

# Position Statement – Open Science

## Summary of Position

The Academy supports the development of an Open Science strategy for Australia. Such a strategy needs to address open access, open methods, open peer review and Findable, Accessible, Interoperable and Reusable (F.A.I.R) data.

## Statement of Principle

The Australian Academy of Science maintains that the advancement of scientific knowledge is best served through the free, open, and accessibly distribution of high-quality peer-reviewed research.

The Academy supports continuing efforts to ensure publicly funded research is freely available and without restriction.

The benefits of open science are considerable and worth pursuing. The transition to open science will require government, funding councils, research councils, learned societies, universities, researchers, librarians, and publishers to collaborate to develop such a sustainable, transparent, cost-effective and high-quality open science environment.

## The Academy's Position

Excellence is central to the scientific mission. Scientists seek to understand nature, people, and society and communicate that understanding for the common good. Nation-states fund science to contribute to knowledge, national prosperity, societal well-being and to manage global risks like pandemics or climate change.

The practice of open science is central to the mission of the scientific enterprise. Publication of scientific theories - and experimental and observational data - allows other scientists to identify errors, support, reject or refine methods, and reuse data for further understanding and knowledge. Science's capacity for self-correction comes from this openness to scrutiny and challenge.

The digitalisation of science and society has changed research and offers opportunities to enhance trust in science and scientists. But equally, digitalisation has in part given rise to a tendency to "cherry-pick", dismiss, misrepresent, or obscure scientific evidence or smear individual scientists. This tendency can be resisted by embracing an open research culture.

Open science requires unhindered access to scientific articles, access to data from public research, and collaborative research. Broadening access to scientific publications and data is at the heart of open science so that research outputs are in the hands of as many as possible, and potential benefits are spread as widely as possible.

The hallmarks of good science are demonstrated expertise, accurate and unbiased reporting, and a commitment to opening one's work to the scrutiny of peers and the public. For this reason, scientists are more inclined to trust research that appears in peer-reviewed literature and is open to examination and critique. This openness builds trust, and this trust allows scientists to expand their thinking and hypotheses, leading to a deeper understanding of the world.

In recent centuries, the growth of this understanding is due to such open practices, open communication and deliberation that sits at the heart of the scientific method.

However, many scientific inputs and outputs remain locked behind paywalls. The Australian Academy of Science maintains that the advancement of scientific knowledge is best served through the free, open, and accessibly distribution of high-quality peer-reviewed research. The Academy

supports continuing efforts to ensure publicly funded research is freely available and without restriction.

The Academy is a signatory to the [Declaration on Research Assessment](#) (2012), the [Beijing statement on research data](#) (2019) and the [Findable, Accessible, Interoperable and Reusable \(F.A.I.R\) access policy statement](#) (2017).

## General principles

Following are general principles offered by the Australian Academy of Science to inform consideration about the transition to Open Science.

1. The Academy supports the [Findable, Accessible, Interoperable and Reusable \(F.A.I.R\) policy statement](#) and calls on government to develop a national strategy for its implementation.
2. Government, other researchers, and the wider community must have unimpeded access to the research findings and data that result from publicly funded research. The curation of such data, which must be machine-readable, should be covered by research funders. Publicly funded research findings should be disseminated as broadly as possible and immediately upon publication.
3. Universities and research institutes should support an open science culture by recognising data communication by their researchers as an essential criterion for career progression and reward; developing a data strategy and their collective capacity to curate their knowledge resources and support the data needs of researchers; having open data as a default position.
4. Research findings must not be delayed or prevented from being made available in an Open Access journal or repository by publishing, financial, copyright or other barriers.
5. A flexible and planned approach from funding providers will be necessary to help researchers transition to an Open science culture and practices and implement the F.A.I.R. statement. There will need to be allowances, especially regarding access to health and other personal data. These exceptions should be limited to as few as possible.
6. The quality and integrity of scholarly publishing must be maintained through the continued use of the peer review process in both pre- and post-publication.
7. Assessment of university research should reward the development of open data on a comparable scale as journal articles and other publications and should include measures that reward collaborative ways of working.
8. As a condition of publication, the Academy calls upon scientific journals to require that data is accessible, usable, reproducible and traceable.

## Statement of Authorisation

This position paper was subject to expert review by the Australian Academy of Science and authorised by the Academy Council at its meeting of 24 June 2021.

## Relevant Recent Submissions

- A.A.S. [Submission—Data Availability and Transparency Bill](#), November 2020
- [A.A.S. Submission – A.R.C. review of ERA and Engagement and Impact](#), October 2020
- [AAS/ATSE Joint Submission—Consultation on Data Sharing and Release Legislative Reform](#), October 2019

## Other Publications

- [Interim paper – Open access publishing](#), October 2013
- [Open science: after the COVID-19 pandemic there can be no return to closed working](#), 2020

## Other Relevant Links

- [Declaration on Research Assessment](#), 2012
- [Principles of Science Policy Advice](#), May 2019
- [Beijing statement on research data](#), November 2019
- [Findable, Accessible, Interoperable and Reusable \(F.A.I.R\) access policy statement](#), January 2017
- [Australasian Open Access Strategy Group](#)
- [Open Science for the 21<sup>st</sup> Century, International Science Council](#), June 2020
- [Opening the record of science: making scholarly publishing work for science in the digital era, International Science Council](#), March 2021