Sistema Bibliotecario di Ateneo
Ufficio Bibliometrico

OPEN ACCESS VS PAYWALLS
L'accesso aperto alla letteratura scientifica

Andrea Solieri

SOMMARIO

(Young) researcher as a reader

As a researcher, you need to read scientific literature, to keep updated in your field and get inspired.

Paywalls still limit access to three-quarters of scholarly literature*.

*Himmelstein, Daniel S., et al. Sci-Hub provides access to nearly all scholarly literature. ELife, 2018, 7: e32822. DOI: 10.7554/ELIFE.32822

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Paywalls

A paywall is a method of restricting access to content via a paid subscription: you want to read, you have to pay (to buy the article or to subscribe to the journal).

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Paywalls: who does it pay?

You may have not encountered paywalls (yet). If that's the case, it may be because someone else has already paid: your institution.

ScienceDirect

Brought to you by:
Università di Modena e Reggio Emilia

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Big deals

In most cases, consortia of universities and/or other higher education institutions make «big deals» with large commercial publishers: they negotiate multiyears (3/5) contracts for bundled access to a publisher's entire journal list (or subsets of the publishers' offerings) for all of their members' researchers.

That's why you (still) can read most of the articles behind paywalls without paying.

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Big deals: how much is it?

The costs of big deals are most often undisclosed.

The European University Association (EUA) estimates a total cost of more than EUR 726 millions per annum on periodicals big deals, 475 millions of which with the five major publishers (see the figure beside). This amount is fully paid by public funds and the bulk of these costs (72%) is borne from university budgets.*

*EUA Big Deals Survey Report, May 2019. Data consider 31 consortia surveyed in 30 European countries.

Percentage of periodicals expenditure per publisher per annum

- Elsevier
- Wiley
- Springer Nature
- Taylor & Francis
- American Chemical Society

56% — 18% — 16% — 7% — 3%

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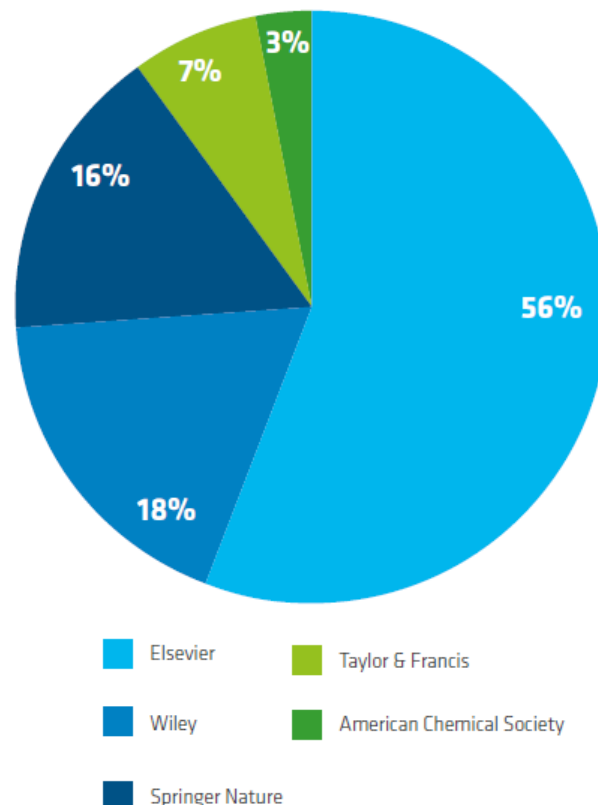
Big deals: what's the big deal?

In the period 2013-2017 the costs of big deals had a **25% growth rate***.

At the same time, 50% of newly published articles are available without paywalls**.

Most of the contracts ended in 2018 or will end during 2019. More and more institutions choose **not to renew big deals** with publishers not compliant with their requests (eg: immediate open access for newly published papers with no extra cost, sustainable publish and read model, authors retain copyrights).

*Five Year Journal Price Increase History 2014-2018, EBSCO 2017
**eLife 7:e32822; DOI: 10.7554/ELIFE.32822

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Big deals: cancellations

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cOAlition S

cOAlition S

**Making
Open Access
a reality
by 2020**

A DECLARATION OF COMMITMENT
BY PUBLIC RESEARCH FUNDERS

On September 4th 2018, a group of national research funding organisations, with the support of the European Commission and the European Research Council, announced the launch of cOAlition S.

