Dr. Malika Ihle
Scientific Coordinator

OSC

LMU Open Science Center

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Psychology (**Managing Director**)

Dr. Sabine Hoffmann
Statistics

Prof. Nikolaus Plesnila
Neurosciences (**Speaker**)

Dr. Tobias Straub
Biomedical sciences

Prof. Alexander Wuttke
Politics

15 Institutional Members

Faculties and Departments

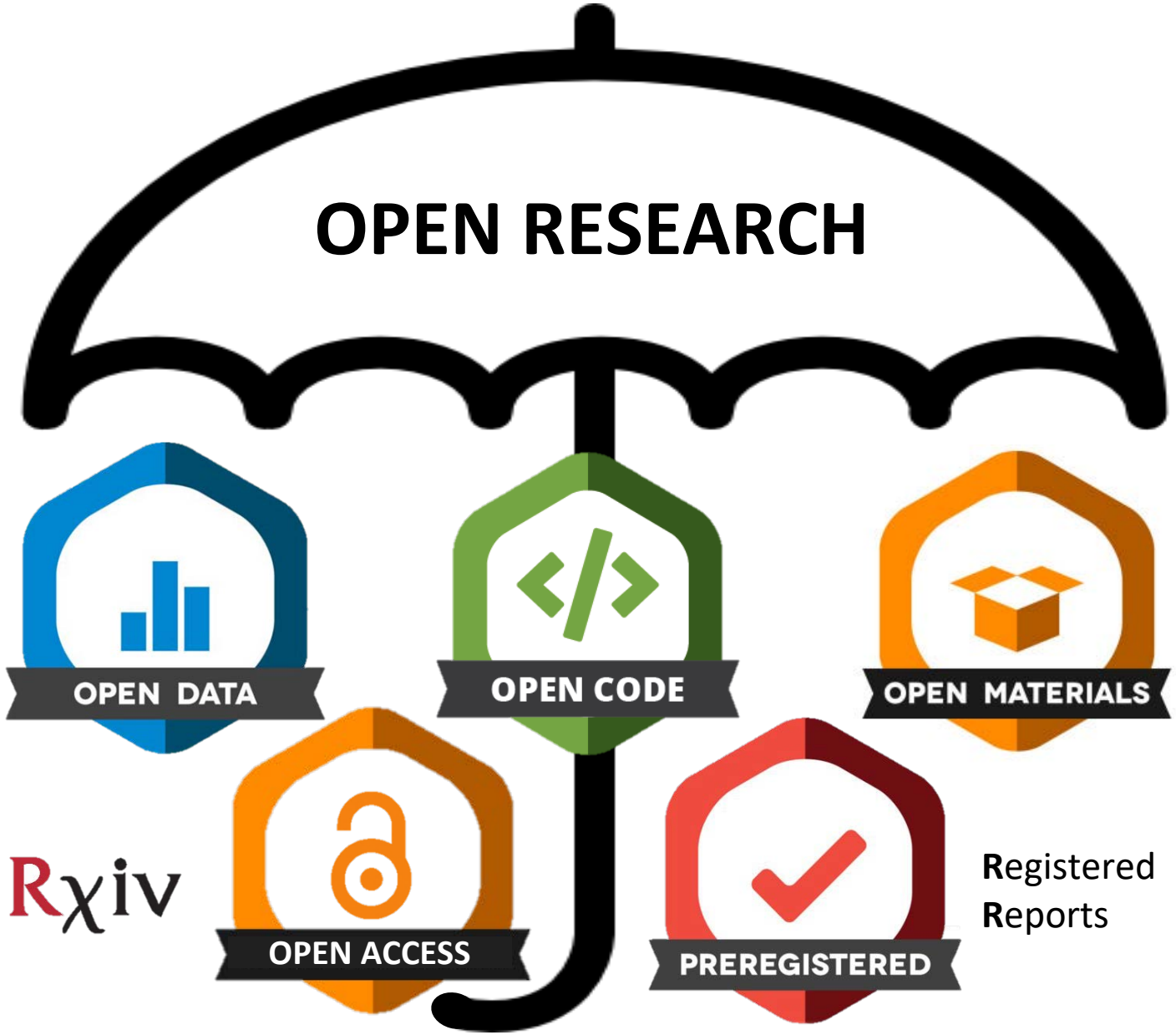
- Department Psychology
- Department Statistics
- Faculty of Biology
- Faculty of Business Admin.
- Faculty of Medicine
- Faculty of Psych. and Edu. Science
- Faculty of Veterinary Medicine

Centers, Clusters, Service units

- Cluster of Excellence – SyNergy
- Cluster of Excellence – ORIGINS
- Biomedical Center Munich
- Digital Humanities Center
- Leibniz Supercomputing Center
- LMU-ifo Economics & Business Data Center
- Munich Center for Neurosciences
- University Library

Individual Members

- **100+ Members (Profs., Drs.) from 14 faculties**
- 20+ Fellows (predoc) leading grassroots initiatives
- 500+ mailing list subscribers


OPEN RESEARCH
OPEN DATA
OPEN CODE
OPEN MATERIALS
OPEN ACCESS
PREREGISTERED
Rxiv
Registered
Reports

Areas of activities

1. Peer-to-peer training

e.g. yearly week-long summer schools and regular workshops (~2250 attendees / year)

2. Community building

e.g. journal club, Open Science Initiative in… Medicine, Statistics

3. Consultation and support

e.g. Clusters of Excellence applicants, LMU researchers wanting to implement open research practices

4. Meta-research

e.g. DFG-funded Priority Program META-REP, EU-funded doctoral network SHARE CDT

5. Liaison with stakeholders

e.g. LMU Research Strategy Unit, German Reproducibility Network, Coalition for Advancing Research Assessment

1. BMC Open Science Survey Results
2. Identification of possible areas of action to implement at BMC
3. OSC’s programs and possible support to BMC

BMC Open Science Survey Results

Survey background:

*Based on: Malika Ihle, Dorothy Bishop, and Laura Fortunato. 2021. "**Open Research at Oxford Survey**." https://doi.org/10.5281/zenodo.4433688.*

*Administered university-wide at the University of Oxford in 2021 and **2022**, N = 1307; led to a **500K** investment into open research.*

*Used a subset of BMC-related fields (i.e. Medical Division and Life Science Division) for some comparison of results, **N = 909***

Open research practices

- **Preprint/Postprint** scholarly work that is deposited in a repository by the authors with unrestricted access either ahead of peer review (preprint) or after acceptance (postprint).
- **Research Data Management plan** A written document describing the data to be collected or used during a research project, and how they will be managed, analysed, stored, shared, and preserved.
- **FAIR data sharing** data sharing is FAIR when the data is:
  Findable: metadata are deposited in a repository with a DOI;
  Accessible: the data is either open, or accessible upon some authentication process, or closed, but with open metadata;
  Interoperable: the data is described with a standard terminology (so the dataset can be merged with other ones) and saved in a stable file format;
  Reusable: the data is richly documented and accompanied by a data usage licence.
- **Code sharing** Sharing of custom software developed by researchers.
- **Materials sharing** Sharing of any element of the research process that can be coded digitally or shared physically.
- **Preregistration** The practice by which researchers specify elements of the planned work in a dedicated registry before observing the outcomes of the work. e.g. in quantitative research: a 'pre-analysis plan'.
- **Registered report** A journal article format in which research question(s) and methodology are peer-reviewed before the work is conducted. When given in principle acceptance, the article will get published if the authors follow through with the accepted plan (with justified deviations).

