How should professors be promoted and tenured?

where's the evidence?

Clinical Epidemiology Program, Centre for Practice Changing Research, Ottawa Hospital Research Institute; School of Epidemiology, Public Health and Preventive Medicine, University of Ottawa, Canada

31st May 2016

Disclosures

- Founding editor-in-chief *Systematic Reviews*
- Member of editorial board of several journals
- Advisory member International Congress on Peer Review and Biomedical Publication
- Member of PLoS ONE's Human Research Advisory Committee
- University of Ottawa Medical Journal Faculty Advisory Board member
- Member of the EQUATOR Network's executive group
- Member of the REWARD alliance team
- Received funding for journalology (publication science) research from the Cochrane Collaboration; BioMed Central, Elsevier; and Garfield Foundation

Outline of my presentation

- The publication dance
- The quality of the published literature
- A program of discovery and evidence generation
- Other initiatives addressing academic promotion and tenure

The status quo – the research portfolio

- Publish
- Publish
- Publish

thresholds for appointment/promotion

Type of phrasing	Example
Number of publications criteria, with minimum thresholds	'Research Full Professor: reserved only for those who have demonstrated sustained achievement and outstanding character. 50–60 publications total, with at least 10 statistical methods papers, at least 15 health science publication, at least 5–10 first authored papers and at least 5–10 top-tier publications' (Department of Biostatistics, University of North Carolina School of Public Health, http://sph.unc.edu/files/2013/10/bios_june2013_guidelines-for-promotion-and-tenure.pdf)

Moher, D et al. Eur J Clin Invest. 2016 May;46(5):383-5.

Multiple quantitative criteria, with specified thresholds	Tenure track professor: Must meet minimum criteria below... Publications: 60 peer-reviewed publications, 30 as first or senior author. Where relevant, corresponding author may be equivalent to senior author. At least 10 of the first or senior authored publications should be in major general or specialty journals. Clear evidence of sustained productivity in scholarly publications. H-index of at least 25. (Columbia University Mailman School of Public Health, https://www.mailman.columbia.edu/sites/default/files/coap_guidelines.pdf)

Moher, D et al. Eur J Clin Invest. 2016 May;46(5):383-5.

Promotion and tenure: traditional model

- Counts
  - Journal publications
  - Journal Impact Factor
- Are any of these metrics meaningful?
  - Authorship inflation

Journal impact factor

- Its calculation is imperfect
  - A fraction
- Can be manipulated
- Not a good predictor

INCOMPLETE REPORTING
MACLEOD ET AL., 2015

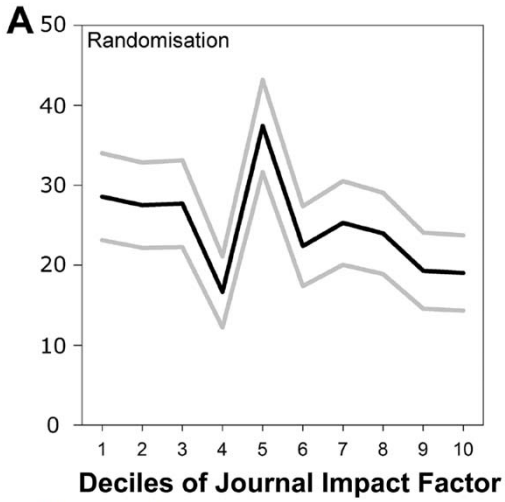


Fig 4. Prevalence of reporting of (A) randomisation, (B) blinded assessment of outcome, (C) sample size calculations, and (D) conflict of interest reporting by decile of journal impact factor in 2,671 publications describing the efficacy of interventions in animal models of eight different diseases identified in the context of systematic reviews. Black lines indicate the median value in that decile, and grey lines indicate the 95% confidence limits derived from nonparametric median regression (S4 Data).

LETTING GO

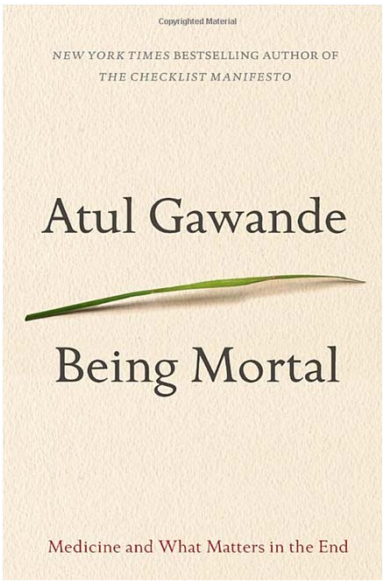
What should medicine do when it can't save your life?

BY ATUL GAWANDE

Modern medicine is good at staving off death with aggressive interventions—and bad at knowing when to focus, instead, on improving the days that terminal patients have left.

PHILLIP TOLEDANO, "BIRTHDAY BALLOON," FROM "DAYS WITH MY FATHER" (2008)

Sara Thomas Monopoli was pregnant with her first child when her doctors learned that she was going to die. It started with a cough and a pain in her back. Then a chest X-ray showed that her left lung had collapsed, and her chest was filled with fluid. A sample of the fluid was drawn off with a long needle and sent for testing. Instead of an infection, as everyone had expected, it was lung cancer, and it had already spread to the lining of her chest. Her pregnancy was thirty-nine weeks along, and the obstetrician who had ordered the test broke the news to her as she sat with her husband and her parents. The obstetrician didn't get into the prognosis—she would bring in an oncologist for that—but Sara was stunned. Her mother, who had lost her best friend to lung cancer, began crying.



LOOKING AT THE EVIDENCE

The published record

- It's tarnished ☹☹☹☹☹
- There is considerable avoidable waste in the biomedical industrial complex

Authors cannot adequately describe basic essential information for readers

- 10 essential elements about intervention
  - e.g., drug name, dose, route....
- examined 262 reports of randomized trials from most prominent oncology journals
- overall, only 11% of articles reported all 10 essential items

Duff JM et al. JNCI 2010 102:702-705

Delivering the best care to patients

- "Thoughtful consideration of reporting trial-related procedures that could assist with turning "best evidence" to "best Practice" would be worthwhile"
- "Careful and consistent reporting would help to promote safe and effective clinical application of oncology therapeutics ..."

Dancey JNCI 2010; 102:670-671

http://compare-trials.org/

67	9	301	357
TRIALS CHECKED TO DATE	TRIALS WERE PERFECT	OUTCOMES NOT REPORTED	NEW OUTCOMES SILENTLY ADDED

)n average, each trial reported just 62.0% of its specified outcomes. And on average, each trial ilently added 5.3 new outcomes.

