

Bibliometrics & Research Impact Measures

Show your Research Impact using Citation Analysis

Christina Hwang
August 15, 2016



UNIVERSITY OF ALBERTA
LIBRARIES

AGENDA

1. Background

1. Author-level metrics

2. Journal-level metrics

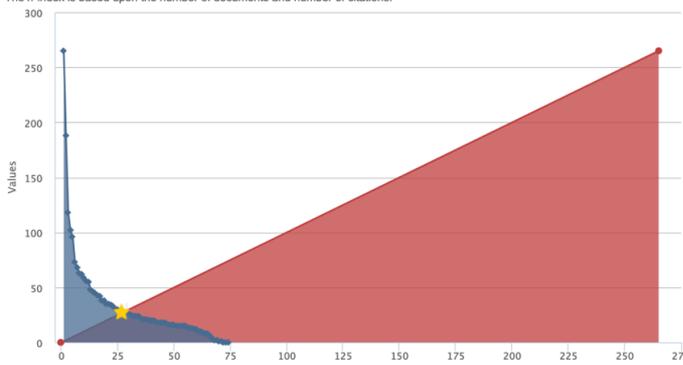
3. Article/Data-level metrics



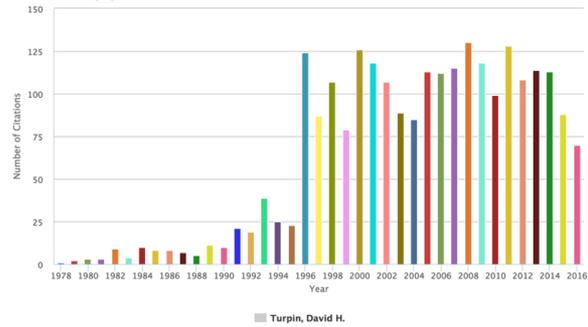
HARVARD
UNIVERSITY



This author's *h*-index is 27
The *h*-index is based upon the number of documents and number of citations.



Citations by year



Note: Scopus is in progress of updating pre-1996 cited references going back to 1970. Pre-1996 citation counts might increase over time.

21 September 2000

International weekly journal of science

nature

\$10.00

www.nature.com

Structure of the 30S ribosomal subunit



Taiwan
Regional
Insight

Metallurgy



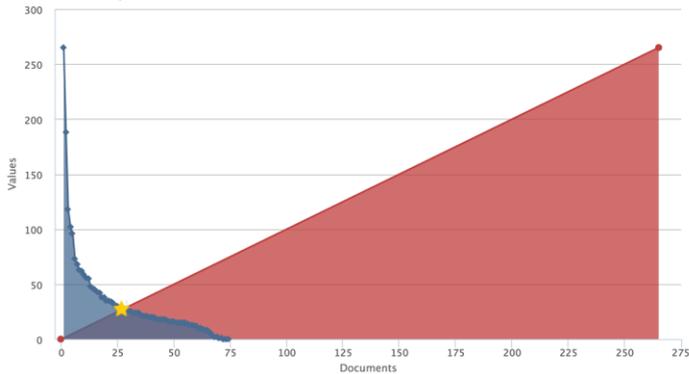


HARVARD UNIVERSITY



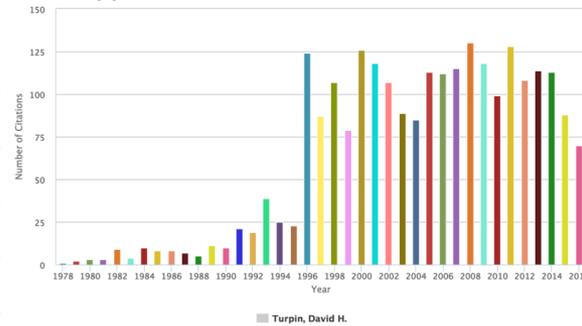
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Citations by year



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21 September 2000 International weekly journal of science

nature

\$10.00 www.nature.com

Structure of the 30S ribosomal subunit

Taiwan Regional Insight

Metalurgy
Electrochemical production of titanium

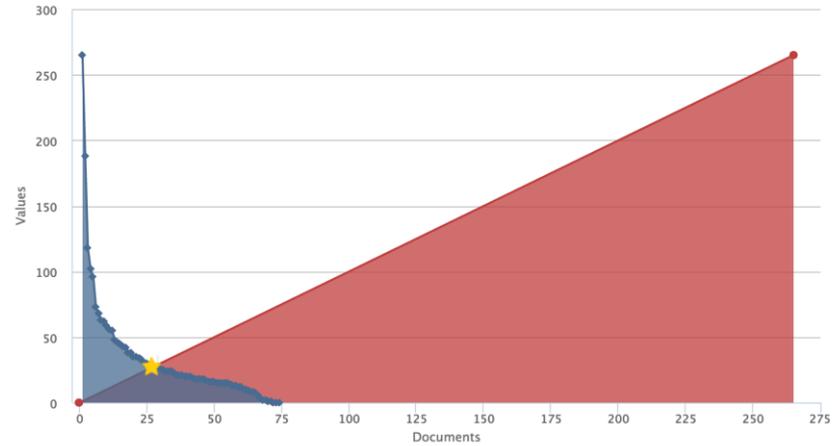
Functional genomics
Chemists join the action

Postdocs
A good career move?

new journals review

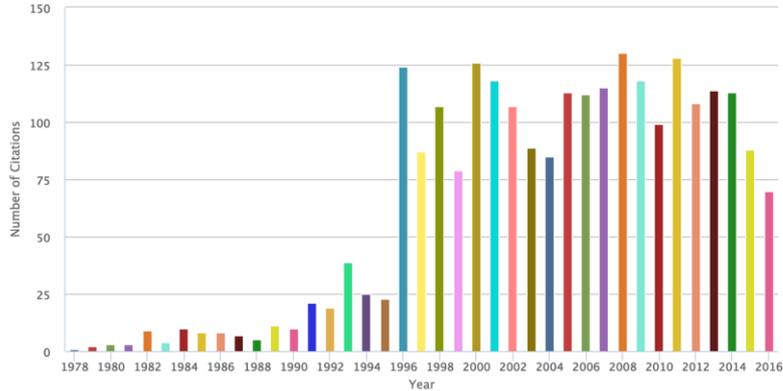
This author's *h*-index is 27

The *h*-index is based upon the number of documents and number of citations.



Note: Scopus is in progress of updating pre-1996 cited references going back to 1970. The *h*-index might increase over time.

