



UMC Utrecht

New incentives and rewards for better science: 'The Dean's Perspective'

Frank Miedema

Professor of Immunology

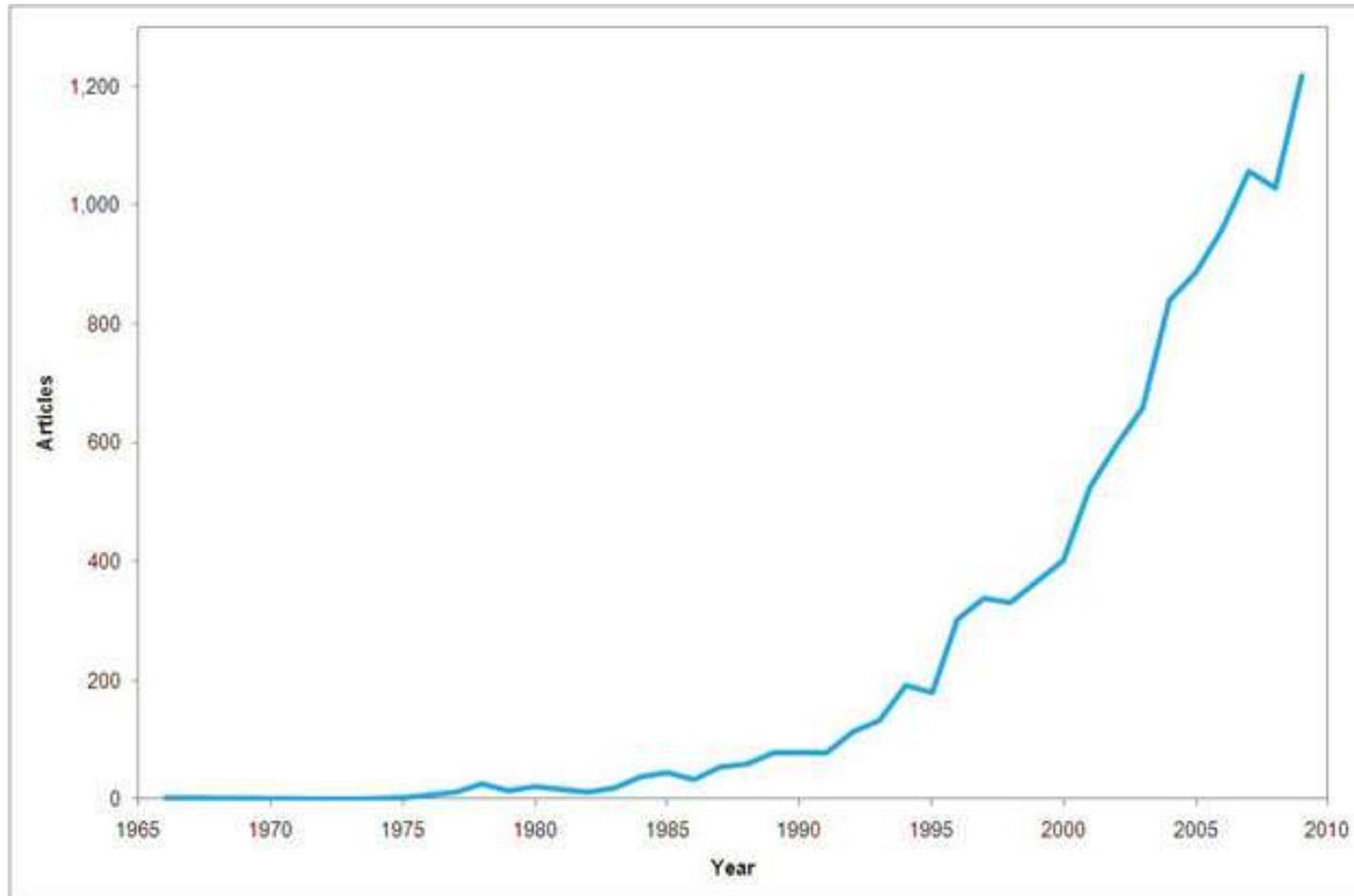
Dean and vice-chairman of the board of UMC Utrecht

Co-founder of Science in Transition

www.scienceintransition.nl



Exponential increase in peer-reviewed publications, today at 1.5 mln/year



THE LANCET

A new Lancet Series



increasing value
reducing waste
in research

“It has been estimated that 85% of research is wasted, usually because it asks the wrong questions, is badly designed, not published or poorly reported.”

