OPEN SCIENCE

JOIN THE
DEBATE

Contents

Key
Underlined text is explained in the glossary.
▼ refers to tools which are given as examples.

The digital version of this guide is available at
www.ouvrirlascience.fr

As part of the Passeport for Open Science collection, this booklet addresses questions frequently asked by researchers about open science.

It provides factual and documented explanations about the legal, technical and financial issues related to open science.

Opening up science involves discussions and exchanges within the scientific community, and this guide will help you join the debate!
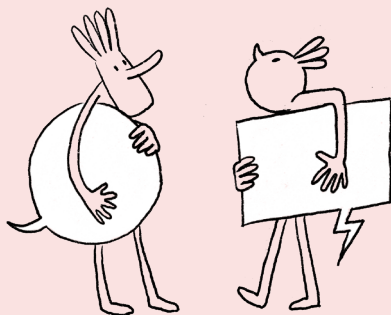
In my field, we don't do open science

Open science applies to all results produced by research: data, codes & software, scientific output. Of course, the nature of the results and methods of scientific communication vary significantly from one field to the next. For example, medicine and sociology involve the use of personal data to which open access cannot easily be provided. In other areas, reputable journals are accessed using an authentication process and so do not correspond to the current standards of open access.

This tells us that open science is not applied in the same way in all fields.

Depending on the scientific communication methods used in your area, you may prefer to publish in an open access journal or deposit your work to an open archive. If you are unable to make your data widely available in the format in which it was collected, one possibility is to make them anonymous and then provide open access. Another is to share them in restricted access with other academic teams authorised under clearly defined frameworks.

If it is not possible to offer completely open access, then sharing with identified users is one way to approach open science.

If I disseminate my scientific work in open access, everyone will be able to use it without citing me

Open access scientific work is easier to obtain but not less well protected than a document with restricted access.

The freely available content on the web facilitates the proper attribution of scientific work and the smooth running of anti-plagiarism software.

Uploading a dataset to a trusted warehouse also allows you to link it to an identifier so it will be correctly cited and your contribution recognised.

Closing off your work behind technical or physical barriers means losing visibility without necessarily avoiding the risk of plagiarism.

If I make my thesis open access, I won't be able to publish it

Disseminating your thesis via an open archive and publishing it in a modified format are two different things. **By allowing open access to your thesis, you give it more visibility and therefore a greater chance of being published**. According to a study conducted in the humanities and social sciences, **82.8% of academic publishing houses are in favour of publishing theses already made publicly available online** (Ramirez *et al*. 2012). Disseminating your thesis is a good way to get it cited and reused. Publishers can then help you adapt and rewrite it to ensure your work reaches a broader audience.

## Open access is a threat to certain publishers

Open access has brought about changes for many structures that contribute to the diversity of academic publishing.

New distribution models combine open access on publishing platforms with commercialisation of other formats and additional services.
There is infrastructure enabling structured digital dissemination which in turn allows for pooled resources and reduced costs. Public policies now support publishers through these changes.

To find a journal or publisher committed to open science, you can consult the ▼**DOAJ** (*Directory of Open Access Journals*) or ▼**DOAB** (*Directory of Open Access Books*) which list 17,000 journals and 500 book publishers respectively.

Open access significantly enhances the visibility of publications and creates opportunities for some academic publishers.
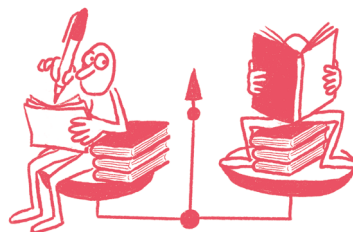
## Open access publishing is too costly for my institute

Some publishers charge researchers or their institutes Article Processing Charges (APC) to disseminate their article in immediate open access. These costs can amount to several thousand euros for just one article. There are options that will allow you to reduce or eliminate these costs, while maintaining open access:

• Deposit the author's version of your article in an open archive. The French Law for a Digital Republic authorises this and limits the potential embargo period that publishers may set. It is also worth learning more about the ▼**Rights retention strategy**;

• publish in a so-called diamond open access journal, which charges the author no fees as the funding is provided upstream through various contributions;

• publish in a journal that charges publishing fees calculated at a fair price. Such journals exist in all fields and are listed in the ▼**DOAJ**.

