

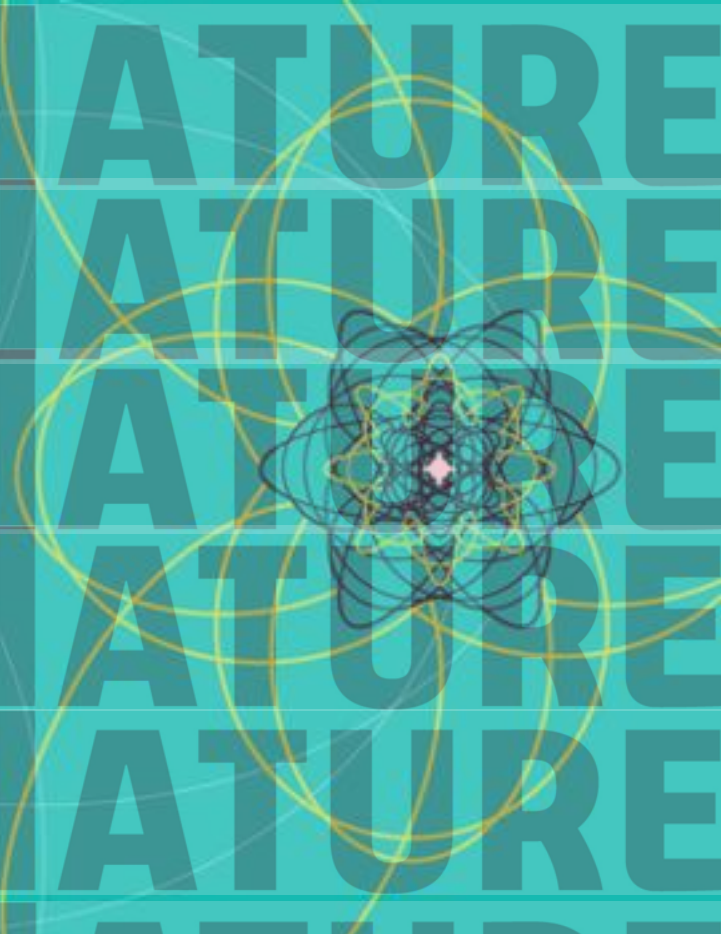
Accelerating open science with tools not rules

Ed Gerstner

Director of Research Environment Alliances
Springer Nature

Presented by Maria Kadlec Markova
Regional Director CEE

November 2024, Slovakia



What are the rules?

Our Rules – A partial History of Open at Springer Nature

1996 – *Nature's* 'Guide to Authors' sets out our expectations for sharing materials, methods and data

GUIDE TO AUTHORS

Guide to authors of contributions to *Nature*

Nature is a weekly international journal covering all the sciences. It is intended for an interdisciplinary readership, so all manuscripts should be written clearly and simply. Contributors should pay particular attention to the fact that English is not the first language of many readers. Space is limited and competition severe, so brevity is highly valued.

Nature publishes the following types of article:
Review articles survey recent developments in a topical area of scientific research. Contributors wishing to submit a review should first send a one-page synopsis to the Reviews Coordinator.
Reviews address a broad research area of a field rather than providing a comprehensive literature survey.
They focus on a topical aspect of a field rather than providing a comprehensive literature survey.
They may be controversial in this respect but should briefly indicate opposing viewpoints. They should not be focused on the author's own work.
Language should be simple, novel concepts defined and jargon explained.
Reviews should not be more than 6,000 words and ideally should be shorter. There should be no more than 100 references and ideally half that number. There is no limit to the number of display items or explanatory boxes (used for clarification of technical points or for background material), but reviews do not generally take more than six pages of *Nature*.
Progress articles are often substantially edited by *Nature's* editors in consultation with the author.
Progress articles review particularly topical and fast-moving fields in a non-specialist readership. They are similar to Reviews except for the following:
They do not exceed four pages of *Nature* in length, including display items and references. (One printed page of text is about 1,300 words.)
They focus on current papers of outstanding interest that are setting new standards in a field.
Because of their topicality, Progress articles should be written and submitted within a few weeks of *Nature's* editors expressing an interest in a topic.
Authors must discuss their own work, but should make it clear in the text if they are presenting a personal, rather than a consensus, view.
Titles are brief (generally a single line) and relatively informal.
Articles are reports of original scientific research.
They report novel conclusions of broad general scientific interest.
They represent a substantial advance in scientific understanding of an important problem.
They should not be longer than 3,000 words, have more than six display items (with captions of fewer than 300 words) or have more than 50 references.
They have a heading of up to 80 words, often rewritten by *Nature's* editors, which advertises the content of the paper in general terms. The heading should not contain numbers, abbreviations or measurements unless central to the message of the paper.
The introduction and summary should be contained in the first two or three paragraphs of the main text.
Letters to *Nature* are short reports focused on a novel, outstanding finding.
The implications of the main result are of interest to non-specialists.
They should not exceed 2½ pages of *Nature*, equivalent to 1,500 words of text with four small display items that save brief captions.
They have a bold-text first paragraph of not more than 150 words summarizing the rationale for the study, the main result and conclusion. This paragraph is aimed particularly at non-specialist readers.
Letters should have fewer than 10 references and no more than four display items. Captions should not exceed 300 words.
Articles and Letters contain a statement at the end of the text: "Correspondence and requests for materials to *xxxx*". Database accession numbers should be included after this statement.

