Animal Protection Research Prize for social and civic engagement in the field of laboratory animals:

Thank you from Norecopa!

Adrian Smith

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@adrian_3r

norecopa.no/220425

Norecopa: PREPARE for better Science

carolsplaces.com

Norwegian School of Veterinary Science 1981-2011

accredited by AAALAC International from 2002

Secretary of Norecopa since its foundation in 2007

peta.org

Norecopa: PREPARE for better Science

fbresearch.org

animal welfarists/activists

scientists

animal technicians

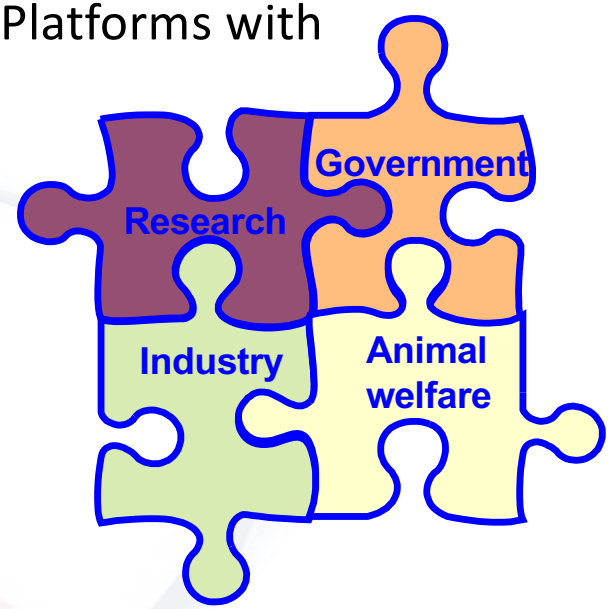
veterinarian

the authorities

All the time: weigh the potential benefits of the research against the harms of using animals

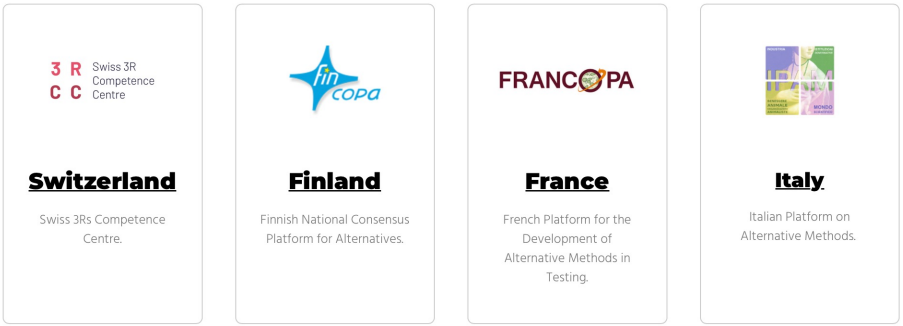
Norecopa is a National Consensus Platform for the 3Rs:
***Replacement**, **Reduction** and **Refinement** of animal experiments*

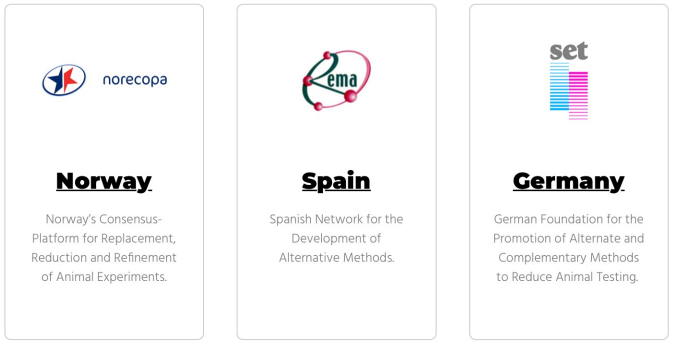
*A member of **ecopa**:*
European Consensus-Platform for Alternatives
which recognises National Consensus Platforms with
4 stakeholders equally represented:



ecopa.eu

★ FULL MEMBERS





★ 2 ASSOCIATE MEMBERS

”PREPARE for better science"

- Replacement if possible
- Reduction and Refinement if not possible to replace
- valid data (a true treatment effect)
- reproducible and translatable experiments
- best possible animal welfare
- health & safety (of animals and people)
- a culture of care at the animal facility
- communication of best practice to others

colourbox.com

Norecopa: PREPARE for better Science

More than 3Rs

The 3 Rs to minimise the harm:

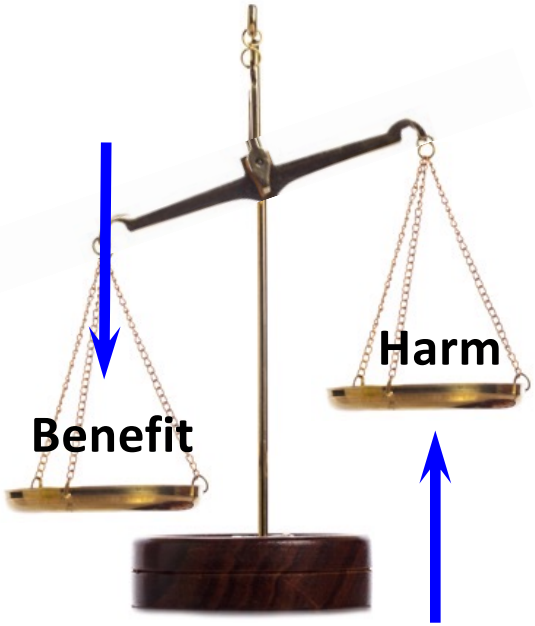
- *Replace the unnecessary experiments*
- *Reduce the number of animals used*
- *Refine the conditions for the animals*

The 3 Vs to increase the validity of the experiment:

- *Construct Validity (can the model answer the question?*
- *Internal Validity (has the experiment been correctly designed?)*
- *External Validity (are the results translatable to the target group?)*

The 3 Ss - use your commonsense and your heart

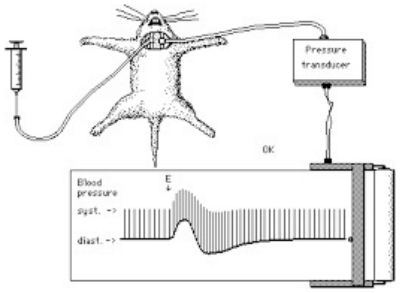
- *Good Science*
- *Good Sense*
- *Good Sensibilities*



norecopa.no/3R
norecopa.no/3V
norecopa.no/3S

Our work with alternatives started 34 years ago ...

wikipedia.org



Pharmatutor

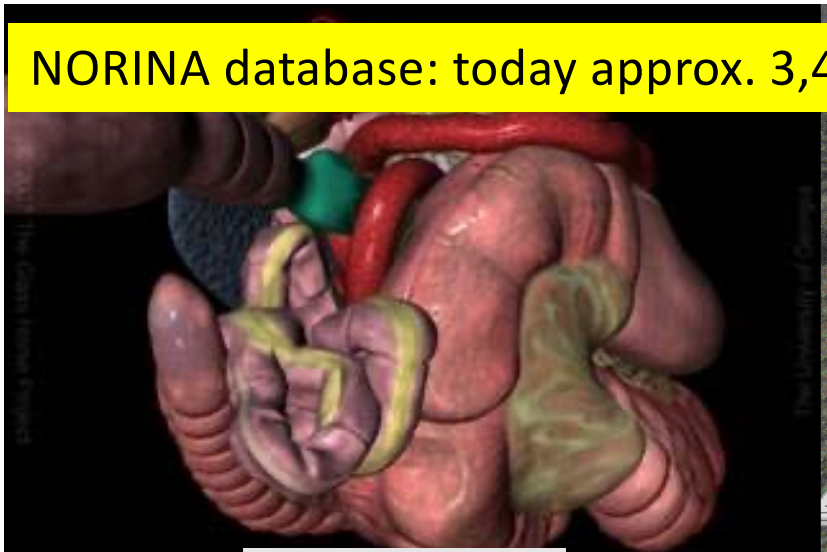
NORINA, 1991

Laboratory Animals Ltd, 1996

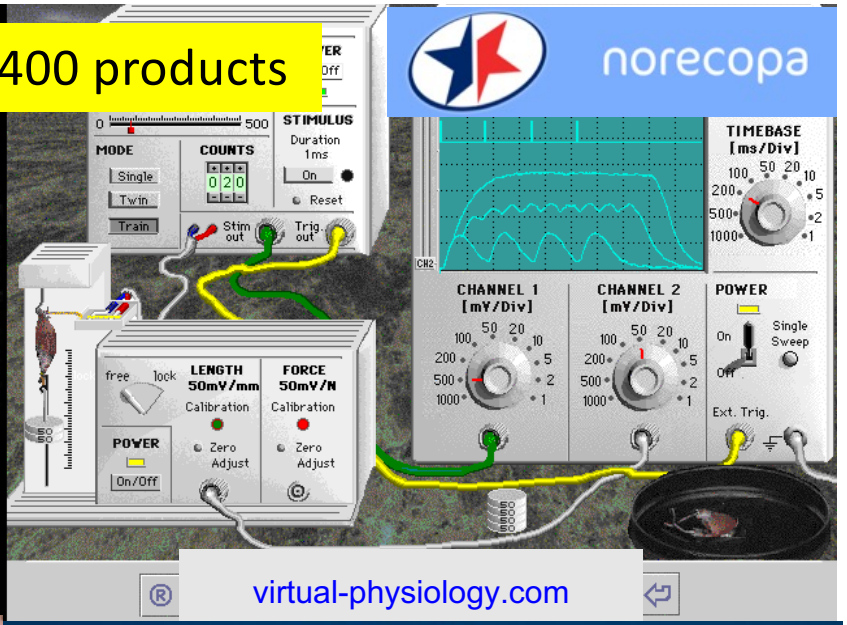
"Current status and future developments of databases on alternative methods"

