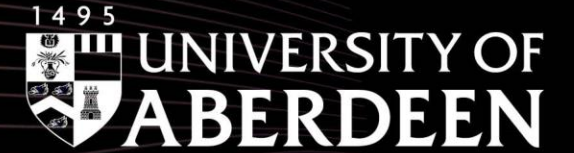


ExplORe Series
Research Integrity and Reproducibility



Lesley MacRae
7th November '23



What do we mean by research integrity?

- Research Integrity =
Good Practice
- Reliability
- Honesty
- Respect
- Accountability

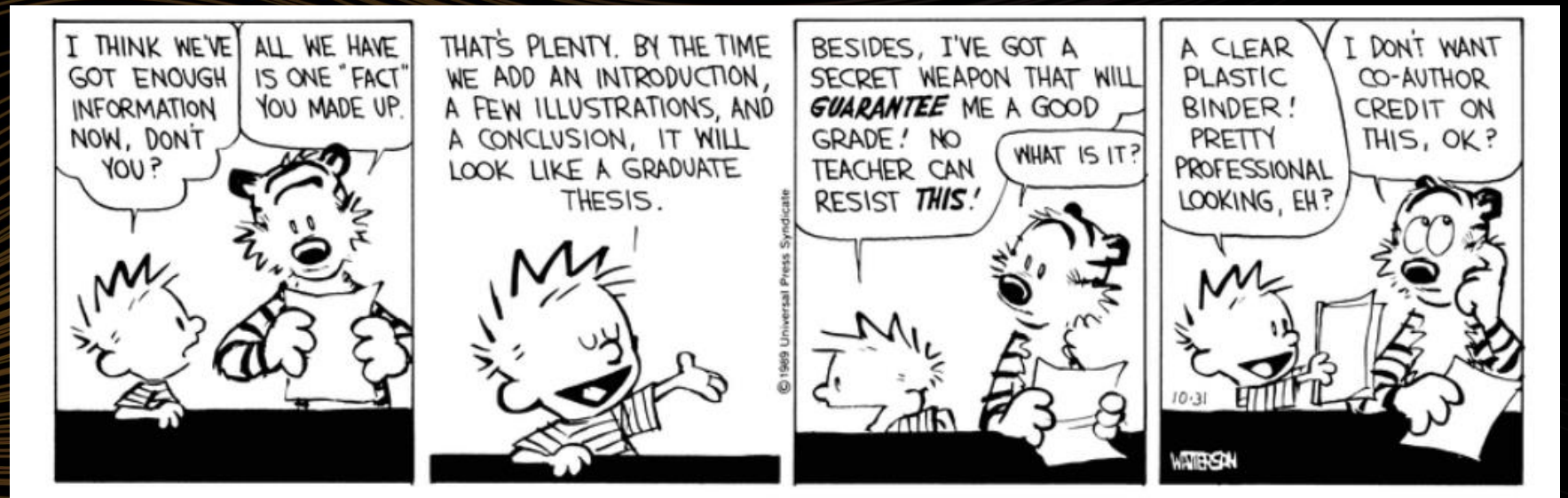


Bad practice

- European Code of Conduct for Research Integrity

Research Misconduct :

- Fabrication
- Falsification
- Plagiarism



Bad practice

thebmj covid-19 Research ▾ Education ▾ News & Views ▾ Campaigns ▾ Jobs ▾ A

News

Lancet retracts Wakefield's MMR paper

BMJ 2010 ;340 doi: <https://doi.org/10.1136/bmj.c696> (Published 02 February 2010)
Cite this as: BMJ 2010;340:c696

Article Related content Metrics Responses

Clare Dyer

Author affiliations ▾

The **Lancet** has retracted the 12 year old paper that sparked an international crisis of confidence in the safety measles, mumps, and rubella (MMR) vaccine when its lead author suggested a link between the vaccine and autism.

Andrew Wakefield was found guilty by the General Medical Council last week of dishonesty and flouting ethics protocols.