62% of French publications in 2020 are in open access: 10% in an open archive, 16% are made available by the publisher, and 28% use these two methods (French Open Science Monitor).

Whether you choose open archives, diamond open access, or journals with fair publishing costs, there are many solutions to ensure that open access publishing won't cost your institute too much.
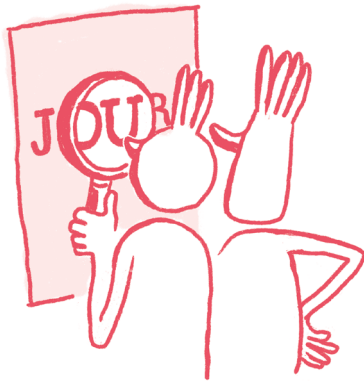
In my field I have to choose a journal based only on the impact factor

The impact factor (IF) is just one statistical indicator among others. It is calculated based on the ratio between the average number of citations a journal receives and the number of articles it publishes over two consecutive years. This is an average that does not reflect on the impact or quality of each article.

The IF varies significantly from one field to the next. *Nature* **for example has an IF of 49.9,** *The Lancet* **79.1, and** *Sociologie du Travail* **0.28, even though each one is a renowned journal in its field.**

When choosing a journal, various criteria and quality indicators are available: Who sits on the editorial committee? Does the publisher operate a peer review process and is that process properly described? Is it an open access journal and does it charge for publishing costs? How long does publishing take? Is the journal referenced in a well-known database?

Open science encourages the development of predatory journals

Perhaps you have received proposals from journals promising quick publication of your work in open access?

The economic model adopted by some open access journals is based on the payment of publishing costs by the authors (Article Processing Charges, APC). **The existence of this model and the development of digital technology have encouraged unscrupulous people to launch journals with the sole aim of generating profits.**

Most open access journals come with a quality guarantee and a peer review process.

Look at the quality criteria of each scientific journal and rely on tools like ▼Think.Check.Submit and ▼DOAJ.

When it comes to sharing publications, all the platforms are the same: I prefer to use academic social media like ResearchGate or Academia

Academic social networking sites encourage discussions with other members of the scientific community.

However, these private platforms cannot guarantee reliable long-term conservation (servers hosted at known addresses, transparent data management, etc.).

In contrast, the ▼**HAL** open archive sends publications to the *Centre Informatique de l'Enseignement Supérieur* (CINES) in France for archiving.

When you deposit your work in an open archive, you receive a permanent download link that you can use in your CV and share on social media.

**I can't share
my research data
because it's too sensitive**

Data sensitivity was cited as a concern by 30% of respondents in an international survey (Simons *et al.* 2021) . Access to some data is limited by legitimate exceptions set out by law, relating for example to professional secrecy, industrial and commercial secrets, personal data, or the protection of scientific and technical potential. In such cases, data sharing practices are encouraged through carefully designed protocols.

The principle **"as open as possible, as closed as necessary"** is an answer to this challenge of limited access. The expectation expressed by French and European Funders is to make research data accessible and reusable. For each research project, those producing the data must assess whether the nature of the data produced or the way in which it is produced justify limiting its usage. Using this approach, you should define which data in your project can be made widely available, shared with restrictions or even made unavailable in case of a legitimate exception.

The question of rights or "ownership" of research data is not considered in the same way as it is for scientific publications.

Most data produced as part of public research will be considered in legal terms to be public data, as understood in French Law for a Digital Republic.

It is the research institute that is recognised as producing the data and not the individual researchers. But these institutes are only depositories of the data insofar as the law requires them to immediately make the information available online and freely reusable.

This general principle (Open Data) is nonetheless subject to legitimate exceptions governed by law, for example when it comes to professional secrecy, industrial and commercial secrets, personal data, the protection of scientific and technical potential or content protected by intellectual property law.

These rules do not prevent your personal contribution to data production from being recognised or the integrity of your results from being respected. But they do prevent you from making the assertion: "This data belongs to me".

COLLECTION

DESCRIPTION

A data management plan will simply increase my workload without benefiting me

A data management plan (DMP) is a structured and standardised document, often required or at least recommended by funders. Before the project begins it is useful as it will allow you to ask the right questions regarding the storage, access, processing and dissemination of your data at each stage in its life cycle and throughout the project. This will help you anticipate the conditions necessary to provide open or limited access to your data when the project ends. The DMP is intended to evolve and can be updated at any stage in the project.

