10th World Congress on Animal Use in the Life Sciences and Alternatives
Seattle, 20 - 24 August 2017

Norecopa: A Toolbox for the 3Rs in Action

norecopa.no/WC10.pdf

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norecopa.no

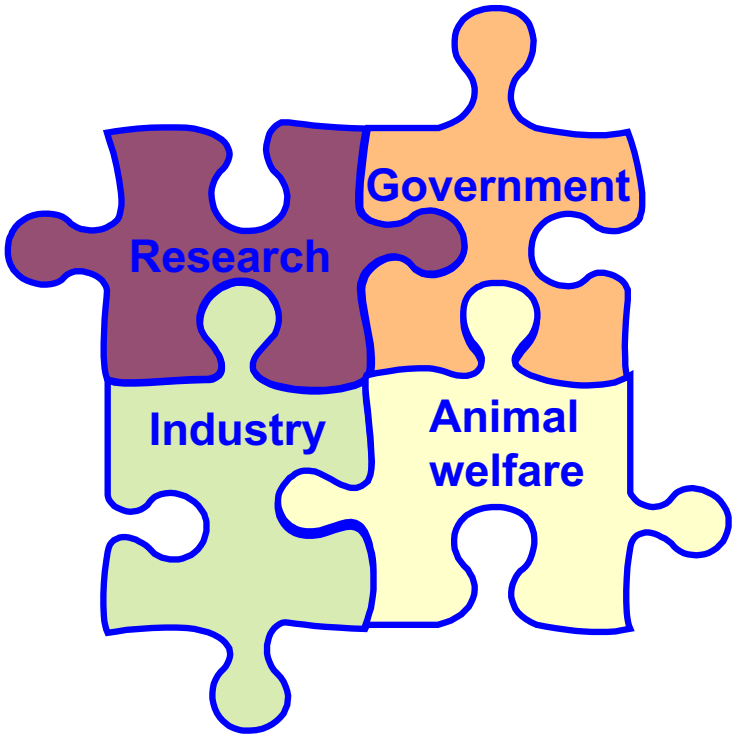
norecopa

A National Consensus Platform for the Three Rs

***E**uropean **Co**nsensus-**P**latform for **A**lternatives*

www.ecopa.eu

ecopa



International consensus meetings

Harmonisation of the Care and Use of:

Fish (2005)

Wildlife (2008)

Fish (2009)

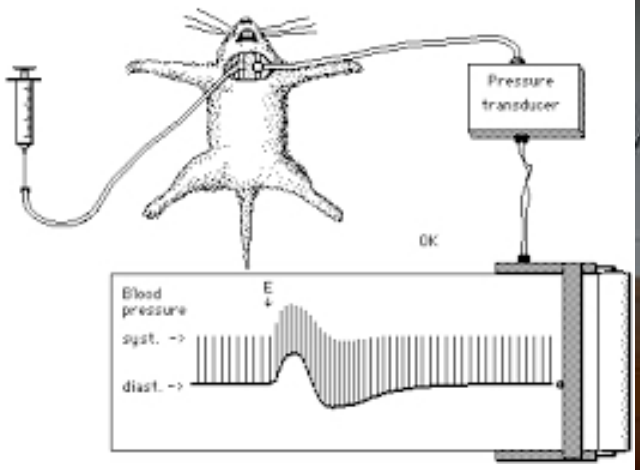
Agricultural animals (2012)

Animals in Field Research 26-27 October 2017

norecopa.no/meetings

norecopa.no/meetings/meetings-calendar

A brief history



WC1	1991-96: Development of the NORINA database on Macs, using a simple application. Later sold as a stand-alone, platform-independent version on floppy discs.
WC3	1996-2005: Server at the Oslo veterinary school donated by Laboratory Animals Ltd. with a mirror site in Sydney, Australia. All pages written manually in HTML, with separate applications for all the support functions. Frequent crashes!
WC5	2005: Content moved to a Microsoft database platform and hosted externally. A separate site built for films and slide shows of procedures on laboratory animals
WC7	2007: Norecopa founded, with its own website
WC10	2015-16: Brand-new website built from scratch, with an intelligent search engine

After 25 years, we ended up with 6 resources on different domains using different technologies

NORINA

TextBase

+ a small subset of products using

old technology: **Classic AVs**

+ films and slide shows of common procedures

+ intelligent search engine

A new website designed in 2015, launched 31 May 2016:

- Responsive – works equally well on mobile phones, tablets and desktop computers

- One (intelligent) search engine for everything – no longer a need to know the names of the databases

- Hand-picked material for quality and relevance to Laboratory Animal Science, 3Rs and welfare – based on 30 years of experience and networking in the field

- Designed to be an answer to the conclusions of so many presentations at congresses: “we need more guidelines”!

- Contains a newsfeed from European media (English- and Scandinavian-language articles on lab animal science)

- Films of common procedures

- The site will be made visually more interesting (with more images), but the focus so far has been on searchable and printable content, not entertainment value

Some important technical specifications:

- **Zero tolerance of dead links** (404-errors)

  'Do I have to make new bookmarks for your webpages?'
  No!

- **Automatic redirection of**

  http://oslovet.veths.no

  http://oslovet.nvh.no

  http://oslovet.norecopa.no

  www.3RGuide.info

  and all the individual pages on these old domains

- **All searches and use of search filters generate unique and individual addresses**, so you can document, and repeat, exactly the same search

norecopa.no

Organisations of relevance to animal research

Organisations within Laboratory Animal Science

AAALAC International (Association for Assessment and Accreditation of Laboratory Animal Care International)
AALAS (American Association for Laboratory Animal Science)
ACLAM (American College of Laboratory Animal Medicine)
AniMatch (an online sharing platform for the exchange of organs and tissues)
ARSAL (Asociatia Româna pentru Stiinta Animalelor de Laborator; Romanian Laboratory Animal Science Association)
ASLAP (American Society of Laboratory Animal Practitioners)

6,000 webpages
80,000 links
22,000 unique links
<3.5% dead links

Your feedback

- I have found a mistake on the current page
- I would like to give my opinion about the website
- I know of a resource which is not cited in 3R Guide
- I know of a product which is not cited in NORINA
- I know of a product which is not cited in TextBase
- I know of a product which is not cited in Classic AVs

Name

Email

Comments

Did you find what you were looking for?

Yes, I found it! | No, I did not!

Did you find what you were looking for?

No, I did not!

What are you looking for?

Please give us your feedback so we can improve the information on the page. Thank you in advance for your help. Please add your email address if you would like a reply.

Submit

Please contact us by email if you have any questions.

