

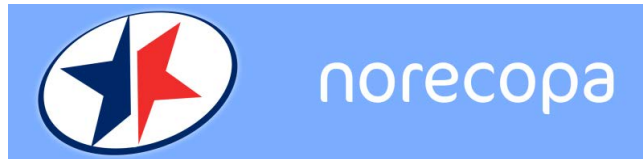
**norecopa.no**

*Guidelines, databases and other  
3R-resources for animal research*

Adrian Smith

[adrian.smith@norecopa.no](mailto:adrian.smith@norecopa.no)

<http://norecopa.no>





Norway's 3R centre, Norecopa  
norecopa.no



USDA Animal Welfare Information Center  
www.nal.usda.gov/awic

## norecopa.no: providing 3R-resources to find the best way forward

An intelligent search engine coupled to a large collection of quality global 3R-resources:

- databases
- guidelines and legislation
- 3R-alternatives
- education & training materials
- lab animal science resources
- email lists and journals
- 3R-information centres
- organisations
- meetings calendar
- newsletter
- newsfeed



Adrian Smith<sup>1</sup>, Tim Allen<sup>2</sup>, Karina Smith<sup>1</sup>, Øyvind Wærens kjold<sup>3</sup>, Bente Bergersen<sup>1</sup>, Siri Knudsen<sup>1</sup>, Anton Krag<sup>1</sup>, Glenn Sundnes<sup>1</sup> & Børge N. Fredriksen<sup>1</sup>  
<sup>1</sup>Norecopa, P.O. Box 750 Sentrum, 0106 Oslo, Norway; <sup>2</sup>Animal Welfare Information Center, National Agricultural Library, 10301 Baltimore Avenue, Beltsville, Maryland 20705, USA; <sup>3</sup>Bitfarm, Fjelløen 50, 4639 Kristiansand, Norway

The need for easy access to quality-controlled, species- and situation-specific guidelines for animal research has never been greater. The media are now overflowing with animal-related material, much of which is not specially selected or peer-reviewed. Indeed, the advent of powerful search engines can give the impression that it is no longer necessary to involve professional information specialists. Recent scientific papers have revealed poor reproducibility and translatability of animal studies, weak experimental design, indications of inadequate post-operative analgesia, and lack of compliance with guidelines for reporting animal studies.

**Scientists need easy access to quality 3R-resources and the ability to document the searches they have performed.**

With this in mind, Norecopa has built a relational database of 3R resources, coupled to an intelligent search engine tuned to the field of laboratory animal science ([norecopa.no](http://norecopa.no)).

The Norecopa website integrates 4 databases and webpages within laboratory animal science, welfare and alternatives. A large number of filters can be applied to increase the relevance of the search results. All searches and their filters generate unique web addresses (URLs), making it easy to document (and repeat) the searches they have performed.

In addition to the 3Rs, Norecopa endorses the 3S's: **Good Science, Good Sense, Good Sensibilities: [norecopa.no/3S](http://norecopa.no/3S)**

**Please contact Adrian Smith ([adrian.smith@norecopa.no](mailto:adrian.smith@norecopa.no)) for more information.**







We gratefully acknowledge the financial support of Dag Stiansen's Foundation, Laboratory Animals Ltd., the Nordic Society against Painful Animal Experiments, Novo Nordisk, the Scottish Accreditation Board and the US Department of Agriculture.

Graphics: colourbox.com

# Sponsors of Norecopa's work

Norecopa has received financial support from many sources. Since this website consists partly of material from the old website of the Laboratory Animal Unit at the Norwegian School of Veterinary Science (<http://oslovet.nvh.no>), this sponsor page also acknowledges the support given to the work performed at that Unit from 1991-2011 in developing and collecting resources concerning the 3Rs.

