



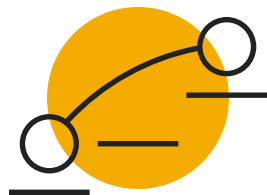
Supervisors' responsibilities

Sandra Bendiscioli, EMBO Senior Policy Officer



Your experience

- Have you had a good supervisor or mentor in your scientific career?
- What makes a supervisor good?
- Mentoring scheme at the Institute?



Supervisor or mentor?

- **Supervision** is often task-oriented (e.g., completion of a thesis or dissertation).
- **Mentoring** is more about caring for an individual's long-term development into a successful professional.

Including mentorship in supervision is ideal



A special responsibility

- **Quality** and **integrity** of the research in their lab.
- Help new researchers master the **ethical** dimensions of research.
-  **Ensure that the values of responsible research are passed on from one generation to the next.**
- If a lab member commits misconduct, there are repercussions on the **PI**.



Supervisor's responsibilities



With great power comes great responsibility!



Early career researchers

Researchers in the earliest phases of their career

- might **not know** that some practices are wrong.
- might **not be aware** of the consequences.

 **Early career researchers**
cannot be expected to just
know things! 

Consequences of bad supervision

In a review of **45 ORI cases (30%)** in which **a trainee** was found guilty of scientific misconduct 1990-2004:

- 90% involved fabrication, falsification or both
- 73% mentors did not look at **raw data**
- 62% mentors did not set **standards for recording data**
- 53% trainees reported **stress levels** as a relevant factor



Trainee's admission of misconduct



There was **much excitement** over this **surprising** and **promising** preliminary result, and I began to feel a self-imposed **pressure to keep the positive data** coming in. It was at this time that I began to **substitute buffer for the control** xxx. (...) Over time I lost more and more control and felt **like I could not stop falsifying experiments.**



Be open to mistakes

Be critical: “Too good to be true?”

Wright, Titus and Cornelison, 2008

What can a supervisor do to foster research integrity?



What can a supervisor do?

- Be available and approachable
- Review raw data
- **Communicate** expectations
- Provide training and guidance
- Know your research integrity officer
- Also, encourage constructive skepticism



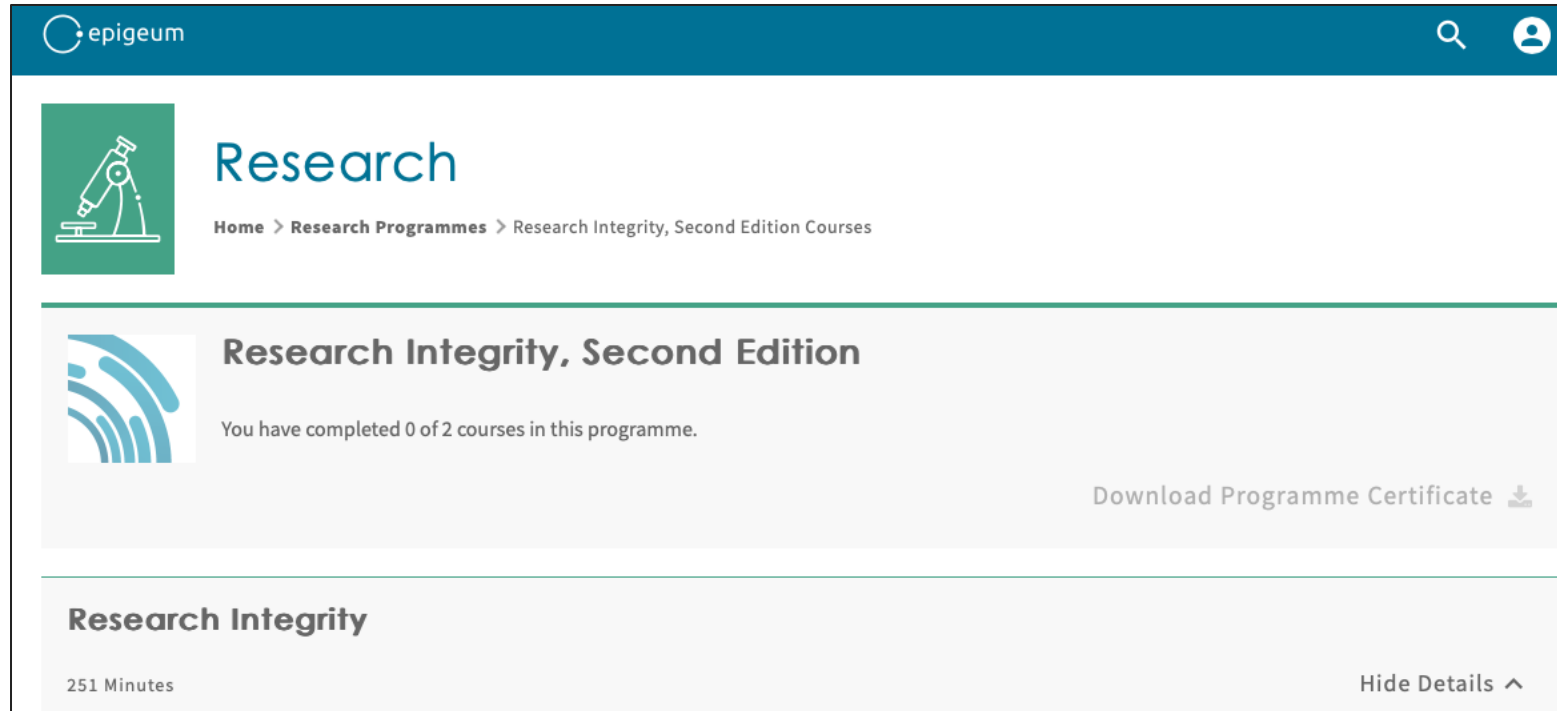
Provide CLEAR instructions about...