Country	Organisation
Austria	Austrian Science Fund
France	French National Research Agency
Ireland	Science Foundation Ireland
Italy	National Institute for Nuclear Physics
Luxembourg	National Research Fund
Netherlands	Netherlands Organisation for Scientific Research
Norway	Research Council of Norway
Poland	National Science Centre Poland
Slovenia	Slovenian Research Agency
Sweden	Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning
UK	UK Research and Innovation

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cOAlition S funders and partners

Supported by

National funders

Charitable and international funders

European funders

Plan S funders (05/11/2019)

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Plan S

«Publication paywalls are withholding a substantial amount of research results from a large fraction of the scientific community and from society as a whole. This constitutes an absolute anomaly. […] In the 21st century, science publishers […] may be paid fair value for the services they are providing, but no science should be locked behind paywalls!»

«With effect from 2021, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo.»

01 Authors or their institutions retain copyright to their publications. All publications must be published under an open license, preferably the Creative Commons Attribution license (CC BY), in order to fulfil the requirements defined by the Berlin Declaration;

04 Where applicable, Open Access publication fees are covered by the Funders or research institutions, not by individual researchers: it is acknowledged that all researchers should be able to publish their work Open Access;

08 The Funders do not support the 'hybrid' model of publishing. However, as a transitional pathway towards full Open Access within a clearly defined timeframe, and only as part of transformative arrangements, Funders may contribute to financially supporting such arrangements;

10 The Funders commit that when assessing research outputs during funding decisions they will value the intrinsic merit of the work and not consider the publication channel, its impact factor (or other journal metrics), or the publisher.

[Preamble to: cOAlition S for the Realisation of Full and Immediate Open Access]
[The Plan S Principles]

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Open access: definition

Open access refers to free, unrestricted online access to research outputs for all, with no access fees.

[Budapest OA Initiative, 14/02/2002]

«By "open access" to [peer-reviewed research literature], we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.

The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.»

Open access: colours and types

Gold OA
Articles are published in an "OA journal," a journal in which all articles are open directly on the journal website. OA journals are most often defined by their inclusion in the Directory of Open Access Journals (DOAJ)*.

*The DOAJ indexes almost 14.000 journals. Of these, only 27% requests an article processing charge (APC) for the paper to be published (up to 05/11/19).

Green OA
Articles are published in a toll-access journal, but self-archived in an OA archive*. The archived articles may be either the published versions, or electronic pre-prints.

*eg Iris Unimore, arXiv, RePEc, Zenodo, etc.

[Piwowar et al., The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. PeerJ 2018, 6:e4375; DOI: 10.7717/peerj.4375]

Hybrid OA
Articles are published in a subscription journal but are immediately free to read under an open licence, in exchange for an article processing charge (APC) paid by authors.

Bronze OA
Articles are published in a subscription journal, but are free to read (after an embargo period) on the publisher page, without a clearly identifiable licence.

Black OA
Articles shared on illegal pirate sites.