The work of building Norecopa's current website would not have been possible without generous support from:

- > [Dag S. Stiansen's Foundation](#) 
- > [Laboratory Animals Ltd.](#) 
- > [Novo Nordisk](#) 
- > [Nordic Society Against Painful Experiments \(Nordisk Samfunn Mot Smertevoldende Dyreforsøk\)](#) 
- > [Scottish Accreditation Board](#) 
- > [US Department of Agriculture](#) 



**Nordisk Samfunn  
mot  
Smertevoldende  
Dyreforsøk  
(NSMSD)**

(Nordic Society against  
Painful Experiments)  
NSMSD currently  
finances the work of  
updating the NORINA  
database and has



**Laboratory  
Animals Ltd.**

Publisher of Laboratory  
Animals, the International  
Journal of Laboratory  
Science and Welfare.

LAL donated the Internet  
server which was used  
to publish the NORINA  
and TextBase databases



**Novo Nordisk**

Novo Nordisk has  
contributed to the costs  
of developing this  
website

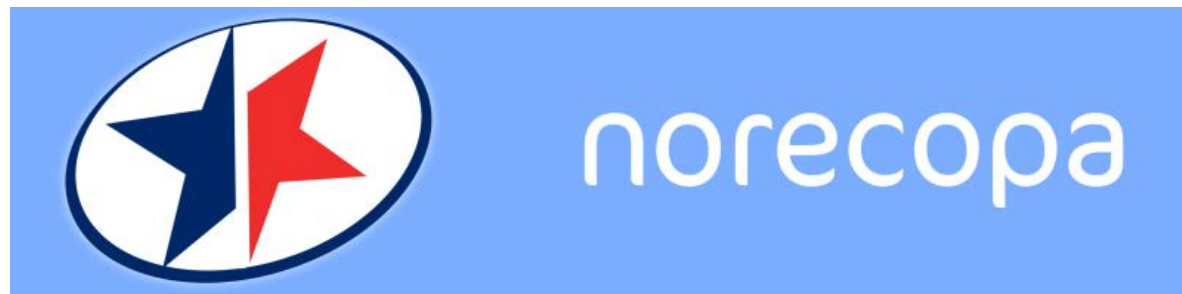


**Scottish  
Accreditation  
Board**

The SAB has contributed  
to the costs of  
developing this website



National Consensus Platform for the  
Replacement, Reduction and Refinement of  
Animal Experiments



**a competence centre for the 3RS**

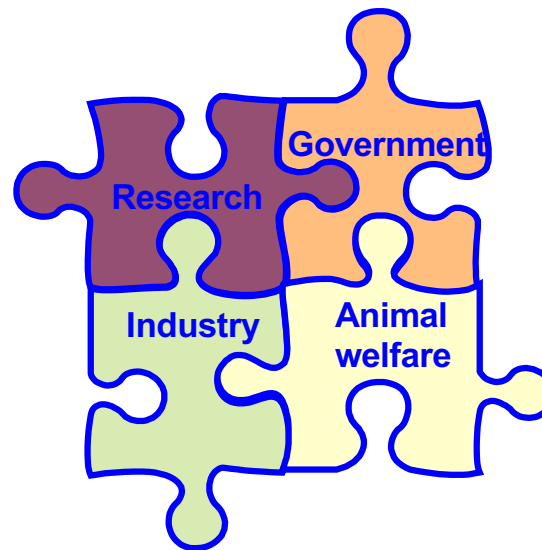
**Norecopa** is a member of **ecopa**

*European Consensus-Platform for Alternatives*

[www.ecopa.eu](http://www.ecopa.eu)



ecopa supports the establishment of National Consensus Platforms (NCPs) where all 4 stakeholders are equally represented:



## ***International consensus meetings***

*Harmonisation of the Care and Use of:*

*Fish (2005)*

*Wildlife (2008)*

*Fish (2009)*

*Agricultural animals (2012)*

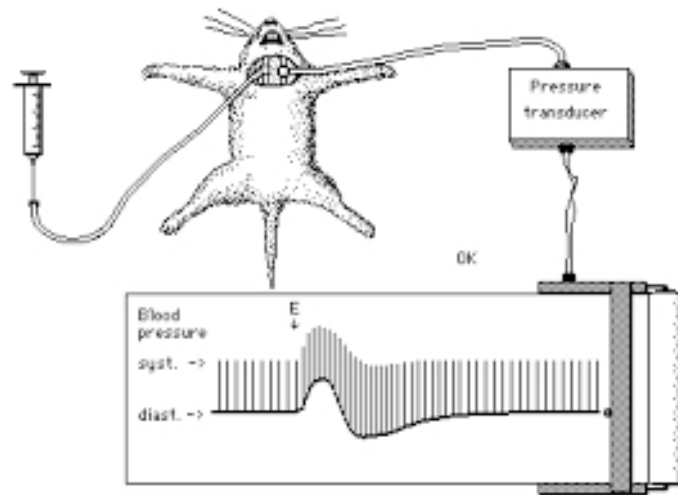
*Wildlife (2017)*

[\*http://norecopa.no/consensus-meetings\*](http://norecopa.no/consensus-meetings)

*All presentations and consensus statements are on the internet: a lasting resource*

*Newsletter (currently only in Norwegian) 8 times a year*

## A brief history



Pharmatutor



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.

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!

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

2007: Norecopa founded, with its own website

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***



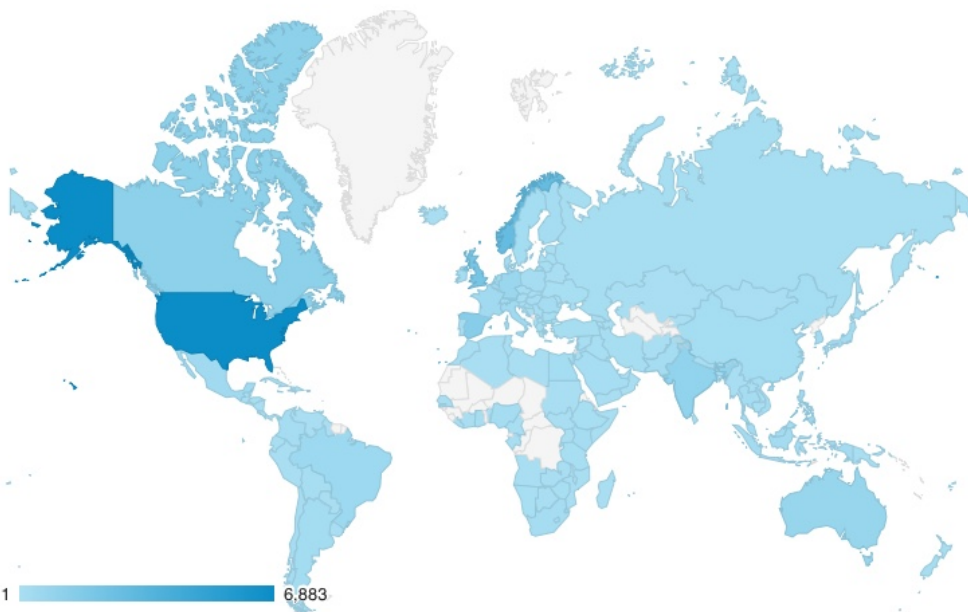
# norecopa.no/website-poster

Approx. 6,000 webpages:

- 3,600 in NORINA
- 1,700 in TextBase
- 350 in 3R Guide
- approx. 500 text pages

## Statistics (as of November 2016):

- Average of approx. 120,000 page views/year, (increasing)
- Average of 150-250 page views per 24 hours on weekdays



Norecopa, Norway's 3R centre: norecopa.no



USDA Animal Welfare Information Center  
awic.nal.usda.gov

## norecopa.no: a global overview of quality resources within laboratory animal science and welfare

Adrian Smith<sup>1</sup>, Karina Smith<sup>1</sup>, Øyvind Wærenskjold<sup>2</sup> & Tim Allen<sup>3</sup>

<sup>1</sup>Norecopa, P.O. Box 750 Sentrum, 0106 Oslo, Norway; <sup>2</sup>Bitfarm, Vigeveien 15A, 4639 Kristiansand, Norway; <sup>3</sup>Animal Welfare Information Center, National Agricultural Library, 10301 Baltimore Avenue, Beltsville, Maryland 20705, USA

### Quality resources in Laboratory Animal Science: where do I find them?

Increased focus on **the 3Rs** (Replacement, Reduction & Refinement) in Laboratory Animal Science and regulatory demands mean that scientists, committee members and animal house staff need easy access to relevant resources.