ECVAM workshop, Neubiberg, Munich, 1996

NORINA database: today approx. 3,400 products

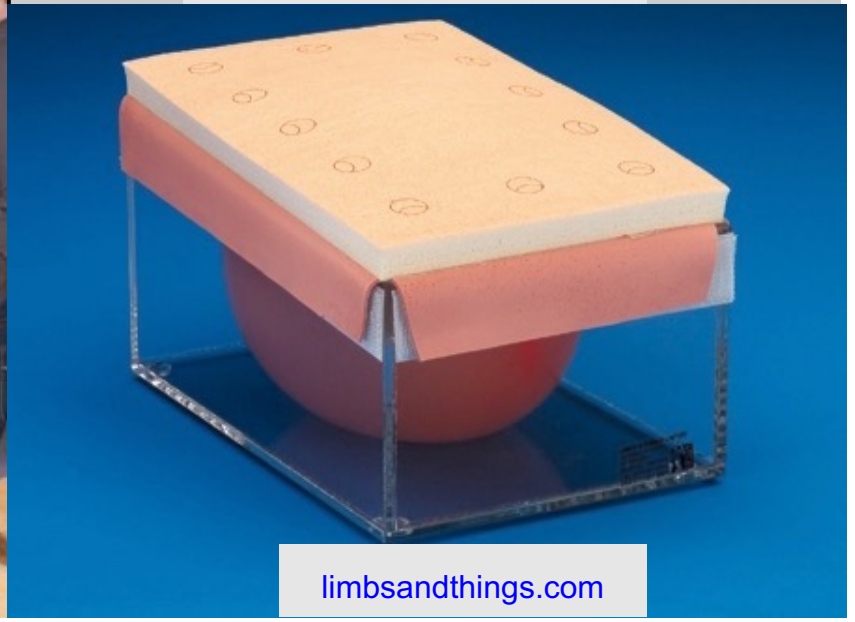


3dglasshorse.com



virtual-physiology.com

rescuecritters.com



limbsandthings.com

TextBase:

1,900 books related to Lab Animal Science, welfare and alternatives:

norecopa.no/textbase

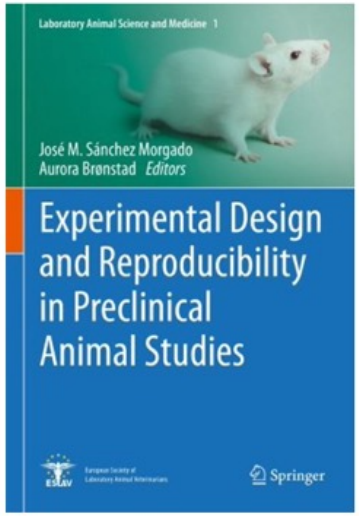
Experimental Design and Reproducibility in Preclinical Animal Studies

By José M. Sánchez Morgado & Aurora Brønstad (Eds.)

Record number: 8619d

This book provides grounds on how to plan and conduct animal experiments that can be reproduced by others. It touches on factors that may impact the reproducibility of animal studies including: the animal genetic background, the animal microbial flora, environmental and physiological variables affecting the animal, animal welfare, statistics and experimental design, systematic reviews of animal studies, and the publishing process.

The book addresses advanced undergraduates, graduate students and all scientists working with animals.



norecopa.no/textbase/experimental-design-and-reproducibility-in-preclinical-animal-studies

3R-Guide: over 400 guidelines for animal studies

norecopa.no/3r-guide

Working Party Report

Guidance on the severity classification of scientific procedures involving fish: report of a Working Group appointed by the Norwegian Consensus-Platform for the Replacement, Reduction and Refinement of animal experiments (Norecopa)

P Hawkins (Convenor)[1], N Dennison[2], G Goodman[3], S Hetherington[4], S Llywelyn-Jones[5], K Ryder[2] and A J Smith[6]

[1]Research Animals Department, RSPCA, Wilberforce Way, Southwater, West Sussex RH13 9RS, UK; [2]Animals (Scientific Procedures) Inspectorate, Home Office, PO Box 6779, Dundee DD1 9WW, UK; [3]Biological Services, The University of Edinburgh, Chancellor Building, 49, Little France Crescent, Edinburgh EH16 4SB, UK; [4]CEFAS, Pakefield Road, Lowestoft, NR33 0HT, UK; [5]King's College London, Biological Services Unit, 4th floor, Hodgkin Building, Guy's Campus, London SE1 1UL, UK; [6]Norecopa, c/o Norwegian Veterinary Institute, PO Box 750 Sentrum, N-0106 Oslo, Norway
Corresponding author: P Hawkins. Email: phawkins@rspca.org.uk

Abstract

The severity classification of procedures using animals is an important tool to help focus the implementation of refinement and to assist in reporting the application of the 3Rs (replacement, reduction and refinement). The recently revised Directive that regulates animal research and testing within the European Union requires Member States to ensure that all procedures are classified as 'non-recovery', 'mild', 'moderate' or 'severe', using assignment criteria set out by the European Commission (EC). However, these are focused upon terrestrial species, so are of limited relevance to fish users. A Working Group set up by the Norwegian Consensus-Platform for the 3Rs (Norecopa) has produced guidance on the classification of severity in scientific procedures involving fish, including examples of 'subthreshold', 'mild', 'moderate', 'severe' and 'upper threshold' procedures. The aims are to complement the EC guidelines and help to ensure that suffering in fish is effectively predicted and minimized. Norecopa has established a website (www.norecopa.no/categories) where more information on severity classification for procedures using fish, including field research, will be made available.

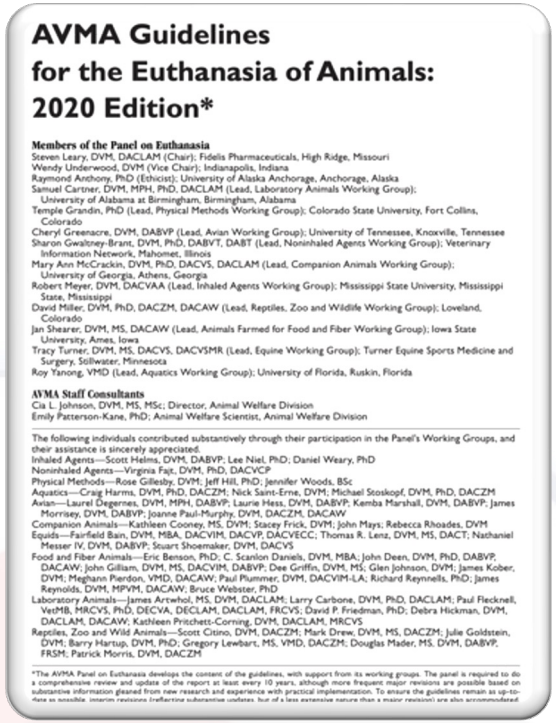
Keywords: Fish, harm–benefit assessment, humane endpoints, refinement, severity

Laboratory Animals 2011; 1–6. DOI: 10.1258/la.2011.010181

Background

An effective prediction of the effects of a research protocol on the animals concerned helps to ensure that any pain, suffering or distress they may experience will be effectively anticipated, recognized and alleviated. This is essential not only for animal welfare but also for scientific validity, because physiological and behavioural responses to suffering can significantly affect data quality. Severity classification is thus an important tool to help focus the implementation of refinement, including monitoring its progress, and to assist in reporting the application of the 3Rs (replacement, reduction and refinement) of Russell and Burch,[1] which is now an integral part of the legislation on animal research and testing in many countries. Predictions of severity are also fundamental to the harm–benefit assessments undertaken by bodies such as regulatory authorities and ethical committees when deciding whether or not a project should be licensed or funded.

