

Wissenschaftliches Publizieren: Was läuft schief, was können wir tun?

(virtual) 20.4.2021

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The need for reform
(,We have a problem‘)

New modes of publishing



A few best practice examples

[Houston] We have a problem...



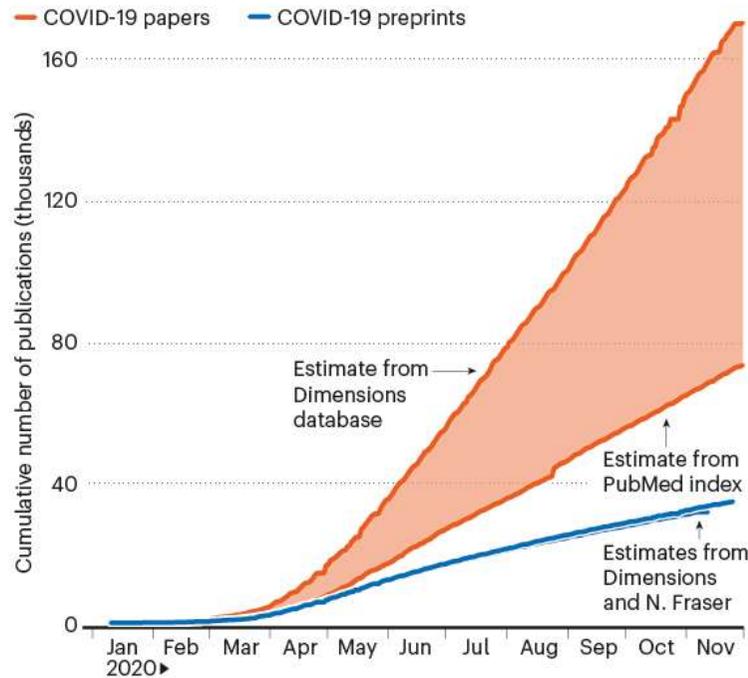
A tsunami of research outputs



Approximately 180.000 COVID related articles in Pubmed since 1/2020

CORONAVIRUS CASCADE

One estimate suggests that more than 200,000 coronavirus-related journal articles and preprints had been published by early December.



*Estimates differ depending on search terms, database coverage, and definitions of what counts as a scientific article; some preprints were posted on multiple sites online.

©nature

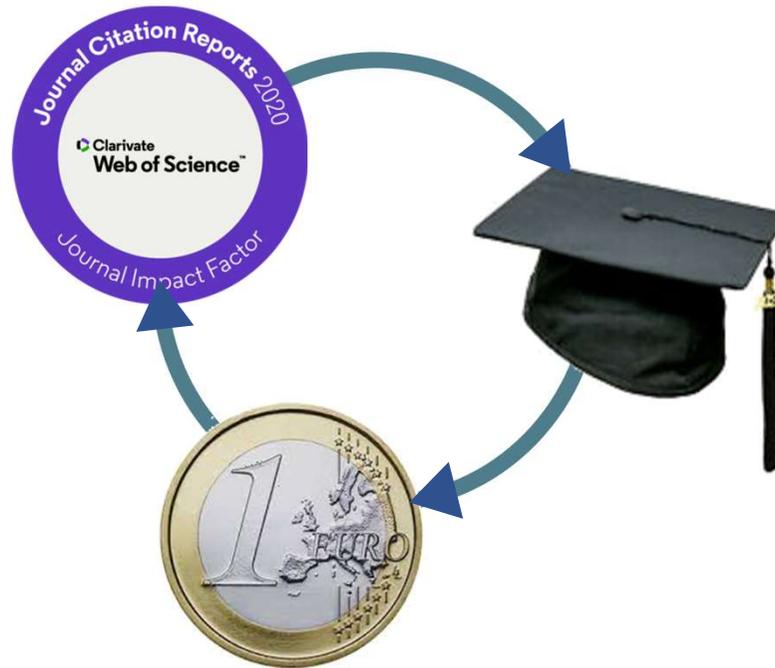
(<https://www.nature.com/articles/d41586-020-03564-y>)

The publishing industry is flourishing....

