

## Frontiers response to NASA's public access plan

### Request for Information: NASA Public Access Plan for Increasing Access to the Results of NASA-Supported Research

August 17, 2023

#### Summary

We welcome the chance to respond to this important [request for information](#) regarding [NASA's public access plan](#). Frontiers is a leading research publisher and open science platform. It is the third most-cited and sixth largest in the world. The science we publish is peer-reviewed, globally shared, and free to read. And of significant note, we have steadily strengthened our partnership with NASA-affiliated authors since Frontiers' founding in 2007.

The Covid emergency taught us that when we trust, open, and share scientific research globally, we can mobilise efficiently, innovate, and save lives. But now we need to do more. We want to see all science open, so that scientists can collaborate better and innovate faster, for fairer and more equitable outcomes in all parts of society, and across all sectors and domains, including education, health, and transportation. That is our social purpose as a business.

So, we fully support the August 2022 OSTP guidelines on immediate public access to federally funded research. We strongly [welcomed them](#) at the time. As a Gold Open Access publisher, we have made thousands of peer-reviewed articles available online immediately, without embargo. Our starting point – and end point – is ease of discovery.

More broadly, as an open science publisher, Frontiers is above all a knowledge, information, and technology company. We were born digital and open access. We made the founding decision to build our own open science platform and continually to develop, improve, and customize it as we meet the evolving needs of the scientific community.

We face global, existential threats. From health emergencies to climate change, we see and feel them now. We can manage and reverse these threats, to live healthy lives on a healthy planet. But that will require political will, global collaboration, and scientific breakthrough at a scale not yet seen.

On all those counts, success will depend on the widespread sharing of the latest scientific knowledge. All of it. We think scale matters. Tackling these threats will require more than incremental change. Good research published at scale, shared globally, and able to be machine-read across large volumes of information, will grow our chances of success.

In simple terms, an article that cannot be found also cannot be shared, replicated, or audited. And all of those findings, therefore, cannot be cited or spur collaboration and breakthrough. Publishing in a Gold OA journal unlocks discoverability and promotes trust and transparency. The articles and underlying data are transferred to a repository such as PubMed Central or stored in commercial or other non-profit databases. The metadata come in XML files and other machine-readable formats to meet FAIR data standards of findability, accessibility, interoperability, and reuse. And that data includes persistent identifiers (PIDs) such as that of ORCID for author identification, a Digital Object Identifier (DOI) for the article itself, and tags to the relevant grant funding or research institution.

The new federal guidelines seek public access but do not specify delivery models. We agree that openly accessible science can – and should – be delivered by more than one

publishing model. We welcome competition if it spurs innovation and the amount of rigorous science accessible to all.

But in judging those delivery models, federal agencies must make a robust and transparent assessment to compare them for efficiency, scalability, and public value for money – guided by the objective of discoverability that underpins public access.

For example, public access known as “Green Open Access (Green OA)” clearly removes some barriers and does not create or perpetuate inequity. But the mechanisms for finding, reading, and sharing Green OA files vary widely. Substantial new funding will be required just to bring that variance down and lift standards for discoverability, with new investment in infrastructure for metadata enrichment. Those institutions unable to fund that investment are likely to face the continued cost pressure of paywall subscriptions that might only minimally ease search and discovery.

So, it is vital that the funding of public access is as efficient, scalable, and as good a value for money as possible, and in our view, Gold OA publishing is the most effective way of securing that outcome. It offers a simple, transparent, and competitive way to unlock the benefits of fully accessible science and does so more effectively than the Green OA option.

As such we believe that NASA, in allowing for compliance through either a Green OA or Gold OA model, should express a preference for Gold OA. We stand ready to support NASA and its partners in the federal government. It is vital we back this effort for open science and meet the public appetite for accountability, transparency, and trust.

#### **Full response**

Our detailed responses to NASA’s framing (in italics) are set out here.

#### ***1. How to best ensure equity in publication opportunities for NASA-supported investigators.***

On public repositories (Pages 9 and 20, Section 4.1), we believe the NASA Public Access Plan rightly encourages and prioritizes the widest possible choices for researchers as they relate to publishing venue, as well as the principles of academic freedom. We think the Plan strikes the right balance by encouraging researchers to make use of existing repositories without privileging or mandating a particular one.

On the article processing charge (APC), we believe it is both fair and effective as it is a fee for a service. And as such we applaud the Plan for allowing all APCs to be included in the NASA grant proposal budget (Access and Discoverability, page 15). But we recognize that in some cases, it is not the preferred or most sustainable price structure for researchers, funders, libraries, and research institutions. And while we, like others in the publishing industry, think the APC model is a good one, we are continually seeking new models to help authors cover the fair and transparent cost of publishing, to make scientific knowledge accessible to the widest possible audience.

On the additional steps NASA might take to ensure new inequities are not created, or existing ones reinforced, we believe NASA should encourage researchers to publish in the Gold OA model – on the basis that the public funding of public access is efficient, scalable, and delivers value for money.

In our view, Gold OA publishing is the most effective way of securing that outcome. It offers a simple, transparent, and competitive way to unlock the benefits of fully accessible

science; and it enables researchers, agencies, universities, libraries, and repositories to fulfil both the NASA Public Access Policy and the OSTP guidance.