Norecopa has built a brand-new website and intelligent search engine which provide a global overview of selected quality resources. The site consists of three major databases and approx. 500 webpages.

- ✓ *The search engine returns hits from all these resources simultaneously. A large range of filters can be applied to narrow the list of hits. All searches generate unique web addresses (URLs), making it easy to document the searches which have been performed.*

### 3R Guide database and webpages

Databases, Guidelines, Regulations, Information Centres, Journals, E-mail lists



Please contact Adrian Smith ([adrian.smith@norecopa.no](mailto:adrian.smith@norecopa.no)) for more information.

We gratefully acknowledge the financial support of Dag Stiansen's Foundation, Laboratory Animals Ltd., the Nordic Society against Painful Animal Experiments, Novo Nordisk, the Scottish Accreditation Board and the US Department of Agriculture.

Graphics: colourbox.com

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



norecopa

- 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>

and all the individual pages on these old domains

<http://oslovet.norecopa.no>

[www.3RGuide.info](http://www.3RGuide.info)

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

If you think it's expensive to hire  
a professional to do the job, wait  
until you hire an amateur. – Red Adair



## 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.



norecopa

NORSK ENGLISH

[About Norecopa](#) [Alternatives](#) [Databases & Guidelines](#) [Education & training](#) [Legislation](#) [Meetings](#) [News](#) [Other resources](#) [Species](#) [Feedback](#)

**Search all Norecopa's databases and webpages simultaneously:**



[Welcome to Norecopa's new website!](#)

[Search engine help file](#)

More about Norecopa's databases: [3R Guide](#) - [NORINA](#) - [TextBase](#) - [Classic AVs](#)



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Search: 

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Search all Norecopa's databases and webpages simultaneously:

Add search term




norecopa.no / [Other resources](#)


# Organisations of relevance to animal research

External links

## 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)

## 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.



## Contact oss

+47 41 22 09 49  
post@norecopa.no



Norecopa on  
Facebook



Norecopa on Twitter

## Street address

Ullevålsveien 68  
0454 Oslo

## Postal address

% Norwegian Veterinary  
Institute  
P.O. Box 750 Sentrum  
N-0106 Oslo, Norway

Org.no. 992 199 199  
Bank account: 7694 05 12030  
(IBAN: NO51 7694 0512 030)  
(payment must be marked  
'12025 Norecopa')

## Shortcuts

- > Give us some feedback!
- > 2010/63/EU
- > Information material
- > Norecopa's Board
- > Sekretariat
- > Sponsors
- > Cookies & Privacy
- > Site map

## Subscribe to our newsletter

Your email address:

- > Browse our latest newsletters

## Resources developed in collaboration with:



Norges miljø- og  
biovitenskapelige  
universitet



U.S. Department  
of Agriculture

# The search engine

The screenshot shows a search engine interface with several key features highlighted by red circles and yellow boxes:

- Search Input:** A search bar containing the text "Guidelines bleeding mice".
- Search Button:** A blue button labeled "Search".
- Help and Settings:** A "Help" button and a checked checkbox for "Enable synonyms and stemming".
- Reset Button:** A grey button labeled "Reset".
- Did you mean:** A suggestion "Did you mean: guideline breeding mice(4)".
- Auto-complete function:** A dropdown menu showing suggestions: "blood", "blood", "blood collection", "blood from", and "blood sampling".
- Synonym list:** A list of synonyms: "Bleeding, bloodsampling, blood sampling, venepuncture, blood collection, phlebotomy".
- Category List:** A list of categories with checkboxes and counts: "Agricultural animals (5)", "Anaesthesia (3)", "Anaesthesia and analgesia (4)", "Anatomy (175)", "Aquatic animals (4)", "Behaviour (4)", "Behavioural research (3)", "Biochemistry (7)", "Biology (4)", "Birds (5)", "Blood sampling (12)", "Cancer research (3)", "Design (7)", "Disease research (3)", "Dissection (7)", and "Education and training (3)".