- 8 major publishers control 2/3rd of market
- 60 billion € per year
- Elsevier (2016): sales 3 billion €, profit 1.2 billion € (40 % profit rate)
- **German University libraries pay 100 Mio € per year for subscriptions**
- 50.000 journals (32% OA licencing model)

Source: https://www.laborjournal.de/rubric/hintergrund/hg/hg_21_03_02.php

Publishers sell us our own work in the guise of curated articles - but essentially they just provide us with a currency which is only valid in academia.



We exchange impact factors (‘reputation’) against money.

Free access to publicly funded research results for everyone is an ethical mandate (,Open Access‘)



But: So called ,Open Access‘ is a business model of the publishers. They want to not only keep their profit rate, but to potentially increase it in the future.



The current publishing system is sluggish....



The screenshot shows the top portion of a web page from the journal Nature. The header is dark red with the 'nature' logo in white. Below the logo is the tagline 'International weekly journal of science'. A navigation bar contains links for Home, News & Comment, Research, Careers & Jobs, Current Issue, Archive, Audio & Video, and Fo. Below this is a breadcrumb trail: Archive > Volume 530 > Issue 7589 > News Feature > Article. The main content area has a sub-header 'NATURE | NEWS FEATURE' and a share/print icon. The article title is 'Does it take too long to publish research?' followed by a short lead: 'Scientists are becoming increasingly frustrated by the time it takes to publish a paper. Something has to change, they say.' The author's name 'Kendall Powell' is on the left, and the date '10 February 2016' is on the right.

nature International weekly journal of science

Home | News & Comment | Research | Careers & Jobs | Current Issue | Archive | Audio & Video | Fo

Archive > Volume 530 > Issue 7589 > News Feature > Article

NATURE | NEWS FEATURE  

Does it take too long to publish research?

Scientists are becoming increasingly frustrated by the time it takes to publish a paper. Something has to change, they say.

Kendall Powell 10 February 2016

<https://www.nature.com/news/does-it-take-too-long-to-publish-research-1.19320>

Peer review: Not only slow, but intransparent and potentially fraught with bias, sometimes incompetent...



