

Operationalizing & Harmonizing Open Research Policies Lessons from the NASEM Roundtable



Chris Bourg,
Director of
Libraries, MIT



Maryrose Franko,
Executive Director,
Health Research
Alliance



Geeta Swamy, AVP for
Research, Duke, & Vice
Dean for Scientific
Integrity, Duke School of
Medicine



Greg Tananbaum,
Director, Open
Research Funders
Group

Session Agenda

1. Provide an overview of the National Academies of Sciences, Engineering, and Medicine's Roundtable on Aligning Incentives for Open Science
 - a. Background & Goals
 - b. Work to Date
 - c. Lessons Learned & Next Steps
2. Engage expert panel of cross-stakeholder experts
 - a. Perspectives on Current State of Play
 - b. Collective Action Opportunities
 - c. Asks & Offers
3. Open the floor for discussion among panelists and audience members

NASEM Roundtable: Participants

Universities

- Arizona State University
- Atlanta University Center
- Benedict College
- Duke University
- 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

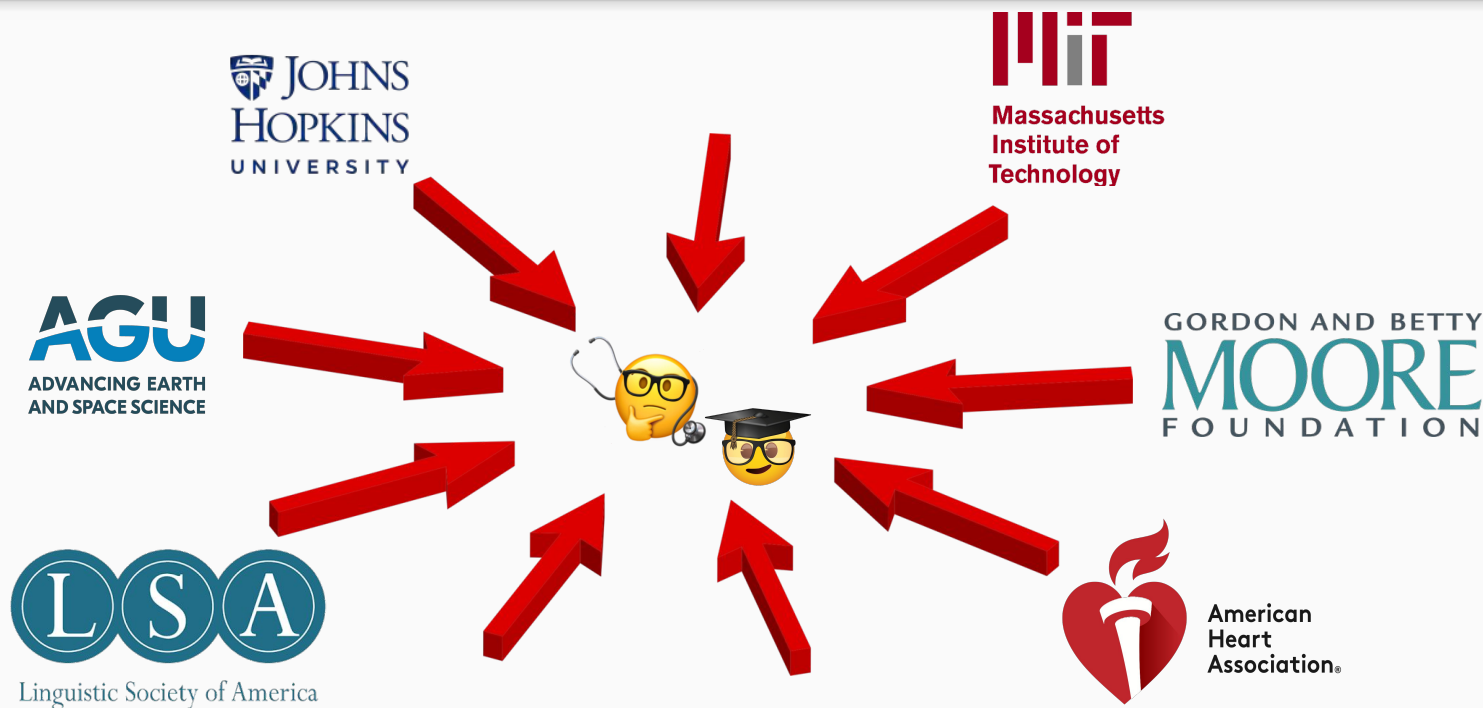
Funders

- 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
- Office of Science and Technology Policy
- Scholarly Publishing and Academic Resources Coalition
- U.S. Department of Education
- United Kingdom Research and Innovation

Roundtable Theory of Change: Mutually Reinforcing Vectors



NASEM Roundtable Toolkit

Email greg@orfg.org for a copy of the toolkit

Open Science Success Stories

Search the Stories:

Search

Why Open Science?

Gaelen Pinnock

An infographic to outline why the University of Cape Town (UCT) supports open science.

See Resource

The leading-edge of genomics research

The Wellcome Sanger Institute aims to tackle some of the most difficult research that pushes the boundaries of scientific understanding.