58	6	31	16
LETTERS SENT	LETTERS PUBLISHED	LETTERS UNPUBLISHED AFTER 4 WEEKS	LETTERS REJECTED BY EDITOR

RESEARCH ARTICLE SUMMARY

PSYCHOLOGY

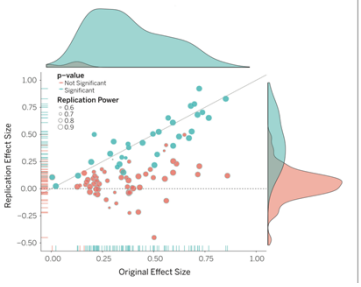
Estimating the reproducibility of psychological science

Open Science Collaboration*

INTRODUCTION: Reproducibility is a defining feature of science, but the extent to which it characterizes current research is unknown. Scientific claims should not gain credence because of the status or authority of their originator but by the replicability of their supporting evidence. Even research of exemplary quality may have irreproducible empirical findings because of random or systematic error.

RATIONALE: There is concern about the rate and predictors of reproducibility, but limited evidence. Potentially problematic practices include selective reporting, selective analysis, and insufficient specification of the conditions necessary or sufficient to obtain the results. Direct replication is the attempt to recreate the conditions believed sufficient for obtaining a previously observed finding and is the means of establishing reproducibility of a finding with new data. We conducted a large-scale, collaborative effort to obtain an initial estimate of the reproducibility of psychological science.

RESULTS: We conducted replications of 100 experimental and correlational studies published in three psychology journals using high-powered designs and original materials when available. There is no single standard for evaluating replication success. Here, we evaluated reproducibility using significance and *P* values, effect sizes, subjective assessments of replication teams, and meta-analysis of effect sizes. The mean effect size (r) of the replication effects (M_r = 0.197, SD = 0.257) was half the magnitude of the mean effect size of the original effects (M_r = 0.403, SD = 0.188), representing a



Replication

NIH plans to enhance reproducibility

Francis S. Collins and **Lawrence A. Tabak** discuss initiatives that the US National Institutes of Health is exploring to restore the self-correcting nature of preclinical research.

A growing chorus of concern, from scientists and laypeople, contends that the complex system for ensuring the reproducibility of biomedical research is failing and is in need of restructuring[1,2]. As leaders of the US National Institutes of Health (NIH), we share this concern and here explore some of the significant interventions that we are planning.

Science has long been regarded as 'self-correcting', given that it is founded on the replication of earlier work. Over the long term, that principle remains true. In the shorter term, however, the checks and balances that once ensured scientific fidelity have been hobbled. This has compromised the ability of today's researchers to reproduce others' findings.

Let's be clear: with rare exceptions, we have no evidence to suggest that irreproducibility is caused by scientific misconduct. In 2011, the Office of Research Integrity of the US Department of Health and Human Services pursued only 12 such cases[3]. Even if this represents only a fraction of the actual problem, fraudulent papers are vastly ing agencies to establish or enforce policies that insist on data access.

PRECLINICAL PROBLEMS

Reproducibility is potentially a problem in all scientific disciplines. However, human clinical trials seem to be less at risk because they are already governed by various regulations that stipulate rigorous design and independent oversight — including randomization, blinding, power estimates, pre-registration of outcome measures in standardized, public databases such as ClinicalTrials.gov and oversight by institutional review boards and data safety monitoring boards. Furthermore, the clinical trials community has taken important steps towards adopting standard reporting elements[7].

Preclinical research, especially work that uses animal models[1], seems to be the area that is currently most susceptible to reproducibility issues. Many of these failures have simple and practical explanations: different animal strains, different lab environments or subtle changes in protocol. Some irreproducible reports are probably the result of coincidental findings that happen to reach statistical significance, coupled with publication bias.

Incomplete Reporting
Macleod et al., 2015

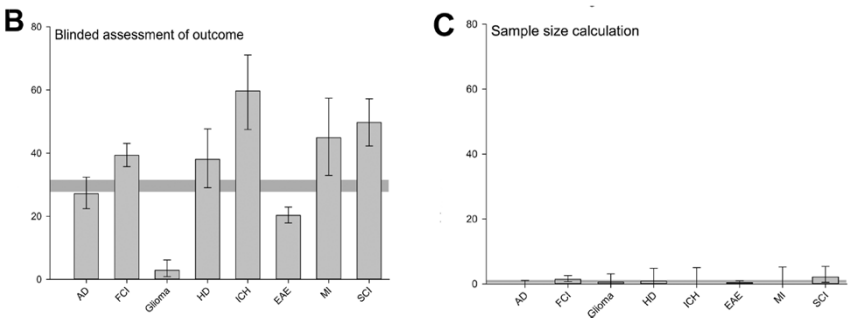


Fig 2. Prevalence of reporting of (A) randomisation, (B) blinded assessment of outcome, (C) sample size calculations, and (D) conflict of interest reporting in 2,671 publications describing the efficacy of interventions in animal models of Alzheimer's disease (AD, *n* = 324 publications), focal cerebral ischaemia (FCI, 704), glioma (175), Huntington's disease (HD, 113), intracerebral haemorrhage (ICH, 72), experimental autoimmune encephalomyelitis (EAE, 1029), myocardial infarction (MI, 69), and spinal cord injury (SCI, 185) identified in the context of systematic reviews. Vertical error bars represent the 95% confidence intervals, and the horizontal grey bar represents the 95% confidence interval of the overall estimate (S2 Data).

OPEN ACCESS Freely available online

PLoS BIOLOGY

Publication Bias in Reports of Animal Stroke Studies Leads to Major Overstatement of Efficacy

Emily S. Sena[1,2,3], H. Bart van der Worp[4], Philip M. W. Bath[5], David W. Howells[2,3], Malcolm R. Macleod[1,6]*

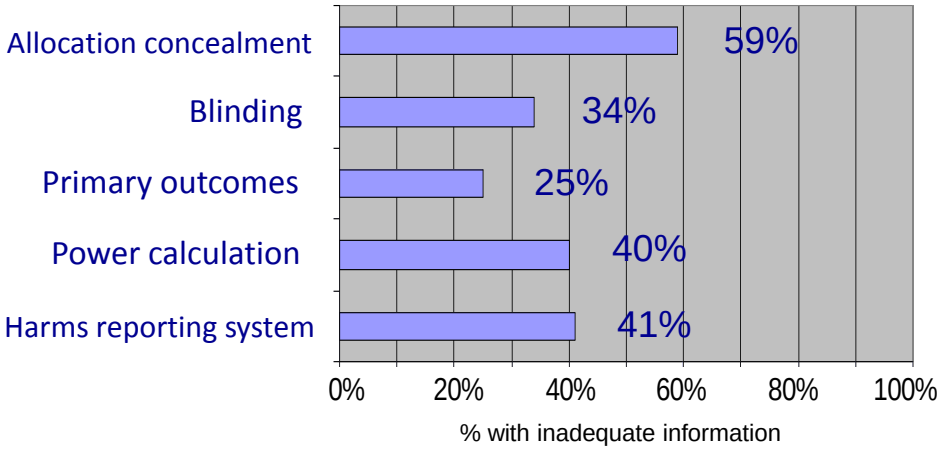
1 Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, United Kingdom, **2** National Stroke Research Institute, Austin Health, University of Melbourne, Melbourne, Victoria, Australia, **3** Department of Medicine, Austin Health, University of Melbourne, Melbourne, Victoria, Australia, **4** Department of Neurology, Rudolf Magnus Institute of Neuroscience, University Medical Center, Utrecht, The Netherlands, **5** Stroke Trials Unit, University of Nottingham, Nottingham, England, United Kingdom, **6** Department of Neurology, NHS Forth Valley, Stirling, Scotland, United Kingdom

