Charles River Excellence in Refinement Award

in collaboration with

the Johns Hopkins University Center for Alternatives to Animal Testing (CAAT)

Thank you!

norecopa.no/CR

Adrian Smith
adrian.smith@norecopa.no


© Roy Greger

scientists

animal care staff

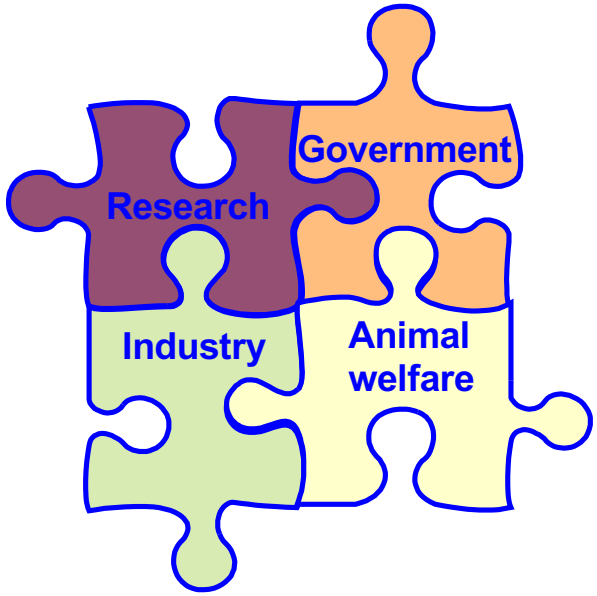
local competent person

animal welfarists

central authority

European Consensus-Platform for Alternatives
ecopa.eu

Recognises National Consensus Platforms (NCPs) with 4 stakeholders equally represented:



Norecopa: PREPARE for better Science

ACKNOWLEDGEMENTS

At the risk of ignoring the Norwegian expression "no one mentioned, no one forgotten" we wish to thank in particular the following for their support during the development of a National Consensus Platform and the activities of Norecopa (in approximately historical order with their affiliation at that time):

Richard Fosse, University of Bergen
Tim Morris, GlaxoSmithKline
Professor Bert van Zutphen, Utrecht University
Rees Griffiths, Macquarie University, Sydney

Baard Johannessen, Nettforsk

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Olav Lyngset and colleagues, Norwegian Ministry of Agriculture
Espen Engh and colleagues, Norwegian Food Safety Authority
Gunvor Knudsen and colleagues at the Research Animals Unit, Norwegian Food Safety Authority

The competent persons at Norway's animal research facilities

Former Director Harald Gjein, Norwegian Veterinary Institute

Past and present Board Members of *ecopa*
Past and present Board Members of Norecopa
Past and present members of Norecopa's Election Committee
Past and present members of Norecopa's 3R Prize Committee
Institutional and individual members of Norecopa

Penny Hawkins and colleagues, RSPCA, UK
The Norwegian Animal Protection Alliance
Knut Carlberg, Nordic Society against Painful Animal Experiments
The Norwegian Society for Protection of Animals

Susanna Louhimies, EU Commission
David Anderson
Jan L. Ottesen and colleagues, Novo Nordisk
Tom Bengtsen and colleagues, secretariat of Denmark's 3R-Center and National Committee
The Board Members of Denmark's 3R-Center
Tim Allen, Kristina Adams and colleagues, Animal Welfare Information Center, Maryland, USA

Siri Anzjøn, Kjell Emil Naas, Kristin Danielsen and colleagues, Research Council of Norway

Ingvill Løken, Norwegian Medicines Agency

Laboratory Animals Ltd.
Jon Richmond and colleagues, Scottish Accreditation Board
The Stiansen Foundation
The Universities Federation for Animal Welfare (UFAW), UK

Past and present members of the Standing Parliamentary Committee on Business and Industry

Øyvind Wærenskjold, Bitfarm
Kjell Ingvar Torvik and colleagues, NetLab AS

Chris Noble and collaborators on the ENRICH Fish project at Nofima and the Institute of Marine Research

and a multitude of friends and colleagues worldwide in the field of Laboratory Animal Science, animal welfare and 3R alternatives.

Responsible Editor: **Adrian Smith**, Norecopa
Illustrations from Norecopa or **colourbox.com** if not otherwise credited.
Front cover photos (clockwise from top left):
Novo Nordisk; Jon Terje Hellgren Hansen; Terje Aamodt, Nofima; Vibeke D. Valderhaug, Sandvig Laboratory, NTNU
Pigs (p. 32): Novo Nordisk
Goats (p. 33): Birte Graeber Bredahl, Norwegian Veterinary Institute
Rabbits (p. 35): Novo Nordisk
Salmon (p. 35): Terje Aamodt, Nofima
Zebrafish (p. 35): Tom Ask, Aleström Lab, NMBU

Norecopa's 3R Prize – approx. $ 3,300










norecopa.no/about-norecopa/3r-prize

Thanks to Norecopa's main sponsors:

- Standing Committee on Business Affairs, Norwegian Parliament
- Norwegian Ministries of Agriculture and Fisheries
- Research Council of Norway
- Laboratory Animals Ltd.
- Architect Finn Rahn's Legacy
- Nordic Society Against Painful Experiments (NSMSD)
- Norwegian Society for Animal Protection (Dyrebeskyttelsen Norge)
- Norwegian Animal Protection Alliance (Dyrevernalliansen)
- Novo Nordisk
- Sanofi
- Scottish Accreditation Board (SAB)
- Stiansen Foundation
- Universities Federation for Animal Welfare (UFAW)
- US Department of Agriculture (USDA)

Graphics: colourbox.com

Friends and colleagues...

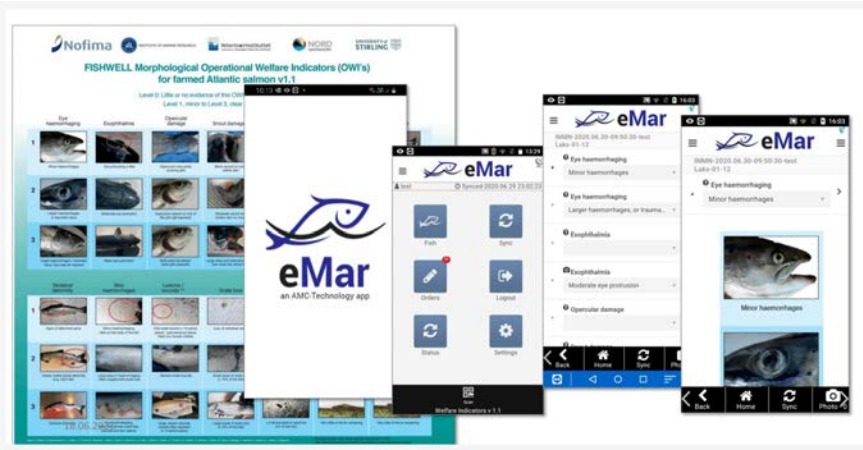
Rafael Frías

ki.se/en/km/education-in-laboratory-animal-science

Anne Zintzsch

norecopa.no/severity

Charles River Award for Animal Welfare 2016
Aurora Brønstad



https://www.innovationnewsnetwork.com/ensuring-fish-welfare-in-aquaculture-with-new-digital-app/12855