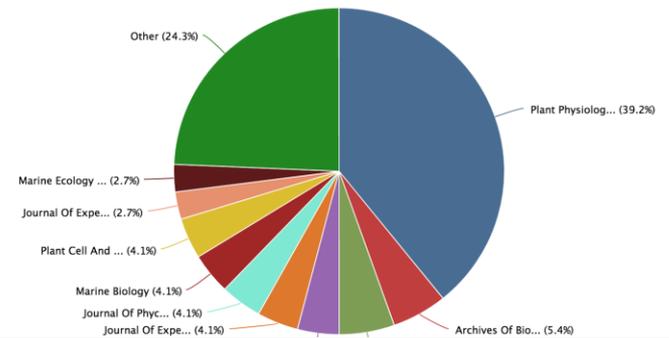
Citations by year



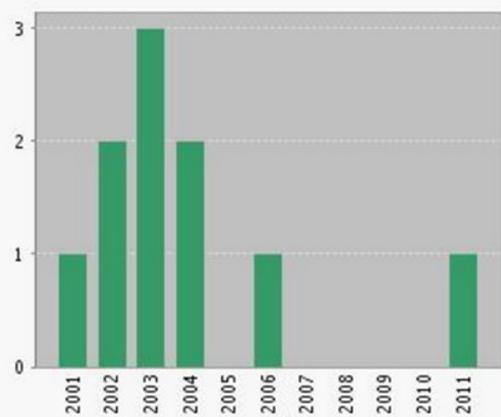
Turpin, David H.

Note: Scopus is in progress of updating pre-1996 cited references going back to 1970. Pre-1996 citation counts might increase over time.

Documents by source

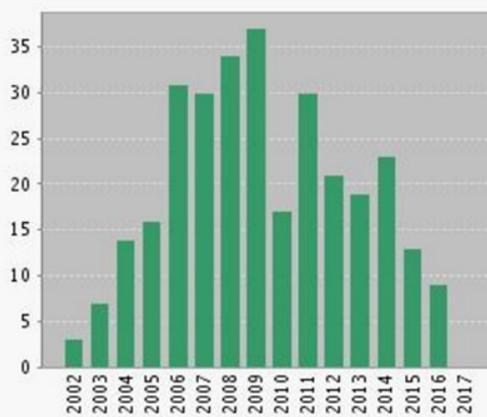


Published Items in Each Year



The latest 20 years are displayed.

Citations in Each Year



The latest 20 years are displayed.

Results found: 10

Sum of the Times Cited [?] : 304

Sum of Times Cited without self-citations [?] : 296

Citing Articles [?] : 258

Citing Articles without self-citations [?] : 253

Average Citations per Item [?] : 30.40

h-index [?] : 8









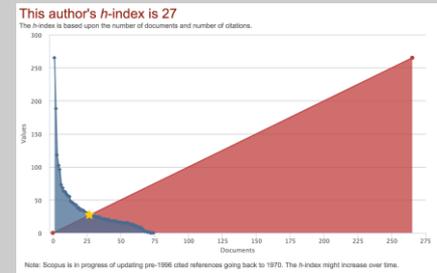
START

AUTHOR-Level



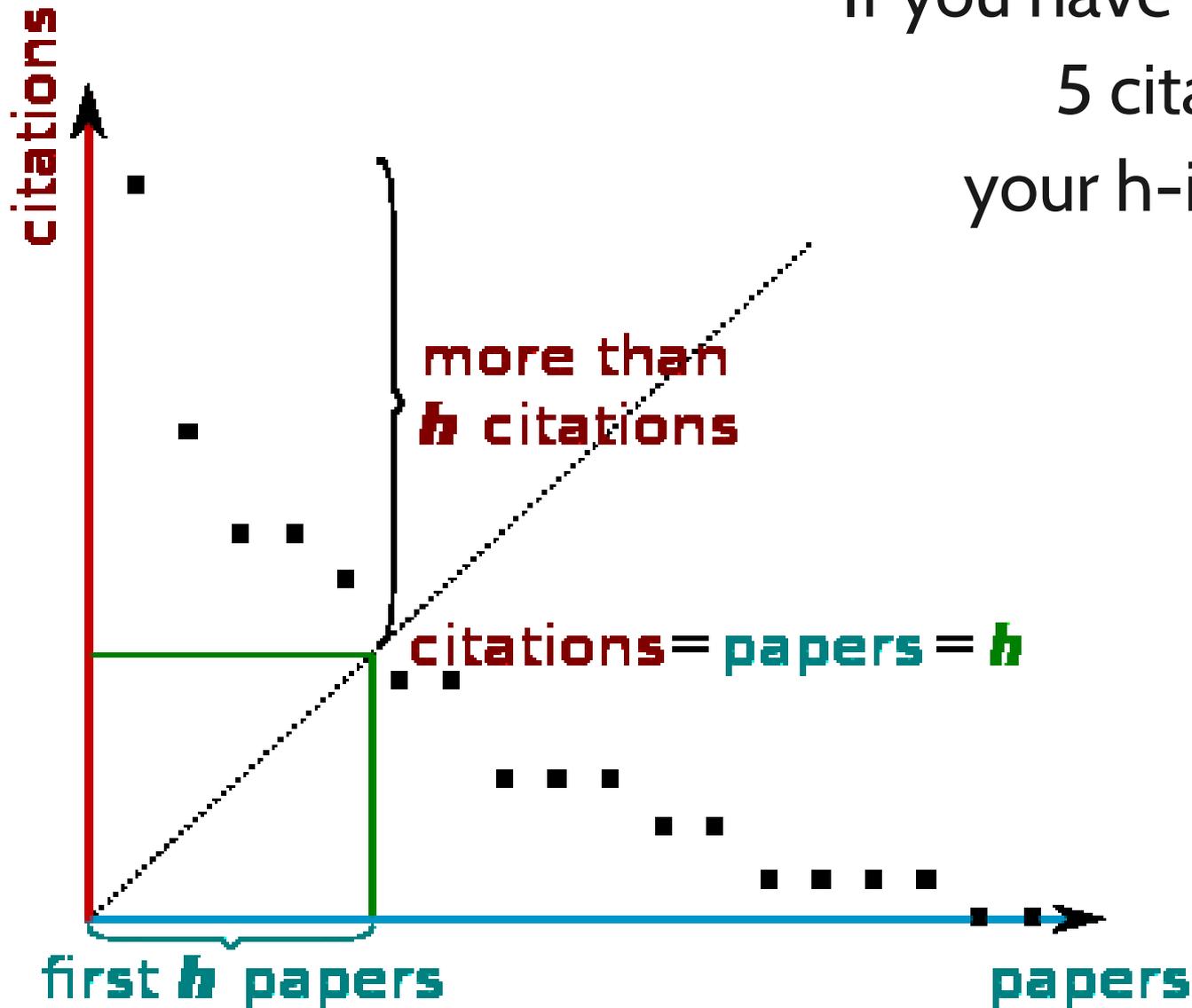
Author-level
Your impact or *h-index*.