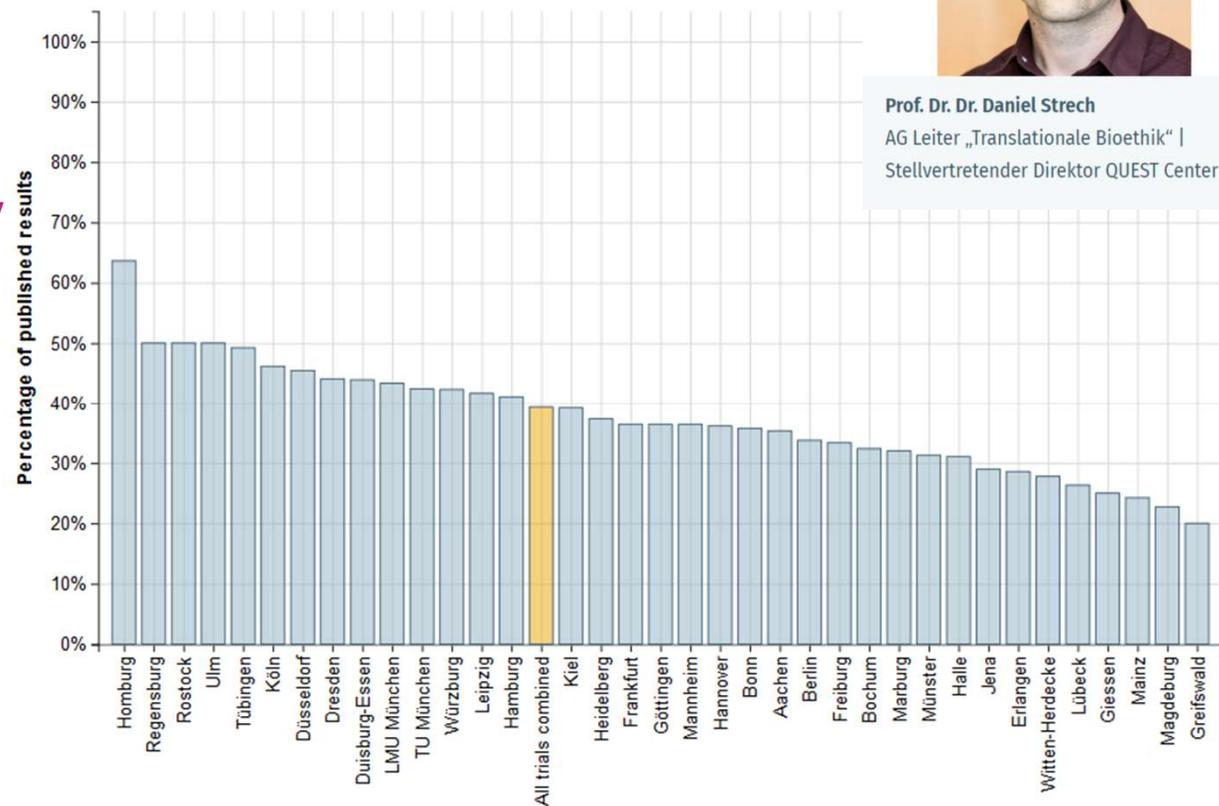
Image via Sarahmirk

(Non) Publication of results

German University Medical Centers:
2 years after study completion
(summary results in registry or publication or internet)

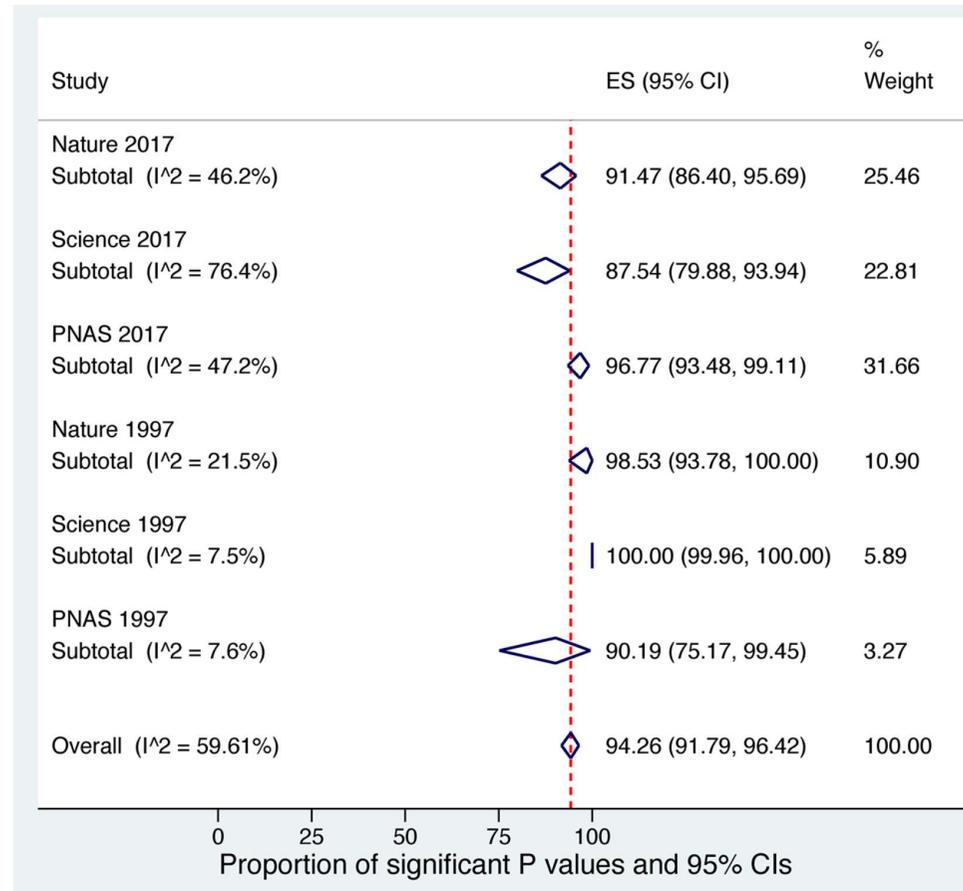
39%

Result dissemination from clinical trials conducted at German university medical centers was delayed and incomplete, Wieschowski, Susanne et al. Journal of Clinical Epidemiology, Volume 115, 37 - 45



