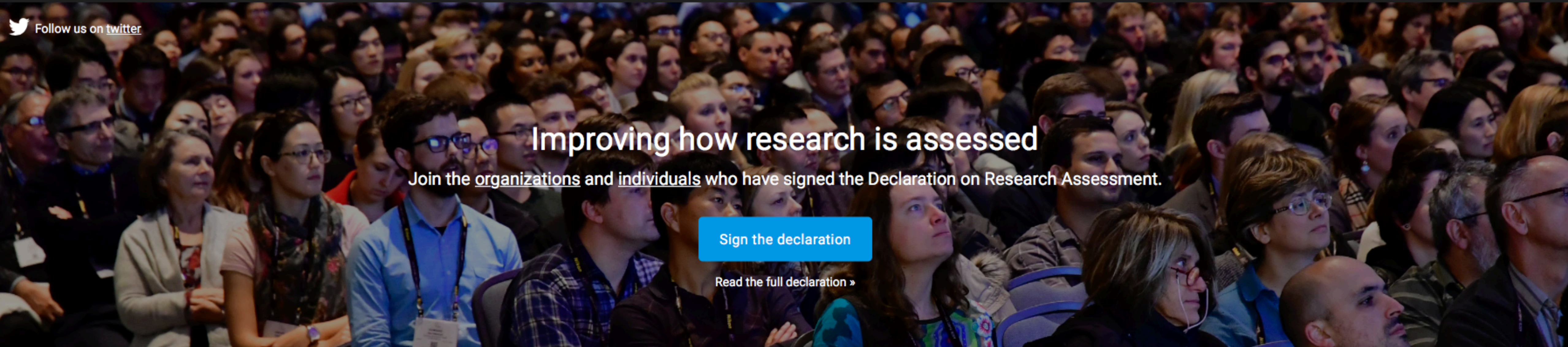


DORA, PLAN S AND THE (OPEN) FUTURE OF RESEARCH EVALUATION



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Improving how research is assessed

Join the [organizations](#) and [individuals](#) who have signed the Declaration on Research Assessment.

[Sign the declaration](#)

[Read the full declaration »](#)

STEPHEN CURRY

IMPERIAL COLLEGE & DORA

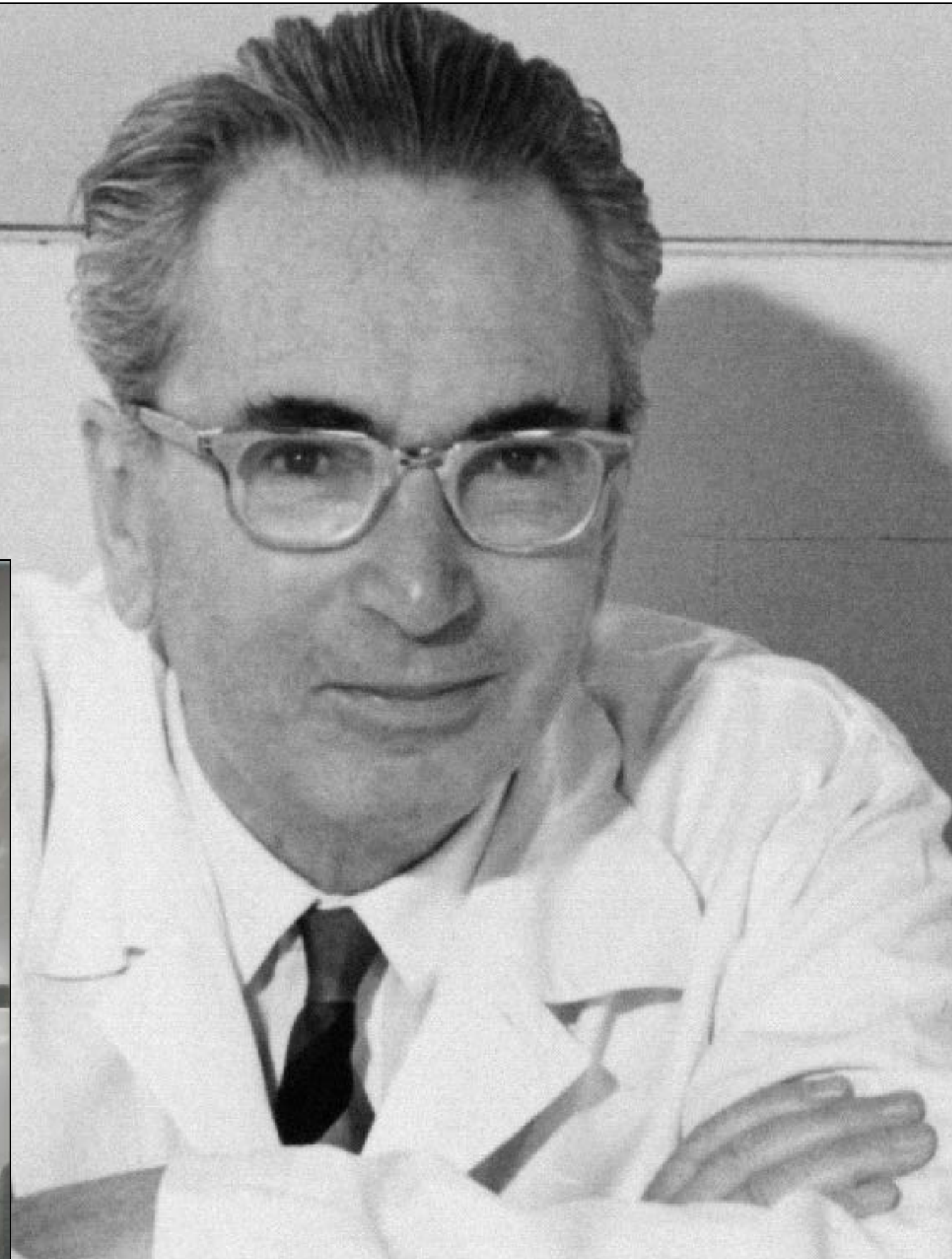
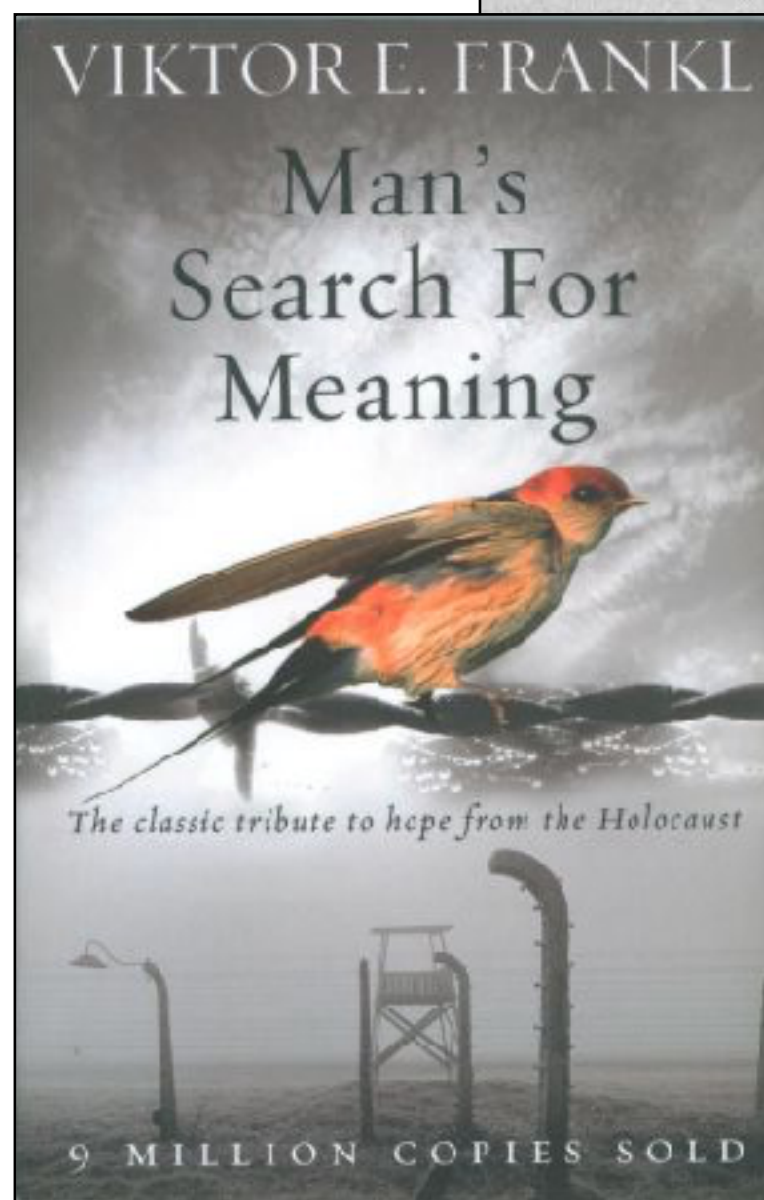
SCIENCE EUROPE GENERAL ASSEMBLY | BRUSSELS | 22 NOV 2018



We need to assess research but how should we define success?

