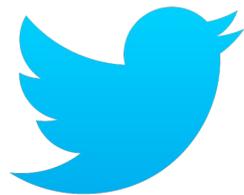
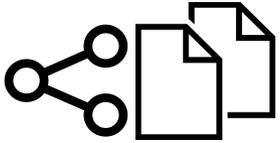


Do you speak Open Science?



paola masuzzo
@pcmasuzzo

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Do you speak open science? Resources and tips to learn the language

Science and Medical Education

Paola Masuzzo^{1,2}, Lennart Martens^{1,2}

January 3, 2017

> Author and article information

∨ Abstract

The internet era, large-scale computing and storage resources, mobile devices, social media, and their high uptake among different groups of people, have all deeply changed the way knowledge is created, communicated, and further deployed. These advances have enabled a radical transformation of the practice of science, which is now more open, more global and collaborative, and closer to society than ever. Open science has therefore become an increasingly important topic. Moreover, as open science is actively pursued by several high-profile funders and institutions, it has fast become a crucial matter to all researchers. However, because this widespread interest in open science has emerged relatively recently, its definition and implementation are constantly shifting and evolving, sometimes leaving researchers in doubt about how to adopt open science, and which are the best practices to follow.

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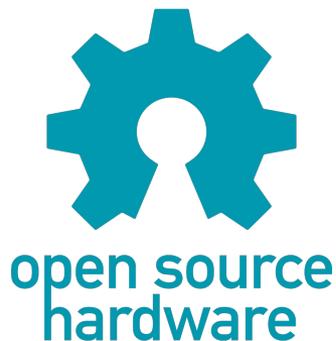
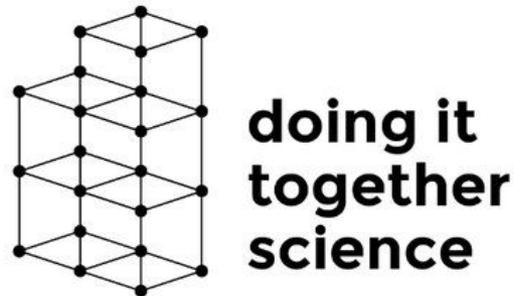
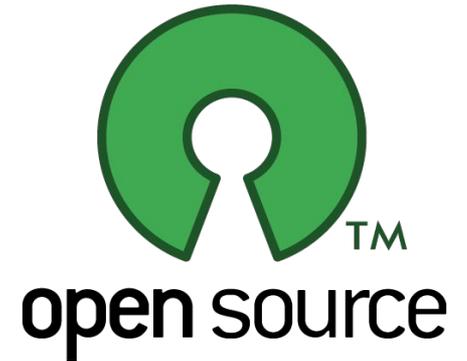
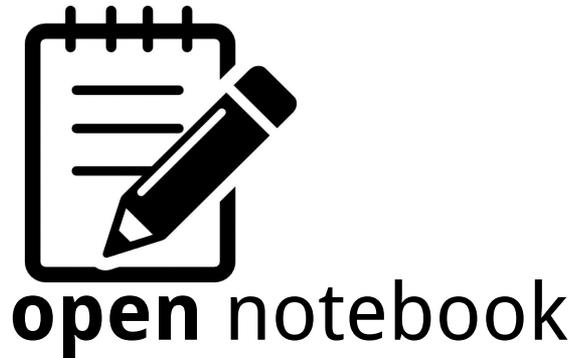
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What is open science exactly?



OPEN DATA

OPEN ACCESS

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OPEN DATA



Open data implies freedom to access, use and re-use for any purpose

Open Definition 2.1

Summary: Knowledge is open if anyone is free to access, use, modify, and share it – subject, at most, to measures that preserve provenance and openness.



OPEN KNOWLEDGE

open knowledge definition conformant licenses



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Research data are first-class citizens in science

REPORT

The Availability of Research Data Declines Rapidly with Article Age

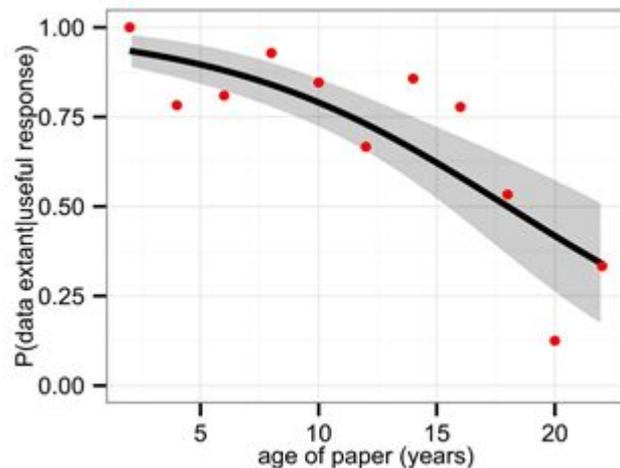
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Research data are first-class citizens in science

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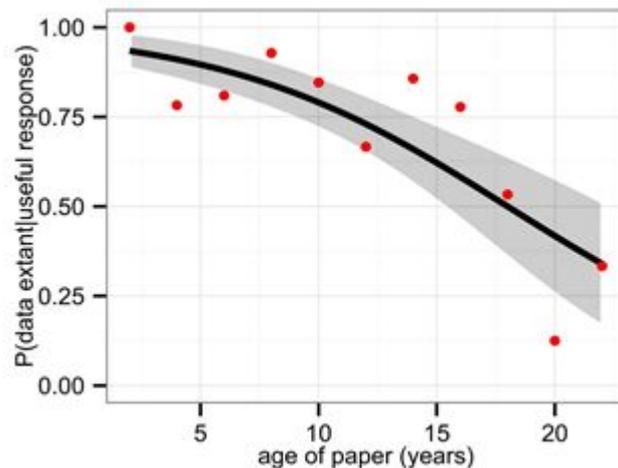
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Published Online: December 19, 2013

Open Archive DOI: <http://dx.doi.org/10.1016/j.cub.2013.11.014> | CrossMark

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Data should be considered the primary output of research



Data produced with public funds belong to the public



BILL & MELINDA
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Open data means more hands at work, more brain power and faster innovations



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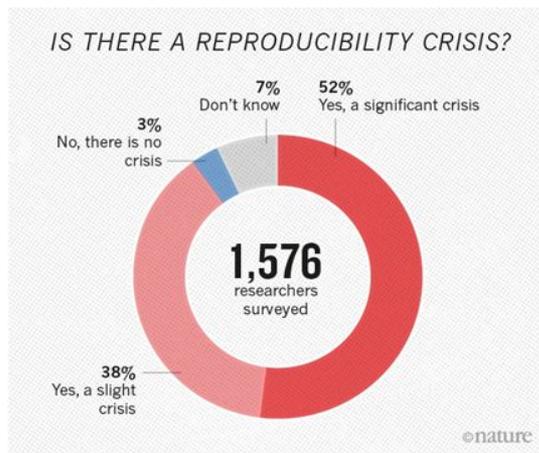


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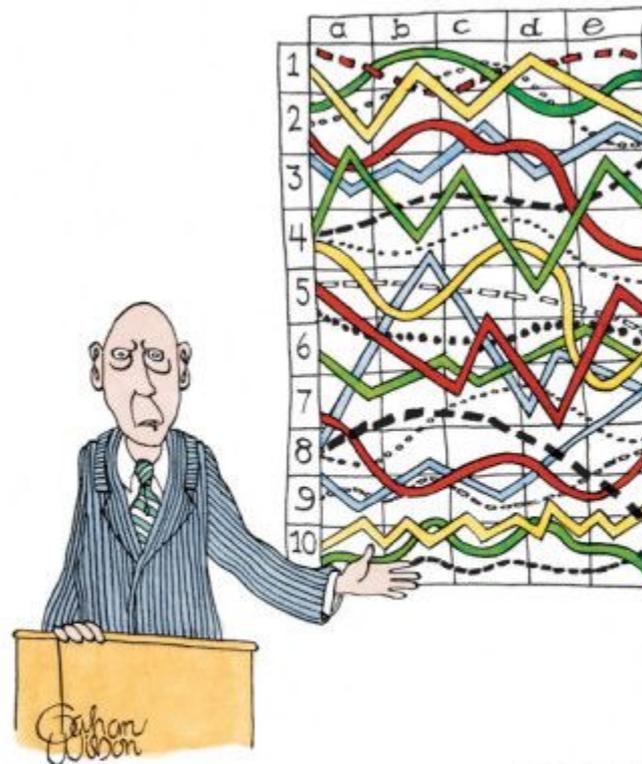
Sluggish data sharing hampers reproducibility effort

Initiative trying to validate 50 cancer papers finds difficulty in accessing original study data.