How many articles/data did you publish?
How many times have you been cited?
What is the nature of these citations?



H-index

If you have 5 papers with
5 citations,
your h-index = 5.



Quantifying Output

$H = 1$ to 12

Assistant professor

$H = 12$

Associate professor
(tenure)

$H = 18$

Professor

$H = 45 +$

Membership National
Academy of Sciences

Hirsch interview -

http://www.sciencenews.org/view/generic/id/6824/title/Math_Trek_Rating_Researchers

Bibliometric Tools

Web of Science

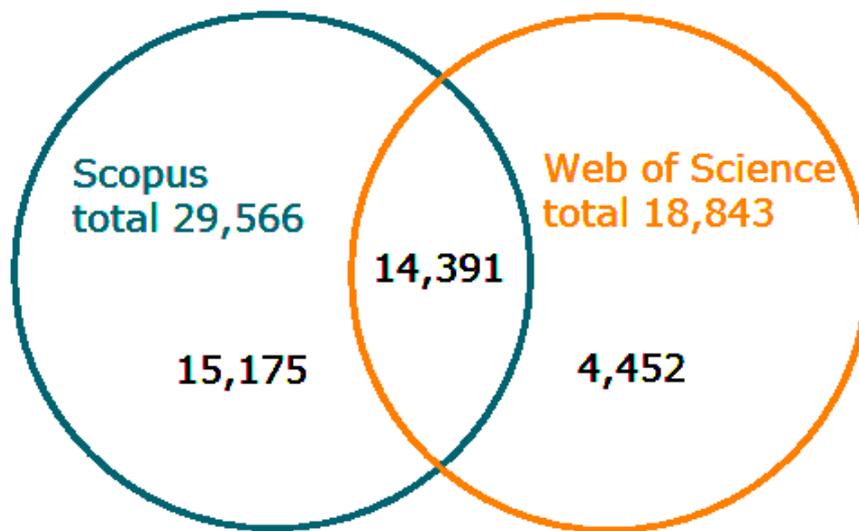
1900-current, +12 000 journals

Scopus

1996-current, +21 000 journals

Publish or Perish

Google Scholar



JISC-ADAT comparison, Scopus vs. Web of Science journal & conference proceedings - 2013 journals-only coverage Scopus=19,809 WoS=12,311

AUTHOR-Level: H-Index

WEB OF SCIENCE™



Search

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[Search History](#)

[Marked List](#)

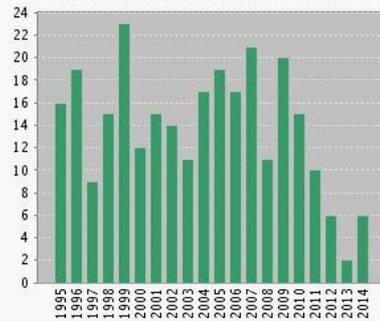
Citation Report: 494

(from Web of Science Core Collection)

You searched for: **DISTINCT AUTHOR SUMMARY: Babiuk, LA** ...[More](#)

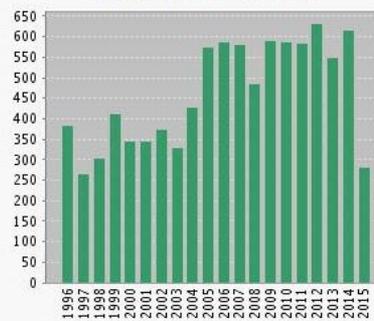
This report reflects citations to source items indexed within Web of Science Core Collection. Perform a Cited Reference Search to include citations to items not indexed within Web of Science Core Collection.

Published Items in Each Year



The latest 20 years are displayed.
[View a graph with all years.](#)

Citations in Each Year



The latest 20 years are displayed.
[View a graph with all years.](#)

Results found: 494

Sum of the Times Cited [?]: 13806

Sum of Times Cited without self-citations [?]: 11551

Citing Articles [?]: 8006

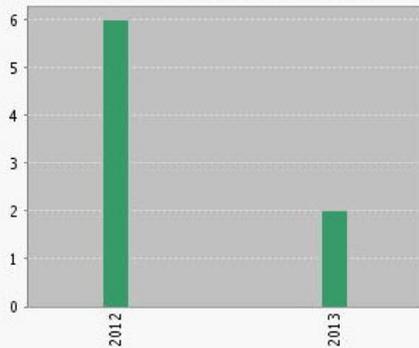
Citing Articles without self-citations [?]: 7571

Average Citations per Item [?]: 27.95

h-index [?]: 57

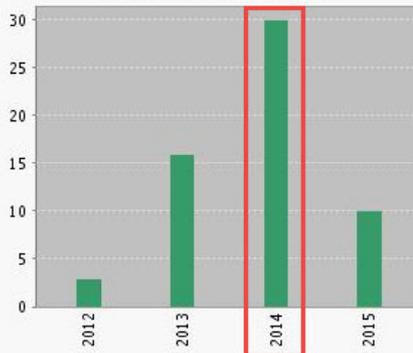
AUTHOR-Level: H-Index

Published Items in Each Year



The latest 20 years are displayed.

Citations in Each Year



The latest 20 years are displayed.

Results found: 8

Sum of the Times Cited [?]: 59

Sum of Times Cited without self-citations [?]: 58

Citing Articles [?]: 55

Citing Articles without self-citations [?]: 54

Average Citations per Item [?]: 7.38

h-index [?]: 4

Individual Impact Factor for 2014

Sort by: Times Cited -- highest to lowest

Page 1 of 1

$$30/8 = 3.75$$

cites in 2014 (30)
articles published in 2013 (2) & 2012 (6)

2012	2013	2014	2015	Total	Average Citations per Year
3	16	30	10	59	14.75

AUTHOR-Level: H-Index

Your (real) Impact Factor

$$\text{Impact Factor (corrected)} = \frac{\begin{array}{l} \# \text{ times your work is cited} \\ - \# \text{ citations that actually trash your work} \\ - \# \text{ times you cited yourself (nice try)} \\ - \# \text{ times you were cited just to pad the introduction section} \\ - \# \text{ citations the editor pressured the author to include to increase the journal's impact factor} \end{array}}{\begin{array}{l} \# \text{ original articles you've written} \\ + \# \text{ articles you were included in out of pity or politics} \\ + \# \text{ not-so-original articles you've} \\ \quad \text{~~written~~ copied and pasted} \end{array}}$$

JORGE CHAM © 2008
WWW.PHDCOMICS.COM

AUTHOR-Level: Benchmarking

- **Weight** of types of citation (review vs. empirical)
- **Number of authors** of a paper not accounted for
- Author placement in citation is not considered
- Differences between citations in fields not equal
- Bounded by total number of publication (**short career** are at a disadvantage (e.g. Einstein))
- No negative contextual considerations (fraudulent/**retracted** work)
- Books same as articles
- Benefits longer careers: A scientist who has been working in the field for 30 years will have a higher index than someone with 10 years.
- Can be used to compare scholars at similar points in their career who publish in the same discipline.