“Don’t aim at success [...] for success, like happiness, cannot be pursued; it must ensue, and it only does so as the unintended side-effect of one’s dedication to a cause greater than oneself...”

Viktor Frankl



https://commons.wikimedia.org/wiki/File:Viktor_Frankl2.jpg

Simple metrics: my Google Scholar h-index = 48



Stephen Curry

FOLLOW

Professor of Structural Biology, Imperial College

Verified email at imperial.ac.uk - [Homepage](#)

[protein structure](#) [virology](#) [human serum albumin](#) [fmdv](#) [splicing](#)

☐ TITLE

CITED BY

YEAR

☐

[Crystal structure of human serum albumin complexed with fatty acid reveals an asymmetric distribution of binding sites](#)

S Curry, H Mandelkow, P Brick, N Franks
Nature Structural and Molecular Biology 5 (9), 827

1153

1998

☐

[Structural basis of the drug-binding specificity of human serum albumin](#)

J Ghuman, PA Zunszain, I Petitpas, AA Bhattacharya, M Otagiri, S Curry
Journal of molecular biology 353 (1), 38-52

1149

2005

☐

[Crystallographic analysis reveals common modes of binding of medium and long-chain fatty acids to human serum albumin1](#)

AA Bhattacharya, T Grüne, S Curry
Journal of molecular biology 303 (5), 721-732

678

2000

☐

[Crystal structure analysis of warfarin binding to human serum albumin anatomy of drug site I](#)

I Petitpas, AA Bhattacharya, S Twine, M East, S Curry
Journal of Biological Chemistry 276 (25), 22804-22809

639

2001

☐

[The extraordinary ligand binding properties of human serum albumin](#)

M Fasano, S Curry, E Terreno, M Galliano, G Fanali, P Narciso, S Notari, ...
IUBMB life 57 (12), 787-796

604

2005

☐

[Binding of the general anesthetics propofol and halothane to human serum albumin high resolution crystal structures](#)

AA Bhattacharya, S Curry, NP Franks
Journal of Biological Chemistry 275 (49), 38731-38738

515

2000

☐

[Fatty acid binding to human serum albumin: new insights from crystallographic studies](#)

S Curry, P Brick, NP Franks
Biochimica et Biophysica Acta (BBA)-Molecular and Cell Biology of Lipids ...

477

1999

Cited by

[VIEW ALL](#)

All

Since 2013

Citations

11412

5289

h-index

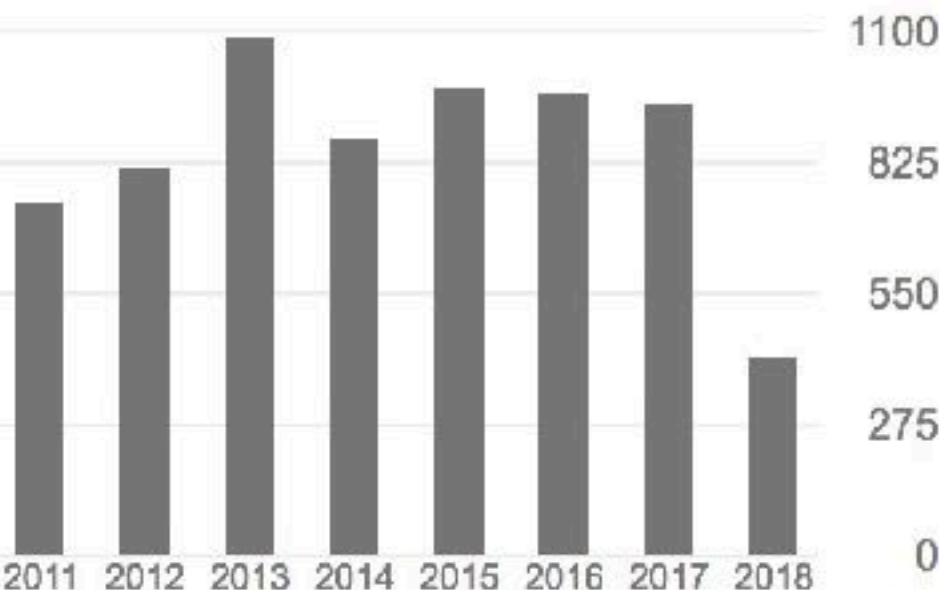
48

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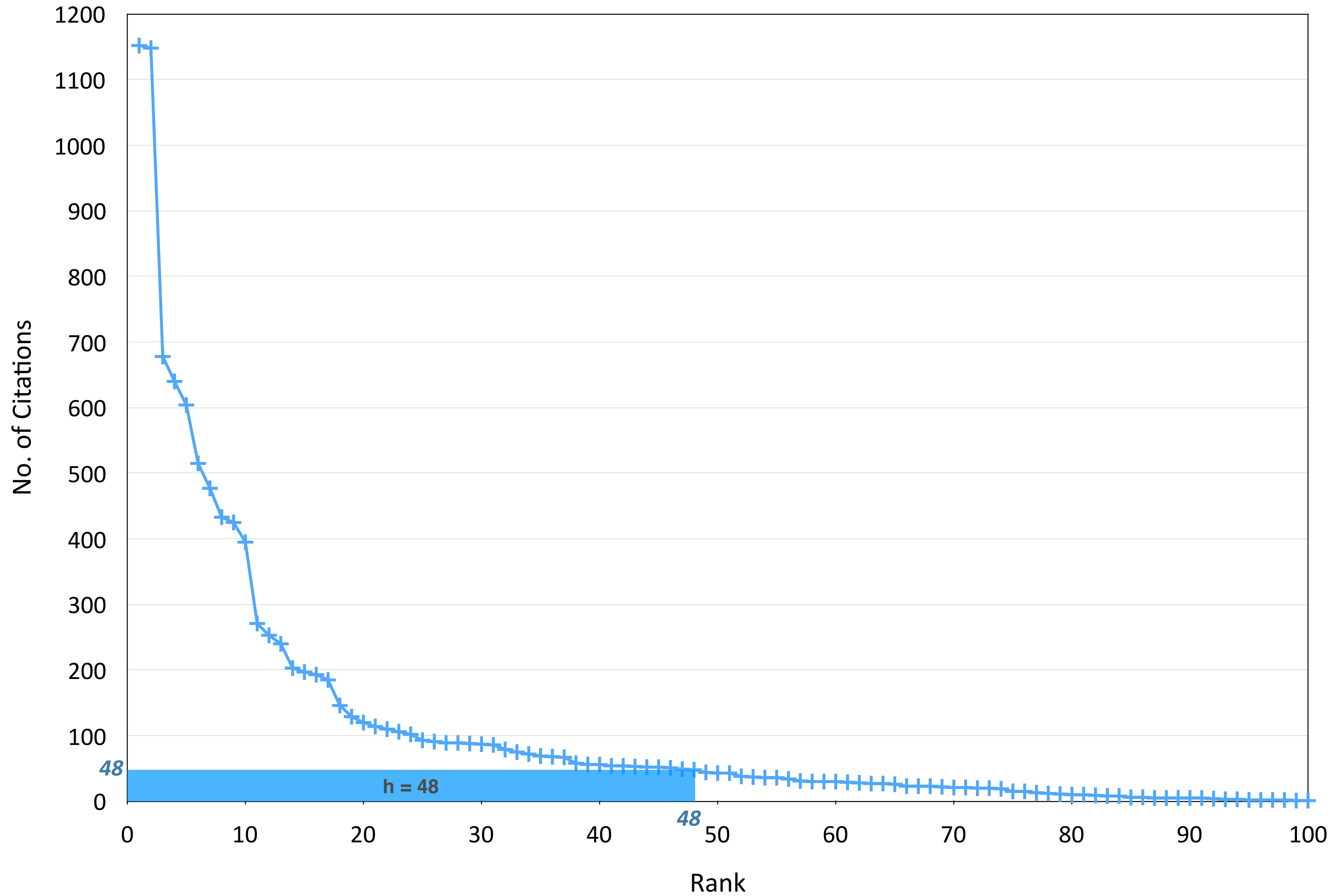
Co-authors

[EDIT](#)