The UK regulator held that Dr Wakefield abused his position, subjected children to intrusive procedures such as

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BIOLOGY

Red-Wine Researcher Implicated in Data Misconduct Case

An investigation has found a UConn lab chief guilty of falsifying data. He denies the allegations. The lab studies wine's health benefits

By Ewen Callaway, Nature magazine on January 12, 2012

Poor research practices

- HARKing – Hypothesising after the results are known
- P-Hacking – Results are manipulated to show statistical significance
- Outcome switching – Certain results are not reported and some may be highlighted

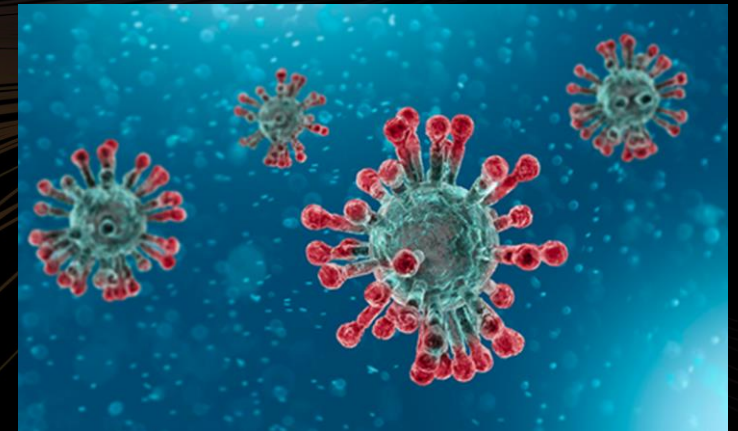
Retraction Watch

- Retractions were not announced
- Reasons were not made public
- Decisions may then be made based on invalid results

376 retractions on COVID papers

Blog started in 2010 'Wonder if we'll have enough material'

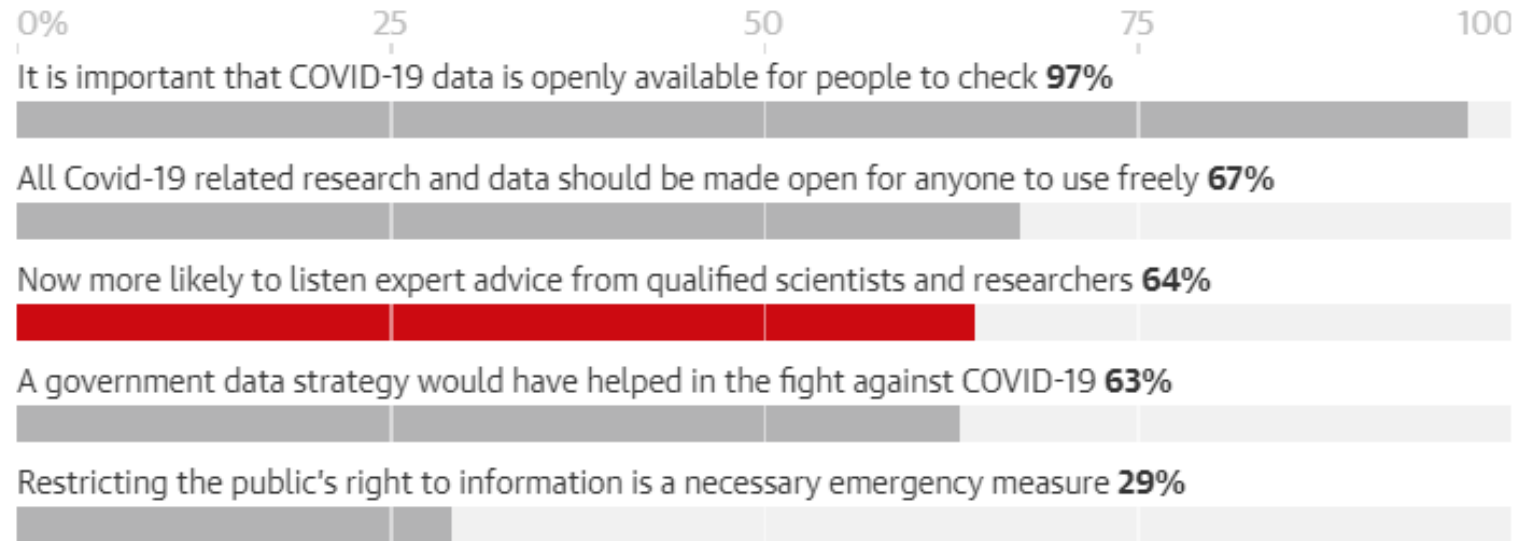
By October 2023 nearly 47,500 entries



Research Integrity

97% of people asked state that they want to see the data

64% of voters are now more likely to listen to expert advice from scientists and researchers



Guardian graphic | Source: Suration poll for the Open Knowledge Foundation. Base: 1,006 Respondents, 1 May 2020