Animals in research:

Fish

Farm animals

Laboratory animals

Wildlife and wild fish

Cephalopods

Other aquatic animals

Norecopa promotes use of "The Three Rs":

Replace

Replacement of animal experiments with alternatives

Reduce

Reduction of the number of animals used in experiments

Refine

Reduction of pain and suffering in animal experiments

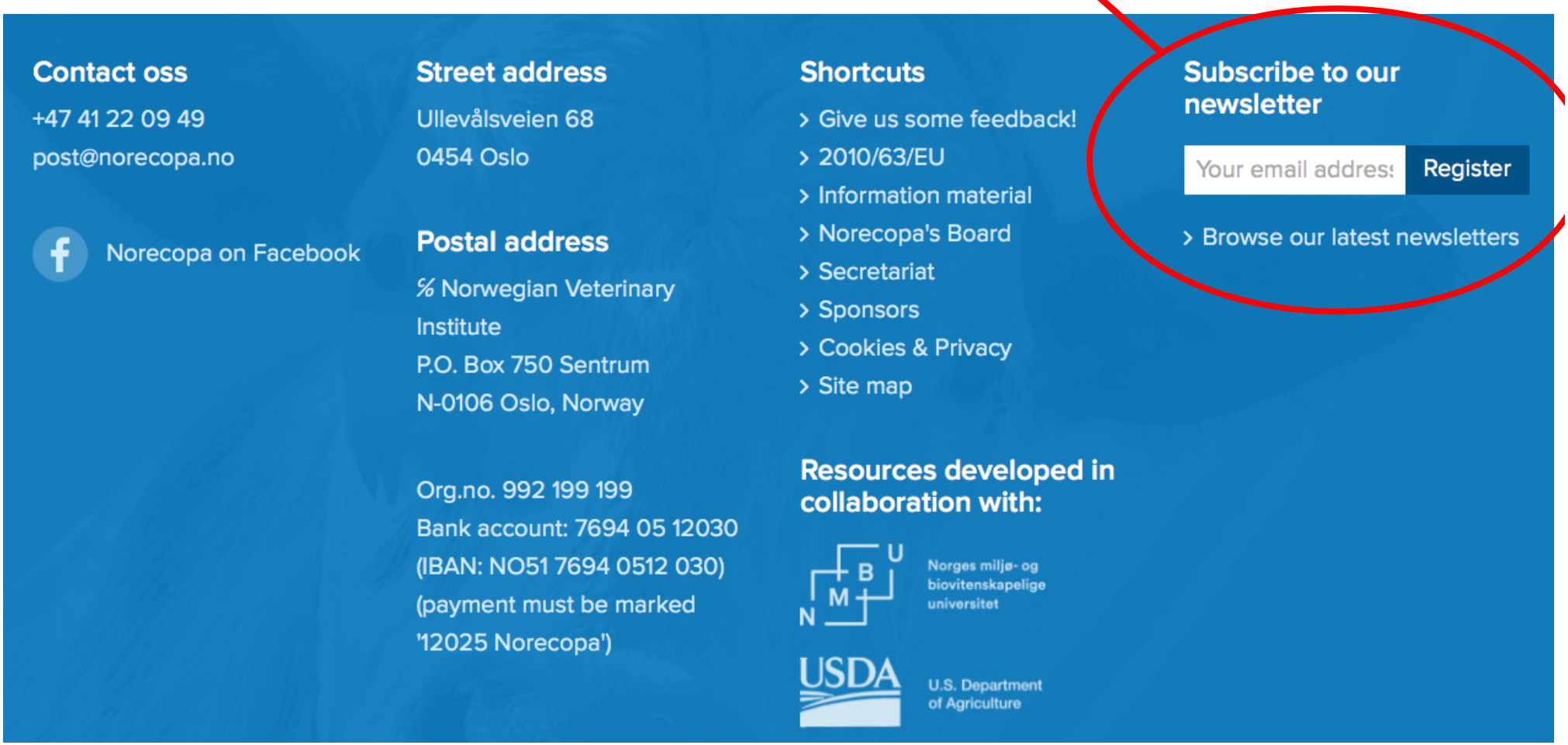
Norecopa aims for consensus between the four stakeholders:

Government and Regulatory Authorities - Research and teaching - Industry - Animal protection and welfare

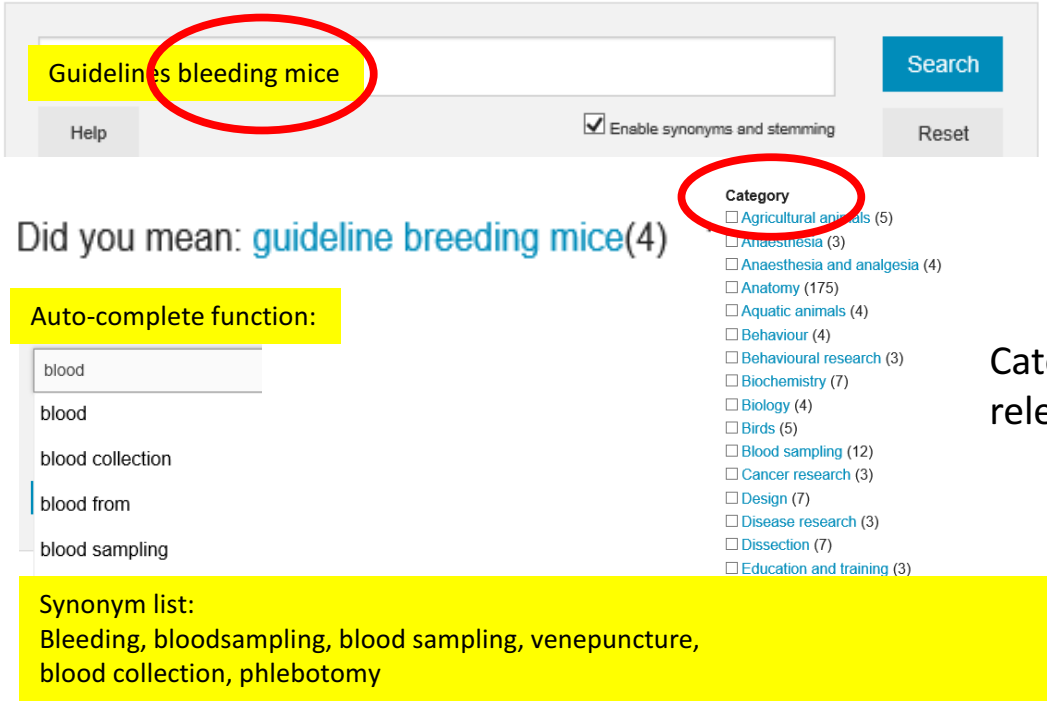
Who are you?

Are you a researcher, student or are you generally interested in animal welfare? Here you will find relevant information to help you achieve your goals.

English-language newsletters



The search engine



Categories, types, 3R relevance and many more

- An index of all the words on all the approx. 6,300 pages
- Fuzzy logic
- Boolean logic
- Wildcards
- Proximity searches
- Truncation

A help file available

USDA United States Department of Agriculture

Collaboration with US Department of Agriculture

Jerry K-9 CPR Mannikin (Dog)

Record number: 8821 (legacy id: 4905)
Category: Handling (TextBase) - Medicine
Type: Simulator

A product line of animal CPR (Cardiopulmonary Resuscitation) training mannequins. Type: Simulator. Category: Handling & Veterinary Medicine.

