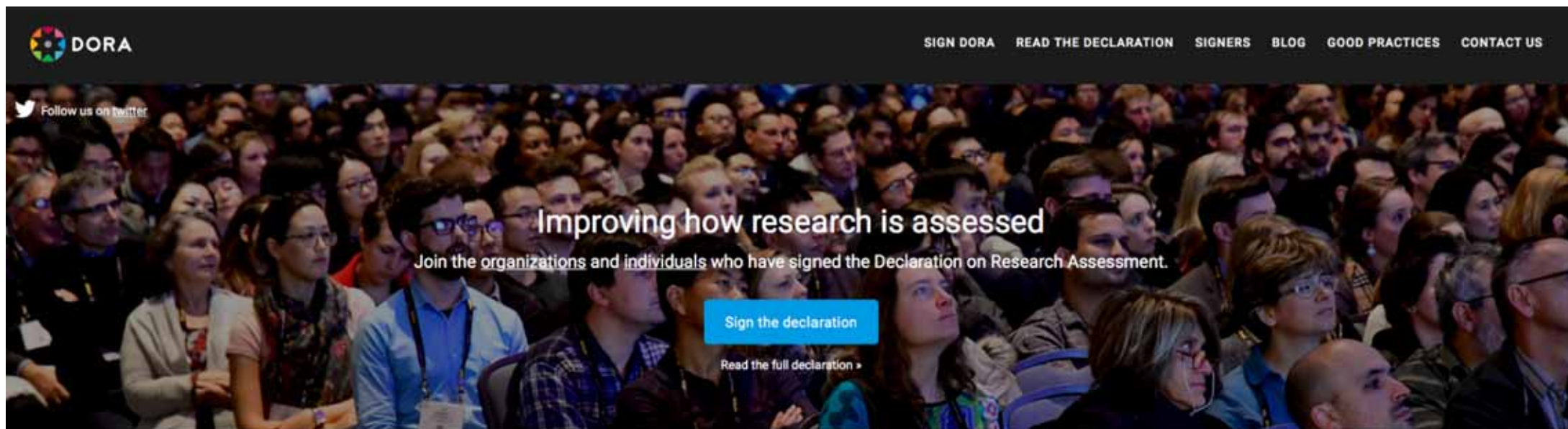


# What's wrong with current metrics?



Stephen Curry

Imperial College & DORA

Swiss Academy of Sciences | BERN | 21 Nov 2018