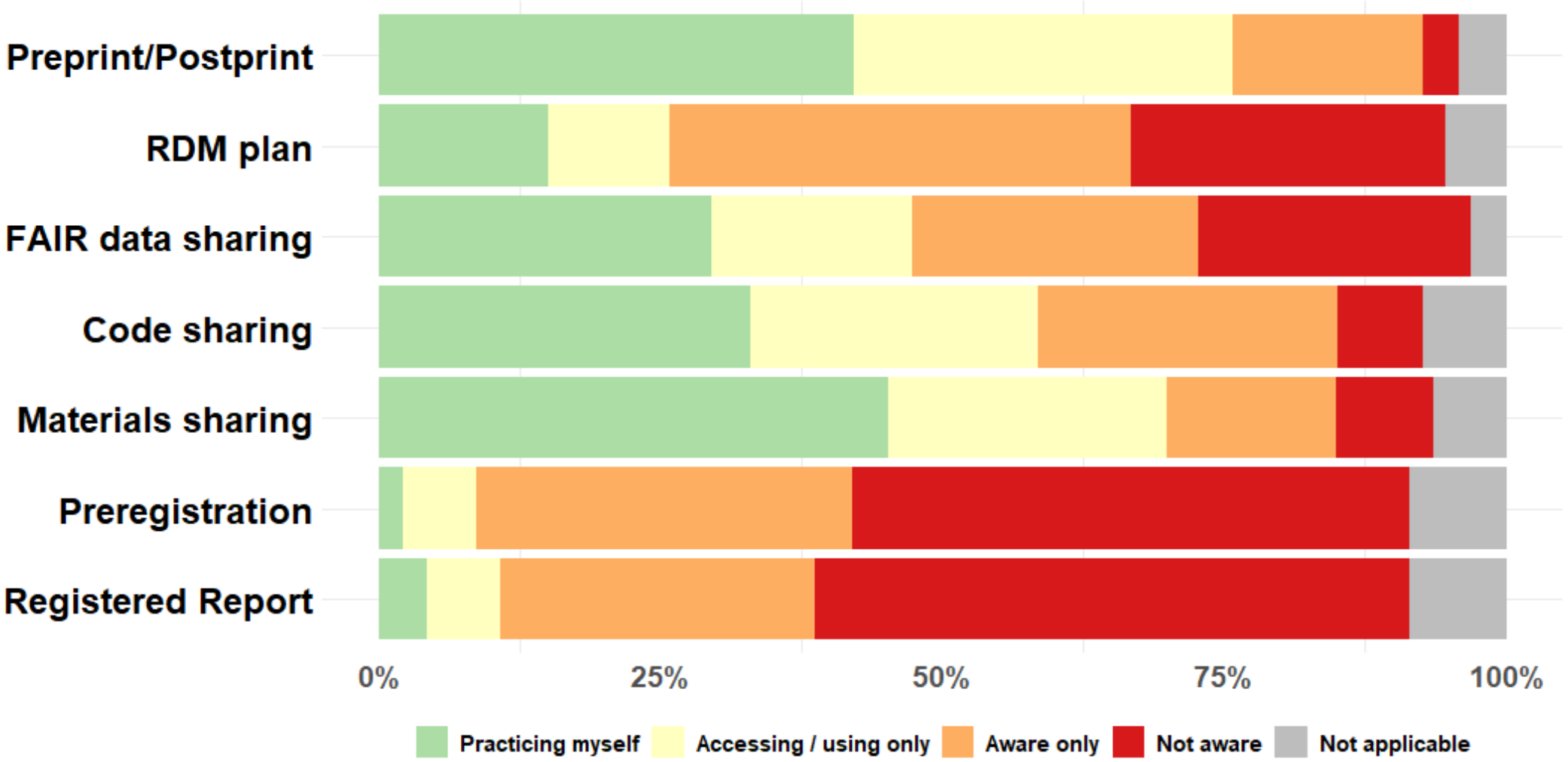
How many BMC researchers participated in the survey?

Flow of survey

#	Question	n	PIs	Postdocs	Support staff	PhD students	MSc students
1	Role	**136**	26	37	**17**	**49**	4
2	Awareness	**95**	24	30	**7**	**32**	2
3	Effect	95	24	30	7	32	2
4	Barriers	88	24	27	6	29	2
5	Downsides	87	23	27	6	29	2
6	Current recruitment criteria	86	24	28	5	27	2
7	Desired recruitment criteria	87	24	28	6	27	2
8	Training	87	24	28	6	27	2
9	Support	**86**	24	28	5	27	2

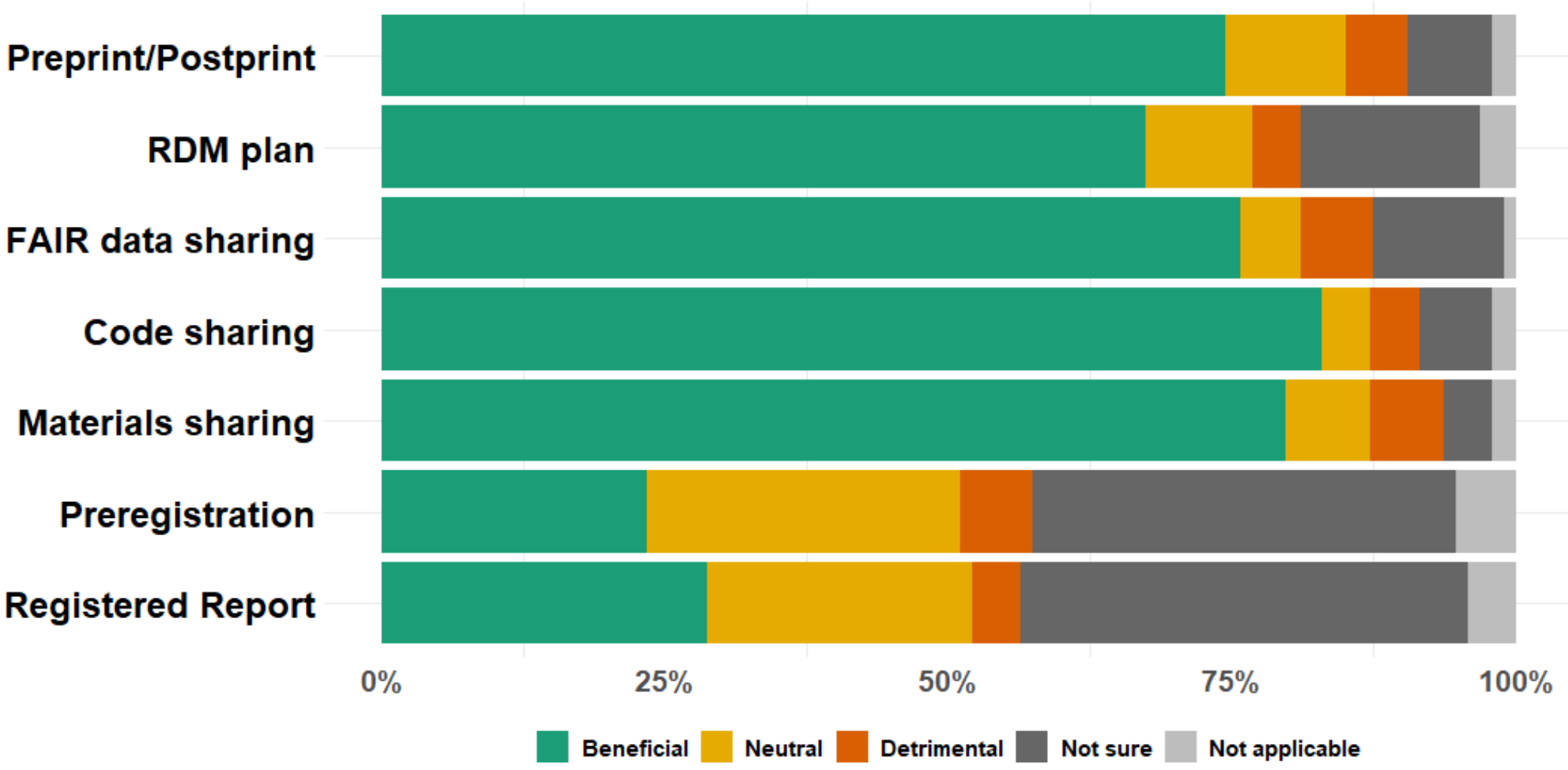
main difference with Oxford: drop of 35% of PhD students and 60% of research support staff for the first open science question vs 10% for any career stage at Oxford → LMU ECRs and support staff not empowered?