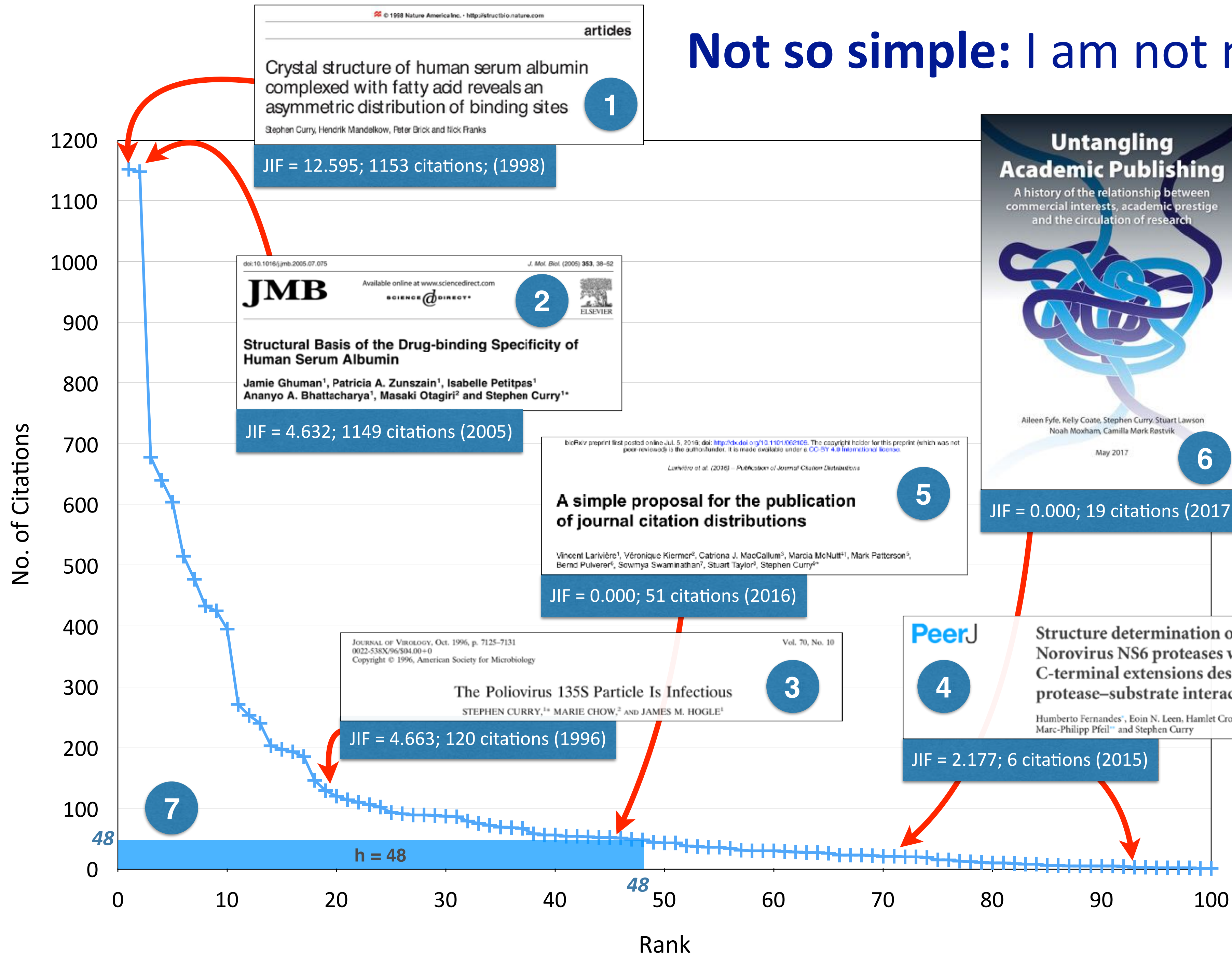


Ian Goodfellow
University of Cambridge

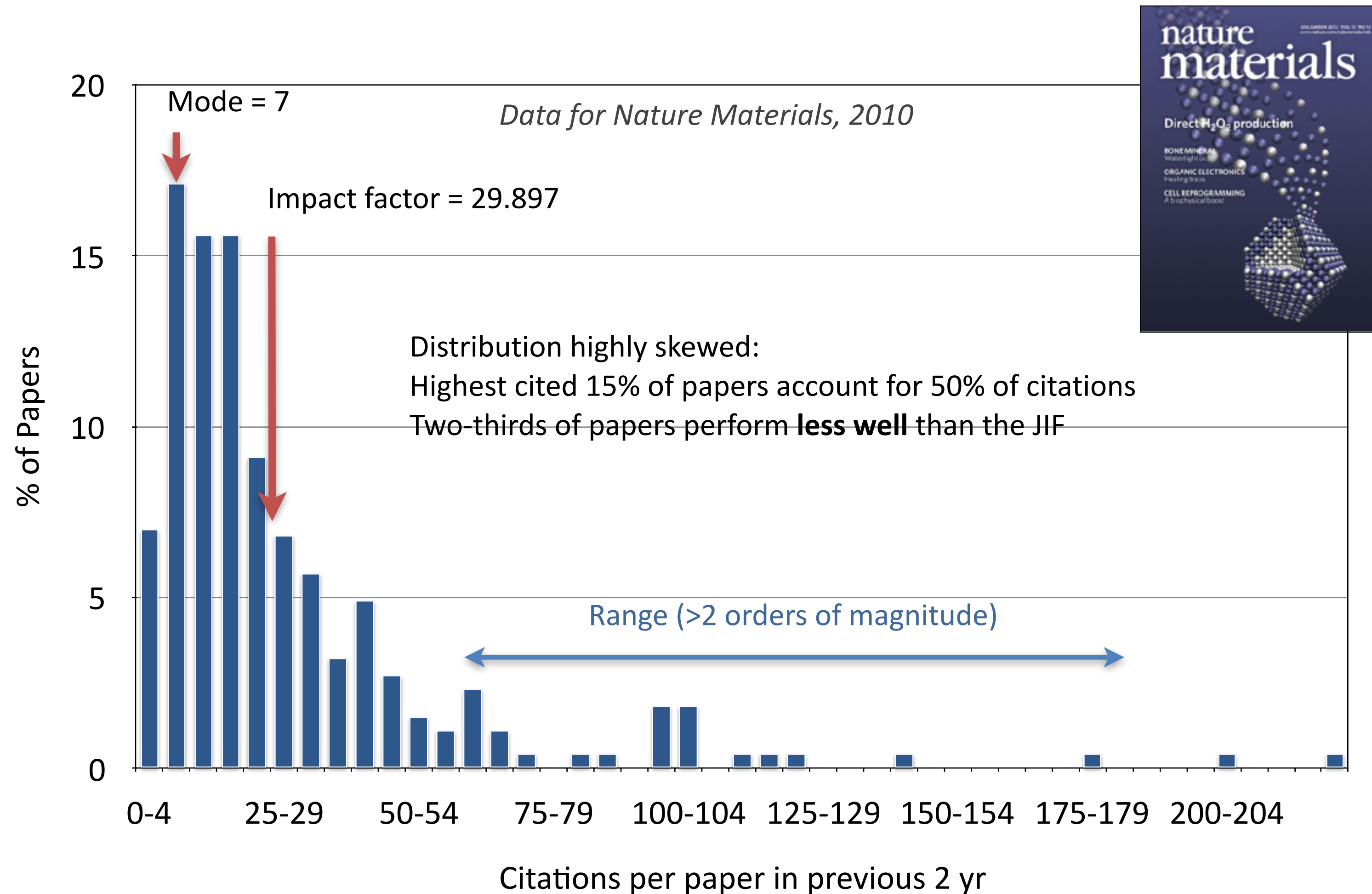
Not so simple: I am not my h-index (or my JIFs)



Not so simple: I am not my h-index (or my JIFs)



Journal impact factors: so little information, so much influence...