Open access, freely

Essay

Why Most Published Research Findings Are False

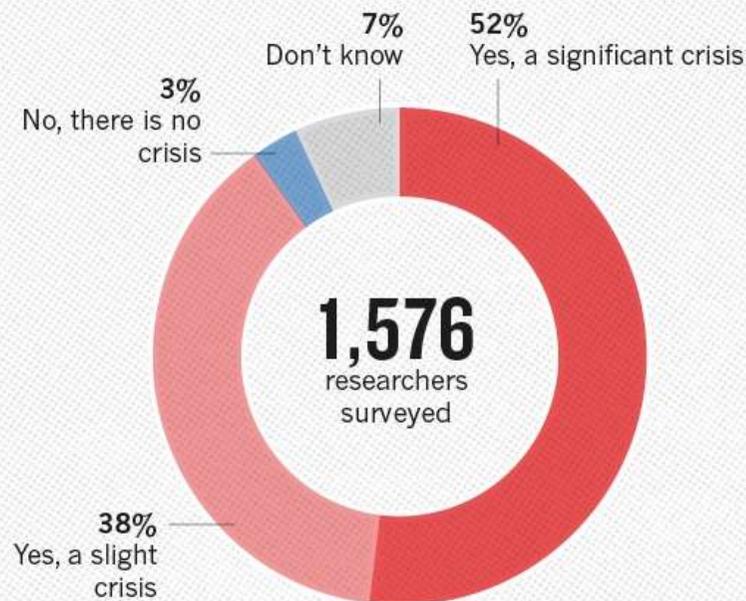
John P. A. Ioannidis



Raise standards for preclinical cancer research

C. Glenn Begley and Lee M. Ellis propose how methods, publications and incentives must change if patients are to benefit.

IS THERE A REPRODUCIBILITY CRISIS?



1,576
researchers
surveyed

©nature

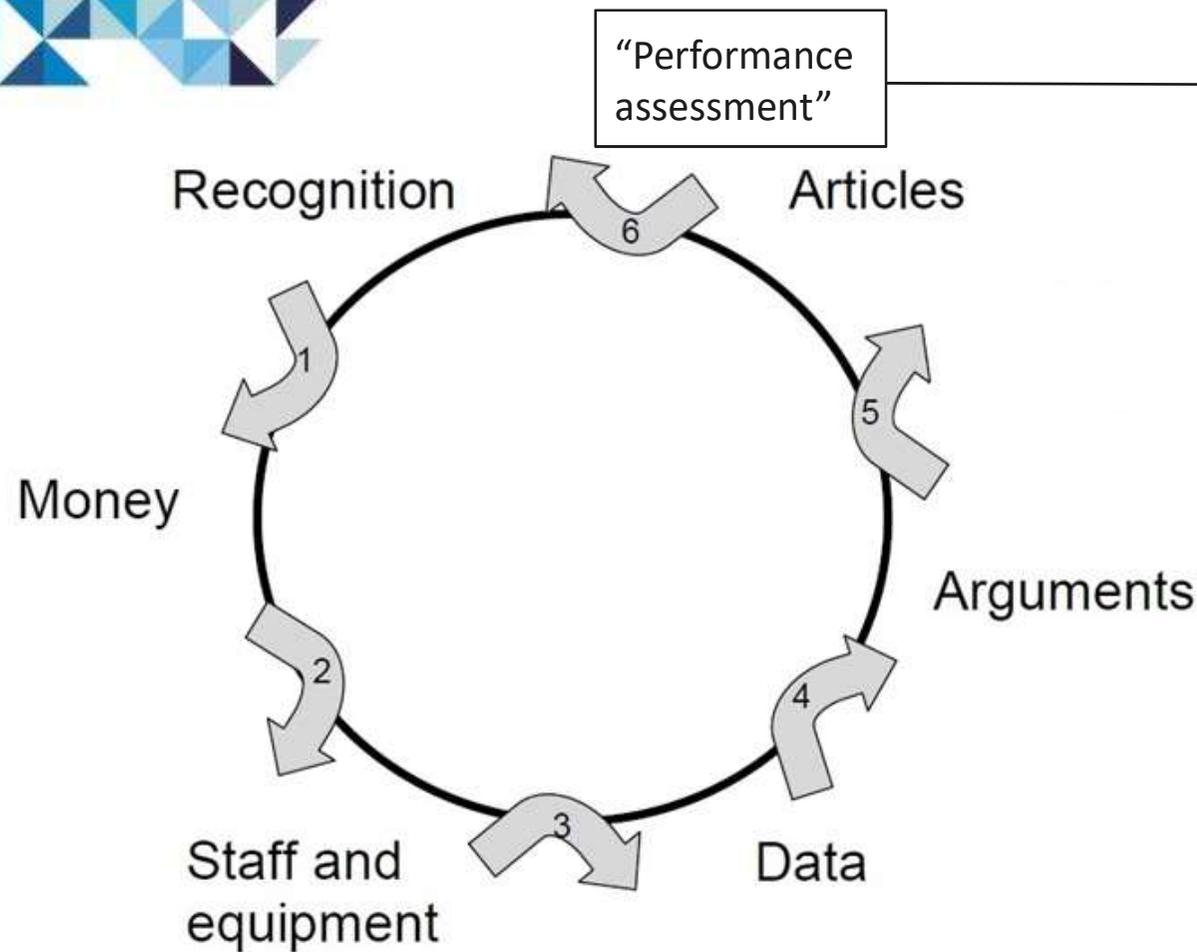
Bayer HealthCare: only about 25% of published preclinical studies could be validated to the point at which projects could continue