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Open access: stats

closed
bronze
hybrid
gold
green
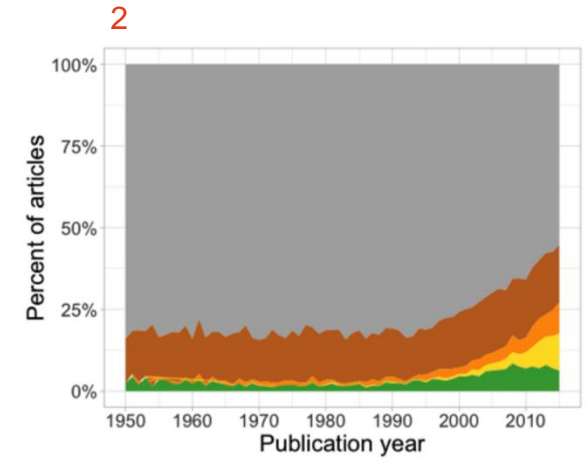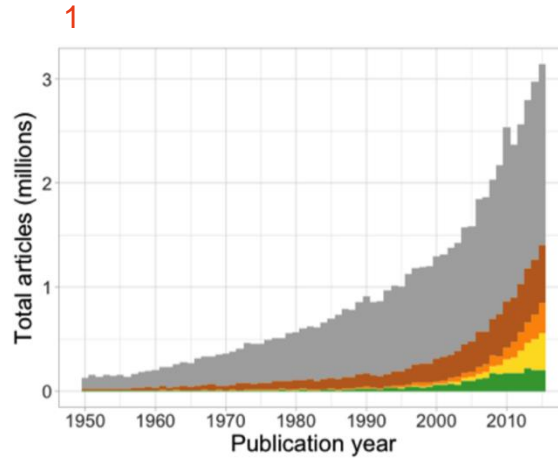
1. Articles published in the last 20 years are increasingly OA.
2. More recent articles are more likely to be OA (20% before 2000, 45% in 2015).
3. 28% of all articles with DOI are somehow available in OA.
4. For almost 50% of articles searched, Unpaywall finds an OA version.
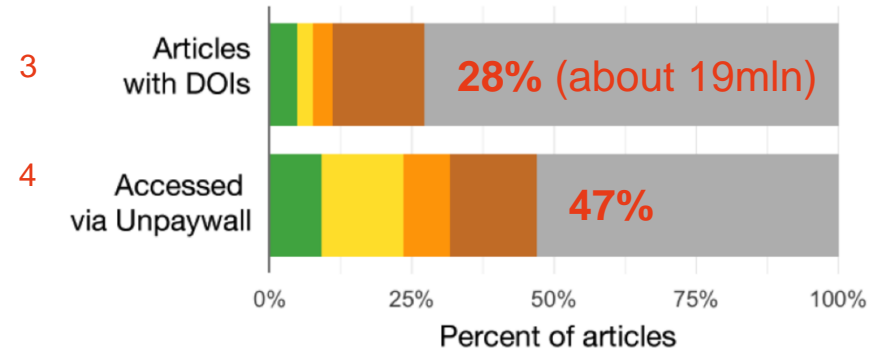
*referred to 67 millions papers analised via three case study, each one considering 100 thousand papers with DOI:
1. Indexed by CrossRef
2. Indexed by Web of Science (years 2009-2015)
3. Viewed on Unpaywall during one week in June 2017

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Searching for OA full-texts on the web

DIRECTORY
DIRECTORY OF OPEN ACCESS JOURNALS https://doaj.org

TOOLS
UNPAYWALL http://unpaywall.org
OPEN ACCESS BUTTON https://openaccessbutton.org
KOPERNIO BUTTON https://kopernio.com

REPOSITORIES
INSTITUTIONAL
SUBJECT-BASED/THEMATIC

ACADEMIC SOCIAL NETWORKS
ACADEMIA.EDU http://www.academia.edu
RESEARCHGATE http://www.researchgate.net

PIRATE WEBSITE
SCI-HUB http://sci-hub.tw (05/11/2019)
SCI-HUB COVERAGE

Directory of open access journals

DOAJ

The Directory of Open Access Journals is a community-curated online directory that indexes and provides access to open access peer-reviewed journals. Basic requirements for entry into DOAJ:

Charges, Article processing charges: Every journal must display clearly on its web site information about any charges for an author to process or publish a paper.

Open Access statement: The journal's Open Access policy must be clearly stated on the journal's web site (not the publisher's own site). The full text of the articles of the journal should be freely available without embargo.

Copyright, Licensing, Publishing Rights: In all instances the journal web site must state clearly and precisely the terms of use and reuse that readers and authors have when they submit an article or use the published content.

«DOAJ operates an education and outreach program across the globe, focusing on improving the quality of applications submitted»   *https://doaj.org*

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Unpaywall, Open access button, Kopernio

Unpaywall is a free Chrome and Mozilla plug-in. It harvests content from legal sources directly from over 50.000 journals and open-access repositories from all over the world. It does do not harvest from sources of dubious legality like ResearchGate or Sci-Hub. I's integrated with Dimensions, Scopus, Web of Science. It's run by is run by Our Research (formerly ImpactStory), a not-for-profit organisation.

The **Open access button** is both a website and a free Chrome and Mozilla plug-in. Its sources include all of the aggregated repositories in the world, hybrid articles, open access journals, and those on authors personal pages. Contents form ResearchGate or Academia.edu are not indexed. It's funded by the charitable fund Arcadia.

Kopernio is a free browser plugin. It makes use of several OA data sources including institutional repositories, pre-print servers such as arXiv and bioRxiv, Unpaywall Data and Pubmed Central. It makes use of your institution's subscriptions and can save pdfs in your private area. It's owned by Clarivate Analytics.