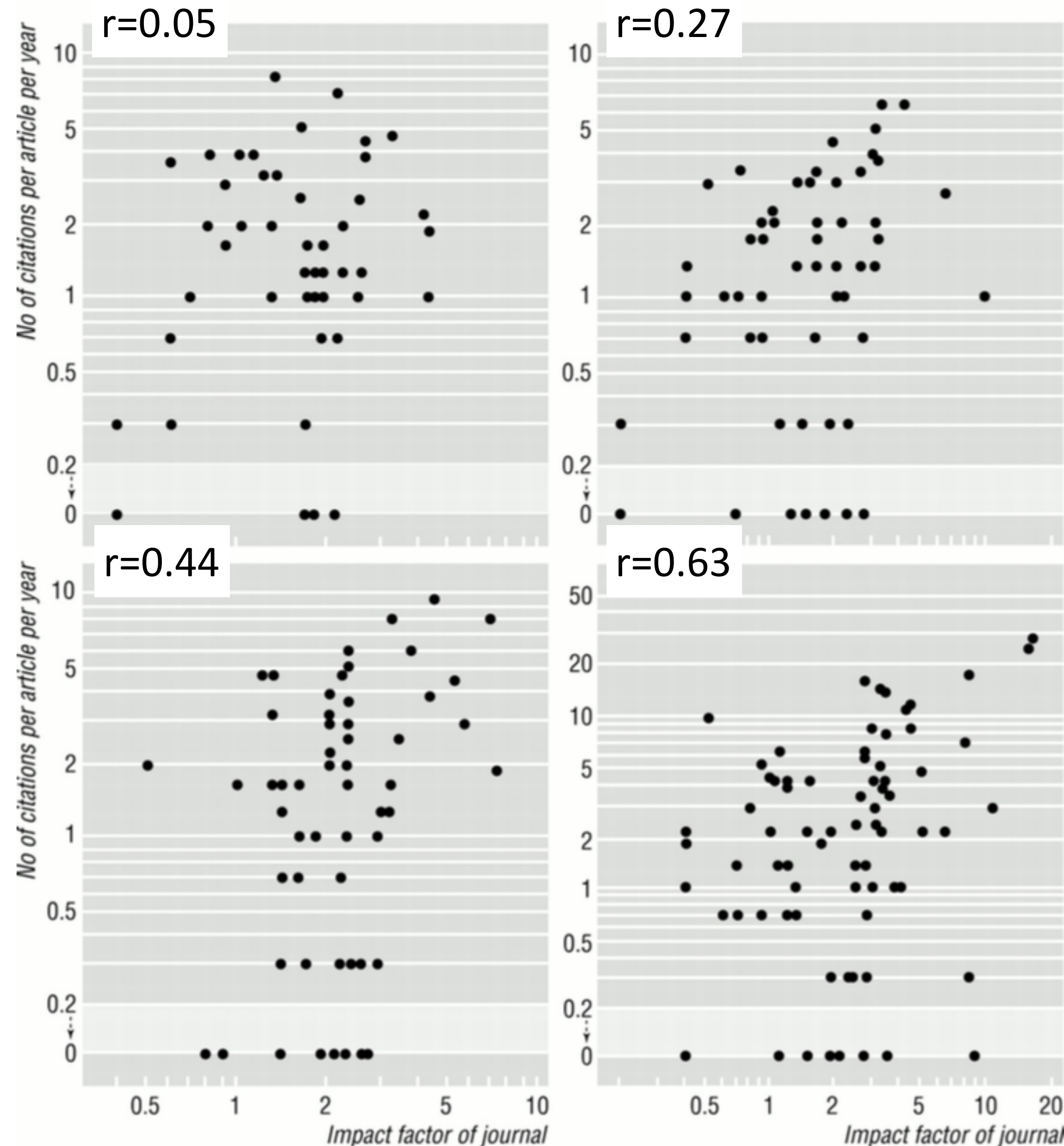


- Huge range of citation performance in any one journal
- 65-70% of papers have fewer citations than suggested by the JIF
- JIF is a poor predictor of the number of citations of any given paper
- Differences in JIFs of <5 are mostly meaningless

See also: <https://quantixed.wordpress.com/2015/05/05/wrong-number-a-closer-look-at-impact-factors/>, <https://www.natureindex.com/news-blog/whats-wrong-with-the-jif-in-five-graphs> and <http://dx.doi.org/10.1101/062109>

Correlation between JIF and citation rate of articles from individual scientists is poor

4 different
researchers



“...authors do not necessarily publish their most citable work in journals of the highest impact, nor do their articles necessarily match the impact of the journals they appear in.”

Seglen, P. O. (1997). Why the impact factor of journals should not be used for evaluating research. *BMJ*, **314**, 498–502.

Even with distributions, we need to ask: what do citations mean?

RESEARCH ARTICLE

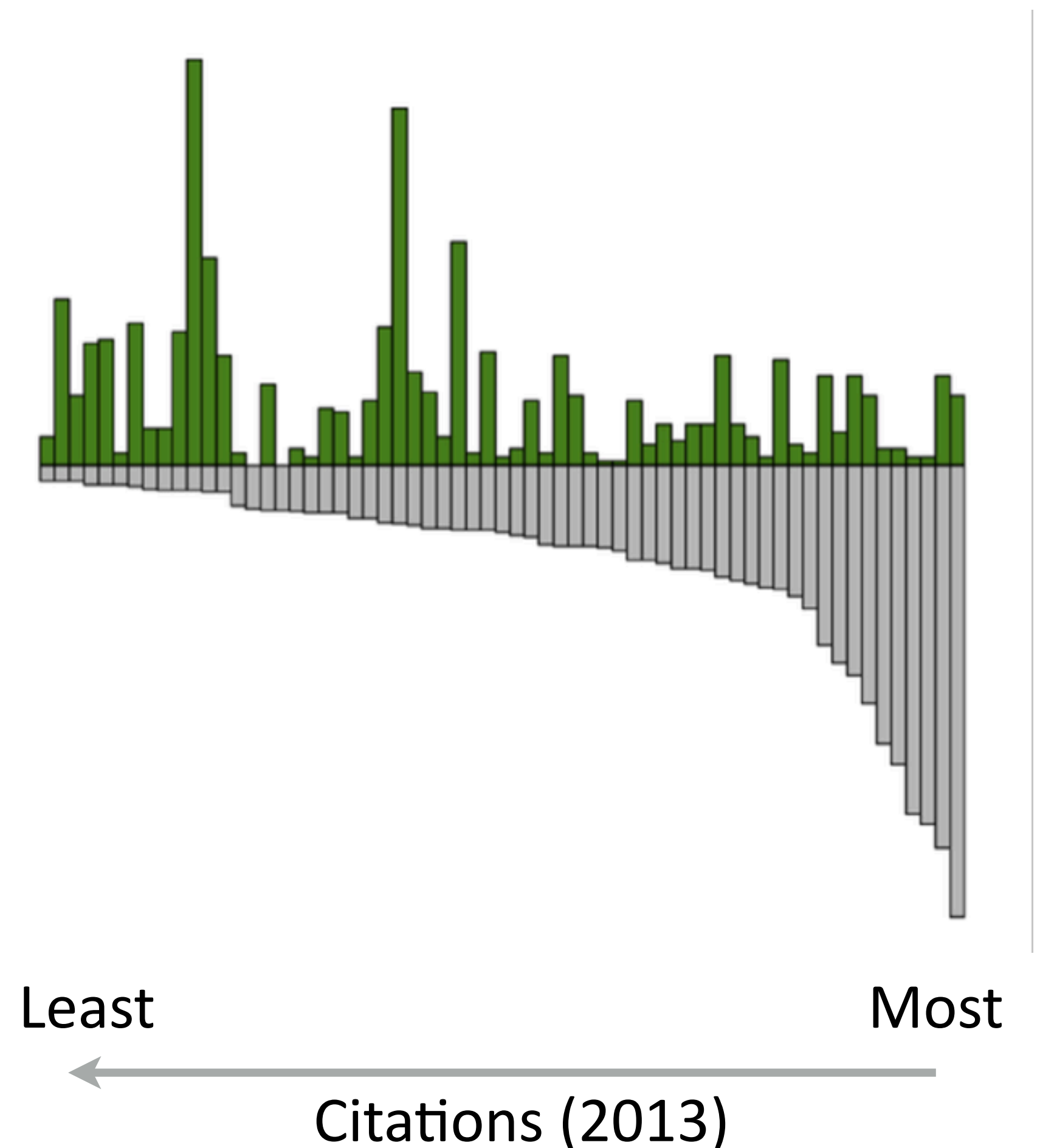
Perception of the importance of chemistry research papers and comparison to citation rates

Rachel Borchardt^{1*}, Cullen Moran¹, Stuart Cantrill², Chemjobber³, See Arr Oh⁴, Matthew R. Hartings^{1*}

¹ American University, NW, Washington, DC, United States of America, ² Nature Chemistry, SpringerNature, London, United Kingdom, ³ Chemjobber, Shell, WV, United States of America, ⁴ Just Like Cooking, Krypton, KY, United States of America

“Respondents view both cited papers and significant papers *differently* than papers that should be shared with chemists. We conclude from our results that **peer judgements of importance and significance differ from metrics-based measurements...**”

Times Chosen in Survey (Most Significant)



Negative effects of over-reliance on metrics based on academic outputs

Sick of Impact Factors

Posted on August 13, 2012 by Stephen

I am sick of impact factors and so is science.

The impact factor might have started out as a good idea, but its time has come and gone. [Conceived by Eugene Garfield](#) in the 1970s as a useful tool for research libraries to judge the relative merits of journals when allocating their subscription budgets, the impact factor is [calculated](#) annually as the mean number of citations to articles published in any given journal in the two preceding years.



<http://occamstypewriter.org/scurry/2012/08/13/sick-of-impact-factors/>

“Our people know how to get the Nature papers...”

Faculty Dean (University of X)

“I’m really excited. We just had a big paper in Cell... !”