See Resource

Costs and savings associated with publishing open access

Simon Page, Ghiesla Nel, Abbie Pound

The initial cost of publishing open access is offset by substantial hypothetical cost savings in OA, which include increased transparency, added value to society, and enhanced discovery.

See Resource

Open Scientist Handbook

Bruce Caron

The Open Scientist Handbook is designed to give any scientist on the planet the knowhow and tools to become a professional organizations and collegial associations, and in your personal life. "Open science"—what people do to restore those practices, motivations, virtues, rigor, and joys that have long been the incentives for smart, creative scientists, instead of devising clever derivative financial devices for Wall Street (which you totally could have done).



Good Practices Primers

Many organizations are still in the deliberative phase with respect to their open science investigation. The Good Practices Primer provides a series of questions to help you decide whether to pursue open science. It also provides a series of questions to help you decide whether to pursue open science. It also provides a series of questions to help you decide whether to pursue open science.

Articles

Reference to Open (Economics)

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Open Science by the Numbers

Open Science provides research that is subject to peer review and is most frequently when all of its elements (including articles, data, protocols, and code) can be openly accessed, tested, and built upon.

\$3.2 TRILLION

Researcher estimate that \$3.2 trillion in economic output could be added to global GDP through Open Science across all sectors, with scientific and scholarly data playing an important role.

37 MILLION

Biological records

The Synapse stores some platforms funded by NIH, hosts 37 million biological records from 300 universities, research, and research organizations.

766

Open Access journals

Open Access journals

Open Access journals

Open Access journals

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Open Access journals

NIH

The Human Genome Project timeline

\$965 BILLION

Genomic output

\$293 BILLION

Genomic output

\$293 BILLION

Genomic output

\$293 BILLION

Genomic output

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Guide to Supporting Open Scholarship for University Presidents and Provosts

Open Scholarship Defined

Open scholarship is the idea that to advance knowledge, research results of all kinds should be openly shared as early as is practical. Open scholarship encompasses all disciplines, including science, the professions, arts and the humanities. As an element of open scholarship, open access is the ability to freely read and reuse publications.

Importance for Universities

Open scholarship is a key strategy for universities to fulfill their core missions of creating, disseminating, and preserving knowledge for the benefit of society. It provides transparency so that others can validate the quality, accuracy and reproducibility of research, thus building the public's trust. It enables and expedites collaboration among researchers through sharing of data, methods and tools early in the discovery process. It promotes efficiency, by rapidly informing others of promising avenues of research as well as potential dead-ends.

Much as MIT's OpenCourseWare initiative has democratized access to online learning, open scholarship is a key tool for creating a more equitable, inclusive, and just research environment. It increases recognition for research through broad availability and engages both peers and the public at large in science and other scholarly activity.

Open scholarship has proved particularly effective in addressing grand challenges, such as the Covid-19 pandemic, by providing a platform for global cooperation, rapid dissemination, and information equity. Institutions that embrace open scholarship are increasingly seen as global research leaders.

Requirements of Federal Government and Foundations

Federal research sponsors are following open science guidelines created by the White House Office of Science and Technology Policy. For instance, in October of 2020, the NIH expanded data sharing and management requirements for grantees. Like federal sponsors, scores of foundations are increasingly requiring grantees to share research data and other research products as well as publish open access articles. Continued receipt of grant funds by universities requires compliance with these sponsor rules.

Steps to Support Open Scholarship

Open scholarship entails a culture shift in how research is conducted in universities. It requires action on the part of university administration, working in concert with faculty, sponsors and disciplinary communities. Universities should consider steps in three areas:

- Policies:** Language and guidance should be reviewed for alignment with open scholarship, in particular: (1) academic hiring, review, tenure and promotion (valuing diverse types of research products; metrics that incentivize the open dissemination of articles, data, and other research outputs; and valuing collaborative research); (2) intellectual property (ownership, licensing and distribution of data, software, materials and publications); (3) research data protection (for data to be stored and shared through repositories); (4) attribution (recognizing full range of contributions); and (5) privacy (insuring that privacy obligations are met).
- Services and Training:** Researchers need support to assure that data and other research objects are managed according to FAIR Principles: findable, accessible, interoperable and reusable. While the specific solution must be tailored to the discipline and research, common standards, including Digital Object Identifiers (DOIs), must be followed.
- Infrastructure:** Archival storage is required for data, materials, specimens and publications to permit reuse. Searchable portals are needed to register research products where they can be located and accessed. Universities can recognize efficiencies by utilizing external resources (including existing disciplinary repositories) and by developing shared resources that span the institution when external resources do not exist.

Operationalizing The Theory of Change

Top Down

- Engage leadership (university presidents, agency leads, philanthropic CEOs, etc.) to signal their commitment to open
- Create a culture that foregrounds open activities and makes the accrual of credit both easy and normative

Middle Out

- Work with professional societies to articulate and amplify disciplinary norms
- Support the human and technical assets that are providing guidance, training, and infrastructure to do open right

Bottom Up

- Identify, fund, and promote pilots and exemplars
- Lean into and learn from the community-driven building blocks that already exist - success stories, faculty champions, etc.

Discussion

Exploration should be the goal of research, and science the tool. Our structures and designs for administering science must change. Otherwise, we are just bureaucratic operatives running the post office.

Michael Crow, President, Arizona State University