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Journal Club



The Scientific Record

The basis for:

Current and future research
(including clinical trials)

Public policy
(medical, environmental, etc)

Healthcare



Johannes Kepler 1627

The Scientific Record

The basis for:

Current and future research
(including clinical trials)

Public policy
(medical, environmental, etc)

Healthcare

The Poldermans case

“...European Society of Cardiology guideline recommending the liberal use of beta-blockers [...] was partly based on unreliable research.”

Forbes / Pharma & Healthcare

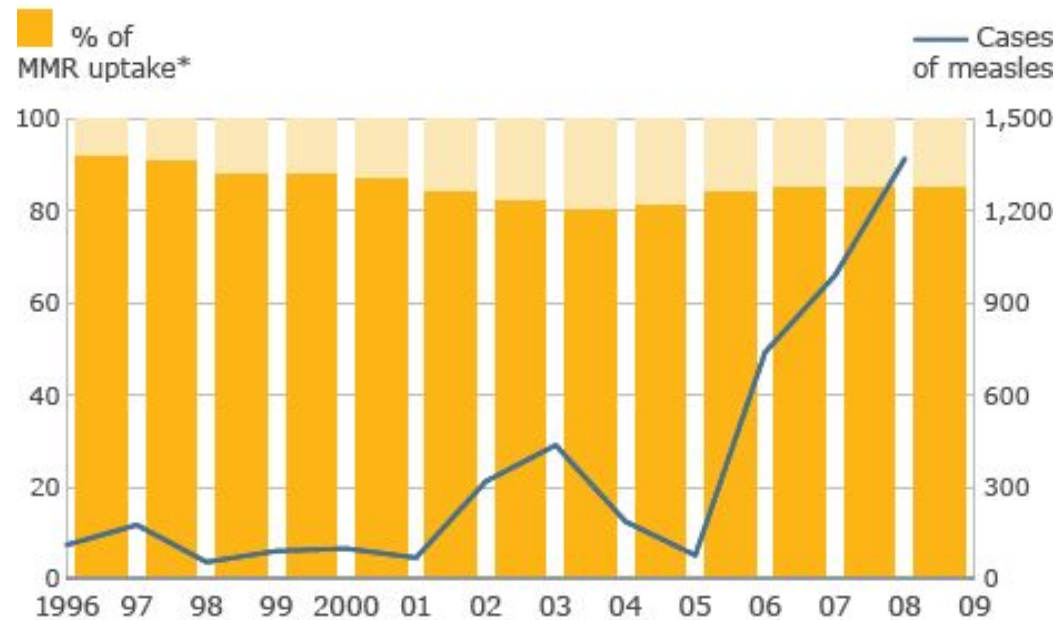
JAN 15, 2014 @ 12:37 PM 45,237 VIEWS

Medicine Or Mass Murder? Guideline Based on Discredited Research May Have Caused 800,000 Deaths In Europe Over The Last 5 Years

The Wakefield Case

- Falsified vaccination-autism claims
- Measles epidemics

MMR and measles



*figures relate to financial years 1996/97, 1997/98 etc

Source: HPA



Published



Retracted

“Fifty-three papers were deemed ‘landmark’ studies [...] scientific findings were confirmed in only 6 (11%) cases.”

-Amgen USA

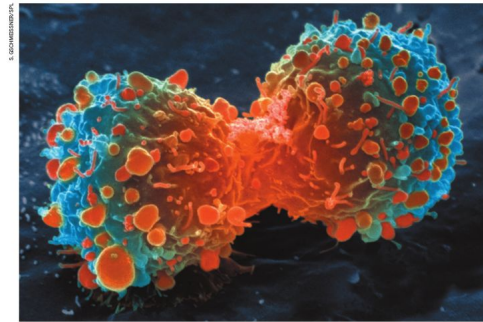
COMMENT

FROM INFLUENZA Shift expertise to track mutations where they emerge **p.534**

EARTH SYSTEMS Past climates give valuable clues to future warming **p.537**

BEYOND SCIENCE Descartes' lost letter tracked using Google **p.548**

BUTYRN Why the Vale and an elusive stress hormone **p.542**



Many landmark findings in preclinical oncology research are not reproducible, in part because of inadequate cell lines and animal models.

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.

Efforts over the past decade to characterize the genetic alterations in human cancers have led to a better understanding of molecular drivers of this complex set of diseases. Although we in the cancer field hoped that this would lead to more effective drugs, historically, our ability to translate cancer research to clinical success has been remarkably low. Sadly, clinical

trials in oncology have the highest failure rate compared with other therapeutic areas. Given the high unmet need in oncology, it is understandable that barriers to clinical development may be lower than for other disease areas, and a larger number of drugs with suboptimal preclinical validation will enter oncology trials. However, this low success rate is not sustainable or acceptable, and

investigators must reassess their approach to translating discovery research into greater clinical success and impact.

