

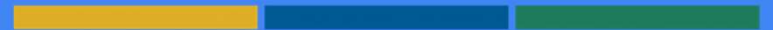
Aligning Linguistic Research Incentives and Open Scholarship

Chris Bourg, MIT Director of Libraries

Greg Tananbaum, Head of Open Research Funders Group

Overview of NASEM's Roundtable on Aligning Incentives for Open Science

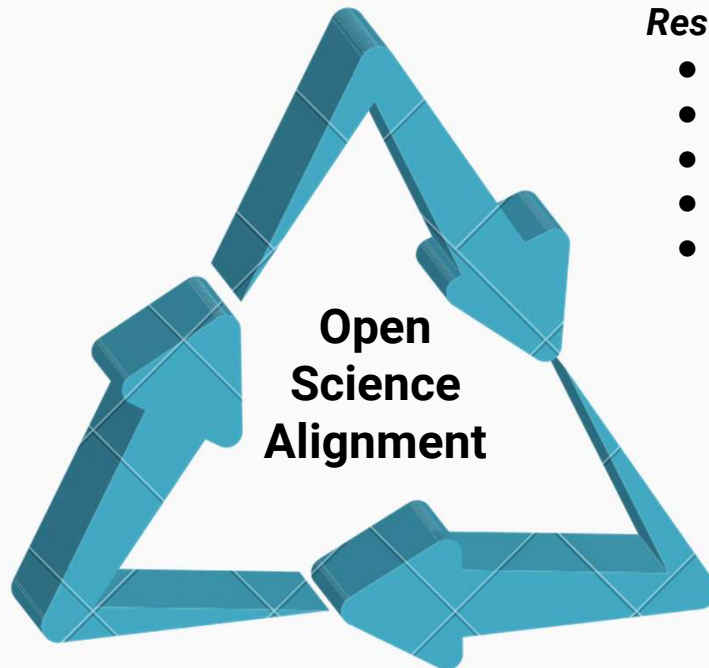
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ENGINEERING
MEDICINE



NASEM Roundtable: Goals

Practices

- Open Access
- Data Sharing
- Preregistration



Research Values

- Transparency
- Replicability & Reproducibility
- Open Dialog
- Knowledge Sharing
- Follow-On Research

Incentives

- Hiring
- Tenure & Promotion
- Funding

NASEM Roundtable: Participants

Universities

- Arizona State University
- Atlanta University Center
- Benedict College
- Harvard University
- Howard University
- Johns Hopkins University
- Massachusetts Institute of Technology
- Princeton University
- Stanford University
- Trinity University
- University of Arizona
- University of California
- University of California at Los Angeles
- University of Houston
- University of Southern California

Funders

- Alfred P. Sloan Foundation
- American Heart Association
- Andrew W. Mellon Foundation
- Arcadia
- Arnold Ventures
- Bill & Melinda Gates Foundation
- Coalition for Epidemic Preparedness Innovations
- Gordon and Betty Moore Foundation
- Health Research Alliance
- Howard Hughes Medical Institute
- James S. McDonnell Foundation
- John Templeton Foundation
- Leona M. and Harry B. Helmsley Charitable Trust
- Lumina Foundation
- Robert Wood Johnson Foundation
- Schmidt Futures
- Wellcome Trust

Agencies & Others

- Association of American Medical Colleges
- Association of American Universities
- Association of Public and Land-grant Universities
- European Commission
- National Institute of Standards and Technology
- National Institutes of Health
- Open Research Funders Group
- National Science Foundation
- Scholarly Publishing and Academic Resources Coalition
- U.S. Department of Education
- United Kingdom Research and Innovation

Roundtable Deliverables

Actionable guidance and resources designed to assist university leadership, academic department chairs, research funders, and government agencies.

The Open Science Imperative

Draft version 3.0

October 31, 2019

Note to Roundtable Members: This narrative, drafted by the Success Stories working group, is intended to communicate the benefits of open science using succinct, approachable language. One way to think about its possible deployment is to envision an academic administrator or senior leader as a philanthropist who has a vague notion that Open Science is something they should better understand. This piece, if successfully executed, will make the affirmative case as to why the open approach to the research endeavor is preferable to the status quo, and what the benefits to society will be (if it is adopted at scale). Notes that this work product will likely be complemented by a longer reader (for those wishing to do a deeper dive) and a shorter infographic (for those seeking a very broad overview).