Jerry K-9 CPR Mannikin is a full size dog for CPR (Cardiopulmonary Resuscitation) training. Features: Working lungs, artificial pulse, disposable and cleanable parts. Designed to perform CPR compressions, mouth-to-snout resuscitation. Also designed to splint and bandage. In addition, a non-removable, long oblique fracture of the right femoral leg bone can now be added to this mannikin. This will allow students to learn how to set and repair common K-9 fractures. This mannikin simulates a 60-70 lbs dog. Accessories included: Carrying case with kneeling pad, brush, 5 disposable lungs. This mannikin is a simplified version of Critical Care Jerry.

Comments & References: Additional Disposable Lungs for Jerry: 24 disposable lungs: US$128.00; 72 disposable lungs: US$380.00. Suitable for training in the veterinary setting, search and rescue, veterinary schools, canine units and for pet owners. This item may be borrowed for up to 6 weeks through the Alternatives Loan System of the International Network for Humane Education (InterNICHE), free of charge, but return postage must be paid by the person who has borrowed the product. Please note that there are practical limitations on where some items can be sent. For more information, please contact loansystem@interniche.org. See also http://www.interniche.org for more information.

Item: 101

Price: US$989.00. Loan Program: Free of charge
Free of charge: Loan Program: Free of charge

On loan: On loan

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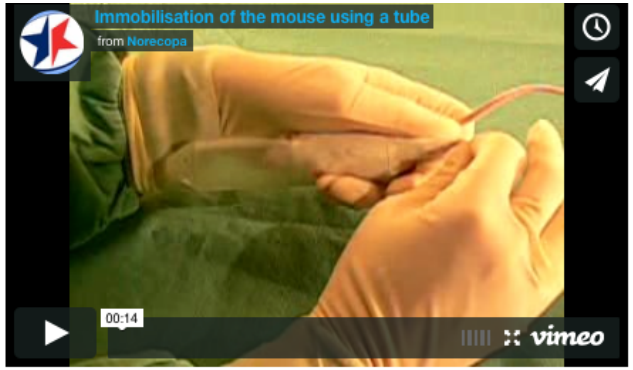
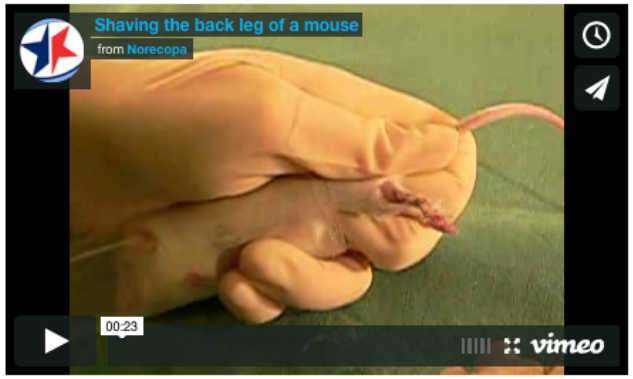
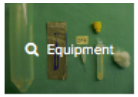
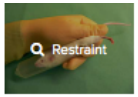
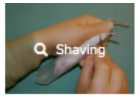

Immobilisation of the mouse using a tube
from Norecopa
00:14
vimeo


Shaving the back leg of a mouse
from Norecopa
00:23
vimeo

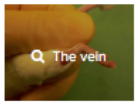

Blood collection from the saphenous vein in the mouse
from Norecopa
00:33
vimeo

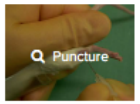

Equipment


Restraint


Shaving


Shaving

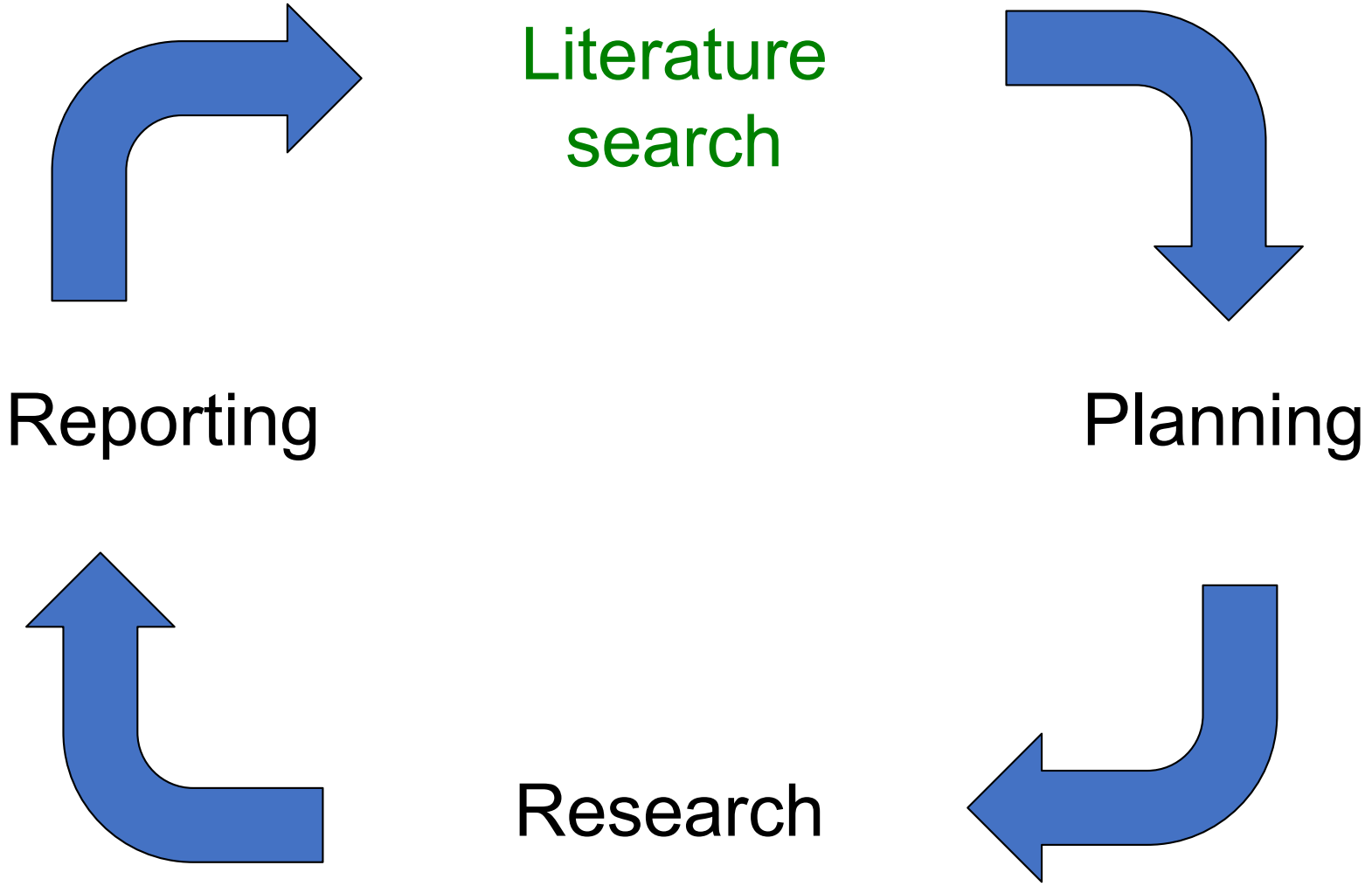

The vein


Puncture


Bleeding


Blood collection

Norecopa's website is designed to aid scientists in finding global 3R resources



Correct literature searches are a vital part of the work to advance the 3Rs

Things have got worse rather than better after Google arrived:

You always get some results, even if you type in everything at once.