Abstract

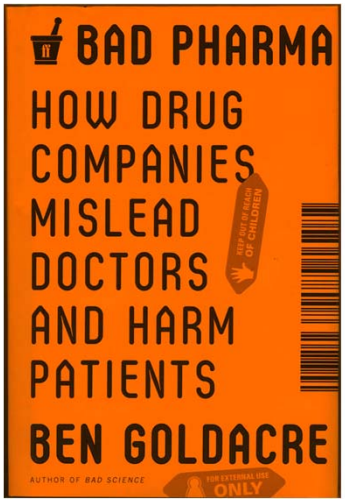
The consolidation of scientific knowledge proceeds through the interpretation and then distillation of data presented in research reports, first in review articles and then in textbooks and undergraduate courses, until truths become accepted as such both amongst "experts" and in the public understanding. Where data are collected but remain unpublished, they cannot contribute to this distillation of knowledge. If these unpublished data differ substantially from published work, conclusions may not reflect adequately the underlying biological effects being described. The existence and any impact of such "publication bias" in the laboratory sciences have not been described. Using the CAMARADES (Collaborative Approach to Meta-analysis and Review of Animal Data in Experimental Studies) database we identified 16 systematic reviews of interventions tested in animal studies of acute ischaemic stroke involving 525 unique publications. Only ten publications (2%) reported no significant effects on infarct volume and only six (1.2%) did not report at least one significant finding. Egger regression and trim-and-fill analysis suggested that publication bias was highly prevalent (present in the literature for 16 and ten interventions, respectively) in animal studies modelling stroke. Trim-and-fill analysis suggested that publication bias might account for around one-third of the efficacy reported in systematic reviews, with reported efficacy falling from 31.3% to 23.8% after adjustment for publication bias. We estimate that a further 214 experiments (in addition to the 1,359 identified through rigorous systematic review; non publication rate 14%) have been conducted but not reported. It is probable that publication bias has an important impact in other animal disease models, and more broadly in the life sciences.

Of 525 unique publications involving 1,359 experiments: 31% overestimate efficacy; 16% experiments remain unpublished; 2% of publications reported no significant treatment effects

Protocols lack important information



Mhaskar R et al, J Clin Epid 2012; Chan AW et al, BMJ 2008, JAMA 2004; Scharf O, J Clin Oncol 2006; Pildal J, BMJ 2005; Hróbjartsson A et al, J Clin Epid 2009



Expenditures on biomedical research

Clinical Review & Education

Special Communication | SCIENTIFIC DISCOVERY AND THE FUTURE OF MEDICINE

The Anatomy of Medical Research
US and International Comparisons

Hamilton Moses III, MD; David H. M. Matheson, JD, MBA; Sarah Cairns-Smith, PhD; Benjamin P. George, MD, MPH; Chasa Piltsch, MPhil; E. Ray Dorsey, MD, MBA

IMPORTANCE Medical research is a prerequisite of clinical advances, while health service research supports improved delivery, access, and cost. Few previous analyses have compared the United States with other developed countries.

OBJECTIVES To quantify total public and private investment and personnel (economic inputs) and to evaluate resulting patents, publications, drug and device approvals, and value created (economic outputs).

EVIDENCE REVIEW Publicly available data from 1994 to 2012 were compiled showing trends in US and international research funding, productivity, and disease burden by source and industry type. Patents and publications (1981-2011) were evaluated using citation rates and impact factors.

FINDINGS (1) Reduced science investment: Total US funding increased 6% per year (1994-2004), but rate of growth declined to 0.8% per year (2004-2012), reaching $317 billion (4.5%) of total health care expenditures. Private sources increased from 46% (1994) to 58% (2012). Industry reduced early-stage research, favoring medical devices, bioengineered drugs, and late-stage clinical trials, particularly for cancer and rare diseases. National Institutes of Health allocations correlate imperfectly with disease burden, with cancer and HIV/AIDS receiving disproportionate support. (2) Underfunding of service innovation: Health services research receives $5.0 billion (0.3% of total health care expenditures) or only 1/20th of science funding. Private insurers ranked last (0.04% of revenue) and health systems 19th (0.1% of revenue) among 22 industries in their investment in innovation. An increment of $8 billion to $15 billion yearly would occur if service firms were to reach median research and development funding. (3) Globalization: US government research funding declined from 57% (2004) to 50% (2012) of the global total, as did that of US companies (50% to 45%), with the total US (public plus private) share of global research funding declining from 57% to 44%. Asia, particularly China, tripled investment from $2.6 billion (2004) to $9.7 billion (2012) preferentially for education and personnel. The US share of life science patents declined from 57% (1981) to 51% (2011), as did those considered most valuable, from 73% (1981) to 59% (2011).

CONCLUSIONS AND RELEVANCE New investment is required if the clinical value of past scientific discoveries and opportunities to improve care are to be fully realized. Sources could include repatriation of foreign capital, new innovation bonds, administrative savings, patent pools, and public-private risk-sharing collaborations. Given international trends, the United States will relinquish its historical international lead in the next decade unless such measures are undertaken.

Editorials pages 143 and 145

Supplemental content at jama.com

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Corresponding Author: Hamilton Moses III, MD, Alerion, PO Box 150, North Garden, VA 22959 (hm@alerion.us).

JAMA. 2015;313(2):174-189. doi:10.1001/jama.2014.15939

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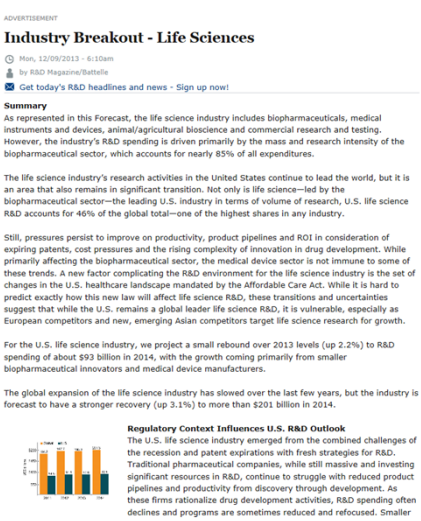

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Industry Breakout - Life Sciences

Mon, 12/09/2013 - 6:10am

by R&D Magazine/Battelle

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Summary

As represented in this Forecast, the life science industry includes biopharmaceuticals, medical instruments and devices, animal/agricultural bioscience and commercial research and testing. However, the industry's R&D spending is driven primarily by the mass and research intensity of the biopharmaceutical sector, which accounts for nearly 85% of all expenditures.