Academic pressures and consequences

TOP FIVE INCENTIVES FOR EACH CATEGORY AS RATED FOR THEIR POTENTIAL IMPACT ON RESEARCH INTEGRITY*

| | | |
|--|---|---|
| Strongly positive perceived impact: <ul style="list-style-type: none">Data sharing policies and requirementsOpen access publishingInterdisciplinary researchProfessional development and training opportunitiesResearch leadership and management | Positive and negative perceived impact: <ul style="list-style-type: none">Media coverage and public perception of researchResearch leadership and managementHow funding for specific projects is awardedHow researchers are assessed for promotion during their careersInstitutional research strategy | Strongly negative perceived impact: <ul style="list-style-type: none">Incidents of bullying and harassmentUse of journal impact factor (JIF), h-index and other metricsLeague tables of institutionsInstitutional workload modelsHow researchers are assessed for promotion during their careers |
|--|---|---|

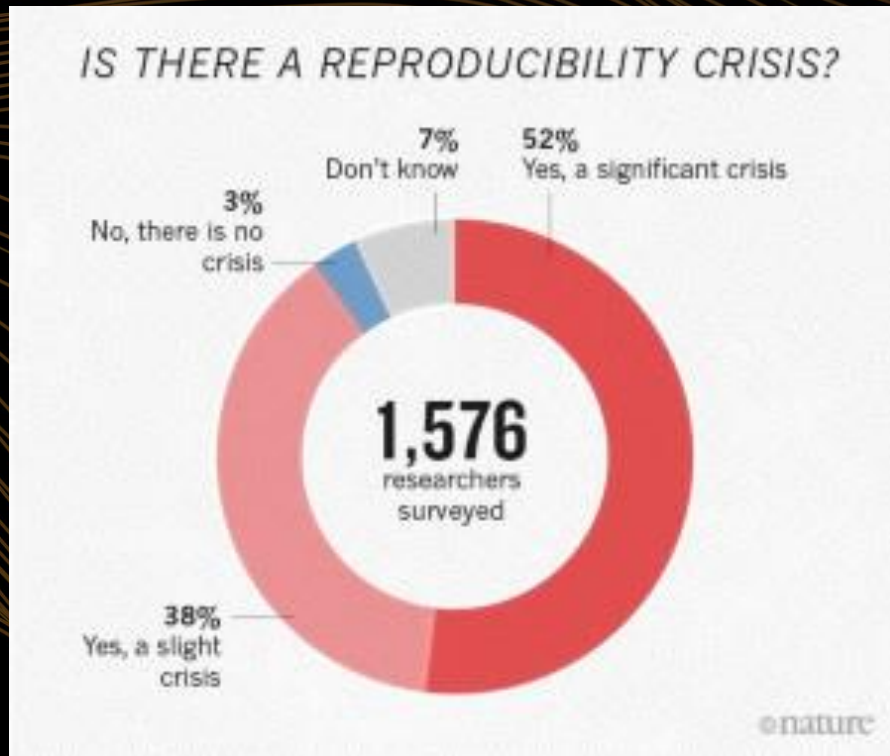
Source: [Research Integrity: a landscape study](#), June 2020. Vitae, UKRIO and UKRN, on behalf of UKRI

Barriers

- Time – It takes time
- Not currently part of the promotions process
- May require additional skills
- Your work may be critiqued



Reproducibility



Reproducibility :

The same analysis with same data/code – but performed by a different person

Replicability :

Re-performing the experiment but using your own data – to create your own results

“More than 70% of researchers have tried and failed to reproduce another scientists experiments, and more than half have failed to reproduce their own experiments” —Baker, Nature 2016