Which of the following research practices are you aware of, and which do you have experience with? (N=95)



main differences with Oxford: 12% practicing preregistration vs 2% at BMC ; 23% practicing material sharing vs 45% BMC

What would be the overall effect of widespread adoption of the following practices in your field of research? (N=95)



main differences with Oxford: everything half as detrimental, increasing share for beneficial

Changing research culture

Adapted from Brian Nosek, Centre for Open Science

Changing research culture

Adapted from Brian Nosek, Centre for Open Science

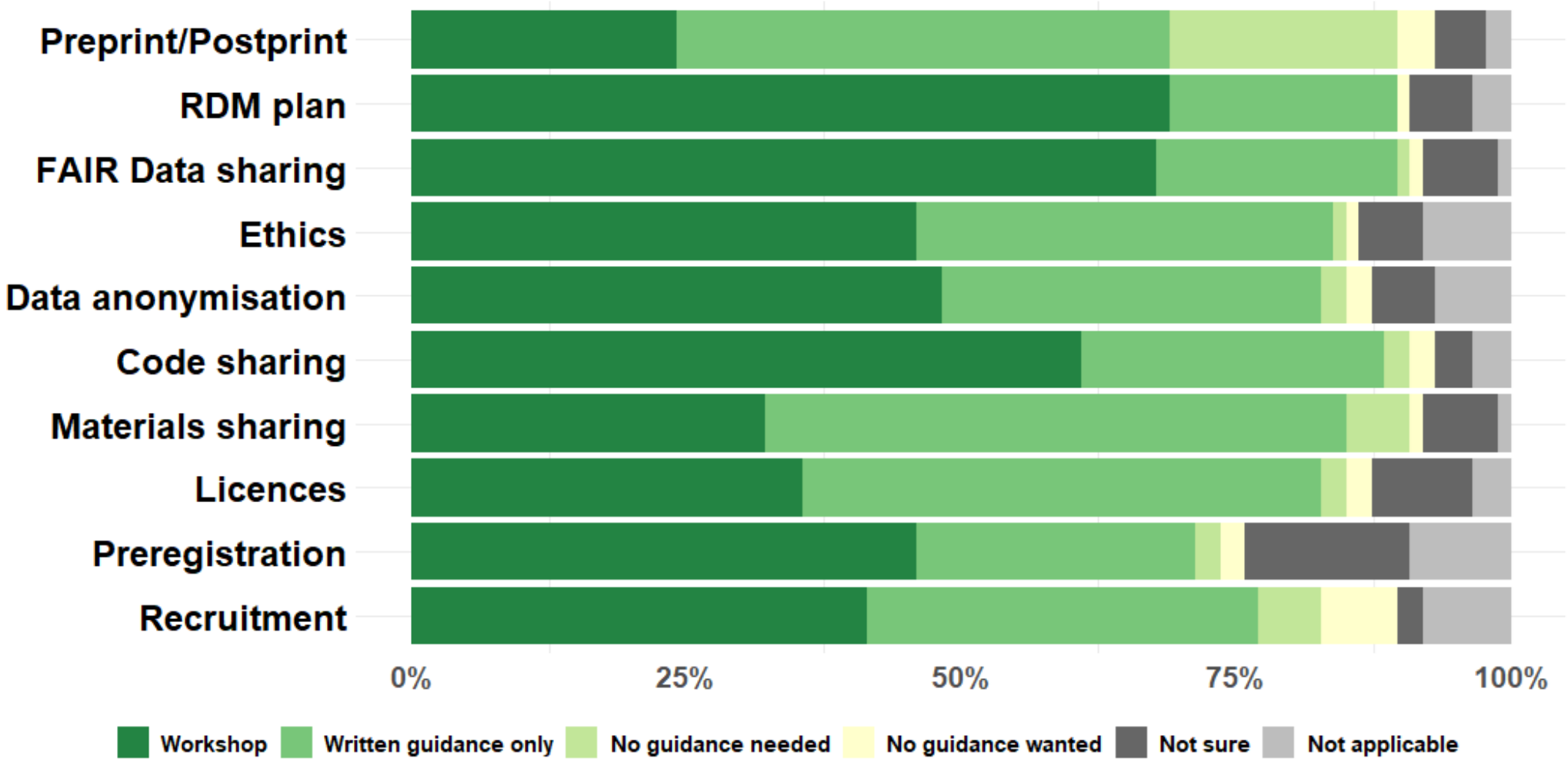
Lack of infrastructure?

- **RDM Plan**. Note that the LMU Library provide the tool RDMO with many templates to comply to many funders' requirements.
- **FAIR data sharing**. Indeed missing discipline-specific repository, missing metadata standards - but discipline-agnostic repositories. However, some raw data too big; only processed data can be shared.
- **preregistration**. Note that discipline agnostic preregistration platform exists e.g. the Open Science Framework (OSF).
- **registered report**. Note that the list of journals providing or requesting this format is maintained at www.cos.io/rr in the tab 'participatory journals'.