Richard Van Noorden



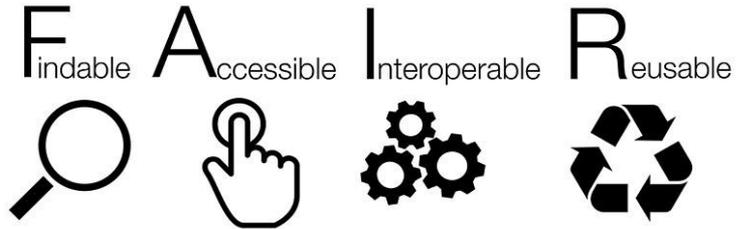
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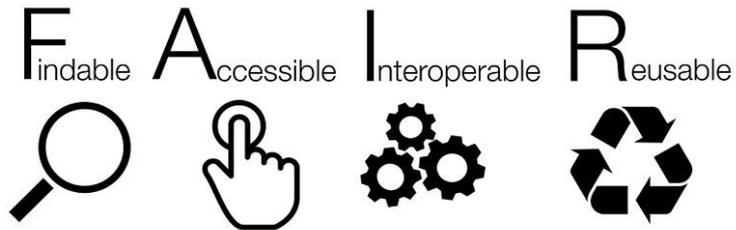
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COLLECTION

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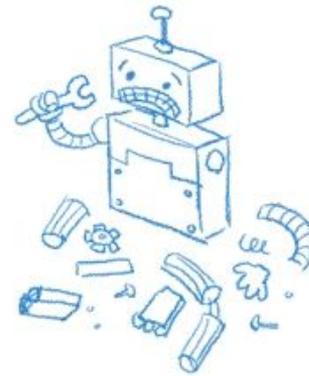


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Intelligent access and interoperability are crucial

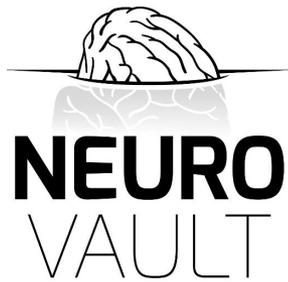
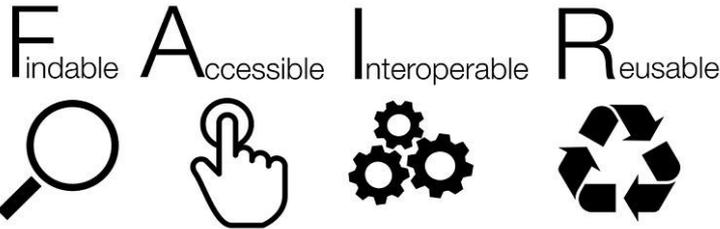


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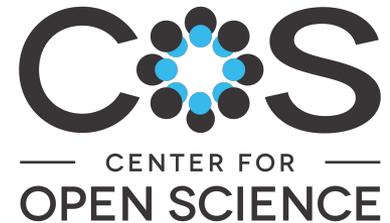


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Intelligent access and interoperability are crucial



What do **abbreviations** mean?
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OPEN ACCESS



There are academic horror stories everywhere, everyday

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But the real academic monsters are paywalls and the impact factor



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Putting research articles behind paywalls is bad, immoral, evil



In 2010, Elsevier's reported a 36% profit margin – higher than Apple, Google, or Amazon posted that year



<https://www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science>



One of the big problems is that too many institutions still worship the impact factor



The current journal model is archaic and not fit for purpose in the modern scientific era



Fabienne Krauer @FabiKrauer Follow

In the future, #impactfactors will not matter anymore. For how long do we have to play that game today in order to get funding tomorrow?

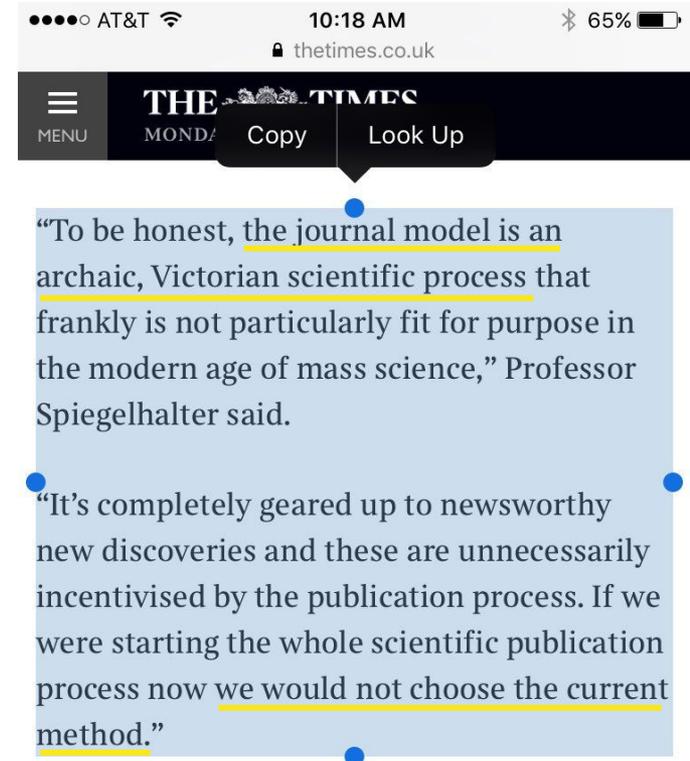
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Replying to @FabiKrauer
You can stop now > sign up with @LoganCorina to fight being #BulliedIntoBadScience



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“To be honest, the journal model is an archaic, Victorian scientific process that frankly is not particularly fit for purpose in the modern age of mass science,” Professor Spiegelhalter said.

“It’s completely geared up to newsworthy new discoveries and these are unnecessarily incentivised by the publication process. If we were starting the whole scientific publication process now we would not choose the current method.”

I have been bullied into bad science



Vin@dh Ilang@van
@InquisitiveVi

Following

Early career fellows, if you're advised Journal Impact Factors are useful, you're [#BulliedIntoBadScience](#) Support cambridge.eu.qualtrics.com/jfe/form/SV_6S

...

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Face palm, when @MerlinCrossley is challenging the status quo by supporting JIF and other irrational metrics. theconversation.com/why-i-disagree...

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↻ 3



8



Paola Masuzzo
@pcmasuzzo

If you want to go into tenure track, you NEED to publish in Nature or Cell. This is what I was told. Have I been [#BulliedIntoBadScience](#)?

NYCPostdocCoalition @NYC_Postdoc

Brilliant- this campaign needs wide-spread support [#BulliedintoBadScience](#)

thetimes.co.uk/article/academ

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↻ 2



5



Don't wait on others to change things for you, be the change yourself



Laurent Gatt

@lgatt0

Following

We now have 105 ECRs and 55 supporters for the [#BulliedIntoBadScience](#) campaign - see [bulliedintobadscience.org](#) cc @LoganCorina

12:03 PM - 13 Jul 2017

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Do you feel bullied into bad science?

Dear Early Career Researcher (ECR),

We are postdocs and a reader in the humanities and sciences at the University of Cambridge. We are **concerned about the desperate need for publishing reform** to increase transparency, reproducibility, timeliness, and academic rigour of the production and dissemination of scholarly outputs (see [Young et al. 2016](#), [Smaldino & McElreath 2016](#)).