Preparation of manuscripts
All manuscripts should be typed, double-spaced, on one side of the paper only.
Manuscripts should be accompanied by a brief cover letter from the corresponding author, containing a full postal address, telephone and fax number, and e-mail address.
Five copies of manuscripts and original figures are needed, together with two copies of the cover letter.
Copies of relevant related manuscripts in press or submitted for publication elsewhere should be included, clearly marked as such.
Unless otherwise instructed by the editor handling a manuscript, when sending revised or resubmitted manuscripts, five copies are required, each accompanied by a copy of the authors' response to refer-

ence and editor's comments on the earlier version.
Titles should be brief, pertinent and simple, avoiding active verbs, numerical values, abbreviations and punctuation.
References are numbered sequentially as they appear in the text, tables and figure legends. Only papers that are published or in press should be given numbers. Manuscripts submitted or in preparation should be mentioned in the text with a list of authors.
Reference lists contain only citations to published papers, and do not contain tentative material, grant details or acknowledgements.
References must be brief and appear after the reference list. *Nature* does not publish grant contributor numbers.
Figures should not be larger than 22 by 24 cm unless unavoidable. They should be marked with the author's name and, where known, the manuscript reference number. One photocopy of the original figures should be provided. All original figures are returned when *Nature* cannot offer to publish a manuscript, but copies of manuscripts and the photocopy of the figures are kept in confidential files for three months and then destroyed. Detailed instructions for preparation of figures are available from the production department, and digital files of final versions of the figures may be requested.
Colour figures are welcome but a contribution towards the cost of reproduction is requested. Liability for any file damage will not prevent *Nature* publishing figures where colour is essential.
Figures containing protein/nucleotide sequence information should ideally use the three-letter code for amino acids. One column width can accommodate 20 amino acids or 60 base pairs.
Figure legends should contain fewer than 300 words. They should consist of a brief description of the figure (title, explanation of the parts, explanation of symbols) followed by a telegraphic account of the methods, if appropriate. Multi-part figures are distinguished unless the parts are logically connected.
Tables do not have a heading section. Symbols and abbreviations in the table should be defined immediately below the table, followed by essential descriptive material, all in double-spaced text. Tables should each be presented on a separate sheet of paper.
As a condition of publication, authors are required to make any data and methods used freely available to academic researchers on an open, supporting datasets must be made available immediately upon publication either by deposition in the appropriate public database or by distribution on the Internet, together with the relevant accession number or site address. In the case of X-ray crystallographic coordinates only, public access cannot be delayed for up to one year after publication.
Manuscripts can be submitted to the Editor at Nature, Porto's South, 1000 St. London N4 9YB or at Nature, 869 National Press Building, Washington, DC 20005. Proofs should be returned by express mail to London.

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News and Views editorials inform and stimulate scientists, either in response to forms of meeting reports. Most are commissioned by the News and Views Editors on paper or of the meeting concerned. And their own work or work from elsewhere guidelines are available on request.
Scientific Correspondence is for scientific issues, including material published in *Nature* (fewer than 500 words), available on request. All contributions are sent to nature@nature.com.
Book Reviews are commissioned. Unsolicited contributions are not considered.
Nature's editors will request final copy for Commentary, News and Views, Scientific Correspondence and Book Reviews on diskette or via e-mail.

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News and Views editorials inform and stimulate scientists, either in response to forms of meeting reports. Most are commissioned by the News and Views Editors on paper or of the meeting concerned. And their own work or work from elsewhere guidelines are available on request.
Scientific Correspondence is for scientific issues, including material published in *Nature* (fewer than 500 words), available on request. All contributions are sent to nature@nature.com.
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Nature's editors will request final copy for Commentary, News and Views, Scientific Correspondence and Book Reviews on diskette or via e-mail.

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News and Views editorials inform and stimulate scientists, either in response to forms of meeting reports. Most are commissioned by the News and Views Editors on paper or of the meeting concerned. And their own work or work from elsewhere guidelines are available on request.
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— *Nature*, 11th April 1996.



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Our Rules — A (partial) History of Open at Springer Nature

2002 — *Nature* requires MIAME-compliant open data for all microarray results published in its journals

nature

26 September 2002 Volume 419 Issue no 6905

Microarray standards at last

Not a moment too soon, the microarray community has issued guidelines that will make their data much more useful and accessible. *Nature* and the Nature research journals will respond accordingly.

You read a paper with a fascinating conclusion about the expression of several genes. You decide to use some of the same experiments on your system of choice. But when you wade through hundreds of pages of supplementary information, you find that crucial details needed for replication are missing.

Welcome to the exciting but frustrating world of DNA microarray research. Microarrays are plastic or glass chips spotted with tiny amounts of thousands of probes, used to query the activity levels of that many genes in any tissue or organism at one time. Variables in every step of the experiment often make cross-paper comparison virtually impossible. Microarray papers also pose a considerable strain on the refereeing process; the vast amounts of data mean that critical review is a monumental task.

Yet referees sometimes feel they are not given enough details, leading cautious reviewers to think that they must reanalyse the primary data set. In other cases, the primary data provided are in proprietary software and so are impossible to comment on. Many journals allowed authors to put the huge data files on their own websites for the review process, until it became clear that unscrupulous authors compromised the anonymity of referees by tracking who had visited the website.

In a move to remedy these problems, the international Microarray Gene Expression Data (MGED) group has written an open letter to scientific journals proposing standards for publication. Other members of the microarray community welcomed these steps, designed to clarify the Minimal Information About a Microarray Experiment (MIAME) guidelines (*Nature Genetics* 29, 365–371; 2001).

For authors, the proposal provides a checklist of variables that should be included in every microarray publication, at http://www.mged.org/Workgroups/MIAME/miame_checklist.html. This checklist, with all variables completed, would be supplied as supplementary information at the time of submission. The MGED group suggests that journals require submission of microarray data to either of two databases emerging as the main public repositories: GEO (www.ncbi.nlm.nih.gov/geo/) or ArrayExpress (www.ebi.ac.uk/arrayexpress).

Harried editors can rejoice that, at last, the community is taming the unruly beast that is microarray information. Therefore, all submissions to *Nature* and the Nature family of journals received on or after 1 December containing new microarray experiments should include the mailing of five compact disks to the editor. These should include necessary information compliant with the MIAME standard. The information must be supplied in a format that could be read by widely available software packages. Data integral to the paper's conclusions should be submitted to the ArrayExpress or GEO databases, with accession numbers where available, supplied at or before acceptance for publication.

How much data? Specifically, do the microarray just to the could presumably be further evolution at the need to specify standards are surely a

community? te the exact genes, which erhaps with technology, the MGED e field. ■



“... all submissions to *Nature* and the Nature family of journals received on or after 1st December [2002] containing new microarray experiments must include ... necessary information compliant with the MIAME standard. The information must be supplied in a format that could be read by widely available software packages. **Data integral to the paper's conclusions should be submitted to the ArrayExpress or GEO databases, with accession numbers where available, supplied at or before acceptance for publication.**”

— *Nature*, 26th September 2002.