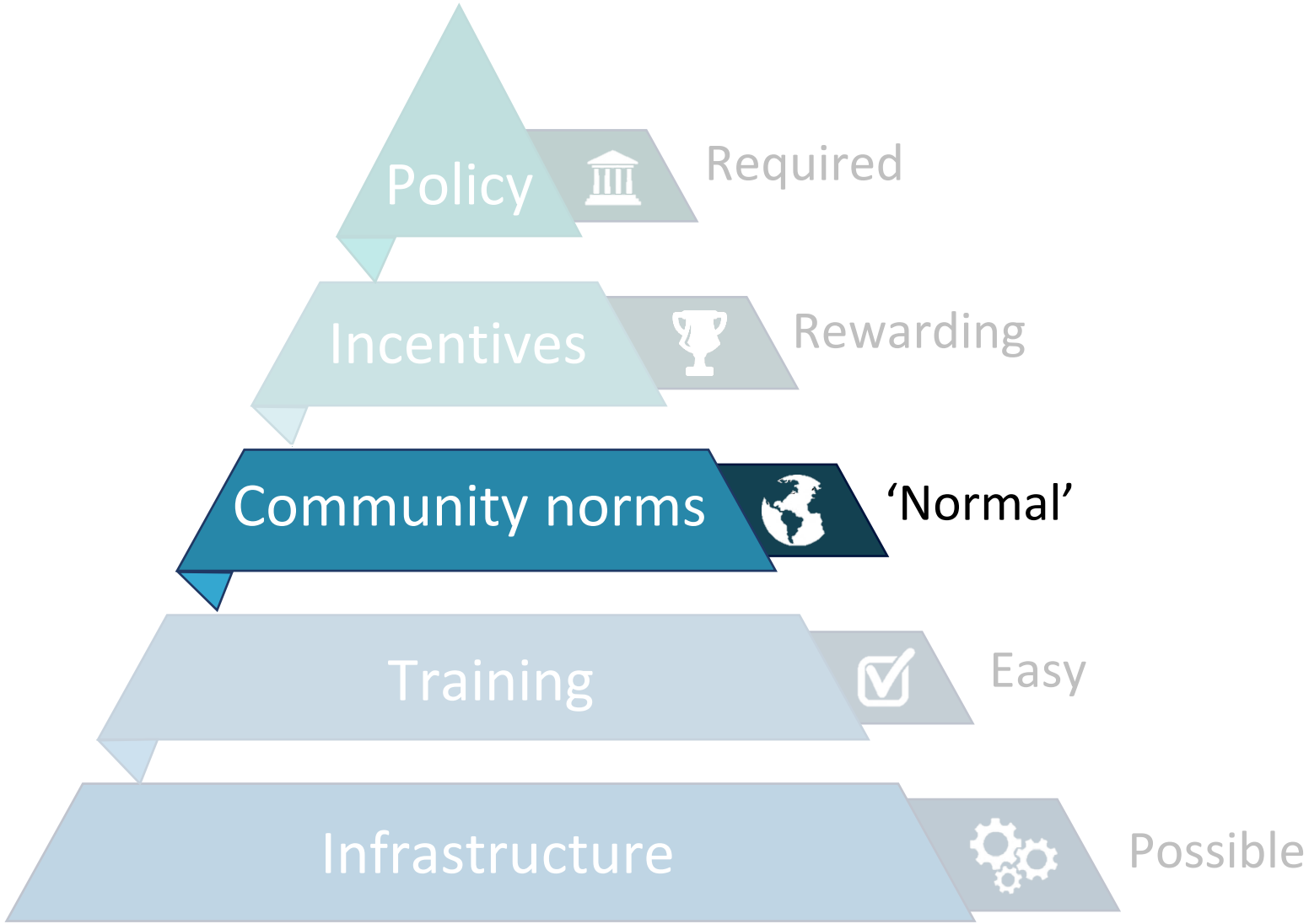
Changing research culture

Adapted from Brian Nosek, Centre for Open Science

For which of the following topics do you think more guidance is necessary? (N=87)

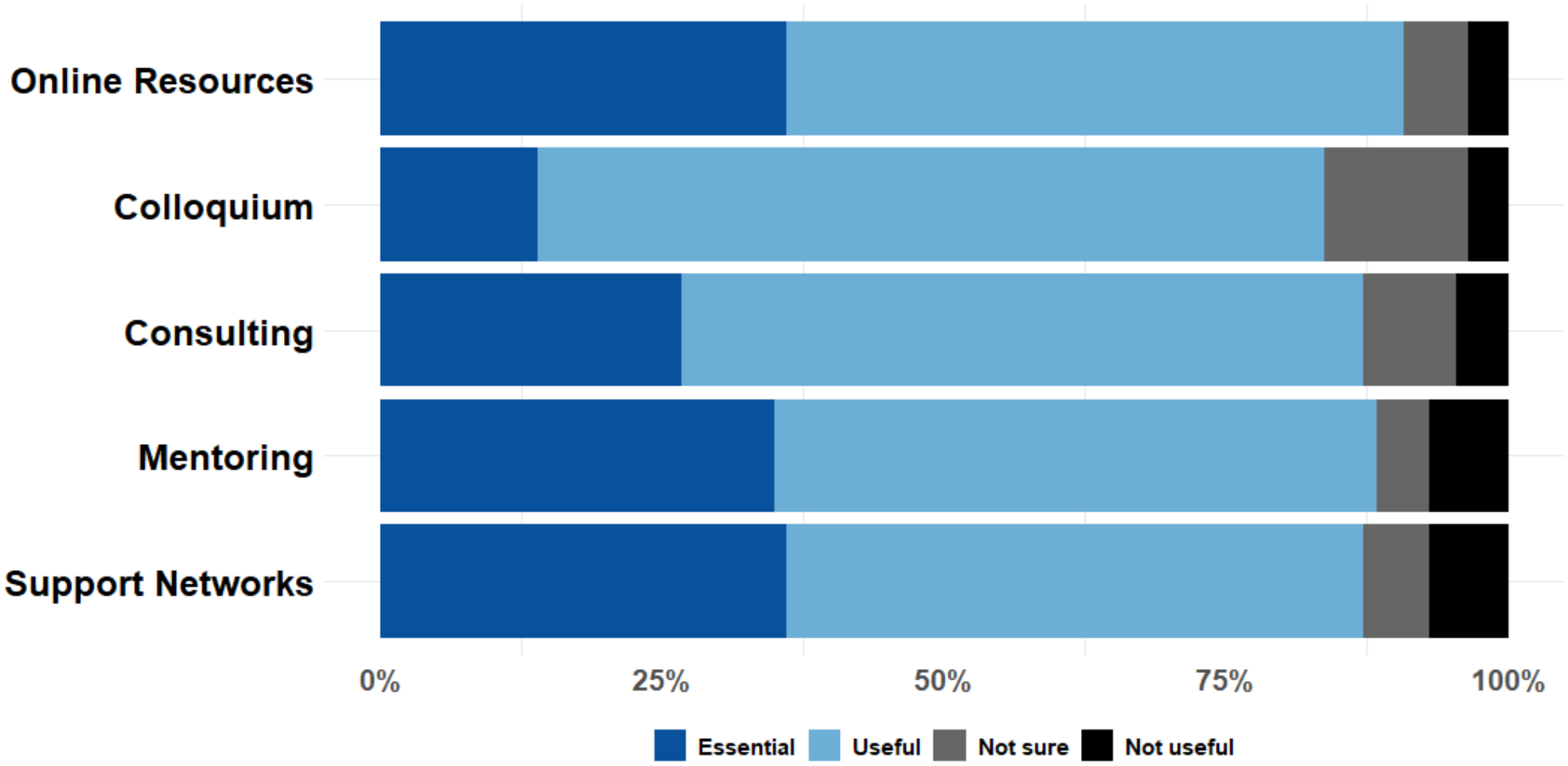


Changing research culture



Adapted from Brian Nosek, Centre for Open Science

What additional support would you find useful to implement open research practices? (N=86)