We have identified actions that institutions and managers can take to better support ECRs (below). These actions are crucial for our success because we are eager to publish openly and at places that keep profits inside academia in accordance with many modern online publication venues ([Logan 2017](#)). However, **ECRs are often pressured into publishing against their ethics** through threats that we would not get a job/grant unless we publish in particular journals ([Carter et al. 2014](#), [Who is going to make change happen?](#), [Kent 2016](#); usually these journals are older and more familiar, have a print version, a high impact factor, and are not 100% open access). These out of date practices and ideas hinder ECRs rather than help us: evidence shows that publishing open access results in increased citations, media attention, and job/funding opportunities ([McKiernan et al. 2016](#)). Open dissemination of all research outputs is also a fundamental principle on which ECRs rely to fight the ongoing reproducibility crisis in science and thus improve the quality of their research.

Non-ECRs: support the campaign

You are an established researcher (Professor) or in a position connected with academia and want to show your support: [fill out this form](#).

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50 ECR campaign supporters as of Wed Jul 05 2017 06:00:13

Research evaluation criteria need to change



800+ organizations and 12,000+ individuals have committed:

- **not** to consider JIF in hiring, promotion or funding decisions
- the scientific content of an article, not the JIF of the journal where it was published, is **what matters**
- to consider the value and impact of **all the research outputs**

Research evaluation criteria need to change



800+ organizations and 12,000+ individuals have committed:

- **not** to consider JIF in hiring, promotion or funding decisions
- the scientific content of an article, not the JIF of the journal where it was published, is **what matters**
- to consider the value and impact of **all the research outputs**

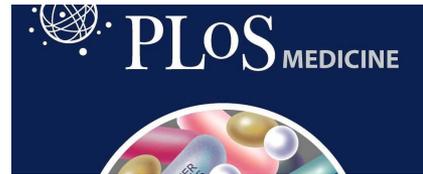


HAVE YOU SIGNED YET?

But if you really, really care, many open access journals have moderate to high IF



IF 7.87



IF 13.58



IF 6.78



IF 12.12



IF 9.80



IF 2.18



IF 4.25



IF 7.72

You can use the Cofactor Journal Selector tool to find open access journals

Journal Selector

Use the options below to find journals that match your requirements. The journals included in the tool are listed at the bottom of the page. Change the options for any of the questions and click Search. The journals list will update to give only the journals that fit your criteria. Click on a journal name for more information about it.

An explanation of the various options and abbreviations is [here](#), or click on the question marks on the right.

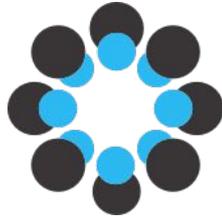
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Innovations in peer review

JUNE 26, 2017 PROTOHEDGEHOG OPEN SCIENCE

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We just submitted a monster paper on the history and present diversity of peer review practices to F1000 Research. [It's available in advance here](#), and soon will be open to public commenting from anyone as it undergoes formal peer review. We wrote it in a [similar manner](#) to another paper published on [Open Access](#) last year.

INSTITUTIONAL REPOSITORIES



The impacts of open access are really numerous

 Check for updates

REVIEW

REVISED The academic, economic and societal impacts of Open Access: an evidence-based review [version 3; referees: 3 approved, 2 approved with reservations]

 Jonathan P. Tennant ¹, François Waldner², Damien C. Jacques², Paola Masuzzo^{3,4}, Lauren B. Collister⁵, Chris. H. J. Hartgerink⁶

 Author details

 Grant information

 This article is included in the [The Future of Scholarly Publishing](#) collection.

Abstract

Ongoing debates surrounding Open Access to the scholarly literature are multifaceted and complicated by disparate and often polarised viewpoints from engaged stakeholders. At the current stage, Open Access has become such a global issue that it is critical for all involved in scholarly publishing, including policymakers, publishers, research funders, governments, learned societies,

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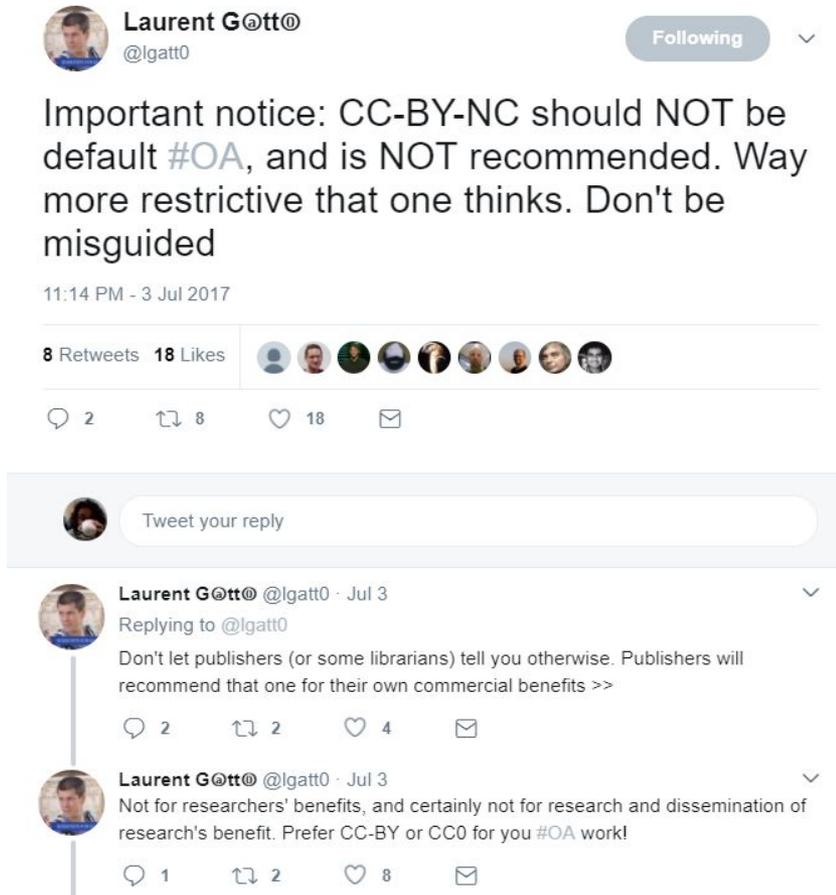
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- commercial use is awesome!
- it means that someone has found a way to add enough value to your work that others will pay for it
- unless you plan on selling your paper, there’s zero opportunity cost

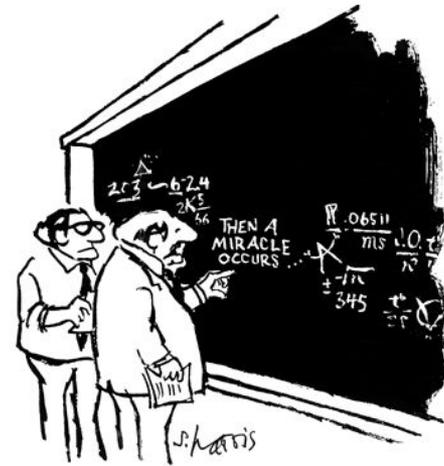
OPEN CODE



A published article is only the tip of the iceberg of the research process

“An article about computational result is advertising, not scholarship. The actual scholarship is the **full software environment, code and data**, that produced the result.”

Buckheit and Donoho (1995)

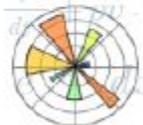


"I think you should be more explicit here in step two."