Our Rules — A (partial) History of Open at Springer Nature

2013 — *Nature* and its sister titles mandate reproducibility checklists for life science papers

From May 2013, all life science papers published in *Nature* and all other Nature research journals must be accompanied by a reporting summary that contains details of experimental design, reagents, and statistical analysis. From June 2017, we started publishing these beside each paper.

ANNOUNCEMENT

Towards greater reproducibility

Since 2013, *Nature* and the Nature research journals have asked authors of papers in the life sciences to complete a checklist when they submit a paper. This extra step — prompting authors to disclose important elements of experimental design and analysis — was part of a broader effort to improve the quality of reporting in our life-sciences articles.

This week we go further. Alongside every life-sciences manuscript, we will publish a new reporting-summary document, to which authors will now be expected to add details of experimental design, reagents and analysis. This is another step in encouraging transparency, in ensuring that papers contain sufficient methodological detail, and in improving statistics reviewing and reporting.

We expect that the new reporting summary will assist reviewers

greater experimental detail for papers based on chromatin immunoprecipitation sequencing, flow cytometry and magnetic resonance imaging. Although our physical-sciences papers will not use a standard reporting summary, we are launching accessory summaries on lasers and solar cells to elevate reporting standards in these areas. In future, we will expand this set to cover other techniques. Like the core reporting summary, these accessory summaries will be published with the relevant paper.

We are happy for other journals and institutions to use the same approach, and so we have made all the reporting-summary templates available for use or adaptation under a CC-BY licence.

As with the initial checklist, these documents aim to improve reporting, rather than to enforce a defined set of standards. They should make apparent the details of how a study was designed, performed and analysed, to allow reviewers and readers to interpret the results and understand any limitations. There are, of course, separate experimental standards that must be met to comply with our editorial policies, and these are captured in our new editorial-policy checklist (see go.nature.com/2rdrnfbh).

As a complement to these new documents, we will now mandate greater transparency in data presentation. We will ask authors,



Nature 546, 8 (2017).

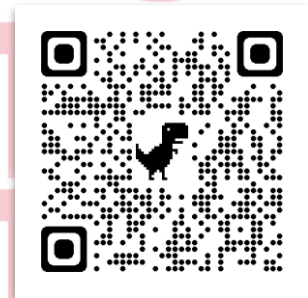
SPRINGER NATURE

Our Rules — A (partial) History of Open at Springer Nature

The Reproducibility checklist had an immediate effect

An independent study of the reproducibility of in vivo cell biology papers published in *Nature* journals before and after implementation of the reproducibility checklist found that:

- The proportion of papers meeting all relevant ‘Landis 4 criteria’ (reporting randomisation, blinding, sample size calculation, and exclusion criteria) increased from **0% to 16%**.
- The proportion that explicitly reported:
 - Randomisation increased from **2% to 11%**;
 - Blinding increased from **4% to 23%**;
 - Sample size calculations increased from **2% to 15%**;
 - Exclusion criteria increased from **14% to 31%**.



<http://dx.doi.org/10.1101/187245>

Our Rules — A (partial) History of Open at Springer Nature

2015 — BMC journals mandate Data Availability Statements

RESEARCH ARTICLE

The citation advantage of linking publications to research data

Giovanni Colavizza^{1,2}, Iain Hrynaszkiewicz^{3,4}, Isla Staden^{1,5}, Kirstie Whitaker^{1,6}, Barbara McGillivray^{1,6*}

1 The Alan Turing Institute, London, United Kingdom, 2 University of Amsterdam, Amsterdam, Netherlands, 3 Springer Nature, London, United Kingdom, 4 Public Library of Science, Cambridge, United Kingdom, 5 Queen Mary University, London, United Kingdom, 6 University of Cambridge, Cambridge, United Kingdom

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Abstract

Efforts to make research results open and reproducible are increasingly reflected by journal policies encouraging or mandating authors to provide data availability statements. As a consequence of this, there has been a strong uptake of data availability statements in recent literature. Nevertheless, it is still unclear what proportion of publications contain well-formed links to data, for example via a URL or DOI. In this study, we find that there is an added value in providing such links. We consider the impact of data availability statements published by PLOS and BMC, develop an automatic system for linking publications to data statements according to four categories based on their content, and finally analyze the citation advantage they display, and finally analyze the citation advantage of data availability statements via regression. We find that, following mandated publication of data availability statements become very common. In 2018 93.7% of 21,793 publications



“... In 2015, BMC updated and standardised its policy and all of its journals (more than 250 journals) required—mandated—a DAS (styled as ‘Availability of data and materials’) in all their publications.”

— Colavizza, G. *et al.* The citation advantage of linking publications to research data. *PLoS ONE* 15, e0230416 (2020).

Funder Rules — Horizon Europe

Mandates data management plans and open sharing of data for grants awarded from 2021 onwards



“Under Horizon Europe (Work programmes 2021 and onwards), grantees of all ERC projects that generate research data have to submit a DMP6 (at the latest six months after the start of the project), **deposit such data in a ‘trusted’ repository and provide access to them, under the principle ‘as open as possible, as closed as necessary’.**”

Funder Rules — NIH Open Science Policy

Mandates data management plans and open sharing of data, eventually

In January 2023, the US National Institutes of Health (NIH) will begin requiring the researchers and institutions it funds to include a data-management plan in all grant applications.

The policy also requires that

“Shared scientific data should be made accessible as soon as possible, and no later than the time of an associated publication, or the end of the award/support period, whichever comes first.”

News in focus



The US National Institutes of Health is located in Bethesda, Maryland.

NIH ISSUES A SEISMIC MANDATE: SHARE DATA PUBLICLY

Policy could set a standard for research, scientists say, but they have questions about logistics and equity.



Funder Rules — The White House Office of Science and Technology Policy

In August, the White House Office of Science and Technology Policy announced that as of 1st January 2026, all research that the US government funds must be made freely available to all upon publications, without embargo.

Most news outlets described this as a momentous day for open access publishing. And it was. But what fewer people mentioned, in the immediate aftermath at least, was **the sweeping mandate on open research data sharing!**

NEWS | 26 August 2022 | Correction [30 August 2022](#)

US government reveals big changes to open-access policy

Biden administration instructs all US agencies to require immediate access to federally funded research after it is published, starting in 2026.