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Institutional repositories
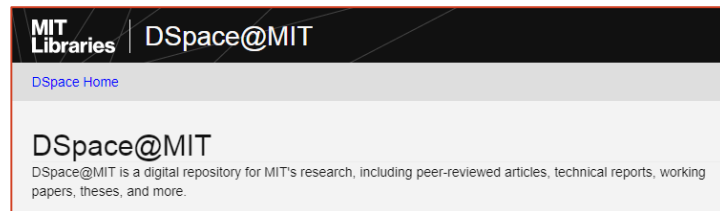
An institutional repository is an online archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution.

Every university has its own repository and lots of them have a (mandatory) policy for open access to publications.

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Subject-based/Thematic repositories

PMC

https://www.ncbi.nlm.nih.gov/pmc
Fields: biomedical and life sciences
Full-texts: > 5 million

RePEc

http://repec.org/
Fields: economics
Full-Texts: > 2,5 million

arXiv.org

https://arxiv.org
Fields: mathematics, computer science, nonlinear sciences, quantitative biology, quantitative finance, statistics, electrical engineering and systems science, economics
Full-texts: > 1,5 million

SSRN

https://www.ssrn.com
Fields: social sciences and humanities
Full-texts: > 800 thousand

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Academia.edu and ResearchGate

A Over 103 million academics have signed up to Academia.edu, adding 23 million papers.*

«The company's mission is to accelerate the world's research»

*claim on the website

R^G Over 15 million members from all over the world use ResearchGate.*

«We're guided by our mission to connect the world of science and make research open to all»

*claim on the website

BEWARE!

Authors often upload full-texts on Academia.edu and ResearchGate without having permission. This may infringe copyrights.

Sci-Hub

Sci-Hub is a pirate website running from 5th September 2011, created by kazak Alexandra Elbakyan. It provides access to hundreds of thousands research papers, effectively bypassing any paywalls and restrictions. In the Sci-Hub library there are more than 77 million papers. In 2016 Nature put Elbakyan among the «Nature's 10. Ten people who mattered this year».

«The first pirate website in the world to provide mass and public access to tens of millions of research papers»

***

http://sci-hub.tw (21/09/2018)

«All of this action goes on in the dark, hidden underground. It's called stealing or piracy, as if sharing a wealth of knowledge were the moral equivalent of plundering a ship and murdering its crew. But sharing isn't immoral - it's a moral imperative. […] There is no justice in following unjust laws. It's time to come into the light and, in the grand tradition of civil disobedience, declare our opposition to this private theft of public culture. We need to take information, wherever it is stored, make our copies and share them with the world.» (Guerrilla Open Access Manifesto, di Aaron Swartz, luglio 2008)

«When Sci-Hub became known, I thought that it will provide a good case against copyright law. When the law prevents science to develop, that law must be repealed. Nothing of that happened. Instead, Sci-Hub was quickly banished as an 'illegal' solution and projects like Unpaywall emerged and started promoting themselves as a 'legal' alternatives to Sci-Hub. […]. Sci-Hub always intended to be legal, and advocated for the copyright law to be repealed or changed, so that it will not prohibit the development of science.» (Why Sci-Hub is illegal, and what you can do about it, Alexandra Elbakyan, 07/07/2018)

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Sci-Hub coverage

✓ by Subject Area: Chemistry: 93%; Chemical engineering: 92,8%; Material Science: 91,2%; and so on.

✓ by Publisher: American Chemical Society 98.8%; Elsevier: 96.9%; Wiley-Blackwell: 94.7%; Taylor & Francis: 92.6%; SAGE 90.9%; Springer Nature: 89.7%; Oxford University Press 88.3%.

✓ by Journal: New England Journal of Medicine: 99,9%; The Lancet: 99,8%; Journal of the American Chemical Society: 98,8%; Nature: 96,6%; Science: 91,9%

✓ by Journal Impact*: most cited journals (top 10%): 90%; least cited journals (lowest 10%): 40.9%.

*using the 2015 CiteScore

[eLife 2018;7:e32822 DOI: 10.7554/ELIFE.32822]

✓ by Year: for most years since 1850: 60-80%; 2016: 56.0% (78.8% of toll access articles, 32.7% of open access articles).

✓ by Category of Access Status: 49.2% of Gold OA articles and 90.4% of closed articles within the State of OA dataset [PeerJ 2018, 6:e4375; DOI: 10.7717/peerj.4375].