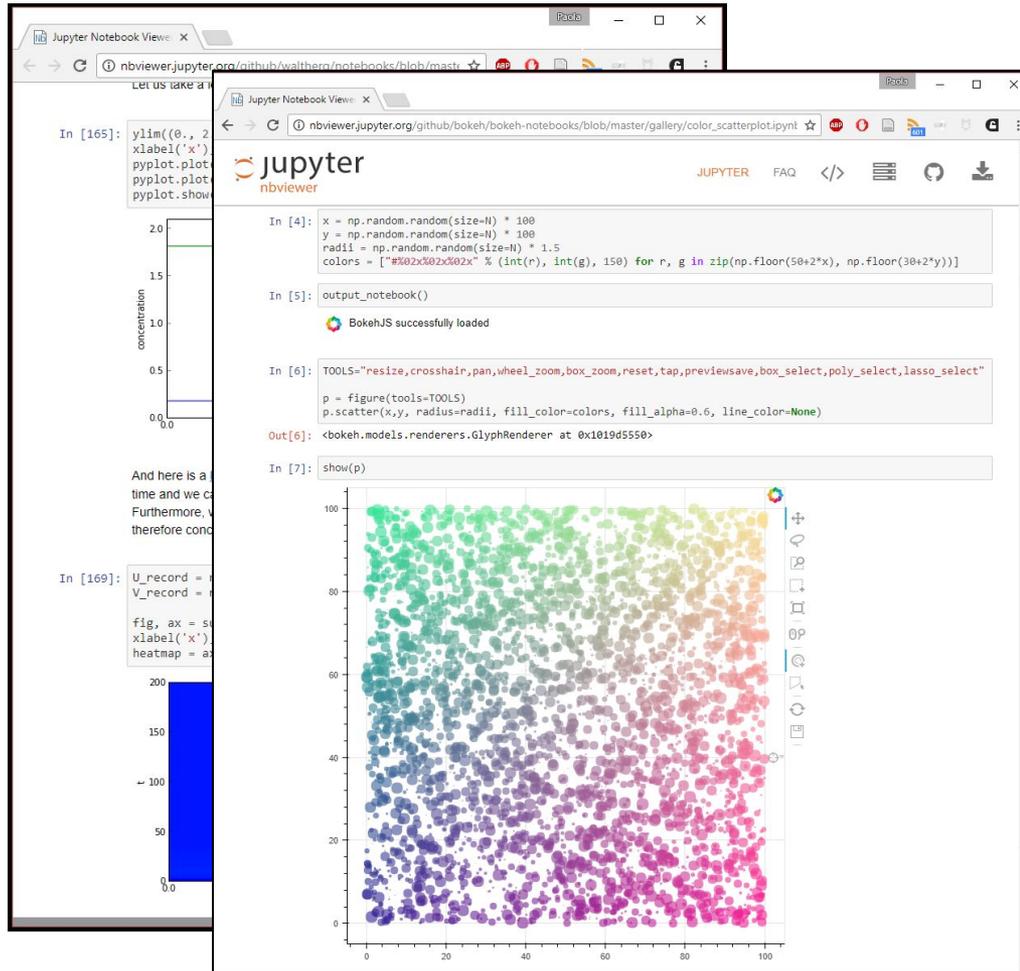
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OPEN CODE = BETTER SCIENCE



Literate programming: sharing the code through interactive notebooks

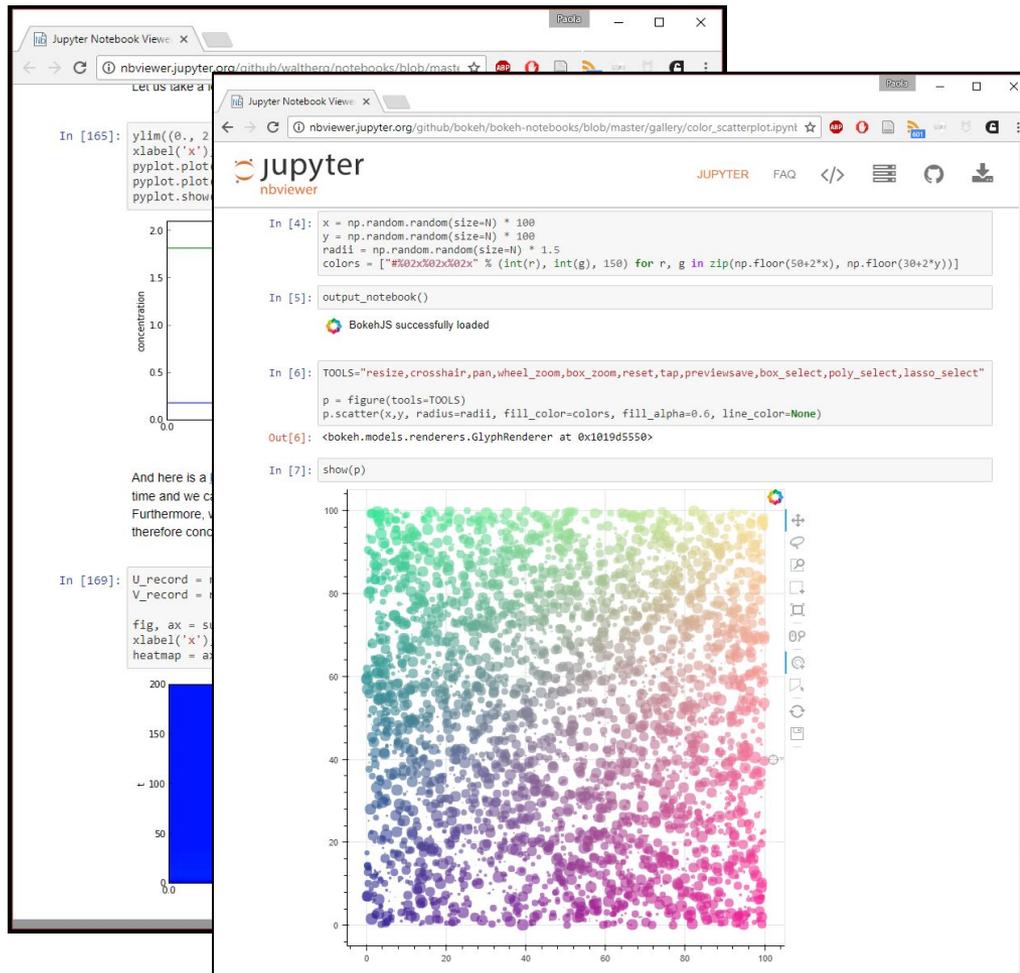


a browser-based and interactive notebook with support for code, rich text, mathematical expressions, inline plots and other rich media

an ideal platform to support **open** and **reproducible** research



Literate programming: sharing the code through interactive notebooks



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will Jupyter notebook change our publication model???

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NATURE GENETICS | ANALYSIS

日本語要約

Multi-tiered genomic analysis of head and neck cancer ties *TP53* mutation to 3p loss

Andrew M Gross, Ryan K Orosco, John P Shen, Ann Marie Egloff, Hannah Carter, Matan Hofree, Michel Choueiri, Charles S Coffey, Scott M Lippman, D Neil Hayes, Ezra E Cohen, Jennifer R Grandis, Quyen T Nguyen & Trey Ideker

[Affiliations](#) | [Contributions](#) | [Corresponding author](#)

Nature Genetics **46**, 939–943 (2014) | doi:10.1038/ng.3051
Received 20 March 2014 | Accepted 10 July 2014 | Published online 03 August 2014

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Abstract

[Abstract](#) • [Introduction](#) • [Results](#) • [Discussion](#) • [Methods](#) • [References](#) • [Acknowledgments](#) • [Author information](#) • [Supplementary information](#)

Head and neck squamous cell carcinoma (HNSCC) is characterized by aggressive behavior with a propensity for metastasis and recurrence. Here we report a comprehensive analysis of the molecular and clinical features of HNSCC that govern patient survival. We find that *TP53* mutation is frequently accompanied by loss of chromosome 3p and that the combination of these events is associated with a surprising decrease in survival time (1.9 years versus >5 years for *TP53* mutation alone). The *TP53*-3p interaction is specific to chromosome 3p and validates in HNSCC and pan-cancer cohorts. In human papillomavirus (HPV)-positive tumors, in which HPV inactivates *TP53*, 3p deletion is also common and is associated with poor outcomes. The *TP53*-3p event is modified by mir-548k expression, which decreases survival further, and is mutually exclusive with mutations affecting RAS signaling. Together, the identified markers underscore the molecular heterogeneity of HNSCC and enable a new multi-tiered classification of this disease.