[Jeff Tollefson](#) & [Richard Van Noorden](#)



The new policy recommends that federal agencies ensure that research from their grant recipients is made available in a public repository without delay after publication. Credit: Shutterstock

What about tools?

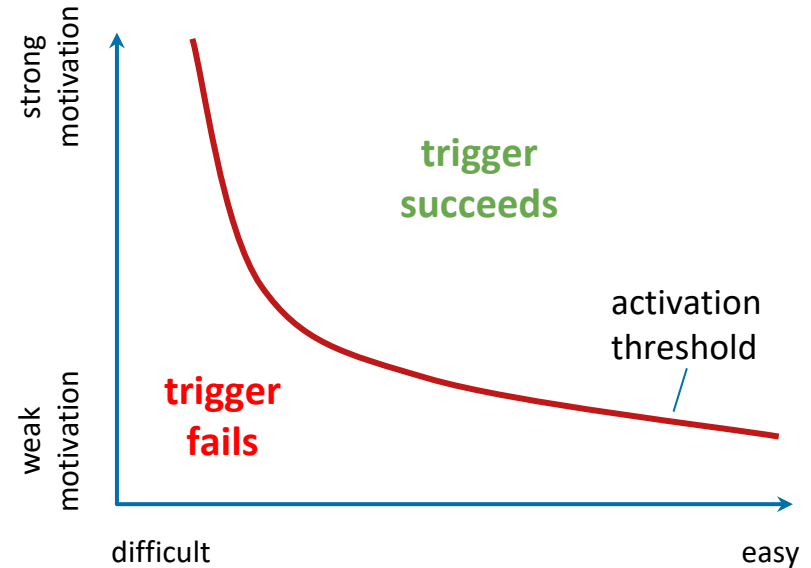
Why tools are better than rules

The Fogg behaviour model — making things easy is usually easier for everyone!

The Fogg behaviour model observes that people will only exhibit a given behaviour in response to a trigger if their **motivation** AND **ease** in doing so exceeds a certain threshold.

You can **increase the chances** of triggering a behaviour by **increasing their motivation** — such as with a reward for compliance or a penalty for non-compliance — or **making it easier for them to comply**.

It is cheaper and more effective to make it easier for researchers to comply than to police or reward their compliance.



Also...

Researchers already spend too much time doing things that aren't research!

FEDERAL DEMONSTRATION PARTNERSHIP (FDP)



2018 Faculty Workload Survey

RESEARCH REPORT: Primary Findings

Prepared by

Sandra L. Schneider (Principal Investigator), etc.

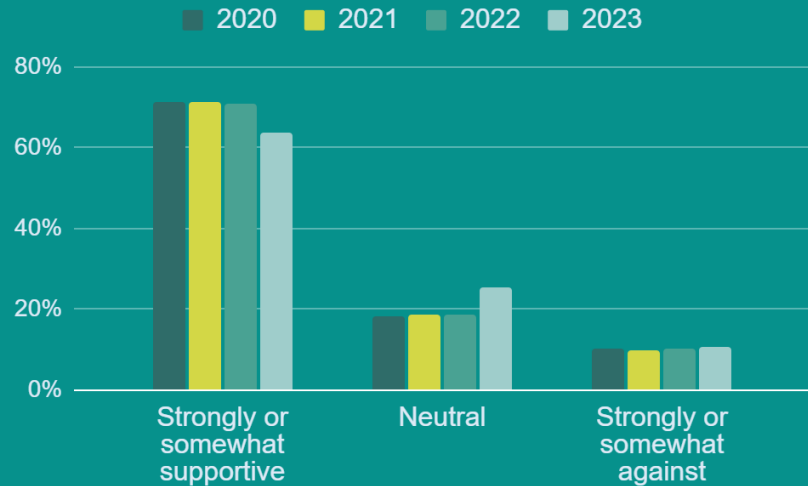
University of South Florida

“... previous surveys in both 2005 and 2012 revealed that faculty researchers estimated that approximately 42.3% of their research time was devoted to fulfilling administrative and other requirements associated with obtaining and managing federally-funded projects. In 2018, this value increased by 2% ... **PIs reported that almost half of their available research time for federal projects had to be allocated to fulfilling requirements instead of focusing on the content of their research projects.**”

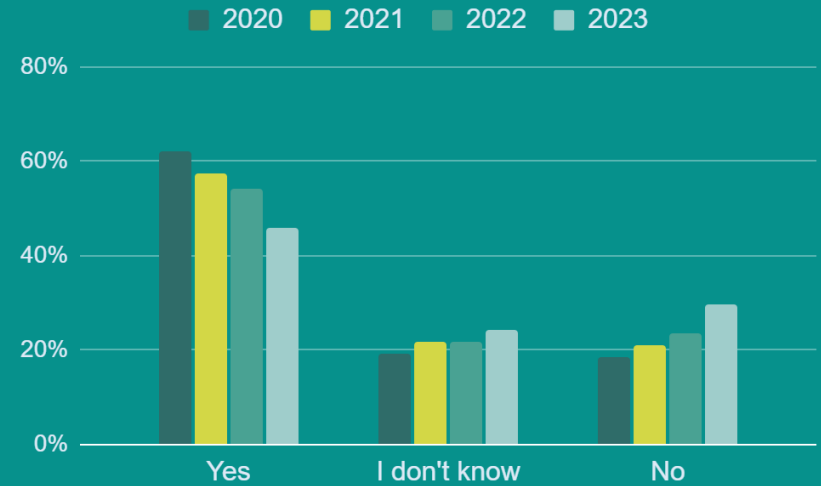
And...

State of Open Data surveys suggest that support for mandatory open data policies has been falling

How supportive would you be of a national mandate for making research data openly available?



Should funders penalise researchers who do not comply with a data sharing mandate?