✓ Benchmark with Penn Libraries: similar coverage on all articles: 85.2% versus 87.4%; when considering only toll access articles, Sci-Hub's coverage exceeds Penn's: 94.2% versus 80.7%.

BEWARE!

Sci-Hub focuses on paywalled articles. If you can't get a full-text other than via Sci-Hub, most probably you are infringing copyrights.

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(Young) researcher as an author

As a researcher, you publish your research results on scientific journals.

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The submission process

Preprint (author's original version)
The preprint is the un-refereed author version of an article completed before submission of the article to the journal. The author accepts full responsibility for the article, and the content and layout is set out by the author.

↓

Post-print (accepted peer-reviewed version)
The post-print is the final draft author manuscript, as accepted for publication by a journal, including modifications based on referees' suggestions, before it has undergone copyediting, typesetting and proof correction.

↓

Version of record (publisher version)
The version of record is the final typeset and edited version of the journal article that has been made available by the publisher by formally and exclusively declaring the article "published".

Author self-archiving policy, Oxford University Press

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Version of the article and copyright

Preprint → submitted version

Post-print → author's accepted manuscript

Version of record → version of record

submitted version → submit to publisher → peer review → edit & revise → author's accepted manuscript (accepted by publisher) → copyright transfer agreement → proofs (copyediting typesetting) → version of record (published)

owned by the author — owned by the publisher

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Copyright transfer

When publishing in scientific journals the author is normally required to assign to the publisher all or some of the rights related to copyright (publication, translation, transmission, distribution).

Therefore, once the contribution is published the author will lose most of these rights and will need to ask the publisher's permission to republish it, or to make any adaptation to the original text.

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Article processing charge (APC)

Authors, or their institutions, can pay an article processing charge (APC) to make a work available open access in either an open access journal or a hybrid journal.
In the latter case, for the author's institution and the scientific community this effectively means paying twice for the same publication: their regular subscription to the journal, and the additional publication fee. This is the so called 'double dipping'.

As of november 2019, 73% out of the almost 14.000 open access journals listed in DOAJ do not charge APCs.

JOURNALS' APCs (in USD):
Cell Reports: 5200
Nature Communications: 5200
PlosOne: 1595
The Lancet: 5000 (Hybrid)

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Predatory journals

BEWARE!

There is no standardized definition of what a predatory journal is. Early definition by Beall describe predatory publishers as outlets «which publish counterfeit journals to exploit the open-access model in which the author pays».

[Beall J, Predatory publishers are corrupting open access. Nature News 2012, 489:179 DOI:10.1038/489179a]

! THINK
✓ CHECK
> SUBMIT

GOOD PRACTICE

Think. Check. Submit. helps researchers identify trusted journals for their research. Through a range of tools and practical resources, this international, cross-sector initiative aims to educate researchers, promote integrity, and build trust in credible research and publications.

UNI**MORE**

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Licences

Making the work open access while guaranteeing that authors retain copyright requires an appropriate licence.

Creative Commons licences are legal tools that the author can use to offer certain usage rights to the public, while reserving other rights, a 'Some Rights Reserved' approach.

By using CC licences, authors can provide open access to publications and be compliant with funders' OA policies.

CC LICENCES:

Attribution

Attribution
No Derivatives

Attribution
Non Commercial

Attribution
Share Alike

Attribution
Non Commercial
No Derivatives

Attribution
Non Commercial
Share Alike

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Funders' mandatory policies 1

National Institute of Health (US)

The NIH public access policy requires scientists to submit **final peer-reviewed journal manuscripts** accepted for publication after April 7th 2008 that arise from NIH funds to **PubMed Central** immediately upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication, implementing PUBLIC LAW 111-8-MAR. 11, 2009.

NIH public access policy

cOAlition S founder

UK Research and Innovation

Journal articles and conference proceedings submitted for publication from April 1st 2013 resulting from UKRI programme project funding and/or outputs submitted for assessment of research excellence via the REF can fulfil policy requirements through either the publisher making articles freely available (the **gold OA** route), or by the author depositing in a freely-accessible repository (the **green OA** route).

UKRI Open Access Principles and High Level Policy

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Funders' mandatory policies 2

National Natural Science Foundation of China

The authors of the papers generated from projects fully or partially funded by NSFC, when submitted and published in academic journals, should deposit the **final manuscripts**, which have been peer reviewed and accepted by the journals, to the **NSFC repository** with an embargo period of no more than 12 months. Earlier OA should be provided if the publisher allows.

