

## Open science tools in animal research – advancing research transparency and quality

	OPEN SCIENCE PRACTICE	SPECIFIC TOOLS	CORRESPONDING LINKS
PLANNING	Guidelines	PREPARE Guidelines	<a href="https://norecopa.no/prepare">https://norecopa.no/prepare</a>
		UKRN Primers	<a href="https://www.ukrn.org/primers/">https://www.ukrn.org/primers/</a>
		ARRIVE Guidelines	<a href="https://arriveguidelines.org/">https://arriveguidelines.org/</a>
	Design your study thoroughly	Literature and tools for the integration of sex and gender in research	<a href="https://cihr-irsc.gc.ca/e/50836.html">https://cihr-irsc.gc.ca/e/50836.html</a>
		Sample size calculator G*Power	<a href="https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower">https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower</a>
		Software package for R for the statistical planning for animal research	<a href="https://invivostat.co.uk">https://invivostat.co.uk</a>
		Tool for the randomization for experimental planning	<a href="https://www.randomizer.org/">https://www.randomizer.org/</a>
		Tool to support animal researchers in planning their studies: SHADE	<a href="https://research.pasteur.fr/en/software/shade-shiny-application-for-designing-experiments/">https://research.pasteur.fr/en/software/shade-shiny-application-for-designing-experiments/</a>
		Creating a sharable scheme with the Experimental Design Assistant (EDA)	<a href="https://eda.nc3rs.org.uk/">https://eda.nc3rs.org.uk/</a>
		Preregistration	Preclinicaltrials.eu Animalstudyregistry.org OSF Registry List of journals offering registered reports
	Writing a research data management plan	Research data management checklist from the Harvard Medical School	<a href="https://datamanagement.hms.harvard.edu/plan-design">https://datamanagement.hms.harvard.edu/plan-design</a>
		Research data management toolkit from JISC	<a href="https://www.jisc.ac.uk/full-guide/rdm-toolkit">https://www.jisc.ac.uk/full-guide/rdm-toolkit</a>
		DMPTool	<a href="https://dmptool.org/">https://dmptool.org/</a>
		DMPonline	<a href="https://dmponline.dcc.ac.uk/">https://dmponline.dcc.ac.uk/</a>
		ARGOS	<a href="https://argos.openaire.eu">https://argos.openaire.eu</a>
Writing a non-technical summary	Alures: the Europe-wide NTS database	<a href="https://webgate.ec.europa.eu/envdataportal/web/resources/alures/submission/nts/list">https://webgate.ec.europa.eu/envdataportal/web/resources/alures/submission/nts/list</a>	
	Guide to writing non-technical summaries from UAR	<a href="https://concordatopenness.org.uk/guide-to-writing-non-technical-summaries">https://concordatopenness.org.uk/guide-to-writing-non-technical-summaries</a>	
CONDUCTING EXPERIMENTS	Using an electronic lab notebook	Table of ELNs with features	<a href="https://zenodo.org/record/4723753">https://zenodo.org/record/4723753</a>
	Sharing protocols	Protocols.io	<a href="https://www.protocols.io/">https://www.protocols.io/</a>
		Protocol exchange	<a href="https://protocolexchange.researchsquare.com/">https://protocolexchange.researchsquare.com/</a>
		Bio-protocol	<a href="https://bio-protocol.org/Default.aspx">https://bio-protocol.org/Default.aspx</a>
	Reporting critical incidents	Critical incident reporting CIRS-LAS	<a href="https://www.cirs-las.de/home">https://www.cirs-las.de/home</a>
	Sharing animals, organs and tissue	Online sharing platform for organs and tissues	<a href="http://www.animatch.eu">www.animatch.eu</a>