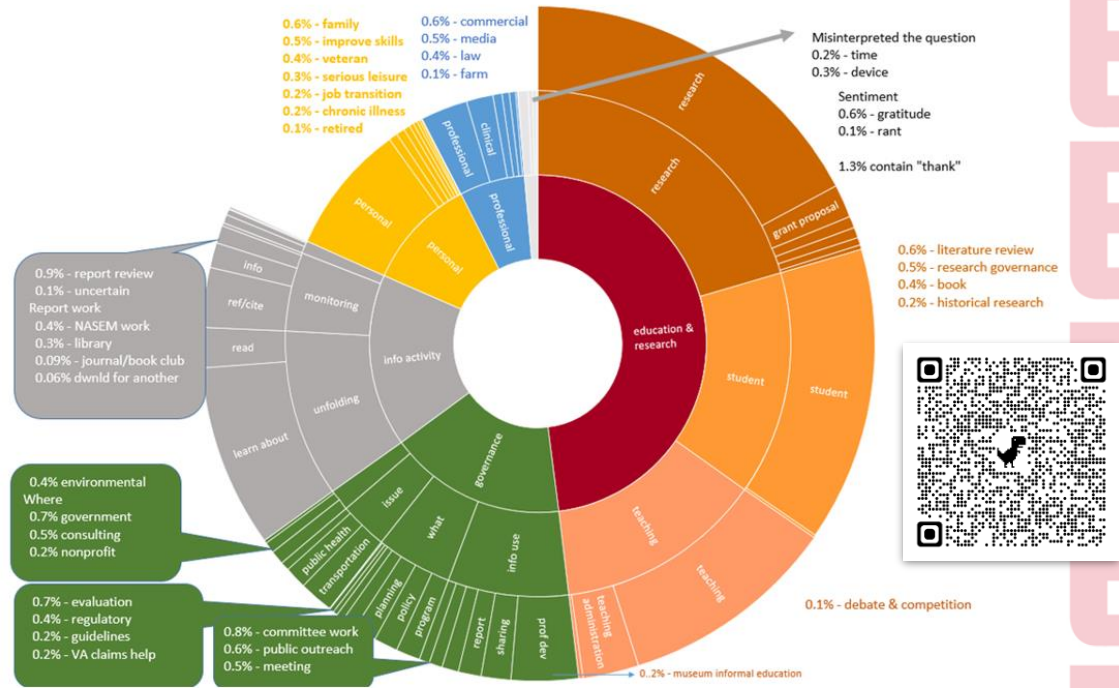


Making it easier to
preprint

Publication

Who reads open access research?

- Researchers analysed data from the US National Academies of Sciences, Engineering and Medicine (NASEM) about how Open Access consensus study reports are used by the public
- Half of all reports used for non-academic purposes including public health and local/regional planners
- Widely used by science and maths teachers
- ‘Serious leisure’ – edible plants, astronomy



HOW CAN WE MAKE PREPRINTING EASY?

Early sharing is becoming more common but still a relatively small proportion

In Review

“Springer Nature receives more than one million submissions a year from authors all around the world, publishing well over 300,000 papers across a huge range of disciplines

...

[In Review] provides every Springer Nature author regardless of academic discipline with a route ... to sharing their research as a preprint.”

Alison Mitchell, Chief Journals Officer

Easy sharing of a preprint integrated with journal submission systems:

- Author selects *In Review* option when they submit
- Preprint available and shareable via *Research Square* platform in html format: easy to read and navigate
- Authors establish priority and benefit from early comments and citations
- Others benefit from early access to a version of their paper

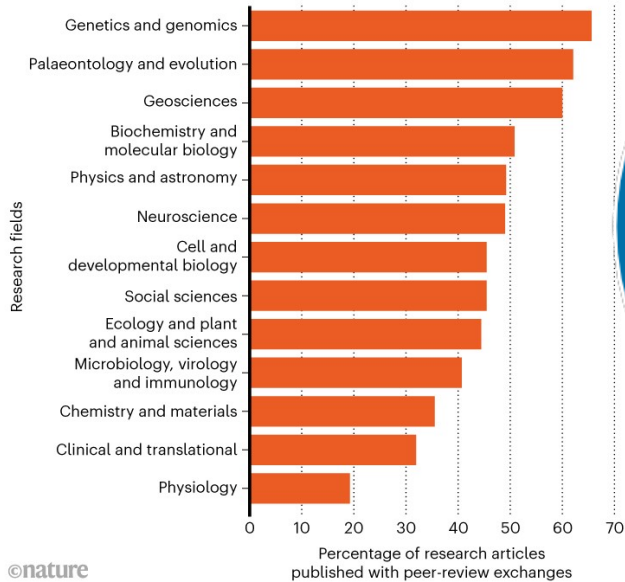
**Making it easier to
open up peer
review**

Peer review

Transparent peer review

PEER REVIEW OPENS UP

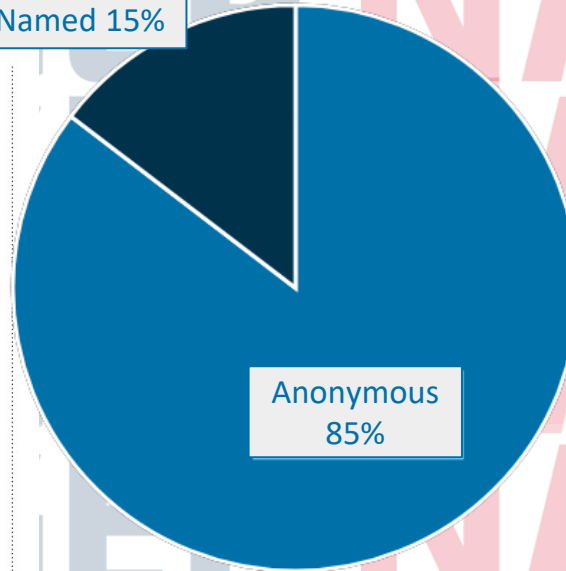
In 2021 and 2022, transparent peer-review comments were published alongside many *Nature* research articles. In total, 447 out of 974 articles in 2021 were published with an anonymous referee reports. By 1 February 2022, it was 30 out of 61 articles.



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BMC Genomics Peer Reviewers

Named 15%



- **Nature:** 48% of authors chose to share their peer review reports
- **Nature Communications:** 69% transparent peer review
- **BMC Series journals:** 100% transparent peer review
- **BMC Genomics:** 15% open with reviewer choosing to name themselves

Transparent peer review is when referee reports and the authors' response are published with the manuscript.

**Making it easier to
share experimental
design**

Hypothesis and study design

Early sharing reduces bias and speeds up sharing of knowledge

Making your study design, methods and analysis available before data are available or accessed reduces bias from selective reporting, decreases false discovery rates and reduces questionable research practices.