NSFC Policy Statement on Open Access

Australian Research Council

Any research output arising from ARC funded research made since January 1st 2013 must be made openly accessible within a 12 month period from the publication date, either in an **institutional repository** or through a **publisher's website**, if the published version of the article is open access with an associated licence, such as a **Creative Commons** licence.

ARC Open Access Policy

The European Commission policy

2012: The EC recommends that member states should ensure «open access to publications resulting from publicly funded research»

[2012/417/EU: Commission recommendation of 17/07/2012]

2018: The EC recommends that member states should ensure that «all scientific publications resulting from publicly-funded research are made available in open access as from 2020 at the latest»

[2018/790/EU: Commission recommendation of 25/04/2018]

Member States should set and implement clear policies to get as results that:

› open access to publications is granted as soon as possible, and in any case no later than six months after the date of publication (no later than 12 months for social sciences and humanities);

› researchers retain the necessary intellectual property rights, when entering into contractual agreements with scientific publishers (this concerns in particular self-archiving and re-use);

› information is published about agreements, in particular the so-called 'big deals', between public institutions and publishers, in order to enhance market transparency and fair competition.

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Horizon 2020 OA mandate

Horizon 2020 (H2020) is the biggest EU Research and Innovation programme ever with nearly EUR 80 billion of funding available over 7 years (2014 to 2020).

Art. 29.2: Each beneficiary must ensure open access (free of charge, online access for any user) to all peer-reviewed scientific publications relating to its results.

Art. 29.6: If a beneficiary breaches any of its obligations, the grant may be reduced.

Multi-Beneficiary General Model Grant Agreement, v 4 27/02/2017

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H2020 OA mandate: How to be compliant

1. **deposit** a machine-readable electronic copy of the publication in a repository.

2. **ensure open access** to the deposited publication -via the repository.

3. **ensure open access** -via the repository- to the bibliographic metadata that identify the deposited publication.

Multi-Beneficiary General Model Grant Agreement, v 4 27/02/2017

what: Version of record (if Gold OA) or Post-print (Green OA)

where: In a repository for scientific publications (institutional, subject-based, centralized).

when: deposit «as soon as possible and at the latest on publication», ensure open access on publication (if gold OA) or within 6 (STEM) / 12 (SSH) months of publication in any other case (green OA).

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OA clause addendum

To provide support concerning compliance with H2020 embargo* periods the European Commission offers a [model amendment to publishing agreement](#) (Addendum).

*In academic publishing, an embargo is a period during which access to the paper is not allowed to users who have not paid for it.
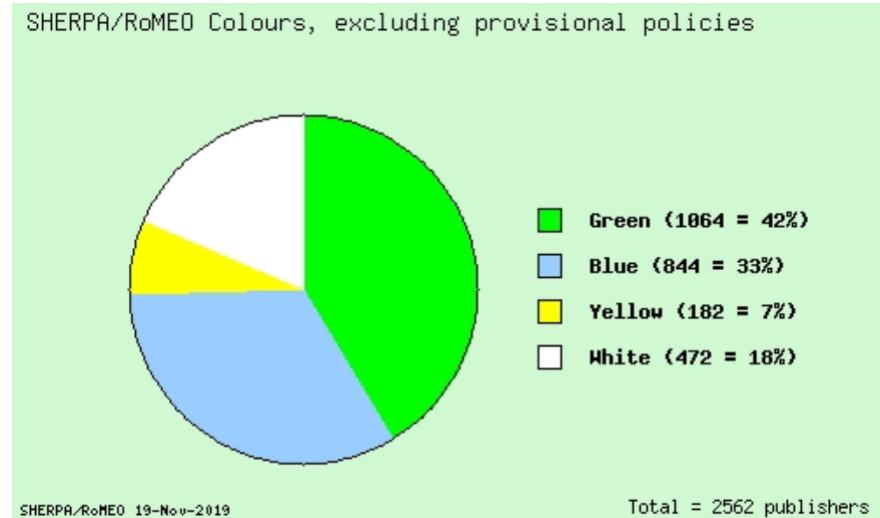
GOOD PRACTICE

With the Addendum, the parties agree to complement and amend the publication agreement with an open access clause which provides the author with the right to deposit a machine-readable electronic copy of the published version or the final manuscript in a repository and provide open access to it immediately or within 6-12 months.