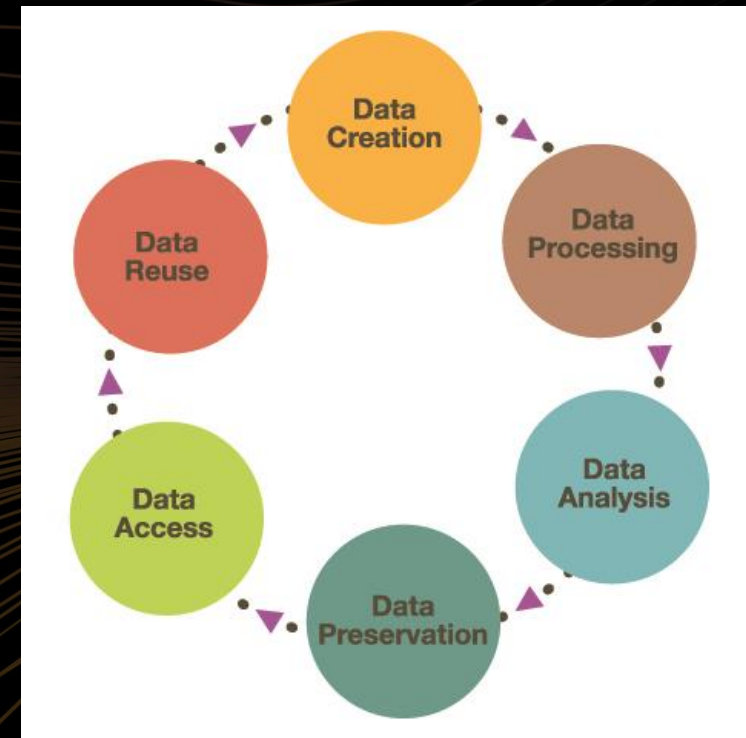
Pre-registration

- Deposit your study design in a repository
- Submit a pre-registration/registered report to a journal
- Helps fight biases and HARKing
- Creates a more complete scientific record



Open Data

- After publication share Data
Metadata
Code
Materials
- Share in a repository (OSF, Zenodo, Figshare)
- Link to your datasets to your institutional repository - PURE



Publish Data – Where?

Journal service for supplementary material

Meet publisher requirements

Data available from published results

It can be costly and risky with data rights

Closed and unlikely access to ensure preservation

Institutional data repository

Accept various types of data, ensure long-term access

More reliable and there will be no costs

May not offer long-term sustainable access

May not have disciplinary metadata

Generic repository

Reach a wider audience.

Accepts several types, suitable for interdisciplinary data

Usually only simple metadata is available

No editorial control over the quality of deposited materials

Disciplinary repository

Offers expertise and experience in data management

Likely to accept complete data sets

Selective in the type of data they accept

Requires planning and high standards, may incur costs

F indable A ccessible I nteroperable R eusable

- Metadata
- PIDs
- Repositories

- Metadata
- Open file formats and software

- Metadata
- Ontologies
- Repositories

- Metadata
- Licences

Open Access

Makes research available to readers at no cost as opposed to the traditional subscription or paywall model

Gold – Fully open access journals with fees/APCs covered by author or institution

Hybrid Journals allow open access on payment of APC

Green – A version (AAM) can be submitted to an institutional repository after an embargo period. Or make immediately available by retaining your rights

Diamond – no APCs, usually funded by other sources



Turing Way/Reproducibilitea



Explore the resources available

reproducibilitea.org

About Getting Started Reading Lists Organizer Tools ...

Welcome to Reproducibilitea

We are a grassroots [journal club initiative](#) that helps researchers create local Open Science journal clubs at their universities to discuss diverse issues, papers and ideas about improving science, reproducibility and the Open Science movement. Started in early 2018 at the University of Oxford, Reproducibilitea has now spread to 99 institutions in 25 different countries. We are completely volunteer run, and provide a unique and supportive community for our members, who are predominantly Early Career Researchers.

Want to join the movement? Just curious for now? Grab your cup of (Reproducibilitea) and use our freely accessible and adaptable materials to [get started](#) today.

the-turing-way.netlify.app/index.html#

The Turing Way

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Welcome

Welcome to *The Turing Way* handbook to reproducible, ethical and collaborative data science.

The Turing Way project is open source, open collaboration, and community-driven. We involve and support a diverse community of contributors to make data science accessible, comprehensible and effective for everyone. Our goal is to provide all the information that researchers and data scientists in academia, industry and the public sector need to ensure that the projects they work on are easy to reproduce and reuse.

PURE



- PURE is our Institutional Repository for research outputs and research data
- Keep your PURE profile up to date as this populates the Public Research Portal

The screenshot shows the University of Aberdeen website. The top navigation bar includes links for Study, About, Research, Alumni & Giving, Business, and Quick Links, along with a search box. Below this is a purple StaffNet banner with links for Working Here, Policy and Governance, Teaching and Learning, Research and Knowledge Exchange (highlighted), News and Events, and Staff Directory. The breadcrumb trail reads: University Home / StaffNet / Research and Knowledge Exchange / Pure / Research Profiles. On the left, a vertical menu shows a path: University Home, StaffNet, Research and Knowledge Exchange, Pure, and Research Profiles (highlighted). The main content area is titled 'Research Profiles' and contains the following text:

Pure contains information on research publications, activities and impact. Although publications can be imported from a range of external sources, impact, activities, prizes and media attention should be added manually to Pure.

Pure also contains information synchronised from other University systems e.g., applications, awards, HR data and postgraduate student supervision.

The [Personalising and Accessing Pure guide](#) can be used to add information to your Pure profile. A [video guide](#) is also available. A University account is required to access the video.

Thank you



Thank you for listening

- Any Questions?
- Contact openresearch@abdn.ac.uk if we can help you in any way

Thank You