National Centre
for the Replacement
Refinement & Reduction
of Animals in Research

A guided tour of NC3Rs online resources

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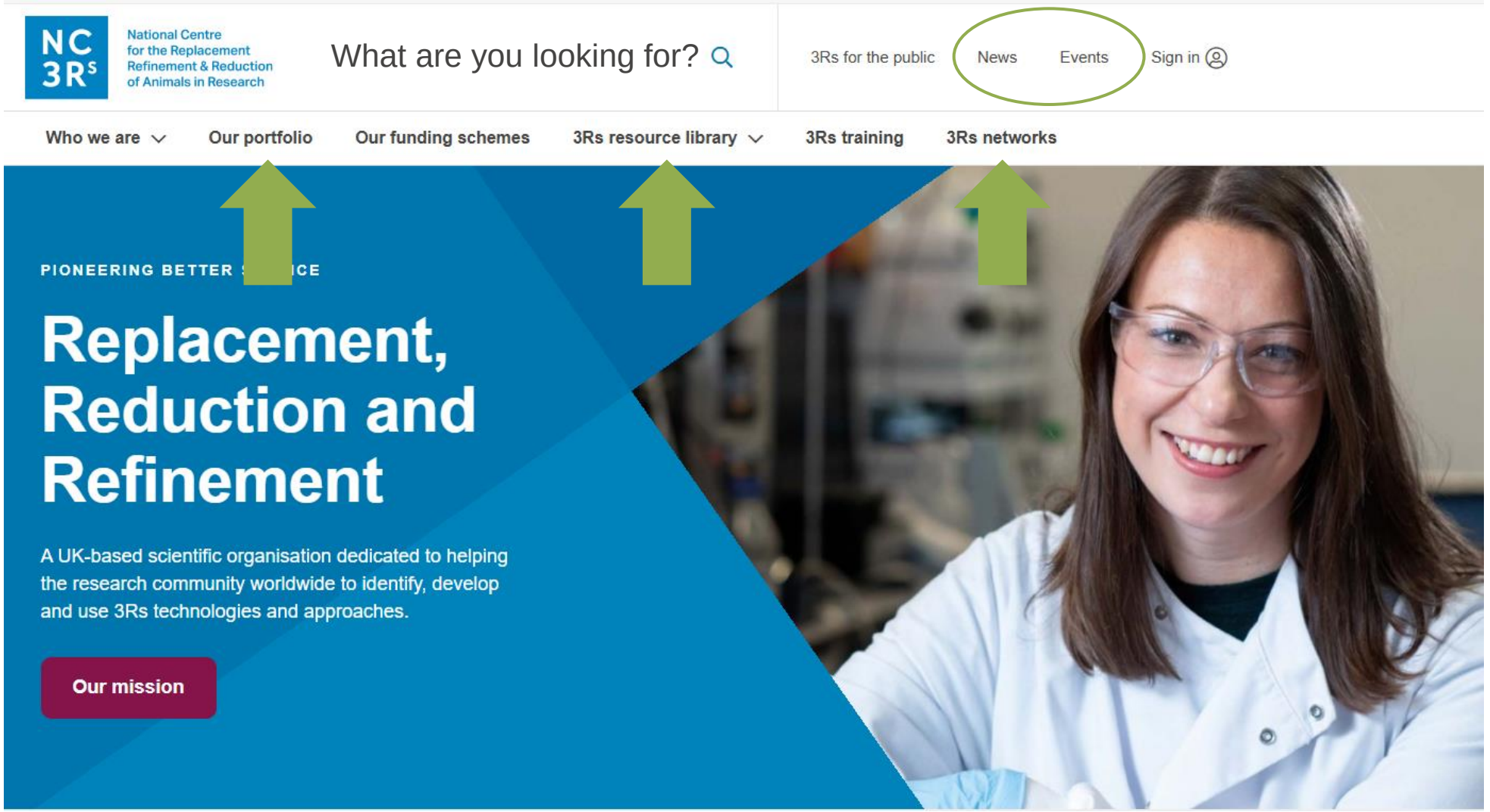
Danish 3R Symposium 2025

Pioneering Better Science

The UK National Centre for the 3Rs

- Established in 2004.
- Work with cross-sector stakeholders in the UK and internationally.
- Accelerating development and uptake of the 3Rs:
  - Research funder.
  - Innovation and commercialisation.
  - Office-led scientific programmes.
  - Guidance/resources for scientific community.

nc3rs.org.uk

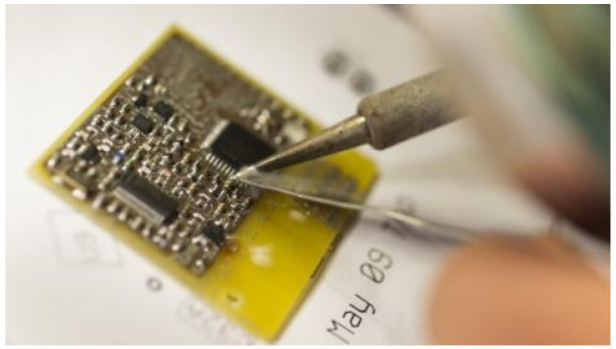

NC 3Rs
National Centre for the Replacement Refinement & Reduction of Animals in Research
What are you looking for?
3Rs for the public
News
Events
Sign in
Who we are
Our portfolio
Our funding schemes
3Rs resource library
3Rs training
3Rs networks
PIONEERING BETTER
Replacement, Reduction and Refinement
A UK-based scientific organisation dedicated to helping the research community worldwide to identify, develop and use 3Rs technologies and approaches.
Our mission

Our portfolio

Research portfolio: nc3rs.org.uk/our-portfolio

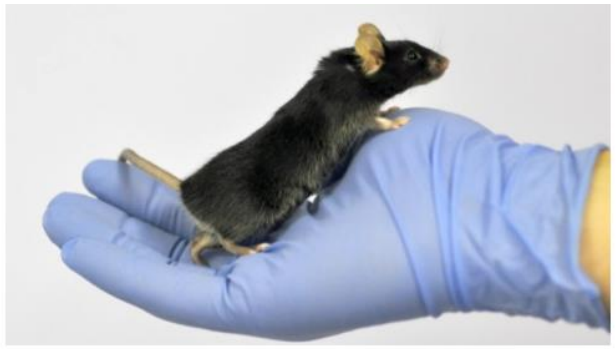
Research and early careers

A list of all grants awarded for the development and uptake of new 3Rs approaches and the training of early career scientists.