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

The screenshot shows the footer of a search engine interface with a blue background. It includes:

- Search Bar:** A white search bar with the text "Add search term" and a magnifying glass icon.
- Welcome Message:** "Welcome to Norecopa, Norway's 3R Centre!"
- Help Links:** "Search engine help file" and "Short cut: Guidelines for animal research" (both circled in red).
- Footer Text:** "More about Norecopa's databases: 3R Guide - NORINA - TextBase - Classic AVs" and "Reviews of the website".

## 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](mailto: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

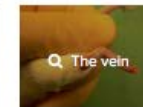
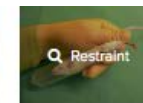
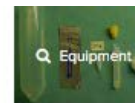
On loan: On loan

### Supplier

#### Rescue Critters, LLC

[All articles from Rescue Critters, LLC](#)

- > Address: 15635 Saticoy St. Unit A, Van Nuys, CA 91406, USA
- > Tel: Int-1-818-780-7860



# The Design of Animal Experiments: Reducing the use of animals in research through better experimental design, Second Edition

By Michael Festing

Record number: 43621

This [Handbook](#) is intended for all research scientists who use laboratory animals, with the aim of helping them to design their own experiments more effectively and/or to improve their ability to communicate with professional statisticians when necessary. It covers all randomised controlled experimental designs likely to be needed in laboratory animal research, with worked examples showing how they can be statistically analysed. It suggests the more widespread use of randomised block designs and shows how both males and females can be included in an experiment without the need to increase the total number of animals by using factorial designs. It also includes guidance on the choice of experimental animals. The book covers the learning outcomes of Module 10 and part (ii) of Module 11 of education and training under Directive 2010/63/EU. Where there is no alternative to the use of animals in biomedical research, it is important that experiments are well designed and correctly analysed in order to minimise pain and maximize the chance of getting scientifically valid results. Experiments that use too few animals may fail to pick up biologically important effects, while those who use them incorrectly or wastefully may get invalid results while subjecting the animals to unnecessary pain, distress or lasting harm. For Table of Contents, [please click here](#).



**Comments & References:** Second Edition. 144 pages. Paperback. Part of the [Laboratory Animal Handbooks](#). Published in Association with [Laboratory Animals Limited](#). Please click here for [Information on the First Edition](#). Please see information on the Computer program entitled "Experimental Design" in NORINA.

ISBN: 978-1-4739-7463-0

Price: £15.99 each

Year: 2016

## Publisher

SAGE Publications Ltd

[All articles from SAGE Publications Ltd](#)

> Web: <http://www.uk.sagepub.com>

This is one of our favourite textbooks within Laboratory Animal Science.

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

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

# How to construct a literature search

Alice Tillema, Medical Library, Nijmegen

<http://libguides.ru.nl/norecopa>



Radboud University



Radboudumc  
university medical center

Search for 'bleeding mice' on Google and Norecopa.

bleeding mice

All Images Videos

About 4,760,000 results (0.35 sec)

[PDF] **Methods of Blood Collection from Mice**  
[www.osa.sunysb.edu/dlar/new](http://www.osa.sunysb.edu/dlar/new)  
Collecting **blood** from mice is necessary for a number of efficient methods available.

[PDF] **Guidelines for Survival Bleeding of Mice and Rats**  
[oacu.od.nih.gov/ARAC/documents](http://oacu.od.nih.gov/ARAC/documents)  
Guidelines for Survival Bleeding of Mice and Rats for investigators and National Institutes of Health (NIH) Animal Care and Use Committees (ACUC) in their choice and application of survival rodent bleeding techniques.

**Blood sample collection in mice**  
[www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov) > NCBI > by S Parasuraman - 2010 - Cited 10 times  
It is important that **blood** sample collection from mice is done correctly. This method is recommended for survival bleeding.