Editors' pick

Focus on TCGA Pan-Cancer Analysis >

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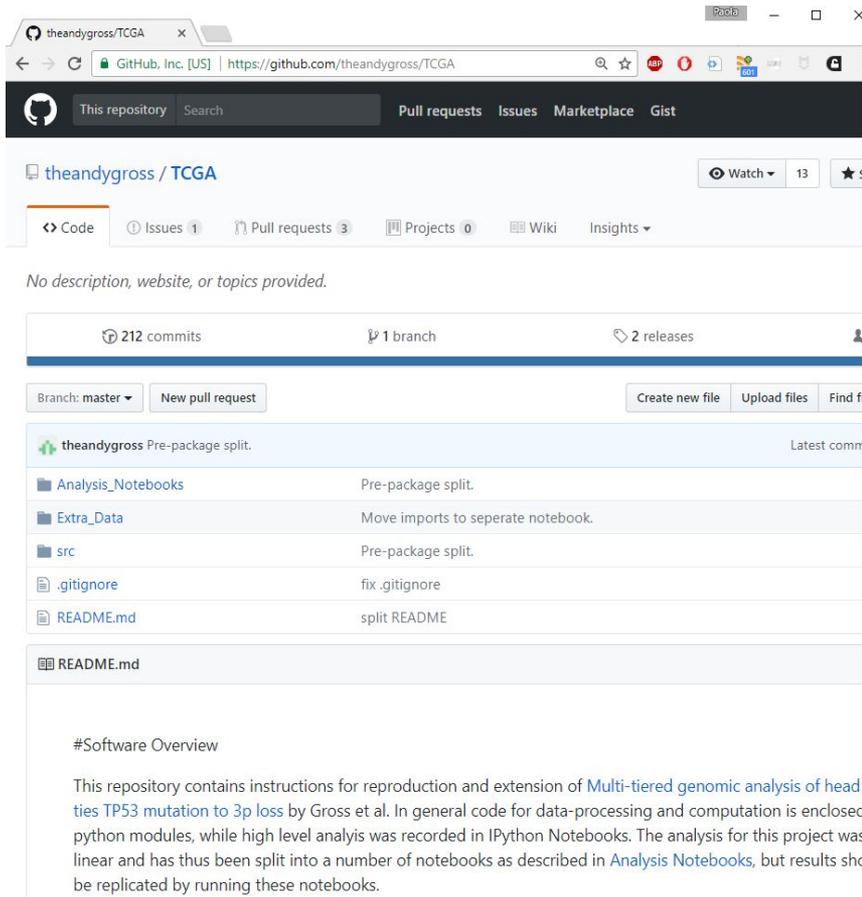
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Small-RNA asymmetry is directly driven by mammalian Argonautes
Nature Structural & Molecular Biology | 22 Jun 2015

Emerging biomarkers in head and neck cancer in the era of genomics
Nature Reviews Clinical Oncology | 18 Nov 2014

The notebooks on GitHub are the actual ‘scholarship’



theandygross/TCGA

theandygross / TCGA

No description, website, or topics provided.

212 commits 1 branch 2 releases

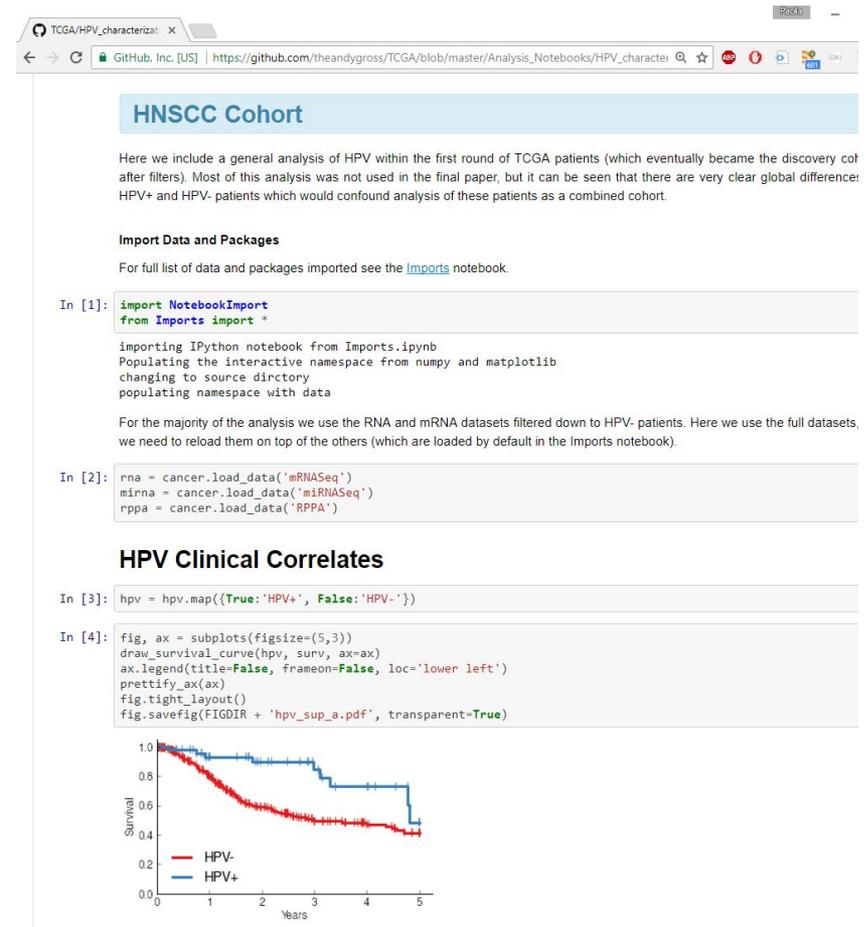
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File	Description
Analysis_Notebooks	Pre-package split.
Extra_Data	Move imports to separate notebook.
src	Pre-package split.
.gitignore	fix .gitignore
README.md	split README

README.md

#Software Overview

This repository contains instructions for reproduction and extension of [Multi-tiered genomic analysis of head ties TP53 mutation to 3p loss](#) by Gross et al. In general code for data-processing and computation is enclosed python modules, while high level analysis was recorded in IPython Notebooks. The analysis for this project was linear and has thus been split into a number of notebooks as described in [Analysis Notebooks](#), but results should be replicated by running these notebooks.



HNSCC Cohort

Here we include a general analysis of HPV within the first round of TCGA patients (which eventually became the discovery cohort after filters). Most of this analysis was not used in the final paper, but it can be seen that there are very clear global differences HPV+ and HPV- patients which would confound analysis of these patients as a combined cohort.

Import Data and Packages

For full list of data and packages imported see the [Imports](#) notebook.

```
In [1]: import NotebookImport
from Imports import *
```

importing IPython notebook from Imports.ipynb
Populating the interactive namespace from numpy and matplotlib
changing to source directory
populating namespace with data

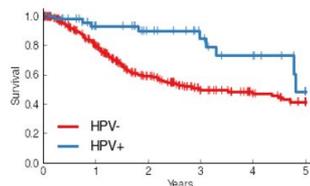
For the majority of the analysis we use the RNA and mRNA datasets filtered down to HPV- patients. Here we use the full datasets, we need to reload them on top of the others (which are loaded by default in the Imports notebook).

```
In [2]: rna = cancer.load_data('mRNASeq')
mirna = cancer.load_data('miRNASeq')
rppa = cancer.load_data('RPPA')
```

HPV Clinical Correlates

```
In [3]: hpv = hpv.map({True:'HPV+', False:'HPV-'})
```

```
In [4]: fig, ax = subplots(figsize=(5,3))
draw_survival_curve(hpv, surv, ax=ax)
ax.legend(title=False, frameon=False, loc='lower left')
pretty_ax(ax)
fig.tight_layout()
fig.savefig(FIGDIR + 'hpv_sup_a.pdf', transparent=True)
```



Years	HPV- Survival	HPV+ Survival
0	1.0	1.0
1	0.8	0.95
2	0.6	0.9
3	0.5	0.85
4	0.45	0.75
5	0.4	0.5



Make sure your project is *actually* open source

Choose an open source license

{ Which of the following best describes your situation? }



I want it simple and permissive.

