





This list contains links to online information and education on the 3Rs and animal experimentation selected by the AWB Leiden. Please enjoy and use the information to keep up with your continuous professional education portfolio!

For tips: please email the [AWB Leiden](#)

Highlight	
Link	Content
 Einstein 3R centre	The Academic biomedical science in Berlin has installed the Einstein 3R centre. The EC3R aims to boost alternative methods with the long-term goal of Reduction and Replacement. This website hosts a well kept EU agenda for events: agenda .

3R websites and e-learnings	
Link	Content
Principles of Humane Experimental Technique 	This Special Edition from 1992 marks a tribute to the authors and is a timely recognition of the Russell and Burch Awards instituted by the Humane Society of the United States which recognises outstanding contributions to the advancement of alternatives to the use of animals in research, testing or education.
Best practices NCad	CoP's published by the NCad
Advices documents NCad	Advise documents published by the NCAD
International and national available guidelines 3Rs centre	Quality standards for aspects of working with laboratory animals have been described on the basis of the most recent knowledge and experience a compilation by the 3Rs centre Utrecht (newsletter)
RSPCA	Animals are used for many different purposes, and each research area raises specific animal welfare, ethical and scientific issues. The RSPCA's constructive and informed approach is widely respected within the scientific community, enabling us to achieve positive outcomes for animals. (RSPCA scientific publications)
Nc3R website	The Nc3R supports researchers to design the best experiments so that their methods and findings are robust and reproducible. They provide information and guidance on the latest knowledge to improve laboratory animal welfare (newsletter)
North American 3Rs collaborative	The purpose of the NA3Rc is to advance the education and science of refining, reducing and replacing (3Rs) the use of animals in research. (newsletter)
3Rs centre Utrecht	This website provides centralised information about the 3Rs and access to 3Rs tools. Additionally, you can find information about initiatives of the 3RCU.
Useful links Norecopa	A compilation of useful websites by Norecopa (newsletter)
Danish 3R-centre	The Danish 3R-Center was established by the in a unique collaboration with both the pharmaceutical industry and animal welfare organizations.
 Einstein 3R centre	The Academic biomedical science in Berlin has installed the Einstein 3R centre. The EC3R aims to boost alternative methods with the long-term goal of Reduction and Replacement. This website hosts a well-kept EU agenda for events: agenda .
 3R centre finland	Fin3R Centre is nominated and supervised by the Council on the Protection of Animals Used for Scientific or Educational Purposes



	(TOKES). TOKES promotes the three R principles (3Rs): Replace, Reduce, and Refine. You can find events here.
Swiss 3R competence centre	The Swiss 3R Competence Centre (3RCC) promotes the 3Rs principle (replacement, reduction and refinement of animal experimentation) among the scientific community and the public.
e-learnings Nc3R	The NC3Rs has funded a number of e-learning resources that are freely available.
e-learnings envigo	Envigo offers multiple webinars and e-books for example on nomenclature
e-learning Arrive guidelines	An introduction to the ARRIVE guidelines 2.0
webinars on responsible research	To support the bioscience research community to keep skills and knowledge of best practice up to date, Responsible Research in Practice provides free monthly webinars which can be viewed on demand.
e-learnings and resources ETPLAS	ETPLAS was established as an information portal to enable information sharing and communication between training providers, approval/accrediting bodies, employers and Member-State authorities.
EU 3rs/finding alternative methods	Inventory of 3Rs Knowledge Sources A detailed inventory - compiled by JRC scientists - of 800 knowledge sources relevant to the Replacement, Reduction and Refinement (Three Rs) of animal procedures used for scientific purposes
research animal training	Research Animal Training requires a 10 £ membership. It allows you to track completion of NC3Rs funded eModules and you get access to a large collection of articles to assist you when studying to pass an EU Module course.
Research animal training: video tutorials procedures-with-care	Research Animal Training also offers a range of free video's to help you perform regular administration of substances and aseptic technique
Three fingers scruffing technique	Noropeco has published a 2 min. video on a refinement of the traditional method of scruffing.



Replacement	
Link	Content
RIVM 3V projects	Projects on replacement for risk assessment by the RIVM
ZonMw	Programs for subsidies on replacement of animals studies
TPI	The Transition Programme for Innovation without the use of animals (TPI) is aimed at increasing the pace of animal-free innovation through temporary, flexible networks and projects.
CAAT	Johns Hopkins University: Center for Alternatives to Animal Testing (CAAT). The CAAT programs seek to provide a better, safer, more humane future for people and animals.
Good cell and tissue culture practice 2.0	Good Cell and Tissue Culture Practice (GCCP) 2.0 describes six main principles to consider when performing cell culture including characterization and maintenance of essential characteristics, quality management, documentation and reporting, safety, education and training, and ethics.
Fetal Calf Serum Free Database	The FCS-free Database provides an overview of FCS-free media for cell-culture.
Non-Animal Technologies	The NAT database (Non-Animal Technologies) contains information on modern non-animal technologies from various areas of