**How to obtain blood samples from mice**  
<https://www.youtube.com/watch?v=...>  
Dec 19, 2010  
See more videos  
Lancet Offers

[PDF] **A rapid, simple, and efficient method for blood collection from mice**  
[ceua.ufsc.br/files/2010/06/Sub-...](http://ceua.ufsc.br/files/2010/06/Sub-...)  
Methods for obtaining blood samples from mice that allows investigators to quickly and easily collect blood.

**Mouse : Decision tree for blood collection**  
<https://www.nc3rs.org.uk/mouse...>  
How much blood does a mouse have? It depends on its bodyweight. A mouse weighing 25g has approximately 1.5ml of blood.

**Search all Norecopa's databases and webpages simultaneously:**

bleeding mice

Welcome to Norecopa's new website!  
[Search engine help file](#)  
More about Norecopa's databases: [3R Guide](#) - [NORINA](#) - [TextBase](#) - [Classic AVs](#)

76 results

**NIH Animal Research Advisory Committee Guidelines for Survival Bleeding of Mice and Rats**  
3R Guide/10891  
These guidelines have been developed to assist investigators and National Institutes of Health (NIH) Animal Care and Use Committees (ACUC) in their choice and application of survival rodent bleeding techniques.

**Blood sampling**  
Blood sampling is one of the commonest procedures conducted on research animals, but it may cause pain, distress and lasting harm if the technique is poor, or if too much of the circulating blood volume is removed. Videos and slide series showing blood sampling techniques on several common laboratory animal species. Links NC3Rs Microsite on blood sampling Films and slide shows on bleeding techniques...

**Blood Collection in Mice Using the Saphenous Vein - An Alternative to Retro Orbital Collection**  
NORINA/8641  
These web pages describe a method for blood collection from the saphenous vein of mice, rats, hamsters, gerbils, guinea-pigs, mink and ferrets. Type of record: Web pages. Category: Veterinary Medicine

**Search filters**

Order by:  
Relevance

Enable synonyms and stemming

**Browse the databases**

- eBooks (6)
- Free (5)
- Held at NMBU Oslo (contact [kristine.hansen@nmbu.no](mailto:kristine.hansen@nmbu.no)) (5)
- Key products (6)
- On loan (2)
- Reviewed

**Database**

- 3R Guide (6)
- Classic AVs (6)
- Website (6)
- NORINA (35)
- TextBase (23)

**Search in the databases**

- All Text
- Title
- Author
- Publisher



Search all Norecopa's databases and webpages simultaneously:

Welcome to Norecopa's new website!  
Search engine help file  
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These web pages describe a method for blood collection from the saphenous vein of mice, rats, hamsters, gerbils, guinea-pigs, mink and ferrets. Type of record: Web pages. Category: Veterinary Medicine

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

### Search filters

Order by:  
Relevance

Enable synonyms and stemming

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#### Database

- 3R Guide (6)
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#### Search in the databases

- All Text
- Title
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- Publisher

***Our vision:***

***To aid dissemination of 3R resources between the different scientific fields***



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

There are lots of platforms...



...but are there enough trains?

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



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

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



### **Thanks to our main sponsors:**

- Standing Committee on Business Affairs, Norwegian Parliament
- Ministries of Agriculture and Fisheries
- Novo Nordisk
- Nordic Society Against Painful Experiments
- Scottish Accreditation Board
- Dag S. Stiansen Foundation
- Laboratory Animals Ltd.
- Norwegian Research Council

### **Funding of the NORINA database 1991-2016:**

*Nordic Society Against Painful Experiments, Dag S. Stiansen Foundation, The Norwegian Research Council, the Norwegian School of Veterinary Science, Laboratory Animals Ltd., RSPCA, UFAW, AstraZeneca, Solvay Pharmaceuticals, the Swedish Fund for Research without Animal Experiments, Norwegian Federation for Animal Protection, Allkopi, The Humane Society of the United States, St. Andrew Animal Fund, Microsurgical Developments Foundation, AAALAC International, LASA, NEAVS, Amersham Health*