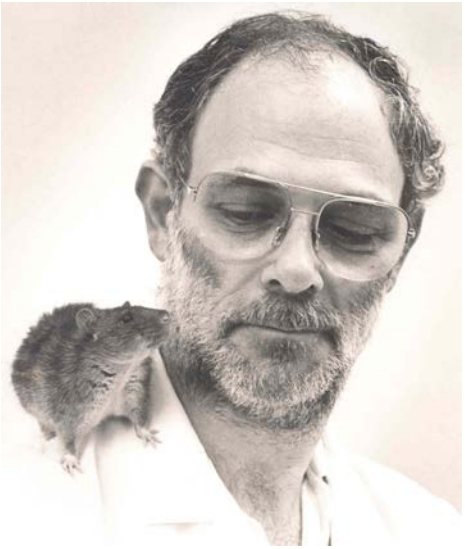
ECVAM workshop, Neubiberg, Munich, September 1996:

Current status and future developments of databases on alternative methods

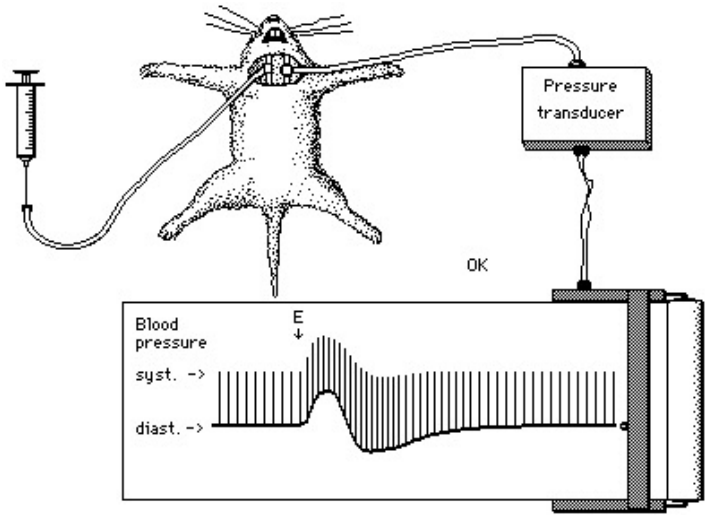
'Internet access has not yet become a universal phenomenon'

https://journals.sagepub.com/doi/abs/10.1177/026119299702500404

wikipedia.org



Richard Fosse



Pharmatutor

laboratory animals

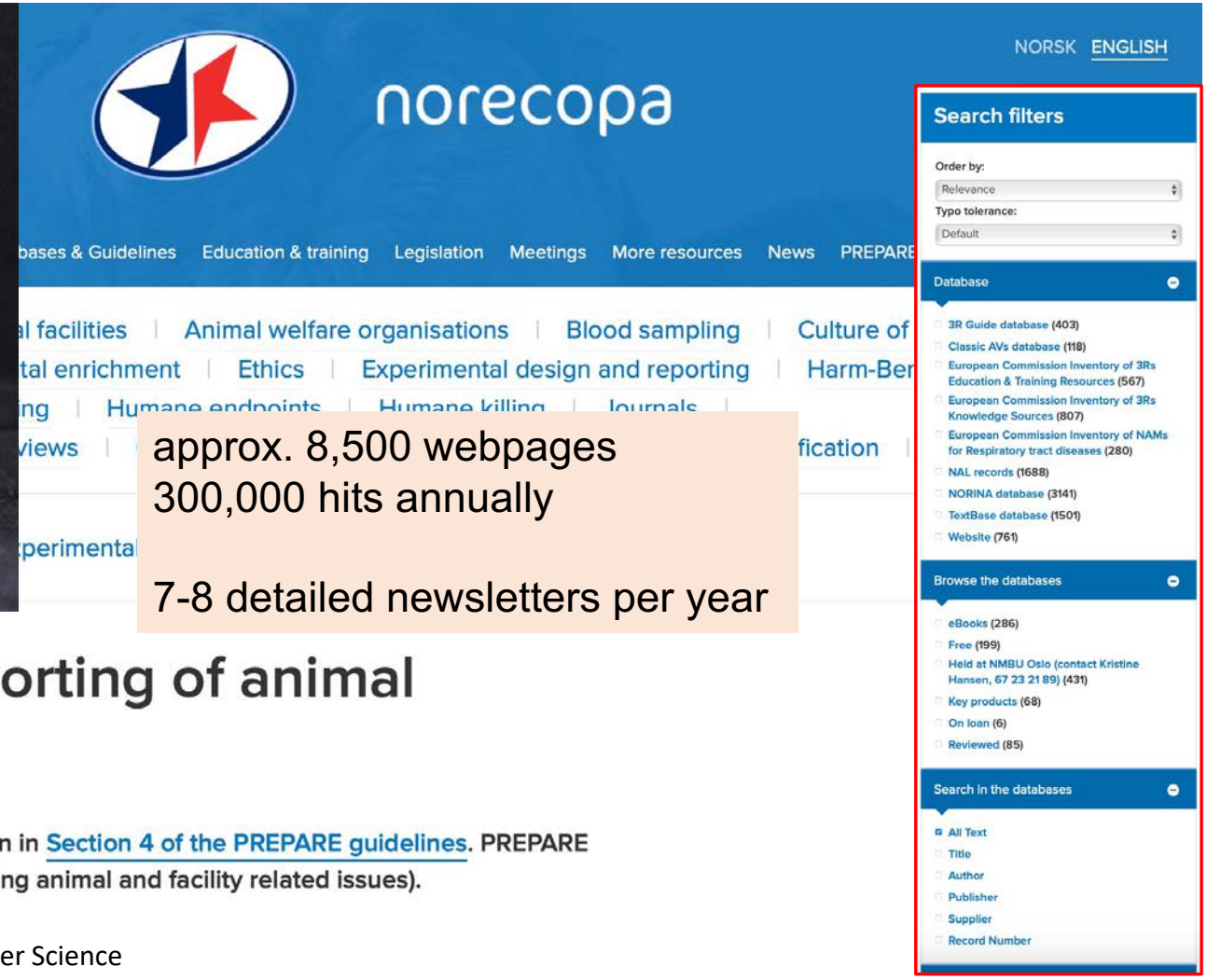
Rees Griffiths, Macquarie University
Sydney, Australia

norecopa.no : an updated overview of global 3R resources

amazon.com

approx. 8,500 webpages
300,000 hits annually

7-8 detailed newsletters per year



Design and reporting of animal experiments

This page supplements advice given in Section 4 of the PREPARE guidelines. PREPARE covers all aspects of design (including animal and facility related issues).