- Data collection, storage, and back up
- How to keep a lab notebook; use of e-lab notebooks?
- Safety rules
- Responsibilities of each team member
- Authorship and data ownership policies
- Preparing images for publication

You are a role model!



Discussions during group meetings



The screenshot shows the Epigeum website interface. At the top is a dark blue header with the 'epigeum' logo on the left, a search icon, and a user profile icon on the right. Below the header, the main content area has a green square icon with a microscope on the left and the word 'Research' in blue text. A breadcrumb trail reads 'Home > Research Programmes > Research Integrity, Second Edition Courses'. A light grey box contains a blue icon of concentric arcs, the title 'Research Integrity, Second Edition', and the text 'You have completed 0 of 2 courses in this programme.' To the right of this text is a button that says 'Download Programme Certificate' with a download icon. Below this box, another light grey box contains the title 'Research Integrity' and '251 Minutes' on the left, and a 'Hide Details' link with an upward arrow on the right.

epigeum

Research

Home > Research Programmes > Research Integrity, Second Edition Courses

Research Integrity, Second Edition

You have completed 0 of 2 courses in this programme.

Download Programme Certificate 

Research Integrity

251 Minutes

Hide Details 



POSSIBLE RED FLAGS OF RESEARCH MISCONDUCT



TIME

- Usable data are only generated when there is a pressing deadline
- Experiments are completed faster than usual

RESULTS

- Data are too good to be true
- Findings can't be replicated by others in the lab



LACK OF TRANSPARENCY

- Raw data can't be produced when requested
- Research materials and protocols are kept hidden
- Work is mostly done when no one else is around

If you suspect research misconduct



Some common problems in labs

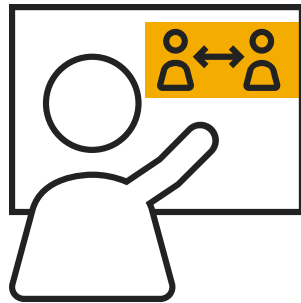
- Conflicting interests
- **Competition among lab members**
- **Lack of clarity on authorship policies**
- Poor **communication** about roles, goals and expectations
- Lack of oversight
- Lack of instructions
- Not regular checking of data
- *Other factors?*

“There is nothing wrong with being wrong”

Fiona Watt, EMBO Director

Common sources of errors

- Ignorance, arrogance, being in a hurry, feeling pressure to get the ‘right’ results



Mitigation

- Encourage researchers to be completely open about mistakes, flaws and inconsistencies in experimental design and data collection
- Foster collaboration, not competition; ensure individuals are not singled out for blame
- Blame-free reporting of incidents is key!