Amgen: of 53 landmark oncology papers in only 6 (11%) cases scientific findings were confirmed





Recognition is gained through articles: the 'currency' of science



Heavily informed by *bibliometric indicators*, e.g.:

- the number of published articles
- impact factor of journals
- personal citation scores
- But also: earning capacity



Metrics shape science (1)

“Young researchers, avoid lecturing”

INTERVIEW

JAN-WILLEM VAN GROENIGEN

Ambitieuze onderzoekers aan Nederlandse universiteiten kunnen maar beter zo min mogelijk onderwijs geven. Dat adviseert bodemkundige Jan-Willem van Groenigen vandaag in zijn oratie in Wageningen.

Een opmerkelijk advies, meneer Van Groenigen. Universiteiten zijn toch onderwijsinstellingen?

‘Ik geef dat advies ook helemaal niet van harte. Waar het om gaat is dat een jonge onderzoeker momenteel zijn kansen op een loopbaan in de wetenschap verkleint met onderwijsuren.’

Wat is er dan aan de hand?

‘Voor een universitaire carrière is een

Veni-beurs of Vidi-beurs van NWO tegenwoordig een voorwaarde, zonder word je nooit hoogleraar. Onderzoekers schrijven dus aanvragen. Daarin spelen je cv en onderzoekswerk een belangrijke rol, plus de zogeheten utilisatieparagraaf, waarin je beschrijft welke maatschappelijke toepassingen het onderzoek kan hebben.’

Maar niks over lesgeven?

‘Geen enkele, het telt niet mee. Sterker, wie onderwijsuren maakt, kan daarin geen onderzoek doen. Commissies zien dat in de praktijk als een nadeel, als er een afweging moet worden gemaakt tussen kandidaten. Ambitieuze onderzoekers kijken dus wel uit om voor de collegezaal te gaan staan. Publiceren en utilisatie, daar gaat het om.’

Het financieringssysteem selecteert op wetenschappers aan universiteiten die geen onderwijs willen geven?

‘Er is niemand die dit zo bedoelt,



Jan-Willem van Groenigen

Adviseert u jonge onderzoekers echt geen les te geven?

