OPEN SCIENCE RESOURCES – SEPTEMBER 2021

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GENERAL

NASEM's Aligning Incentives for Open Science Toolkit:

NASEM Convened critical stakeholders (including many HRA members) to fundamentally improve the correlation between open science practices, credit/reward systems, and research values. In the toolkit below are resources created by the Roundtable that can help funders (and others) implement open science plans. More details on the Roundtable can be found here.

NASEM's Toolkit for Fostering Open Science Practices (Agenda Book November 5, 2020)

Sections of the Toolkit include:

- **The Open Science Imperative**. This essay communicates the benefits of open science using approachable language.
- **Open Science by the Numbers Infographic**. Intended to communicate the benefits of open science in a graphic form.
- **Signaling Language Templates and Rubric.** These resources provide specific but modifiable language that can be adopted by funders and universities at specific points of high leverage (e.g., grant applications, progress reports, job postings) to ***send a clear signal to researchers that we value their "open" behavior.***
  Sending Signals Text: From NASEM Roundtable
  Open Behavior is Valued Rubric NASEM 2020
- **Good Practices Primers.** These are concise guides intended to offer policymakers a high-level overview of open sharing.
- **Reimagining Outputs Worksheet**. This table lists the range of research products stakeholders may choose to consider as they develop open science policies.
- **Open Science Success Stories Database**. This database compiles research articles, perspectives, case studies, news stories, and other materials that demonstrate the myriad ways in which open science benefits researchers and society alike.

ORFG's Tip Sheets

Here is a link to 4 "Tip Sheets" that help specific audiences understand the benefits of open science and implement effective policies.
Open101
ORFG 101 Staff
ORFG 101 Grantees
ORFG 101 Leadership

ORFG's Incentivization Blueprint

The Blueprint is a fantastic resource that provides funders with a Step-by-Step guide for funders to incentivize open behavior – from Policy development, to implementation, through Stakeholder engagement. It also included helpful template language.

Entities who facilitate "Open"

Center for Open Science **(www.cos.io)**
A nonprofit dedicated to increasing openness, integrity, and reproducibility of research. Advocacy, services and products hosted by COS include:

- Transparency and Openness Guidelines (TOP) Guidelines (including TOP for Funders) is a resource hub with examples of best practices for funders including recommendations, tools, and templates for funder to learn from others how to best shift norms in the entire research community.
- Open Science Framework (OSF) including OSF preprints, and OSF registries.
- Preregistration (meaning specifying your research plan in advance of your study and submitting it to a registry)
- Registered Reports (peer review prior to data collection to emphasize the research question and the quality of methodology - protocols are then provisionally accepted for publication if the authors follow through with the registered methodology.)
- OSF Preprints OSF Preprints is not only a branded preprint service but also aggregates search results from a variety of other preprint providers such as arXiv, bioRxiv, PeerJ, CogPrints and others, and can be searched by author or keywords, or filtered by subject, and many other ways.

ORFG (Open Research Funders Group) **www.orfg.org**

A membership organization for funders committed to the open sharing of research outputs. This group also identifies and creates resources to help promote open science behaviors. Many of the resources they have identified or developed are linked to in other places in this document.

- Greg Tananbaum (ORFG Director) gave a presentation to HRA members summarizing reasons for implementing policies and some resources that can help lower barriers for researchers. Slides are here.
- ORFG also developed "Tip Sheets" and the Incentivization Blueprint (above).
- ORFG has a How Open is It? Guide to Research Funder Policies

Open Access for Publications

HRA Open

HRA's web-based platform that enables grantees of HRA member organizations to deposit publications into PubMed Central – just like NIH-funded grantees. The platform also connects grantees' publications to their grant AND any data/material/code/etc. that is deposited in Figshare. More info can be found here.

"Plan S"

European Funders announced Plan S for Open Access. Citing the detrimental effects of paywalls on the progress of science, a new document, "Plan S," calls for "research publications that are generated through research grants to be made fully and immediately open." The "Plan S" document lays out a set of principles to achieve this aggressive goal.

Data (Protocols/Materials/Code) Sharing

Principles and Practices

The FAIR Guiding Principles for Scientific Data Management and Stewardship

FAIR means data (or other research output like material or code) must be **F**indable **A**ccessible **I**nteroperable **R**eusable. The principles and other details can be found here.