Over the last 20 years, the research community has grown increasingly interested in and supportive of Open Science activities. Open Science encompasses a range of individual, institutional, and community efforts to broaden access to research outputs. This increased accessibility facilitates better collaboration and outcomes as a function of collective intelligence. By prioritizing shared discovery over individual and institutional agendas, Open Science practices are spurring the knowledge economy, generating broad social and public benefits, strengthening cultural values around scientific literacy and education, and improving public policy and democracy.¹ Despite the benefits of Open Science, individual researchers face numerous barriers that are restricting broad uptake of these practices. The current credit and reward systems disincentivize information sharing in favor of siloed, non-inclusive modes of knowledge production. Significant, coordinated support within and across research stakeholder groups is necessary to change these incentives to realize the benefits of Open Science. This white paper, prepared in conjunction with the National Academies of Sciences, Engineering, and Medicine's Roundtable on Aligning Incentives for Open Science, briefly sketches the current state of Open Science, contrasts the diminishing returns of the traditional scientific model with the advantages of emergent Open Science practices, and suggests possible measures that organizations can individually and collectively undertake to shape the future of research and discovery.

The State of Open Science
Open Science has been conceptualized in philosophical and ideological terms as an affinity for open flows of information to facilitate innovation for the betterment of society² but is most frequently used as an umbrella term to describe active efforts to reduce the barriers to information access for researchers and the public. A commonly used definition of Open Science is "the idea that scientific knowledge of all kinds should be openly shared as early as is practical in the discovery process."³ Although varying conceptualizations and definitions of Open Science

¹ Tennant et al., 2016; Zuccala, 2010
² Gold, 2016
³ Nelson, 2011

Data

Relevance to Open Ecosystem

The independent confirmation of results and conclusions is critical for understanding scientific soundness and informing future research activities. Openly shared data can shed light on negative results and attempted research directions, with the potential to improve efficiency of the research process, as well as lead to novel analyses and conclusions.

Examples of Open Data Policies

- The **American Heart Association** requires grant applicants to include a data sharing plan as part of the application process. Any research data that is needed for independent verification of research results must be made freely and publicly available within 12 months of the end of the funding period (and any no-cost extension).
- The **European Open Science Cloud (EOSC)** has developed a strategic implementation plan for the creation of a data commons housing interoperable, machine-readable data across domains, consistent with FAIR principles.
- The **Yale University Open Data Access (YODA) Project** facilitates clinical trial data access to promote independent analyses of the data. It also provides a formal vetting of the data to ensure consistency with informed consent and confidentiality requirements.

Considerations

A number of issues merit consideration by organizations developing open data policies, including the following:

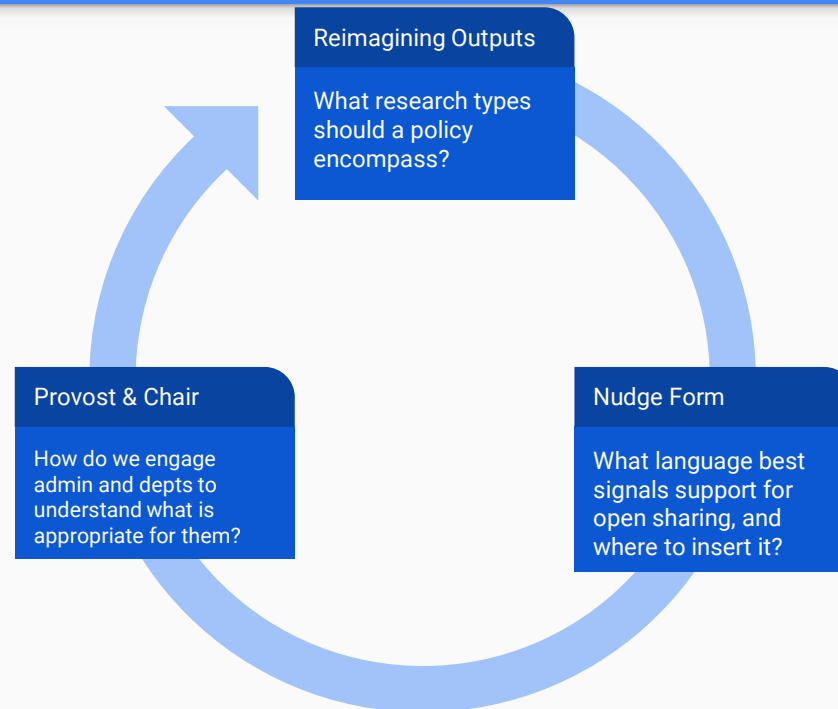
- **Comprehensiveness.** What data is needed for the independent verification of research results? To what extent, if any, are lab notebooks, partial datasets, preliminary analyses, and other materials necessary to facilitate the validation of research findings?
- **Timing.** Given the centrality of open data in replicating and reproducing research results, should all data related to these results be made available concurrent with the posting of research findings? Should researchers be given an additional window of exclusivity (6-12 months) to further explore their research data before sharing it with the community?
- **Financial Support.** Will the policy maker provide funding to defray costs of preparing and/or depositing the data? If so, is there a cap on the amount? Must the researcher explicitly account for these expenses at the time of project design?
- **Licensing.** What type of licensing requirements will the policy include to facilitate reuse of the data?
- **Proprietary Software.** To the extent that the data can only be accessed or analyzed through software that is not open source, what steps can be taken to reduce restrictions on its reuse?
- **Data Management Plans.** What support and guidance will the organization provide to help the researcher clearly articulate at the outset of a project how and where data will be shared? What mechanisms are in place to ensure that the researcher adheres to the data management plan?