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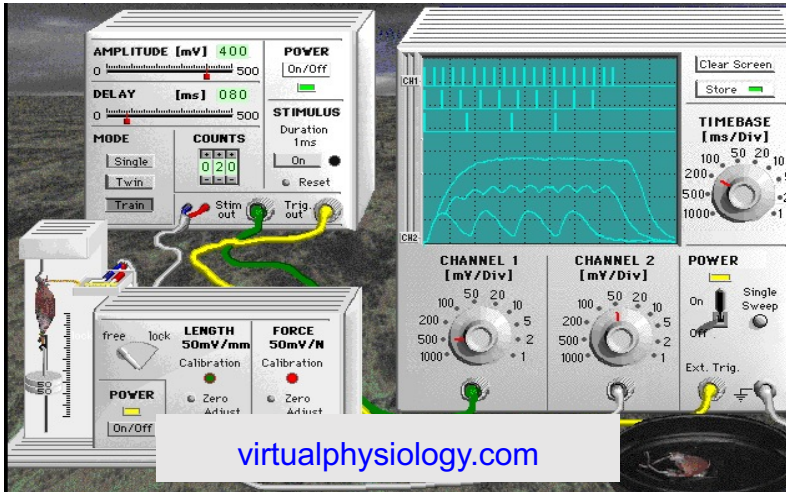
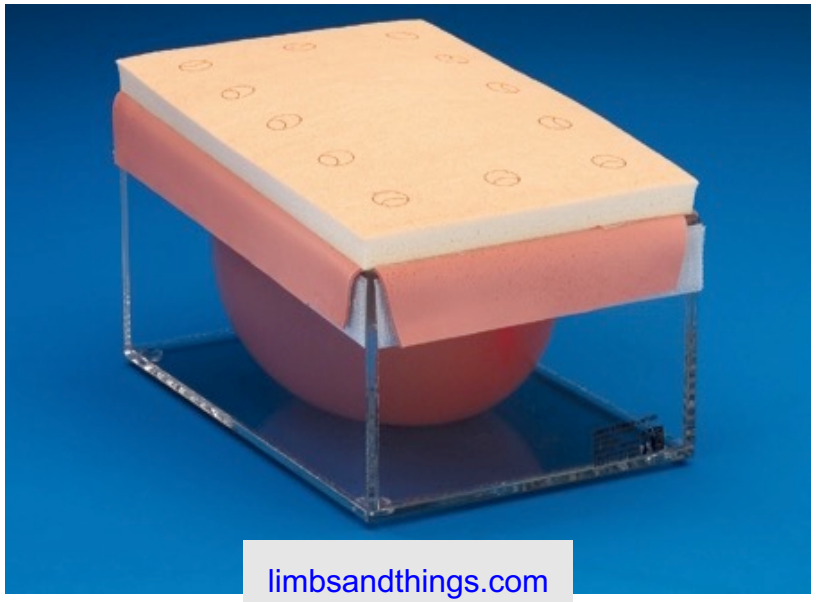
Nettforsk
Bitfarm
NetLab
Sourceit
Getonnet
Webhuset
Apsis

The NORINA database: norecopa.no/NORINA





The NORINA database

Karina Smith:
1991-2017

Elisabeth Pagels:
2018-

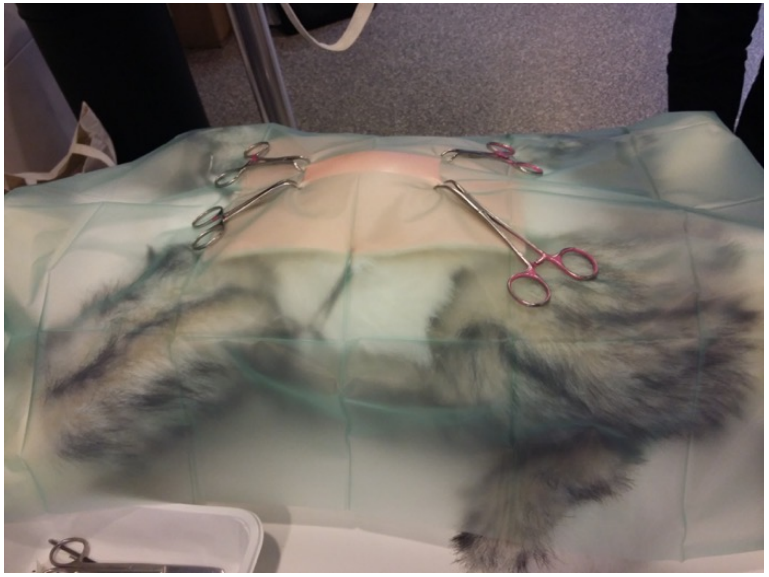
Nordic Society Against Painful Animal Experiments

Norecopa: PREPARE for better Science

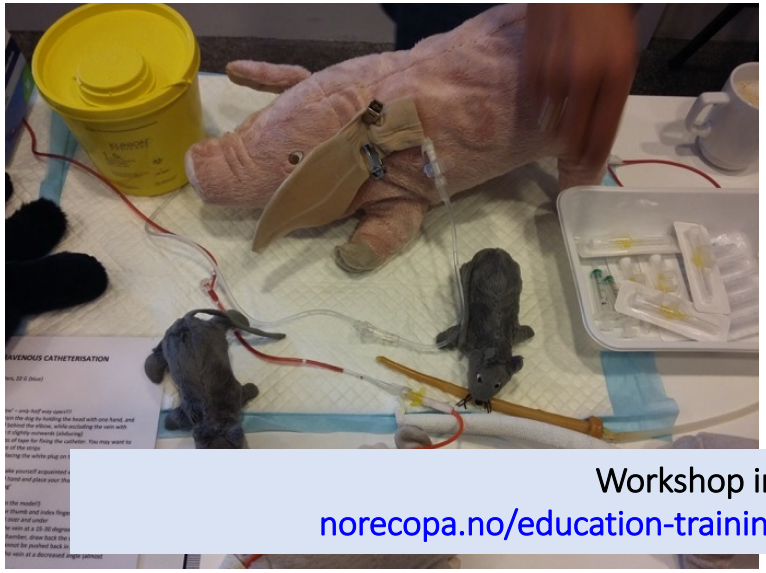
norecopa.no/NORINA

’We may need the animals, as it were, on the night;
but the machines will do very well at rehearsals’

Laura-Kim Schüller, Veterinary School, Berlin



Rikke Langebæk, University of Copenhagen



Workshop in Oslo, April 2018
norecopa.no/education-training/homemade-educational-materials

Laura-Kim Schüller, Veterinary School, Berlin

vetiqo.com

Norecopa: PREPARE for better Science

3R Guide - Tim Allen (AWIC, NAL)

approx. 400 guidelines on the care and use of animals in research and testing

Working Party Report

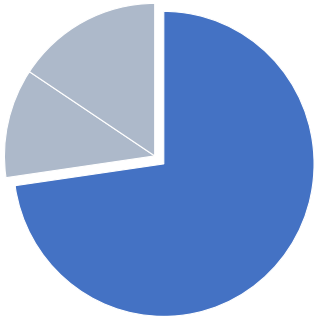
Guidance on the severity classification of scientific procedures involving fish: report of a Working Group appointed by the Norwegian Consensus-Platform for the Replacement, Reduction and Refinement of animal experiments (Norecopa)