Postdoc (University of Y)

- slows publication & reduces productivity
- positive bias in the literature
- JIF correlates with retraction rate
- impact on reliability & public trust?
- devaluation of other important activities
- stress on the individual

*“Despite personal ideals and good intentions, in this incentive and reward system researchers find themselves pursuing not the work that benefits public or preventive health or patient care the most, but **work that gives most academic credit** and is better for career advancement.”*

Frank Miedema

<https://blogs.bmj.com/openscience/2018/01/24/setting-the-agenda-who-are-we-answering-to/>

A brief history of attempts at research assessment reform...

Dec 2012/May 2013



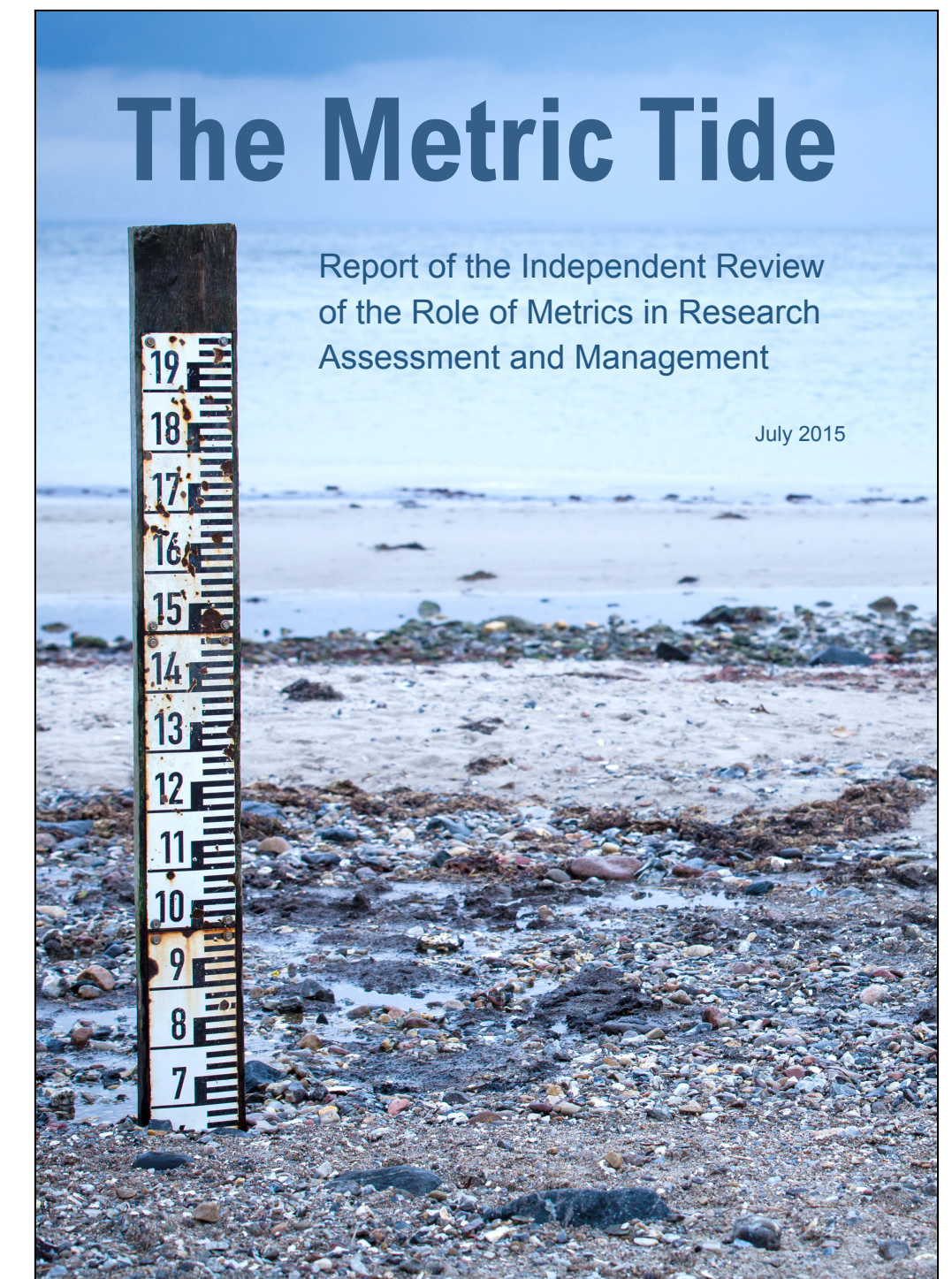
<https://sfdora.org>

Mar 2015



<http://www.leidenmanifesto.org>

Jul 2015



UK Forum for Responsible Research Metrics

DORA: the declaration

San Francisco Declaration on Research Assessment

One generate recommendation:

Do not use journal-based metrics, such as Journal Impact Factors, as a **surrogate measure** of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.



17 positive recommendations for different stakeholders:

- funders
- institutions
- publishers
- data providers
- researchers

For funding agencies:

Be explicit about the criteria used in evaluating the scientific productivity of grant applicants and clearly highlight, especially for early-stage investigators, that **the scientific content of a paper is much more important than publication metrics** or the identity of the journal in which it was published.

For the purposes of research assessment, **consider** the **value and impact of all research outputs** (including datasets and software) in addition to research publications, and **consider a broad range of impact measures** including qualitative indicators of research impact, such as influence on policy and practice.

DORA: the campaign

San Francisco Declaration on Research Assessment

- 5 years old; >13,000 individuals & >700 organisations signed
- New funding, new steering group, new URL - [sfdora.org](https://www.nature.com/articles/d41586-018-01642-w)
- New Roadmap:
 - Increase awareness of the need to develop alternatives to the JIF
 - Research and promote best practice in research assessment.
 - Extend the global and disciplinary impact of DORA
- New international advisory board – a truly global initiative

<https://www.nature.com/articles/d41586-018-01642-w>

WORLD VIEW

A personal take on events



Words were a good start — now it is time for action

Five years ago, the Declaration on Research Assessment was a rallying point. It must now become a tool for fair evaluation, urges **Stephen Curry**.

Declarations are bound to fall short. The 240-year-old United States Declaration of Independence holds it self-evident that “all men [sic] are created equal”, but equality remains a far-off dream for many Americans.

The San Francisco Declaration on Research Assessment (DORA; <https://sfdora.org>) is much younger, but similarly idealistic. Conceived by a group of journal editors and publishers at a meeting of the American Society for Cell Biology (ASCB) in December 2012, it proclaims a pressing need to improve how scientific research is evaluated, and asks scientists, funders, institutions and publishers to forswear using journal impact factors (JIFs) to judge individual researchers.

DORA’s aim is a world in which the content of a research paper matters more than the impact factor of the journal in which it appears. Thousands of individuals and hundreds of research organizations now

agree and have signed up. Momentum is building, particularly in the United Kingdom, where the number of university signatories has tripled in the past two years. This week, all seven UK research councils announced their support.

Impact factors were never meant to be a metric for individual papers, let alone individual people. They’re an average of the skewed distribution of citations accumulated by papers in a given journal over two years. Not only do these averages hide huge variations between papers in the same journal, but citations are imperfect measures of quality and influence. High-impact-factor journals may publish a lot of top-notch science, but we should not outsource evaluation of individual researchers and their outputs to seductive journal metrics.

Most agree that yoking career rewards to JIFs is distorting science. Yet the practice seems impossible to root out. In China, for example, many universities pay impact-factor-related bonuses, inspired by unwritten norms of the West. Scientists in parts of Eastern Europe cling to impact factors as a crude bulwark against cronyism. More worryingly, processes for JIF-free assessment have yet to gain credibility even at some institutions that have signed DORA. Stories percolate of research managers demanding high impact factors. Job and grant applicants feel that they can’t compete unless they publish in prominent journals. All are fearful of shrugging off the familiar harness.

So, DORA’s job now is to accelerate the change it called for. I feel the need for change whenever I meet postdocs. Their curiosity about the world and determination to improve it burns bright. But their desires to pursue the most fascinating and most impactful questions are subverted by our systems of evaluation. As they apply for their first permanent positions, they are already calculating how to manoeuvre within the JIF-dependent managerialism of modern science.

There have been many calls for something better, including the Leiden Manifesto and the UK report ‘The Metric Tide’, both released in

2015. Like DORA, these have changed the tenor of discussions around researcher assessment and paved the way for change.

It is time to shift from making declarations to finding solutions. With the support of the ASCB, Cancer Research UK, the European Molecular Biology Organization, the biomedical funder the Wellcome Trust and the publishers the Company of Biologists, *eLife*, F1000, Hindawi and PLOS, DORA has hired a full-time community manager and revamped its steering committee, which I head. We are committed to getting on with the job.