There may also be a legal requirement to predict and classify severity. For example, the new Directive regulating animal use within the European Union, which must be implemented within all Member States by January 2013, requires the severity of each procedure to be classified on the basis of the 'degree of pain, suffering, distress or lasting harm expected to be experienced by an individual animal during the course of the procedure', with the aim of enhancing transparency, facilitating the project authorization process and providing tools for monitoring compliance.[2] Member States will have to ensure that all procedures are classified as 'non-recovery', 'mild', 'moderate' or 'severe' on a case-by-case basis, using the assignment



AVMA Guidelines for the Euthanasia of Animals: 2020 Edition*

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Roy Yanong, VMD (Lead, Aquatics Working Group); University of Florida, Ruskin, Florida

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Noninhaled Agents—Virginia Fajt, DVM, PhD, DACVCP
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Equids—Fairfield Bain, DVM, MBA, DACVIM, DACVP, DACVECC; Thomas R. Lenz, DVM, MS, DACT; Nathaniel Messer IV, DVM, DABVP; Stuart Shoemaker, DVM, DACVS
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*The AVMA Panel on Euthanasia develops the content of the guidelines, with support from its working groups. The panel is required to do a comprehensive review and update of the report at least every 10 years, although more frequent major revisions are possible based on substantive information gleaned from new research and experience with practical implementation. To ensure the guidelines remain as up-to-date as possible, interim revisions (reflecting substantive updates, but of a less extensive nature than a major revision) are also recommended

A Gold Standard Publication Checklist to Improv Quality of Animal Studies, to Fully Integrate the and to Make Systematic Reviews More Feasible

Carlijn R. Hooijmans, Marlies Leenaars and Merel Ritskes-Hoitinga

Radboud University Nijmegen Medical Centre, Central Animal Laboratory and 3R Researc Nijmegen, The Netherlands

Summary — Systematic reviews are generally regarded by professionals in the field of medicine as the highest level of medical evidence, and they are already standard practice for However, they are not yet widely used nor undertaken in the field of animal experimentatio there is a lot to be gained from the process. Therefore, a gold standard publication chec animal studies is presented in this paper. The items on the checklist have been selected o literature analysis and the resulting scientific evidence that these factors are decisive in d outcome of animal studies. In order to make future systematic reviews and meta-analyses of possible, to allow others to replicate and build on work previously published, diminish animals needed in animal experimentation (reduction), improve animal welfare (refinement) improve the quality of scientific papers on animal experimentation, this publication checkl used and followed. We have discussed and optimised this GSPC through feedback from experts in the field of animal experimentation. From these interviews, it became clear tha adopt this GSPC when journals demand it. The GSPC was compared with the current authors from nine different journals, selected on the basis that they featured a high number on animal studies. In general, the journals' demands for the description of the animal studie that it is not possible to repeat the studies, let alone carry out a systematic review. By usin animal studies, the quality of scientific papers will be improved. The use of the GSPC and th improvement in the quality of scientific papers will also contribute to decreased variation standardisation and, as a consequence, a reduction in the numbers of animals used and outcome of animal studies. It is of major importance that journal editors become convince these recommendations, because only then will scientists follow these guidelines to the ful

Key words: *animal experimentation, meta-analysis, publication checklist, scientific quality, review*

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E-mail: C.Hooijmans@cdl.umcn.nl

Introduction

A systematic review (SR) is a literature review focused on a single question which tries to identify, appraise, select and synthesise all available high-quality research evidence relevant to that question (1). SRs are generally regarded by evidence-based medicine professionals as the highest level of medical evidence, and they are already standard practice in clinical studies. However, SRs are not yet widely used nor undertaken in the animal experimentation field, although there would be a lot to be gained from the process. A systematic approach to incorporate all available relevant literature into the design of an animal experiment is a prerequisite for research which is of high scientific quality. Good science, from a scientific as well as an animal welfare point of view, is the basis of the book. *The Principles of Humane Experimental Technique*, by R (2). In this book, they recomm Rs *principles* (*Refinement*, *Replacement*) should be applied in animal studies. Besides pro research, SRs of animal experi direct implementation of the provide the proper argumentati animal model will give the b (clinical) research question whether there are gaps in a that require new animal exp *ment* and *refinement*). This venting unnecessary dupli experiments (*reduction*), and unnecessary animal use and animal studies will also lead t tation of the already existing from animal experiments. thro

Tim Allen, AWIC, USDA

Norecopa: PREPARE for better Science

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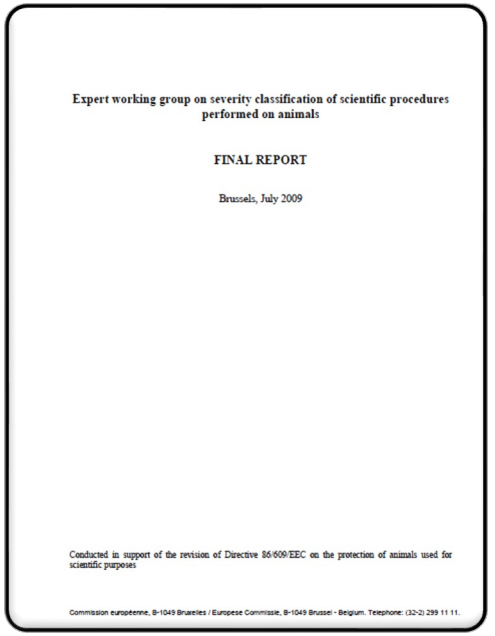
Guidance on the severity classification of procedures involving fish

A supplement to EU's guidance



Expert working group on severity classification of scientific procedures performed on animals

FINAL REPORT

Brussels, July 2009

Conducted in support of the revision of Directive 86/609/EEC on the protection of animals used for scientific purposes

Commission européenne, B-1049 Bruxelles / Europese Commissie, B-1049 Brussel - Belgium. Telephone: (32-2) 299 11 11.

http://ec.europa.eu/environment/chemicals/lab_animals/pdf/report_ewg.pdf

P Hawkins, N Dennison, G Goodman, S Hetherington,
S Llywelyn-Jones, K Ryder and AJ Smith (2011)

norecopa.no/categories

Norecopa: PREPARE for better Science

norecopa.no/databases-guidelines

Databases & Guidelines

Published lists of resources are difficult to search and quickly become outdated. Lists on a website are easier to search, but do not enable the use of filters or intelligent search engines.
Norecopa has therefore constructed four databases, which together with all the text on this website can be searched simultaneously using the search field at the top of every page.

- 3R Guide: a global overview of **databases, guidelines, information centres, journals, email lists, regulations and policies** which may be of use when planning experiments which might include animals. A quick overview of all the guidelines can be accessed here. Norecopa has written several of these, including the PREPARE guidelines for planning animal research and testing.
- NORINA: a global overview of audiovisual aids and other items which may be used as **alternatives or supplements to animals in education and training** at all levels from junior school to University, including dissection alternatives and surgical simulators.
- TextBase: a global overview of **textbooks and other literature within laboratory animal science** and related topics.
- Classic AVs: a subset of NORINA covering **audiovisual aids that are based on older technology**.

These databases are updated regularly. Please give us feedback if you discover errors or omissions.

The Norecopa website also includes four other collections:

- NAL: a collection of literature references relating to the 3Rs from the US National Agricultural Library
- European Commission datasets:
  - 3Rs Knowledge Sources: over 800 resources collected by the Commission in 2016
  - 3Rs Education and Training Resources, over 560 items collected in 2018
  - Non-animal models for respiratory tract diseases, over 280 models identified in a literature review of over 21,000 publications

Here is an alphabetical global list of all the databases cited on the Norecopa website.

links to over 70 other databases

norecopa

"the most comprehensive, up-to-date, website for global 3R resources"

over 10,500 webpages
nearly 1,000 hits per day

7-8 detailed newsletters per year

norecopa.no

norecopa.no/education-training/films-and-slide-shows

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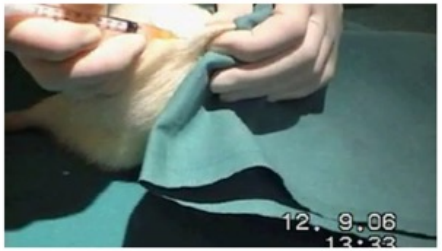
Rat s.c. injection
Norecopa | 1,380 views

Rat i.p. injection (method 2)
Norecopa | 1,280 views

Anatomia de la rata
Norecopa | 977 views

Testing anaesthetic depth in the chicken
Norecopa | 598 views

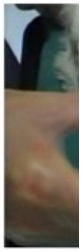
Blood collection from the saphenous vein in the mouse
Norecopa | 6,777 views