AUTHOR-Level: Your Name Matters

Harris, Jeffrey P.
23 Harris, Jeffery P.
Harris, Jeffrey P.
Harris, Jeffrey

153 Medicine ; Neuroscience ;
Biochemistry, Genetics and
Molecular Biology; ...

University of California, San Diego San Diego

United States

Harris, Jeffrey Richard W
24 Harris, Jeff
Harris, Jeffrey R.
Harris, Jeffrey

151 Medicine ; Earth and Planetary
Sciences ; Environmental
Science; ...

University of Alberta

Edmonton

Canada

Utility of level VI neck dissection in diagnostic hemithyroidectomies Vaz, J., Co  , D., Rizk, N., 2012 Journal of Otolaryngology - 0
Seikaly, H., Harris, J. Head and Neck Surgery

[Full Text](#)

[Get It!](#) 

Remote predictive mapping of bedrock geology using image
classification of Landsat and SPOT data, western Minto Inlier,
Victoria Island, Northwest Territories, Canada

Behnia, P., Harris, J.R.,
Rainbird, R.H., Williamson,
M.C., Sheshpari, M.

2012

International Journal of
Remote Sensing

1

[Full Text](#)

[Get It!](#) 



AUTHOR-Level: Your Name Matters

Get your name right & standardize your affiliation with [ORCID](#)



DISTINGUISH YOURSELF IN THREE EASY STEPS

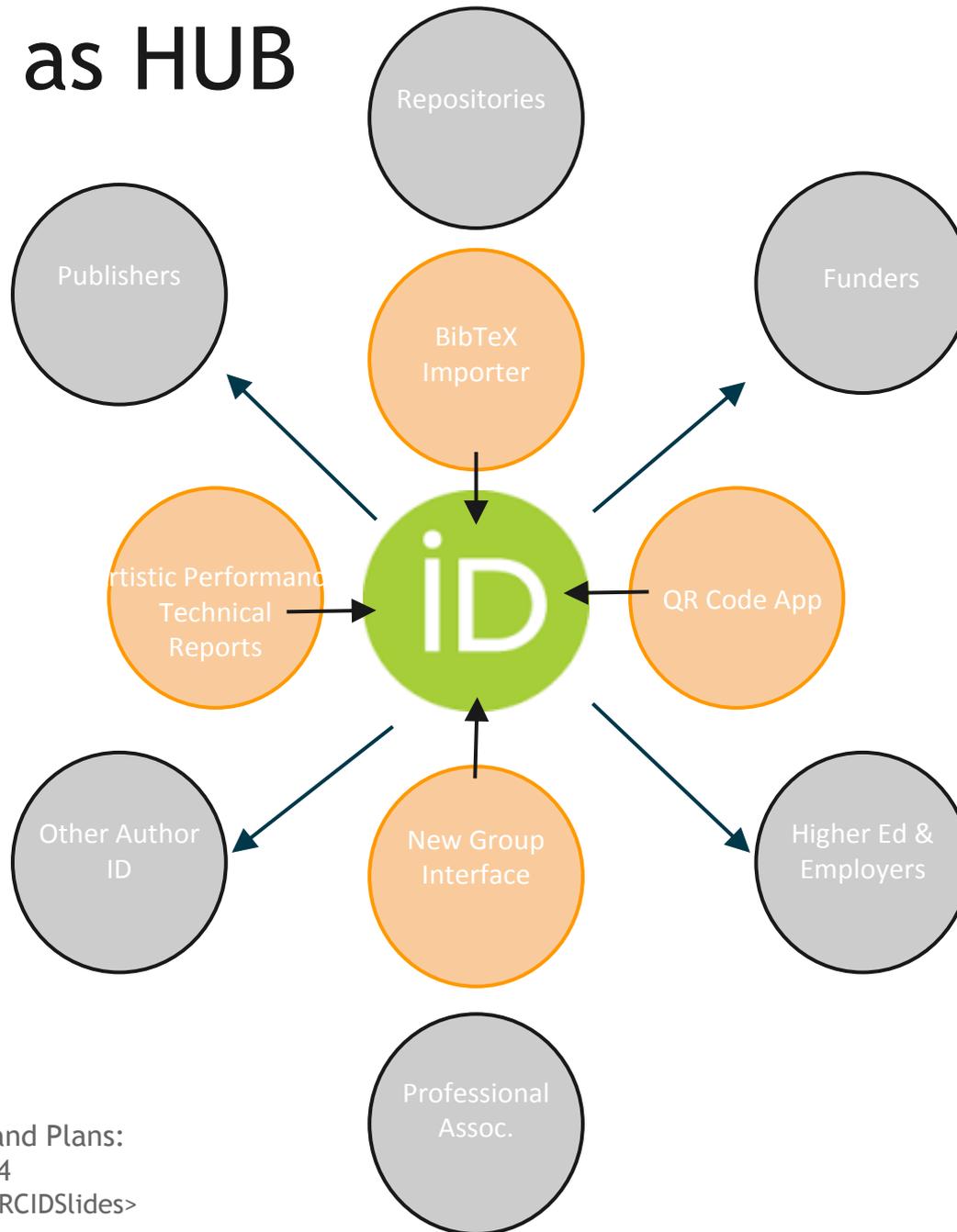
ORCID provides a persistent digital identifier that distinguishes you from every other researcher and, through integration in key research workflows such as manuscript and grant submission, supports automated linkages between you and your professional activities ensuring that your work is recognized. [Find out more.](#)

1 REGISTER Get your unique ORCID identifier [Register now!](#)
Registration takes 30 seconds.

2 ADD YOUR INFO Enhance your ORCID record with your professional information and link to your other identifiers (such as Scopus or ResearcherID or LinkedIn).

3 USE YOUR ORCID ID Include your ORCID identifier on your Webpage, when you submit publications, apply for grants, and in any research workflow to ensure you get credit for your work.