Our goal is to discover and disseminate examples of good practice, and to boost the profile of assessment reform. We will do that at conferences and in online discussions; we will also establish regional nodes across the world, run by volunteers who will work to identify and address local issues.

IT’S WORTH
DOING THE
EXPERIMENT
TO PROPERLY
EVALUATE
EVALUATION.

This week, for example, DORA is participating in a workshop at which the Forum for Responsible Metrics — an expert group established following the release of ‘The Metric Tide’ — will present results of the first UK-wide survey of research assessment. This will bring broader exposure to what universities are thinking and doing, and put the spotlight on instances of good and bad practice.

We have to get beyond complaining, to find robust, efficient and bias-free assessment methods. Right now, there are few compelling options. I favour concise one- or two-page ‘bio-sketches’, similar to those rolled out in 2016 by the University Medical Centre Utrecht in the Netherlands.


These let researchers summarize their most important research contributions, plus mentoring, societal engagement and other valuable activities. This approach could have flaws. Perhaps it gives too much leeway for ‘spin’. But, as scientists, surely we can agree that it’s worth doing the experiment to properly evaluate evaluation.

This is hard stuff: we need frank discussions that grind through details, with researchers themselves, to find out what works and to forestall problems. We need to be mindful of the damage wrought to the careers of women and minorities by bias in peer review and in subjective evaluations. And we need to join in with parallel moves towards open research, data and code sharing, and the proper recognition of scientific reproducibility.


Declarations such as DORA are important; credible alternatives to the status quo are more so. True success will mean every institution, everywhere in the world, bragging about the quality of their research-assessment procedures, rather than the size of their impact factors. ■

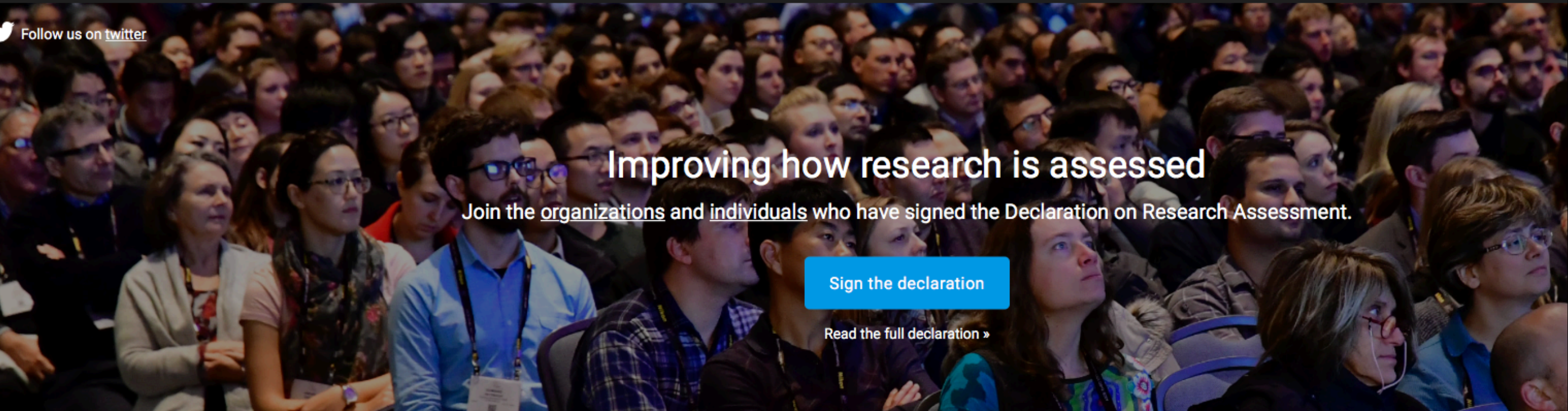
Stephen Curry is a professor of structural biology and assistant provost for equality, diversity and inclusion at Imperial College London. He is also chair of the DORA steering group.
e-mail: s.curry@imperial.ac.uk

8 FEBRUARY 2018 | VOL 554 | NATURE | 147
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DORA

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Improving how research is assessed

Join the organizations and individuals who have signed the Declaration on Research Assessment.


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Read the full declaration »


ascb
an international forum for cell biology™


CANCER RESEARCH UK


The Company of Biologists

eLIFE

EMBO
excellence in life sciences

F1000Research
Open for Science

Hindawi

PLOS

wellcome

New tools and processes for assessment

<http://www.nature.com/news/fewer-numbers-better-science-1.20858>



Fewer numbers, better science

Scientific quality is hard to define, and numbers are easy to look at. But bibliometrics are warping science — encouraging quantity over quality. Leaders at two research institutions describe how they do things differently.

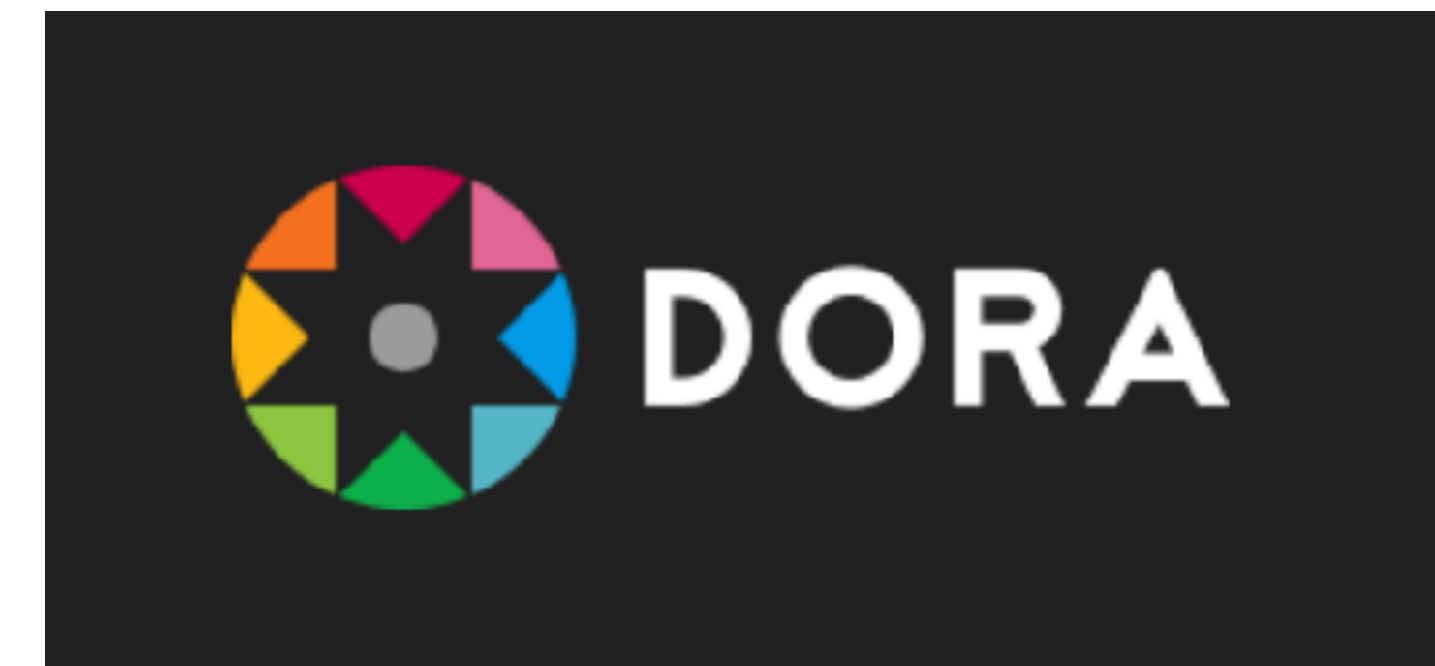
Researcher assessment at UMC Utrecht

1. Research, publications, grants
2. Managerial & academic duties
3. Mentoring & teaching
4. Clinical work (if applicable)
5. Entrepreneurship & community outreach

Charité University Hospital, Berlin

- Your scientific contribution to your field
- Your 5 most important papers
- **Your contribution to open science**
- Your most important collaborations

More examples at: <https://sfdora.org/good-practices/>



A public good: how *open* science can be *better* science

Peer review and scientific publishing
Occam's corner

Stephen Curry
@Stephen_Curry


Monday 7 September 2015 11.00 BST

Shares 1 Comments 14

Save for later

Peer review, preprints and the speed of science

Peer review is often claimed to be the guarantor of the trustworthiness of scientific papers, but it is a troubled process. Preprints offer a way out



Subediting skills for writers Photograph

A few weeks ago my collaborator and I submitted a paper to a journal. We have been investigating the machinery of infected cells and, in the peer review, our paper could be published or rejected.