Prof. Dr. Dr. Daniel Strech
AG Leiter „Translationale Bioethik“ |
Stellvertretender Direktor QUEST Center

Inflation bias: *Almost every statistical test is significant ($p \leq 0.05$)*



Citation: Cristea IA, Ioannidis JPA (2018) *P* values in display items are ubiquitous and almost invariably significant: A survey of top science journals. PLoS ONE 13(5): e0197440. <https://doi.org/10.1371/journal.pone.0197440>

New modes of scientific publishing



Preregistration of study protocols

- Limits unwarranted ,researcher's degrees of freedom'
- Prevents ,outcome switching'
- Prevents HARKING
- Provides scooping protection
- Reduces publication bias
- ...

PLOS BIOLOGY

PERSPECTIVE

Preregistration of exploratory research: Learning from the golden age of discovery

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<https://doi.org/10.1371/journal.pbio.3000690>

Registered reports



<https://www.cos.io/initiatives/registered-reports>

Preprint servers

Full drafts of a research papers shared publicly before having been peer reviewed.

- Fast
- Feedback
- Priority
- Visibility
- Free (in most cases)

The logo for arXiv.org, consisting of the text "arXiv.org" in white on a red rectangular background.The logo for medRxiv, featuring the text "medRxiv" in a serif font with "Rxiv" in blue, and the tagline "THE PREPRINT SERVER FOR HEALTH SCIENCES" in a smaller, black, sans-serif font below it.The logo for bioRxiv, featuring the text "bioRxiv" in a serif font with "Rxiv" in red, and the tagline "THE PREPRINT SERVER FOR BIOLOGY" in a smaller, black, sans-serif font below it.

...and many, many more

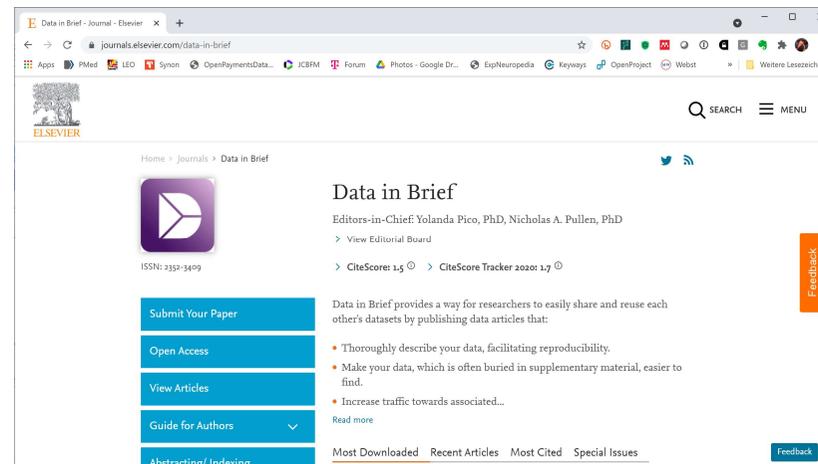
Publishing 'NULL' results

- Prevents file drawer effect
- Prevents publication bias
- Prevents repetition of futile experiments
- Provides more robust evidence than „positive‘ results, i.e. they are more likely to be true than „positive“ results
- Provides boundary conditions for future experiments, „stepping stones‘ to „positive“ results
- Allows aggregation of entire evidence base in meta-analysis
-