Data Repository Guidance

In general data should be submitted to discipline-specific, community-recognized repositories where possible. Where a suitable discipline-specific resource does not exist, data should be submitted to a generalist repository. This link details the requirements of a robust repository.

Data Sharing: A Roadmap

This Roadmap was created to walk organizations through the steps and highlights available resources that help funders adopt and implement a data sharing policy.

HRA hosted webinars

Data Sharing and Data Management Plans [HRA Members Meeting, Virtual, Spring 2021]

Many HRA organizations have a data-sharing/management policy in place or are considering developing one and a few were highlighted in this session including what is a robust data-sharing/management plan, guidance to researchers on how to create a robust plan, specific repositories or tools to use.

Federal Policy for Data Sharing Webinar [February 23, 2021]

Attendees learned details of the NIH Policy for Data Management and Sharing as well as how CDMRP is already implementing their data-sharing incentives and procedures within their programs to demonstrate thihngs HRA Members can do to implement their own policy.

How NCI is Leading on Data Sharing [Webinar, October 9, 2018]

A representative from shared how they promote the data sharing ecosystem, including the impressive steps that NCI is taking to incentivize and ease the burden of data sharing.

Implementing a System to Enable Credit for Data Sharing

The (AAMC), the Multi-Regional Clinical Trials Center of Brigham and Women's Hospital and Harvard (MRCT Center), and the NEJM launched the Credit for Data Sharing initiative to describe and implement a system to appropriately credit researchers for sharing data.

Data on Funder's (including NIH) Data Sharing Policies

Funder Data Sharing Policies: Overview and Recommendations [RWJF Report]

This 2017 report by RWJF reviews funder policies and practices, and provides recommendations.

HRA member (and other) data sharing policies

The spreadsheet on this page links to data sharing policies from HRA members, funders in the UK, federal funders and others.

Protocols.io

Open access platform that makes it easy to share protocols and to collaborate on method development, both publicly and privately. See additional information here.

PREPRINTS

ORFG's Preprint Primer

The Open Research Funders Group (ORFG) has developed a Preprints Primer for the American Heart Association. Feel free to use this guidance in setting your own policy around the use of preprints.

OSF Preprints

See above for details on the OSF Preprints functionality.

Preprints and the life cycle of scholarly journal publication

See page 12 of this article for a very clear graphic outlining when and where preprints provide value.

PREREGISTRATION / REGISTERED REPORTS

Details on both preregistration and Registered Reports can be found here.

Preregistration

The act of submitting a research plan (often with a detailed analysis plan) to a registry prior to conducting a study. It adds credibility to all research by ensuring that the most rigorous, confirmatory findings are distinct from exploratory research discoveries. Preregistration improves research by addressing:

• Selective reporting, by submitting the work to a registry

• Questionable research practices, such as hypothesizing after results are known or deciding which samples to include or covariates to add after seeing how they affect the results.

Preregistration: Improve Research, Rigor, Reduce Bias [Webinar, December 10, 2018]

Attendees heard the benefits of submitting a research plan to a registry prior to conducting a study. A link to "The preregistration revolution" is also linked, as well as how to preregister a study.

Registered Reports (cos.io/rr)

A publishing format in which peer review occurs before results are known. High quality studies that ask important research questions and that include sufficiently rigorous methods can be given an in-principle acceptance, or a promise to publish regardless of outcome. In addition to the benefits mentioned above for preregistration, Registered Reports also address:

• Publication bias, in which studies that report significant findings are more likely to be published.

• Study quality, by conducting peer review at a point in the research project when feedback can improve the conduct of the study.

Registered Reports: From the Funders' and Publisher's Perspectives [Webinar, March 4, 2020]

In this HRA-hosted webinar, attendees heard the Funder's perspective and the Publisher's for the value of conducting peer review prior to data collection, and how researchers benefit from increased quality of studies, a clear publication path, and more transparent research.

Use cases for Registered Reports

A qualitative analysis of stakeholder experiences with Registered Reports Funding Partnerships

Evaluating Registered Reports Funding Partnerships: a feasibility study