THE FUTURE OF RESEARCH ASSESSMENT: PEER REVIEW VS METRICS

Kent Business School

TIME FOR A MORE GROWN UP DEBATE?

Liz Allen
Director of Strategic Initiatives, F1000
30 May 2017

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RESEARCH ASSESSMENT & EVALUATION ARE IMPORTANT

Effective funding & learning

Reward & recognition

Career appointments

Strategy setting

Resource allocation

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CORE PRINCIPLES FOR RESEARCH ASSESSMENT

- **Integrated**: M & E is a core component of funding process
- **Balanced & realistic**: essential to remember the complexity & what you can/can't measure & attribute (qualitative & quantitative data required)
- **Proportionate**: M & E should not detract from the research in first place

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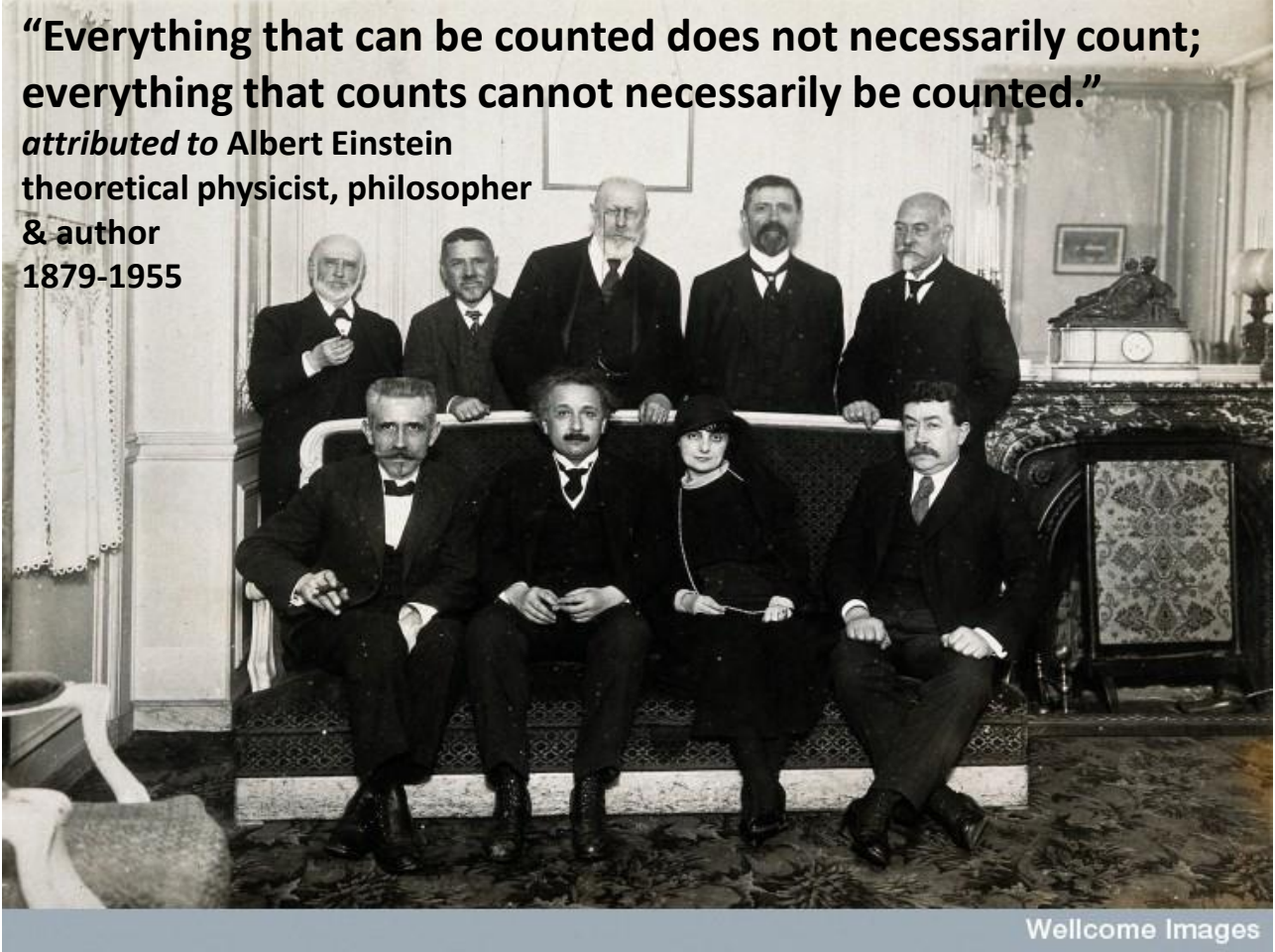
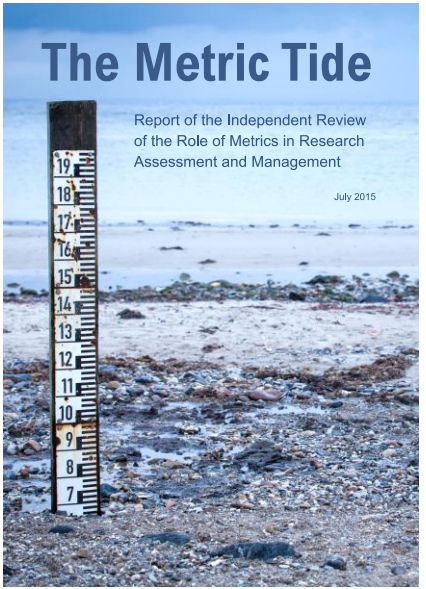

“Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.”
attributed to Albert Einstein
theoretical physicist, philosopher & author
1879-1955
Wellcome Images

RESEARCH INDICATORS USEFUL BUT USE SENSIBLY



‘PEER REVIEW’ USEFUL BUT USE SENSIBLY (i)

Common critique	efficiency & productivity
Peer review is too resource intensive	Bureaucratic/burden on reviewers
	Resource intensive: time (securing response) & cost
	Division of labour: many stages
	Long term sustainability
… takes too long/slows down research	Process takes too much time & prevents researcher from moving on

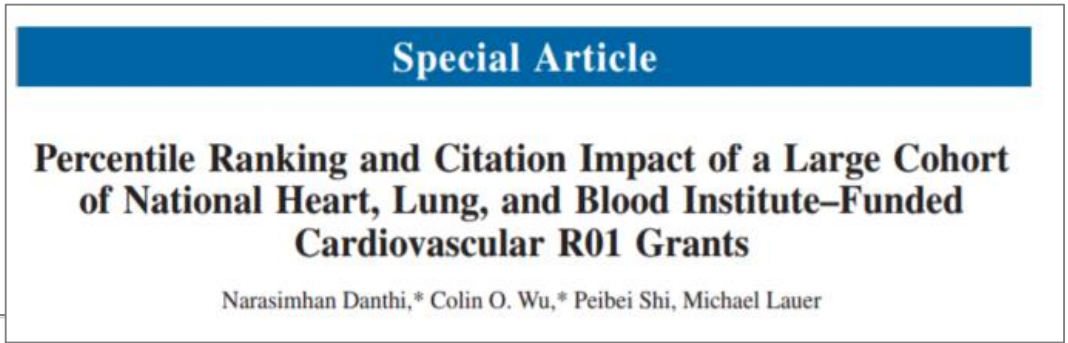
Source: adapted from RAND (2013) *Alternatives to Peer Review on Research Project Funding*
http://www.rand.org/content/dam/rand/pubs/research_reports/RR100/RR139/RAND_RR139.pdf

‘PEER REVIEW’ USEFUL BUT USE SENSIBLY (ii)

Common critique	effectiveness
Peer review is a blunt instrument	When is it best used? (e.g. ‘best’; excellent; merit; novel ?) ***expert review vs expert input?***
	Generalist vs targeted
… does not recognise the ‘*best*’ science	Is risk averse/’anti-innovation’
	Does not favour multi/inter-disciplinary work
	Does not favour applied/translational research
… is unreliable	Hard to know if the ‘right’ peer reviewed (vs reviewers who responded)
	Ratings vary between reviewers
	Difficult to reconcile narrative commentary with quantitative ‘scoring’
… is biased	Is gender-biased
	Is age-biased
	Plagued by unconscious bias & group think
	Favours existing positive results?
… is unaccountable & not transparent	Open to cronyism
	Anonymity can mask conflicts