Research ethics in supervision

By: Line Wittek Published: 1/7/2025

What does research ethics mean for supervisors and students? Drawing on three specific cases, this article explores how research ethics guidelines and recent research can help clarify roles and responsibilities, relational dynamics and collective responsibility in the supervision process.

<https://www.forskningsetikk.no/en/resources/the-research-ethics-library/integrity-and-collegiality/research-ethics-in-supervision/>

How can *institutes* help PIs to be good supervisors?

- Organize **mentoring schemes** for young PIs
- **Acknowledge supervising activities** in PIs' performance assessment
- Provide extra support for PIs with **large labs**
- Provide **lab management training** (HHMI, EMBO Lab Leadership)
- Provide **funding for training** in statistics, data management **for lab members**
- **Research integrity training!**

EMBO Lab Leadership

Empowering Scientists. Advancing Science.

Training for researchers in leadership,
negotiation, research integrity, and
more...

embolableadership.org



**EMBO
lab leadership**



A background image showing three people in a professional setting. On the left, a man with glasses and a grey sweater is looking towards the center. In the middle, a woman with short dark hair and glasses, wearing a red top and a dark jacket, is looking towards the right. On the right, the back of a person with long brown hair wearing a green sweater is visible. They appear to be in a meeting or discussion in front of large windows.

Foundations in Scientific Integrity

How to publish reproducible results.

[Course description](#) →



Checklists for Supervisors

Help your students write and publish with academic and research integrity

Preparations for student work

- ☐ The student and I have agreed on regular individual or group meetings and we are following the schedule.
- ☐ The student and I have agreed to respect each other's working hours and avoid contacting each other on weekends and during vacation time.
- ☐ I have set up a suitable work schedule with the student and we have agreed on the timeline that he/she will follow.
- ☐ I am here to support my students and they know that I will do my best to help them; they also know how and when to reach me.
- ☐ Before data collection began, I checked whether my student's research needs ethical approval and helped her/him with the procedure.

Formulating research questions and the study design

- ☐ The student and I have discussed literature searches and how to find relevant research literature.
- ☐ The student and I have discussed what type of contribution their thesis will make to existing research in our field.
- ☐ The student and I have discussed and agreed on research questions, study design, the methodology of the thesis work, and how the research process will be monitored.
- ☐ The student and I have discussed and agreed on the scope of her/his research and what knowledge and/or skills are needed to implement the research design. If needed, I guided my student using relevant resources, training opportunities, and/or consultation.
- ☐ If needed, I advised the student to have an additional/external consultant for a planned research topic.

Feedback

- ☐ I have regular consultations with my students and I follow their ongoing research.
- ☐ I am always clear and respectful in my communication.
- ☐ I am always trying to give constructive feedback and appreciate the positive aspects.
- ☐ I checked/reviewed whether my supervised student's data have been collected, recorded, and managed properly.

Data processing and analysis

- ☐ The student and I have agreed on the methods of data processing and analysis that she/he will be using.
- ☐ I have talked with my student about factors that might influence objectivity in data analysis, such as various forms of bias or conflicts of interest.
- ☐ I have instructed the student that all potential limitations, biases, and conflicts of interest must be clearly declared in her/his work.
- ☐ The student and I have discussed the requirements for properly storing research data and have agreed on how and where the thesis data will be stored.
- ☐ I have talked to my student about the possibility of outliers and of why and how they should not be omitted from the dataset.
- ☐ I have talked to my student about the importance of anonymizing the research participants (if relevant).

Academic writing

- ☐ I have directed the student to examples of good academic writing in my discipline.
- ☐ I have encouraged the student to read appropriate literature on academic writing.
- ☐ I have regularly reviewed the thesis and made sure that the student is aware of how to cite properly.
- ☐ I have talked to my student about the importance of using one reference style consistently.
- ☐ I have advised my student to properly use reference management software.