The life science industry's research activities in the United States continue to lead the world, but it is an area that also remains in significant transition. Not only is life science—led by the biopharmaceutical sector—the leading U.S. industry in terms of volume of research, U.S. life science R&D accounts for 46% of the global total—one of the highest shares in any industry.

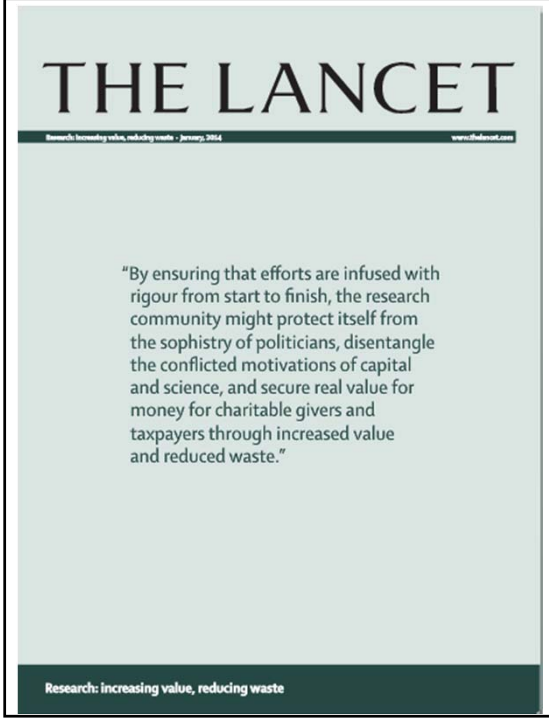
Still, pressures persist to improve on productivity, product pipelines and ROI in consideration of expiring patents, cost pressures and the rising complexity of innovation in drug development. While primarily affecting the biopharmaceutical sector, the medical device sector is not immune to some of these trends. A new factor complicating the R&D environment for the life science industry is the set of changes in the U.S. healthcare landscape mandated by the Affordable Care Act. While it is hard to predict exactly how this new law will affect life science R&D, these transitions and uncertainties suggest that while the U.S. remains a global leader life science R&D, it is vulnerable, especially as European competitors and new, emerging Asian competitors target life science research for growth.

For the U.S. life science industry, we project a small rebound over 2013 levels (up 2.2%) to R&D spending of about $93 billion in 2014, with the growth coming primarily from smaller biopharmaceutical innovators and medical device manufacturers.

The global expansion of the life science industry has slowed over the last few years, but the industry is forecast to have a stronger recovery (up 3.1%) to more than $201 billion in 2014.

Regulatory Context Influences U.S. R&D Outlook

The U.S. life science industry emerged from the combined challenges of the recession and patent expirations with fresh strategies for R&D. Traditional pharmaceutical companies, while still massive and investing significant resources in R&D, continue to struggle with reduced product pipelines and productivity from discovery through development. As these firms rationalize drug development activities, R&D spending often declines and programs are sometimes reduced and refocused. Smaller



THE LANCET

Research: increasing value, reducing waste - January, 2014 www.thelancet.com

"By ensuring that efforts are infused with rigour from start to finish, the research community might protect itself from the sophistry of politicians, disentangle the conflicted motivations of capital and science, and secure real value for money for charitable givers and taxpayers through increased value and reduced waste."

Research: increasing value, reducing waste

"Our belief is that research funders, scientific societies, school and university teachers, professional medical associations, and scientific publishers (and their editors) can use this Series as an opportunity to examine more forensically why they are doing what they do...and whether they are getting the most value for the time and money invested in science."

Annals of Internal Medicine

IDEAS AND OPINIONS

Stop Predatory Publishers Now: Act Collaboratively

David Moher, PhD, and Ester Moher, PhD

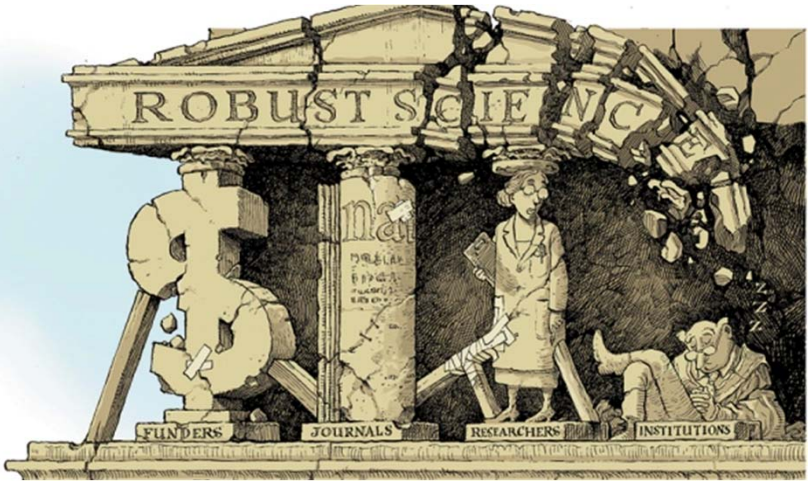
Researchers trying to publish their work face a duality of tensions. To advance their careers, they must be productive and publish in journals with high impact factors. However, passing the scientific rigor of peer review and editorial approval in these journals makes publishing difficult. Morally corrupt businesses, posing as legitimate publishers, have moved into this space. They offer to publish anything quickly, thus circumventing the very fabric of scientific publishing. This cancer has spread rapidly in part because these publishers have no physical presence—instead, they conduct their ruse through illegitimate online journals. Unless these predatory publishers and journals are stopped immediately, they will permanently undermine the publication record.

There is no robust definition of predatory journals. They are best identified through behavior and practice: annoyingly high volumes of daily e-mails requesting submission of any type of manuscript, the promise of expedient peer review, and rapid publication. Predatory journals do not provide scientifically rigorous peer review; their feedback is rubbish. They also have dis-

Prospective authors need to be aware of the hazards of predatory journals and take the time to more fully assess the merits of submitting any manuscript to them. A previous assessment of these invitations (2) found that they can all be deleted; the Web sites can be added to personal and institutional e-mail filters and thus be blocked. Further, requests for submission should be viewed with caution. It is rare for a legitimate journal to send blanket requests for manuscript submission. An exception would be a personalized correspondence from a senior editor encouraging submission of a specific editorial, commentary, review, or research report.

Why have legitimate publishers not done more to combat their predatory counterparts? This is in stark contrast to their progressive collaborative action to create the CrossRef products (www.crossref.org). Similarly, editorial groups seem silent and have not proposed any plan to stop predatory journals. Yet, they used their bully pulpit to demand clinical trial registration, which similarly posed a threat to the quality of reported health research (3).

There is good evidence showing that much of this investment is wasted



Begley CG, Buchan AM, Dirnagl U. Robust research: institutions must do their part for reproducibility. Nature 2015 525 (7567): 25-27

Academic institutional incentives and rewards

- The perverse nature of the incentive-reward system that seems deeply entrenched
- Are incentives and rewards evidence based?
  - publish or perish
- We have evidence about the importance of:
  - replication, data sharing, making all research accessible, peer review
- Do incentives and rewards need a reboot?