Subcutaneous injection in the rat - Technique 1
Norecopa | 2,249 views

Blood san
Norecop

Blood san
Norecop



Blood san
Norecop

Blood sampling from the pig
Norecopa | 3,914 views

Intravenous injection in a rabbit
Norecopa | 2,025 views

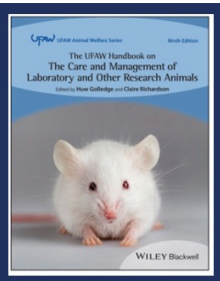
Lifting a rabbit
Norecopa | 2,420 views

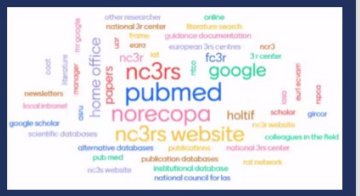
Subcutaneous injection in the rabbit
Norecopa | 1,479 views

Subcutaneous injection in the chicken
Norecopa | 1,806 views

Immobilisation of the rabbit
Norecopa | 2,072 views

norecopa

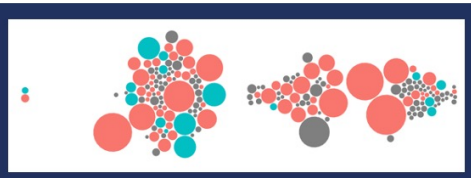


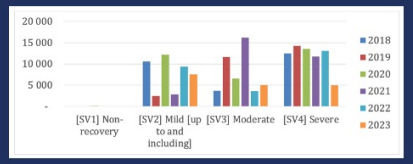


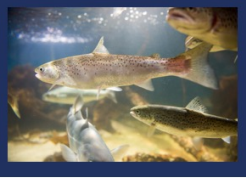
Annual Report for 2024

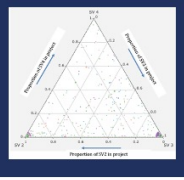
Norecopa

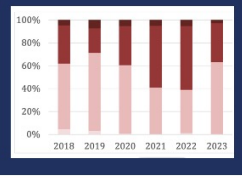
norecopa











Research animal use in Norway from 2018 to 2023:
A presentation of the official statistics, with emphasis on large studies

Antoine Champetier, Adrian Smith & Stéphanie Vuille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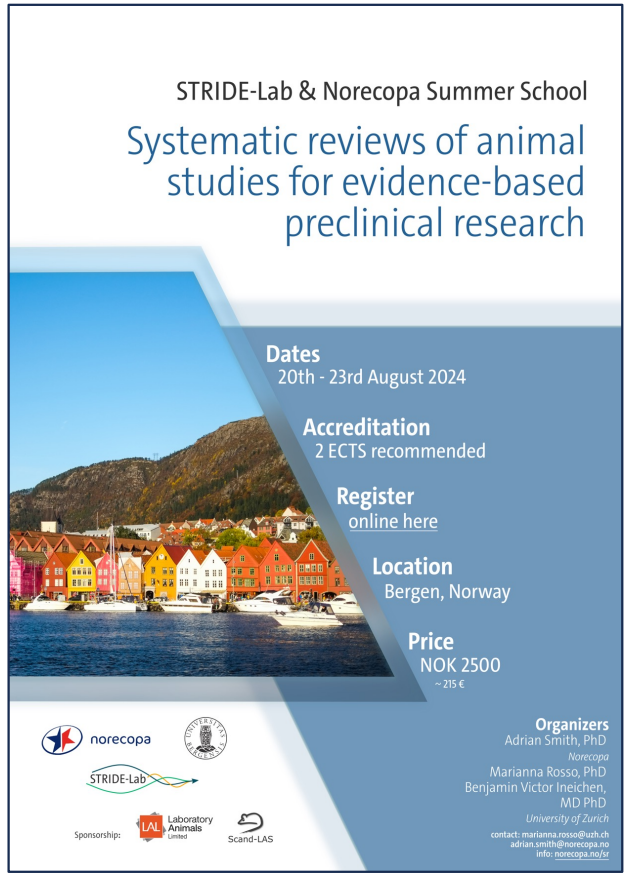

Summer School on Systematic Reviews and Literature Searching, August 2024

Norecopa: PREPARE for better Science

Guidelines for planning studies that look as if they may involve animal use

PREPARE (2018): **P**lanning **R**esearch and **E**xperimental **P**rocedures on **A**nimals: **R**ecommendations for **E**xcellence

PREPARE covers 15 topics:

Formulation of the study

1. Literature searches
2. Legal issues
3. Ethical issues, harm-benefit assessment and humane endpoints
4. Experimental design and statistical analysis

Dialogue between scientists and the animal facility

5. Objectives and timescale, funding and division of labour
6. Facility evaluation
7. Education and training
8. Health risks, waste disposal and decontamination

Methods

9. Test substances and procedures
10. Experimental animals
11. Quarantine and health monitoring
12. Housing and husbandry
13. Experimental procedures
14. Humane killing, release, reuse or rehoming
15. Necropsy

Items in pink are not typically highlighted in reporting guidelines

norecopa.no/PREPARE/prepare-checklist

PREPARE

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The PREPARE Guidelines Checklist

Planning Research and Experimental Procedures on Animals: Recommendations for Excellence

Adrian J. Smith[a], R. Eddie Clutton[b], Elliot Lilley[c], Kristine E. Aa. Hansen[d] & Trond Brattelid[e]

[a]Norecopa, c/o Norwegian Veterinary Institute, P.O. Box 750 Sentrum, 0106 Oslo, Norway; [b]Royal (Dick) School of Veterinary Studies, Easter Bush, Midlothian, EH25 9RG, U.K.; [c]Research Animals Department, Science Group, RSPCA, Wilberforce Way, Southwater, Horsham, West Sussex, RH13 9RS, U.K.; [d]Section of Experimental Biomedicine, Department of Production Animal Clinical Sciences, Faculty of Veterinary Medicine, Norwegian University of Life Sciences, P.O. Box 8146 Dep., 0033 Oslo, Norway; [e]Division for Research Management and External Funding, Western Norway University of Applied Sciences, 5020 Bergen, Norway.

PREPARE[1] består av retningslinjer for planlegging av dyreforsøk. Disse komplementerer retningslinjer for rapportering av dyreforsøk, som f.eks. ARRIVE[2]. PREPARE dekker de tre store områdene som bestemmer kvaliteten av arbeidet med å forberede dyreforsøk:

1. **Designet av studiet**
2. **Dialogen mellom forskerne og dyreavdelingen**
3. **Kvalitetskontroll av de ulike komponentene i studiet**

I praksis vil ikke temaene alltid behandles i den rekkefølgen som er presentert her, og enkelte temaer overlapper. PREPARE-sjekklisten kan endres for å ivareta spesielle behov, f.eks. ved feltforsøk. PREPARE inkluderer råd om drift av dyreavdelinger, fordi laboratorieforsøk er helt avhengige av deres kvalitet. Den fulle versjonen av PREPARE er tilgjengelig på Norecopas nettsider, med lenker til globale ressurser, på **https://norecopa.no/PREPARE.**

2. Juridiske spørsmål	☐ Vurdere hvordan forsøket er påvirket av relevant lovgivning for dyreforsøk og andre aktuelle områder som f.eks. dyretransport og helse, miljø og sikkerhet. ☐ Finne relevante veiledningsdokumenter (f.eks. EUs retningslinjer for prosjektevaluering).
3. Etiske spørsmål, kostnad-nytteanalyse og humane endepunkter	☐ Skrive et sammendrag av prosjektet på legmannsspråk. ☐ I dialog med etiske komitéer, vurdere om uttalelser om denne typen forsøk er allerede blitt produsert. ☐ Adressere "de 3 R-ene" (Replacement, Reduction, Refinement) og "de 3 S-ene" (Good Science, Good Sense, Good Sensibilities). ☐ Vurdere forhåndsregistrering av forsøket og publisering av negative resultater. ☐ Foreta en kostnad-nytteanalyse ("Harm-Benefit Assessment") og diskutere eventuelle lidelser som kan oppstå under forsøket. ☐ Diskutere læringsmålene dersom dyrene skal brukes i undervisnings- eller treningsøyemed. ☐ Klassifisere prosjektet etter belastningsgraden. ☐ Definere objektive, lett målbare og utvetydige humane endepunkter. ☐ Diskutere behovet (hvis det er noe) for å bruke død som endepunktet for forsøket.
4. Eksperimentelt design og statistisk analyse	☐ Vurdere pilotforsøk og diskutere statistisk styrke og signifikansnivåer. ☐ Definere den eksperimentelle enheten og bestemme antallet forsøksdyr. ☐ Bestemme metodene for randomisering, forhindre observasjonsskjevheter, og bestemme inklusjons- og eksklusjonskriterier.