In many ways the situation was better earlier when searches had to be done manually with the help of a librarian

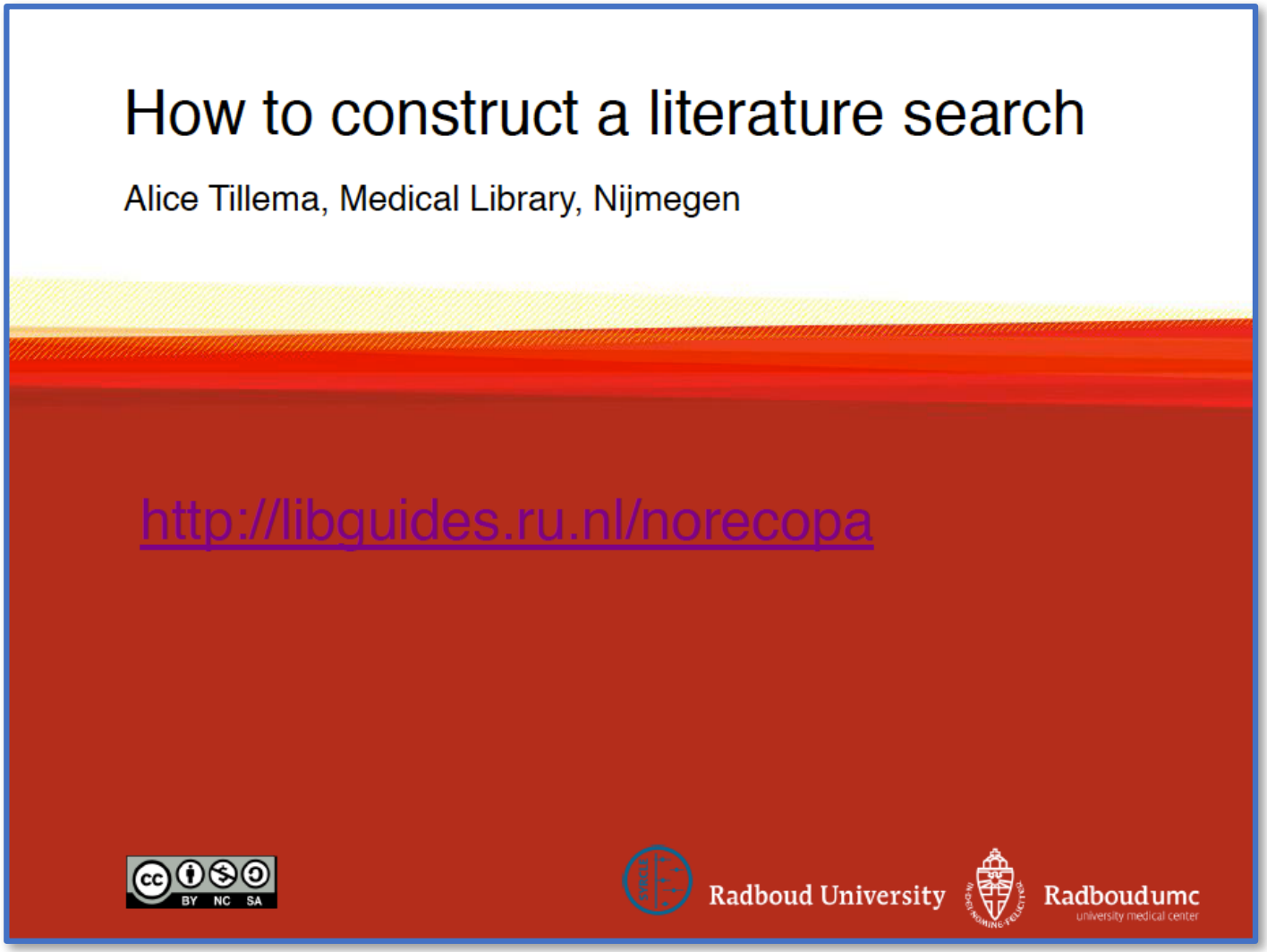
Action needed:

It is high time that all scientists received mandatory education in literature searching