Registered reports are peer-reviewed descriptions of the background, study design, methods and analysis plan (Stage 1) and the study's results (Stage 2) are published regardless of the outcome.

Study protocols are a time-stamped record of a study's design, methods and analysis published before data are collected or analysed.

nature
human behaviour

REGISTERED REPORT
nature.com/doi/10.1038/s41562-020-0844-z

Self-insight into emotional and cognitive abilities is not related to higher adjustment

Joyce C. He^{1*} and Stéphane Côté²

Despite the popularity of the Ancient Greek maxim 'know thyself', the importance of self-insight for adjustment, or effective psychological functioning, remains unclear. Here we investigated four models of self-insight and emotional abilities and assessed self-view about these abilities. Participants then completed daily tasks that were used to report multiple self-reported indicators of adjustment. We analysed data using polynomial regression and response surface analysis. We found no support for benefits of self-insight for adjustment in either category for those with a confident (vs. uncertain) relationship between self-view about these abilities and adjustment were also not met. The findings suggest that giving employees and students feedback about their cognitive and emotional abilities for better adjustment should not enhance their adjustment. We discuss the limitations of our study and offer suggestions for future research.

Registered registration
The stage 1 protocol for this Registered Report was accepted in principle on 21 June 2020. The protocol, as accepted by the journal, can be found at <https://doi.org/10.5281/zenodo.4283647.v1>.

Metrical health experts and scholars in the humanities and social sciences have noted the importance of self-insight for adjustment^{1–3}. In a seminal review on personality psychology, Ogburn notes that 'insight and self-awareness toward oneself' is held to be a primary virtue⁴. Despite the popularity of the Ancient Greek maxim 'know thyself', however, there are reasons to think that self-insight into one's abilities may not be necessary—and may even be detrimental—for adjustment. Taylor and Brown⁵ wrote that the notion that 'well-calibrated contact with reality' is a hallmark of mental health. It is incongruent with adjustment. In particular, self-insight into low or average abilities might deter individuals of the confidence needed to perform actions that facilitate adjustment, such as initiating projects⁶. Moreover, an implicit assumption of research on the stability of intelligence is that self-insight is unnecessary because adults already possess adequate engagement with the environment regardless of whether people know they possess these abilities⁷.

The nature of the association between self-insight and adjustment has important implications for policy, education and management. Decisions in schools and organizations are often based on assumptions that students and employees will benefit from knowing their strengths and weaknesses. For example, assessing and developing programs commonly involve giving feedback to employees about their strengths and weaknesses as an effort to improve their performance⁸. However, this feedback might be harmful if self-insight into low or average abilities reduces employees' confidence and self-efficacy, which in turn reduces their performance. Leaders may want resources to provide feedback to highly skilled students and employees, but might not want to do so for highly adjusted ones if they do not know their strengths.

The debate about the importance of self-insight for adjustment persists in this day^{9–11} because of two notable limitations of past research. First, several past studies used problematic criteria to determine whether individuals possess self-insight¹². Several models considered individuals to have self-insight if they perceived

He et al. | 2022 | 4:08
https://doi.org/10.1038/s41562-020-0844-z

Trials

STUDY PROTOCOL

Open Access

Evaluation of the safety and immunogenicity of different COVID-19 vaccine combinations in healthy individuals: study protocol for a randomized, subject-blinded, controlled phase 3 trial [PRIVIVAC]

Xuan Ying Poh¹, Russel Lee¹, Clarissa Lim¹, Jinfan Teo¹, Sama Razi¹, Pei Ying Chia^{1,2}, Sean W. X. Ong¹, Tau Hong Lee¹, Ray J. H. Lim^{1,3}, Lisa F. P. Lim¹, Lee Chee Rong¹, Raymond T. P. Lee¹, Lu Fu Wang¹, Laurent Renard^{1,4}, David Chen Lye^{1,5,6} and Benjamin Y. Young^{1,6*}

Abstract

Background: Over 2021, COVID-19 vaccination programs worldwide focused on raising population immunity through the primary COVID-19 vaccine series. In Singapore, two mRNA vaccines (BNT162b2 and mRNA-1273) and the inactivated vaccine Covaxion are currently authorized under the National Vaccination Programme for use as the primary vaccination series. More than 90% of the Singapore population has received at least one dose of a COVID-19 vaccine as of December 2021, with the demonstration that vaccine effectiveness wanes in the months after vaccination and the emergence of Omicron which enables fast immunity from prior infection and/or vaccination, alternative to many countries has shifted to how best to maintain immunity through booster vaccinations.

Methods: The objective of this phase 3, randomized, subject-blinded, controlled clinical trial was to assess the safety and immunogenicity of heterologous based COVID-19 vaccine regimens (inter-variant groups: 1–4) compared with a homologous based regimen (control arm) in up to 100 adult individuals. For each mRNA vaccine combination, participants will be randomized at different time points depending on vaccine availability and local regulatory approval. Participants will be randomized at equal probability to the available intervention arms at the time of randomization. Eligible participants will have received two doses of a homologous mRNA vaccine series with BNT162b2 or mRNA-1273 at least 6 months prior to enrollment. Participants will be included if they have a history of confirmed SARS or SARS-CoV-2 infection, are immunocompromised or are pregnant. Participants will be randomized for adverse events and serious adverse events by physical examinations, laboratory tests and self-reporting. Blood samples will be collected at serial time points (pre-vaccination, 1 day, 7, 14, 28, 42, 56, 7, 28, 42, 56, 84, 100 days post-vaccination) for assessment of antibody and cellular immune parameters. Primary endpoint is the level of anti-SARS-CoV-2 spike immunoglobulins at day 28 post-vaccination and will be assessed against primary SARS-CoV-2 and variants of concern. Comprehensive immune profiling of the humoral and cellular immune response to vaccination will be performed.

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Trials | Singapore

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Experimental design

Early sharing advances science and improves reproducibility



protocols.io

protocols.io was acquired by Springer Nature in 2023 and provides a secure platform for scientific collaboration outside of traditional protocols and methods workflows, in addition to providing a space for them to be shared openly.