‘Liever niet. Maar ik kan me voorstellen dat mensen bijvoorbeeld uitwijken naar onderzoeksinstituten waar geen onderwijs taak bestaat. Dat neem ik ze niet kwalijk. Het maakt een wetenschappelijke carrière zeker gemakkelijker.’

Mag dat eigenlijk: dat een jonge universitair onderzoeker weigert les te geven?

‘Ik zie bij postdocs vaak heel weinig animo om onderwijs te geven, uit zelfbehoud. En ik zie docenten en

maar het is hoe het gaat. Er zit een perverse prikkel in het systeem, die maakt dat het onderwijs aan de universiteit op de tweede rang komt. Dat is slecht voor de studenten.’

hoofddocenten worstelen met het dilemma tussen goed lesgeven en het beseft dat het ten koste gaat van de wetenschappelijke carrière.’

Als het systeem zo pervers is, wat moet er dan anders?

‘Voor universitaire onderzoekers zou wat mij betreft een goed gedocumenteerd onderwijsdossier ook moeten meetellen als utilisatieparagraaf. Pas als een aanvrager geen onderwijs geeft, moet de vraag zijn waar het werk dan goed voor is, maatschappelijk gezien. Nu moet je laten zien dat alles en iedereen profiteert van het werk, behalve de studenten die je universiteit opleidt. Terwijl het opleiden van nieuwe academici bij uitstek een maatschappelijk belang is.’

Maakt uw voorstel kans, denkt u?

‘Dat is aan de politiek en vooral aan financiers als NWO. Maar nu de schijnwerper voor mijn oratie op mij gericht is, moet ik een helder signaal geven.’

Martijn van Calmthout

REACTIE NWO

‘NWO ziet het geven van onderwijs eerder als een onderdeel van de gebruikelijke werkzaamheden van wetenschappers aan de universiteiten. Kennisoverdracht of onderwijs aan doelgroepen buiten het eigen wetenschapsgebied geldt wel als kennisbenutting.’

‘NWO waardeert niettemin het pleidooi van deze hoogleraar. NWO beraadt zich zelf ook over wat nu kenmerkend is voor de kwaliteit van een onderzoeker. Het is meer dan alleen het trackrecord in onderzoek en publicaties.’

Professor in Soil Quality Jan-Willem van Groenigen, Wageningen University, in his inaugural lecture (30-3-2017):
“Young researchers should minimize their teaching efforts”



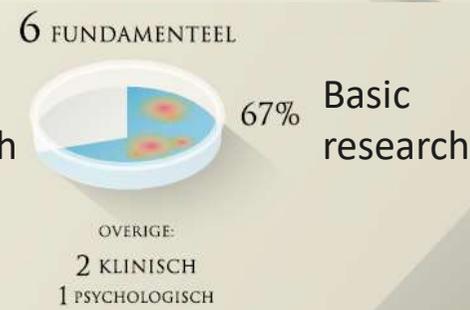
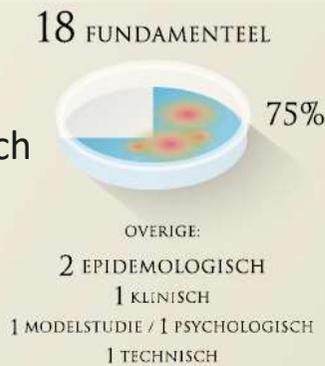
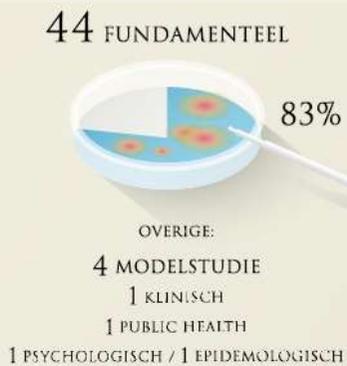
Metrics shape science (2)

WELK BIOMEDISCH ONDERZOEK
VALT IN DE PRIJZEN?