- One question to ask is whether the reward criteria used by promotion and tenure committees to explicitly and implicitly incentivize scientists plays a role?

- Is it possible that some reward criteria used by promotion and tenure committees is overvalued (publications), while other criteria is undervalued (study registration), or not valued at all (replication research)?

BRUNO LATOUR AND STEVE WOOLGAR (1979)
LABORATORY LIFE

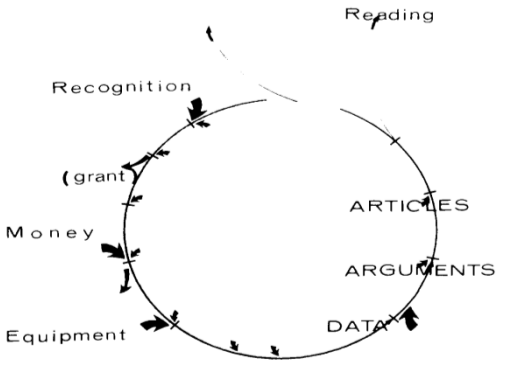


Figure 5.1
This figure represents the conversion between one type of capital and another which is necessary for a scientist to make a move in the scientific field. The diagram shows that the complete circle is the object of the present anaysis, rather than any one particular section. As with monetary capital, the size and speed of conversion is the major criterion by which the efficiency of an operation is established. It should be noted that terms corresponding to different approaches (for example, economic and epistemological), are united in the phases of a single cycle.

CYCLES OF CREDIT

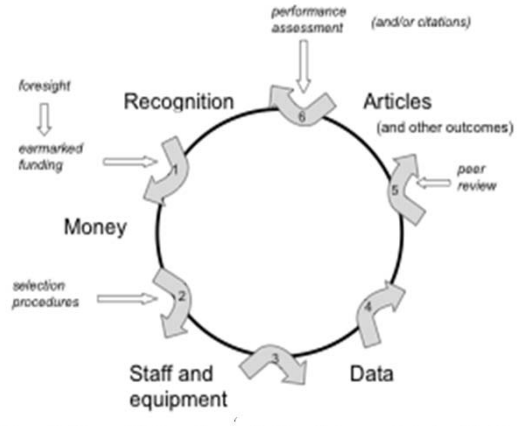


Figure 3. The credibility cycle, adapted from Latour and Woolgar (1986). Points at which organizational devices connect to the cycle are shown

Hessels et al, Science and public policy 2009

Research rewards system

	Different examples of reward systems		
	Current	**Change 1**	**Change 2**
CURRENCIES			
Publication (per unit)	Win 1	No value	No value
Replicated publication (per unit)	Win 1	Win 2	Win 2
Successfully translated publication (per unit)	Win 1	Win 5	Win 5
Refuted publication (per unit)	Win 1	Lose 1	Lose 1
Sharing data, protocols, analysis codes (per unit)	No value	Win 2	Win 2
Contribution to peer-review (per unit)	No value	Win 2	Win 2
Contribution to education/training (per unit)	No value	Win 1	Win 1
Grant funding (per one R01)	Win 5	Win 5	Lose 5
OTHER WEALTH ITEMS			
Assistant professor, title in good university	Win 3	Win 3	No value
Associate professor, title in good university	Win 10	Win 10	No value
Tenured professor, title in good university	Win 20	Win 20	No value
Team leader/director			
Per 1 doctoral student/post-doc	Win 2	Win 2	Lose 2
Administrative power, networking, lobbying	Win up to 200	No value	Lose up to 200

doi:10.1371/journal.pmed.1001747.t002

Ioannidis JPA (2014) How to Make More Published Research True. PLoS Med 11(10): e1001747

Research rewards system

Table. PQRST Index for Appraising and Rewarding Research

	Operationalization	
Item in PQRST Index	Example	Data Source
P (productivity)	Number of publications in the top tier % of citations for the scientific field and year	ISI Essential Science Indicators (automated)
	Proportion of funded proposals that have resulted in ≥1 published reports of the main results	Funding agency records and automated recording of acknowledged grants (eg, PubMed)
	Proportion of registered protocols that have been published 2 y after the completion of the studies	Study registries such as ClinicalTrials.gov for trials
Q (quality of scientific work)	Proportion of publications that fulfill ≥1 quality standards	Need to select standards (different per field/design) and may then automate to some extent; may limit to top-cited articles, if cumbersome
R (reproducibility of scientific work)	Proportion of publications that are reproducible	No wide-coverage automated database currently, but may be easy to build, especially if limited to the top-cited pivotal papers in each field
S (sharing of data and other resources)	Proportion of publications that share their data, materials, and/or protocols (whichever items are relevant)	No wide-coverage automated database currently, but may be easy to build, eg, embed in PubMed at the time of creation of PubMed record and update if more is shared later
T (translational influence of research)	Proportion of publications that have resulted in successful accomplishment of a distal translational milestone, eg, getting promising results in human trials for intervention tested in animals or cell cultures, or licensing of intervention for clinical trials	No wide-coverage automated database currently, would need to be curated by appraiser (eg, funding agency) and may need to be limited to top-cited papers, if cumbersome

Ioannidis JP, Khoury MJ. Assessing value in biomedical research: the PQRST of appraisal and reward. JAMA 2014;312:483–84

- Would modifications to the reward criteria currently used have important downstream benefits and help improve the rigor, quality and impact of biomedical research reducing waste and increasing research value
  - reduce author inflation
  - reduce reporting biases
  - increase data sharing
  - increase replication research

What criteria are used to reward members of faculties of medicine?

- Very little evidence to answer this question
- A well-known research (i.e., excluding teaching and service) criterion is the quantitative 'publish or perish phenomenon'
- In many institutions, faculty members are rewarded with – promotion and tenure - for publishing as much as possible and in the highest possible impact factor journals

Methods – formal document analysis

- We will use the QS World University Rankings (a partnership with Elsevier Science) to select Dutch, English, French, and Greek language promotion and tenure documents from 100 faculties of medicine
- The QS rankings are based on academic reputation, employer reputation, and research citations per paper, and broken down by world region. We will use stratified sampling by world region to select faculties (by random numbers generator).

Methods – formal document analysis

- A data extraction form will be developed to capture detailed information from each included document. One reviewer, with a second reviewer conducting 100% data verification for accuracy, will extract the data
- Consensus or a third member of the research team will resolve disagreements between reviewers

Methods – formal document analysis

- We will create a comprehensive list of statements and descriptions related to promotion and tenure criteria, including sources of data
- We will thematically categorize the lists and descriptions. We will group similar criteria across the included documents
- This process will facilitate themes emerging from the data, based on consensus from the two-team members synthesizing the data and a third team member in case of disagreements
- A training exercise in document analysis will be completed prior to formal synthesizing of the data

Implicitness

- While some promotion and tenure documents are precisely detailed others are more vague. This vagueness maybe purposeful as it provides promotion and tenures committees more latitude about implicit criteria (e.g., evaluating the importance of public versus private funding in a faculty member's portfolio) that can be discussed during committee meetings

Interviews

- To document possible social response bias we will interview promotion and tenure committee members from 10-15% of the committees included in our sample (purposefully sampled; facilitating maximum response variation and saturation).
- The interviews will help identify potential differences between explicit (written documentation) and implicit (oral decision-making) reward criteria and metrics.