tl;dr

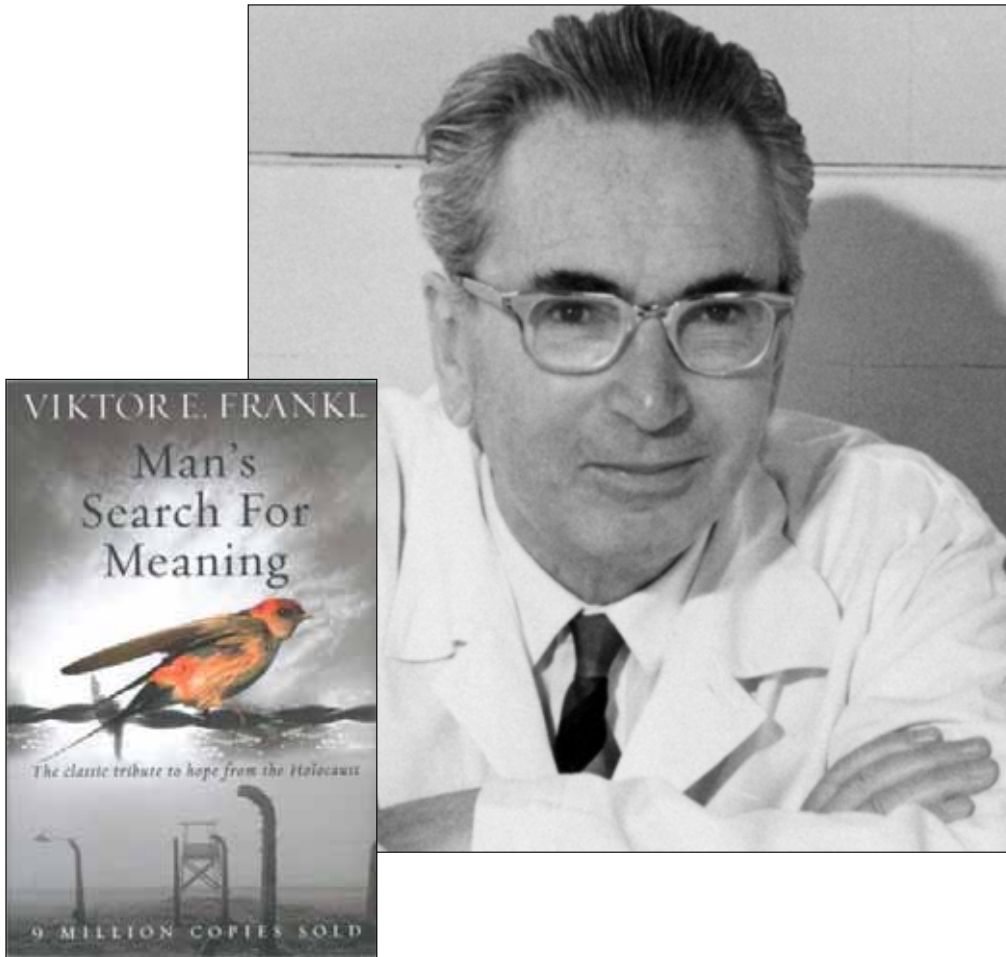
Metrics narrow our focus to academic outputs and academic prestige (*i.e.* journals)

This is unhealthy for research – and for researchers (who are human beings)

We can do better



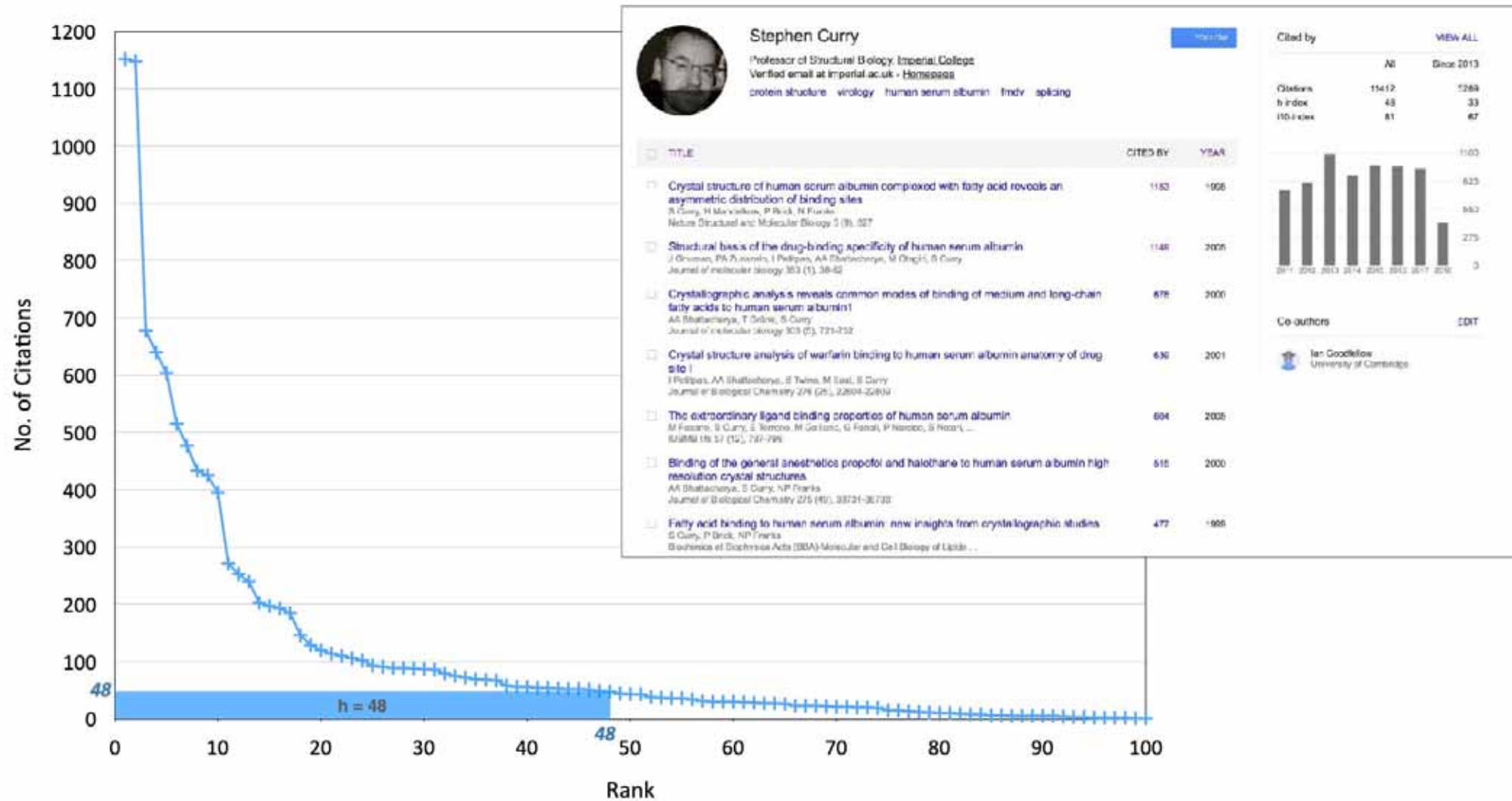
We need to assess research but how should we define success?