ORCID iD as HUB



Create an ORCID iD
Import your citations
with BibTeX.
Include any/all of
your scholarly works,
eg invited speaker,
patents, clinical
guidelines, technical
reports etc

ORCID is being
endorsed by
publishers,
repositories, funding
agencies, universities,
professional assoc.,
other author
identifying systems



JOURNAL-Level

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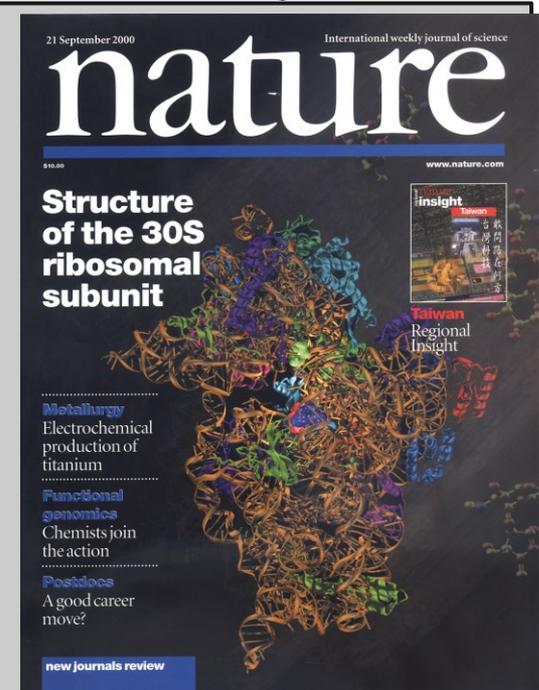


Journal-level

How many publications?

What types of journals?

- International
- Disciplines



JOURNAL-Level: Impact Factor Tools

Thomson-Reuters: [Web of Science](#)/JCR (Journal Citation Report)

JIF Journal Impact Factors

$$\text{Impact Factor 2014 JCR} = \frac{\text{number of citations in 2013 of articles published in 2011 - 2012}}{\text{number of articles published in the journal in 2011 - 2012}}$$

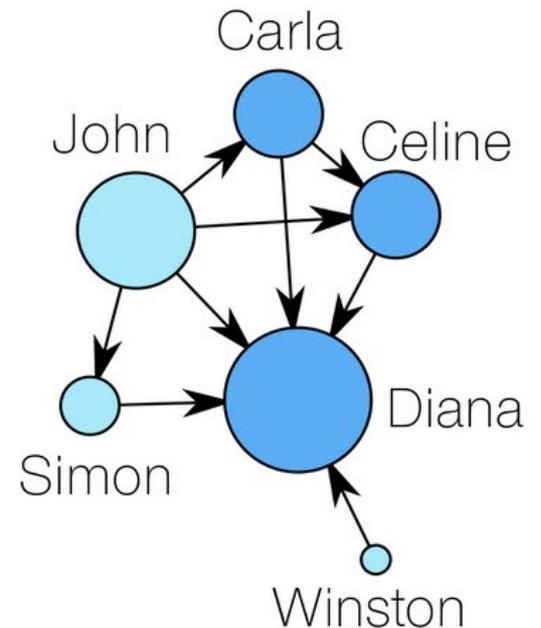
JOURNAL-Level: Impact Factor Tools

Elsevier: [Scopus](#)

SJR SCImago Journal Rank

Nature 1.50 = 1.5% *total influence in network* (2014)

[Google Scholar](#) Metrics



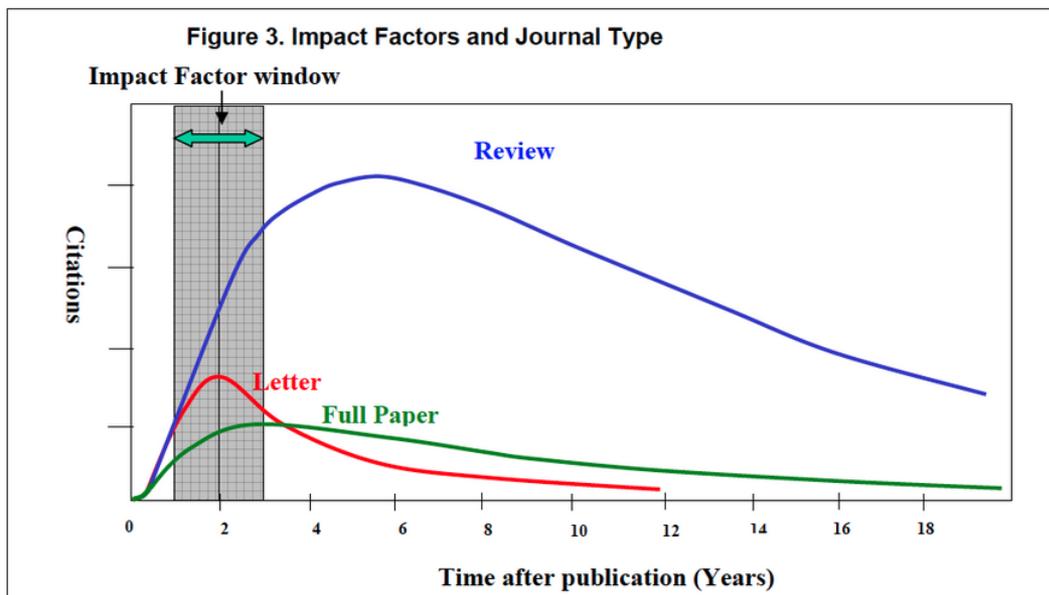
Some Important Truths About Citations

Differences within fields/discipline (citation density, publishing patterns, etc.)

New or niche journals

Database coverage of your field

Review journals are cited more often in all fields





Metrics: journal's impact factor skewed by a single paper

Jordan D. Dimitrov, Srinivasa V. Kaveri & Jagadeesh Bayry

Affiliations

Nature **466**, 179 (08 July 2010) | doi:10.1038/466179b

Published online 07 July 2010



PDF



Citation



Reprints



Rights & permissions



Article metrics

We have discovered a striking example of how the use of impact factors to judge journal performance can bias the whole evaluation system (*Nature* **465**, 845; 2010, *Nature* **465**, 864–866; 2010, *Nature* **465**, 870–872; 2010).

A surprise in the 'all journals' category of Thomson Reuters' impact factors for 2009 is the meteoric rise to second position of the journal *Acta Crystallographica A*. That journal's impact factor, which has not exceeded 2.38 in the past four years, has hit a whopping 49.93. Such

THE NEW WEB OF KNOWLEDGE : FAQ

UPDATED AUGUST 26, 2011

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UPDATE: RECORD CORRECTIONS COMPLETE

[SKIP TO QUESTIONS BELOW](#) ▾

Since the release of the new version of *Web of Knowledge*, users have noticed differences in search results and citation counts between the previous and new version.