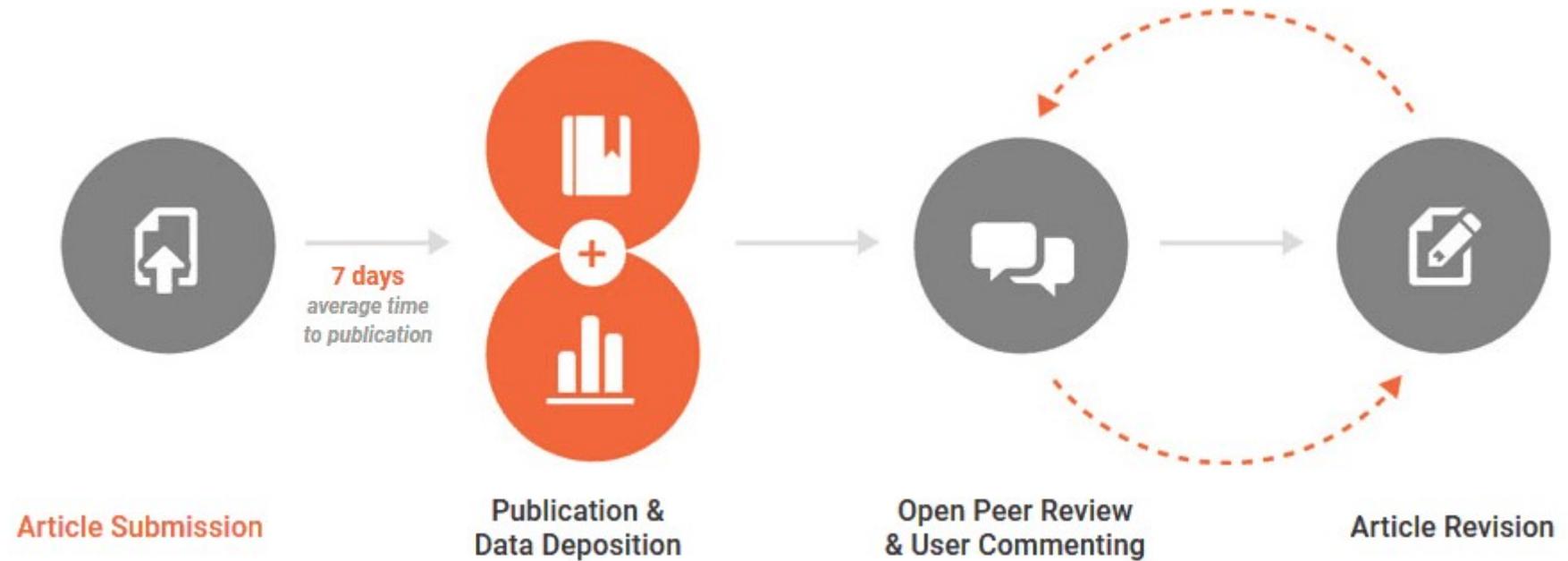
etc.

Reporting Open Data (FAIR use and reuse), Data journals



etc.

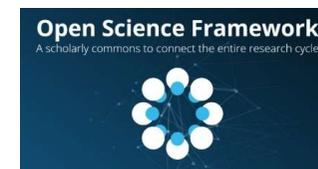
Open and/or post publication peer review an/or user commenting



<https://socialsciences.nature.com/posts/54659-why-i-think-open-peer-review-benefits-phd-students>

<https://asapbio.org/f1000-peer-review>

Examples



etc.



Open Data LOM at Charité

Automated identification and rewarding of OD, 290.000 Euros for 2020 allocated on institutional level („Einrichtungsebene“) to incentivize the set up of open data facilitating structures, knowledge base, support etc...

OS awards at Charité



- The QUEST 1,000 € Open Data Reuse Award
- The QUEST 1,000 € Preregistration Award
- The QUEST 1,000 € NULL Results And Replication Study Award

Dr. Evgeny Bobrov



Dr. Nico Riedel



Open Science at the hiring/tenure/promotion level: Professorship Application Service Portal

