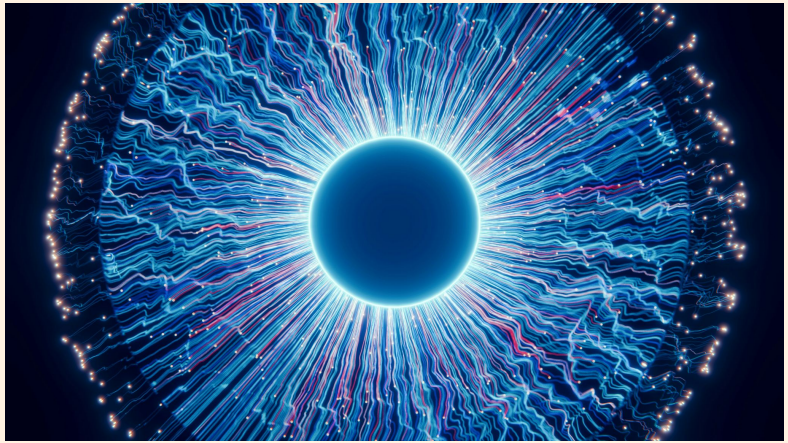
GV-SOLAS
Gesellschaft für Versuchstierkunde
Society for Laboratory Animal Science

RSPCA ANIMALS IN SCIENCE

efat.org

Harnessing technology, e.g. AI and Home Cage Monitoring

- AI can be used in drug discovery, disease classification and biomarker identification
- Machine learning models can predict drug toxicity and efficacy before animal testing, avoiding some animal use
- Some companies are attempting to use data sets and AI for drug discovery without animals
- Home Cage Monitoring technology (which may also use AI) enables better surveillance and reduces human observer bias

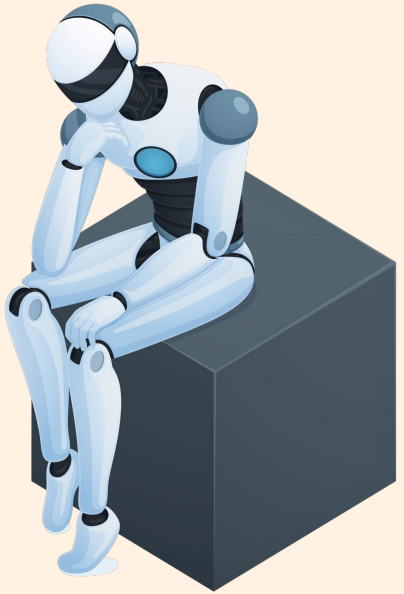


RSPCA
ANIMALS IN SCIENCE

Photo by Luke Jones on Unsplash

Negative aspects of AI

- It has been suggested that AI has been misused in research fraud, contributing to the reproducibility crisis
- AI could accelerate biomedical research by identifying many more candidate compounds, expanding animal use in the current climate
- Risk of project design or ethical review by AI, removing incentives and opportunities to challenge and reflect



RSPCA ANIMALS IN SCIENCE

Image by macrovector on magnific.com

Greater understanding of animal sentience

- **‘Feelings that matter to the animal’**
- Acts as a driver for all 3Rs
- Challenges use of ‘lower’ animals as ‘Replacements’
- Should lead to application of precautionary principle regarding the scope of legislation and regulations relating to animals
    - UK Animal Sentience Act 2022

RSPCA ANIMALS IN SCIENCE

Photo by Masaaki Komori on Unsplash

Globalisation of research and testing

Positives	Negatives
• Can act as a **driver to improve standards** • Opportunities to **share knowledge and expertise** and 'level up' • ICLAS Special Working Group is leading work, collaborating with a range of regional and global LAS-related organisations, to develop guidelines on **globally harmonised standards** in key areas relevant to scientific quality, animal welfare and ethical oversight	• Some countries are expanding biomedical research but **not investing** in good quality animal care and use • Many countries have **low standards** around implementing the 3Rs, regulation, enforcement, and ethical review • Some countries are investing in significant new **animal breeding infrastructure** as 'national assets' e.g. a new NHP breeding facility in France to house 1,800 primates (opposed by 93% in a public consultation) • **Lack of harmonisation** of good animal care and welfare standards

Where might Europe be in 2036? A vision …

- Ambitious **phase-out strategies** established by countries, organisations and companies are well-supported and are being successfully implemented
- **NAMs are dominant**, with animal use reduced to a smaller number of challenging areas
- Animal technologists and scientists are **transitioning in step with strategies**
- **Data assets and AI** are being used to create models and generate insights, whilst avoiding or reducing animal use
- **Global harmonisation** between regulatory bodies accelerates the acceptance and uptake of NAMs and eliminates duplication
- Research funding bodies **increase scrutiny** of animal use, emphasising **outcomes and impact**
- The **reproducibility crisis** is over
- No animal experiences **severe suffering**
- Greater openness leads to more robust **harm-benefit analysis and ethical review**, driven by **public expectations**


GLOBAL HARMONISATION ACHIVED:
ICH/OECD/EMA UNIFIED REGULATIONS FOR NAMs
RESEARCH FUNDING 2036:
FUNDING PRIORITIZES NAMs & IMPACT
LEADING THE WAY IN HUMANE, EFFECTIVE SCIENCE 2036
REPRODUCIBILITY CRISIS RESOLVED:
ROBUST DATA SHARING
GLOBAL PHASE-OUT STRATEGIES 2036
NAMs & NATs: >95% DOMINANCE
ANIMAL USE: <5% (Challenging Areas Only)
AI-DRIVEN REPLACEMENT MODELS:
PREDICTIVE TOXICITY (99% ACCURACY)
HuHeart Chip
NeuroSpheroid
Liver-on-a-Chip

rspca.org.uk/animalsinscience

linkedin.com/in/rspca-animals-in-science

animalsinscience@rspca.org.uk

RSPCA
ANIMALS IN SCIENCE