Outcome

- The outcome of the document analysis will include a list of criteria and metrics currently used by promotion and tenures committees.

ARE THERE EMERGING EVIDENCE-BASED CRITERIA TO CONSIDER WHEN REWARDING MEMBERS OF FACULTIES OF MEDICINE?

Annals of Internal Medicine

EDITORIAL

Sharing Clinical Trial Data: A Proposal From the International Committee of Medical Journal Editors

The International Committee of Medical Journal Editors (ICMJE) believes that there is an ethical obligation to responsibly share data generated by interventional clinical trials because participants have put themselves at risk. In a growing consensus, many funders around the world–foundations, government agencies, and industry–now mandate data sharing. Here we outline ICMJE's proposed requirements to help meet this obligation. We encourage feedback on the proposed requirements. Anyone can provide feedback at www.icmje.org by 18 April 2016.

The ICMJE defines a clinical trial as any research project that prospectively assigns people or a group of people to an intervention, with or without concurrent comparison or control groups, to study the cause-and-effect relationship between a health-related intervention and a health outcome. Further details may be

added an element to its registration platform to collect data-sharing plans. We encourage other trial registries to similarly incorporate mechanisms for the registration of data-sharing plans. Trialists who want to publish in ICMJE member journals (or nonmember journals that choose to follow these recommendations) should choose a registry that includes a data-sharing plan element as a specified registry item or allows for its entry as a free-text statement in a miscellaneous registry field. As a condition of consideration for publication in our member journals, authors will be required to include a description of the data-sharing plan in the submitted manuscript. Authors may choose to share the deidentified IPD underlying the results presented in the article under less restrictive, but not more restrictive, conditions than were indicated in the registered data-sharing plan.

Taichman DB, et al. Sharing clinical trial data: a proposal from the International Committee of Medical Journal Editors. CMAJ 2016; 188 (2): 91-2

EDITORIAL

The measure of research merit

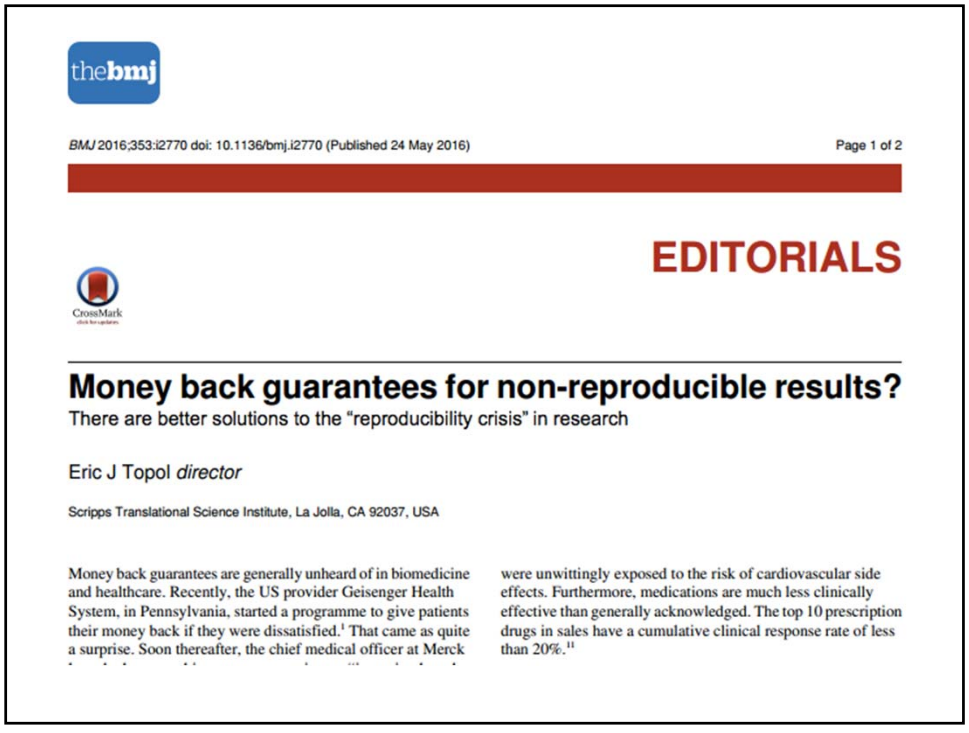
Each year, $1.4 trillion are invested in research by governments, foundations, and corporations. Hundreds if not thousands of high-profile prizes and medals are awarded to the best researchers, boosting their careers. Therefore, establishing a reliable predictor of future performance is a trillion-dollar matter. Last month, the Alexander von Humboldt Foundation convened an international assembly of leaders in academia, research management, and policy to discuss "Beyond Bibliometrics: Identifying the Best." Current assessment is largely based on counting publications, counting citations, taking note of the impact factor of the journals where research-

journals, suggest that downloads of online papers poorly track eventual citations. This could indicate that some papers were found unworthy of being cited, or that some papers were influential, but just not cited because the author did not feel that the concept required a citation. Adding more context in referencing could reduce some ambiguity and encourage more appropriate referencing, but such proposals have not gained traction. Counting citations is also quantitatively inconsistent. If an author publishes a better method or an improved estimate for a physical parameter, other researchers who use those improvements are obligated to cite that paper. On the other hand, if a researcher pub-

Marcia McNutt
Editor-in-Chief
Science *Journals*

McNutt M. The measure of research merit. Science 2014; 346:1155

- "….[A]ssess young scientists according to their willingness to take risks, ability to work as part of a diverse team, creativity in complex problem-solving, and work ethic?"



thebmj

BMJ 2016;353:i2770 doi: 10.1136/bmj.i2770 (Published 24 May 2016)

EDITORIALS

CrossMark

Money back guarantees for non-reproducible results?

There are better solutions to the "reproducibility crisis" in research

Eric J Topol *director*

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Money back guarantees are generally unheard of in biomedicine and healthcare. Recently, the US provider Geisenger Health System, in Pennsylvania, started a programme to give patients their money back if they were dissatisfied.[1] That came as quite a surprise. Soon thereafter, the chief medical officer at Merck

were unwittingly exposed to the risk of cardiovascular side effects. Furthermore, medications are much less clinically effective than generally acknowledged. The top 10 prescription drugs in sales have a cumulative clinical response rate of less than 20%.[11]

Is data sharing associated with added value?