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Publishers' policies on self-archiving

RoMEO colour	Archiving policy
green	Can archive pre-print and post-print
blue	Can archive post-print (ie final draft post-refereeing)
yellow	Can archive pre-print (ie pre-refereeing)
white	Archiving not formally supported

82% out of the 2562 publishers on the Sherpa/Romeo list formally allow some form of self-archiving. [Sherpa/Romeo Statistics]

Example of a publisher's policy on self-archiving

SHERPA/RoMEO Colours, excluding provisional policies

- ■ Green (1064 = 42%)
- ■ Blue (844 = 33%)
- ■ Yellow (182 = 7%)
- □ White (472 = 18%)

SHERPA/RoMEO 19-Nov-2019   Total = 2562 publishers

Journal:	Cell (ISSN: 0092-8674, ESSN: 1097-4172)
RoMEO:	This is a RoMEO yellow journal
Paid OA:	A paid open access option is available for this journal.
Author's Pre-print:	✔ author can archive pre-print (ie pre-refereeing)
Author's Post-print:	subject to Restrictions below, author can archive post-print (ie final draft post-refereeing)
Restrictions:	• 12 months embargo
Publisher's Version/PDF:	✖ author cannot archive publisher's version/PDF
General Conditions:	• Author's pre-prints on ArXiv, bioRxiv or BioRN • On non-commercial hosting platforms including institutional repository • Published source must be acknowledged • Must link to journal homepage with DOI • Publisher's version/PDF cannot be used • Author's post-print must be released with a Creative Commons Attribution Non-Commercial No Derivatives License

Open Research Data Pilot

The European Commission is running a flexible pilot under H2020 called the Open Research Data Pilot (ORD).

The beneficiaries need to create a Data Management Plan (DMP) and select a repository that will preserve data*, metadata and possibly tools in the long term.

*In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images.

Projects may opt out of the ORD Pilot in a series of cases that include conflict with obligation to protect results, with confidentiality obligations, with security obligations or with rules on protection of personal data. The Commission's approach can therefore be described as «as open as possible, as closed as necessary».

Guidelines on FAIR Data management in Horizon 2020, v 3.0 2016

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FAIR data and DMP

In general terms, your research data should be 'FAIR':
›   Findable
›   Accessible
›   Interoperable
›   Re-usable

FAIR DATA PRINCIPLES

AH!

FINDABLE

ACCESSIBLE

HOW DO YOU OPEN A .XZQ FILE?

INTEROPERABLE

...HERE

CC

REUSABLE

Image from: https://book.fosteropenscience.eu/

As part of making research data FAIR, a DMP should include information on:

›   the handling of research data during and after the end of the project
›   what data will be collected, processed and/or generated
›   which methodology and standards will be applied
›   whether data will be shared/made open access
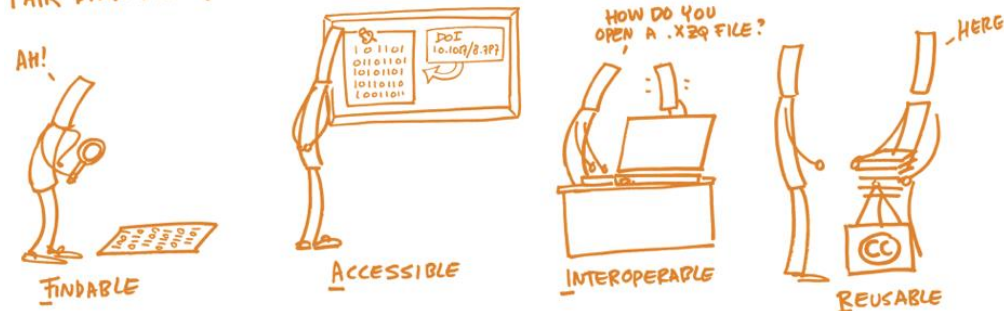›   how data will be curated and preserved (including after the end of the project).