We identified errors affecting a subset of records that were contributing to these differences. We have now corrected these records, and those changes should be reflected on the platform.

We take full responsibility for these errors and sincerely apologize to all those who were inconvenienced while we were working to rectify the problems.

We appreciate during this time of transition that our user community has remained very engaged, providing insightful comments and asking important questions about the differences they have observed. We've pulled together some of the frequently asked questions on the subject of differing citation counts and results sets and published detailed explanations to those below. However, we realize that each user's query is unique so if your particular question is not answered, we encourage you to [contact us](#) directly.

Why recent product enhancements impact results

PR

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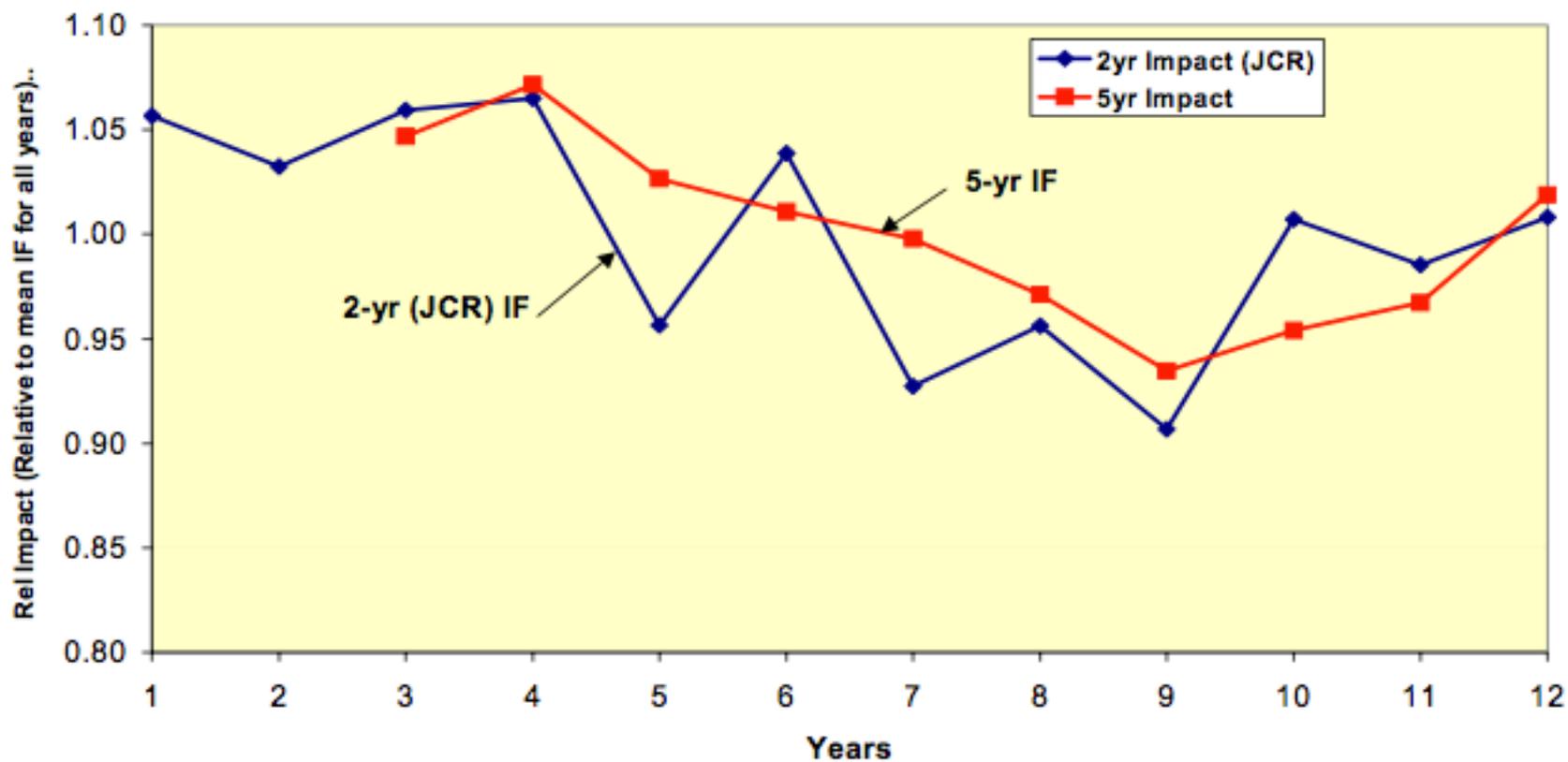
SCIENTIFIC AMERICAN™

□ <http://www.scientificamerican.com/article.cfm?id=top-science-journal>

Doh! Top Science Journal Retractions of 2011

- Each year hundreds of peer-reviewed scientific articles are retracted. Most involve no blatant malfeasance; the authors themselves often detect errors and retract the paper. Some retractions, however, entail plagiarism, false authorship or cooked data
- By [Christopher Wanjek](#) and [LiveScience Bad Science Columnist](#) | December 27, 2011 |

Figure 5. Impact Factor Measurement Window Fluctuations
Ave 200+ Chemistry Journals



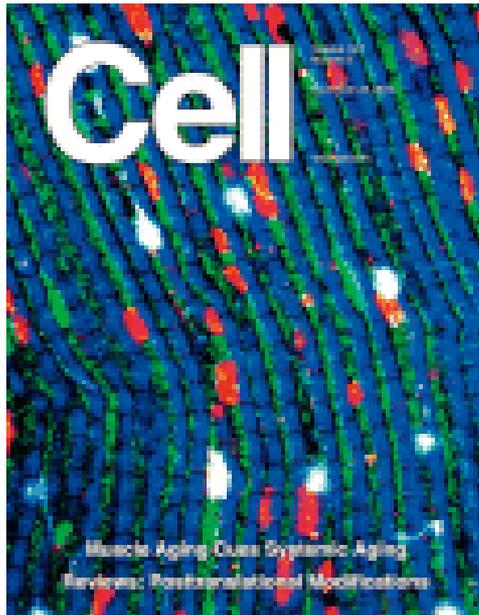
JCR impact factor has moved in recent years from an obscure bibliometric indicator to become the **chief quantitative measure** of the quality of a journal, its research papers, the researchers who wrote those papers, and even the institution they work in.

misappropriated metrics have been used to assess individual researchers, institutions, and departments.