SPRINGER NATURE
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Search over 75,000 protocols and methods

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Making it easier to
review and share
code

Open code has the same needs as open data

1

Proper documentation

Code needs to be sufficiently documented with rich metadata that enables others to check and re-use it. This includes information on dependencies, operating systems, technical requirements as well as licenses and terms of use.

2

Peer review and verification

Peer reviewing the code ensures that it is evaluated by an expert and it is functional and re-usable at the time of publication

3

Permanence and recognition

Code should be stored in a repository using a permanent unique identifier, cited in the paper and recognized as a valuable output in its own right

4

F.A.I.R

Like data, published code should be Findable, Accessible, Interoperable and Re-usable

Integrated solutions support authors, reviewers and readers

1

Supporting code sharing

The container assembles data, code and the right environment and offers transparency and reproducibility of the results

2

Supporting authors

Authors are given the option to use the Code Ocean platform and technical support to set up their code and data in a container.

3

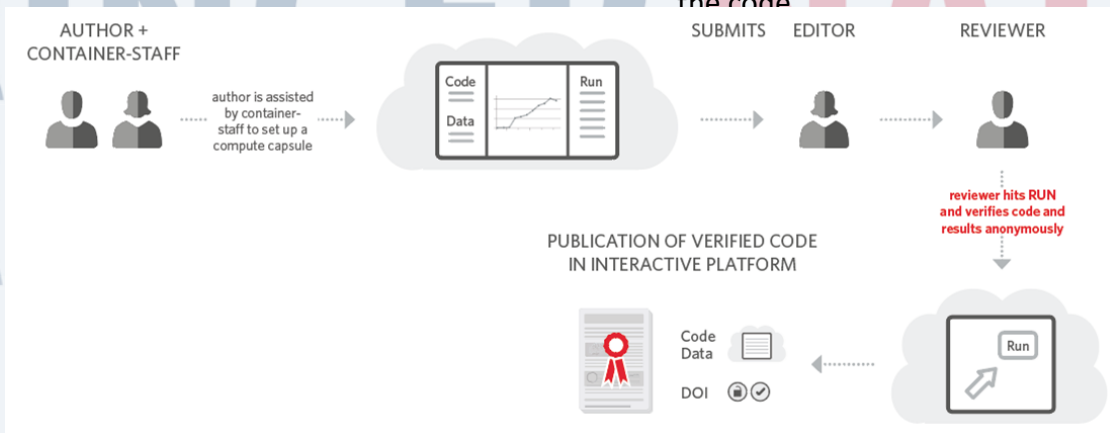
Supporting reviewers

Reviewers are provided private access to the code container and free-computing time. The container facilitates checking and running the code

4

Supporting readers

Readers access code, data and environment in one place, via a link to the capsule. The capsule is given a DOI to enable proper recognition, citation and re-use



Positive engagement and response from the community

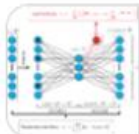
- Average 54% uptake from authors of offered service
- High engagement by reviewers (24 views per capsule; 1.3 runs per capsule)
- Positive feedback from the community

Code availability

All source codes and models of DeepFragLib are publicly available through a Code Ocean compute capsule (<https://doi.org/10.24433/CO.3579011.v1>)⁴⁹ and on GitHub (<https://github.com/ElwynWang/DeepFragLib>). We have also provided an online server for DeepFragLib at <http://structpred.life.tsinghua.edu.cn/DeepFragLib.html>.



For our paper in @NatMachIntell we put everything on @CodeOceanHQ including a simulated dataset. There are no excuses for avoiding reproducibility.



4Dsurvival: Deep learning cardiac motion analysis for human survival...
codeocean.com

2:15 PM · Jan 21, 2020



Just had an absolute joy of a reviewing experience for @NatComputSci – really interesting paper that I felt I could help strengthen even more, and solid code capsule on @CodeOceanHQ as part of the package too! May all reviews be so educational and fun! AND HAVE INLINE FIGURES

1:07 PM · Mar 12, 2021 · Twitter for iPhone

What's next?

1 **Improve integration into our systems and expand roll out of service across journals**

Reach more disciplines, support reproducibility of the article

2 **Continue to evolve our code sharing policies in partnership with the community**

Software citation guide (FORCE11)

Software citation implementation Journals taskforce (FORCE11)

Reproducibility badges for computational work (NISO)

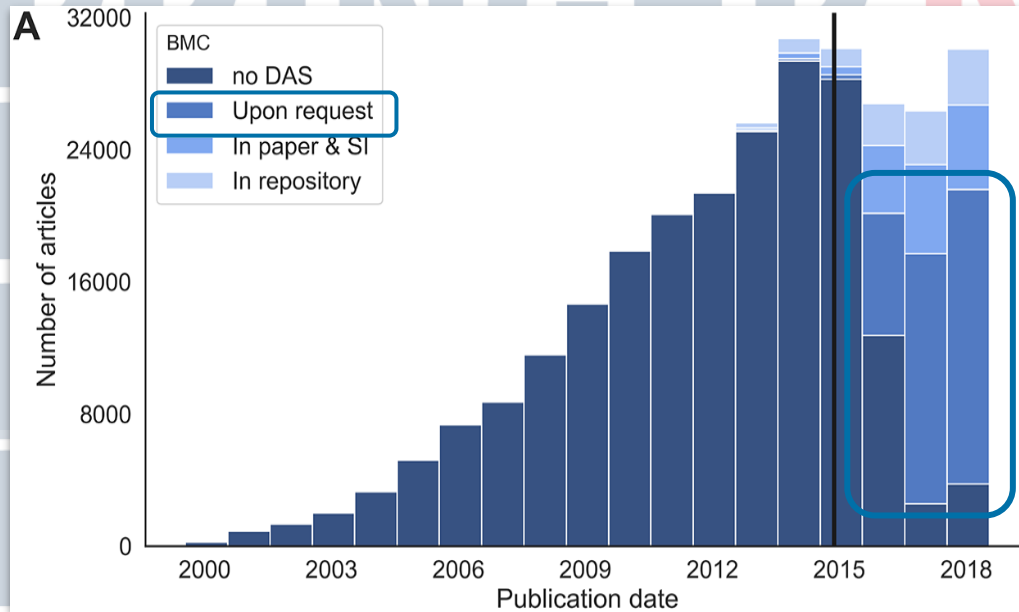
3 **Promote better recognition and credit for sharing verified peer reviewed code**

Enhancing code visibility and recognition in the paper via our article platforms

**Making it easier to
share research data**

The problem

Data Availability Statements are better than nothing... but only just



60% of open access papers state their data are “available on request”.