Innovation

A list of all awards made for the development of 3Rs products and services through CRACK IT Challenges, our open innovation funding competition.



Office-led projects

A list of all projects led by NC3Rs staff to embed the 3Rs in policy, practice and regulations nationally and internationally.

Funded research impacts

Impact stories

Learn how NC3Rs-funded research comes together to develop innovative new 3Rs tools and technologies that are pioneering better science.

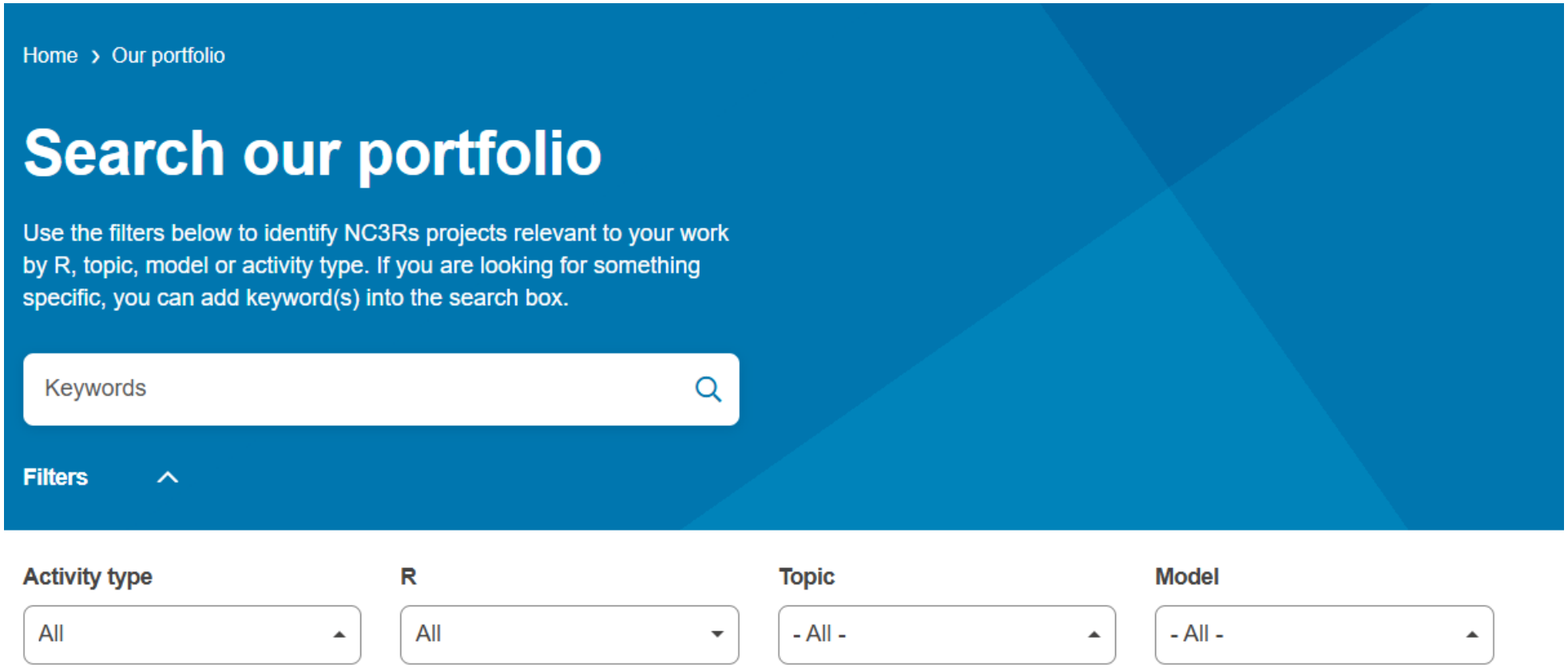
Research round-ups

Discover snapshots of the impact of NC3Rs-funded research across a range of thematic areas.

The NC3Rs Gateway

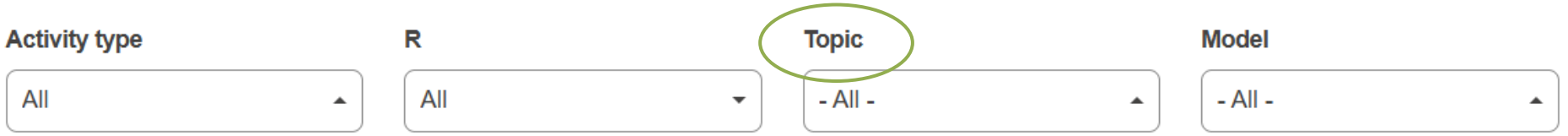
The latest developments in NC3Rs-funded research, including detailed methodology, performance characteristics and validation against gold standard models.

Research portfolio search: nc3rs.org.uk/our-portfolio/search



Research portfolio search: nc3rs.org.uk/our-portfolio/search

- Animal welfare science.
- Cardiovascular disease.
- Cardiovascular system biology.
- Cellular and molecular neuroscience.
- Cognitive neuroscience.
- Dermatology.
- Drug development, delivery and testing.
- Ecology.
- Experimental design and reporting.
- Gastrointestinal/digestive system.
- Immune system function.
- Infection and infectious disease.
- Musculoskeletal disease.
- Musculoskeletal system.
- Oncology.
- Neurological disorder.
- Reproductive and developmental biology.
- Respiratory disease.
- Respiratory system.
- Safety assessment.
- Sensory system.
- Urinary system.