Scientists should ensure that 3R advances are mentioned in the title or abstract

Alice Tillema, Radboud University:
How to construct a literature search

http://norecopa.no/how-to-construct-a-literature-search.pdf



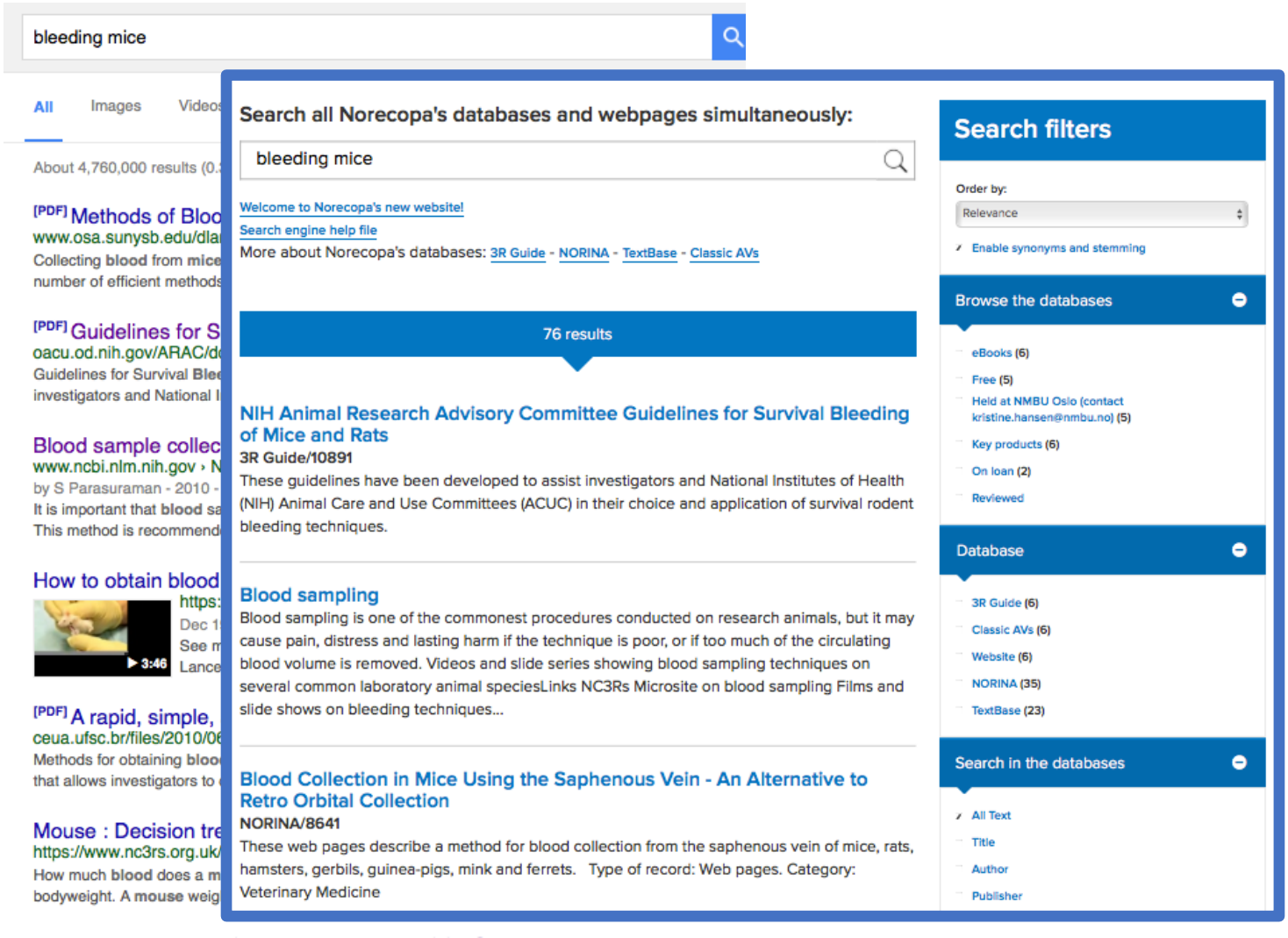
Encourage scientists to publish 3R-improvements somewhere where they are visible!

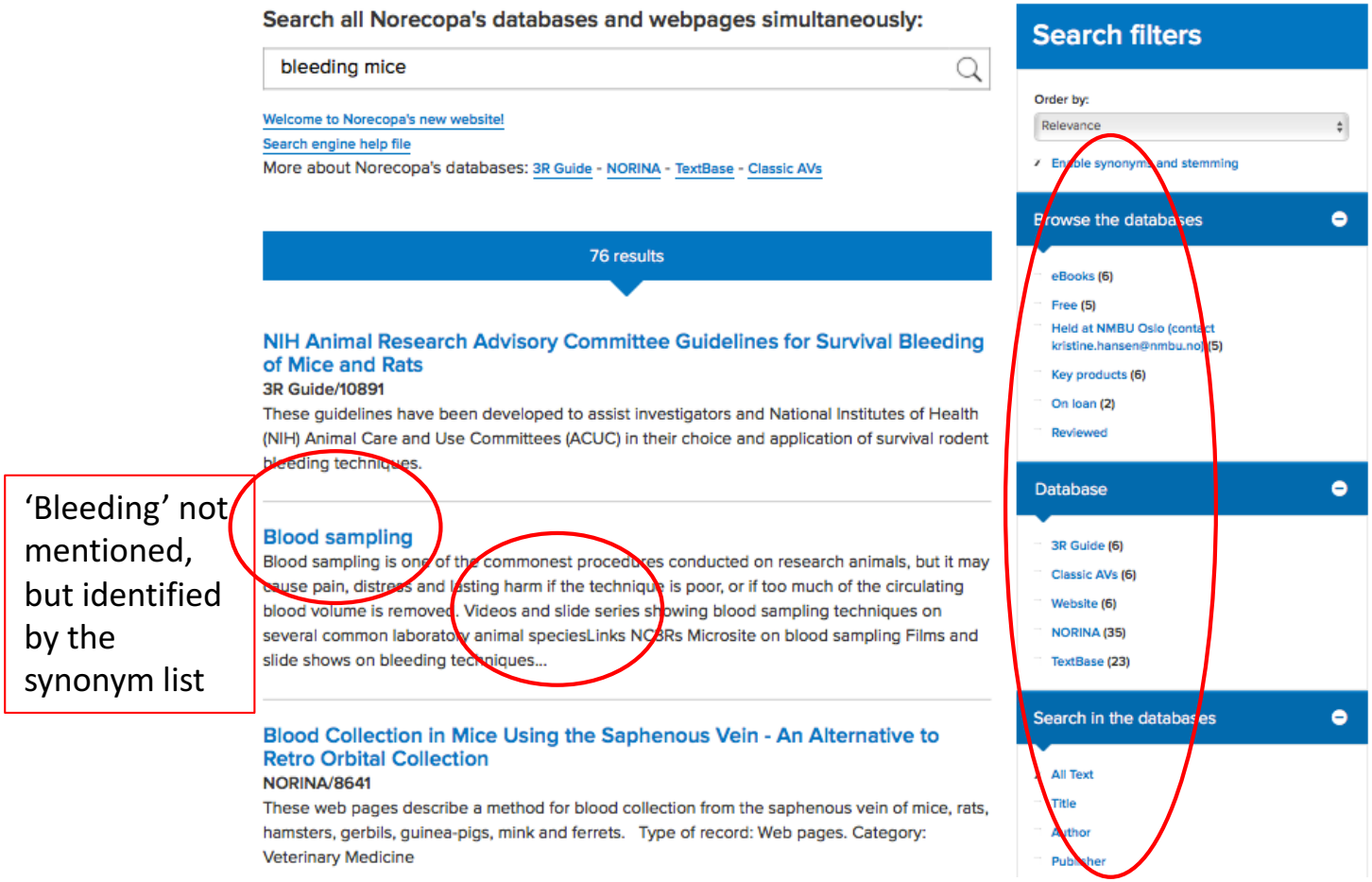
http://www.theodora.com/rodent_laboratory/blood_collection.html

photo: NMBU

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

Search for ‘bleeding mice’ on Google and Norecopa.