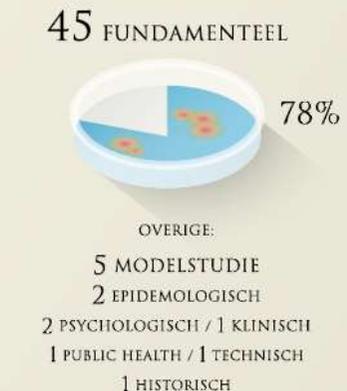
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2015



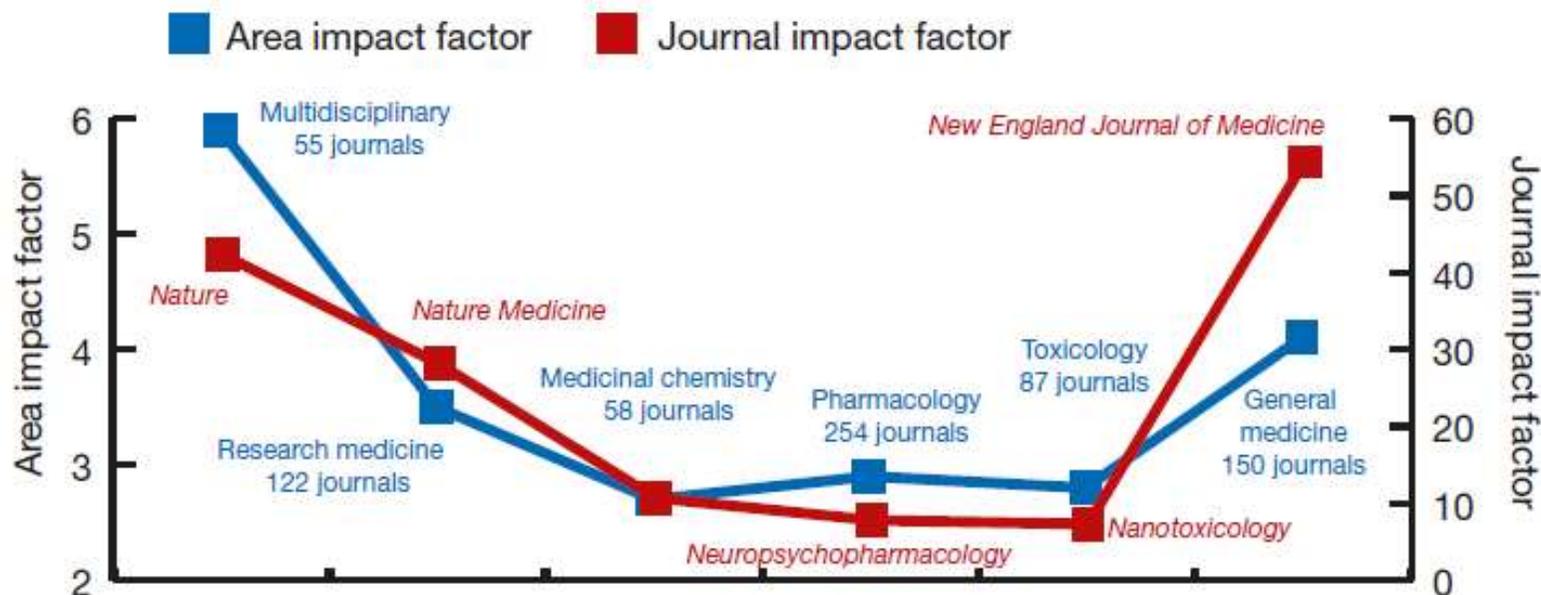
2016



Mission of main Dutch research funder NWO: "NWO only funds the best research..."



Metrics shape science (3)



Essential research for drug discovery – e.g. lead identification & optimization, preclinical studies - gets “lost in the citation valley”

Nature Biotechnology **34**, 1016–1018 (2016)

