Open Science in Horizon 2020

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Agenda

1. Introduction to Open Science and policy context

2. Open Access in H2020
   1. Summary of requirements
   2. Practical implementation
   3. OpenAIRE support services and tools

3. Open Research Data in H2020
INTRODUCTION TO OPEN SCIENCE AND POLICY CONTEXT
“Open Innovation, Open Science, Open to the World”

Commissioner Carlos Moedas, 2015
A systemic change in the modus operandi of science and research

Affecting the whole research cycle and its stakeholders

Commissioner Carlos Moedas
Open Science Presidency Conference
Amsterdam, 4 April 2016
Open Science

- Open Access
- Open Research
- Open Data
- Open Notebook Science
- Citizen Science
Open Science

Openness at every stage

Change the typical lifecycle
Publish earlier and release more
Papers + Data + Methods + Code...
Support reproducibility
Open Science – opening up the research process
OPEN SCIENCE : WHY?
«Bernard of Chartres used to compare us to dwarfs perched on the shoulders of giants. He pointed out that we see more and farther than our predecessors, not because we have keener vision or greater height, but because we are lifted up and borne aloft on their gigantic stature.»

John of Salisbury, *Metalogicon*, 1159 (III, 4)
Even the genius...

“What DesCartes did was a good step. You have added much several ways, & especially in taking ye colours of thin plates into philosophical consideration. If I have seen further it is by standing on ye sholders of Giants.“
“Much of the remarkable growth of scientific understanding in recent centuries is due to open practices; open communication and deliberation sit at the heart of scientific practice.”

Open Science: Why?

To make science more efficient, transparent, trustable and reproducible.
Scientific progress - Emergency science

Zika Open

These papers are posted in the context of the Public Health Emergency of International Concern declared by the Director-General of the World Health Organization 1 February 2016.

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If you wish to submit a manuscript, please do so via our online tracking system.

EDITORIAL

Data sharing in public health emergencies: a call to researchers
- Christopher Dye, Kidist Bartolomeos, Vasee Moorthy, Marie Paule Kieny
Posted: 4 February 2016
http://dx.doi.org/10.2471/BLT.16.170860  Article [HTML]

RESEARCH IN EMERGENCIES
“It was unbelievable. It’s not science the way most of us have practiced in our careers. But we all realised that we would never get biomarkers unless all of us parked our egos and intellectual property noses outside the door and agreed that all of our data would be public immediately.”

Dr John Trojanowski, University of Pennsylvania
“It was a mistake in a spreadsheet that could have been easily overlooked: a few rows left out of an equation to average the values in a column.

The spreadsheet was used to draw the conclusion of an influential 2010 economics paper: that public debt of more than 90% of GDP slows down growth. This conclusion was later cited by the International Monetary Fund and the UK Treasury to justify programmes of austerity that have arguably led to riots, poverty and lost jobs.”
Combat fraud

Report finds massive fraud at Dutch universities

Investigation claims dozens of social-psychology papers contain falsified data.

Diederik Stapel

When colleagues called the work of Dutch psychologist Diederik Stapel too good to be true, they meant it as a compliment. But a preliminary investigative report (go.nature.com/3mpolc) released on 31 October gives literal meaning to the phrase, detailing years of data manipulation and blatant fabrication by the prominent Tilburg University researcher.

"We have some 30 papers in peer-reviewed journals where we are actually sure that they are fake, and there are more to come," says Pieter Luyckx, chair of the committee that investigated Stapel’s work at the university.

Stapel’s eye-catching studies on aspects of social behaviour such as power and stereotyping garnered wide press coverage. For example, in a recent Science paper (which the investigation has not identified as fraudulent), Stapel reported that unidly environments encouraged discrimination (Science 337, 104; 2012).
WHY OPEN ACCESS TO SCIENTIFIC PEER-REVIEWED PUBLICATIONS?

GOOD FOR SCIENCE
allows scientists to build on previous research results and avoids unnecessary duplication of effort.

GOOD FOR THE ECONOMY
speeds up innovation faster progress to market.

GOOD FOR SOCIETY
makes research available to individual citizens and to non-profit organisations greater transparency.
Open Science

European Commission Open Research Publishing Platform

The Commission proposes to fund a European Commission Open Research Publishing Platform. The main aim of this platform is to offer Horizon 2020 beneficiaries a free and fast publication possibility for peer reviewed articles as well as pre-prints resulting from Horizon 2020 funding. The attached note contains more information about this action which is foreseen to be launched in early 2018 through a public procurement process.