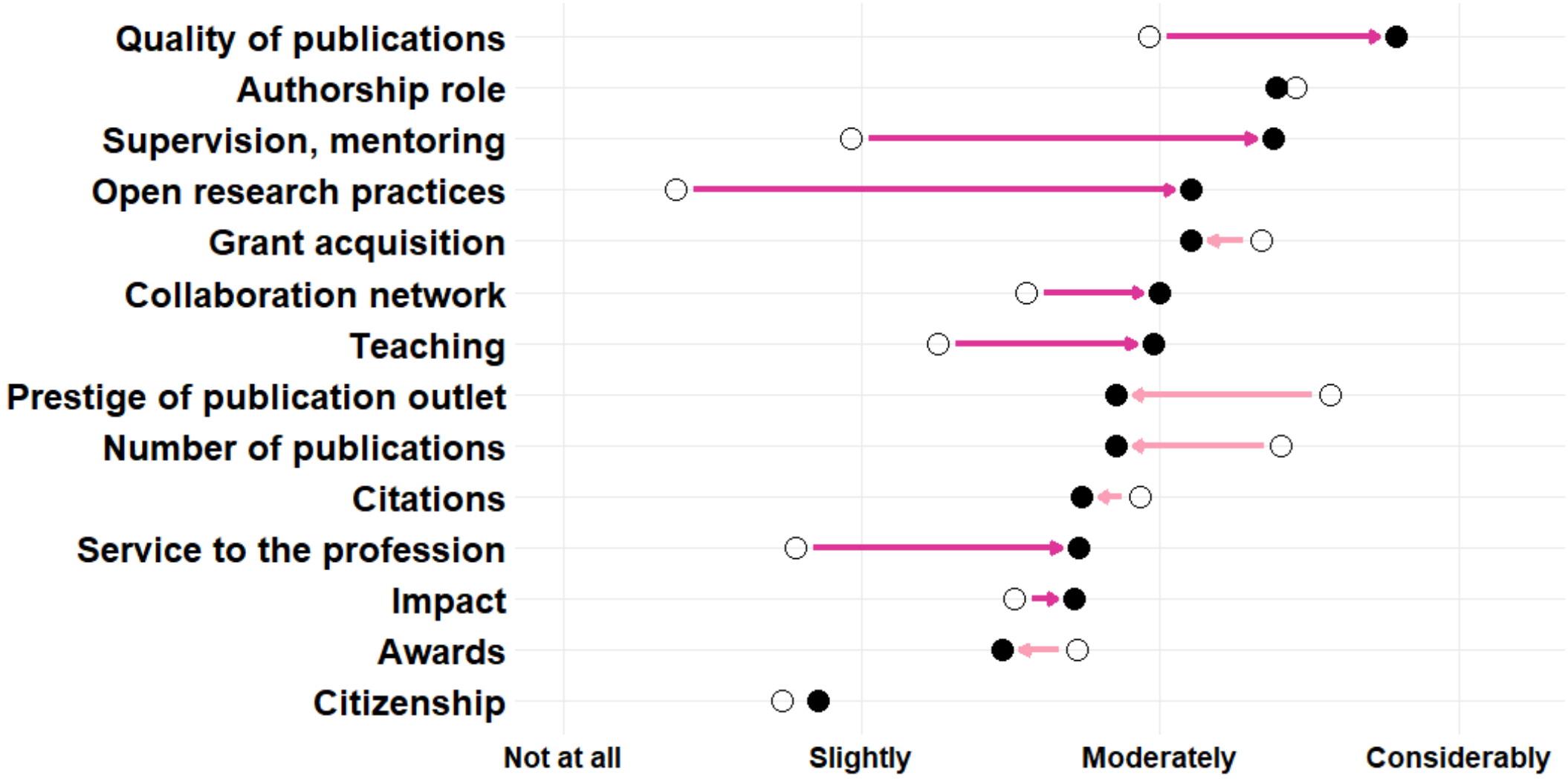
Changing research culture

Adapted from Brian Nosek, Centre for Open Science

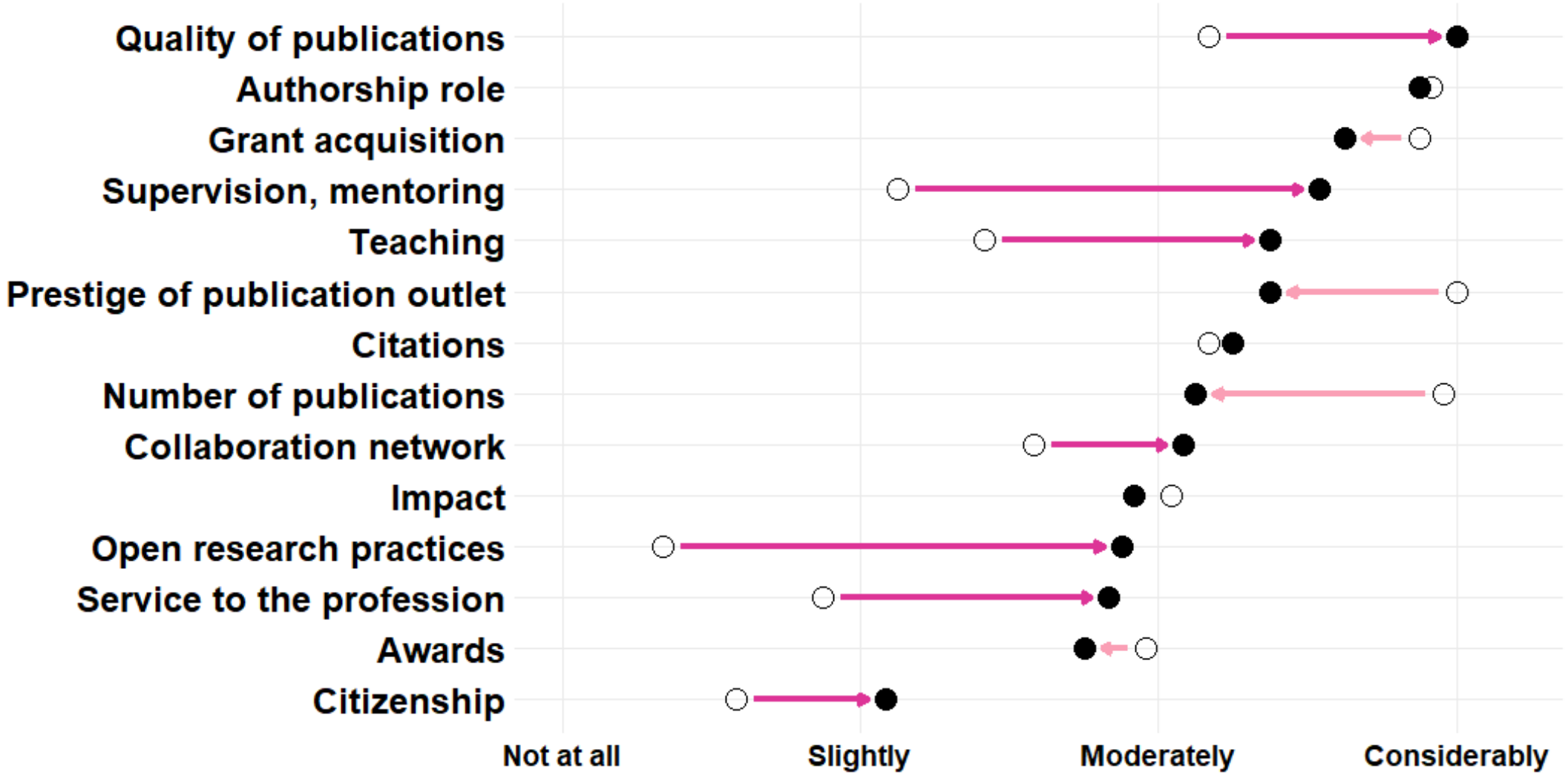
Existing incentives and policies

- would often be an investment for your future self (increase efficiency, reuse, collaboration), but short-term contracts limit that benefit
- LMU Guidelines for Safeguarding Good Scientific Practice include FAIR data sharing and reproducible workflows
- DFG and ERC calls include these, RDM plans, and sometimes additional requirements
- Coalition for Advancing Research Assessment (CoARA) - of which DFG is a signatory and the head of the German chapter, will implement new research assessment criteria away from JIF and h-index and in favor of qualitative evaluation, including basic measures of rigor which can be evidenced by a transparent workflow.

To what extent are (○) vs should (●) the following criteria be used for recruitment? (N=87)



To what extent are (○) vs should (●) the following criteria be used for recruitment? (N=24 PIs)



some differences with Oxford (n=56): current JIF and Nb Pub start lower and end up even lower than at the BMC. Pub quality start higher and end up as high as at the BMC. Impact rates much higher at Oxford.

In your view, are there any downsides to widespread adoption of the following practices in your field of research? (N=87)

6% found downsides

A fear of **scooping** was mentioned for **preprint/postprint**, **preregistration** and **registered report**.

But note that

- **preprinting/postprinting** can occur right before or after the acceptance of a manuscript. It can be just a way to ensure open access - and do so for free instead of paying APCs. See https://openpolicyfinder.jisc.ac.uk/
- **preregistrations** can be embargoed up to 4 years on the Open Science Framework.
- **registered reports** are given in principle acceptance after review of the proposal.