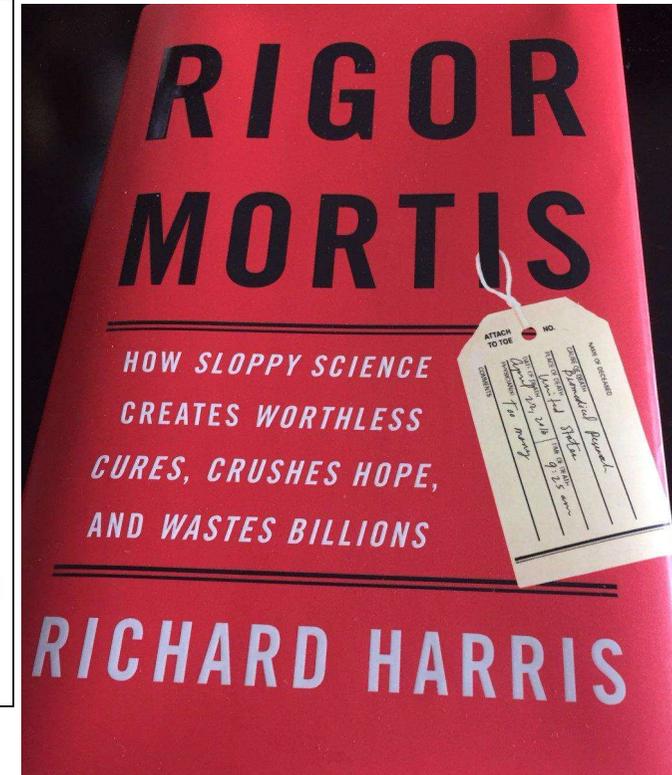




Saving Science

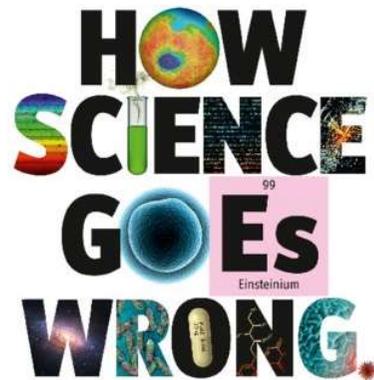
Science isn't self-correcting, it's self-destructing. To save the enterprise, scientists must come out of the lab and into the real world.

Daniel Sarewitz



The Economist
 OCTOBER 18TH - 24TH 2013
 Economist.com

- Washington's lawyer surplus
- How to do a nuclear deal with Iran
- Investment tips from Nobel economists
- Junk bonds are back
- The meaning of Sachin Tendulkar



Rescuing US biomedical research from its systemic flaws

Bruce Alberts^a, Marc W. Kirschner^b, Shirley Tilghman^{c,1}, and Harold Varmus^d



Solutions: be aware of the limitations of metrics



“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.”

Dutch universities sign DORA at Science in Transition conference

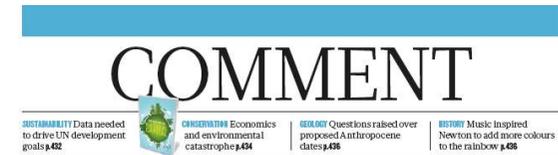


Funding councils sign up to ‘responsible’ research assessment

New injection of cash for San Francisco Declaration on responsible metrics hopes to move initiative from words to action

February 7, 2018

All seven of the UK’s research councils have signed up to a declaration that calls for the academic community to stop using journal impact factors as a proxy for the quality of scholarship.



The Leiden Manifesto for research metrics

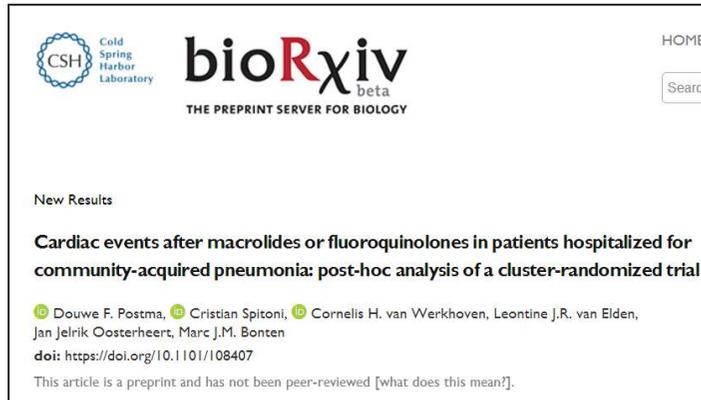
Use these ten principles to guide research evaluation, urge Diana Hicks, Paul Wouters and colleagues.