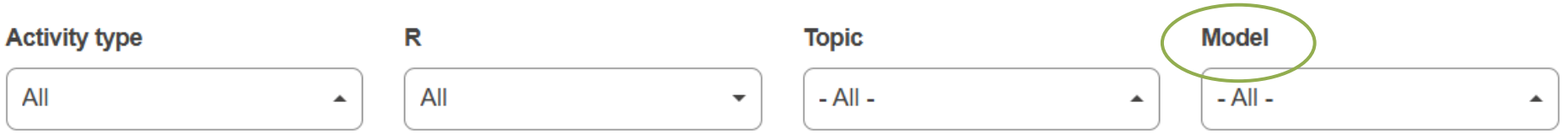


Research portfolio search: nc3rs.org.uk/our-portfolio/search

- *Ex vivo*.
- *In silico*.
- *In vitro*.
  - Complex *in vitro*.
  - Simple *in vitro*
  - Other *in vitro*.

- *In vivo*.
  - Mouse
  - Rat
  - Other rodent.
  - Rabbit.
  - Cat.
  - Dog.
  - Pig.

  - Ferret.
  - Non-human primate.
  - Other mammalian species.
  - Zebrafish.
  - Other fish.
  - Amphibian.
  - Bird.
  - Invertebrate.



DRIVER recommendations

nc3rs.org.uk/driver-recommendations

Designing and **R**eporting ***In Vitro*** **E**xperiments **R**esponsibly.

Improving the standards of *in vitro* research to build confidence in their use as replacements and avoid unnecessary animal use

2023: Preprint published.

2024: User testing survey – results will be published soon.

Late 2025: Online resource

- Interactive elements with practical examples.
- Specific guidance to support best practice.
- Tailored content for specific models and methodologies.

3Rs approaches in biologics testing

nc3rs.org.uk/
3rs-approaches-biologics

Funding from WHO and Bill & Melinda Gates Foundation.

NC 3Rs

Driving the global adoption of non-animal testing strategies to optimise quality control testing of biological products

Late 2023: Review of animal use requirements in WHO biologics guidelines completed and published.

October 2025: New WHO guidelines on the replacement or removal of animal tests for the quality control of biological products.

Closing 12 December: Survey on use of monocyte activation test to replace the rabbit pyrogen test.

3Rs resource library

3Rs resource library: nc3rs.org.uk/3rs-resources

3Rs resource topics

- Alternatives
- Experimental design and reporting
- Genetic modification
- Handling
- Husbandry
- In vivo techniques
- New approach methodologies
- Research culture and ethical review
- Toxicology and regulatory sciences
- Welfare assessment

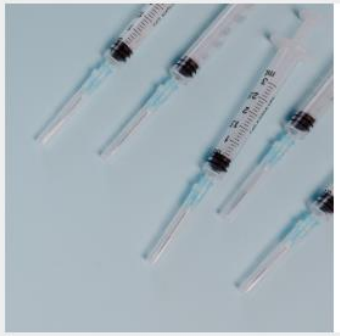
Other sites, tools and services

- ARRIVE guidelines
- Experimental Design Assistant
- CRACK IT Innovation Platform
- Peer review and advice service
- The Macaque website
- The NC3Rs gateway

Practical guidance

Breeding and colony management

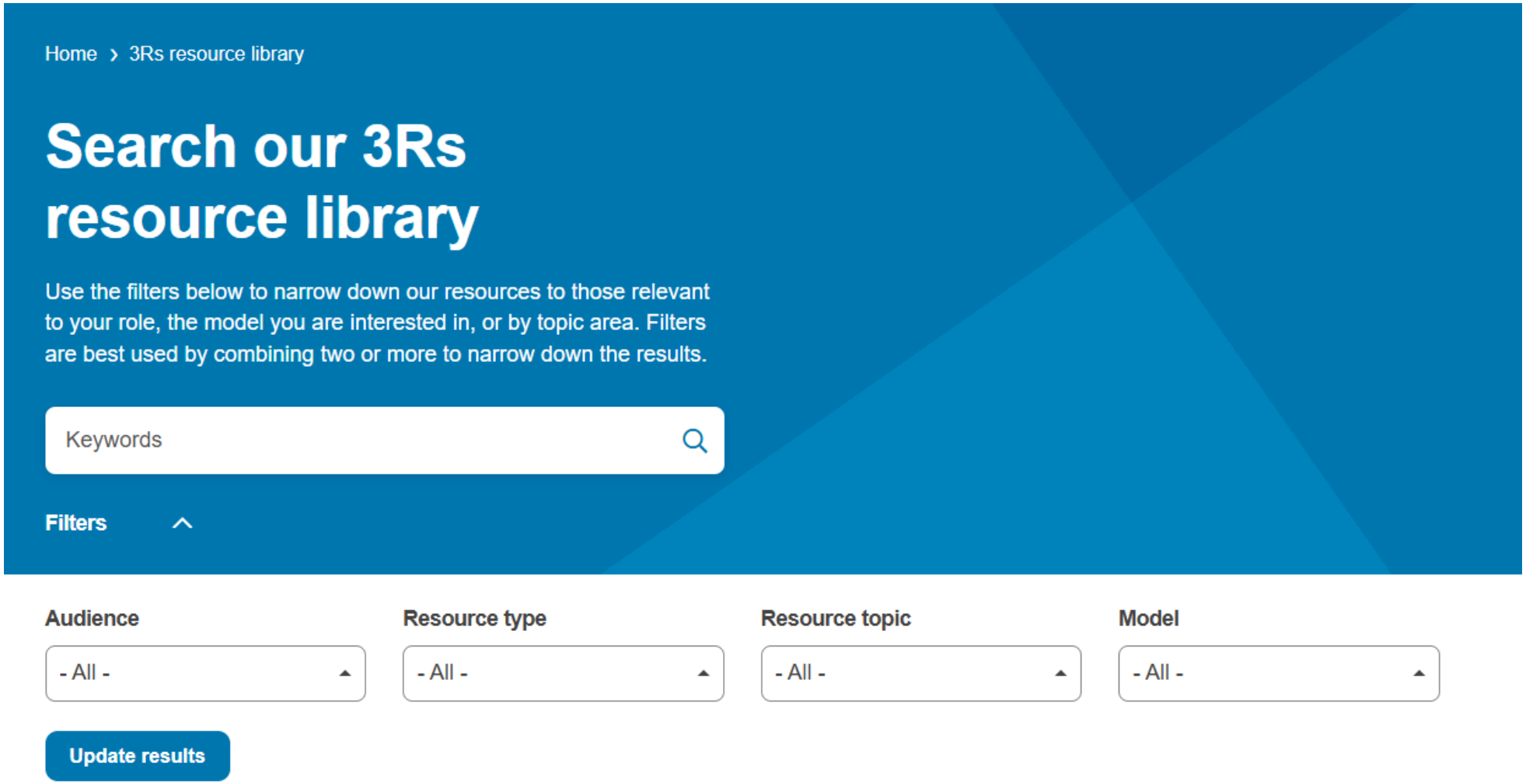
Guidance on re-establishing colonies after a pause (e.g. COVID-19 lockdown).