Source: adapted from RAND (2013) *Alternatives to Peer Review on Research Project Funding*
http://www.rand.org/content/dam/rand/pubs/research_reports/RR100/RR139/RAND_RR139.pdf

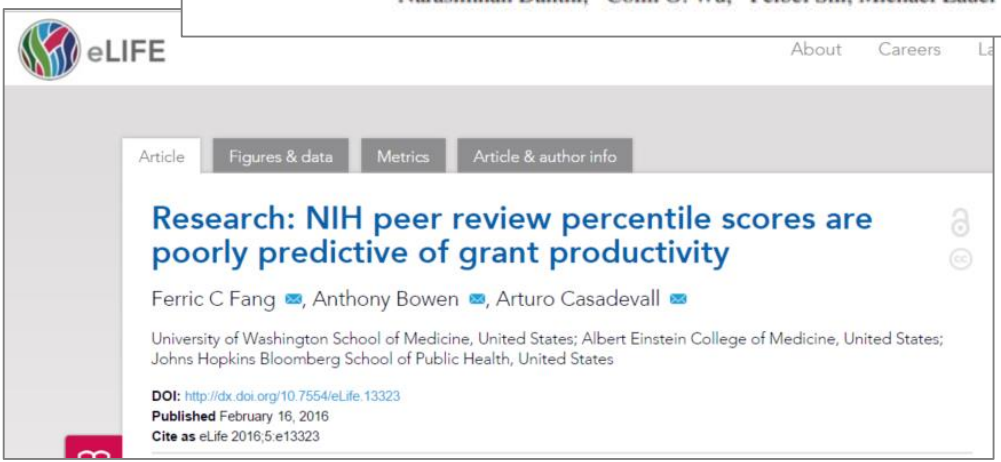
Effectiveness: limits of scoring to select 'best'



Special Article

Percentile Ranking and Citation Impact of a Large Cohort of National Heart, Lung, and Blood Institute–Funded Cardiovascular R01 Grants

Narasimhan Danthi,* Colin O. Wu,* Peibei Shi, Michael Lauer



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Article Figures & data Metrics Article & author info

Research: NIH peer review percentile scores are poorly predictive of grant productivity

Ferric C Fang, Anthony Bowen, Arturo Casadevall

University of Washington School of Medicine, United States; Albert Einstein College of Medicine, United States; Johns Hopkins Bloomberg School of Public Health, United States

DOI: http://dx.doi.org/10.7554/eLife.13323
Published February 16, 2016
Cite as eLife 2016;5:e13323

Effectiveness: limits of scoring in decision

nature International weekly journal of science

Biochemist questions peer review at UK funding agency

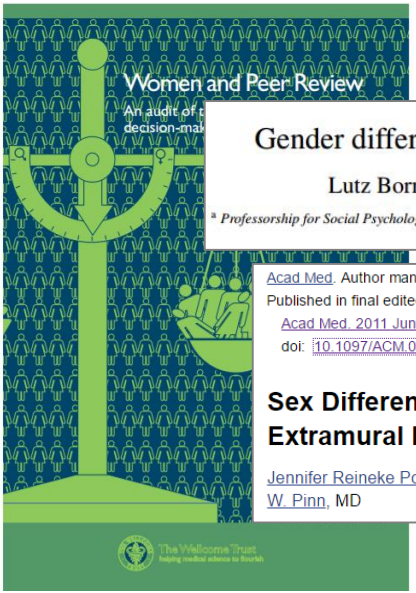
Data show scores given to grant applications by external reviewers don't correlate with what actually gets funded.

"... not every referee makes sensible comments …nor gives scores that match their written comments … the job of board members is precisely to moderate this. So looking at scores alone without context is likely to prove misleading."