EDITORIAL
Impact, not impact factor
Inder M. Verma
Editor-in-Chief, PNAS

...on, good practice and interpretation. ... was the Science Citation Index, developed by Eugene Garfield at the Institute for Scientific Information, Philadelphia, and first published by experts in 1927. Thomson ISI later acquired the database widely used by researchers (ISI Web of Science). In 2005, Jorge Hirsch, a physicist at the University of California, San Diego, proposed the h-index, popularizing citation counting for individual researchers. Interest in the journal impact factor grew steadily after 1995 (see ‘Impact-factor obsession’). Lately, metrics related to social usage ...

23 APRIL 2015 | VOL 520 | NATURE | 429

Solutions: consider new publication strategies



The screenshot shows the bioRxiv website interface. At the top left is the Cold Spring Harbor Laboratory logo. The bioRxiv logo is prominently displayed with the tagline 'THE PREPRINT SERVER FOR BIOLOGY'. A search bar is visible on the right. Below the header, there is a section for 'New Results' featuring a preprint article titled 'Cardiac events after macrolides or fluoroquinolones in patients hospitalized for community-acquired pneumonia: post-hoc analysis of a cluster-randomized trial'. The authors listed are Douwe F. Postma, Cristian Spitoni, Cornelis H. van Werkhoven, Leontine J.R. van Eiden, Jan Jelrik Oosterheert, and Marc J.M. Bonten. A DOI link is provided: <https://doi.org/10.1101/108407>. A note at the bottom states: 'This article is a preprint and has not been peer-reviewed [what does this mean?]'.

PRECLINICALTRIALS.EU
International register of preclinical trial protocols

This website provides a platform to register animal studies.

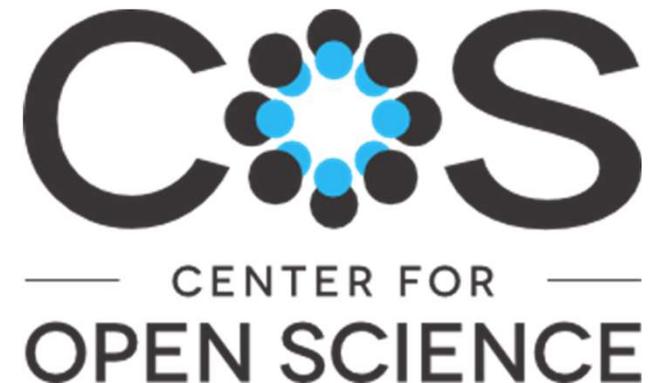
Psychological Science Agenda | August 2015

The promise of pre-registration in psychological research

Encouraging a priori research and decreasing publication bias.



Registered Reports: Peer review before results are known to align scientific values and practices.



Solutions: bring research closer to the real world



Onderzoeksaenda

De onderzoeksaenda is een lijst met 5 onderwerpen die prioriteit krijgen in onderzoek. Deze onderwerpen zijn vastgesteld samen met onder meer onderzoekers, patiënten en artsen.



- **Preventie** (het voorkomen van ziekte en het bevorderen van gezondheid);
- **Regeneratieve Geneeskunde** (het daadwerkelijk genezen van chronische ziekten) en;
- **Personalised Medicine** (op de persoon gerichte geneeskunde).

Solutions: funders take their responsibility



ZonMw

Programme

Fostering Responsible Research Practices

The Fostering Responsible Research Practices (FRRP) programme funds research on research, addressing the need for greater quality, integrity and efficiency in academic research.

NWO

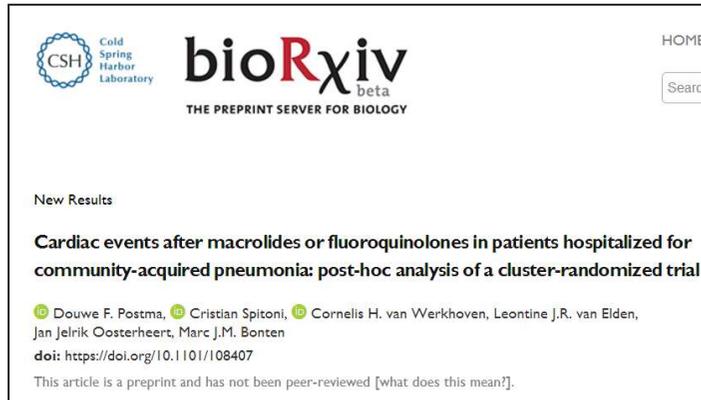
Home

Replication Studies

Researchers with a PhD who are employed by a Dutch research institution can request funding for the replication of "cornerstone research" in the disciplines of the NWO Research Area of the Social Sciences and ZonMw.