- Information Note: towards a Horizon 2020 platform for open access. 205 KB

G7 Science Ministers committed to giving incentives for open science and to providing research infrastructures on the basis of FAIR data

The G7 Science Ministers met in Venaria (Italy) on September 28th and they discussed how the G7 nations could lead efforts to materialise the benefits of the Next Production Revolution. In this context, the G7 Ministers also recognized that technological and

[https://ec.europa.eu/research/openscience](https://ec.europa.eu/research/openscience)
EC OA Mandate Progression

FP7 OA Pilot (2008)
- Grant agreement SC39
- 20% programme areas
- Deposit in Repositories
- ERC’s OA Guidelines: Deposit in discipline (or institutional) repositories. Cap embargo.

Horizon 2020 (2014)
- All grant agreements
- 100% programme areas
- Deposit in Repositories
- Open Research Data Pilot
Open Research Data Pilot

AS OPEN AS POSSIBLE, AS CLOSED AS NECESSARY

Grantees have the right to opt-out, but need to say why
OPEN ACCESS IN H2020
Open Access is the DEFAULT for research results in H2020
Multi-beneficiary General Model Grant Agreement

29.2 Open access to scientific publications

29.3 Open access to research data

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

In particular, it must:

(a) as soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

(b) ensure open access to the deposited publication — via the repository — at the latest:
   (i) on publication, if an electronic version is available for free via the publisher, or
   (ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.

(c) ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:
- the terms ["European Union (EU)" and "Horizon 2020"] ["Euratom" and Euratom research and training programme 2014-2018);
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.
OA in H2020: summary of requirements
Open Access requirements and who is covered by them?

All beneficiaries of H2020 funding must provide open access (free of charge, online access for any user) to all peer-reviewed publications by depositing them into a repository.


www.openaire.eu/h2020openaccess
In other words...

Authors are free to choose between the two main and non-exclusive routes toward Open Access

**Self-archiving (‘green’ open access):** the published article or the final peer reviewed manuscript is uploaded in an online repository - access is often delayed (‘embargo period’)

**Open access publishing (‘gold’ open access):** the article is immediately in open access mode, through the publisher. The associated costs are covered by the author/institution/funder.

The article must always be deposited in a repository, even if the gold route has been choosen.
Where to deposit?

Institutional repository
OR
Disciplinary repository (arXiv, Europe PubMed Central, etc.)
OR
Zenodo (www.zenodo.org) if none of the above is available.

EC-cofunded, multidisciplinary repository, for publications and data.

Remarks:
or via OpenAIRE www.openaire.eu
A list of publications on the project website is not sufficient.
How to bring all publications together? OpenAIRE-compatibility to enable the harvesting of metadata (more details later)
What to deposit?

The **final peer-reviewed manuscript**, accepted for publication, including all modifications from the peer-review process

**OR**

A machine-readable copy of the **published version** (usually a PDF document)

In principle this applies to all kinds of publications, but emphasis is on peer-reviewed journal articles.
When to deposit?

Each beneficiary must deposit as soon as possible and at the latest on publication.
When should open access be provided?

Open access must be ensured immediately or after an embargo period:
- **GREEN** - 6-12 months depending on the research area and the choice of journal
- **GOLD** - immediately

Some journals demand longer embargo periods (compare SHERPA/RoMEO database).
OA in H2020: summary of requirements
RESEARCHER DECIDES WHERE TO PUBLISH

Check publishers policies on www.sherpa.ac.uk/romeo

Open Access Journals doaj.org

Check for Article Processing Charges

Subscription-based journal

Self-archive in a repository
Find at: openaire.eu

IMMEDIATE OPEN ACCESS

IMMEDIATE OR DELAYED OPEN ACCESS
Are Article Processing Charges (APCs) supported?

Yes

For open access publishing, researchers can publish in open access journals, or in journals that sell subscriptions and also offer the possibility of making individual articles openly accessible (hybrid journals).

Where the case, the Article Processing Charges (APCs) incurred by beneficiaries are eligible for reimbursement during the duration of the action.
Publication costs

Dissemination costs, e.g. for publishing in open access journals/books, are eligible costs if incurred during the project period.

What budget to consider in proposals?
APC = Article Processing Charges

Budget for Publications = Average APC x number of publications

Method 1: Average APC based on list of journals used by the consortium (look up prices at publisher website and/or consult librarian)
Method 2: Average APC based on general market figures (see next slide)
Average APC?