Although a DMP may seem to be burdensome, you will find that ultimately it enables the whole team to better manage and access their data during and even after the project, especially if the plan is drafted collaboratively from the outset.

Online tutorials and dedicated staff teams at your institute are available to help.

STORAGE

ARCHIVING

SHARING
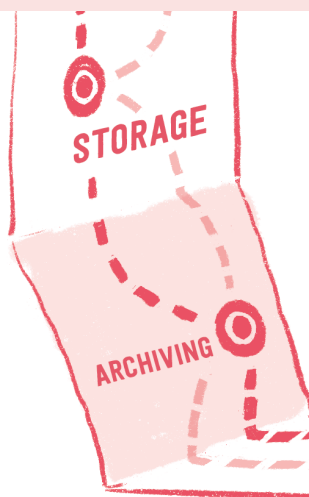
## In my field there is no warehouse to store my research data

There are many data warehouses for specific fields listed in directories like ▼**re3data**. But not all disciplines have specialised infrastructure for the publication, open access or sharing of data. If this is true of your field, general or institutional data warehouses are perfectly suited to store your data.

In France, **the ▼Recherche Data Gouv ecosystem** is a trusted option for any researcher without a dedicated solution.

Whatever the circumstances, the warehouse you choose must be trustworthy, which means it should have criteria guaranteeing reuse of the data: a unique permanent identifier, sufficient description of the data for reuse, use of licences, recognition for the data producers and clear rules governing access, etc.

Find out how your institute can help you.
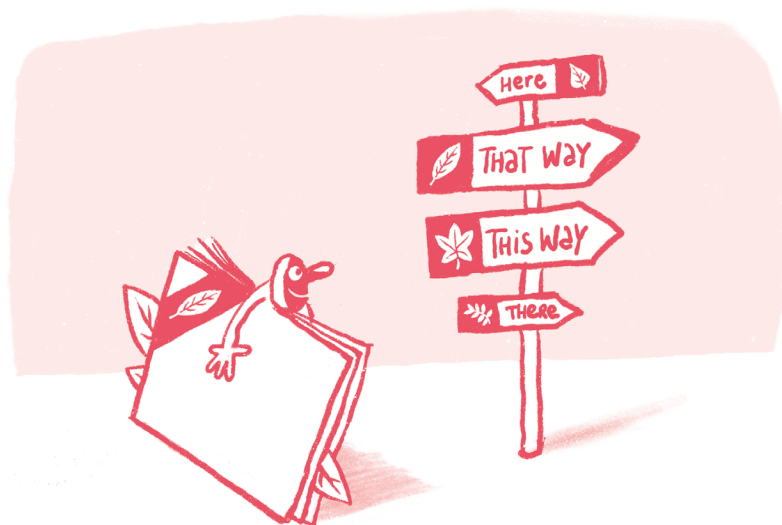
Code available online is royalty–free

The law considers software as intellectual work protected by authors' rights. **And in copyright law, everything that is not explicitly authorised in the software license is forbidden**. In order for a specific action to be permitted, such as copying a software program onto your computer from the Internet, compiling it or executing it, the rights holder must have explicitly authorised it. The conditions of use and reuse are usually set out in a license attached to the software. Be sure to seek it out and adhere to it.

You can consult the guide on *Source code and software* booklet in the Passport for Open Science collection, which explains how to choose the license best suited to your work.
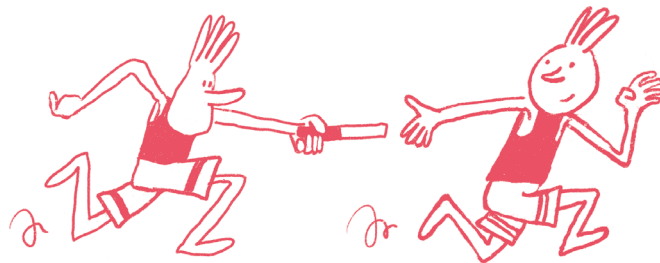
As freeware specialist François Élie puts it, "you can't pool resources all alone".