Checklists for supervisors

Research Integrity at KU Leuven CHECKLIST for doctoral researchers and their supervisors



	Aspect of research integrity	Suggested action	Available resources/ web links
☐	Code of Conduct	Acknowledge the European Code of Conduct and comply with its provisions in all stages of the research.	- European Code of Conduct for Research Integrity
☐	Training	Attend the university wide lecture Research Integrity (compulsory for all new doctoral researchers) that will be offered several times during the academic year. Go through the online tool Mind the GAP.	- Registration for central lecture on Research Integrity for doctoral researchers - Online tool Mind the GAP : accessible via Toledo
☐	Authorship	Discuss authorship throughout the project, especially prior to work being prepared or submitted for publication. Use the authorship record form together with the KU Leuven authorship policy.	- KU Leuven policy on authorship - KU Leuven authorship record form
☐	Image processing	Discuss how to process laboratory and clinical images (if applicable to your research).	- KU Leuven guidelines for laboratory and clinical image processing
☐	Conflict of interest	Discuss how any potential conflicts associated with the research might be identified, declared and managed.	- Good practice on COI
☐	Plagiarism	Discuss what constitutes plagiarism and how to avoid unintentional plagiarism.	- KU Leuven definition of plagiarism - Turnitin detection software (+ instructions doctoral school)
☐	Ethics requirements	Discuss the KU Leuven procedures for ethics review if the research will use humans, animals, or may lead to dual use/ military use/ misuse.	- Overview of ethics committees at KU Leuven - Ethics self-assessment requirements across funders - Ethics guidance
☐	Requirements if processing personal data	Discuss under which conditions personal data may be collected and processed.	- Guidelines for collecting and processing personal data - GDPR e-learning : accessible via a community in Toledo
☐	Management of Research Data and Records	Discuss how to collect, store and use the research data and records generated by the research. Draw up a data management plan (DMP) for the collection, storage and management of data.	- KU Leuven Research Data Management (RDM) policy - KU Leuven guidance on RDM and writing a DMP
☐	Concerns or questions about research integrity	Approach a local research integrity confidant if you have a concern or question.	- Local confidants for questions and concerns about research integrity
☐	Complaints about research conduct	Look up what the KU Leuven procedures and structures are for dealing with complaints about the conduct of research.	- Reports about tentative misconduct are treated by the KU Leuven Commission on Research Integrity (CRI)

EMBO Press author checklist

EMBO Press Author Checklist

Corresponding Author Name:
Journal Submitted to:
Manuscript Number:

USEFUL LINKS FOR COMPLETING THIS FORM

[The EMBO Journal - Author Guidelines](#)
[EMBO Reports - Author Guidelines](#)
[Molecular Systems Biology - Author Guidelines](#)
[EMBO Molecular Medicine - Author Guidelines](#)

Reporting Checklist for Life Science Articles (updated January 2022)

This checklist is adapted from Materials Design Analysis Reporting (MDAR) Checklist for Authors. MDAR establishes a minimum set of requirements in transparent reporting in the life sciences (see Statement of Task: [10.31222/osf.io/bsmdx](#)). Please follow the journal's guidelines in preparing your manuscript.

Please note that a copy of this checklist will be published alongside your article.

Abridged guidelines for figures

1. Data

The data shown in figures should satisfy the following conditions:

- ☒ the data were obtained and processed according to the field's best practice and are presented to reflect the results of the experiments in an accurate and unbiased manner.
- ☒ ideally, figure panels should include only measurements that are directly comparable to each other and obtained with the same assay.
- ☒ plots include clearly labeled error bars for independent experiments and sample sizes. Unless justified, error bars should not be shown for technical replicates.
- ☒ if $n < 5$, the individual data points from each experiment should be plotted. Any statistical test employed should be justified.
- ☒ Source Data should be included to report the data underlying figures according to the guidelines set out in the authorship guidelines on Data Presentation.