The **MIT License** is a permissive license that is short and to the point. It lets people do anything they want with your code as long as they provide attribution back to you and don't hold you liable.

jQuery, **.NET Core**, and **Rails** use the MIT License.



I'm concerned about patents.

The **Apache License 2.0** is a permissive license similar to the MIT License, but also provides an express grant of patent rights from contributors to users.

Android, **Apache**, and **Swift** use the Apache License 2.0.



I care about sharing improvements.

The **GNU GPLv3** is a copyleft license that requires anyone who distributes your code or a derivative work to make the source available under the same terms, and also provides an express grant of patent rights from contributors to users.

Bash, **GIMP**, and **Privacy Badger** use the GNU GPLv3.

{ What if none of these work for me? }

My project isn't software.

There are licenses for that.

I want more choices.

More licenses are available.

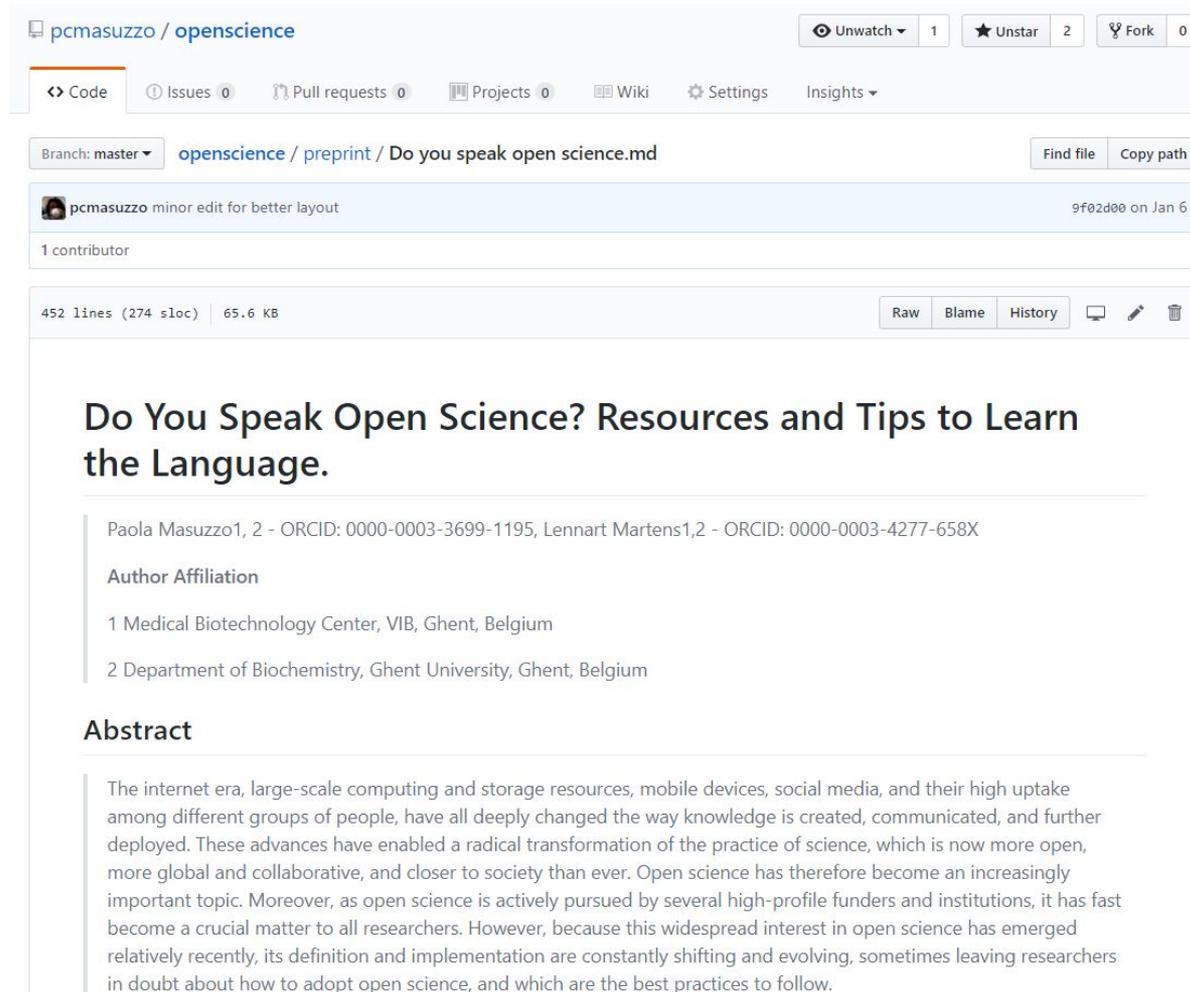
I don't want to choose a license.

You don't have to.

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GitHub is more than just code



The screenshot displays the GitHub interface for the repository 'pcmasuzzo / openscience'. At the top, there are navigation links for 'Code', 'Issues', 'Pull requests', 'Projects', 'Wiki', 'Settings', and 'Insights'. The repository is currently on the 'master' branch, and the selected file is 'preprint / Do you speak open science.md'. The commit history shows a recent commit by 'pcmasuzzo' with the message 'minor edit for better layout' on January 6. The file statistics indicate 452 lines of code (274 sloc) and a size of 65.6 KB. The document content includes the title 'Do You Speak Open Science? Resources and Tips to Learn the Language.', author information for Paola Masuzzo and Lennart Martens, their affiliations at Ghent University, and an abstract discussing the impact of the internet era on open science.

pcmasuzzo / openscience

Unwatch 1 Unstar 2 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Settings Insights

Branch: master openscience / preprint / Do you speak open science.md Find file Copy path

pcmasuzzo minor edit for better layout 9f02d00 on Jan 6

1 contributor

452 lines (274 sloc) 65.6 KB Raw Blame History

Do You Speak Open Science? Resources and Tips to Learn the Language.

Paola Masuzzo^{1, 2} - ORCID: 0000-0003-3699-1195, Lennart Martens^{1,2} - ORCID: 0000-0003-4277-658X

Author Affiliation

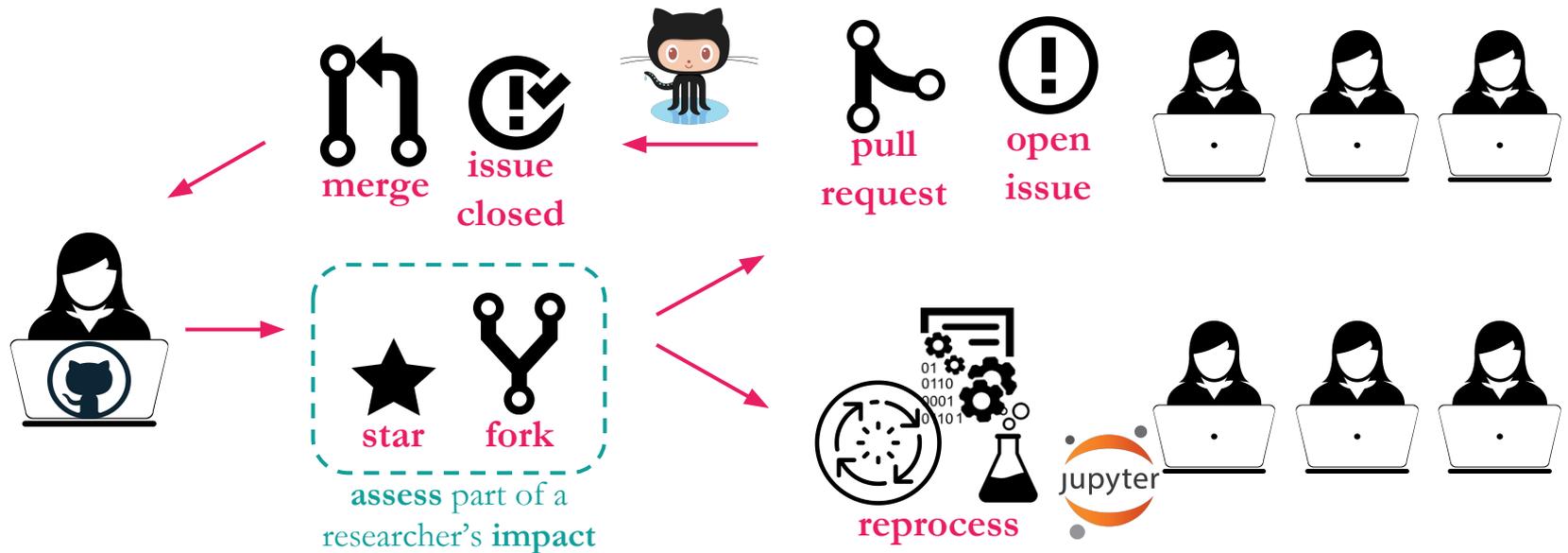
1 Medical Biotechnology Center, VIB, Ghent, Belgium