A community will emerge to maintain my software

In order for people to contribute to your software, there must be an advantage for them: adapting the software to their needs, scientific or technical recognition, etc. If you can deal with contributions as they come in, whether solicited by you or spontaneous, you can also stimulate them by proposing a roadmap and governance approach with which your contributors can identify.

Maintaining a dynamic community requires real investment, something you can delegate in the future. It's a matter of building up long–term trust.

Engaging in open science will penalise me in the evaluation process as a researcher

Providing open access to your publications, data or codes takes time, and this is an effort currently insufficiently recognised in the assessment process.

The **San Francisco declaration on research assessment (▼DORA)**, signed by 2,568 institutions (70 in France), identifies "the need to assess research on its own merits rather than on the basis of the journal in which the research is published". It also recommends research assessment based on "a broad range of impact measures" that are more qualitative and better account for the diversity of scientific output and activities.

Open science pratices are increasingly taken into account in the criteria institutions use to assess researchers.

They are even mandatory for the implementation of the projects of most funders, including the ANR and Horizon Europe.

A far-reaching initiative is underway in the European Union to reform the way research is evaluated.

In time you will be at a disadvantage if you do not open up your research results. So adopt the habit of doing so now, and don't forget to cite all of your scientific output (data, source code, etc.) in your CV. That way, they are more likely to be included in your assessment!

Going further

DORANUM Cat Opidor catalogue. https://cat.opidor.fr

DMP OPIDoR: Resources. https://dmp.opidor.fr/static/resources

Ouvrir la science. Open Science Library.
https://www.ouvrirlascience.fr/category/resources/

Recherche Data Gouv, Access portal for data sharing and open data services.
https://recherche.data.gouv.fr/en

Think. Check. Submit. "Predatory Publishing" – Resources.
https://thinkchecksubmit.org/resources/

Sources

Agreement on Reforming Research Assessment (2022). European Commission.
https://www.eua.eu/downloads/news/2022_07_19_rra_agreement_final.pdf

CoreTrustSeal Data Repository requirements. https://www.coretrustseal.org/

Couperin. Modèles économiques du gold.
https://scienceouverte.couperin.org/modeles-eco-du-gold/

Digital Science, Simons, N., Goodey, G., Hardeman, M., Clare, C., Gonzales, S., et al. (2021).
The State of Open Data 2021. Digital Science Report.
https://digitalscience.figshare.com/articles/report/The_State_of_Open_
Data_2021/17061347/1

DORA, San Francisco declaration on research assessment. https://sfdora.org/

Elie, F. (2009). *Économie du logiciel libre.* Éditions Eyrolles.

Implementing the rights retention strategy for scientific publications (2022).
Ministry of Higher education & Research, French Committee for Open Science.
https://www.ouvrirlascience.fr/implementing-the-rights-retention-strategy-for-
scientific-publications/

**Institut de Recherche et d'Action sur la Fraude et le Plagiat Académiques, A guide for
victims of plagiarism.** https://irafpa.org/en/methods/investigating-cases-of-plagiarism/
a-guide-for-victims-of-plagiarism/

Ministry of Higher education & Research. French Open Science Monitor.
https://frenchopensciencemonitor.esr.gouv.fr/

**Partager les données liées aux publications scientifiques. Guide pour les chercheurs
(2022).** Ministry of Higher education & Research, French Committee for Open Science.
https://www.ouvrirlascience.fr/partager-les-donnees-liees-aux-publications-
scientifiques-guide-pour-les-chercheurs/

Piron, F. (2015). *Penser le plagiat à la lumière du cadre normatif du régime contemporain des
savoirs scientifiques. Questions de communication,* (1), 217-231.
https://doi.org/10.4000/questionsdecommunication.9818

Ramirez, M. L., Dalton, J. T., McMillan, G., Read, M., & Seamans, N. H. (2013).
*Do Open Access Electronic Theses and Dissertations Diminish Publishing Opportunities in the
Social Sciences and Humanities?,* College & Research Library, vol 74, n° 4.
https://doi.org/10.5860/crl-356

re3data directory of multidisciplinary data warehouses.
https://www.re3data.org/

Repository Finder, a pilot Project of the Enabling FAIR Data Project.
https://repositoryfinder.datacite.org