	biomedicine and life sciences, based on scientific studies and publications.
SciCrunch	SciCrunch is a curated searchable repository research resources, with an emphasis on biomedical research resources.
EU 3rs/finding alternative methods	Inventory of 3Rs Knowledge Sources A detailed inventory - compiled by JRC scientists - of 800 knowledge sources relevant to the Replacement, Reduction and Refinement (Three Rs) of animal procedures used for scientific purposes
re-place	The Belgium RE-Place database provides a reliable overview of different New Approach Methodologies and the names of the experts and research centres where these techniques can be learned.
NORINA-database	NORINA (A Norwegian Inventory of Alternatives) is an English-language database containing information on approximately 3,000 audiovisual aids that may be used as alternatives or supplements to the use of animals in education and training, including dissection alternatives, at all levels from Junior School to University. The information in the database has been collected from 1991 onwards.
EU reference laboratory alternatives animal testing	EURL ECVAM has launched a series of studies to review available and emerging non-animal models being used for research in seven disease areas. Three areas have been added. On the left the central link. Find your research area of interest and find non-animal methodologies for: respiratory tract diseases ; neurodegenerative research ; breast cancer ; immuno-oncology ; immunogenicity testing for advanced medicinal therapy products ; cardiovascular diseases autoimmune diseases
Guidance for literature search alternatives	The National Agricultural Library's Animal Welfare Information Center (AWIC) provides guidance on building and conducting a 3Rs (replacement, reduction, refinement of animal use) alternatives literature search. This page details instructions for finding 3Rs alternatives along with other resources to assist individuals working with animals in research, testing, and teaching.
Helpathon Hotel – Home	We help to create coincidence by organizing HELPATHONS. A Helpathon is a 24 hour online and real live transformative venue organized around a particular human health research question.

Refinement

Link	Content
Vehicles database	Gad Consulting Services, with the help of several other individuals and organizations, in 2006 completed a data mining project to determine the safe dosing level of drug delivery vehicles for in vivo animal studies (full text article).
Webinar Severity Classification Flecknell	One hour webinar on severity classification according to EU legislation by Paul Flecknell
Workman et al., 2010	Guidelines for the welfare and use of animals in cancer research
Tickle your rat	Tickling as a social enrichment to improve rat welfare.

Tunnel handling	Practical tips on non-aversive handling, including a webinar, a video tutorial, and the underpinning evidence base by the group of Jane Hurst.
Humane endpoints	This website is the tool to make animal experimentation more humane while improving the quality of science.
interspecies database	The Interspecies Database helps researchers to make an optimal choice of species and strain of the animal model.
Webinar Gut Microbiota Franklin	One hour webinar on e-learnings on Gut Microbiota: Variability and translatability in Rodent Models by Craig Franklin
Refining procedures for the administration of substances (sagepub.com)	Refining administration procedures provides opportunities for improving both welfare and science. A workshop report BVAAWF; FRAME; RSPCA and UFAW.

Reduction	
Link	Content
Online course on statistics	This free course will teach the different aspects of data analysis and is organized by the statistician in the AWB of the LUMC Dr. Mar Rodríguez-Girondo. Lectures are given by Mar together with Prof. Saskia le Cessie and Prof. Jelle Goeman.
Short movie randomization and blinding	Movie (in Dutch) on the importance of randomization and blinding by Ivo Tiebosch
RandoMice	A novel and free, user-friendly randomization tool in animal research developed by Robin van Eenige, LUMC
Blinding video	In this video from the British Pharmacological Society it is explained how blinding reduces bias in experimental design.
Experimental Design Assistant	The Experimental Design Assistant (EDA) is a free online tool from the NC3Rs, designed to guide researchers through the design of their experiments, helping to ensure that they use the minimum number of animals consistent with their scientific objectives, methods to reduce subjective bias, and appropriate statistical analysis.

Responsible science with animals	
Link	Content
The laboratory rat	The Laboratory Rat: A Natural History. M. Berdoy. Oxford University. A 27 min film follows the lives of domestic rats after being released in a large outdoor enclosure where they have to compete, like their wild cousins, for food, shelter and mates.
Arrive guidelines	The ARRIVE guidelines 2.0 consist of a checklist of 21 items describing the minimum information that all scientific publications reporting research using animals should include. (Kilkenny et al., 2010)
PREPARE guidelines	PREPARE focuses on a large number of factors which, although they are seldom reported in scientific papers, can dramatically influence the validity and outcome of studies on animals, as well as the health and safety of all those concerned.
The principles of humane experimental technique	A classic in our field: The Principles of Humane Experimental Technique by Russel and Burch. In this book the authors classified humane techniques under the headings of replacement, reduction, and refinement --now commonly known as the three Rs .



EU science updates	EU science hub: The European Commission's science and knowledge service
preclinicaltrials.eu	Preclinicaltrials.eu aims to provide a comprehensive overview of all animal studies, including those that might otherwise remain unpublished. This is done by (prospective) registration of animal studies.
EQIPD	Enhancing Quality In Preclinical Data (EQIPD) offers simple and sustainable solutions that facilitate improvements in data quality without impacting innovation and freedom of research, developed by scientists in academia and industry
NIH: NCATS	The National Center for Advancing Translational Sciences (NCATS) tackles ongoing challenges in research so that new treatments can reach people faster. They focus on what is common across diseases and develop solutions that reduce, remove or bypass bottlenecks in the translational process.
Guide to pharmacology	Guide to PHARMACOLOGY is an expert-curated resource of ligand-activity-target relationships, the majority of which come from high-quality pharmacological and medicinal chemistry literature. It is intended as a “one-stop shop” portal to pharmacological information.
UK Research Integrity Office	The aim of the UK Research Integrity Office is the more systematic and visible promotion and demonstration of integrity in research. They provide proactive support tailored to the needs of employers, researchers and the public.
The embassy of good science	The Embassy is a community platform offering support in handling day-to-day research practices and dilemmas. The platform is a wiki - allowing users to contribute their knowledge and expertise.
Statistics in cardiovascular research	A list of recommended minimum reporting guidelines to aid authors in preparing manuscripts in cardiovascular research. Following these guidelines could substantially improve the quality of statistical reports and enhance data rigor and reproducibility.
Tips and traps for behavioural animal experimentation	An article that will help you avoid falling into traps and find answers to what you always wanted to know about conducting behavioural animal experimentation.