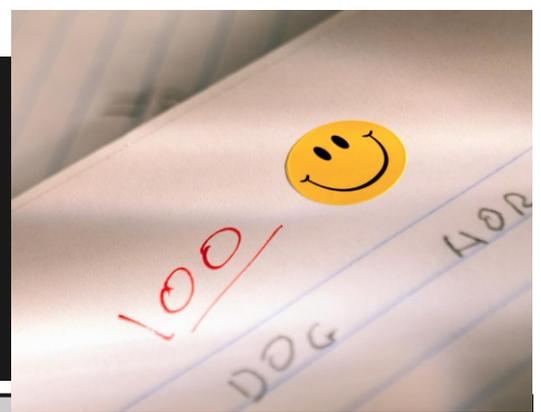
31.152



your work?



ARTICLE/DATA-Level

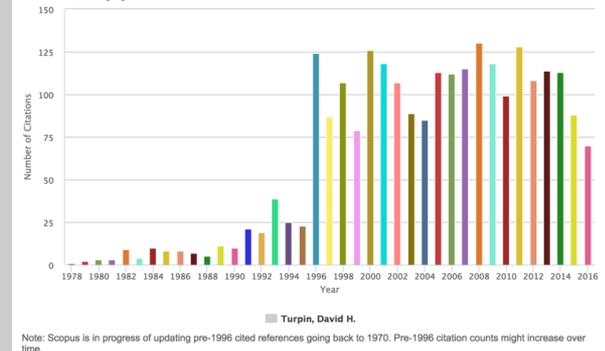


Article/Data-level

How many citations?

- From Where?
- By Who?
- Why?

Citations by year





Search

Alerts

Lists

My Scopus

Back to results | 1 of 74 Next >

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ANNU.REV.PLANT PHYSIOL.PLANT MOL.BIOL.

Volume 45, 1994, Pages 577-607

Integration of carbon and nitrogen metabolism in plant and algal cells (Review)

Huppe, H.C., Turpin, D.H.

Queen's Univ., Dept Biol., Kingston K7L 3N6, Canada

Cited by 265 documents

Effects of nitrogen and phosphorus enrichment on growth and photosynthetic assimilation of carbon in a green tide-forming species (*Ulva prolifera*) in the Yellow Sea

Li, S. , Yu, K. , Huo, Y. (2016) Hydrobiologia

Enhanced nutrient removal from municipal wastewater assisted by mixotrophic microalgal cultivation using glycerol

Gupta, P.L. , Choi, H.J. , Lee, S.-M. (2016) Environmental Science and Pollution Research

Some Important Truths About Citations

Citations are not always received for valid reasons

Time favours citations

Review studies are cited more often in all fields

Sleeping Beauties

The research may be too recent and not widely known, like emerging fields. There is no guarantee that every paper which ought to be cited will be cited. An uncited author may be ahead of his peers. Mendel and his genetics work went unappreciated for years.

Math vs. Medicine

Citation rate of a few prolific authors citing each other, including self citations



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ELSEVIER

Personality and Individual Differences

Volume 83, September 2015, Pages 198–201



Short Communication

Be open: Mindfulness predicts reduced motivated perception

Kathryn C. Adair  , Barbara L. Fredrickson 

[+ Show more](#)

[doi:10.1016/j.paid.2015.04.008](https://doi.org/10.1016/j.paid.2015.04.008)

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ERA

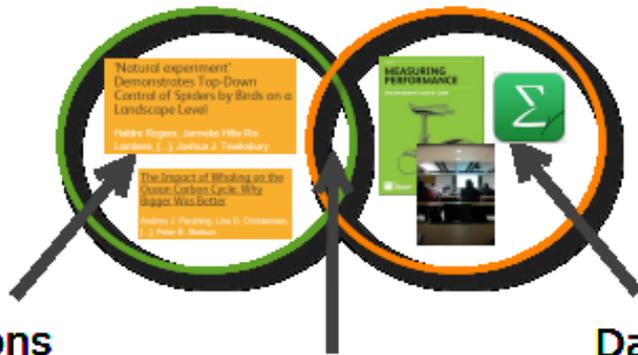
education & research archive



The
Dataverse
NetworkTM
Project



Article Level Alternative



Citations

- Downloads
- Mendeley readers
- Facebook likes
- Citeulike
- F1000 score
- Wikipedia citations
- Media/news stories
- Time spent reading
- Annotation density
- Readership demographics

Data sets

- Data reuse/repurpose
- Data downloads
- Data citation
- Software
- App development
- Reviewing
- Tools built
- Grant revenue
- PhDs supervised
- Course materials
- Patents
- Standards
- Government documents

Journal level



Impact factor

- Title
- Editorial board
- H-index (h5 index)
- Eigenfactor

Adapted from: Holmes, K. (2014). Transforming Assessment: Alternative Metrics and Other Trends.

Count everything

Alternative metrics

Altmetric tools measure

Tweets, blog mentions,
Facebook posts,
presentations, media &
news articles, shared
citations, data uploads





[J Med Internet Res](#). 2011 Oct-Dec; 13(4): e123.

PMCID: PMC3278109

Published online 2011 Dec 16. doi: [10.2196/jmir.2012](https://doi.org/10.2196/jmir.2012)

Can Tweets Predict Citations? Metrics of Social Impact Based on Twitter and Correlation with Traditional Metrics of Scientific Impact

Monitoring Editor: Anne Federer

Reviewed by Mike Thelwall and Jason Priem

[Gunther Eysenbach](#), MD, MPH, FACMI^{1,2,3}

¹University Health Network, Centre for Global eHealth Innovation & Techna Institute, Toronto, ON, Canada

²Institute for Health Policy, Management, and Evaluation, University of Toronto, Toronto, ON, Canada

³JMIR Publications Inc., Toronto, ON, Canada

Gunther Eysenbach, University Health Network, Centre for Global eHealth Innovation & Techna Institute, 190 Elizabeth St, Toronto, ON, M4L3Y7, Canada, Phone: 1 416 7866970, Fax: 1 416 340 3595, Email: geysenba@uhnres.utoronto.ca.

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Altmetric Tools



Carl Boettiger



Theoretical Ecologist. Bio at: <http://carlboettiger.info>

Open Access



UC Berkeley



Overview

Map

Twitter fans

articles (15)

datasets (16)

figures (1)

posters (3)

slide decks (17)

software products (77)

theses (4)

Selected works

Tippling points: From patterns to predictions.

(2013) [Boettiger](#), Hastings. *Nature*

read fulltext

highly cited highly saved highly discussed highly viewed

Lab Notebook, 2012

(2013) *figshare*.

highly viewed +11 highly discussed highly viewed

RNeXML

(2013) *GitHub*. Implementing semantically rich NeXML I/O in R

view readme

highly recommended highly cited highly viewed cited

Key profile metrics

1.6k saves across
 15 articles

148 forks across
 77 software products

2.8k views across
 15 articles

385 tweets across
 15 articles

5.6k views across
 77 software products

383 stars across
 77 software products



Carl Boettiger

Lab Notebook, 2012

2013 *figshare*.