Blood sampling

Techniques for blood sampling in laboratory animal species to ensure the most appropriate technique is chosen.

3Rs resource library: nc3rs.org.uk/3rs-resources



Welfare webinars

nc3rs.org.uk/welfare-webinars

Implementing refinements in day-to-day practice

Socialisation and positive reinforcement training for pigs and dogs.

Thursday 27 November, 12.30 – 13.30 (GMT) / 13.30 – 14.30 (CET).

Habituation of minipigs, primates and dogs for procedures in toxicology.

Thursday 29 January, 12.30 – 13.30 (GMT) / 13.30 – 14.30 (CET).

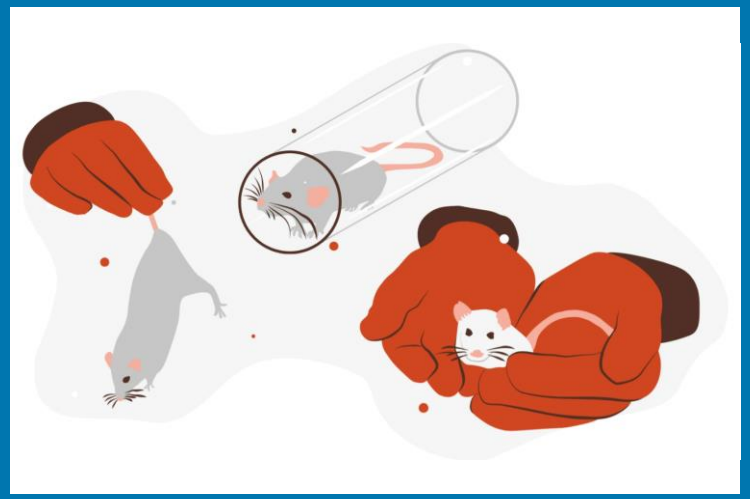
Recordings available:

- Refined humane endpoints and early interventions.
- Improving the lives of laboratory zebrafish.

Planned future topics:

- Refined oral dosing.
- Refining interactions between rodents and humans.

Refined mouse handling



mousehandling.org

Training for cup and tunnel handling techniques

eLearning course: Background and practical applications of refined methods to pick up mice.

45 minutes completion time.

Also available:

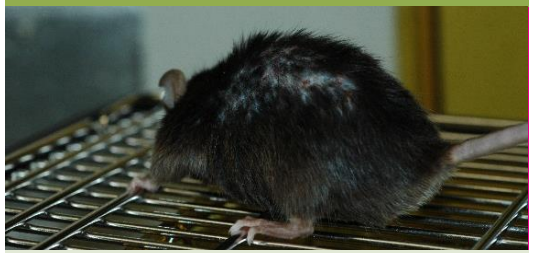
- Video tutorial and technique clips.
- Webinars.
- FAQs and testimonials.
- Research papers.

In vivo research resources

Breeding and colony management

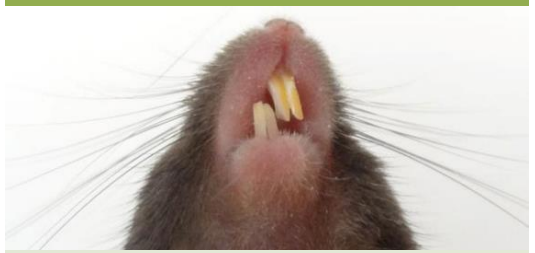
nc3rs.org.uk/colony-management

Managing aggression in mice



nc3rs.org.uk/mouse-aggression

Malocclusion



nc3rs.org.uk/malocclusion

Blood sampling

nc3rs.org.uk/blood-sampling

Evaluating environmental enrichment

nc3rs.org.uk/EEE

Grimace scales

nc3rs.org.uk/grimace-scales

Zebrafish skin swabbing

nc3rs.org.uk/zebrafish-swabbing

Amphibian care and welfare

nc3rs.org.uk/amphibian-webinar

Animal-free *in vitro* technologies

nc3rs.org.uk/

animal-free-vitro-technologies

Replacing animal-derived reagents and products to improve reproducibility and reduce animal use

Antibodies, culture media, enzymes/cells and scaffolds.

- Overview of technologies.
- Lists of companies/products.
- Case studies.
- Further reading and references.

Coming soon: Non-animal derived antibodies resource.

Toxicology and regulatory sciences

nc3rs.org.uk/toxbib

Replacing animal toxicity tests with new approach methodologies.

Reducing the number of animals involved in regulatory studies.

Refining procedures in safety testing to minimise pain and suffering.

- Acute toxicity testing.
- Animals in environmental safety testing.
- Endocrine disruptor assessment.
- Exposure and dose selection.
- Minimising non-human primate use in drug development.
- New approach methodologies in toxicology.
- Study designs for pharmaceutical and chemical development.
- Safety pharmacology.