Guidelines on FAIR Data management in Horizon 2020, v 3.0 2016

ORD Pilot: how to be compliant

(a) **deposit in a research data repository** and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate -free of charge for any user-:

- (i) the data needed to validate the results presented in scientific publications;

- (ii) other data, as specified in the 'data management plan'

b) **provide information about tools and instruments** at the disposal of the beneficiaries and necessary for validating the results (and -where possible- provide the tools and instruments themselves).

find a data repository on re3data.org

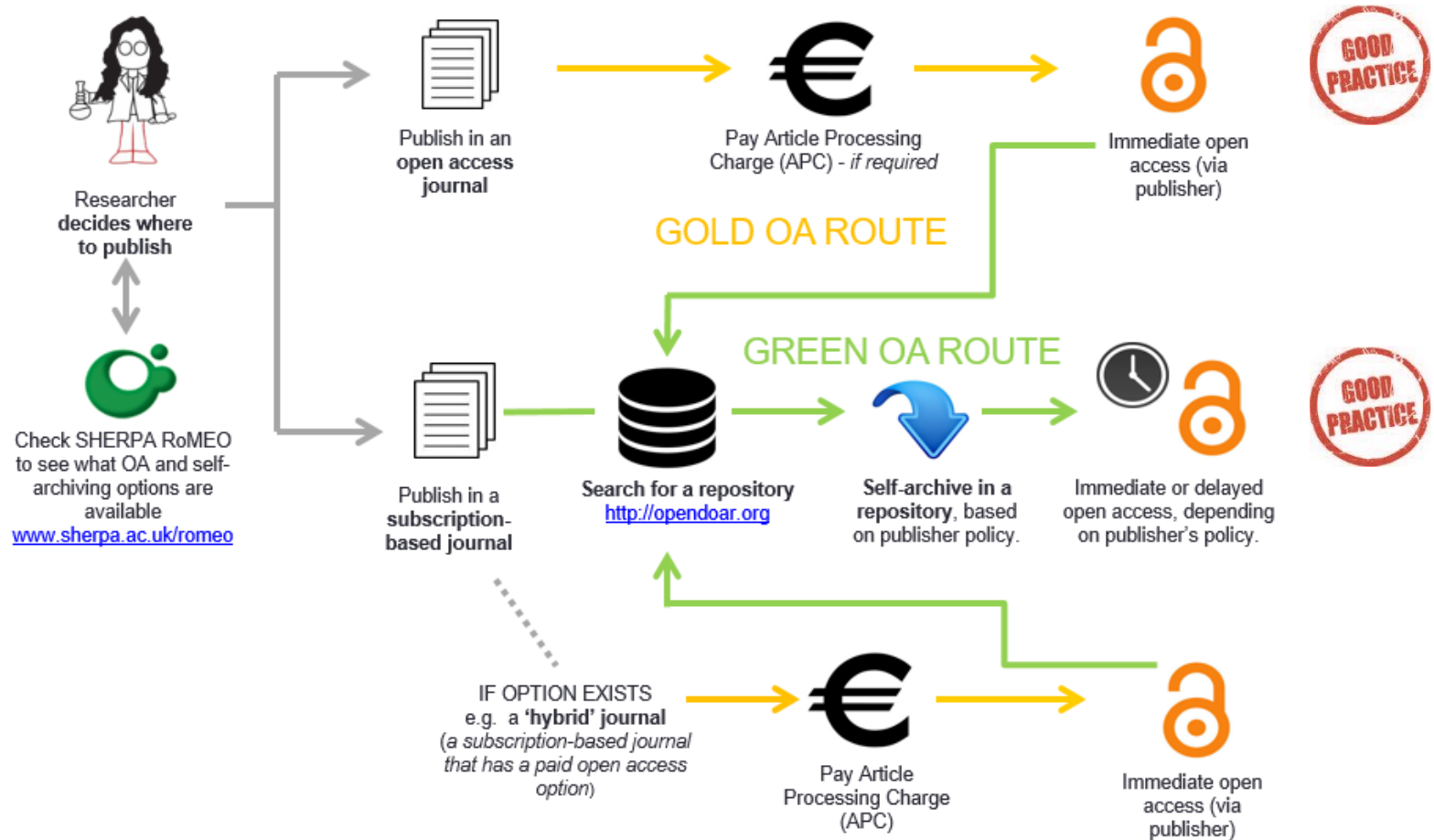Multi-Beneficiary General Model Grant Agreement, v 4 27/02/2017

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Choose the route

Image from: https://fosteropenscience.eu/

Sistema Bibliotecario di Ateneo
Ufficio Bibliometrico

GRAZIE

CONTATTI
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