Björk/Solomon estimated (2014) the average price of Article Processing Charges (APC) for established **open access journals** at ca. **1,020 EUR** and for **hybrid journals** (subscription journal with OA option for individual articles) at ca. **1,980 EUR**
At the moment OpenAPC provides cost data on 44,407 open access journal articles contributed by 117 institutions. For fully open access journals the average payment was 1,479 €. For hybrid journals (subscription journal with OA option for individual articles) the average fee is 2,493 €.

Both types of OA publication costs can be reimbursed in H2020 projects. Currently, there is no price-cap for APCs.
What are projects expected to do?

Projects have to start planning early on

DURING PROPOSAL WRITING PHASE
- Outline of dissemination and exploitation strategy, including OA >> impact section of the proposal (how will results be shared, data be managed and shared?)
- Include resources for publication costs (what journals, how many publications, what does it cost on average?)
- Combine GREEN/GOLD strategies to achieve maximum of OA

DURING THE PROJECT
- Additional provisions in the Consortium Agreement - where to deposit, who is responsible.
- Implementation of the dissemination strategy, report at reviews and update
- What issues occur and how can they be solved? (publisher embargos, repositories for specific material, etc.)

AFTER THE PROJECT END
- Are there publications foreseen after the ending of the project (ie which will not be covered by the budget) - for post-FP7 project publications there is a pilot.
- Who takes care of deposit in repositories after the project end?
Some issues to consider

1. Publishing *all* articles in APC based gold OA is not probably the right solution, as this can lead to a substantial amount of the overall project budget. Therefore, a mixed strategy of GREEN/GOLD open access is highly recommended.

2. The growing open access market comes with some challenges

Some caution is needed when publishing, this holds for all journals. Consult 'white lists' such as DOAJ.
What are the consequences for non-compliance with OA requirements?

If a beneficiary breaches any of its obligations, the grant may be reduced (Article 43) and it may also lead to any of the other measures described in Chapter 6 of the General Model Grant Agreement.

EC SUPPORT INFO

✓ EC Open Access Factsheet:

✓ Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020
Open Access in Horizon 2020

Updated on 28 March 2017

Open access to scientific peer reviewed publications has been anchored as an underlying principle in the Horizon 2020 and is explained in the Regulation and the Rules of Participation as well as through the relevant provisions in the grant agreement (see Horizon 2020 Annotated Model Grant Agreement, 25 November 2016 with information about open access on the pages 221-223).

ARE YOU SUPPOSED TO DEPOSIT? > WHAT TO DEPOSIT > WHERE TO DEPOSIT > WHEN TO DEPOSIT > WHEN SHOULD OPEN ACCESS BE PROVIDED

https://www.openaire.eu/h2020openaccess/#
RESEARCH ADMINs
How to monitor research results. What services to use for your needs.

RESEARCHERS
Why Open Access. How to comply. What services to use.

FUNDERS
Why align policies and practices. How to monitor and analyze results.

DATA PROVIDERS
How to make your content more visible. What to do to increase quality. How to join.

www.openaire.eu
OpenAIRE’s e-infrastructure Commons

**KEY STAKEHOLDERS SERVICES**

**Funders, research admins, research communities**
- Research impact
- Project reporting and monitoring
- Open Access trends

**Content providers**
- Repository validation
- Repository notification broker
- Repository analytics and usage stats

**Researchers**
- Claim publications, datasets, software
- Deposit publications, datasets, software
- Search & browse: interlinked publications, datasets, projects
- Open Access & DMP Helpdesk
- End-User feedback

**INFO SPACE SERVICES**

- Cleaning
- De-duplication
- Validation
- Enrichment by inference

**CONTENT PROVIDERS**

- Publications repositories
- Research Data repositories
- CRIS systems
- Registries (e.g. projects)
- OA Journals
- Software Repositories

**GUIDELINES**

**TERMS OF USE**
Share, deposit and publish in OA

Why Open Science. How to comply. What services to use.
Deposit once!

• Locate an appropriated repository via OpenAIRE.
  • If no repository is available: use Zenodo (OpenAIRE/CERN repository).
  • **Acknowledge** project funding in the publication or dataset metadata record.
  • Use a fully OpenAIRE compatible repository. If don’t... use the OpenAIRE linking services afterwards and associate your research results (**Link/Claim** publication or datasets to projects).
  • But we don’t stop there! We apply cleaning, transformation, disambiguation processes, and **identify relationships** among all research entities: publications, data, funding...

• All publications accessible via OpenAIRE and linked to a project will be displayed automatically in the reporting section of the EC Participant Portal for the project.

**We did it!**
Find where to deposit

DEPOSIT PUBLICATIONS

Are you a grant recipient from the following: H2020, FP7 with SC39, or ERC? Then you are required to publish in open access. One way to do this is to deposit your publications into an open access repository.