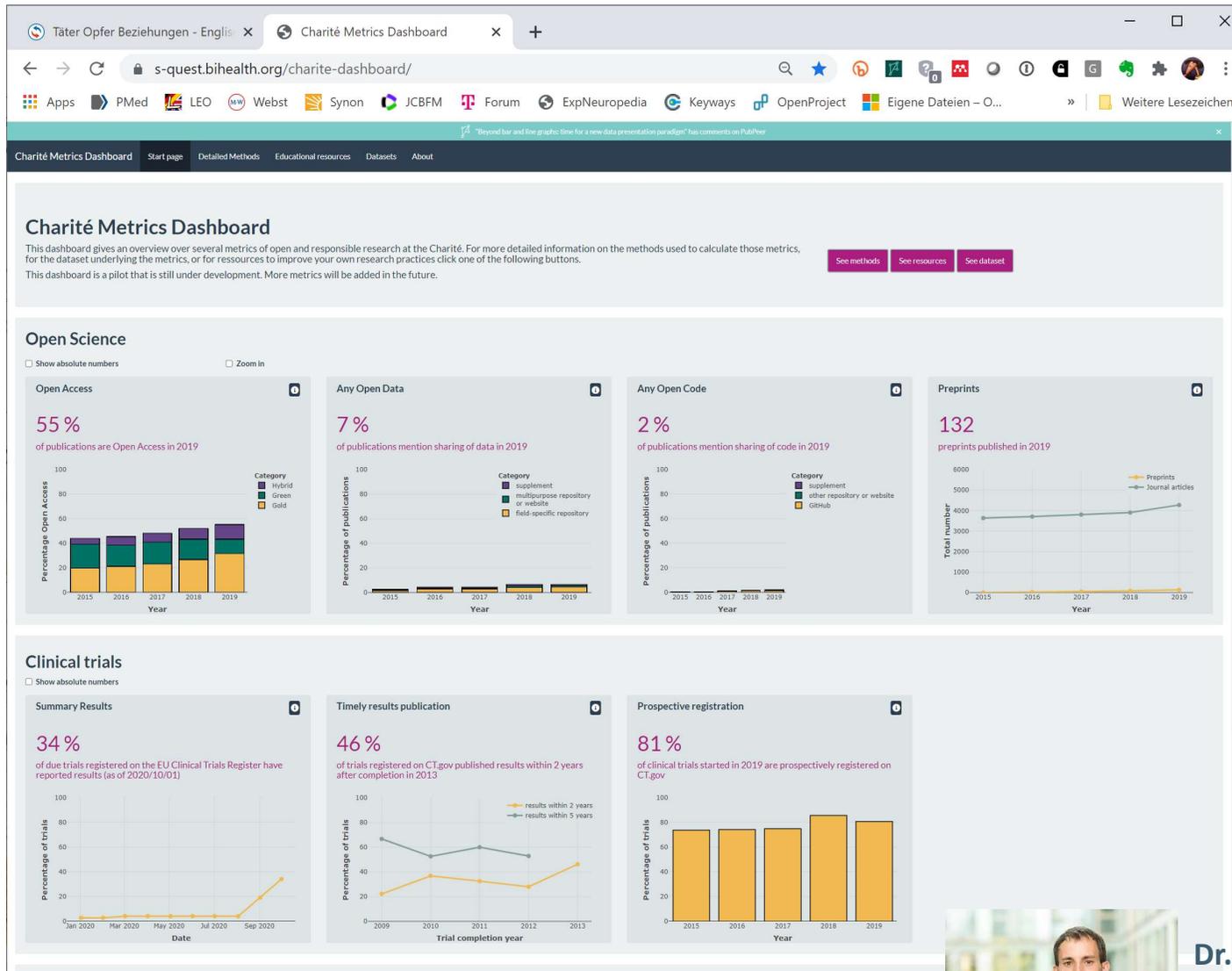


Description of Professorship	calls	notes	date due
W3 Universitätsprofessur für Hämatologie und Onkologie m. S. Lymphome/Multiples Myelom W3 Universitätsprofessur für Onkologie Further vacancies at Charité	call for applications	application notes	28.09.2017

“The Charité attaches great importance to transparent, replicable research and supports the objectives of Open Science (Open Access, Open Data). This includes the registration of studies in registries (clinicaltrials.gov, DRKS, etc.), the preregistration of studies, and the publication of negative and zero results. **How have you been pursuing these goals so far and what are your plans for the future?”**”



Open Science – Charité Dashboard

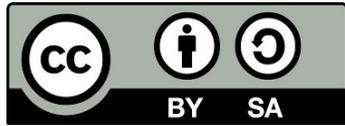


Dr. Nico Riedel
BIH QUEST
 Transforming Biomedical Research

Conclusions

- Scientific publishing is ripe for reform
- A number of novel approaches are currently being implemented (or tested)
- Institutions and funders need to embrace these new formats and adjust the way we evaluate science and scientists

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Laborjournal

SERIE



Einsichten eines Wissenschaftsnarren (2)