Prof Doug Kell, former Head of BBSRC (UK)

Source: Van Noorden, R. Nature (20 questions peer review at UK funding agency, **Nature doi:10.1038/nature.2014.16479**

Effectiveness: bias - gender continued …



Gender differences in grant peer review: A meta-analysis

Lutz Bornmann [a,*], Rüdiger Mutz [a], Hans-Dieter Daniel [a,b]

[a] Professorship for Social Psychology and Research on Higher Education, ETH Zurich, Zaehringerstr. 24, CH-8092 Zurich, Switzerland
[b] Evaluation Office, University of Zurich, Switzerland

Journal of INFORMETRICS
An International Journal

Acad Med. Author manuscript; available in PMC 2012 Jun 20.
Published in final edited form as:
Acad Med. 2011 Jun; 86(6): 759–767.
doi: 10.1097/ACM.0b013e31821836ff

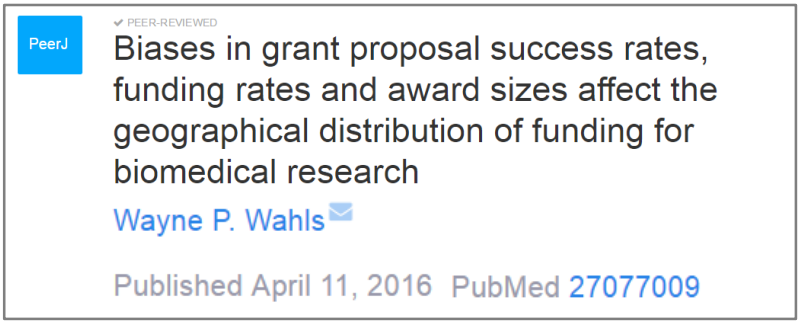
ACADEMIC MEDICINE
Journal of the Association of American Medical Colleges

Sex Differences in Application, Success, and Funding Rates for NIH Extramural Programs

Jennifer Reineke Pohlhaus, PhD, Hong Jiang, PhD, Robin M. Wagner, PhD, MS, Walter T. Schaffer, PhD, and Vivian W. Pinn, MD

Source: Bornmann L, Mutz R, Daniel H. (2007) Gender differences in grant peer review: a meta-analysis. ***J Informetr*** 1:226 –238. Pohlhaus JR, Jiang H, Wagner RM, Schaffer WT, Pinn VW. (2011) Sex differences in application, success, & funding rates for NIH extramural programs. ***Acad Med*** 86:759 –767