2. Captions

Each figure caption should contain the following information, for each panel where they are relevant:

- ☒ a specification of the experimental system investigated (eg cell line, species name).
- ☒ the assay(s) and method(s) used to carry out the reported observations and measurements.
- ☒ an explicit mention of the biological and chemical entity(ies) that are being measured.
- ☒ an explicit mention of the biological and chemical entity(ies) that are altered/changed/perturbed in a controlled manner.
- ☒ the exact sample size (n) for each experimental group/condition, given as a number, not a range;
- ☒ a description of the sample collection allowing the reader to understand whether the samples represent technical or biological replicates (including how many animals, litters, cultures, etc.).
- ☒ a statement of how many times the experiment shown was independently replicated in the laboratory.
- ☒ definitions of statistical methods and measures:
 - common tests, such as t-test (please specify whether paired vs. unpaired), simple χ^2 tests, Wilcoxon and Mann-Whitney tests, can be unambiguously identified by name only, but more complex techniques should be described in the methods section;
 - are tests one-sided or two-sided?
 - are there adjustments for multiple comparisons?
 - exact statistical test results, e.g., P values = x but not P values < x ;
 - definition of 'center values' as median or average;
 - definition of error bars as s.d. or s.e.m.

Please complete ALL of the questions below.
Select "Not Applicable" only when the requested information is not relevant for your study.

Materials

Newly Created Materials	Information included in the manuscript?	In which section is the information available? (Reagents and Tools Table, Materials and Methods, Figures, Data Availability Section)
New materials and reagents need to be available; do any restrictions apply?	Select response	
Antibodies	Information included in the manuscript?	In which section is the information available? (Reagents and Tools Table, Materials and Methods, Figures, Data Availability Section)
For antibodies provide the following information: - Commercial antibodies: RRID (if possible) or supplier name, catalogue number and/or clone number - Non-commercial: RRID or citation	Select response	
DNA and RNA sequences	Information included in the manuscript?	In which section is the information available? (Reagents and Tools Table, Materials and Methods, Figures, Data Availability Section)
Short novel DNA or RNA including primers, probes: provide the sequences.	Select response	
Cell materials	Information included in the manuscript?	In which section is the information available? (Reagents and Tools Table, Materials and Methods, Figures, Data Availability Section)
Cell lines: Provide species information, strain. Provide accession number in repository OR supplier name, catalogue number, clone number, and/OR RRID.	Select response	
Primary cultures: Provide species, strain, sex of origin, genetic modification status. Report if the cell lines were recently authenticated (e.g., by STR profiling) and tested for mycoplasma contamination.	Select response	
	Select response	
Experimental animals	Information included in the manuscript?	In which section is the information available? (Reagents and Tools Table, Materials and Methods, Figures, Data Availability Section)
Laboratory animals or Model organisms: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository OR supplier name, catalogue number, clone number, OR RRID.	Select response	
Animal observed in or captured from the field: Provide species, sex, and age where possible.	Select response	
Please detail housing and husbandry conditions.	Select response	
Plants and microbes	Information included in the manuscript?	In which section is the information available? (Reagents and Tools Table, Materials and Methods, Figures, Data Availability Section)
Plants: provide species and strain, ecotype and cultivar where relevant,		

Example of a completed Reagents and Tools table, with instruction prompts included.