Tema	Anbefaling
(B) Dialogen mellom forskerne og dyreavdelingen	
5. Mål og tidshorisont, finansiering og arbeidsfordeling	☐ Arrangere møter med alle relevante personell når tidlige planer for prosjektet foreligger. ☐ Lag en omtrentlig tidsramme for prosjektet, som viser behovene for assistanse med forberedelser, dyrestell, prosedyrer og avfallshåndtering/dekontaminasjon. ☐ Diskutere og legge frem alle forventede og potensielle kostnader. ☐ Lage en detaljert plan for fordelingen av både arbeidsoppgavene og utgiftene, på alle stadiene i forsøket.
6. Evaluering av dyreavdelingen	☐ Foreta en fysisk inspeksjon av fasilitetene, for å evaluere bygningsmassen, standarden på utstyret og spesielle behov. ☐ Diskutere bemanningsbehovet ved perioder med ekstra risiko.
7. Utdanning og trening	☐ Vurdere den nåværende kompetansen hos personalet og evaluere behovet for videreutdanning og trening før forsøket.
8. Helsefarer, avfallshåndtering og dekontaminasjon	☐ I samarbeid med dyreavdelingen, foreta en risikoevaluering som omfatter alle personene og dyrene som er påvirket, direkte eller indirekte, av studiet. ☐ Evaluere, og om nødvendig produsere, spesifikke retningslinjer for alle stadiene av prosjektet. ☐ Diskutere metoder for å ivareta, dekontaminere og avhende alt utstyret som skal brukes i studiet.
12. Oppstalling og stell	☐ Ta hensyn til dyrenes spesifikke instinkter og behov, i samråd med eksperter. ☐ Diskutere akklimatisering, optimale oppstallingsforhold og prosedyrer, miljøfaktorer og eventuelle begrensninger på disse (f.eks. fasting eller oppstalling i enebur).
13. Eksperimentelle prosedyrer	☐ Utvikle optimale metoder for fangst, immobilisering, merking og frisetting eller omplassering. ☐ Utvikle optimale metoder for å gi dyrene behandling, samt for prøvetaking, sedasjon og anestesi, kirurgi og andre inngrep.
14. Human avliving, frisettelse eller omplassering	☐ Konsultere relevant lovgivning og retningslinjer i god tid før studiet. ☐ Definere de primære metodene for avliving, samt metoder som kan brukes i en nødssituasjon. ☐ Evaluere kompetansen til personene som må foreta disse handlingene.
15. Obduksjon	☐ Lage en systematisk plan for alle stadiene i obduksjonen, inkl. hvor den skal foregå, og identifikasjon av alle dyrene og prøvene som tas.

Referanser

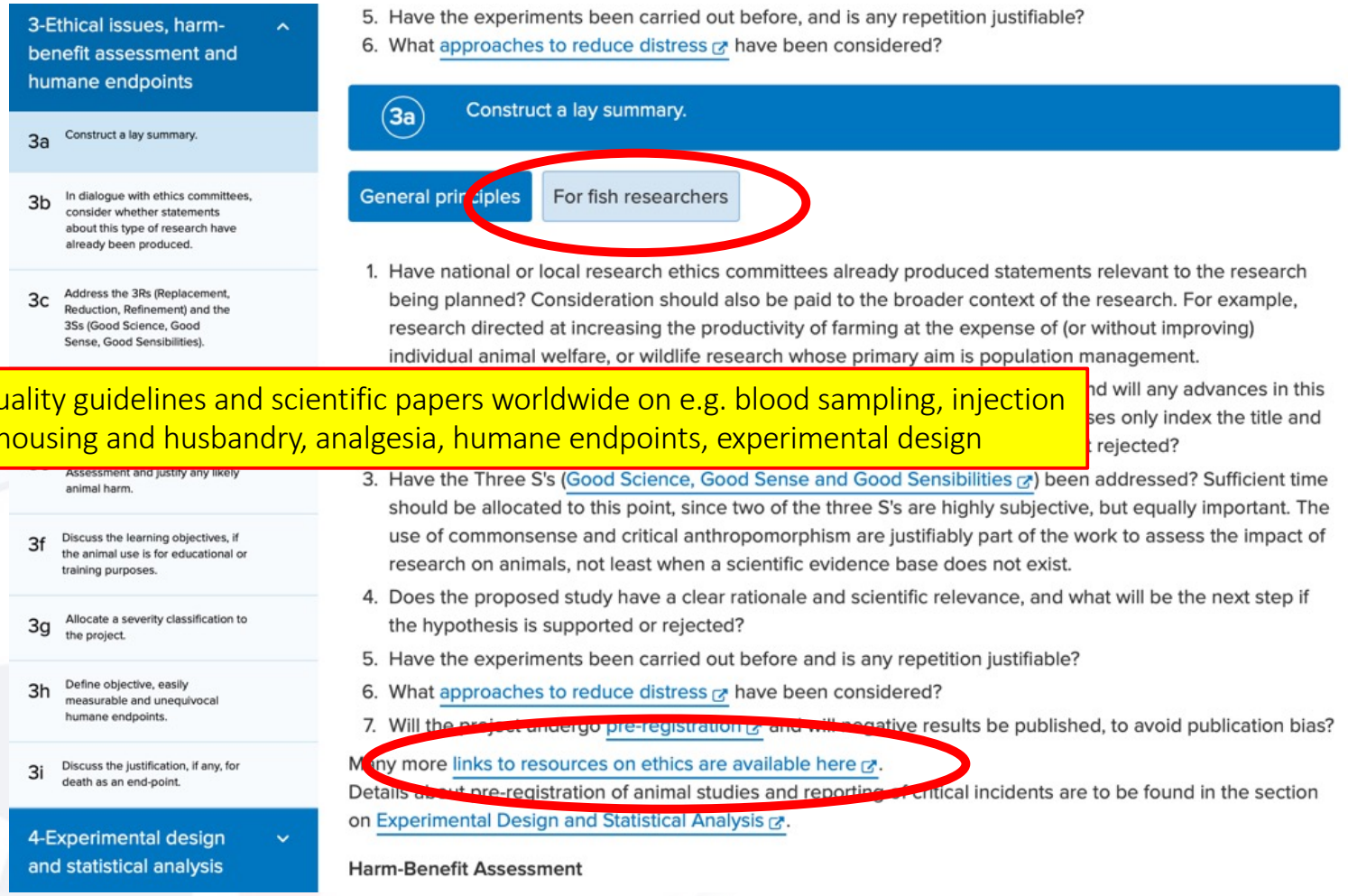
1. Smith AJ, Clutton RE, Lilley E, Hansen KEA & Brattelid T. PREPARE:Guidelines for Planning Animal Research and Testing. *Laboratory Animals*, 2017, DOI: 10.1177/0023677217724823.
2. Kilkenny C, Browne WJ, Cuthill IC *et al.* Improving Bioscience Research Reporting: The ARRIVE Guidelines for Reporting Animal Research. *PloS Biology*, 2010; DOI: 10.1371/journal.pbio.1000412.