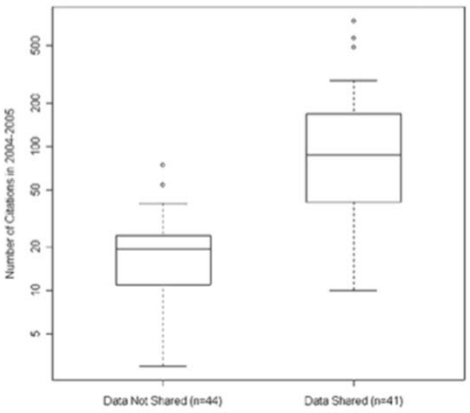


Figure 1. Distribution of 2004–2005 citation counts of 85 trials by data availability. The 41 clinical trial publications which publicly shared their microarray data received more citations, in general, than the 44 publications which did not share their microarray data. In this plot of the distribution of citation counts received by each publication, the extent of the box encompasses the interquartile range of the citation counts, whiskers extend to 1.5 times the interquartile range, and lines within the boxes represent medians.

Piwowar HA, Day RS, Fridsma DB (2007) Sharing Detailed Research Data Is Associated with Increased Citation Rate. PLoS ONE 2(3): e308.

Scoping reviews

- "A scoping review or scoping study is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge."

Colquhoun H, let al. Scoping reviews: time for clarity in definition, methods, and reporting. J Clin Epidemiol. 2014 Dec;67(12):1291-4; Arksey H, O'Malley L. Scoping studies: towards a methodological framework. Int J Social Res Methodol 2005; 8(1), 19-32

Outcomes

- Categories and lists of emerging/proposed evidence-based criteria and metrics for consideration by promotion and tenure committees

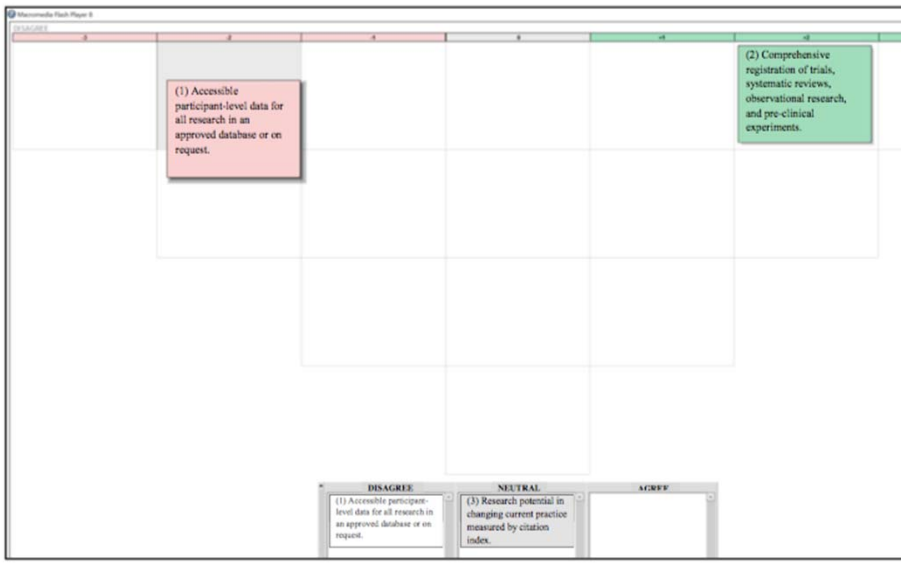
HOW DO PROMOTION AND TENURE COMMITTEES AND OTHER STAKEHOLDERS VALUE REWARD CRITERIA AND METRICS

Q Sort methodology

- In a Q methods study participants are shown a sample of statements on a topic and asked to rank-order them from their point of view according to some preference, judgment or feeling about each statement.

Brown SR. Q methodology and qualitative research. Qual Health Res 1996;6(4):561-567

Figure 1: Example of Q-survey sorting



Q Sort methodology

- Q methods enable the systematic study of subjectivity, revealing participants' viewpoint, opinion, and understanding, by combining both qualitative and quantitative methods
- What makes Q methodology unique is the premise that it is possible to investigate the subjectivity of any situation in an objective, orderly, and scientific manner

Participants

- We will invite several groups to participate in the Q-Sort survey:
  - members of promotion and tenure committees and deans from 100 faculties of medicine
  - a broad spectrum of academics (e.g., assistant to full professors), identified from the membership of the Cochrane Collaboration and METRICS,
  - major public research funders and charities

Outcomes

- Rankings of traditional and emerging reward criteria by promotion and tenure committees and a broad spectrum of stakeholders.

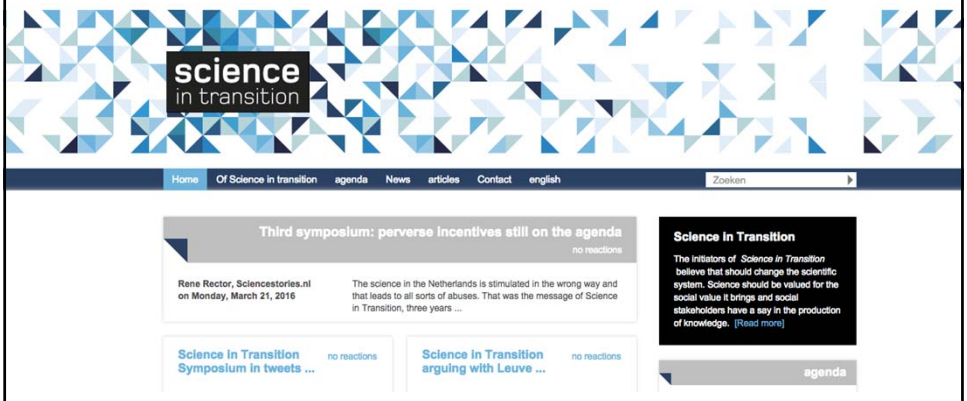
Knowledge Translation (implementation)

- Two faculty of Medicine Deans will be our knowledge users
- We have access to the Science in Transition network and the METRICS Network
- The results will be of interest nationally and internationally to promotion committees, deans and a broad array of academics and funders
- Several end of grant KT strategies are planned
  - passive dissemination through journal publications
  - dynamic activities through educational sessions with our knowledge users and their affiliates

New model

- Giving more credit for:
  - Reproducibility
  - More complete reporting of research
  - Sharing data
  - Depositing all research reports in a publically accessible repository
- Giving less credit for:
  - Volume of publications