2 Department of Biochemistry, Ghent University, Ghent, Belgium

Abstract

The internet era, large-scale computing and storage resources, mobile devices, social media, and their high uptake among different groups of people, have all deeply changed the way knowledge is created, communicated, and further deployed. These advances have enabled a radical transformation of the practice of science, which is now more open, more global and collaborative, and closer to society than ever. Open science has therefore become an increasingly important topic. Moreover, as open science is actively pursued by several high-profile funders and institutions, it has fast become a crucial matter to all researchers. However, because this widespread interest in open science has emerged relatively recently, its definition and implementation are constantly shifting and evolving, sometimes leaving researchers in doubt about how to adopt open science, and which are the best practices to follow.

Open science is by default collaborative and reproducible science



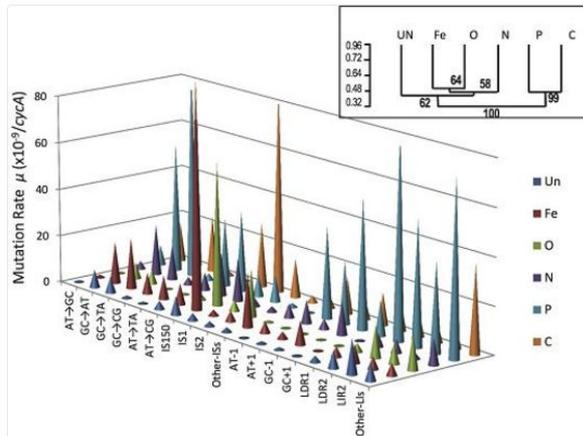
An example: improve data visualization with open data and open code



PLOS Biology
@PLOSbiology

Following

5 different environmental stresses cause 5 different patterns of #mutagenesis in #bacteria #PLOSbiology plos.io/2r8ul0u



12:11 PM - 9 Jun 2017

4 Retweets 7 Likes



1 4 7



Tweet your reply



Clement Viguiet @ClementViguiet · Jun 9

Replying to @PLOSbiology

This could be interesting, but you should not promote it with this kind of badly designed chart. This chart is terrible. #dataviz #wtfviz

1 1



PLOS Biology @PLOSbiology · Jun 9

It's Fig 5 from the paper. Luckily we insist on all underlying data, if you feel like making something prettier ;-). doi.org/10.1371/journa...

1 2



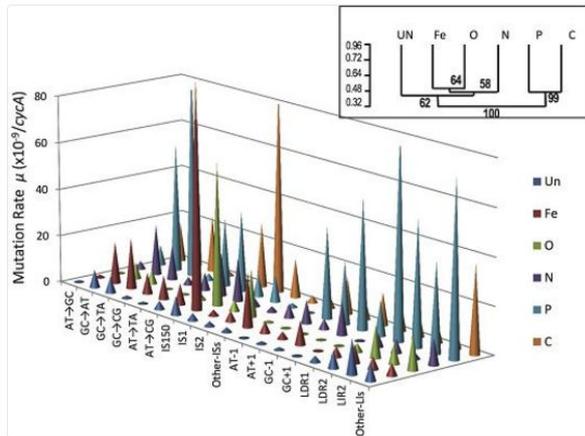
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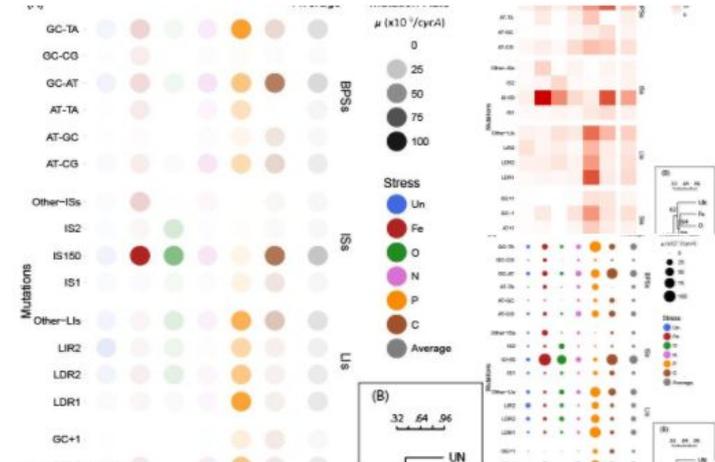
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1 2



Clement Viguiet @ClementViguiet · Jun 21

Better late than never. Here 3 alternative designs. I prefer the heatmap but the alpha plot is more attractive. Could work better alignment.



PLOS Biology

1 2



PLOS Biology @PLOSbiology · Jun 21

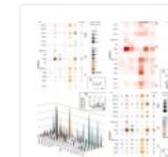
Fantastic! We'll see if we can figure out a way to link them to the paper...

1 2



Clement Viguiet @ClementViguiet · Jul 3

...and there is the code to produce them:

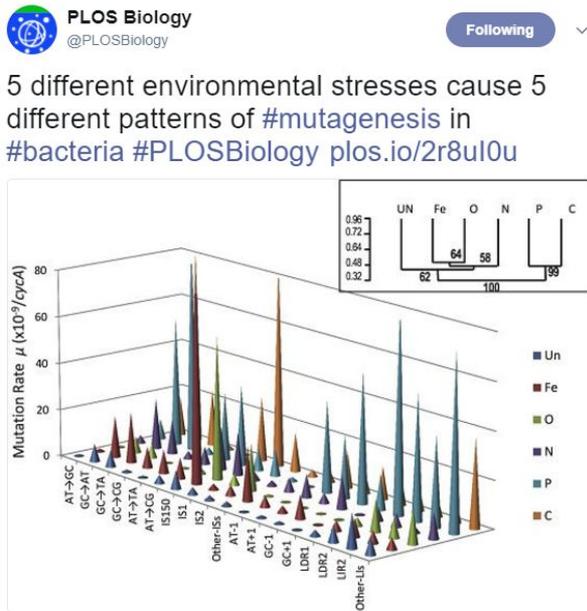


Clement Viguiet @ClementViguiet

You can read about the story behind my redesigns for @PLOSbiology and code used @ggplot2 on this blog post: [medium.com/@clementviguiet...](https://medium.com/@clementviguiet) Enjoy!

1 1

An example: improve data visualization with open data and open code



12:11 PM - 9 Jun 2017

4 Retweets 7 Likes



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Tweet your reply



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PLOS Biology @PLOSbiology · Jun 9

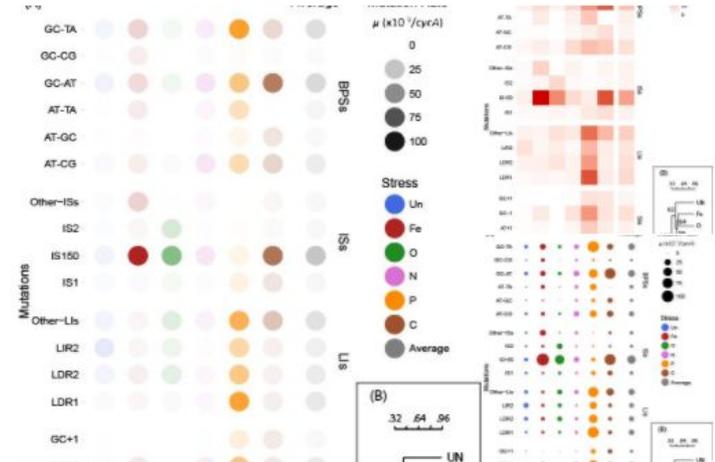
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Clement Viguier @ClementViguier · Jul 3

POST-PUBLICATION
PEER REVIEW

1 1

OPEN PEER REVIEW



Is peer review broken?