'Bleeding' not mentioned, but identified by the synonym list

Published online on 9 May 2011 Lab Anim, doi: 10.1258/la.2011.010181

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]

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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

More species- and situation- specific guidance is needed

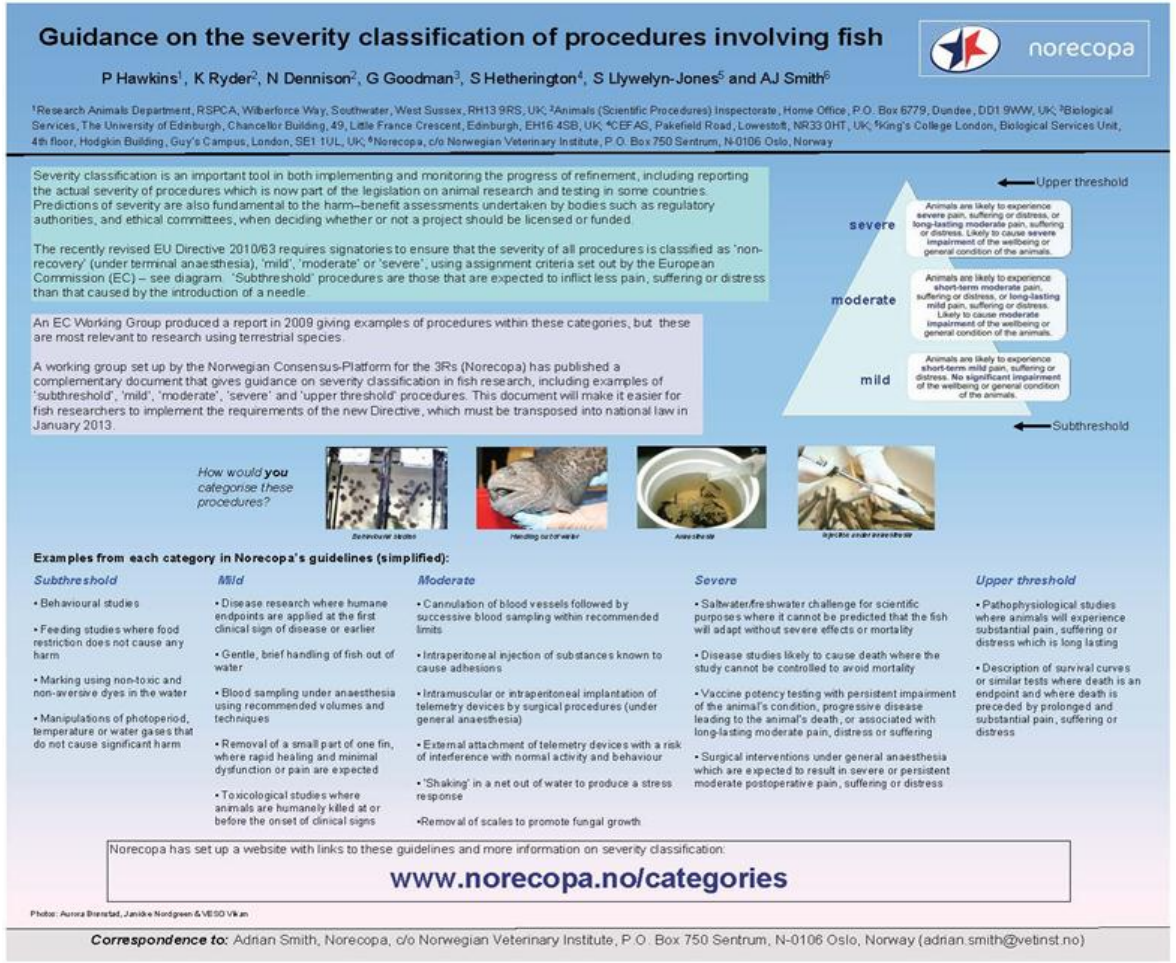
Guidance on the severity classification of procedures involving fish

Report from a Working Group
convened by Norecopa

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

Laboratory Animals, 45: 219-224, 2011

norecopa.no/categories



Guidance on the severity classification of procedures involving fish

norecopa

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

[1]Research Animals Department, RSPCA, Wilberforce Way, Southwater, West Sussex, RH13 9RS, UK; [2]Animals (Scientific Procedures) Inspectorate, Home Office, P.O. 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, P.O. Box 750 Sentrum, N-0106 Oslo, Norway

Severity classification is an important tool in both implementing and monitoring the progress of refinement, including reporting the actual severity of procedures which is now part of the legislation on animal research and testing in some 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.

The recently revised EU Directive 2010/63 requires signatories to ensure that the severity of all procedures is classified as 'non-recovery' (under terminal anaesthesia), 'mild', 'moderate' or 'severe', using assignment criteria set out by the European Commission (EC) – see diagram. 'Subthreshold' procedures are those that are expected to inflict less pain, suffering or distress than that caused by the introduction of a needle.

An EC Working Group produced a report in 2009 giving examples of procedures within these categories, but these are most relevant to research using terrestrial species.

A working group set up by the Norwegian Consensus-Platform for the 3Rs (Norecopa) has published a complementary document that gives guidance on severity classification in fish research, including examples of 'subthreshold', 'mild', 'moderate', 'severe' and 'upper threshold' procedures. This document will make it easier for fish researchers to implement the requirements of the new Directive, which must be transposed into national law in January 2013.

*How would **you** categorise these procedures?*

Examples from each category in Norecopa's guidelines (simplified):

Subthreshold	*Mild*	*Moderate*	*Severe*	*Upper threshold*
• Behavioural studies • Feeding studies where food restriction does not cause any harm • Marking using non-toxic and non-aversive dyes in the water • Manipulations of photoperiod, temperature or water gases that do not cause significant harm	• Disease research where humane endpoints are applied at the first clinical sign of disease or earlier • Gentle, brief handling of fish out of water • Blood sampling under anaesthesia using recommended volumes and techniques • Removal of a small part of one fin, where rapid healing and minimal dysfunction or pain are expected • Toxicological studies where animals are humanely killed at or before the onset of clinical signs	• Cannulation of blood vessels followed by successive blood sampling within recommended limits • Intraperitoneal injection of substances known to cause adhesions • Intramuscular or intraperitoneal implantation of telemetry devices by surgical procedures (under general anaesthesia) • External attachment of telemetry devices with a risk of interference with normal activity and behaviour • 'Shaking' in a net out of water to produce a stress response •Removal of scales to promote fungal growth	• Saltwater/freshwater challenge for scientific purposes where it cannot be predicted that the fish will adapt without severe effects or mortality • Disease studies likely to cause death where the study cannot be controlled to avoid mortality • Vaccine potency testing with persistent impairment of the animal's condition, progressive disease leading to the animal's death, or associated with long-lasting moderate pain, distress or suffering • Surgical interventions under general anaesthesia which are expected to result in severe or persistent moderate postoperative pain, suffering or distress	• Pathophysiological studies where animals will experience substantial pain, suffering or distress which is long lasting • Description of survival curves or similar tests where death is an endpoint and where death is preceded by prolonged and substantial pain, suffering or distress

Norecopa has set up a website with links to these guidelines and more information on severity classification:

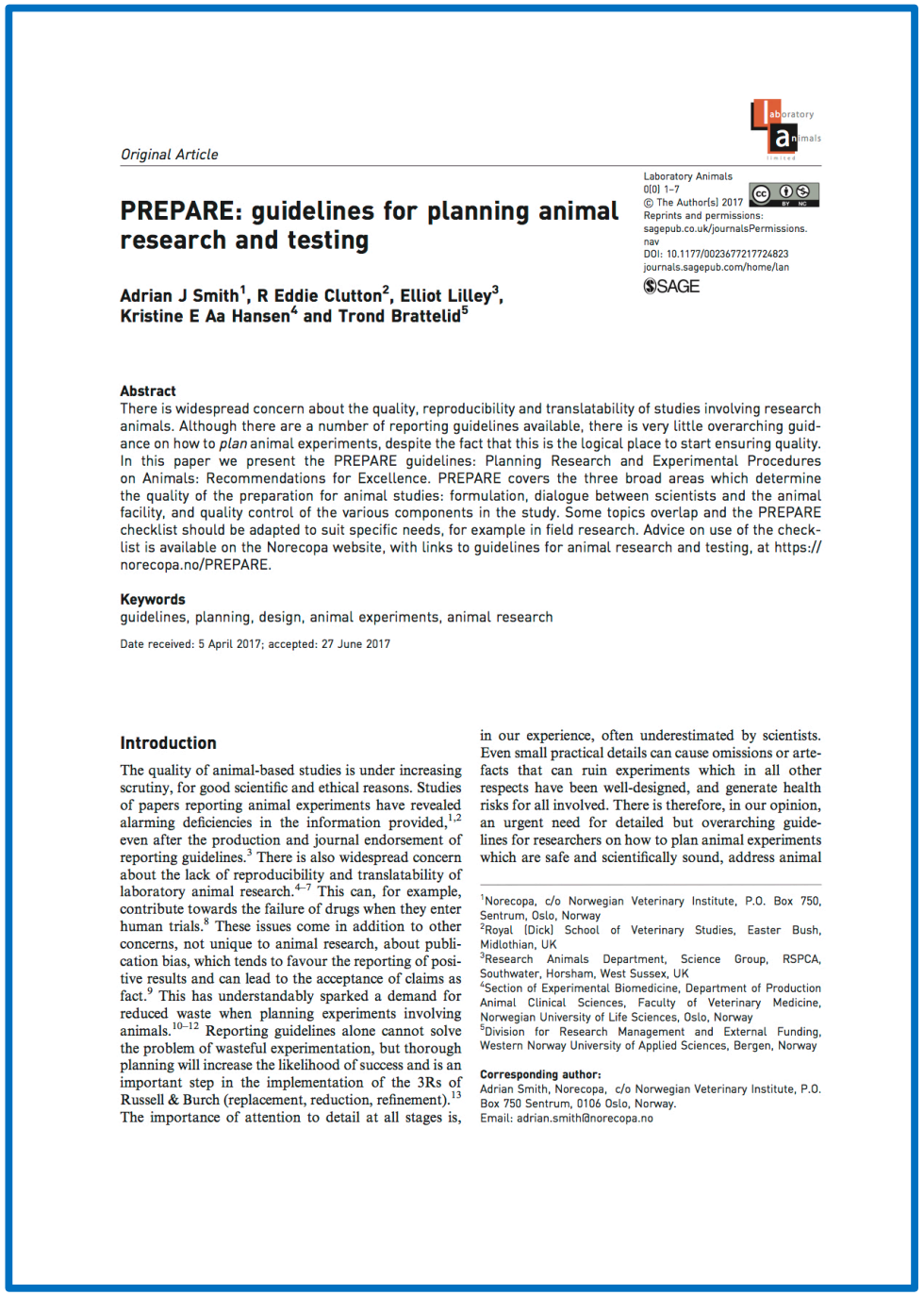
www.norecopa.no/categories

Photos: Aurora Brønstad, Janicke Nordgreen & VESO Vikan

Correspondence to: Adrian Smith, Norecopa, c/o Norwegian Veterinary Institute, P.O. Box 750 Sentrum, N-0106 Oslo, Norway (adrian.smith@vetinst.no)

Position Statements and Guidelines

- Food deprivation
- Toe clipping
- Pain relief
- Fin clipping of fish
- Biometric methods of identification
- Methods for identification of birds



Original Article

Laboratory Animals
0[0] 1–7

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

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]

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

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[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

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https://doi.org/10.1177/0023677217724823

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

PREPARE

norecopa

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] consists of planning guidelines which are complementary to reporting guidelines such as ARRIVE[2].
PREPARE covers the three broad areas which determine the quality of the preparation for animal studies:

1. **Formulation of the study**
2. **Dialogue between scientists and the animal facility**
3. **Quality control of the components in the study**

The topics will not always be addressed in the order in which they are presented here, and some topics overlap. The PREPARE checklist can be adapted to meet special needs, such as field studies. PREPARE includes guidance on the management of animal facilities, since in-house experiments are dependent upon their quality. The full version of the guidelines is available on the Norecopa website, with links to global resources, at **https://norecopa.no/PREPARE**.
The PREPARE guidelines are a dynamic set which will evolve as more species- and situation-specific guidelines are produced, and as best practice within Laboratory Animal Science progresses.

Topic	Recommendation
(A) Formulation of the study	
1. Literature searches	☐ Form a clear hypothesis, with primary and secondary outcomes. ☐ Consider the use of systematic reviews. ☐ Decide upon databases and information specialists to be consulted, and construct search terms. ☐ Assess the relevance of the species to be used, its biology and suitability to answer the experimental questions with the least suffering, and its welfare needs. ☐ Assess the reproducibility and translatability of the project.
2. Legal issues	☐ Consider how the research is affected by relevant legislation for animal research and other areas, e.g. animal transport, occupational health and safety. ☐ Locate relevant guidance documents (e.g. EU guidance on project evaluation).
3. Ethical issues, Harm-Benefit Assessment and humane endpoints	☐ Construct a lay summary. ☐ In dialogue with ethics committees, consider whether statements about this type of research have already been produced. ☐ Address the 3Rs (Replacement, Reduction, Refinement) and the 3Ss (Good Science, Good Sense, Good Sensibilities). ☐ Consider pre-registration and the publication of negative results. ☐ Perform a Harm-Benefit Assessment and justify any likely animal harm. ☐ Discuss the learning objectives, if the animal use is for educational or training purposes. ☐ Allocate a severity classification to the project. ☐ Define objective, easily measurable and unequivocal humane endpoints. ☐ Discuss the justification, if any, for death as an end-point.
4. Experimental design and statistical analysis	☐ Consider pilot studies, statistical power and significance levels. ☐ Define the experimental unit and decide upon animal numbers. ☐ Choose methods of randomisation, prevent observer bias, and decide upon inclusion and exclusion criteria.