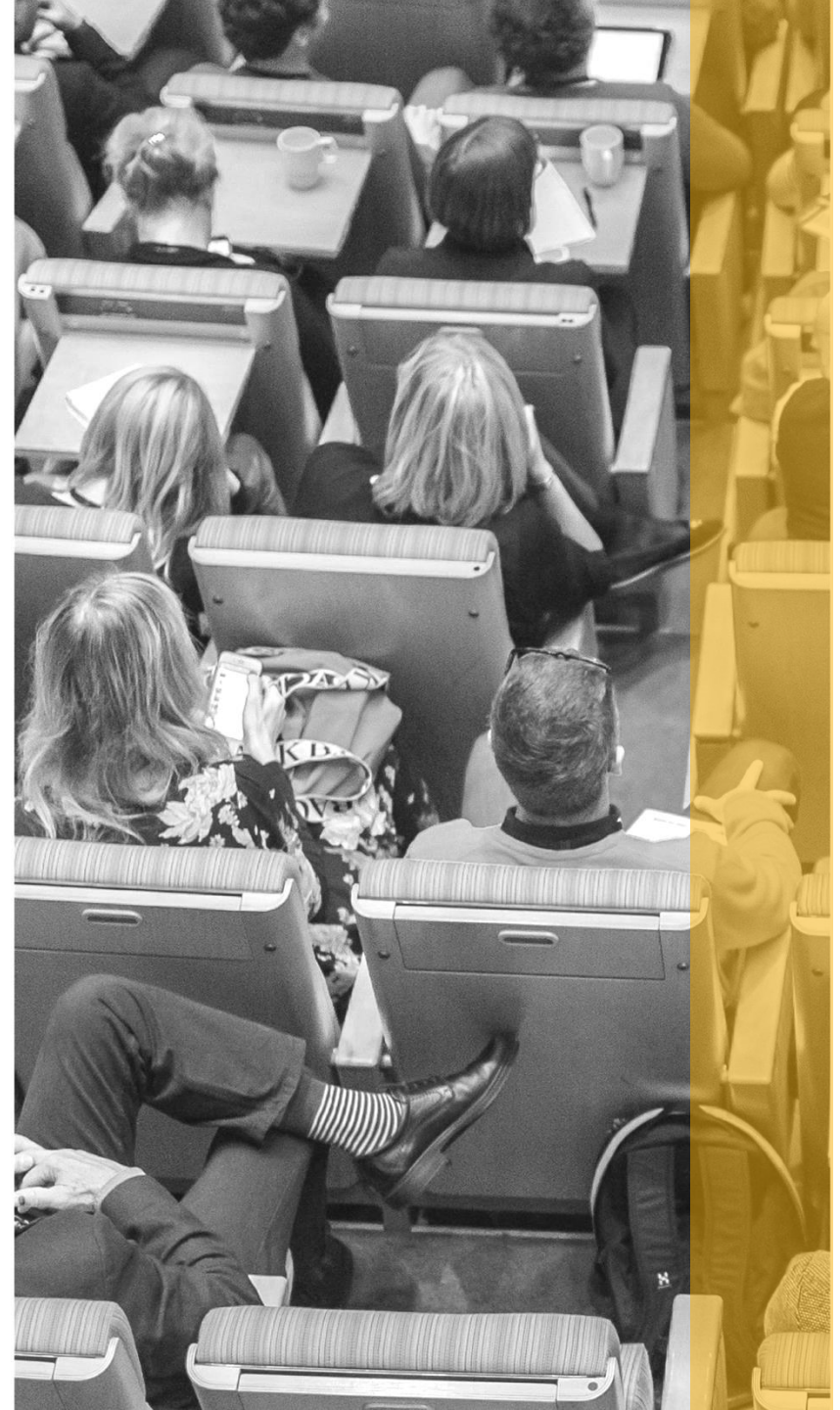
Reagent/Resource	Reference or Source	Identifier or Catalog Number
	Source (public): Stock center, company, other labs Reference: list relevant study (e.g. Smith et al, 2017) if referring to previously published work: use "this study" if new. If neither applies: briefly explain.	Provide catalog numbers, stock numbers, database IDs or accession numbers, RRIDs or other relevant identifiers.
Experimental Models List cell lines, model organism strains, patient samples, isolated cell types etc. Indicate the species when appropriate. example: C57BL/6J (<i>M. musculus</i>)	Jackson Lab	B6.129P2Gpr37tm1Dgen/J
Recombinant DNA Indicate species for genes and proteins when appropriate example: pCMV-BE3	Addgene	Cat #73021
Antibodies Include the name of the antibody, the company (or lab) who supplied the antibody, the catalogue or clone number, the host species in which the antibody was raised and mention whether the antibody is monoclonal or polyclonal. Please indicate the concentrations used for different experimental procedures. example: Rabbit anti-H3	Abcam	Cat#ab1791
Oligonucleotides and other sequence-based reagents For long lists of oligos or other sequences please refer to the relevant Table(s) or EV Table(s) example: PCR primers	This study	Table EV3
Chemicals, Enzymes and other reagents (e.g. drugs, peptides, recombinant proteins, dyes etc.) example: T7 Endonuclease I	New England Biolabs	Cat # M0302S
Software Include version where applicable example: Cytoscape v3.4.0	http://www.cytoscape.org Shannon et al, 2003	
Other (Kits, instrumentation, laboratory equipment, lab ware etc. that are critical for the experimental procedure and do not fit in any of the above categories) example: Illumina NextSeq 500	Illumina	