Solutions: consider new publication strategies



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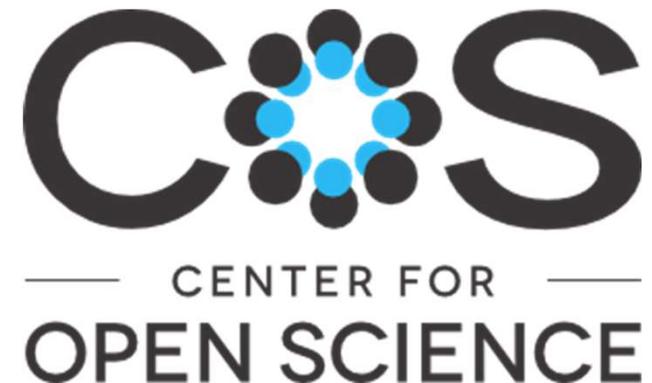
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Solutions: shift to Open Science on all levels



English **EN**

Search

[European Commission](#) > [Research and Innovation](#) > [Strategy](#) > [Policy goals](#) >

Open Science

This is the ongoing transition in how research is performed and how knowledge is shared. News, events, publications related to Open Science



Towards an Open Science Programme for
Utrecht University



Science in Transition in UMC Utrecht

Our mission is to have maximal **impact**:

- Organized research in six **multidisciplinary** programs targeted to grand challenges, clinical and health needs
- Involve **societal stakeholders** (e.g. patient organizations) continuously and in evaluation of research programs/teams
- Developed and use **new indicators for impact** next to metrics
- **Diversify** talent management: define **excellence** according to variety of scientists required in teams
- Candidate (associate) professors required to fill out a portfolio along these principles



Science in Transition in UMC Utrecht

Discuss ideology and myth:

- **Academic output is diverse: papers, books, methods, ehealth applications, patents, guidelines, policy advice, design of novel therapy and tangible products (biologicals, MRI Linac)**
- **Excellence and quality are required for all these products, thus diverse and not confined to basic science and papers**
- **Research closer to users can have on short term big impact, basic research may have impact on a much longer term**



Indicators for research impact

Structure	Leadership & culture
	Collaborations with stakeholders
	Continuity and infrastructure
Process	Setting research priorities
	Posing the right questions
	Incorporation of next steps
	Design, conduct, analysis
	Regulation and management
Outcomes (from SEP)	Research products for peers
	Research products for societal groups
	Use of research products by peers
	Use of research products by societal groups
	Marks of recognition from peers
	Marks of recognition from societal groups



Redefine Excellence

Candidate (associate) professors fill out portfolio describing their track record in:

Research

Teaching

Clinical work

Innovation and impact

Leadership, development and collaboration

**gives selection committees a broader view
of the candidates, changes 'what can be
talked about'**





Change scientific incentives and rewards for broader impact & open science

nature

International weekly journal of science

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Current Issue

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.

REDEFINE EXCELLENCE

Fix incentives to fix science

Rinze Benedictus and Frank Miedema

An obsession with metrics pervades science. Our institution, the University Medical Center Utrecht in the Netherlands, is not exempt. On our website, we proudly declare that we

publish about 2,500 peer-reviewed scientific publications per year, with higher than average citation rates.

A few years ago, an evaluation committee spent hours discussing which of several faculty members to promote, only to settle on the two who had already been awarded particularly prestigious grants. Meanwhile, faculty members who spent time crafting policy advice had a hard time explaining how this added to their scientific output, even when it affected clinical decisions across the country.

Publications that directly influenced patient care were weighted no higher in evaluations than any other paper, and ▶

“Are we making a cure or a career?”