Guidance on the severity classification of procedures involving fish

Report from a Working Group convened by Norecopa

Penny Hawkins and colleagues, RSPCA

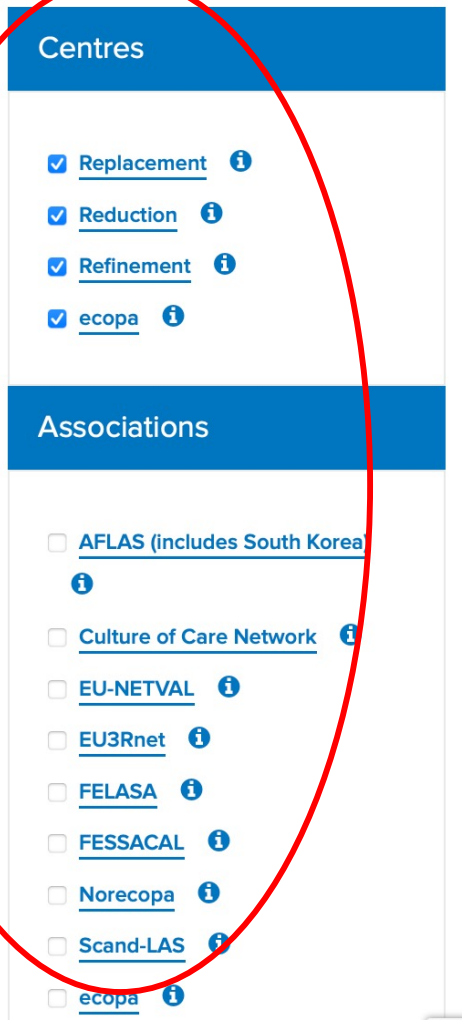
What has the award been used for?



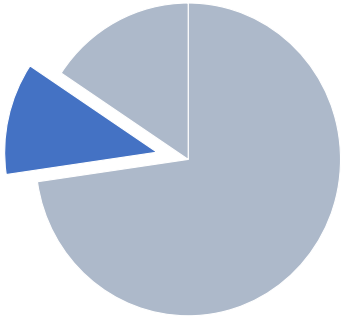
we welcome more from you!

EU3Rnet – European 3R centres
International Culture of Care Network

norecopa.no/global3r



What has the award been used for?



PREPARING, CARING, SHARING and FLAGGING

The scientific and welfare benefits of increased collaboration and transparency

Adrian Smith, Norecopa, Norway (adrian.smith@norecopa.no)

This poster presents a set of four icons which were made by Norecopa (the Norwegian platform for Replacement, Reduction & Refinement of animal experiments) to illustrate the 4 essential steps of good preclinical science.

Prepare — *Ensure that scientists and animal care staff collaborate closely from day one, to ensure all aspects of a study that potentially uses animals have been addressed* norecopa.no/PREPARE

Share — *Promote examples of improvements in the care and use of animals, for example by using the Refinement Wiki* norecopa.no/wiki

Care — *Encourage a strong Culture of Care around animal research, promoting mutual respect, animal and human wellbeing, and safety* norecopa.no/coc

Flag — *Highlight advances made within the 3Rs in scientific papers, if necessary in a separate methodology paper* norecopa.no/3R

These icons can be downloaded as jpg and mp4 files from norecopa.no/PREPARE-CARE-SHARE-FLAG and used freely.
Thanks to Per Trystad for the artwork.

norecopa *PREPARE for better Science*

Prepare

Care

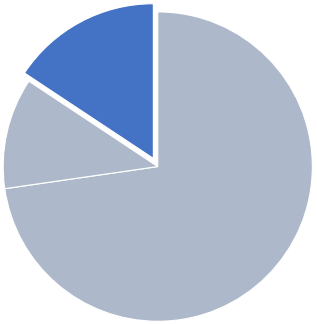
Share

Flag

norecopa.no/PREPARE-CARE-SHARE-FLAG

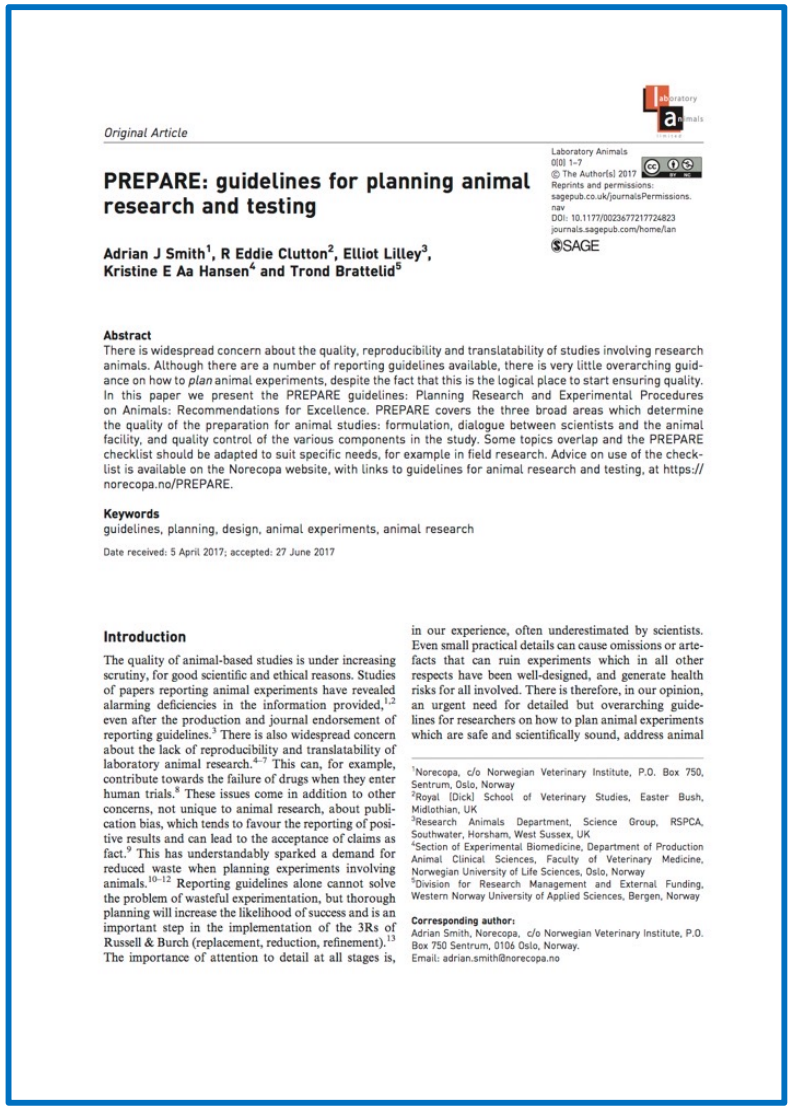
Norecopa: PREPARE for better Science

What will the award be used for?