Ask for support

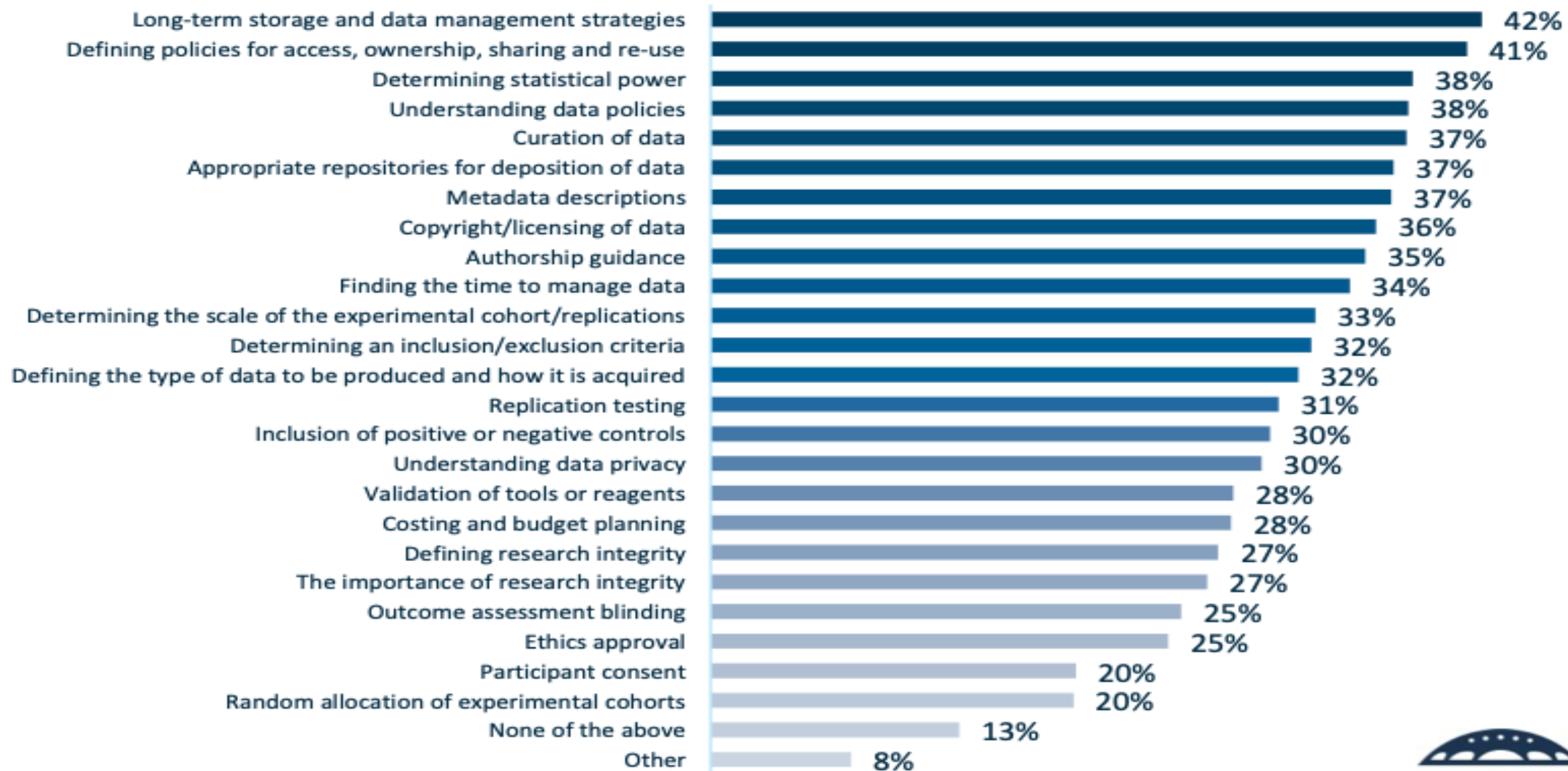
Request additional training for, e.g.:

- Statistics
- Data management
- Image preparation for publishing
- Lab safety
- Lab management skills
- Use of animals in research
- Protection of human subject participants
- And more area-specific skills

 ***Do you have access to such training or support at your institute?***



Q. Which, if any, of the following topics regarding research integrity do you feel you would benefit from further training in? (n=821)



Thank you!

policy@embo.org