Communicating 3Rs research

nc3rs.org.uk/communicating-3rs-research

Sharing 3Rs advances with professional and public audiences

Guidance on key messages and highlighting 3Rs impacts.

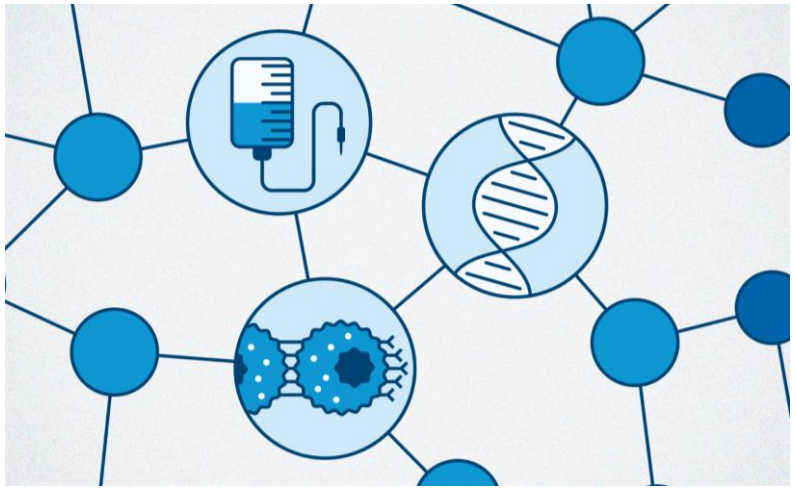
Webinar recording, blog article, written guidance.

Resources supported by NC3Rs public engagement awards:

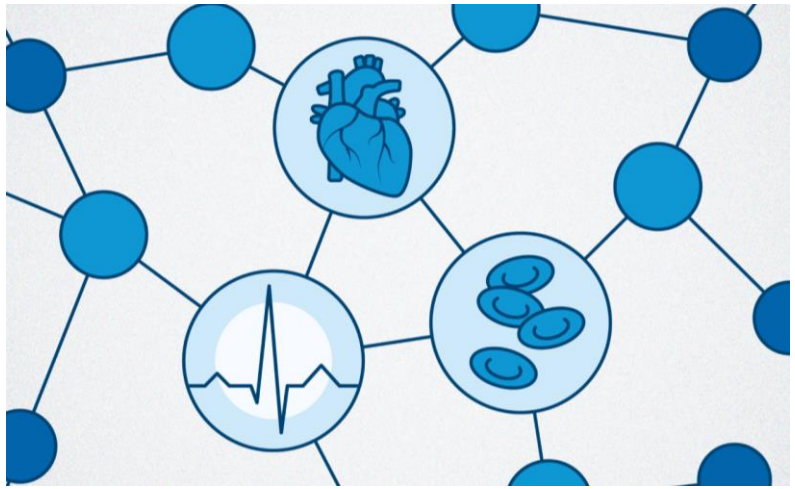
- Biological models trump cards.
- Marvellous Medicine badge pack.

NC3Rs Networks

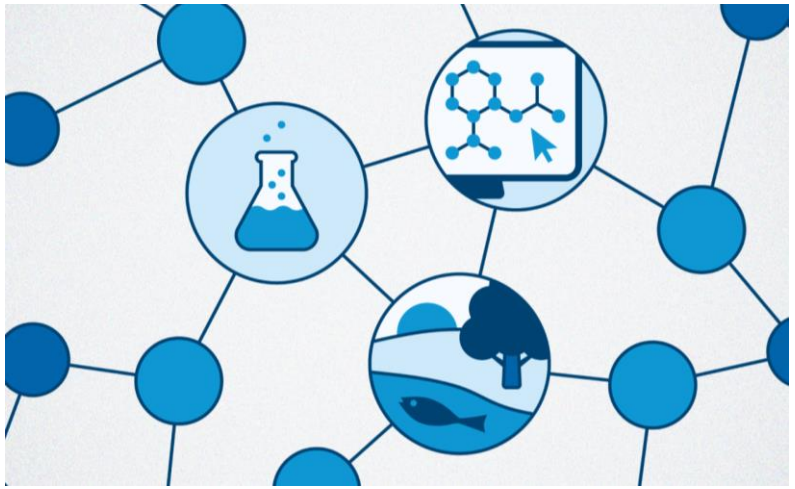
NC3Rs Networks: nc3rs.org.uk/networks



Oncology



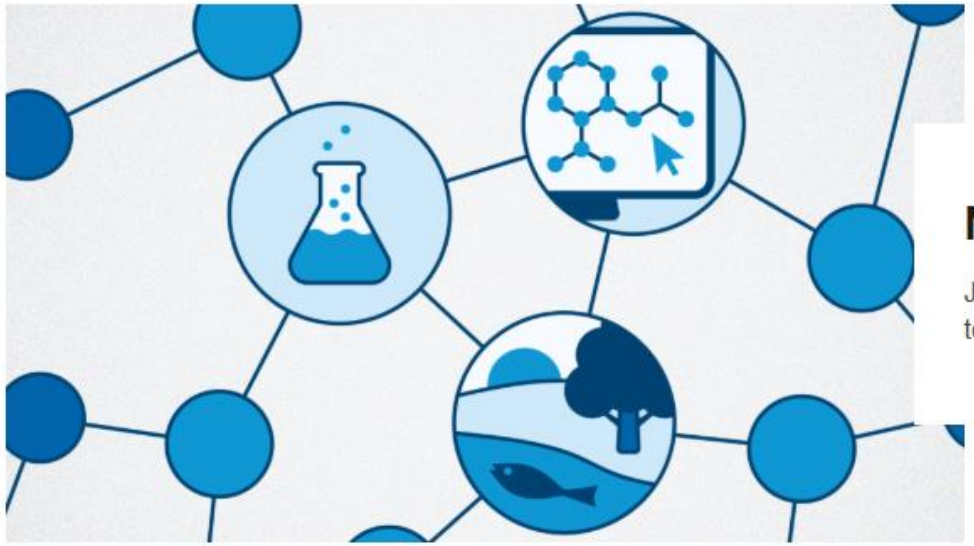
Cardiovascular



NAMs

- Supporting collaborations to maximise 3Rs impact and catalyse the uptake of 3Rs technologies.
- Open to scientists and stakeholders at all career stages from across academia and industry.
- Events, collaboration opportunities, 3Rs updates, website hubs – tailored to the community.