Further development of

- *the PREPARE website*
- *the Refinement Wiki*



Original Article

PREPARE: guidelines for planning animal research and testing

Adrian J Smith[1], R Eddie Clutton[2], Elliot Lilley[3], Kristine E Aa Hansen[4] and Trond Brattelid[5]

Laboratory Animals
0(0) 1–7

DOI: 10.1177/0023677217724823
journals.sagepub.com/home/lan
SAGE

Abstract

There is widespread concern about the quality, reproducibility and translatability of studies involving research animals. Although there are a number of reporting guidelines available, there is very little overarching guidance on how to *plan* animal experiments, despite the fact that this is the logical place to start ensuring quality. In this paper we present the PREPARE guidelines: Planning Research and Experimental Procedures on Animals: Recommendations for Excellence. PREPARE covers the three broad areas which determine the quality of the preparation for animal studies: formulation, dialogue between scientists and the animal facility, and quality control of the various components in the study. Some topics overlap and the PREPARE checklist should be adapted to suit specific needs, for example in field research. Advice on use of the checklist is available on the Norecopa website, with links to guidelines for animal research and testing, at https://norecopa.no/PREPARE.

Keywords

guidelines, planning, design, animal experiments, animal research

Date received: 5 April 2017; accepted: 27 June 2017

Introduction

The quality of animal-based studies is under increasing scrutiny, for good scientific and ethical reasons. Studies of papers reporting animal experiments have revealed alarming deficiencies in the information provided,[1,2] even after the production and journal endorsement of reporting guidelines.[3] There is also widespread concern about the lack of reproducibility and translatability of laboratory animal research.[4–7] This can, for example, contribute towards the failure of drugs when they enter human trials.[8] These issues come in addition to other concerns, not unique to animal research, about publication bias, which tends to favour the reporting of positive results and can lead to the acceptance of claims as fact.[9] This has understandably sparked a demand for reduced waste when planning experiments involving animals.[10–12] Reporting guidelines alone cannot solve the problem of wasteful experimentation, but thorough planning will increase the likelihood of success and is an important step in the implementation of the 3Rs of Russell & Burch (replacement, reduction, refinement).[13] The importance of attention to detail at all stages is, in our experience, often underestimated by scientists. Even small practical details can cause omissions or artefacts that can ruin experiments which in all other respects have been well-designed, and generate health risks for all involved. There is therefore, in our opinion, an urgent need for detailed but overarching guidelines for researchers on how to plan animal experiments which are safe and scientifically sound, address animal

[1]Norecopa, c/o Norwegian Veterinary Institute, P.O. Box 750, Sentrum, Oslo, Norway
[2]Royal [Dick] School of Veterinary Studies, Easter Bush, Midlothian, UK
[3]Research Animals Department, Science Group, RSPCA, Southwater, Horsham, West Sussex, UK
[4]Section of Experimental Biomedicine, Department of Production Animal Clinical Sciences, Faculty of Veterinary Medicine, Norwegian University of Life Sciences, Oslo, Norway
[5]Division for Research Management and External Funding, Western Norway University of Applied Sciences, Bergen, Norway

Corresponding author:
Adrian Smith, Norecopa, c/o Norwegian Veterinary Institute, P.O. Box 750 Sentrum, 0106 Oslo, Norway.
Email: adrian.smith@norecopa.no

Norecopa: PREPARE for better Science

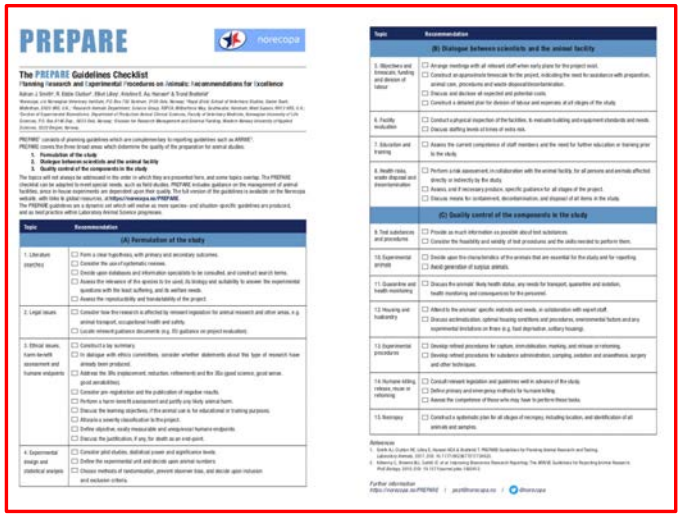
Pre-published under Open Access on 3 August 2017, sponsored by the Universities Federation for Animal Welfare (UFAW), UK

https://doi.org/10.1177/0023677217724823

Reached 20,000 downloads/reads during WC11

norecopa.no/PREPARE

norecopa.no/PREPARE



Norecopa: PREPARE for better Science

PREPARE:

Planning **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

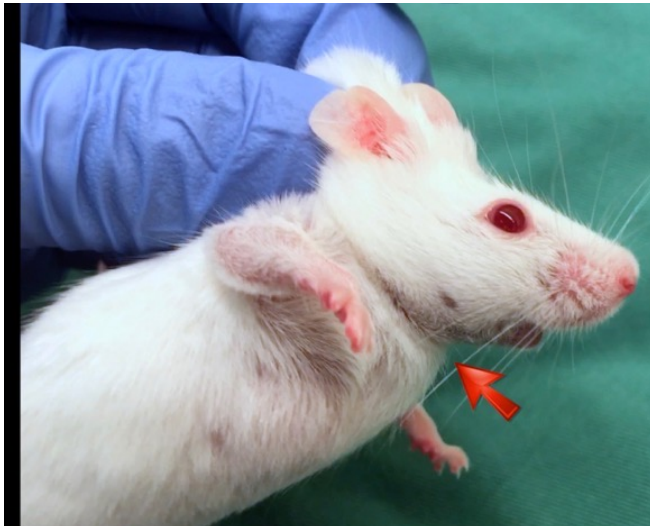
The burnt cake fallacy:

We can improve research by

- "better reporting"
- "courses in "Experimental Design" that leave out the animal & facility-related issues

reddit.com

reddit.com



Fire, flooding
Water, power and ventilation failures

Health and safety issues:
Bites, kicks, scratches
Allergy
Zoonoses
Corrosives, isotopes, radiation
etc. etc.