Mer informasjon
https://norecopa.no/PREPARE / *post@norecopa.no* / @norecopa

Fillable Word file that can be used to write a **Study Plan**

Norecopa: PREPARE for better Science

norecopa.no/PREPARE



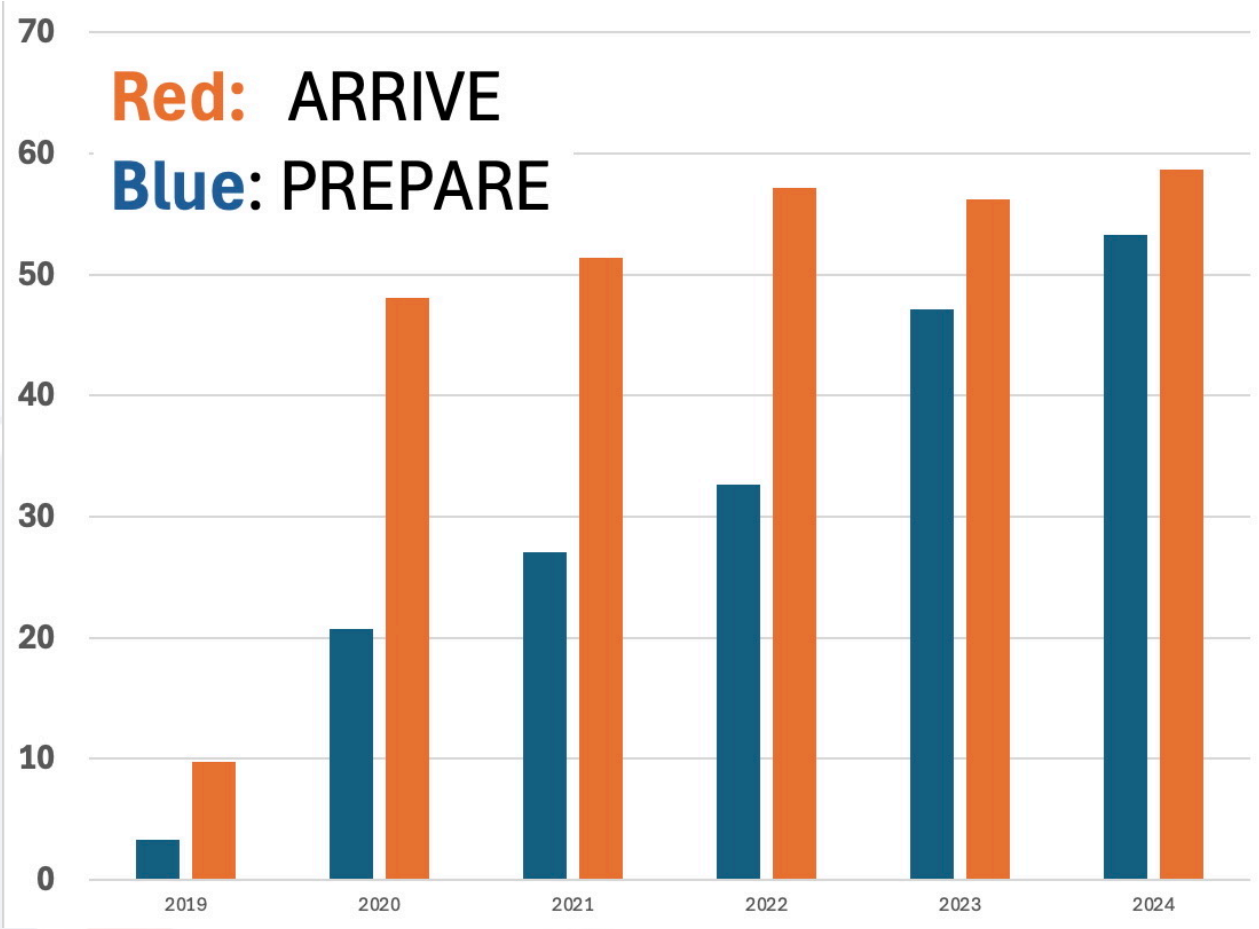
Links to quality guidelines and scientific papers worldwide on e.g. blood sampling, injection volumes, housing and husbandry, analgesia, humane endpoints, experimental design

Stating the obvious: Replacement must be considered from day 1 of planning

Norecopa: PREPARE for better Science

norecopa.no/PREPARE *and* ivd-utrecht.nl/en/news/better-animal-research-through-open-science-1

Percentage of UK Non-Technical Summaries citing ARRIVE & PREPARE



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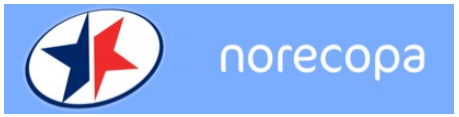

Endorsements

Please contact Norecopa if you know of endorsements that are not on this list.
See also the page of general endorsements for Norecopa's work.

Accreditation Bodies, Funders and Regulatory Authorities

- The PREPARE guidelines are featured on the List of Resources for Investigators produced by AAALAC International *(Association for the Assessment and Accreditation of Laboratory Animal Care)*, who have accredited over 1,100 animal facilities worldwide.
- PREPARE is highlighted by the UK Home Office in their Guidance Notes for Project Licence Applications (February 2024, page 13). The same text is to be found in the ASPel Project Licence Application online Template, available here on the website of the Department of Health, Northern Ireland (under point D7.9, page 29). These provide part of their collection of guidance for the regulated community on animal research and testing.
- The Non-Technical Summaries of all projects approved by the UK Home Office in the period January-September 2024 showed that, of 283 projects, 153 (54%) state explicitly that they use resources from Norecopa, the vast majority of these mentioning PREPARE specifically.
- The Association of Medical Research Charities (AMRC) in the UK asks grantholders to make use of the PREPARE guidelines when planning experiments.
- Cancer Research UK cites PREPARE as a source of information in connection with their policy on the use of animals in research.
- PREPARE is cited in a Report by the Advisory Committee to the Director (ACD) of the NIH entitled "ACD Working Group on Enhancing Rigor, Transparency, and Translatability in Animal Research", published on 11 June 2021. The Report cites PREPARE as one of the ways to *'strengthen the critical elements across the life of a study, from planning to execution and publication, which will result in a higher quality knowledge base and will better inform future research'*.
- PREPARE is cited by the Senate Commission on Animal Protection and Experimentation of the central independent German Research Foundation (DFG) in its Guidance on the 3Rs and the validity of animal experiments (in German and in English. The Commission advises the statutory bodies of the DFG as well as policy-makers and government agencies. In its advisory capacity, it also makes its expertise available to researchers, universities and research institutions.

norecopa.no/meetings/meetings-calendar

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April 2025

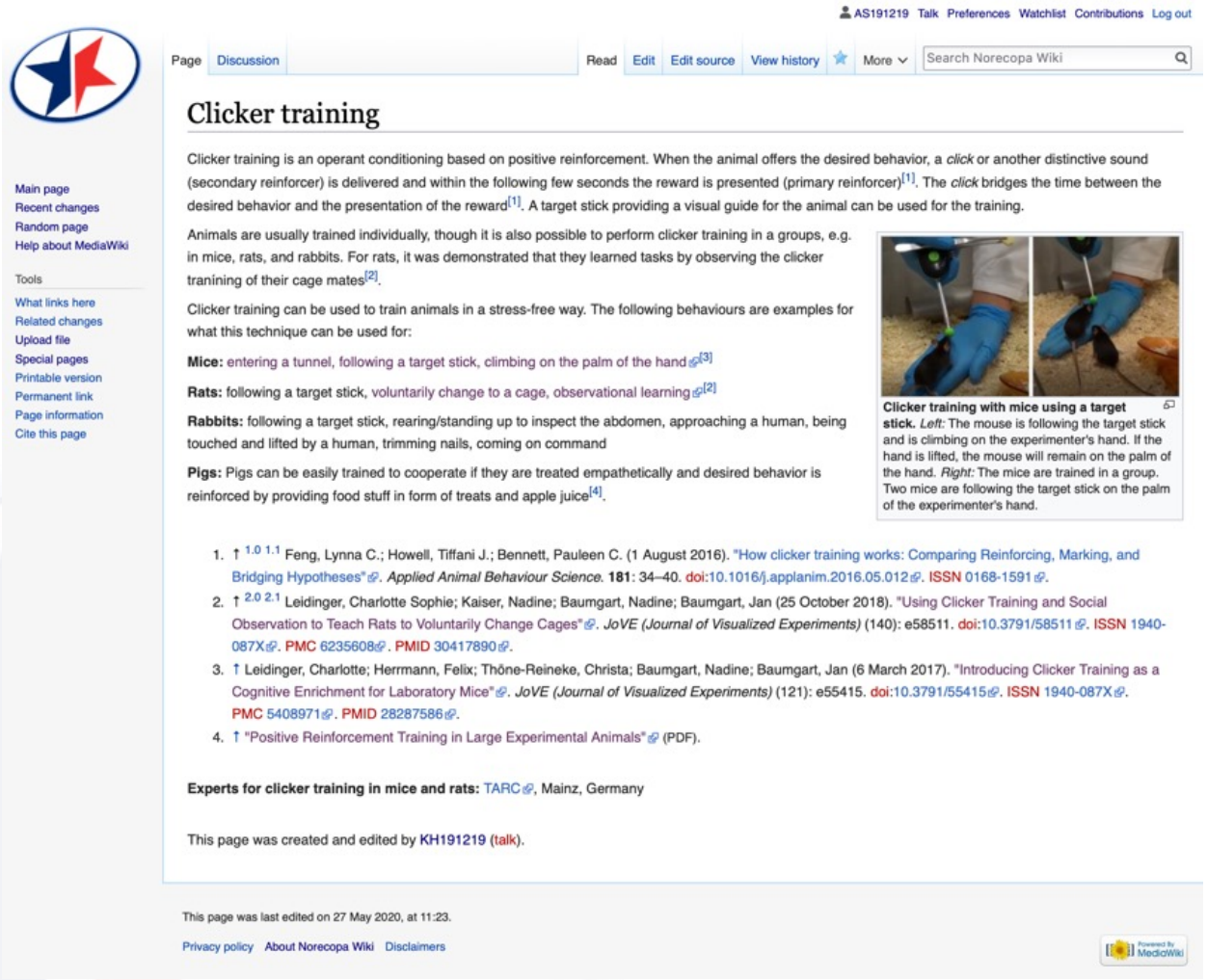
- *Ex vivo*, *de novo* & *in silico* models in biomedical research , Stuttgart, 1-2 April 2025
- EBVS Congress, Belgrade, 2-4 April 2025
- The Transparent Transition - The future of animal and animal-free research, Amsterdam, 3 April 2025
- From crisis to opportunity - systematic heterogenization as a tool to improve reproducibility and reduce animal use, webinar (Helene Richter), 8 April 2025
- 1st Finnish Culture of Care Symposium, Helsinki, 9 April 2025
- Antibodies and Beyond: The Power of Animal-Free, Recombinant Antibodies, webinar (Esther Wenzel), 9 April 2025
- Meeting the Requirements of the US Animal Welfare Act, workshop, 9-10 April 2025
- 17th Minipig Research Forum, Amsterdam, 9-11 April 2025