Publishing in a Gold OA journal immediately facilitates the transfer of articles to a repository, with metadata in machine-readable formats. In this model, there are no embargoes and no superfluous or costly bundled services that are common in “hybrid” or “transformative” subscription options offered by legacy commercial publishers.

On public value for money, new federal guidelines seek public access but do not specify delivery models. We agree that openly accessible science can – and should – be delivered by more than one publishing model. We welcome competition if it spurs innovation and the amount of rigorous science accessible to all.

## **2. Steps for improving equity in access and accessibility of publications.**

On the 12-month embargo, we strongly welcome NASA’s decision to end it on peer-reviewed publications (Revisions, page 2) and to encourage researchers to inquire with publishers about embargo policies (Purpose and Background, page 12).

Such inquires are necessary because many legacy scholarly publishers have adopted so-called Transformative Agreements (TAs). TAs lack transparency; have complex bundles of often unnecessary services, making it all but impossible to judge value for money; and come with no contractual commitment to a move to full open access (Green, Gold, or otherwise) within a binding deadline.

We believe TAs help subsidize the market dominance of legacy publishers by controlling the pace of transition to fully open access science. The worldwide scientific publishing market is around \$27 billion.<sup>1</sup> Within that, the five largest paywall publishing houses<sup>2</sup> have captured 40 percent of the journals market.<sup>3</sup>

On the basis NASA seeks equity in access as well as transparency in costs, backed by financial sustainability, we believe Gold OA publishers can deliver. We consistently invest in measures that improve the accessibility of our publications. Many such requirements were mandated by the Coalition S initiative, which Frontiers fully supported, and which saw wide-ranging and progressive open access policies adopted in the United Kingdom and across Europe.

We firmly back public policies that promote equity of opportunity, the ability both to read and to publish research, and the scientific rigor, academic freedom, institutional values, and personal and professional recognition that underpin success. We are committed to increasing research access, knowledge resources, and educational opportunities for all, especially for those groups, nations, and individuals who are historically marginalized, underrepresented, or disadvantaged.

We urge NASA to draw on its influence to see that library, research, and educational institutions commit to investing in open access so that all parties can source sufficient funding for publishing. Several equitable open publishing models are readily available. It cannot be right if colleges and universities are encouraged to maintain robust publications budgets for subscriptions and then asked to make cuts to open access.

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<sup>1</sup> By revenues. In 2021. Outsell Inc., “Segment View: Scientific, Technical and Medical, 2021 (cited in [STM Global Brief 2021 – Economics & Market Size](#)).

<sup>2</sup> Elsevier, Springer Nature, Wiley, Taylor & Francis, Oxford University Press.

<sup>3</sup> By published articles. [Dimensions data for published articles 2022](#).

We believe there is enough funding in the system to make the transition to open access complete. But that funding can only be unlocked with public sector, policymaker, and buyer leadership, and on the basis that we look beyond legacy publishing models that have been responsible for a decades-long cost explosion in scholarly publishing. With the right policies and incentives, agencies can help drive the value of taxpayer-funded investment and spur innovation.

### ***3. Methods for monitoring evolving costs and impacts on affected communities.***

We welcome NASA's interest in the commercial drivers of scholarly publishing, particularly in matters of access, equity, and cost. The governing principle of all scholarly publishing should be that the researchers have the most freedom possible to focus on their research. And so, all publishers compete to lower administrative and process-based burdens.

Within the article processing charge (APC) framework, we have expanded our portfolio of institutional models to meet the tailored needs of our customers (recognizing, for example, the distinct needs of research-intensive "publish" organizations as well as high consumption "read" institutions and societies). Our success indicates a range of pricing options can meet the needs of a range of customers and institutions.

### ***4. Input on considerations to increase findability and transparency of research.***

On data sharing, we fully back NASA's effort through its Public Access Plan to spur a better and more consistent use of metadata. In driving this effort, NASA is providing critical leadership in the scholarly publishing ecosystem.

Moreover, we welcome NASA's focus on the findability and transparency of research. Open data drives scientific and technological innovation and spurs collaboration; is critical to driving efficiency and scaling innovation; and in uniform standards can be verified, reproduced, and built upon.

If data is transparent and open to scrutiny and evaluation, it follows that trust and confidence in science are more likely to be sustainable. The infrastructure for open data is readily available and an increasingly frequent resource; what's more, many large-scale repositories already exist to make data open.

By way of illustration, we deposit the full text or metadata of our 230-plus Gold OA journals in more than 20 repositories when we publish articles. The metadata from such journals come in XML files and other machine-readable formats to meet FAIR data standards of findability, accessibility, interoperability, and reuse. The metadata includes PIDs such as that of ORCID for author identification, a Digital Object Identifier (DOI) for the article itself, and tags to the relevant grant funding or research institution. And compliance with JATS DTD for XML and other PMC-recommended tagging enables an even more efficient search and discovery experience.

The new federal guidelines seek public access without specifying delivery models, and we agree that openly accessible science can – and should – be delivered by more than one publishing model. We welcome competition if it spurs innovation and the amount of rigorous science accessible to all.

We think it is possible to achieve the fullest possible access to our collective knowledge – for fairer outcomes in all parts of society – in a business model that is cost-effective, commercially sustainable, and underpinned by private sector innovation.