Click the following to find more information: FP7 guidelines, H2020 guidelines, ERC guidelines OR ask a question to OpenAIRE's national representative.

LOCATE DATA PROVIDER VIA YOUR INSTITUTION

DEPOSIT PUBLICATIONS

DATA PROVIDERS FOR INSTITUTION: UNIVERSITEIT GENT

Please use the information/contacts shown below to deposit your publications.

Chent University Academic Bibliography
Organizations: UNIVERSITEIT GENT
Type: Institutional Repository
Languages: English, French, Dutch
Contents: Journal articles, Conference and workshop papers, Theses and dissertations, Unpublished reports and working sections, Multimedia and audio, Visual materials
Website URL: https://biblio.ugent.be
OAI-PMH URL: https://biblio.ugent.be/oai
Short Facts about Zenodo

- Catch-all repository for EU funded research
- Up to 50 GB per upload
- Data stored in the CERN Data Center
- Persistent identifiers (DOIs) for every upload
- Includes article level metrics
- Free for the long tail of Science
- Open to all research outputs from all disciplines
- Easily add EC funding information and report via OpenAIRE
PROJECT FUNDING IN THE PUBLICATION OR DATASET METADATA RECORD
Acknowledge project funding: e.g. ZENODO

OpenAIRE
OpenAIRE Funders Projects List

REPOSITORIES DEPOSIT WORKFLOW:
Searching by the name, acronym or the project id number... Select the project and accept
Discover, Access and Reuse

For all OpenAIRE stakeholders...
# Search all entities

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Purification and characterization of an extracellular β-xylanase from Pseudomonas hubeiensis NCIM 3574 (PhXYl), an unexplored yeast

Mhetras, Nutan; Liddell, Susan; Gokhaile, Digamber (2016)
Publisher: Springer Berlin Heidelberg
Journal: AMB Express
Languages: English
Types: Article
Subjects: Unexplored yeast, Pseudomonas hubeiensis, β-Xylanase, Original Article, Metal and ethanol tolerant enzyme

This paper reports on the production of β-xylanase from an unexplored yeast, Pseudomonas hubeiensis. The expression of this enzyme could be induced by beech wood xylan when the yeast was grown at 27°C. The enzyme was purified to homogeneity as a glycoprotein with 23% glycosylation. The purification protocol involved ammonium sulfate precipitation, QAE-Sephadex A50 ion exchange chromatography and sephacryl-200 column chromatography which resulted in 8.3-fold purification with 33.12% final recovery. The purified enzyme showed a single band on SDS-PAGE. It is a monomeric protein of 110 kDa molecular weight confirmed by MALDI-TOF mass spectrometry (112.3 kDa). The enzyme was optimally active at 60°C and pH 4.5 and stable at pH range 4.9-5.5 and at 50°C for 4 h. Chemical modification studies revealed that active site of the purified enzyme comprised of carboxyl, tyrosine and tryptophan residues. The carboxyl residue is involved in catalysis and tryptophan residue is solely involved in substrate binding. The best match from the search of the NCBI dbase was with gi|82364558 glycose hydrolyase of Pseudomonas hubeiensis SY58 by 26% sequence coverage confirming that it is a glycoside hydrolase/beta-glucosidase. From the search of customized SWISSPROT database, it was revealed that SWISSPROT does not contain any entries that are similar to the purified enzyme.

Electronic supplementary material The online version of this article (doi:10.1186/s13568-016-0243-7) contains supplementary material, which is available to authorized users.

The results below are discovered through our pilot algorithms. Let us know how we are doing!

- Adua, MO, Bastawde, KB, Gokhaile, DV. Biochemical characterization of two xylanases from Pseudomonas hubeiensis producing only xyloglucohydrolases. Bioreour Technol. 2009; 100: 6489-6498
- Basaran, P, Ozcakm, M. Characterization of β-xylanase enzyme from a Pichia stipitis mutant. Bioreour

Related Research Data (1)
Link your research results

Services for researchers, project coordinators and research managers
LINK RESEARCH RESULTS TOOL

https://www.openaire.eu/participate/claim

Link publication or datasets to projects. Identify the project, select publications or datasets and set the access rights.

Services for researchers, project coordinators and research managers
Projects: publications and data
PROJECT PUBLICATIONS AND DATASETS

Automatically
EC's participant portal
Project overview

- Project productivity over time
- Post project-end monitoring
- OA mandate conformance
- Pubs location
Questions?