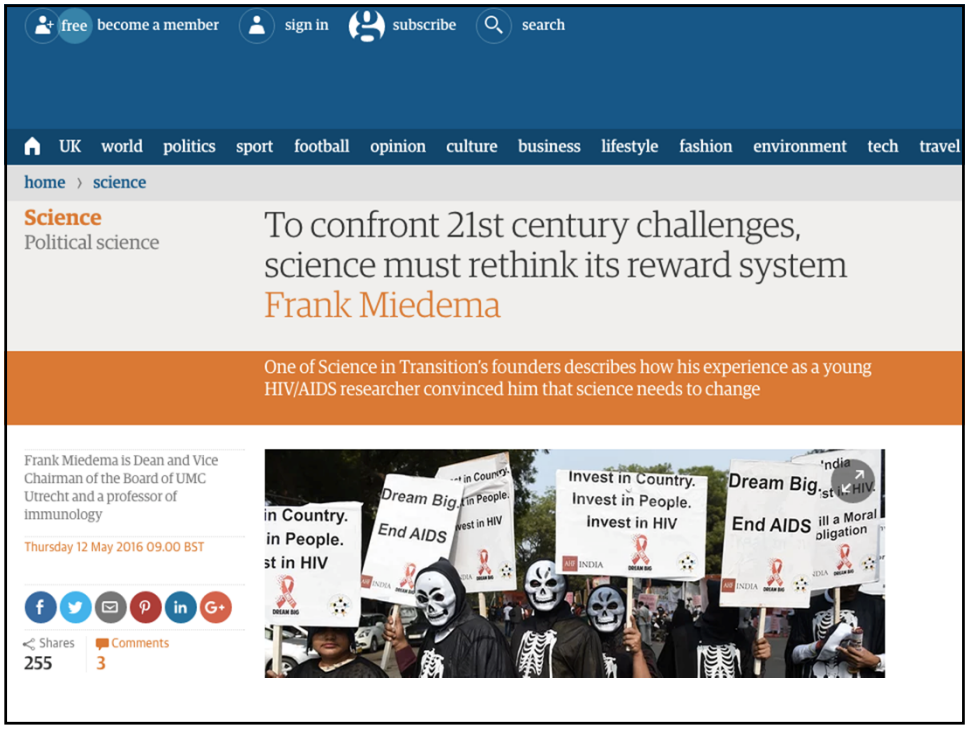
WWW.SCIENCEINTRANSITION.NL/



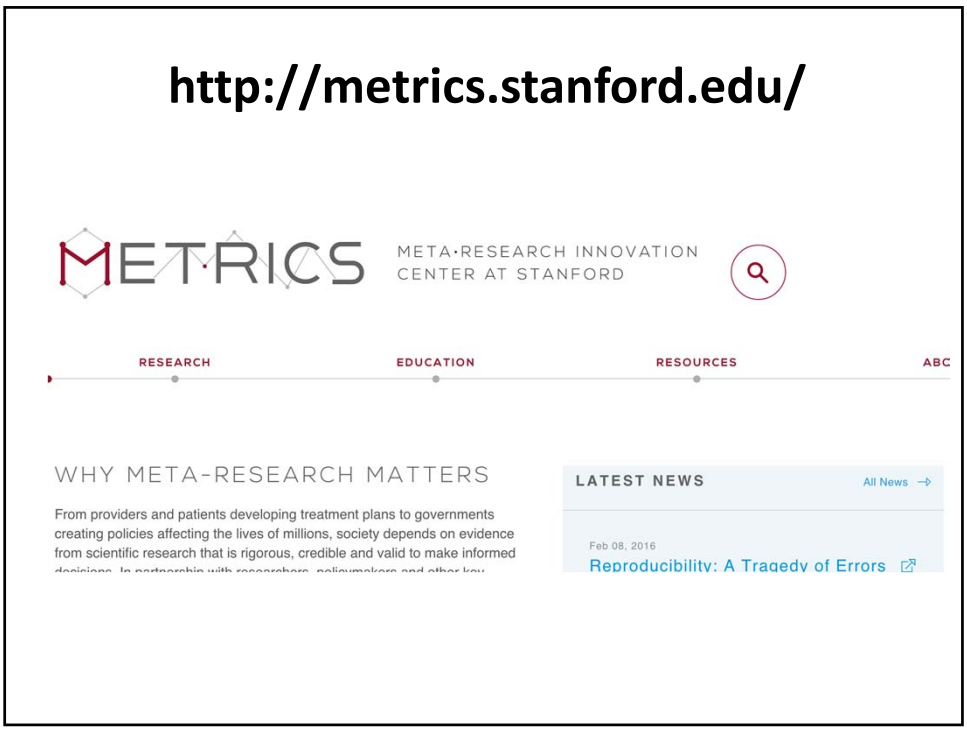
- Should we put a limit on the number of publications as part of the promotion and tenure game?
- Should we explicitly recognize other indicators?

Peer review

- Should we give lots more real credit for peer reviewing?
- F1000 – peer reviews are citable



http://metrics.stanford.edu/



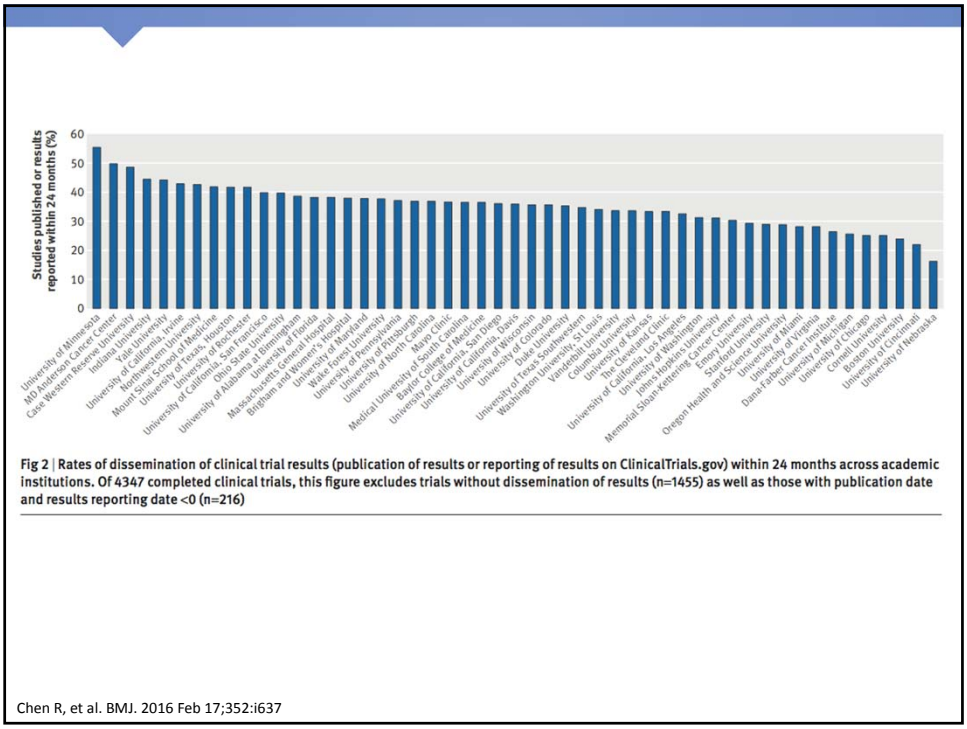


Fig 2 | Rates of dissemination of clinical trial results (publication of results or reporting of results on ClinicalTrials.gov) within 24 months across academic institutions. Of 4347 completed clinical trials, this figure excludes trials without dissemination of results (n=1455) as well as those with publication date and results reporting date <0 (n=216)

Chen R, et al. BMJ. 2016 Feb 17;352:i637