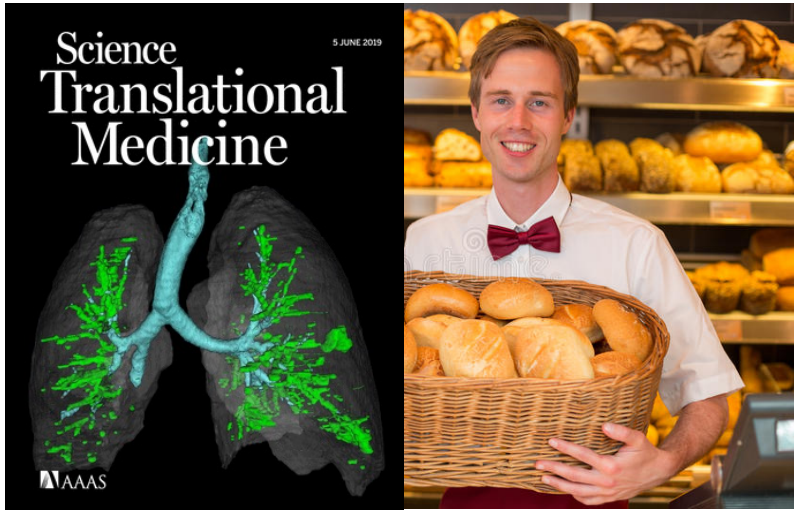
reddit.com

https://www.bls.gov/ooh/images/3077.jpg

norecopa

PREPARE *from day 1*

ARRIVE

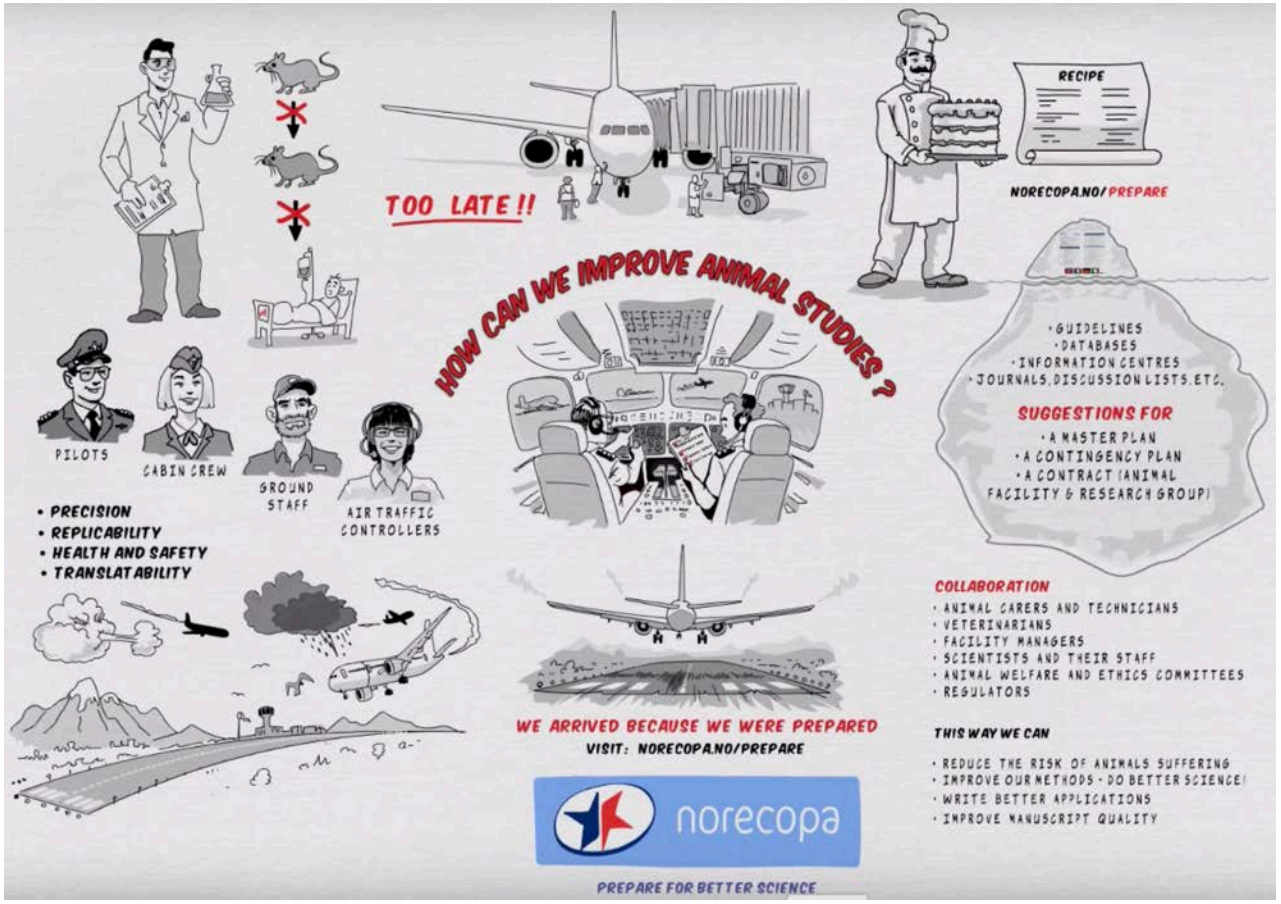


https://www.dreamstime.com

Norecopa: PREPARE for better Science

norecopa.no/PREPARE/film

3-minute film

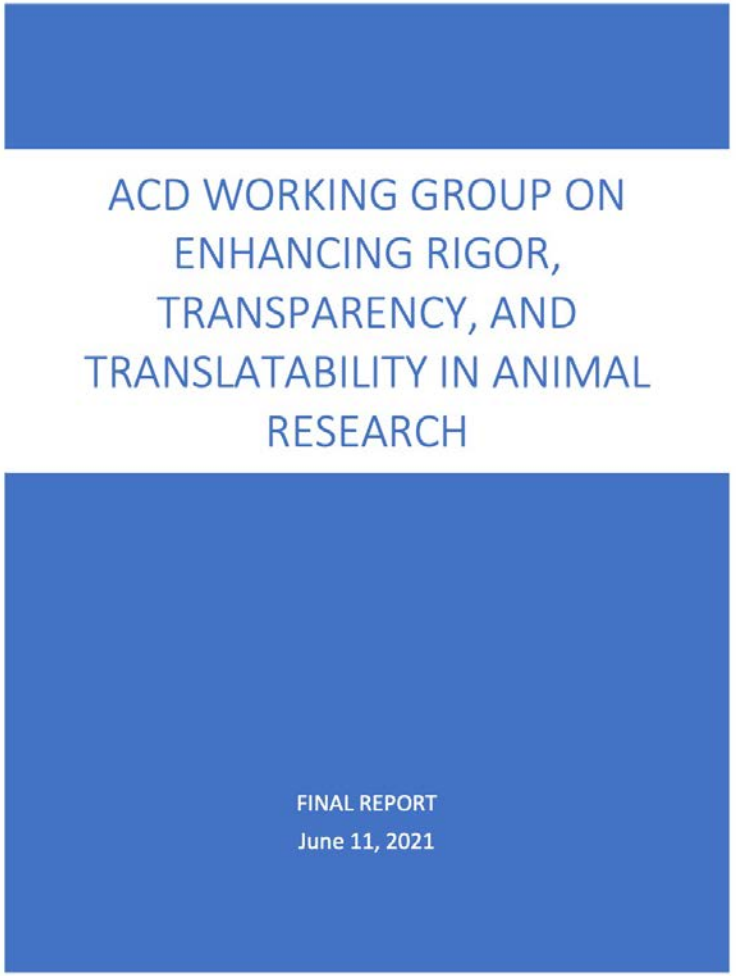


Norecopa: PREPARE for better Science

norecopa.no/prepare/endorsements

Report of the Advisory Committee to the Director of the NIH

PREPARE is mentioned as one of the standards which can strengthen 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.'