In your view, are there any downsides to widespread adoption of the following practices in your field of research? (N=87)

Additional concerns listed were: (skipped today)

- spread of non peer-reviewed work with **preprint/postprint**
  –> Debate around current peer-review system being an appropriate safeguard

- impediment of flexibility in protocols and analyses with **preregistration** and **registered reports** and the lack of clarity around exploratory analyses with these practices.
  –> to be used as documentation to move your study along the exploratory-confirmatory continuum. Indeed, more easily written for experiments to prevent confirmation and hindsight biases.

- delay before starting experiment and more work for reviewers for **registered reports**
  –> see Peer Community in Registered Report and partner journals

Possible avenues for action based on the views you shared

1. **Provide adequate training**

- FAIR data sharing
- reproducible workflows

2. **Provide adequate support**

- online self-learning resources
- research group consultation
- mentoring program or other community building activities

2. **Review research assessment criteria for recruitment**

- Research Quality Evaluation (RESQUE) - threshold for methodological rigor, qualitative assessment for top candidates
- Officer to redirect discussion when JIF or number of papers are mentioned in hiring committees
- Narrative CV, Open Science statement, etc.

Open Science Summer School (OSSS)

CEST	Monday 15.09.2025	Tuesday 16.09.2025	Wednesday 17.09.2025	Thursday 18.09.2025	Friday 19.09.2025
09:00	**Welcome & Logistics**	**Science as amateur software development** Richard McElreath (v)	**Data sharing** Felix Schönbrodt	**Clean code** Jonas Hagenberg	**Trainees' projects** OSC team
	Replicability crisis Felix Schönbrodt	**Open access, preprints, postprints** Felix Schönbrodt	**FAIR research data management** Reema Gupta	**Quarto** Pat Callahan	**Q&A**
	Credible research Malika Ihle				
lunch					
	Hybrid networking	**Preregistration** Malika Ihle	**Research Data Management (RDM) plans** Laura Meier	**renv & code publishing** Pat Callahan	**What's next?** Sarah von Grebmer
	R Pat Callahan	**Simulations in R** Malika Ihle	**Version control in RStudio** Malika Ihle	**Assessing research replicability** Tim Errington (v)	**Pedagogy** Sarah von Grebmer
17:30				**Dinner**	

public lecture
(v) : presenter is online

workshop
for selected applicants

socials
for school participants

Open HyFaST

Open Hybrid-Facilitated Self-paced Tutorials

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For an efficient and reproducible workflow !

Programming
For reproducible data wrangling and analysis

Version control
Track changes in your code without saving multiple copies of a file

Literate programming
Alternate natural language with code and write reproducible manuscript

quarto

References management
Manage your bibliography automatically and reproducibly

Zotero

Reproducible computational environment
Keep track of your software and packages version

Software publishing
Document, licence, wrap, and publish your code along your manuscript

zenodo

https://github.com/lmu-osc

Open HyFaST

Open Hybrid-Facilitated Self-paced Tutorials

For an efficient and reproducible workflow !