Provost & Chairs Working Group

P&C Group's Origin Story



P&C Relationship to Other Working Groups



Conversations to
Date

36 Departments

22 Institutions

14 Disciplines



JOHNS HOPKINS
UNIVERSITY



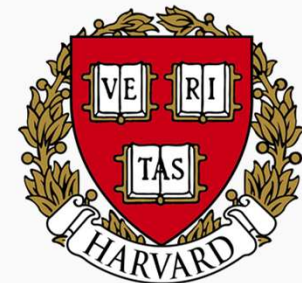
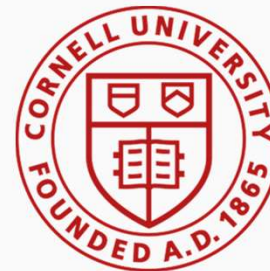
Stanford
University



UNIVERSITY
OF OREGON



WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON

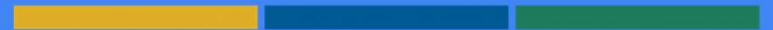


Collaborating with the LSA



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“How do we make sure that the open science policies we implement here will align with what our peers are doing in their own departments? ”

- Really Smart Department Chair from Big-Time University

“It would totally suck if we made our people do open stuff that made it harder for them to get work elsewhere.”



- Really Smart (If Perhaps Slightly More Blunt) Department Chair from Different Big-Time University

The Psychology Example

Department: ARTS & Sciences, College of

Department: Department of Psychology, Developmental Area

Rank: Assistant Professor

Annual Basis: 9 Month

Application Deadline

Review of applications will begin October 15, 2019; position open until filled

Required Application Materials

Candidates are asked to apply online at <https://academicjobsonline.org/ajo/jobs/14601> by submitting a cover letter, curriculum vitae, three letters of recommendation, three representative publications, and three statements: (1) research accomplishments and future plans, (2) teaching experience and approach, and (3) personal contributions and/or plans to foster an environment of equity and inclusion for faculty, staff, and students from diverse backgrounds.

Our department embraces the values of open and reproducible science, and candidates are strongly encouraged to address in their statements how they have pursued and/or plan to pursue these goals in their work.



Sample Signalling Language: Faculty Annual Reporting

- For each of the categories below, please provide representative examples demonstrating how (where appropriate) you have made outputs resulting from your research openly accessible. If possible, please provide the DOI and license terms under which the materials are available.
 - Open access articles
 - Open access books, book chapters, and/or monographs
 - Copies of your papers, chapters, monographs, or other published materials in institutional or disciplinary repositories
 - Etc.
- If known, describe how others have made use of these open research outputs, and include relevant DOIs if possible. This can include use in other disciplines and outside of academia.
- Please describe the impact that your openly available research outputs from this evaluation period have had from the research, public policy, pedagogic, and/or societal perspectives.

So What Do We Want?

Coordinated action to develop open science plans that are appropriate for your department, your institution, *and your discipline.*

1. Build a “Linguistics Coalition of the Willing”
1. Collaborate to Develop Linguistics-Appropriate Language and Insertion Points
1. Collaborate to Develop Linguistics-Appropriate Propagation Plans
1. Commitments to Engage with Department Colleagues and Academic Leadership to Get Buy-In
1. Commitments to Share Lessons Learned from these Engagements

...and What Are We Prepared to Do?

Lead the effort to understand what open science language, practices, and policies can be realistically implemented at scale in linguistics.

1. Provide Toolkit of Resources to Adapt and Adopt
1. Leverage NASEM Imprimatur to Ensure Academic Leadership are Engaged
1. Coordinate Linguistics Cohort Discussions
1. Analyze Collective Wisdom and Share with Broader Linguistics Community

Let's Talk!

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