Science
Occam's corner

Zika virus initiative reveals deeper malady in scientific publishing

Stephen Curry

Moves to speed up the release of Zika virus research in response to the public health crisis highlight a systemic failure in scientific publishing. Help could be at hand at the ASAPbio meeting today in the USA

Contact author
@Stephen_Curry

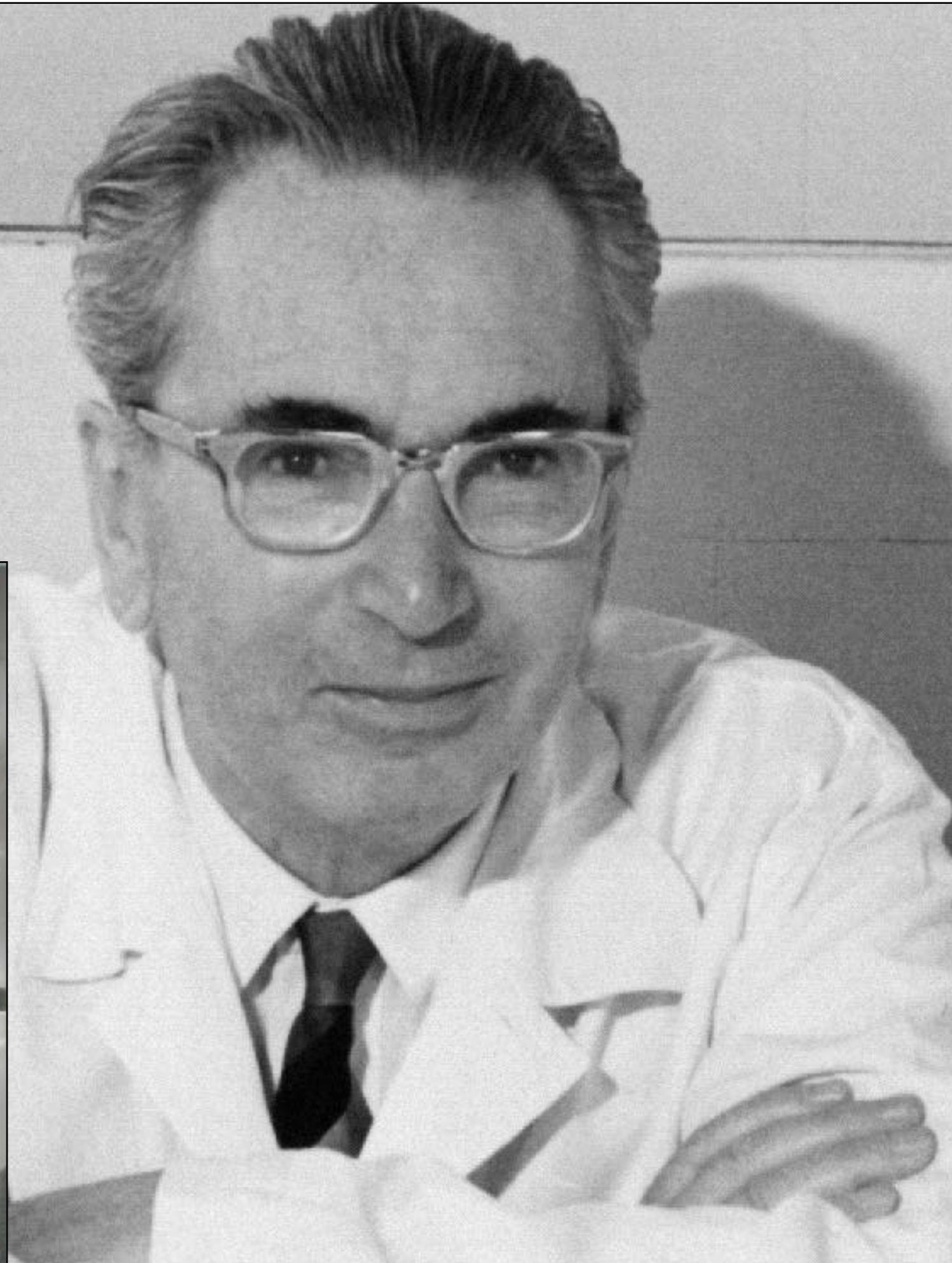
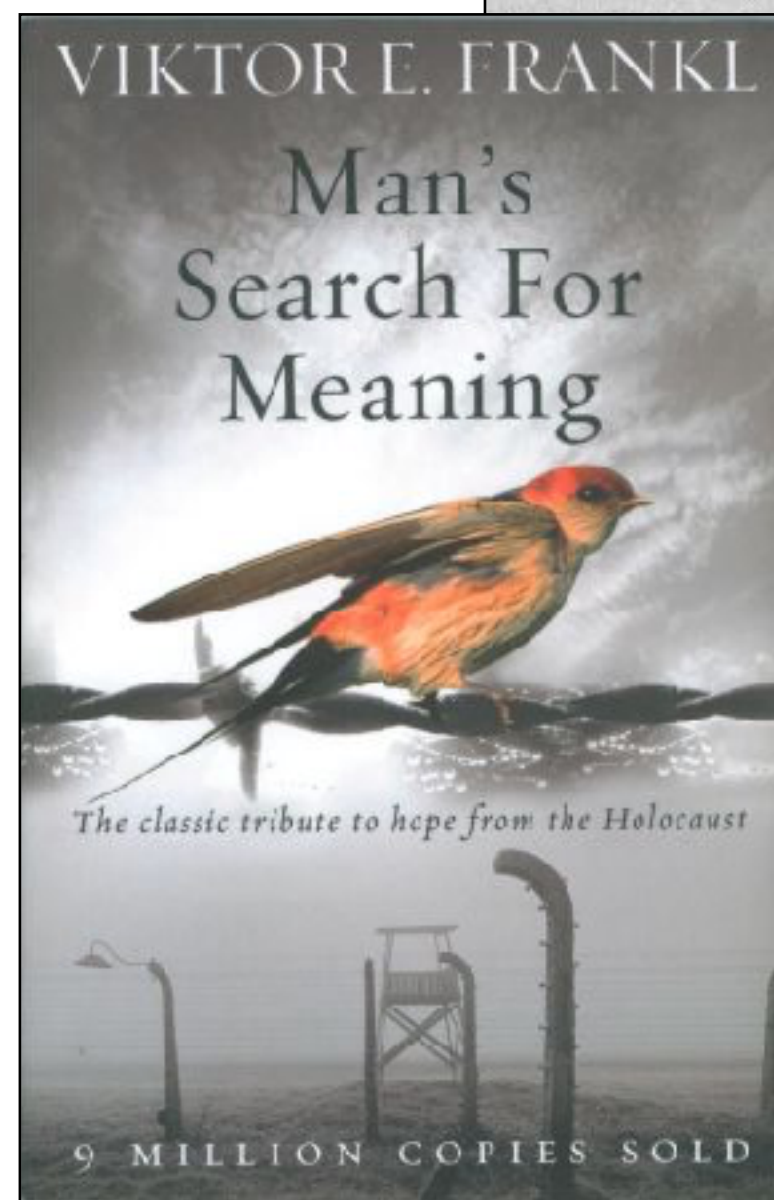
Tuesday 16 February 2016 11:54 GMT

Shares 539 Comments 4

Save for later

- Preprints:** faster communication; worldwide access
- Focus on the content, not the container (journal)
 - Valuable groundwork for journal-indep. evaluation
- Largest possible audience (sharing + scrutiny = reliability)
 - Same applies to OA papers
- Practice encourages **open peer review**
- Data sharing:** scrutiny benefits (reliability)
- Better for changing the world (utility & impact; e.g. Zika crisis)

We need to assess research but how should we define success?



https://commons.wikimedia.org/wiki/File:Viktor_Frankl2.jpg

What should success look like?

Reliable, rapidly communicated, highly-accessible. high-quality **research** that transforms our understanding of the world and that may have real world impact (in the short, medium or long term).

Researchers who can collaborate within and between disciplines, who feel a duty of care to their group members & colleagues, and to the societies of which they are an integral part.

A **research system** that is ever mindful of the people within it, which considers their quality of life, their mental health, and which seeks out the creative vigour of diversity.

The future...

THE ROYAL SOCIETYVenue

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Research culture: Changing expectations

Conference

Starts:

October
29
2018

10:00
[Add to calendar](#)

Ends:

October
30
2018

17:00
[Add to calendar](#)

Location

The Royal Society, London, 6-9 Carlton House Terrace, London, SW1Y 5AG

 [View map](#) | [Venue information](#)

Overview

Research culture: Changing expectations will bring together intertwined debates around research assessment, career progression, researcher development, research dissemination and research integrity. This conference will showcase initiatives and work across the research landscape to continue to create and improve the cultural conditions and environments in which excellent research and researchers can flourish.

The best culture is an open culture, one where research findings and the data and metadata behind them are made openly available...