Simulation for preregistration

Simulation in R for power analyses

Data anonymity
GDPR, k-anonymity

Synthetic data
An alternative to sharing real data when sensitive

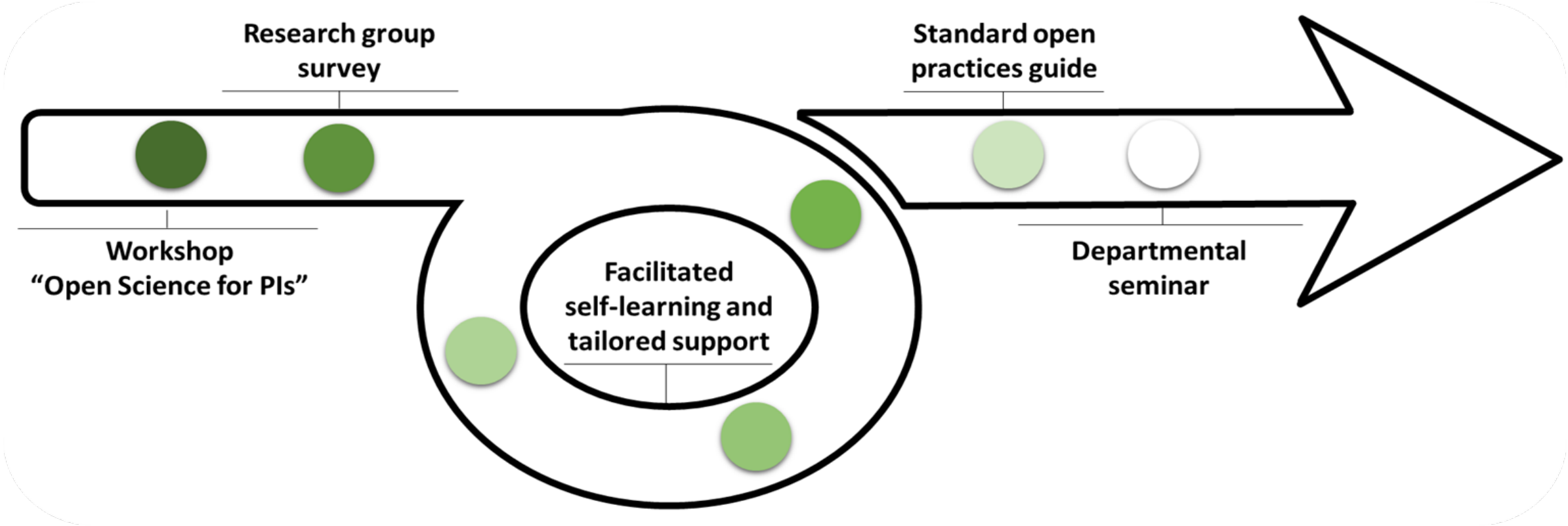
FAIR data sharing in neurosciences

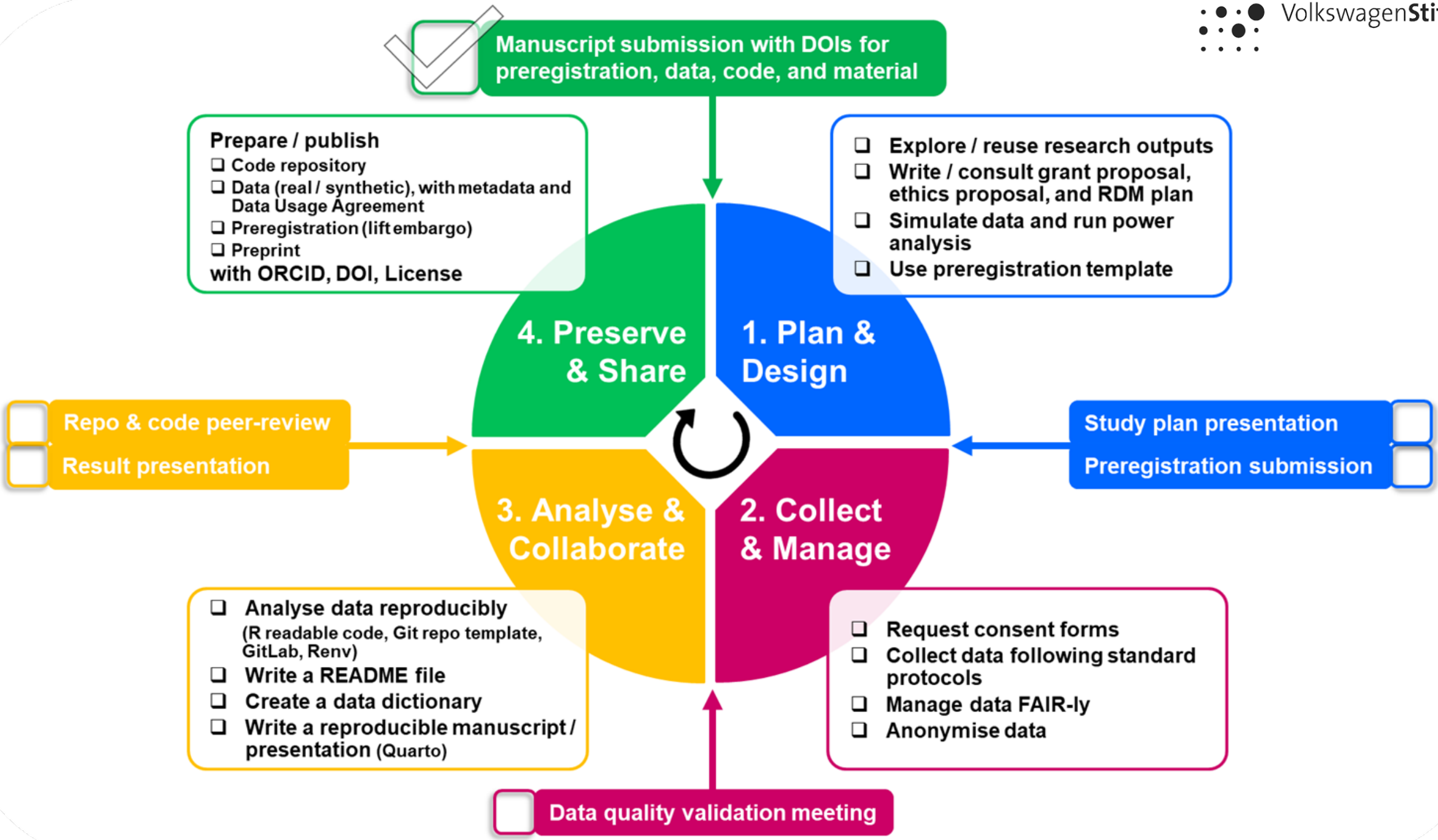
FAIR data sharing in …

https://github.com/lmu-osc

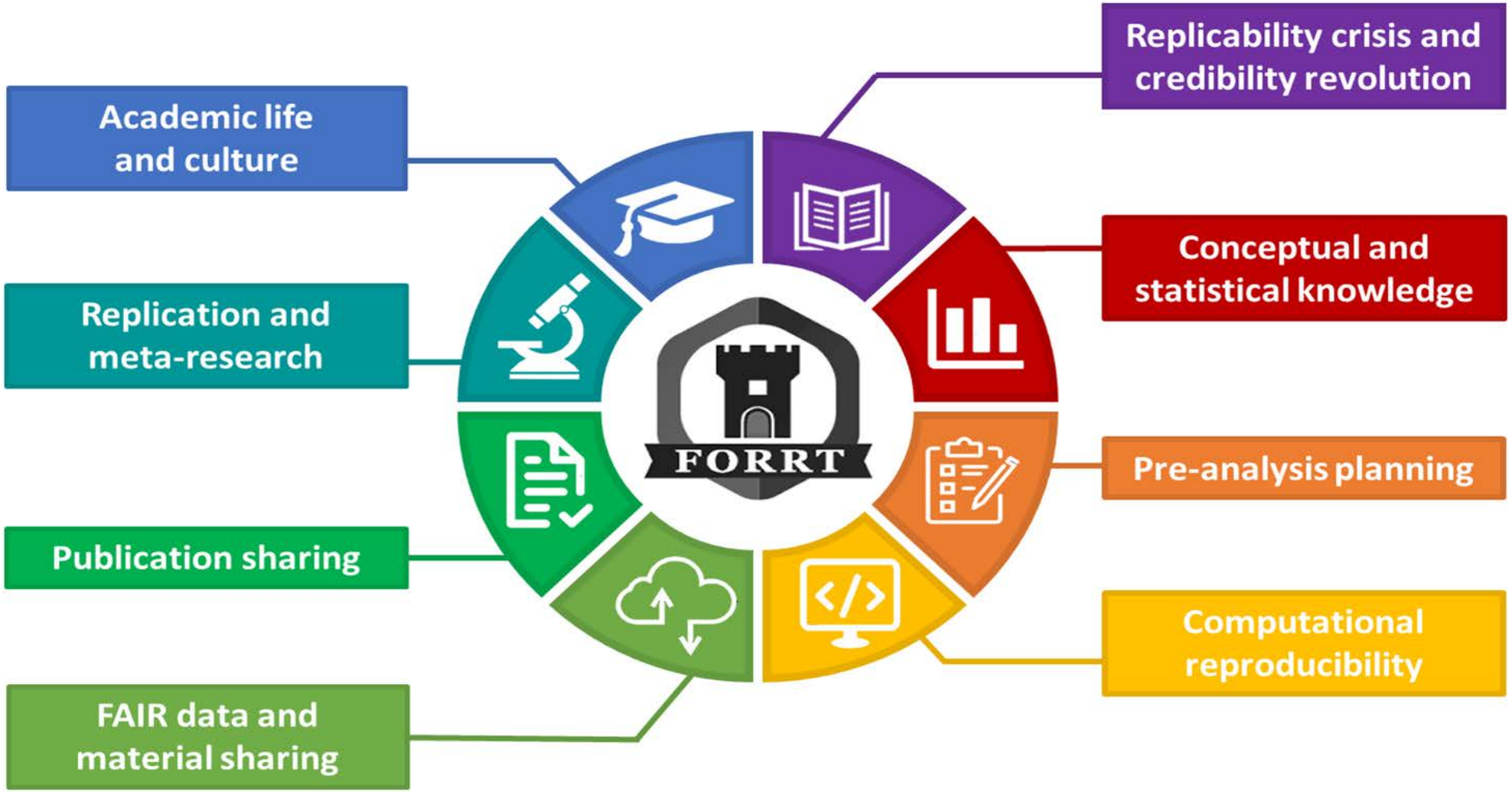
VolkswagenStiftung

Switch-to-Open




Manuscript submission with DOIs for preregistration, data, code, and material
Prepare / publish
❑ Code repository
❑ Data (real / synthetic), with metadata and Data Usage Agreement
❑ Preregistration (lift embargo)
❑ Preprint
with ORCID, DOI, License
❑ Explore / reuse research outputs
❑ Write / consult grant proposal, ethics proposal, and RDM plan
❑ Simulate data and run power analysis
❑ Use preregistration template
4. Preserve & Share
1. Plan & Design
Repo & code peer-review
Result presentation
Study plan presentation
Preregistration submission
3. Analyse & Collaborate
2. Collect & Manage
❑ Analyse data reproducibly (R readable code, Git repo template, GitLab, Renv)
❑ Write a README file
❑ Create a data dictionary
❑ Write a reproducible manuscript / presentation (Quarto)
❑ Request consent forms
❑ Collect data following standard protocols
❑ Manage data FAIR-ly
❑ Anonymise data
Data quality validation meeting

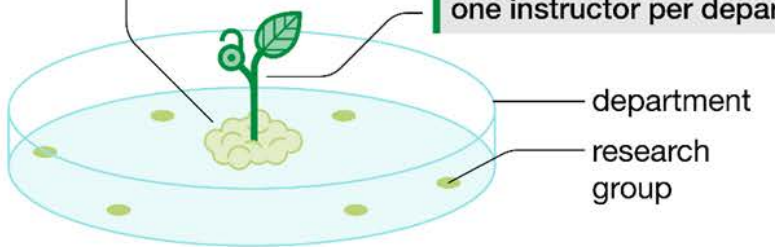
Train-the-Trainer



Framework for Open and Reproducible Research Training, FORRT https://forrt.org/

The ‘switch-to-open’ programme supports a research group to develop a standard open research practice guide for their daily workflows