☰ Summary

📄 Full text

📊 Metrics (4)

🌐 Map (0)

🐦 Tweets (9)

🌐 **1167** figshare views ↗ +11

99th percentile on Impactstory

🌐 **54** figshare downloads ↗

99th percentile on Impactstory

📄 **540** Impactstory views ↗

99th percentile on Impactstory

🐦 **9** Twitter tweets ↗

98th percentile on Impactstory

👤 Overview

🌐 Map

🐦 Twitter fans

📄 articles (15)

📊 datasets (16)

📊 figures (1)

🖼️ posters (3)

📺 slide decks (17)

📄 software products (77)

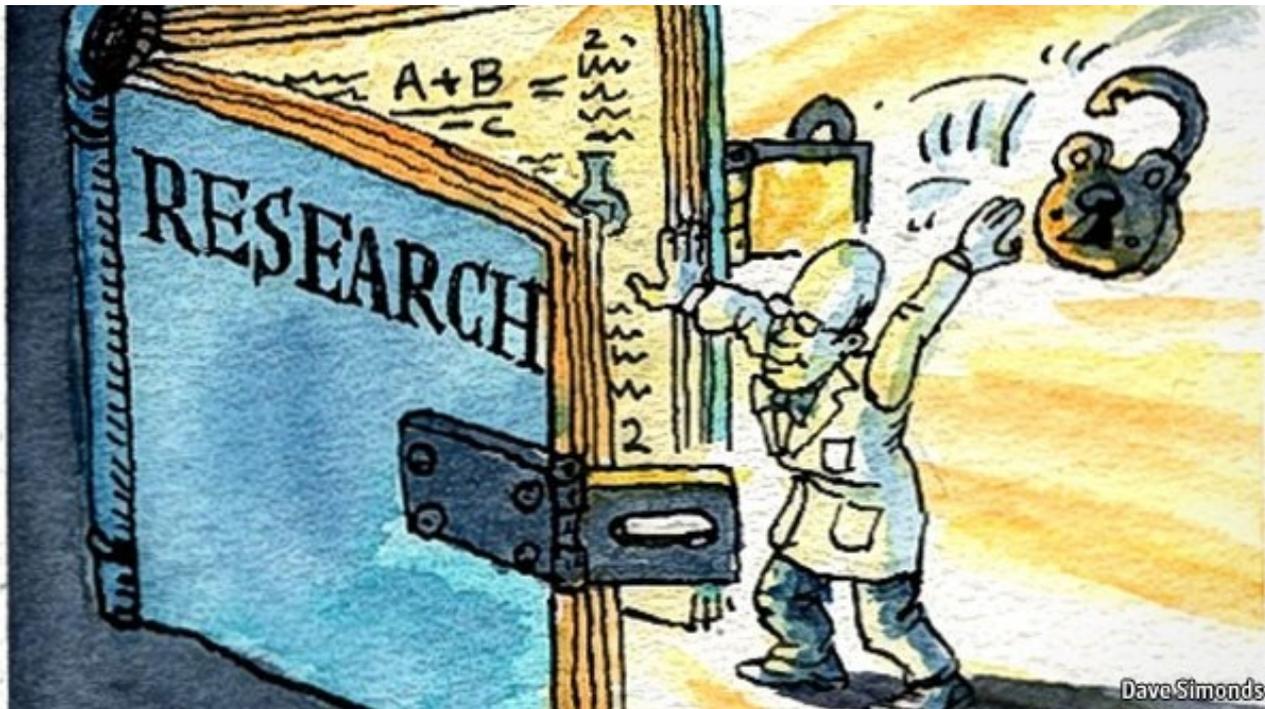
☰ theses (4)



A black metal gate with a sign that reads "NO ACCESS". The sign is rectangular with a white border and black background, featuring the text in white, bold, serif capital letters. The gate is made of black metal bars, and the background is a blurred green field.

NO ACCESS

OPEN ACCESS



Email Alerts

1. Follow person
2. Article
3. Journal
4. Subject
5. Theses

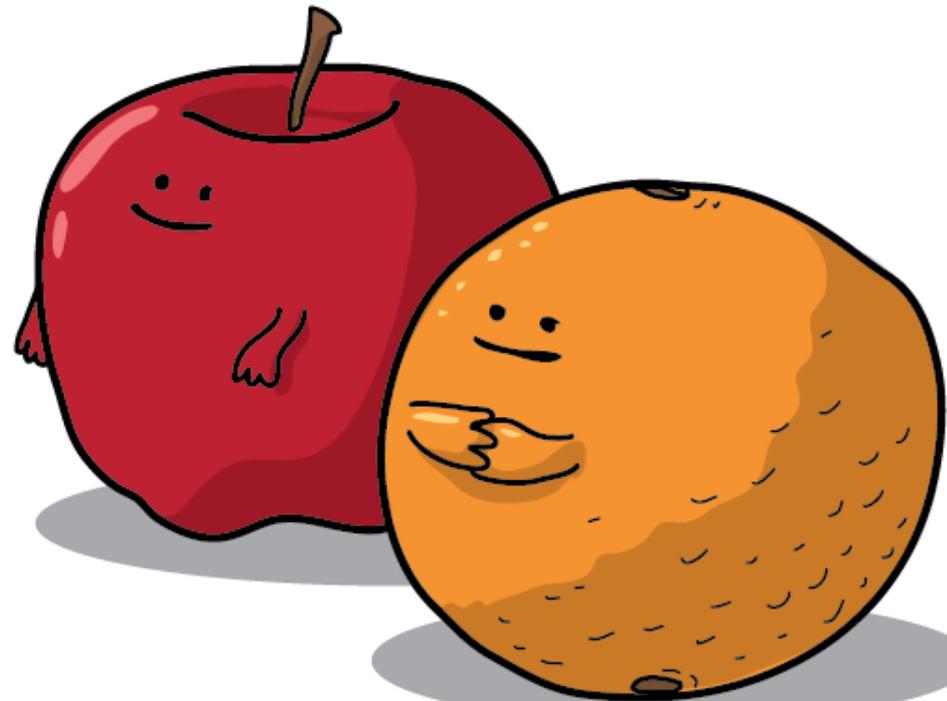






NO*id*W







A scenic landscape featuring a range of mountains in the background, a dense forest of evergreen trees in the middle ground, and a calm lake in the foreground that reflects the sky and the surrounding scenery. The sky is filled with soft, white clouds. The overall tone is serene and natural.

Thank you!

Christina.Hwang @ ualberta.ca

Faculty of Science Librarian