Peer review is a complex process

A multi-disciplinary perspective on emergent and future innovations in peer review

Jonathan P. Tennant^{*1}, Jonathan M. Dugan², Daniel Graziotin³, Damien C. Jacques⁴, François Waldner⁴, Daniel Mietchen⁵, Yehia Elkhatib⁶, Lauren B. Collister⁷, Christina K. Pikas⁸, Tom Crick⁹, Paola Masuzzo¹⁰, Anthony Caravaggi¹¹, Devin R. Berg¹², Kyle E. Niemeyer¹³, Tony Ross-Hellauer¹⁴, Sara Mannheimer¹⁵, Lillian Rigling¹⁶, Daniel S. Katz¹⁷, Bastian Greshake¹⁸, Josmel Pacheco-Mendoza¹⁹, Nazeefa Fatima²⁰, Marta Poblet²¹, Marios Isaakidis²², Dasapta Erwin Irawan²³, Sébastien Renaut²⁴, Christopher R. Madan²⁵, Lisa Matthias²⁶, Jesper Nørgaard Kjær²⁷, Daniel Paul O'Donnell²⁸, Cameron Neylon²⁹, Sarah Kearns³⁰, Manojkumar Selvaraju³¹, and Julien Colomb³²

The main idea behind open peer-review is to enable a fully transparent and author-driven process

post-publication peer-review model adopted by F1000Research



Researchers can use open reviews to their advantage

REVIEW

REVISED The academic, economic and societal impacts of Open Access: an evidence-based review [version 3; referees: 3 approved, 2 approved with reservations]

Jonathan P. Tennant ¹, François Waldner², Damien C. Jacques², Paola Masuzzo^{3,4}, Lauren B. Collister⁵, Chris. H. J. Hartgerink⁶

Version 1

open feedback

Referee Report 28 Apr 2016

Chris Chambers, School of Psychology, Cardiff University, Cardiff, UK

✓ Approved

Tennant *et al* offer a timely and insightful review of the various effects of open access publishing on science and society. The paper is well structured and enjoyable to read. Although I am not an expert on open access publishing, I also found the discussion of the literature quite balanced and evidence-based.

Referee Report 25 Apr 2016

Anne Tierney, Department of Learning and Teaching Enhancement, Edinburgh Napier University, Edinburgh, UK

✓ Approved

This paper is a comprehensive review of the complexities of OA. I have come late to the discussion on this paper, and I find that the previous reviewers have been meticulous in their critique of the paper, to the point I have very little to add. However, there are a couple of points for consideration. What is the effect (if any) of the UK Research Excellence Framework on Open Access? To what extent is disciplinarity a factor in Open Access? I ask this question because of the high impact of the sciences and biomedical research, but wonder about Arts and Humanities (and other areas) as a

Views

96

Cite

Views

69

Cite

transparent
submission timeline

Open Peer Review

Referee Status: ✓ ? ? ✓ ✓ ✓

	Invited Referees				
Version(s)	1	2	3	4	5
REVISED Version 3 published 21 Sep 2016		?			
		read report			
REVISED Version 2 published 09 Jun 2016	✓	?			✓
	read report	read report			read report
Version 1 published 11 Apr 2016	✓	✓	?	✓	✓
	read report	read report	read report	read report	read report

- 1 Gwilym Lockwood, Max Planck Institute for Psycholinguistics, Netherlands
- 2 Peter Suber, Harvard University, USA
- 3 Paige Brown Jarreau, Louisiana State University, USA
- 4 Anne Tierney, Edinburgh Napier University, UK
- 5 Chris Chambers, Cardiff University, UK

All reports (9), Responses and comments (6)

And they can get credit for the reviews they perform



BioMed Central
The Open Access Publisher

ROYAL SOCIETY
OPEN SCIENCE



eLIFE

BMJ

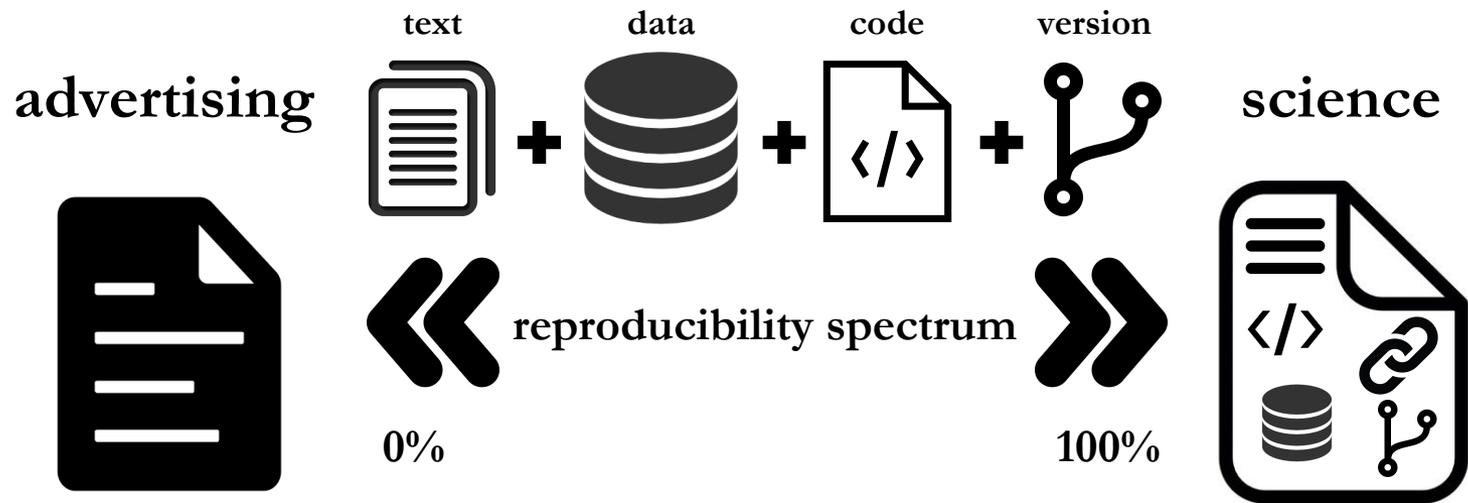
(GIGA)ⁿ
SCIENCE

F1000Research
Open for Science

BRINGING IT ALL TOGETHER



Open science is just science



ALL AMAZING?



Open science: too much talk, too little action

« Prev

Next »

Feb
03

OPEN SCIENCE: TOO MUCH TALK, TOO LITTLE ACTION

In: Science Politics • Tags: infrastructure, open science, publishing

Starting this year, I will stop traveling to any speaking engagements on open science (or, more generally, infrastructure reform), as long as these events do not entail a clear goal for action. I have several reasons for this decision, most of them boil down to a cost/benefit estimate. The time spent traveling does not seem worth the hardly noticeable benefits any more.



Blog post Björn Brembs

<http://bjoern.brembs.net/2017/02/open-science-too-much-talk-too-little-action/>



Open science: too much talk, too little action

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- Publishing is still dominated by the main publishers which keep increasing their **profit margins**
- Most of our work is still behind **paywalls**
- You won't get a job unless you publish in **high-ranking journals**
- Higher ranking journals still publish **less reliable science**
- Libraries are still told by their faculty that **subscriptions** are important
- There are no institutional solutions to **sustainably archive and make accessible** our narratives other than text, or our code or our data

Blog post Björn Brembs

<http://bjoern.brembs.net/2017/02/open-science-too-much-talk-too-little-action/>



Ideas?
Thoughts?
Wishes?
Actions?

THANKS!



paola masuzzo
@pcmasuzzo