		Searchable online data base of mouse strain resources from multiple repositories	<a href="http://www.findmice.org/index">http://www.findmice.org/index</a>
ANALYSIS	Writing transparent code	Jupyter Notebooks	<a href="https://jupyter.org/">https://jupyter.org/</a>
		GitHub	<a href="https://github.com/">https://github.com/</a>
		GitLab	<a href="https://gitlab.com/">https://gitlab.com/</a>
		R	<a href="https://www.r-project.org/">https://www.r-project.org/</a>
Quarto		<a href="https://quarto.org/">https://quarto.org/</a>	
	Codeberg	<a href="https://codeberg.org/">https://codeberg.org/</a>	
	Choosing transparent data visualization	Paper with a list of free tools for more transparent data visualization	<a href="https://www.ahajournals.org/doi/epub/10.1161/CIRCULATIONAHA.118.037777">https://www.ahajournals.org/doi/epub/10.1161/CIRCULATIONAHA.118.037777</a>
		Tool to check graph accessibility for color blind persons	<a href="https://colororacle.org/index.html">https://colororacle.org/index.html</a>
PUBLICATION	Adopting the FAIR data principles	A guide on how to implement the FAIR data principles	<a href="https://www.go-fair.org/how-to-go-fair/">https://www.go-fair.org/how-to-go-fair/</a>
	Using field specific reporting guidelines	ARRIVE Guidelines	<a href="https://arriveguidelines.org/">https://arriveguidelines.org/</a>
		Tool from the EQUATOR Network to find specific reporting guidelines	<a href="https://www.equator-network.org/reporting-guidelines/">https://www.equator-network.org/reporting-guidelines/</a>
		MERIDIAN – collection of all reporting guidelines involving animals	<a href="https://meridian.cvm.iastate.edu/">https://meridian.cvm.iastate.edu/</a>
	Using persistent identifiers	Unmistakably identify publications: Digital Object Identifier (DOI)	<a href="https://www.doi.org/">https://www.doi.org/</a>
		Unmistakably identify authors: ORCID-ID	<a href="https://orcid.org/">https://orcid.org/</a>
		Unmistakably identify resources: Research Resource Identifiers (RRID)	<a href="https://scicrunch.org/resources">https://scicrunch.org/resources</a>
		Unmistakably identify mouse lines: The Mouse Genome Informatics (MGI)	<a href="http://www.informatics.jax.org/mgihome/nomen/index.shtml">http://www.informatics.jax.org/mgihome/nomen/index.shtml</a>
	Publishing preprints	Searchable database of preprint servers	<a href="https://asapbio.org/preprint-servers">https://asapbio.org/preprint-servers</a>
		BioRxiv	<a href="https://www.biorxiv.org/">https://www.biorxiv.org/</a>
MedRxiv		<a href="https://www.medrxiv.org/">https://www.medrxiv.org/</a>	
OSF preprints		<a href="https://osf.io/preprints/">https://osf.io/preprints/</a>	
Publishing negative results	fiddle- file drawer data liberation effort to identify a way of publication for null results	<a href="https://s-quest.bihealth.org/fiddle/">https://s-quest.bihealth.org/fiddle/</a>	
	Platform to publish short reports on negative or inconclusive results	<a href="https://www.fc3r.com/en/FC3R-short-notes.php">https://www.fc3r.com/en/FC3R-short-notes.php</a>	
Publishing open access	Journals listed by the Directory of Open Access Journals (DOAJ)	<a href="https://doaj.org/">https://doaj.org/</a>	
	Gold Open Access: List of open access biomedical journals	<a href="https://s-quest.bihealth.org/OAPositiveList/">https://s-quest.bihealth.org/OAPositiveList/</a>	
	Green Open Access: List of open Access repositories OpenDOAR	<a href="https://v2.sherpa.ac.uk/cgi/search/repository/advanced">https://v2.sherpa.ac.uk/cgi/search/repository/advanced</a>	
	Find open access policies of journals and publishers: Sherpa Romeo	<a href="https://v2.sherpa.ac.uk/romeo/search.html">https://v2.sherpa.ac.uk/romeo/search.html</a>	

Depositing code and data in public repositories	Finding a research field specific repository:	<a href="https://www.re3data.org/browse/by-subject/">https://www.re3data.org/browse/by-subject/</a>
		<a href="https://beta.fairsharing.org/">https://beta.fairsharing.org/</a>
	Open Science Framework	<a href="https://osf.io/">https://osf.io/</a>
	Figshare	<a href="https://figshare.com/">https://figshare.com/</a>
	Dryad	<a href="https://datadryad.org/stash">https://datadryad.org/stash</a>
	Zenodo	<a href="https://zenodo.org/">https://zenodo.org/</a>
Attributing creative commons licenses	Attributing the adequate creative commons license	<a href="https://creativecommons.org/choose/">https://creativecommons.org/choose/</a>
Giving author/ contributor information	CRediT (Contributor Roles Taxonomy)	<a href="https://credit.niso.org/">https://credit.niso.org/</a>
	Tenzing	<a href="http://www.tenzing.club">http://www.tenzing.club</a>
Publishing and connecting all outcomes	Open Science Framework	<a href="https://osf.io/">https://osf.io/</a>
	Octopus	<a href="https://www.octopus.ac/">https://www.octopus.ac/</a>
	R= ResearchEquals	<a href="https://www.researchequals.com/">https://www.researchequals.com/</a>
Communicating research	Mastodon	<a href="https://mastodon.social/">https://mastodon.social/</a>
	Twitter	<a href="https://twitter.com/">https://twitter.com/</a>
	ResearchGate	<a href="https://www.researchgate.net/">https://www.researchgate.net/</a>