+ webpages for recorded meetings, including a page sorted by the PREPARE topics

- How to convince your colleagues to work under aseptic conditions, EPAT/ESLAV webinar (Bertrand Lussier), 10 April 2025
- Stress-reduced handling of rats and mice, webinar (Therése Ahlström), 11 April 2025
- 41st LAMA/ATA Annual Conference, Fort Walton Beach, 14-17 April 2025
- Environmental Monitoring & Database Management, webinar (Zoltan Varga & TBC), 18 April 2025
- Course in Fish Diseases part 1, Copenhagen, 21-25 April 2025
- 3Rs Sharing Conference, Seattle, 23 April 2025
- 46th Annual BCLAS Symposium: Stress and emotions in animals, Namur, 23-24 April 2025
- Replication of null results: Absence of evidence or evidence of absence?, webinar (Samuel Pawel), 29 April 2025
- All you ever wanted to know about registered reports, webinar (Nonia Pariente), 30 April 2025

The Refinement Wiki

wiki.norecopa.no



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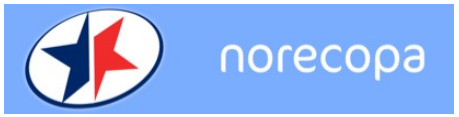
SCID-Hu mice immunized with a pneumococcal vaccine produce specific human antibodies and show increased resistance to infection.

Aaberge I.S. *et al*., Infection & Immunity, 1992, 60 (10): 4146-4153
https://journals.asm.org/doi/epdf/10.1128/iai.60.10.4146-4153.1992

Pages created (April 2025)

wiki.norecopa.no



- Acclimatisation
- Adrian Smith
- Alphaxalone
- Anaesthesia in neonates
- Analgesia
- Asepsis
- Blood sampling of hamsters
- Blood sampling of pigs
- Blood sampling of rainbow trout
- Breeding strategies for mice
- Clicker training
- Contingency plans
- Decapitation
- Dehydration
- Detecting early onset of clinical signs in the mouse model of Covid-19
- Detection of pain and distress in mice
- EMLA cream
- Embryo transfer
- Experimental Autoimmune Encephalomyeltis (EAE)
- Facial expression analysis
- Food crunchers
- Forced swim test
- General discusson on use of analgesics
- Genotyping mice
- Habituation training
- Health monitoring
- High-fat diets
- Hot Bead Sterilisers
- Housing nude mice
- Housing research fish
- Humane endpoints
- Hydrodynamic gene delivery
- Intra-ocular injections
- Intranasal administration
- Intraperitoneal injection
- Intraperitoneal pentobarbitone
- Irradiation for haematology studies
- Ketamine and alpha-2 agonist combinations
- Long-term anaesthesia in rodents
- Lumpfish
- MDA (micropipette-guided drug administration) Method
- Main Page
- Marble Burying Test
- Metabolic cages
- Microchipping rats and mice
- Minipumps
- Montanide adjuvant
- Mouse Grimace Scale
- Mouse handling
- Nest building material
- Non-invasive genetic sampling in wildlife research
- Oestrus suppression in ferrets
- Pneumocystis murina
- Recapping needles
- Refinement of oral gavage
- Rotarod Test
- Screening cell lines
- Sedation of cattle
- Splenectomy
- Sterilisation of instruments
- TTEAM and TTouch
- Tail vein injection
- Tamoxifen
- Tamoxifen information sheet V4.pdf
- The use of DMSO
- Tramadol
- Transport stress
- Tumour cell implant into mammary fat pad
- Ulcerative Dermatitis in Mice
- Water quality
- Xenopus laevis
- Zebrafish swabbing

Culture of Care

Norecopa hosts The International Culture of Care Network

norecopa.no/coc

A demonstrable commitment, throughout the establishment, to improving:

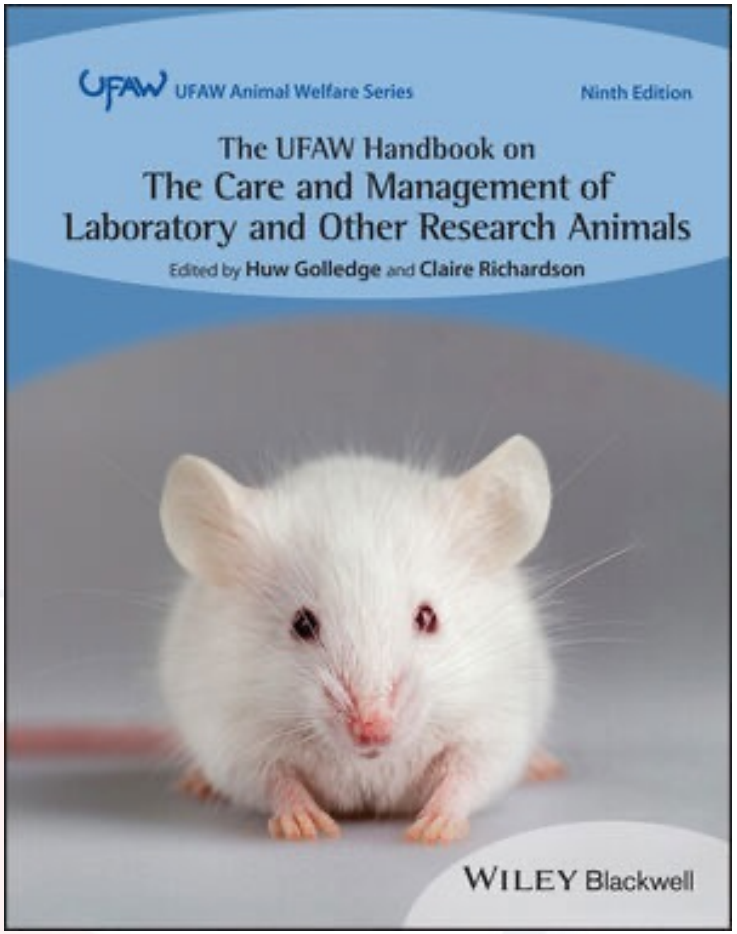
- animal welfare
- scientific quality
- care of staff
- transparency for all stakeholders, including the public

It goes beyond simply complying with the law!

approx 60 members in 14 countries

meetings sponsored by Norecopa at FELASA, in Prague (2019) & Athens (2025)

AJ Smith & J Richmond:
The Three Rs



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The UFAW Handbook on the Care and Management of Laboratory and Other Research Animals, 9th Edition, 2024

Norecopa: PREPARE for better Science

40-slide powerpoint presentation

ccac.ca

The 3Rs of Russell and Burch:

Replacement, Reduction & Refinement

Available at norecopa.no/3Rs

With some material from:
Smith AJ & Richmond J (2024). The Three-Rs.
In: *The UFAW Handbook on the Care and Management of Laboratory and Other Research Animals.* 9th edition.
Richardson CA and Golledge HDR (eds).
Oxford: Wiley-Blackwell.

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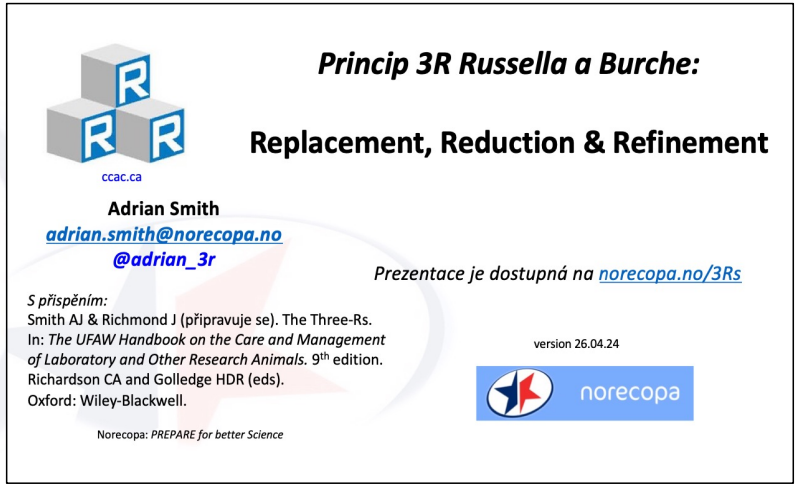