Many factors are responsible for the high failure rate, notwithstanding the inherently difficult nature of this disease. Certainly, the limitations of preclinical tools such as inadequate cancer-cell-line and mouse models make it difficult for even

29 MARCH 2012 | VOL 483 | NATURE | 531
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Nature 2012

In 67 projects only 33% of published preclinical studies could be validated to the point at which projects could continue.

-Bayer HealthCare
Germany

CORRESPONDENCE

Believe it or not: how much can we rely on published data on potential drug targets?

Florian Prinz, Thomas Schlange and Khusru Asadullah

Nature Rev Drug Discovery 2011

“100 experimental and correlational studies published in three psychology journals.

39% of effects were subjectively rated to have replicated the original result”



Open Science Framework

RESEARCH ARTICLE SUMMARY

PSYCHOLOGY

Estimating the reproducibility of psychological science

Open Science Collaboration*

Science 2015

“...the complex system for ensuring the reproducibility of biomedical research is failing and is in need of restructuring.”

NATURE | COMMENT

Policy: NIH plans to enhance reproducibility

[Francis S. Collins](#) & [Lawrence A. Tabak](#)

27 January 2014

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.

Nature 2014

Pressure to Publish

“best” journals = career success
(e.g. jobs, funding, promotions, etc.)

Potentially “high-impact” research
at expense of careful work

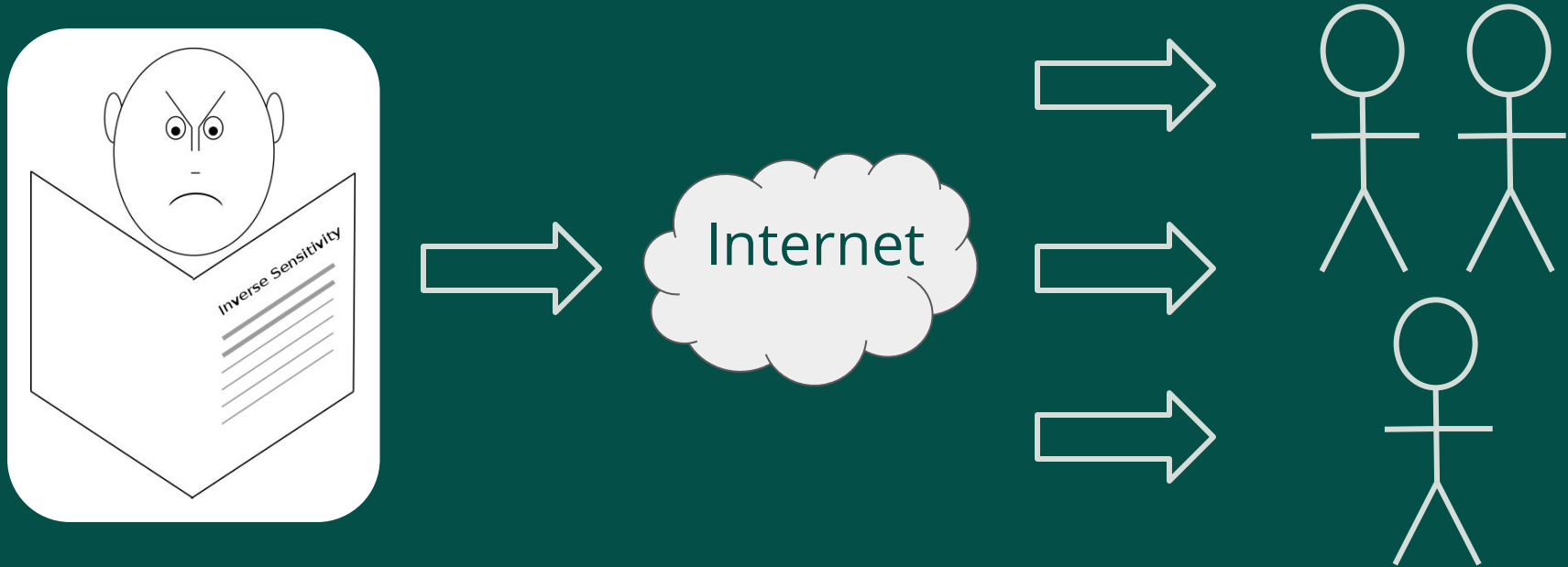


**Conflicts of interest
impede correcting the
scientific record**

Authors / Journals / Institutions

"It is difficult to get a man to understand something, when his salary depends upon his not understanding it!" - Upton Sinclair