NAMs Network hub: nc3rs.org.uk/nams-hub



NAMs Network

Join our community of researchers, developers and end-users that are working to advance the field of NAMs.

NAMs resources

Learn more about what NAMs are, where they can be applied in scientific research and our projects in this area.

NAMs portfolio

Read about successful NAMs research and the development of new technologies.

NAMs products

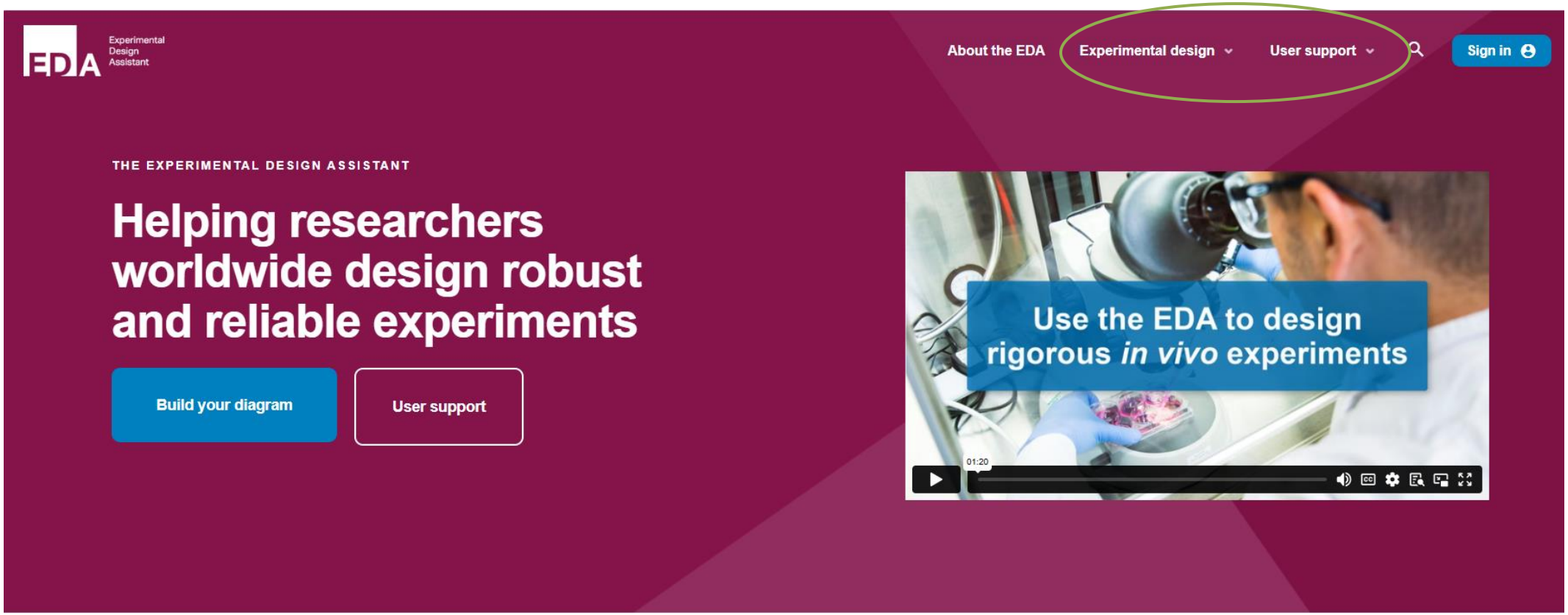
Browse NAMs tools, technologies and services to support your research needs.

NAMs webinars

Watch our webinars that showcase the latest developments in the NAMs research support by the NC3Rs.