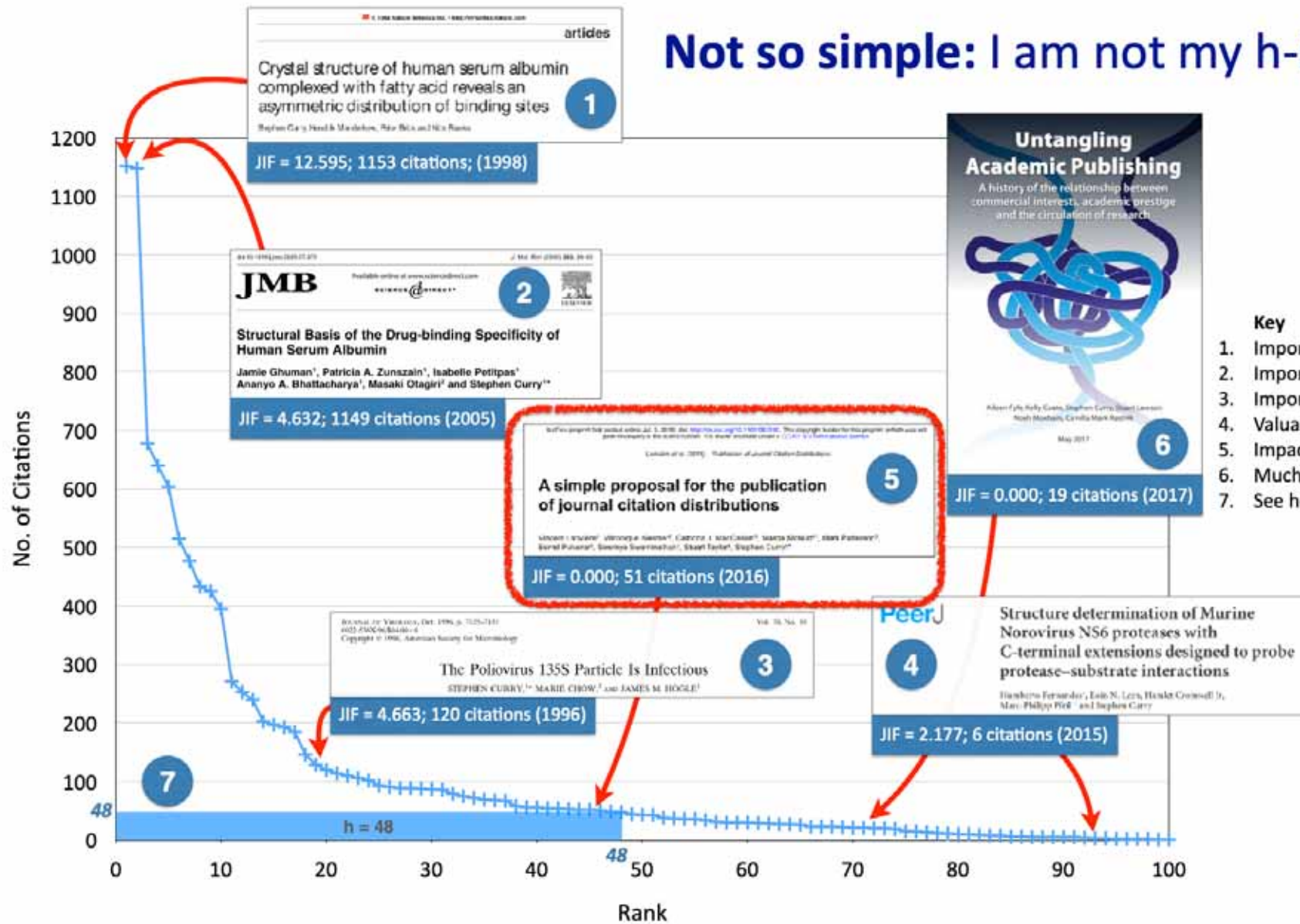
*“Don’t aim at success [...] for success, like happiness, cannot be pursued; it must ensue, and it only does so as the unintended side-effect of one’s dedication to a cause greater than oneself...”*