Bypass conflicts of interest

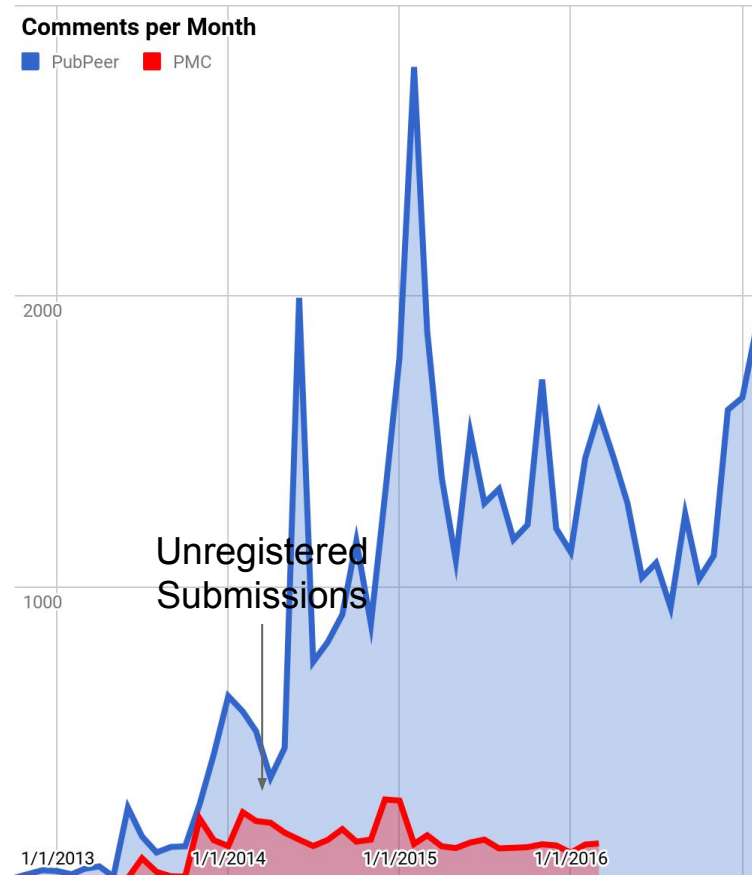


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report



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Another anti-vaxxer

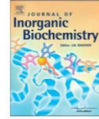
- Published September 5th
- First PubPeer comment on September 20th
- Retracted October 10th



Contents lists available at ScienceDirect

Journal of Inorganic Biochemistry

journal homepage: www.elsevier.com/locate/jinorgbio



Subcutaneous injections of aluminum at vaccine adjuvant levels activate innate immune genes in mouse brain that are homologous with biomarkers of autism

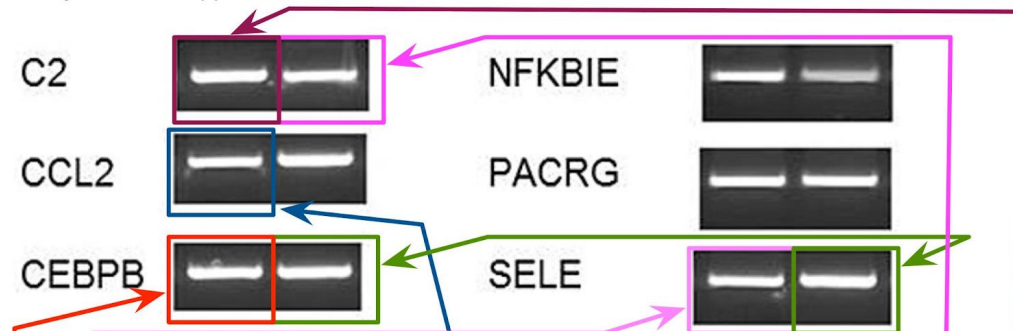


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Journal of Inorganic Biochemistry

Volume 177, December 2017, Pages 39-54



Subcutaneous injections of aluminum at vaccine adjuvant levels activate innate immune genes in mouse brain that are homologous with biomarkers of autism

Dan Li ^a, Lucija Tomljenovic ^a, Yongling Li ^a, Christopher A. Shaw ^{a, b, c}

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<https://doi.org/10.1016/j.jinorgbio.2017.08.035>



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Highlights

- Mechanisms underlying aluminum adjuvant neurotoxicity have

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Self-control relies on glucose as a limited energy source: willpower is more than a muscle. | PubMed