https://acd.od.nih.gov/working-groups/eprar.html

NASA

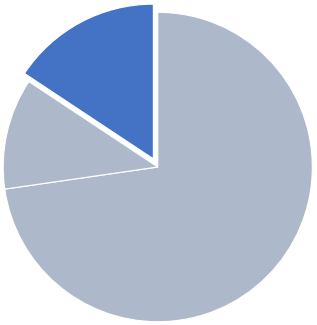
cbsnews.com

no.wikipedia.org

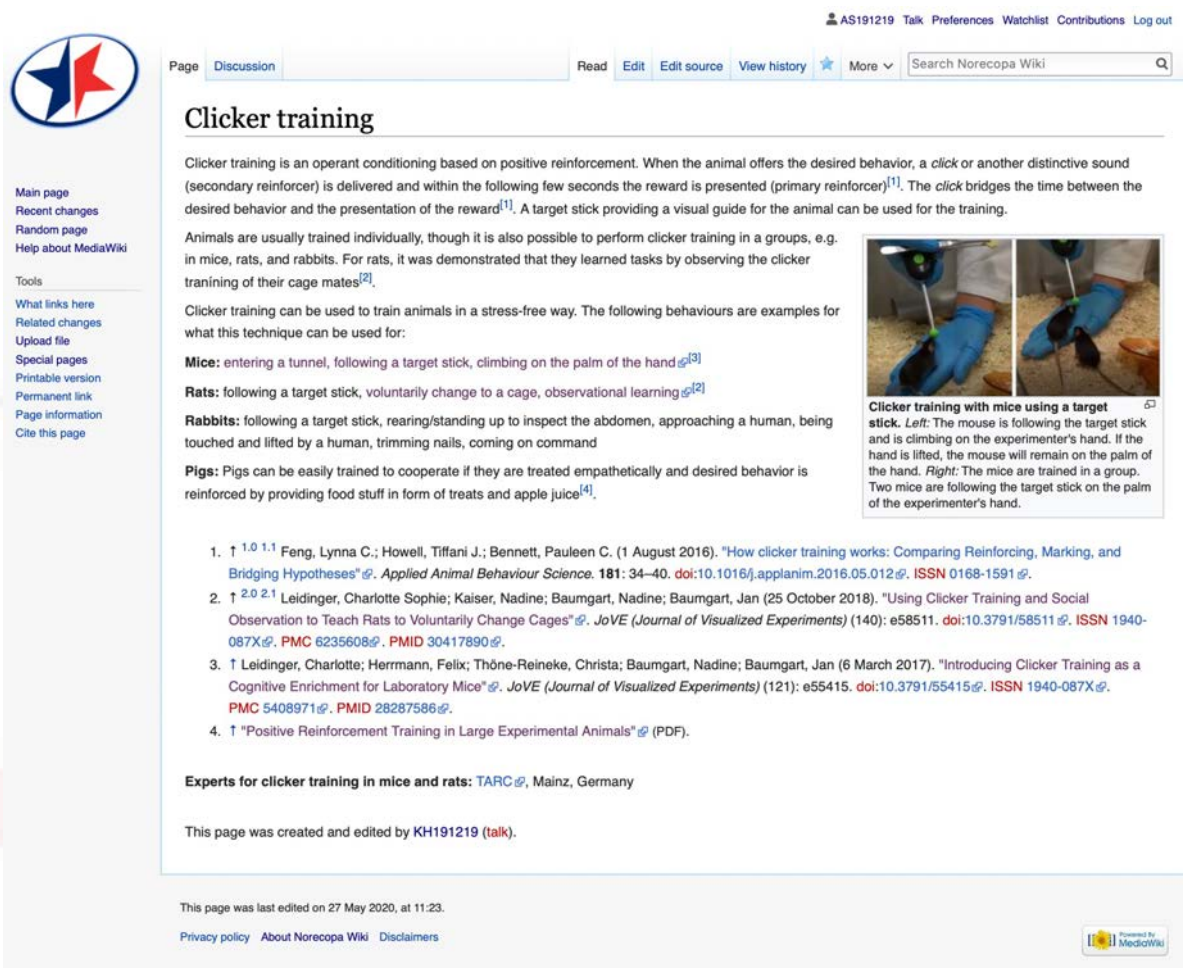
- Complex machines / animals create ***known or unknown unknown interactions***
- **Design weaknesses** (*which the engineers knew about!)*
- **External pressure to launch** - Publish or perish.
- **Management decisions**:
  "We've got away with it before"
  "We've managed to publish before"
- **A combination of many factors, each of which may be harmless until they occur simultaneously**

What will the award be used for?

Refinement Wiki



wiki.norecopa.no

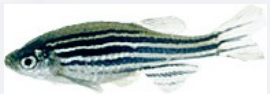


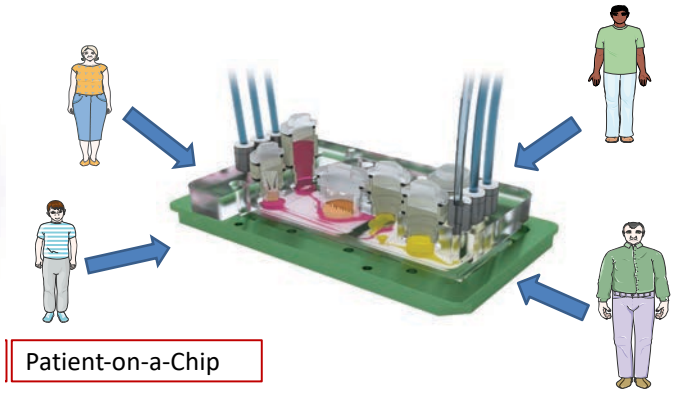
Collaboration, collaboration and collaboration...

Also highly relevant to One Health....