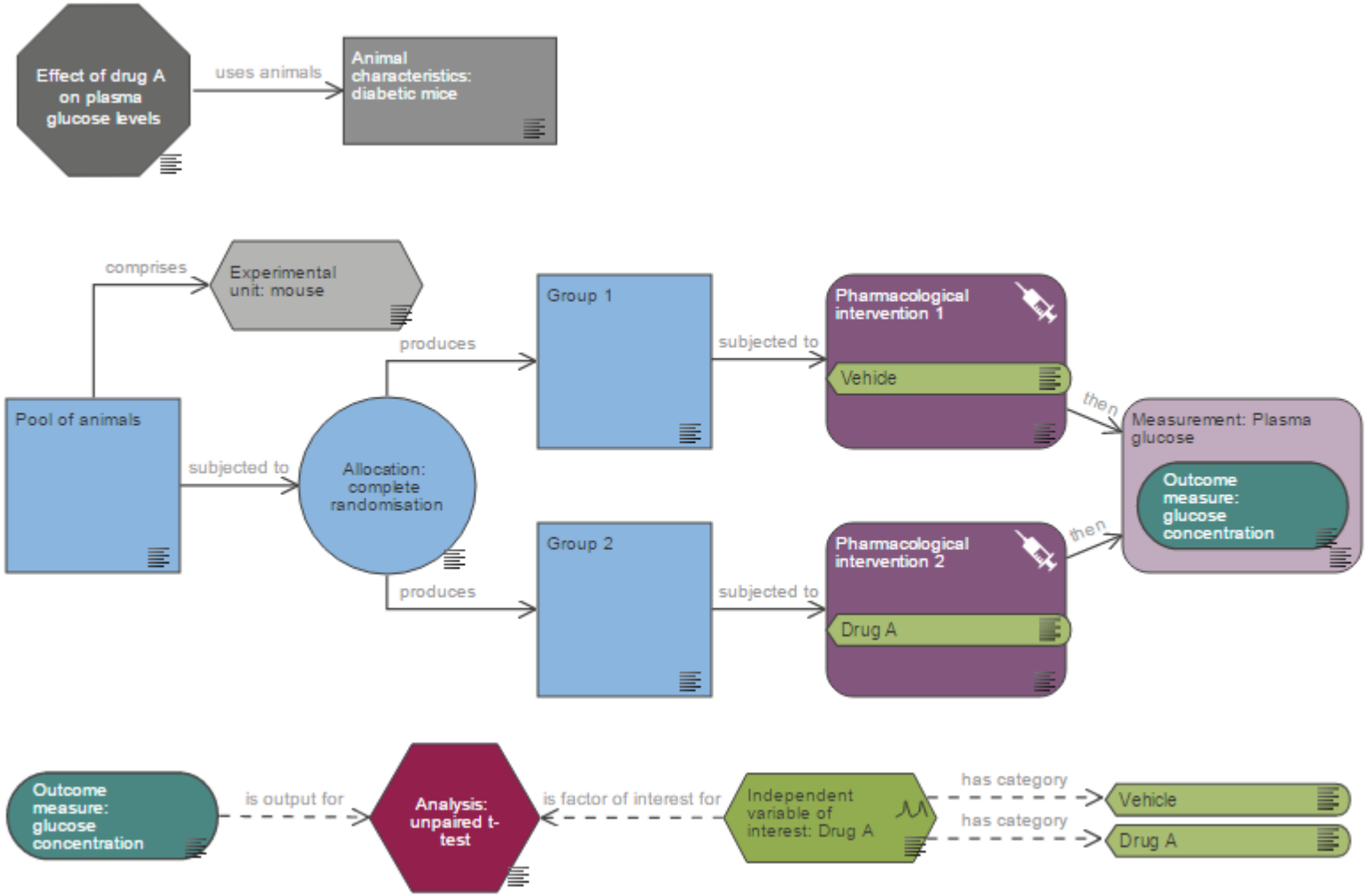
The Experimental Design Assistant (EDA)

The EDA: eda.nc3rs.org.uk



NC 3Rs EDA

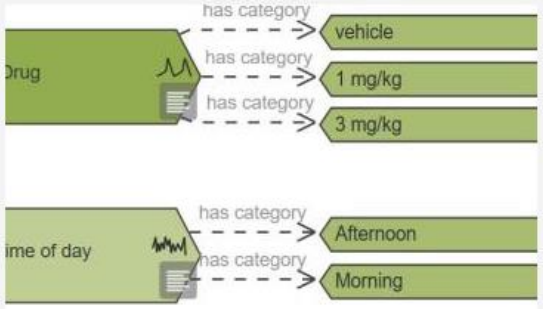
The EDA: eda.nc3rs.org.uk



Experimental design pages: eda.nc3rs.org.uk/experimental-design

Understanding your experiment
How to define hypotheses and set a biologically relevant effect size

Animal characteristics
How to account for animals with different strains, ages or sexes in the design and analysis of an in vivo experiment



Independent variables
How to identify independent variables of interest and nuisance variables and account for them in the design and the analysis of an in vivo experiment

Group and sample size
How to define the experimental groups and calculate the sample size needed to obtain reliable results

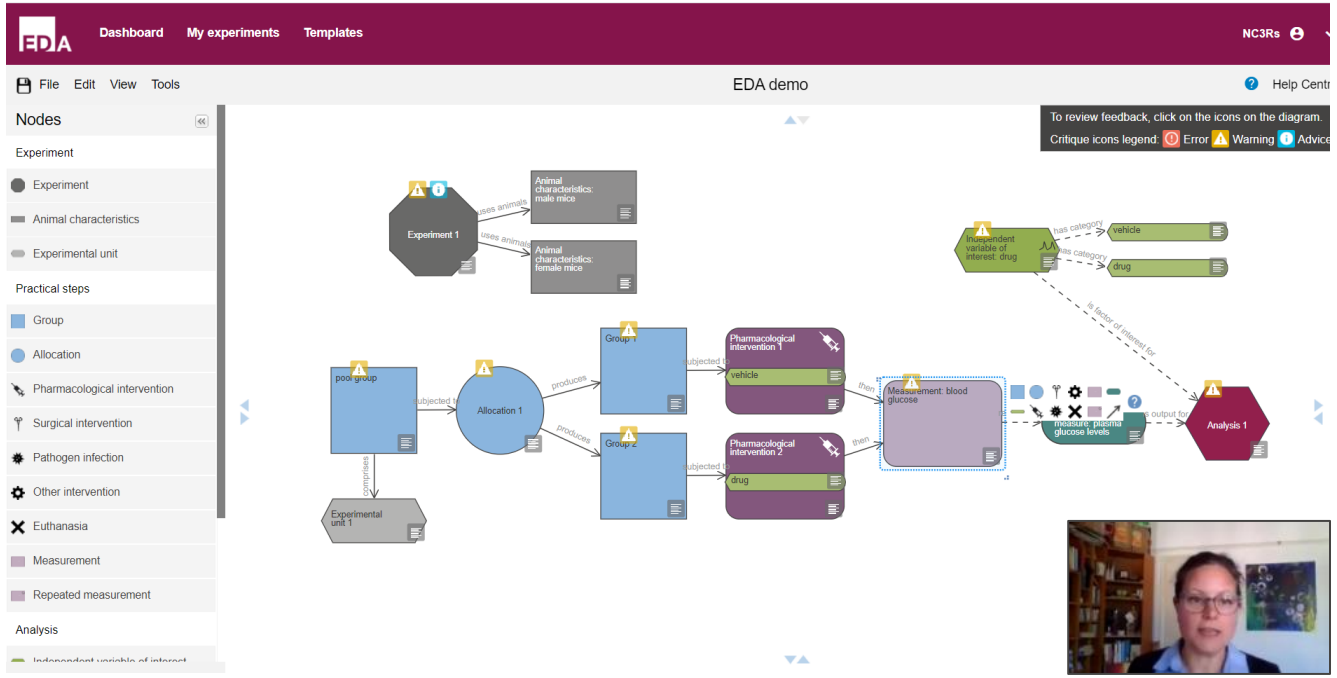
Experimental unit
How to identify the experimental unit in an in vivo experiment

Inclusion and exclusion
How to define criteria for including or excluding animals, experimental units, samples or data points from an experiment

Virtual EDA workshop: nc3rs.org.uk/EDAdemos

Personalised guidance as you learn to use the EDA and design your own experiment.