The ‘train-the-trainer’ programme produces at least one instructor per department



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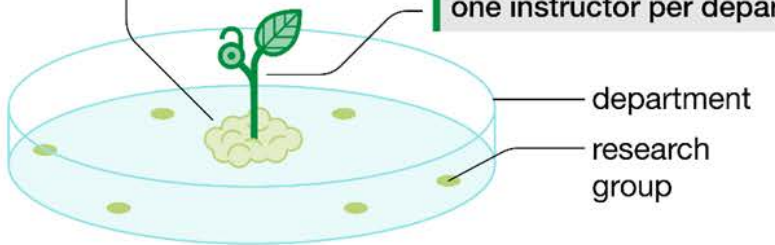
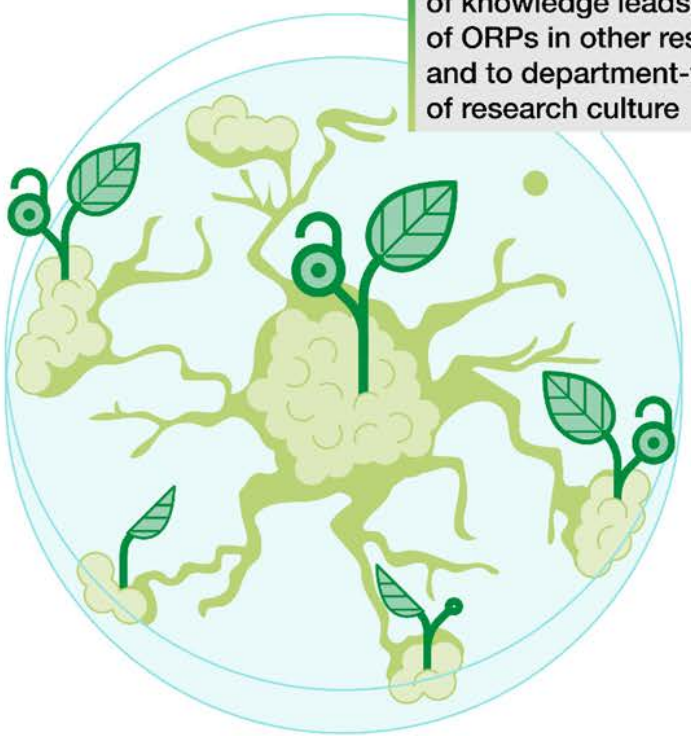
The ‘train-the-trainer’ programme produces at least one instructor per department

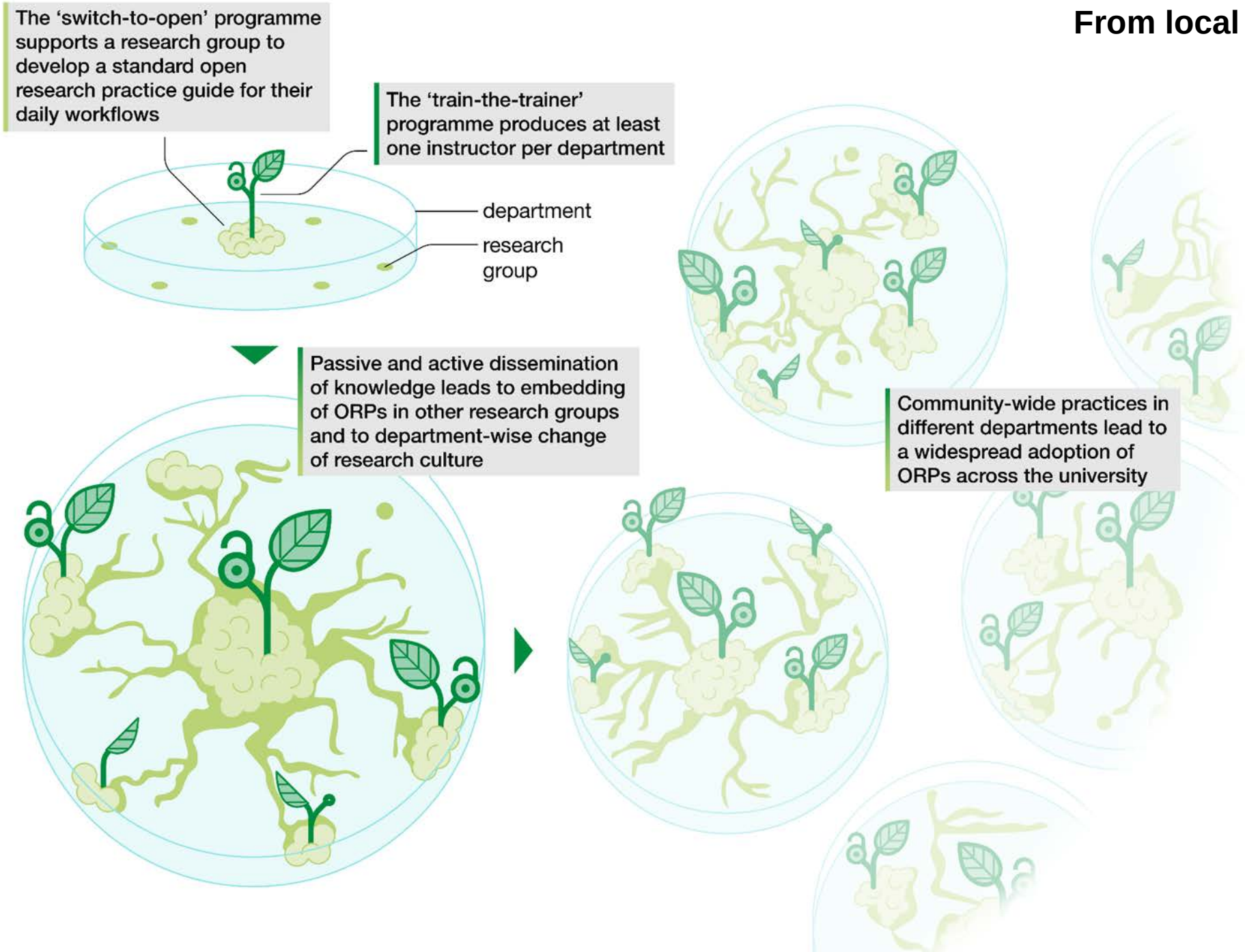


Passive and active dissemination of knowledge leads to embedding of ORPs in other research groups and to department-wise change of research culture



From local to systemic implementation: Embedding open research in institutional practices

VolkswagenStiftung



Make our excellence open: Visible and impactful, for the benefit of all!

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Possible avenues for action based on the views you shared

1. Provide adequate training

- FAIR data sharing
- reproducible workflows

e.g. priority seats to OSC summer school, Train-the-Trainer, consultation for graduate programme

2. Provide adequate support

- online self-learning resources
- research group consultation
- mentoring program or other community building activities

e.g. incentivise use of OSC self-learning resources, amplify lab handbook of the switch to open group, consultation for community engagement

2. Review research assessment criteria for recruitment

- Research Quality Evaluation (RESQUE) - threshold for methodological rigor, qualitative assessment for top candidates
- Officer to redirect discussion when JIF or number of papers are mentioned in hiring committees
- Narrative CV, Open Science statement, etc.

e.g. consultation for hiring committee

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Decide on a priority to discuss at the first barcamp: the 1-2-4-all approach

- 1 min: think on your own or take notes of your priorities
- 2 min: discuss with one neighbour
- 4 min: as a pair, discuss with another pair
- all: report from your group + remaining questions
- vote for a topic of discussion