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1. [Meta-analysis of pharmacogenetic interactions in amyotrophic lateral sclerosis clinical trials.](#)
van Eijk RPA, Jones AR, Sproviero W, Shatunov A, Shaw PJ, Leigh PN, Young CA, Shaw CE, Mora G, Mandrioli J, Borghero G, Volanti P, Diekstra FP, van Rheenen W, Verstraete E, Eijkemans MJC, Veldink JH, Chio A, Al-Chalabi A, van den Berg LH, van Es MA; For UKMND-LiCALS and LITALS Study Group.
Neurology. 2017 Oct 4. pii: 10.1212/WNL.0000000000004606. doi: 10.1212/WNL.0000000000004606. [Epub ahead of print]
PMID: 28978660
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2. [C9orf72 poly GA RAN-translated protein plays a key role in Amyotrophic Lateral Sclerosis via aggregation and toxicity.](#)
Lee YB, Baskaran P, Gomez J, Chen HJ, Nishimura A, Smith B, Troakes C, Adachi Y, Stepto A, Petrucelli L, Gallo JM, Hirth F, Rogelj B, Guthrie S, Shaw CE.
Hum Mol Genet. 2017 Sep 13. doi: 10.1093/hmg/ddx350. [Epub ahead of print]
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3. [Letter to the editor.](#)
Crépeaux G, Exley C, Shaw CA, Gherardi RK.
Toxicology. 2017 Sep 1:390-159. doi: 10.1016/j.tox.2017.09.010. Epub 2017 Sep 18. No abstract available.
2 comments on PubPeer (by: Hoya Camphorifolia, Anolis Jacare)

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4. [Subcutaneous injections of aluminum at vaccine adjuvant levels activate innate immune genes in mouse brain that are homologous with biomarkers of autism.](#)
Li D, Tomljenovic L, Li Y, Shaw CA.
J Inorg Biochem. 2017 Sep 5:177-39-54. doi: 10.1016/j.jinorgbio.2017.08.035. [Epub ahead of print]
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5. [Skeletal trauma reflects hunting behaviour in extinct sabre-tooth cats and dire wolves.](#)
Brown C, Balisi M, Shaw CA, Van Valkenburgh B.

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Theoretical neuroscience

Theory of spike initiation, sensory systems, autonomous behavior, epistemology

Editor Romain Brette

66
Sources



This journal highlights a number of papers that the editor personally finds interesting for computational or theoretical neuroscience, in particular but not limited to spike initiation, sensory systems, autonomous behavior and epistemology of neuroscience. These are not necessarily theoretical papers, but somehow relevant to theoretical neuroscientists (or more accurately, to the editor).

Published

Can robots make good models of biological behaviour? (2001-12)

B Webb

<http://www.ncbi.nlm.nih.gov/pubmed/12412325>

Jun 28, 2018 - This is an essay about the epistemology of biorobotics, which consists in making robotic models of animals with the goal of understanding biology (as opposed to solving robotics problems). It is a mine of references about the epistemology of modelling, and in particular what we mea...

What Might Cognition Be, If Not Computation? (1995)

Tim Van Gelder

<http://dx.doi.org/10.2307/2941061>

Jun 22, 2018 - Because we are so used to think of the brain as a computer, some physical thing implementing computations (hence the name of the field « computational neuroscience »), a typical reaction to criticisms of that view is : « what else could it be, if not computation ? ». The ambition o...

Causal Circuit Explanations of Behavior: Are Necessity and Sufficiency Necessary and Sufficient? (2017)

Alex Gomez-Marín

http://dx.doi.org/10.1007/978-3-319-57363-2_11

Jun 21, 2018 - This epistemological paper makes a number of important points about what constitutes an explanation in neuroscience, with many interesting pointers to relevant ideas in philosophy and psychology. A strong tendency in current literature is to identify neural circuits that are « nece...

'Necessary and sufficient' in biology is not necessarily necessary - confusions and erroneous conclusions resulting from misapplied logic in the field of biology, especially neuroscience

Motojiro Yoshihara, Motoyuki Yoshihara

<http://dx.doi.org/10.1080/01677063.2018.1466443>

May 20, 2018 - This epistemological paper criticizes the lack of rigor in the use of the words "necessary



Subjects

Neuroscience (miscellaneous)

Behavioral Neuroscience

Cellular and Molecular Neuroscience

Cognitive Neuroscience

Developmental Neuroscience

Sensory Systems

Multidisciplinary

Computational

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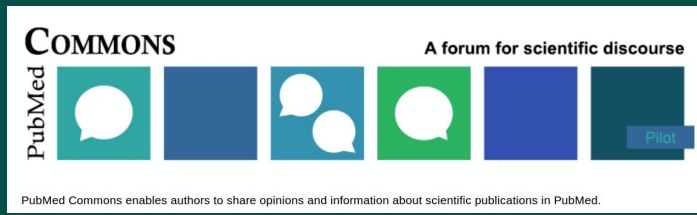


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- Put focus on the data
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