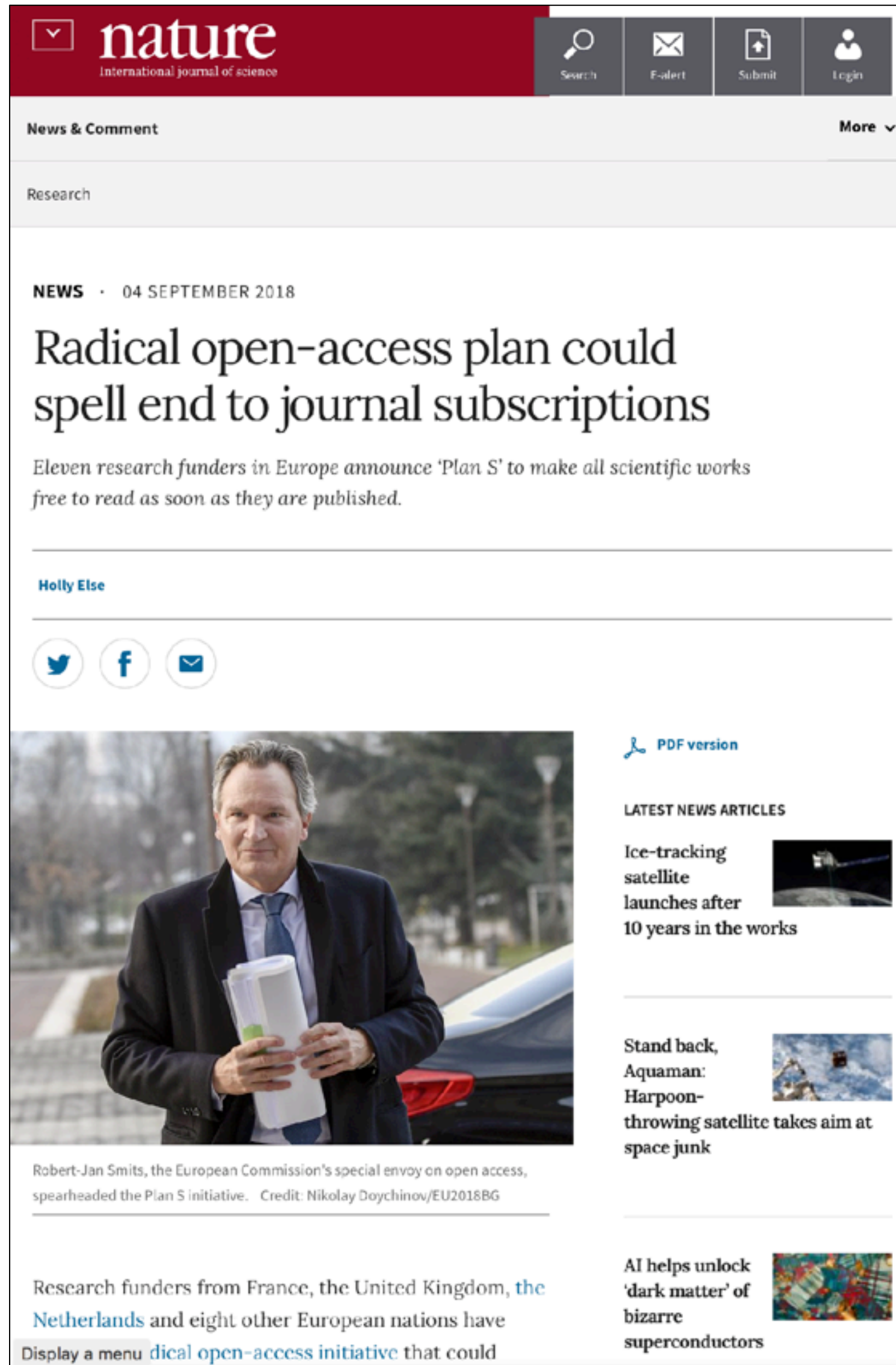
The name of the journal must not be used as a surrogate for the quality of the work within it. [...] We are still too wedded to the traditional methods of publishing, and we need to harness new technology to disseminate research more effectively.

Sir Mark Walport, CEO, UKRI

29 Oct 2018

<https://royalsociety.org/science-events-and-lectures/2018/10/research-culture-conference/>

Plan S: the announcement



<https://www.nature.com/articles/d41586-018-06178-7>

“We also understand that researchers may be driven to do so by a misdirected reward system which puts emphasis on the wrong indicators (e.g. journal impact factor). **We therefore commit to fundamentally revise the incentive and reward system of science**, using the San Francisco Declaration on Research Assessment (DORA) as a starting point.

<https://www.scienceeurope.org/coalition-s/>

News | 5 November 2018

Wellcome is updating its open access policy

Following a six-month review, we're updating our open access (OA) policy. The changes will apply from 1 January 2020. Robert Kiley, Head of Open Research, explains what will be different and why.

“5. Wellcome-funded organisations must sign or publicly commit to the San Francisco Declaration on Research Assessment (DORA), or an equivalent. We may ask organisations to show that they're complying with this as part of our organisation audits. This is a new requirement to encourage organisations to consider the intrinsic merit of the work when making promotion and tenure decisions, not just the title of the journal or publisher.”

Plan S: the debate

A Response to Plan-S from Academic Researchers: Unethical, Too Risky!

Summary

Open access (OA) publishing in general has many advantages over traditional subscription, or toll access (TA), publishing: it not only makes science accessible to a larger public, but also expands the reach of individual researchers and the potential impact of their research. Plan S is a noble effort

Academic freedom and responsibility: why Plan S is not unethical

Posted on [October 1, 2018](#) by [Stephen](#)

Since its [announcement](#) on 4th September the European Commission's plan to make a radical shift towards open access (OA) has caused [quite a stir](#). Backed by eleven* national funding agencies, the plan aims to make the research that they support free to read as soon as it is published. This is a major challenge to the status quo, since the funders are effectively placing subscription journals off limits for their researchers, even if the journals allow green OA (publication of the author-accepted manuscript) after cases where journals are "admirably strong" in some aspects. Others [academics](#) is that is published and

On Academic Freedom and Responsibility

Posted on [October 1, 2018](#) by [jbrittholbrook](#)

Today, Stephen Curry published a piece on his [blog](#) on "[Academic freedom and responsibility: why Plan S is not unethical](#)," and I want to offer a response to some of his arguments here.

The first thing to say is that I think Curry and I agree on quite a few points. We especially agree that to speak of academic freedom means we should also to speak of academic responsibility. For six years (2012-2018), I was a member of the American Association for the Advancement of Science (AAAS) Committee on Scientific Freedom and Responsibility. I fully support the [AAAS Statement on Scientific Freedom and Responsibility](#), which the Committee co-authored:

Reaction of Researchers to Plan S; Too far, too risky?

An Open Letter from Researchers to European Funding Agencies, Academies, Universities, Research Institutions, and Decision Makers

We support open access (OA) and Plan S is probably written with good intentions. However, Plan S¹, as currently presented by the EU (and several national funding agencies) goes too far, is unfair for the scientists involved and is too risky for science in general. Plan S has far-reaching consequences, takes insufficient care of the desires and wishes of the individual scientists and creates a range of unworkable and undesirable situations:



The Open Letter: Reaction of Researchers to Plan S: too far, too risky.

A response of the Fair Open Access Alliance

We write to provide a counter view to the recent open letter ("Plan S: Too Far, Too Risky"),¹ partly based on our FOAA recommendations for the implementation of Plan S.² We are glad to note that the researchers who have signed the open letter support open access as their very first principle. However, the letter itself goes on to make a number of highly problematic and logically fallacious statements with which we strongly disagree and here contest.

But good practices don't spread by themselves (or by declarations...)

Why was anaesthesia adopted more rapidly than antiseptics?

“We yearn for frictionless, technological solutions. But people talking to people is still how the world's standards change.”

ANNALS OF MEDICINE JULY 29, 2013 ISSUE

SLOW IDEAS

Some innovations spread fast. How do you speed the ones that don't?

 **By Atul Gawande**

Why do some innovations spread so swiftly and others so slowly? Consider the very different trajectories of surgical anesthesia and antiseptics, both of which were discovered in the nineteenth century. The first public demonstration of anesthesia was in 1846. The Boston surgeon Henry Jacob Bigelow was approached by a local dentist named William Morton, who insisted that he



ld render pain of atic claim. In tooth ng. Without rgeons learned eed. nts down as ed, until they Nothing ever tried had made much difference. reed to let Morton demonstrate his claim.



We yearn for frictionless, technological solutions. But people talking to people is still the way that norms and standards change.

ILLUSTRATION BY HARRY CAMPBELL

Thank you

s.curry@imperial.ac.uk
@Stephen_Curry