Society is unity in diversity

George Herbert Mead





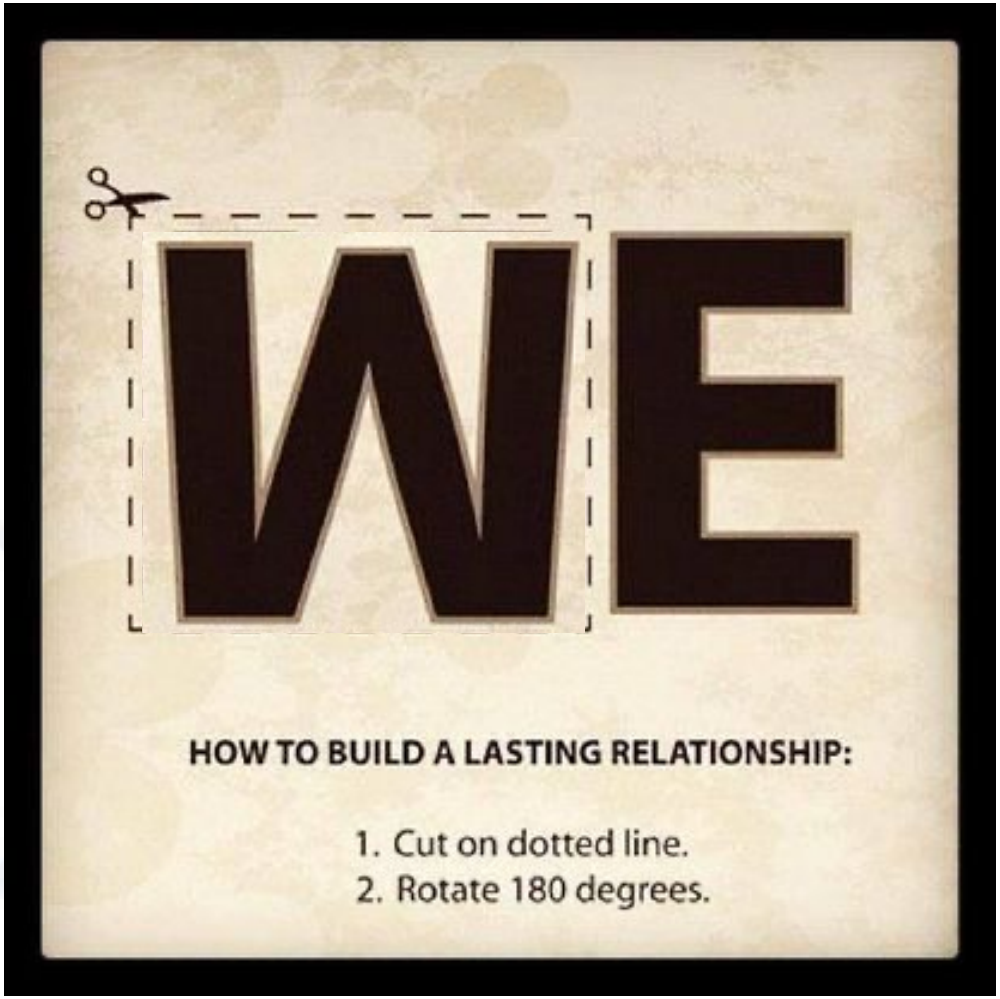
24th August

Shaun Khoo, @EpistemeHealth

'Siloing is a huge barrier. Papers on refinement are published in specialist vet sci lab animal journals. The scientists who do animal research do not read these journals and the journals they do read don't tend to publish updates on best practice.'


TT2019
THE 15th
TRANSGENIC TECHNOLOGY
MEETING
Date
April 7-10, 2019
Venue
Kobe International Conference Center
ISTT
BDR
charles river
MERCK
International Society for Transgenic Technologies


The Iceberg Illusion
Success is an iceberg
SUCCESS!
WHAT PEOPLE SEE
WHAT PEOPLE DON'T SEE
Persistence
Failure
FAIL
Sacrifice
THINGS I HAVE TO GIVE UP
1.
2.
3.
Disappointment
Dedication
GOAL
Hard work
Discipline
@sylviaduckworth


WE
HOW TO BUILD A LASTING RELATIONSHIP:
1. Cut on dotted line.
2. Rotate 180 degrees.

Aggregation of marginal gains

Instead of hoping for a paradigm shift (= immediate animal replacement):

Small improvements of many small components

Lilley E, Jennings M (2013):
Refinement: Lessons from the 2012 Olympics

Alternatives to Laboratory Animals (ATLA) 41(3):P28-P29.
doi:10.1177/026119291304100309

rspca.org.uk/webContent/staticImages/Downloads/2012Olympics.pdf

jamesclear.com/marginal-gains

Norecopa: A hub of international resources norecopa.no/WC11

The PREPARE guidelines norecopa.no/WC11-PREPARE

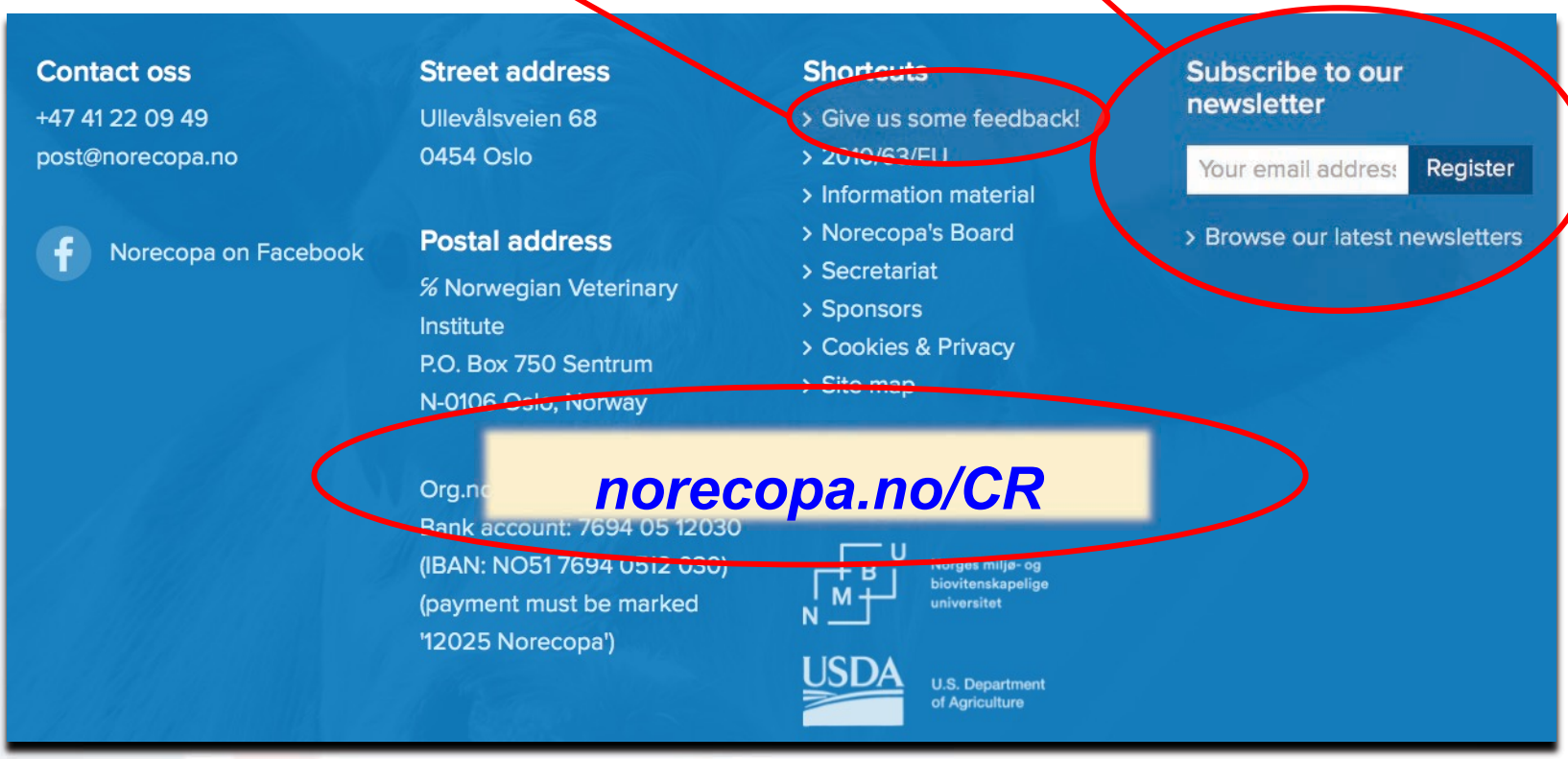
Wildlife research norecopa.no/WC11-wildlife

The Refinement Wiki norecopa.no/WC11-wiki

norecopa

Feedback

English-language newsletters




Thank you!