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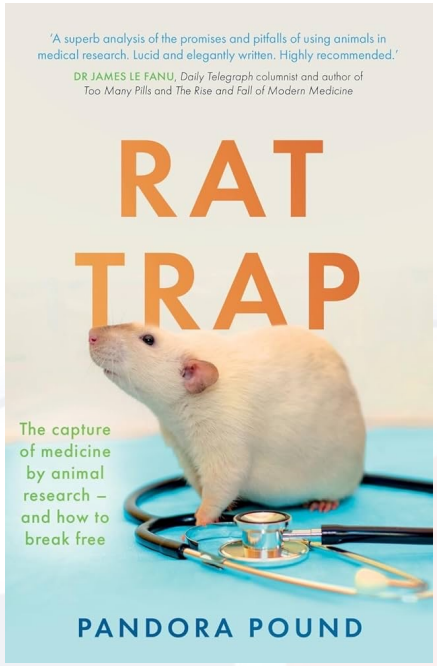
norecopa.no/3Rs

Norecopa’s annual 3R Prize – NOK 30,000 + diploma

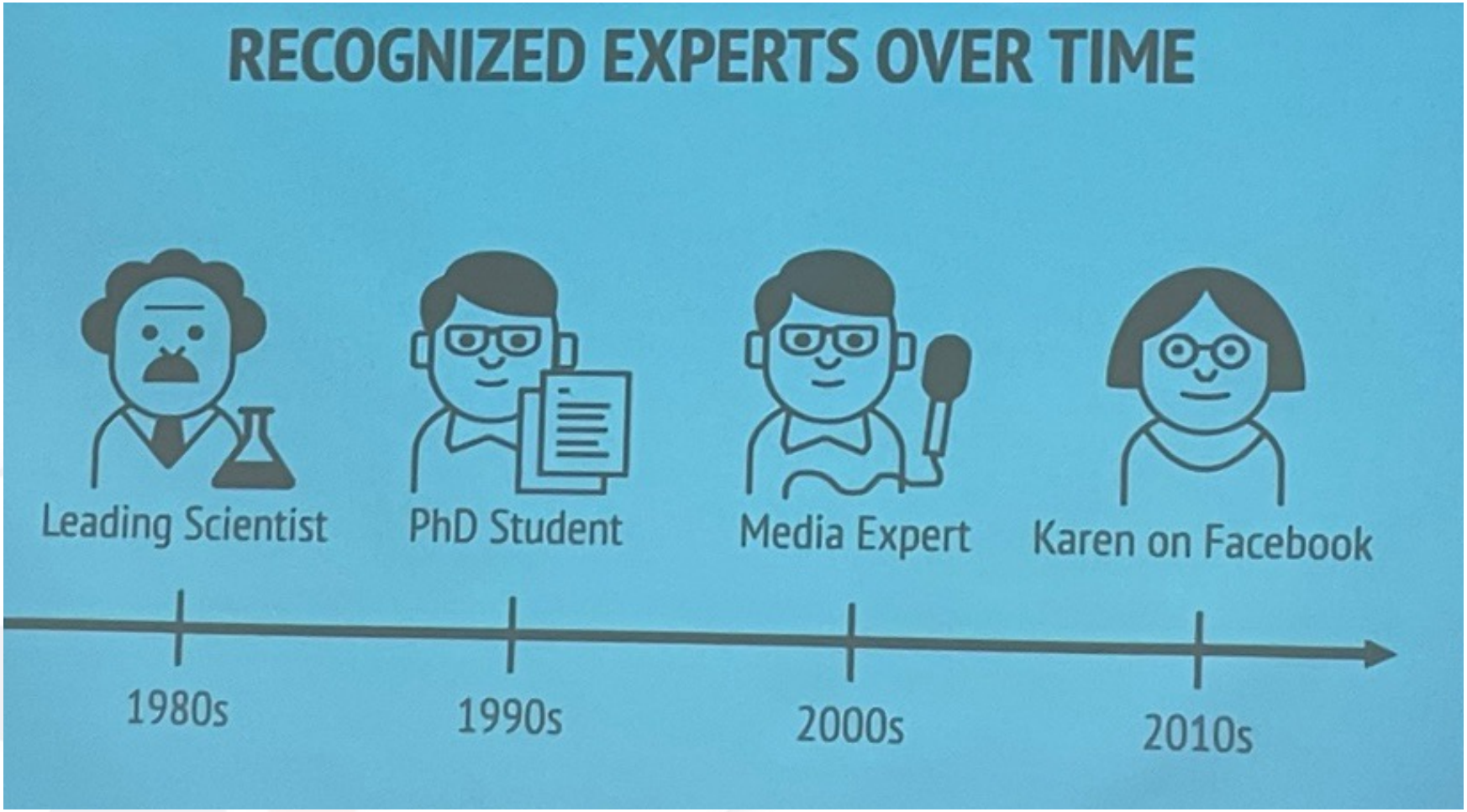
“Respectful dialogue”?



Scientists who have built their career on an animal model

- refined
- humanised (genetically altered)
- validated
- where previous data is available

“Animal testing” and “animal research” are often used indiscriminatively, even though the potential for animal replacement is very different



colourbox.com

norecopa.no/poster

Free to download, use and distribute

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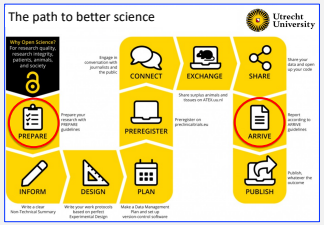
Adrian Smith, Norecopa, c/o Norwegian Veterinary Institute, P.O. Box 64, 1431 Ås, Norway
adrian.smith@norecopa.no

What's the problem?

Preclinical *in vivo* research needs to be reproducible and translatable, while maximising the animals' welfare and replacing them with alternatives wherever possible. This can be summed up in **the 3Rs** of Russell & Burch: ***Replace, Reduce & Refine***.

Scientists are usually well aware of ***reporting*** guidelines when publishing research. These are important, but a sub-standard study, like a burnt cake, cannot be improved by a better description. Guidelines for ***planning***, although not mandatory, are of great help in designing better experiments.



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What can Norecopa offer?

Norecopa maintains a comprehensive database of resources for scientists, which include:

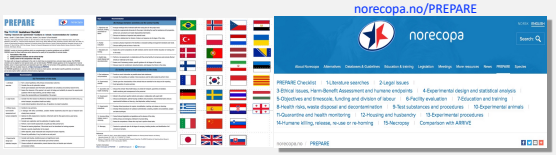
- over 9,000 searchable webpages of quality 3R resources, with filters to facilitate searching
- the PREPARE guidelines for planning animal experiments, with a checklist in over 30 languages
- links to recordings of webinars covering all aspects of animal research
- an International Webinars & Meetings Calendar
- a collection of over 400 guidelines for planning and conducting animal research
- an English-language newsletter with the latest developments within the 3Rs
- the NORINA database of alternatives to animal use in education and training
- a slide set describing the 3R concept in detail: norecopa.no/3Rs
- a Refinement Wiki

Examples of Norecopa's resources:

PREPARE covers:

- ✓ *Formulation of a study*
- ✓ *Dialogue between scientists and the animal facility*
- ✓ *Quality control of the components in the study*

norecopa.no/PREPARE



The Refinement Wiki
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Norecopa gratefully acknowledges financial support from:
The Norwegian Parliament, the Ministry of Agriculture & Food and the Ministry of Trade, Industry & Fisheries; the Nordic Society against Painful Experiments (NSMSD), Novo Nordisk, the Norwegian Animal Protection Alliance (Dyrevernalliansen), the Norwegian Society for Protection of Animals (Dyrebeskyttelsen Norge), the Research Council of Norway, Laboratory Animals Ltd., the Royal Society for the Prevention of Cruelty to Animals (RSPCA), Sanofi, the Scottish Accreditation Board, the Stiansen Foundation, the Universities Federation of Animal Welfare (UFAW) and the US Department of Agriculture (USDA).
Toolbox graphic: colourbox.com

Thanks to Norecopa's sponsors

Standing Committee on Business Affairs, Norwegian Parliament
Norwegian Ministries of Agriculture and Fisheries
Research Council of Norway

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Architect Finn Rahn's Legacy
Laboratory Animals Ltd.
Nordic Society Against Painful Experiments (NSMSD)
Norwegian Society for Animal Protection (Dyrebeskyttelsen Norge)
Norwegian Animal Protection Alliance (Dyrevernalliansen)

Novo Nordisk
PHARMAQ
Royal Society for the Prevention of Cruelty to Animals (RSPCA)
Sanofi
Scand-LAS
Scottish Accreditation Board (SAB)
Stiansen Foundation
Universities Federation for Animal Welfare (UFAW)
US Department of Agriculture (USDA)

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Thank you for listening and for the award!

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English-language newsletters