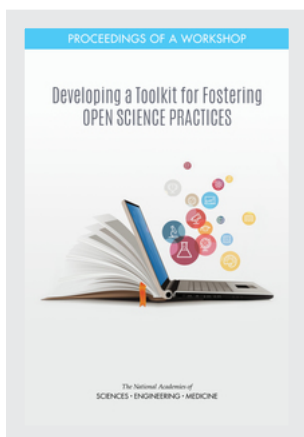


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Developing a Toolkit for Fostering Open Science Practices: Proceedings of a Workshop (2021)

DETAILS

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Appendix C

Toolkit Elements

This appendix includes examples of draft elements of a toolkit that have been developed by members of working groups of the National Academies of Sciences, Engineering, and Medicine’s Roundtable on Aligning Incentives for Open Science. The following materials were developed to stimulate discussions at the November 5, 2020, workshop on Developing a Toolkit for Fostering Open Science Practices:

- I. **Open Science Imperative.** This essay communicates the benefits of open science using approachable language.
- II. **Open Science Signaling Language Template and Rubric.** These resources provide specific language that can be adapted and adopted to signal an organization’s interest in open science activities at specific points of high leverage (e.g., grant applications, job postings).
- III. **Good Practices Primers.** These concise guides offer policy makers a high-level overview of open sharing.
- IV. **Open Science by the Numbers Infographic.** This infographic communicates the benefits of open science in a graphic form.
- V. **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.

- VI. **Reimagining Outputs Worksheet.** This table enumerates the range of research products stakeholders may choose to consider as they develop open science policies.

The toolkit is primarily intended to assist university leadership, academic department chairs, research funders, learned societies, and government agencies about how such a toolkit might be used, what additional materials are needed, and how such a toolkit should be disseminated for broad adoption. As a result of the workshop, a few sections in the Open Science Imperative and Good Practices Primers have been revised by the working group authors.

IV. OPEN SCIENCE BY THE NUMBERS INFOGRAPHIC

Open Science by the Numbers

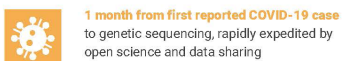
Open Science posits that research has its widest impact and is most trustworthy when all of its elements (including articles, data, protocols, and code) can be openly accessed, tested, and built upon.



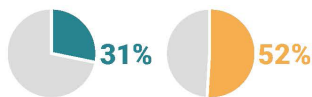
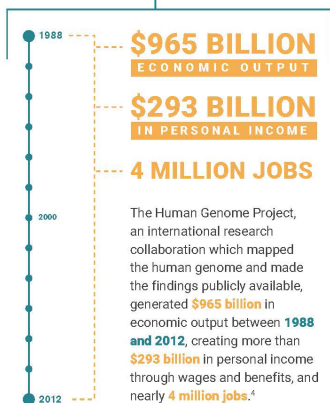
Researchers estimate that **\$3.2 trillion** in economic output could be added to global GDP through Open Data across all sectors, with scientific and scholarly data playing an important role.¹



The Symbiota open source platform, funded by NSF, hosts **37 million biological records** from **766 universities, museums, and research organizations**.²



NIH The Human Genome Project timeline



In 2019, **31% of all journal articles were available as Open Access**, and **52% were viewed Open Access articles**.⁵

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