Viktor Frankl

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

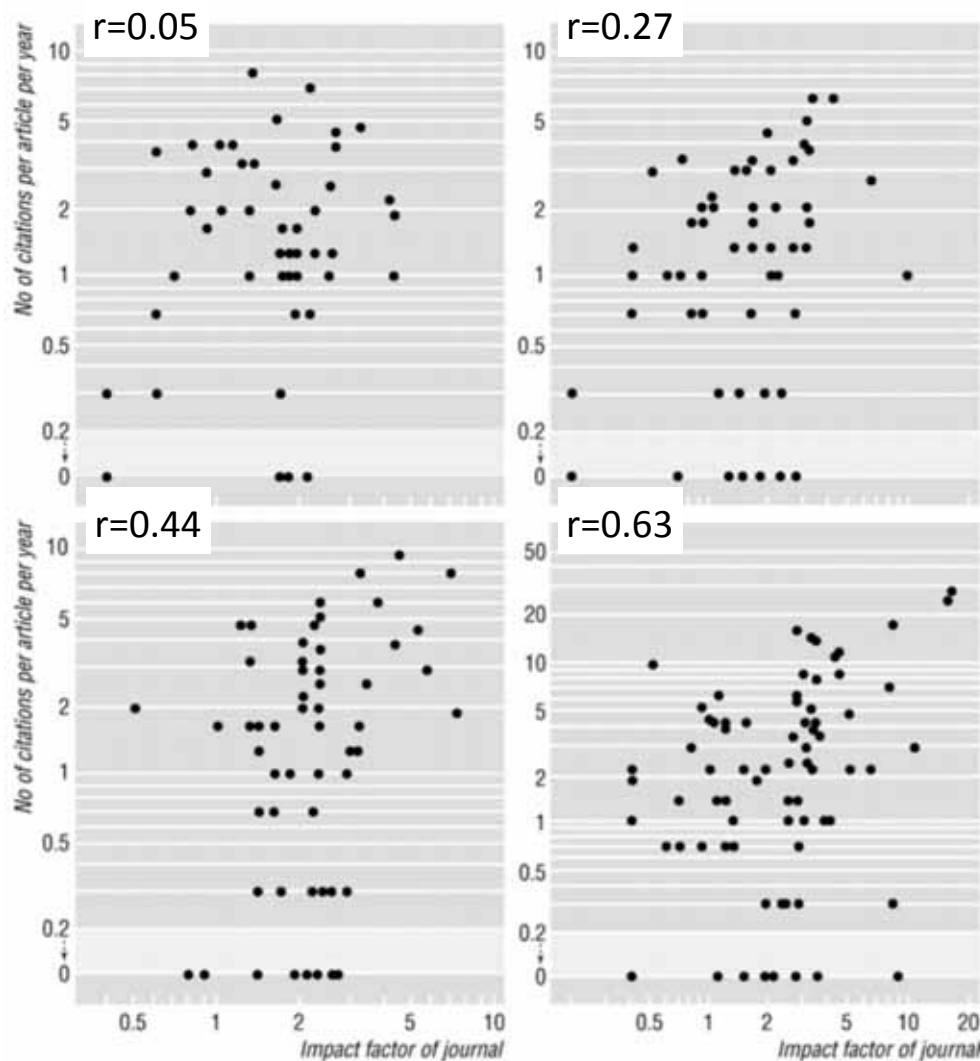


# Not so simple: I am not my h-index (or my JIFs)



## 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

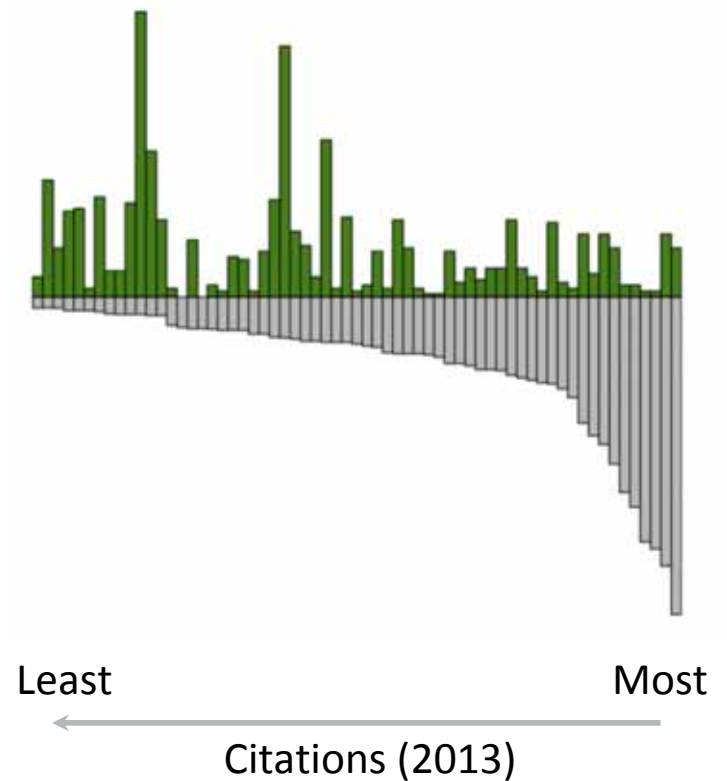
## Perception of the importance of chemistry research papers and comparison to citation rates

Rachel Borchardt<sup>1\*</sup>, Cullen Moran<sup>1</sup>, Stuart Cantrill<sup>2</sup>, Chemjobber<sup>3</sup>, See Arr Oh<sup>4</sup>, Matthew R. Hartings<sup>1\*</sup>