The problem

Data Availability Statements are better than nothing... but only just



Journal of Clinical Epidemiology

Available online 30 May 2022
In Press, Journal Pre-proof

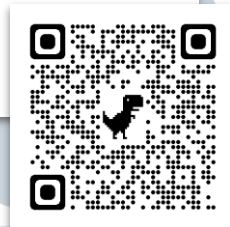


Original Article

Many researchers were not compliant with their published data sharing statement: mixed-methods study

Mirko Gabelica¹, Ružica Bojčić², Livia Puljak³

Show more



“Only **6.8%** of authors stating ‘Available on request’ actually supply their data when requested.”

The problem

Even if authors technically comply, the data are rarely findable, accessible, interoperable or reusable

'Available on request'

Original Article | [Open Access](#) | Published: 03 January 2019

Molecular structure of human synaptonemal complex protein SYCE1

[Orla M. Dunne](#) & [Owen R. Davies](#) 

[Chromosoma](#) **128**, 223–236(2019) | [Cite this article](#)

3512 Accesses | **9** Citations | **7** Altmetric | [Metrics](#)

Data availability

All data are available from the corresponding author upon reasonable request.

Supplementary Information

[Additional file 1.](#)

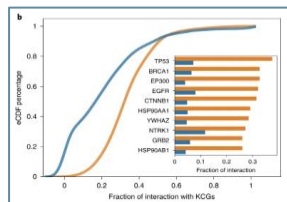
[Additional file 2:](#)

Fig. S1. Full Western blots used for Fig. [1b](#), [c](#), [d](#)
Western blots used for Fig. [1c](#). (c) Full Western

Source data

[Source data](#)

Data 'in the paper'



	A		B	
	Weight (lbs.)	Weight (lbs.)	Price	Price
Mileage (mpg)	-108.4*** (-11.60)	-91.22*** (-10.34)	-49.51 (-0.57)	21.85 (0.29)
Car type		-550.1*** (-4.96)		3673.1*** (3.37)
Weight (lbs.)			1.747** (2.72)	3.465*** (5.49)
Constant	5328.8*** (25.85)	5125.7*** (27.93)	1946.1 (0.54)	-5853.7 (-1.73)
Observations	74	74	74	74

t statistic in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Our first step was to provide advice to authors who want to open their data

Springer Nature Research Data helpdesk

Support for authors:

- Compliance with the policies of their funders and institutions
- Information on the data policy of their target journal(s)
- Identifying and using appropriate data repositories
- Data reporting standards

Support for editors:

- Understanding and implementing a data policy
- Identifying appropriate repositories for their journal
- Dealing with peer review of sensitive/human data
- Best practice for integration into the literature

Authors and editors can visit <https://www.springernature.com/gp/authors/research-data/helpdesk> or email researchdata@springernature.com for help and advice.



Integrating with the figshare data repository into the submission process

Lowering the barrier of effort for best practice

Springer Nature has partnered with **figshare** at seven Nature Portfolio and Academic Journals, providing authors with a simple solution to share their data into a repository.

- **Ease of use:** facilitating deposition during manuscript submission encourages data sharing by authors who haven't yet used a repository.
- **Automation:** integrated deposition is quick, easy and allows coordination of manuscript and data progress.
- **Integrity:** data are made available to reviewers and editors prior to being made publicly available.
- **Control:** data are stored privately until publication of the related article.
- **Expert support:** data specialists check all submissions and provide feedback to authors.
- **Flexibility:** submissions can be handled up to 50GB, covering a wide range of disciplines and data types.

nature
portfolio



ACADEMIC JOURNALS
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How it works

Straightforward deposition with quality assurance

Submit

- Authors add their data to figshare from **within the manuscript submission system**, no separate login or searching for repositories.
- One **simple form** to submit files and metadata.

Check

- Data are **stored privately** & made available to **reviewers**.
- Specialist **data checks** are performed on scope, presence of sensitive data, rights issues, file and metadata integrity.
- Guidance on **data citation** and general support is provided .

Share

- Progress is coordinated with the manuscript.
- Data are shared in the **Springer Nature figshare repository** and **linked** to the manuscript.
- Authors have a **persistent, citable** data record with clear licence for **reuse**.

The published output

Linked article and data



Results of the figshare integration pilot

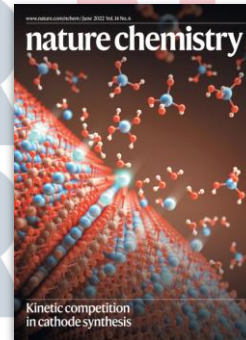
The rate of uptake is modest but greater than we expected!

The 10 week pilot period saw data deposited to figshare from 13% of submitted manuscripts across the seven journals — *Nature Chemistry*, *Nature Ecology & Evolution*, *Nature Energy*, *Nature Neuroscience*, *Bone Marrow Transplantation*, *Oncogene*, and *Oncogenesis* — with uptake ranging from ~9 to ~17%.

This is on top of data sharing that was already happening via specialist repositories.

The overall rate of deposition in open data repositories has increased from 50% to 62% following integration.

Based on this, the data sharing will continue on these journals and expand to include many more.



What next for the figshare integration?

What can we learn and how can we do even better?

As well as making the integration available more widely, we are committed to learning from usage so far and developing a better offering for authors. Including:

- **Ensuring reviewer engagement:** We want to better understanding of how much reviewers are using this feature, and how we can promote review of data alongside the manuscript.
- **Improving quality of metadata:** The main focus of the pilot was to see whether integration would increase data sharing. Now that we know it does, we're keen to see how we can help researchers ensure that their data is made more useful through rich metadata.
- **Usage and impact:** As data sharing increases, we're keen to learn more about how these records are used, both via direct citations and Altmetrics embedded on the figshare page. We're particularly interested to measure how this improves usage and impact of the papers the datasets are linked to and, independently, of the datasets themselves.
- **Extension to more journals:** Eventually we like to be able to offer this service to all of the 3,000+ journals we publish

Thank you

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Springer Nature

and

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