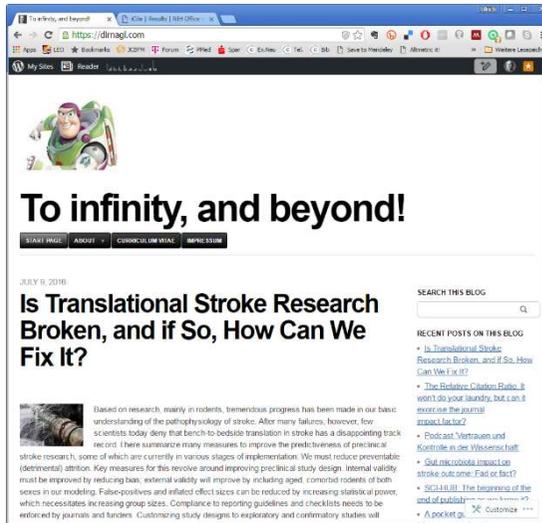
Zu Risiken und Nebenwirkungen fragen Sie Ihren Bibliothekar

Der Übergang des wissenschaftlichen Publizierens zu Open Access ist überfällig. Doch zuerst müssen wir das Diktat des Journal-Impact-Faktors brechen.

Nabezu unbeachtet von der Wissenschaft

wir es mit Steuermitteln wieder zurück. Doch es kommt noch toller: Die Verlage geben uns unser Produkt nur leihweise, mit beschränktem Zugang, auf Widerruf und ohne Rechte auf die Artikel zurück. Der Steuerzahler, der alles bezahlt hat, kommt gar nicht ran. Also nicht nur Larsen Müller bleibe draussen, sondern auch niedergelassene Ärzte oder Kliniker und Wissenschaftler außerhalb der Universitäten. Nach vielen Jahren als Chief Editor bei

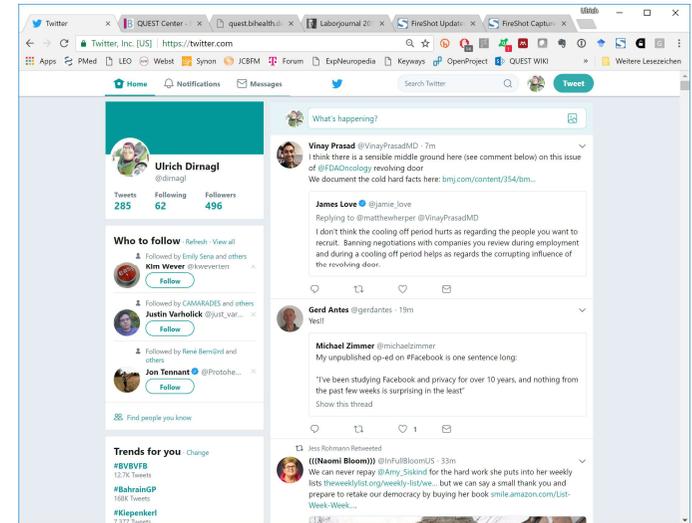
Welche Probleme löst das? Ganz klar, wir Autoren behalten das Recht auf die Wiederverwertung unserer Artikel (zumindest im Creative-Commons-Modell), und jedermann mit Zugang zum Internet kann sie lesen. Das wäre in der Tat ein Riesengain nicht nur. Allerdings häuften sich der eigenmächtigen Tauschhandel, bei dem wir unser selbsterzeugtes Produkt verschenken, um es gleichzeitig wieder zurückzukaufen, überhaup nicht geändert. Statt über Sub-



To infinity, and beyond!

Is Translational Stroke Research Broken, and if So, How Can We Fix It?

Based on research, mainly in rodents, tremendous progress has been made in our basic understanding of the pathophysiology of stroke. After many failures, however, few scientists today deny that bench-to bedside translation in stroke has a disappointing track record. I here summarize many measures to improve the predictiveness of preclinical stroke research, some of which are currently in various stages of implementation. We must reduce preclinical (definitional) attrition. Key measures for this revolve around improving preclinical study design. Internal validity must be improved by reducing bias; external validity will improve by including aged, comorbid rodents of both sexes in our modeling. False-positives and inflated effect sizes can be reduced by increasing statistical power, which necessitates increasing group sizes. Compliance to reporting guidelines and checklists needs to be enforced by journals and funders. Customizing study designs to exploratory and combinatorial studies will



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