- Applying feedback to improve your design.
- Determining appropriate sample size.
- Generating a randomisation sequence.
- Sharing your plans with an experimental design report (PDF and URL versions).

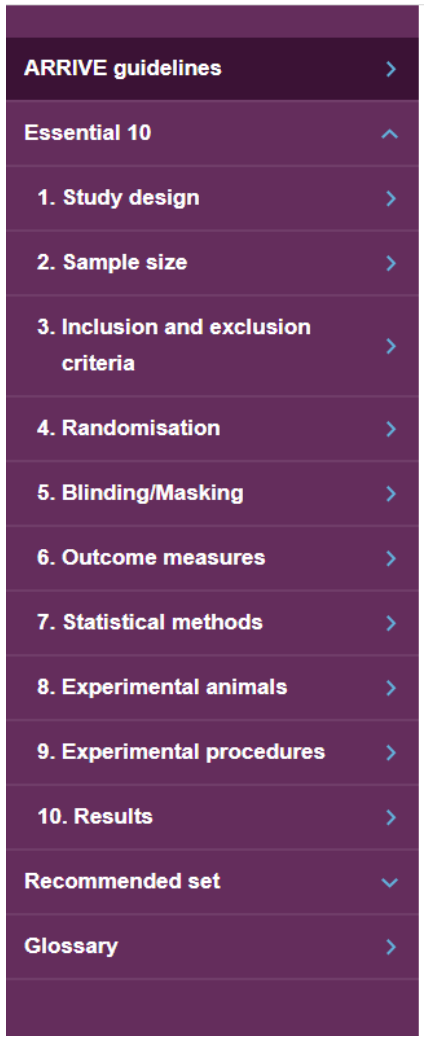


The ARRIVE guidelines

ARRIVE: arriveguidelines.org.uk

NC 3Rs ARRIVE

ARRIVE 2.0: arriveguidelines.org.uk/arrive-guidelines



The ARRIVE guidelines 2.0

This section of the website provides detailed explanations about each item of the guidelines. Use the left-hand side menu to navigate to each item. The guidelines in their entirety can also be downloaded as a PDF, in English or a variety of translations.

To facilitate a step-wise approach to improving reporting, the guidelines are organised into two prioritised sets:

ARRIVE Essential 10

These ten items are the basic minimum that must be included in any manuscript describing animal research. Without this information readers and reviewers cannot assess the reliability of the findings.

Recommended Set

These items complement the Essential 10 set and add important context to the study described. Reporting the items in both sets represents best practice.

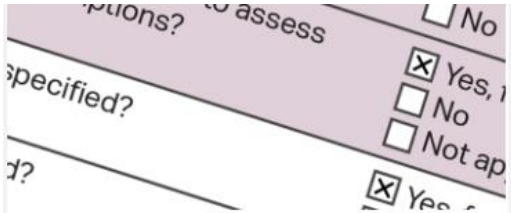
Each item of the guidelines includes examples of good reporting from the published literature, extracted from different types of studies, in model organisms ranging from mammals to invertebrates. This battery of examples will be regularly expanded.

Consulting this information during the planning of an animal study ensures that researchers can benefit from the explanations and advice on experimental design, minimisation of bias, sample size and statistical analyses, helping the design of rigorous and reliable *in vivo* experiments.

The Explanation and Elaboration for the ARRIVE guidelines 2.0 were originally published in *PLOS Biology* doi:10.1371/journal.pbio.3000411 under a CC-BY license.

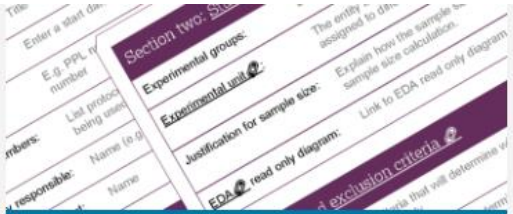
NC 3Rs ARRIVE

ARRIVE resources: arriveguidelines.org.uk/resources



Compliance questionnaire

Designed for use by journals assessing submitted manuscripts, this questionnaire



ARRIVE study plan

A freely available template for researchers, technicians and ethical review bodies to communicate and assess the rigour of

Training resources

Freely available educational resources for individuals and training providers, including manuscript review exercises and

Coming soon: ARRIVE compliance checker AI tool

Request pocket-sized ARRIVE guidelines

Pocket-sized versions of the ARRIVE guidelines are available, free of charge, to any researchers or organisations interested in using them. This handy, compact format allows for quick reference to the guidelines in a scientific setting, and easy dissemination of them among research groups or institutions.

In the interest of sustainability, the minimum order volume for postage is five copies. To promote scientific collaboration, please consult with colleagues and collaborators before ordering, and share any spare copies with other researchers.

To request copies (in English only) please click here, complete the form and click submit.

Keeping up to date

Subscribe to our newsletters: nc3rs.org.uk/newsletter

NC3Rs newsletter	Tech3Rs	Tox News
• General 3Rs. • Everyone! • NC3Rs updates, events, articles and external news. • Monthly.	• Animal use/welfare focus. • Technicians/facility staff. • Careers features, facility updates, papers of interest. • Quarterly.	• Toxicology/regulatory focus. • Industry/regulators/scientists. • Publications, events, project outputs and updates. • Bimonthly.

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Thank you!

For more information

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nc3rs.org.uk
linkedin.com/company/national-centre-3rs
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Keep in touch

Our monthly newsletter provides the latest updates from the NC3Rs, including funding calls and events www.nc3rs.org.uk/register

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