ARRIVE

The ARRIVE Guidelines Checklist

Animal Research: Reporting In Vivo Experiments

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	ITEM	RECOMMENDATION	Section/ Paragraph
Title	1	Provide as accurate and concise a description of the content of the article as possible.	
Abstract	2	Provide an accurate summary of the background, research objectives, including details of the species or strain of animal used, key methods, principal findings and conclusions of the study.	
INTRODUCTION			
Background	3	a. Include sufficient scientific background (including relevant references to previous work) to understand the motivation and context for the study, and explain the experimental approach and rationale. b. Explain how and why the animal species and model being used can address the scientific objectives and, where appropriate, the study's relevance to human biology.	
Objectives	4	Clearly describe the primary and any secondary objectives of the study, or specific hypotheses being tested.	
METHODS			
Ethical statement	5	Indicate the nature of the ethical review permissions, relevant licences (e.g. Animal [Scientific Procedures] Act 1986), and national or institutional guidelines for the care and use of animals, that cover the research.	
Study design	6	For each experiment, give brief details of the study design including: a. The number of experimental and control groups. b. Any steps taken to minimise the effects of subjective bias when allocating animals to treatment (e.g. randomisation procedure) and when assessing results (e.g. if done, describe who was blinded and when). c. The experimental unit (e.g. a single animal, group or cage of animals). A time-line diagram or flow chart can be useful to illustrate how complex study designs were carried out.	
Experimental procedures	7	For each experiment and each experimental group, including controls, provide precise details of all procedures carried out. For example: a. How (e.g. drug formulation and dose, site and route of administration, anaesthesia and analgesia used [including monitoring], surgical procedure, method of euthanasia). Provide details of any specialist equipment used, including supplier(s). b. When (e.g. time of day). c. Where (e.g. home cage, laboratory, water maze). d. Why (e.g. rationale for choice of specific anaesthetic, route of administration, drug dose used).	
Experimental animals	8	a. Provide details of the animals used, including species, strain, sex, developmental stage (e.g. mean or median age plus age range) and weight (e.g. mean or median weight plus weight range). b. Provide further relevant information such as the source of animals, international strain nomenclature, genetic modification status (e.g. knock-out or transgenic), genotype, health/immune status, drug or test naïve, previous procedures, etc.	

The ARRIVE guidelines. Originally published in *PLoS Biology*, June 2010[1]

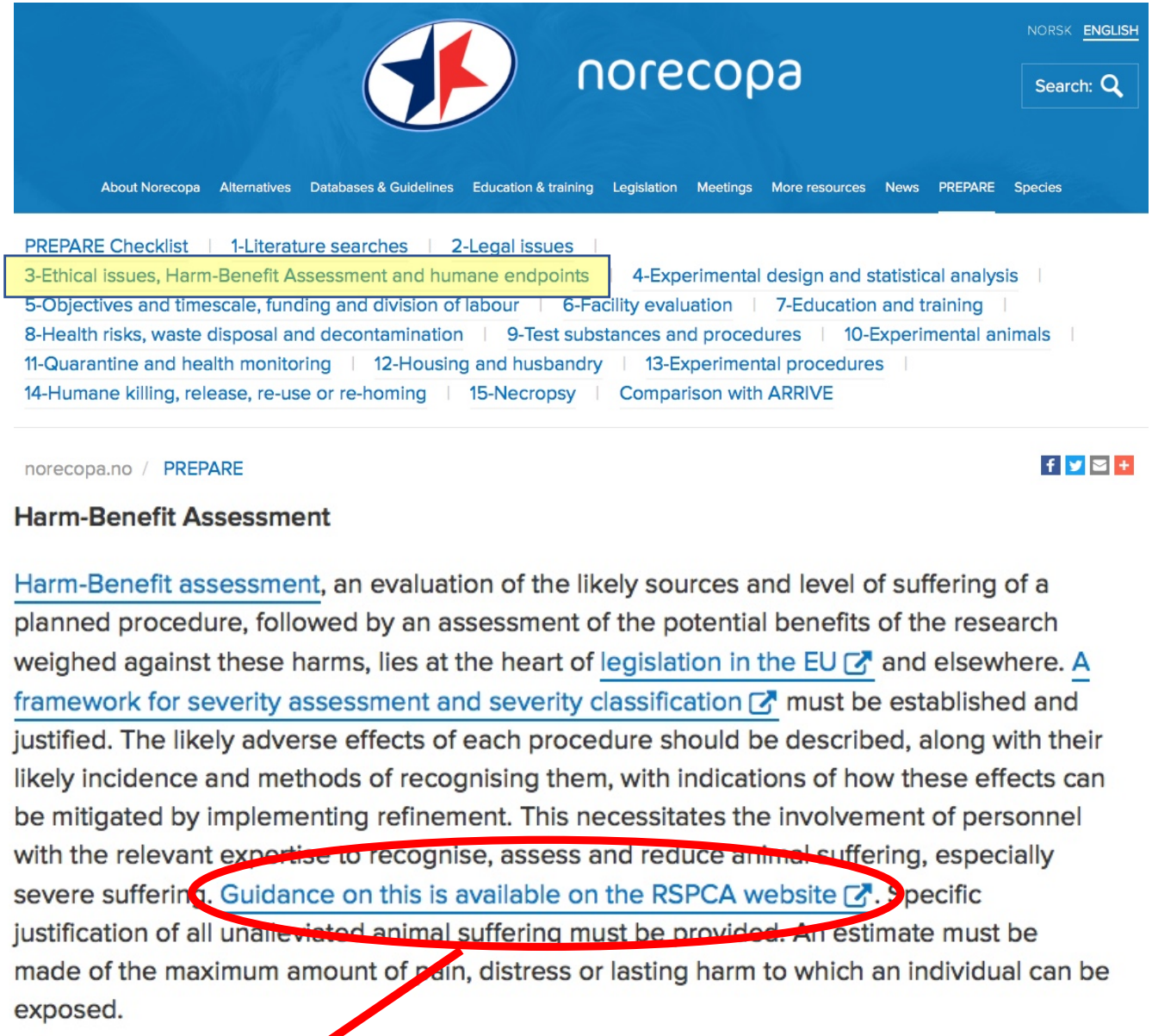
Two pages, translated into several languages

In addition to the checklist, much more information is available on:

norecopa.no/PREPARE

utilizing the resources already on the Norecopa website

norecopa.no/PREPARE



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

Contract between the animal facility and the research group

The division of labour and responsibilities between the two parties, with the aim of clarifying all stages of the experiment and ensuring that all necessary parameters are recorded.

	Animal facility	Researcher	Not applicable
Animal:			
Arrival date			
Species			
Strain/stock and substrain			
Supplier (full name and address) or bred on the premises			
Number and sex			
Age, weight, stage of life cycle on arrival			
Pre-treatment (surgical or medical) from supplier			
Quality (e.g. SPF, germ-free, gnotobiotic, conventional)			
Acclimation time before the start of the experiment			
Time and duration of fasting (with/without water and bedding)			
Environment:			
Type of housing: barrier/conventional			
Temperature (mean ± variation)			
Light schedule			
Relative humidity (mean ± variation)			
Number of air changes in the animal room/cabinet per hour			
Environmental enrichment			
Housing:			
Free-range, shelf, cabinet, isolator			
Cage type and size			
Number and method of distribution of animals per cage			

Our vision:
To aid dissemination of 3R resources between the different scientific fields

https://kmonadollaraday.files.wordpress.com/2011/03/information-silos.jpg

http://www.london-gifts.co.uk

There are lots of platforms...

...but are there enough trains?

Norecopa aims to be a fast train to global 3R resources

Photo: http://www.bbc.com/news/uk-england-london-35882068

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