<sup>1</sup> American University, NW, Washington, DC, United States of America, <sup>2</sup> Nature Chemistry, SpringerNature, London, United Kingdom, <sup>3</sup> Chemjobber, Shell, WV, United States of America, <sup>4</sup> 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/>

- 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

*“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)**

“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/>

## New tools and processes for assessment



### 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

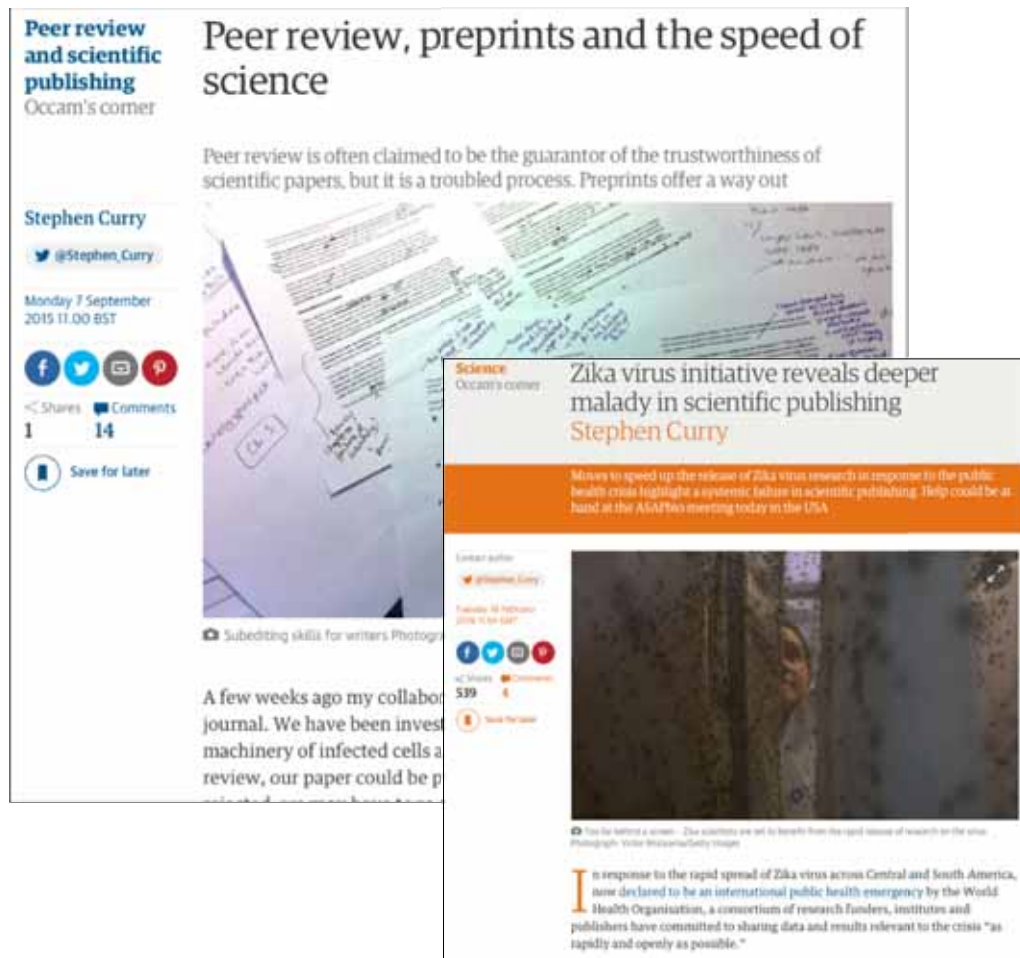
### Charité University Hospital, Berlin

- 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



**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)

## Plan S and the future...?



<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/>

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



...d render pain of atic claim. In tooth ng. Without geons learned ted. ts down as hed, 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

<http://www.newyorker.com/magazine/2013/07/29/slow-ideas>

Thank you

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@Stephen\_Curry