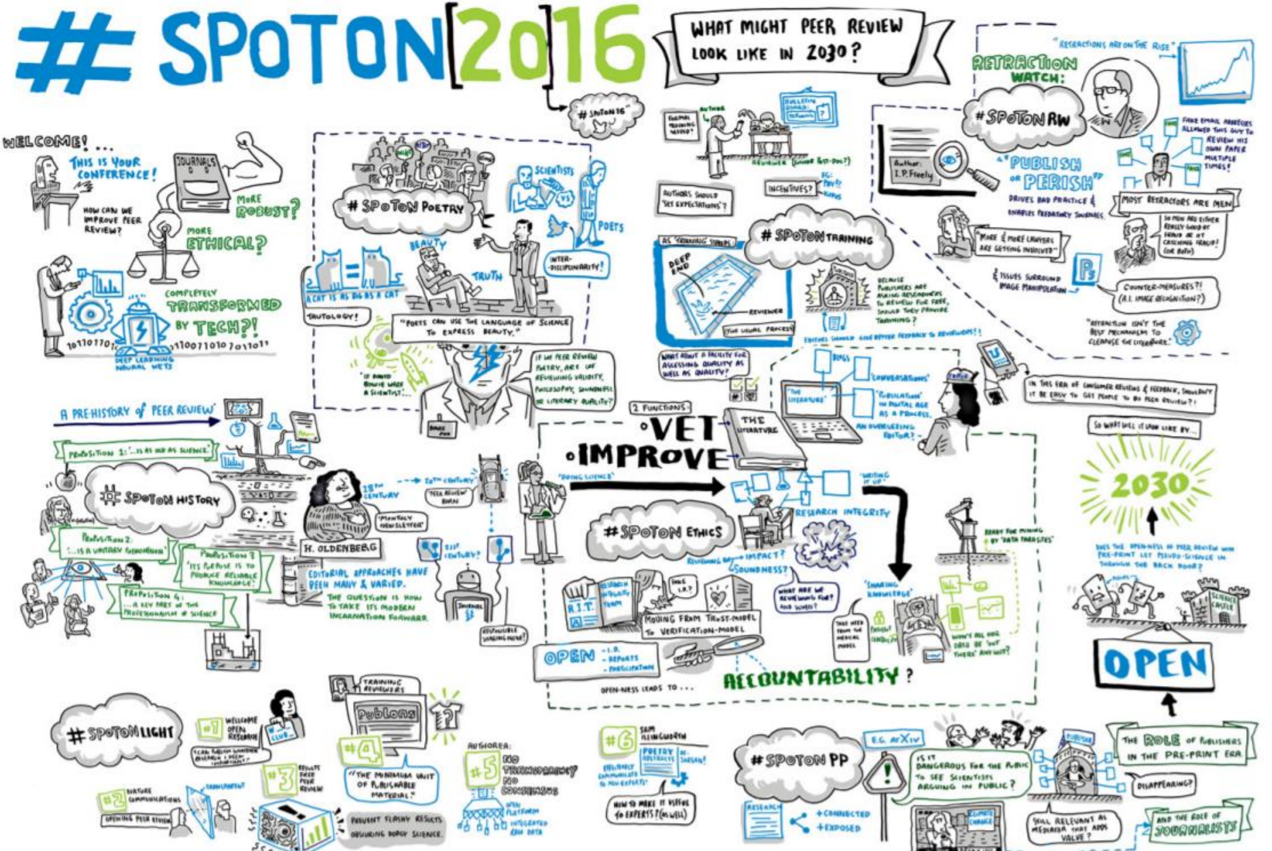
Effectiveness: other bias



Geography

Race & ethnicity

Source: https://peerj.com/articles/1917/ ;



SPOTON[2016]
WHAT MIGHT PEER REVIEW LOOK LIKE IN 2030?
#SPOTON16
WELCOME! ...
THIS IS YOUR CONFERENCE!
HOW CAN WE IMPROVE PEER REVIEW?
JOURNALS
MORE ROBUST?
MORE ETHICAL?
COMPLETELY TRANSFORMED BY TECH?!
DEEP LEARNING NEURAL NETS
#SPOTON POETRY
SCIENTISTS
VS
POETS
BEAUTY
TRUTH
A CAT IS AS BIG AS A CAT
TAUTOLOGY!
INTER-DISCIPLINARITY!
"POETS CAN USE THE LANGUAGE OF SCIENCE TO EXPRESS BEAUTY."
IF WE PEER REVIEW POETRY, ARE WE REVIEWING VALIDITY, PHILOSOPHY, SOUNDNESS OR LITERARY QUALITY?
"IF DAVID BOWIE WERE A SCIENTIST"...
FORMAL TRAINING NEEDED?
AUTHOR
REVIEWER
BULLETIN BOARD
AUTHORS SHOULD 'SET EXPECTATIONS'?
INCENTIVES?
#SPOTON TRAINING
AS 'TRAINING' STANDS
DEEP END
REVIEWER
THE USUAL PROCESS
BECAUSE PUBLISHERS ARE ASKING RESEARCHERS TO REVIEW FOR FREE, SHOULD THEY PROVIDE TRAINING?
EDITORS SHOULD GIVE BETTER FEEDBACK TO REVIEWERS!
WHAT ABOUT A FACILITY FOR ASSESSING QUALITY AS WELL AS QUALITY?
RETRACTION WATCH:
"RETRACTIONS ARE ON THE RISE"
#SPOTON RW
Author: I.P. Freely
"PUBLISH OR PERISH"
DRIVES BAD PRACTICE & ENABLES PREDATORY JOURNALS
FAKE EMAIL ADDRESS ALLOWED THIS GUY TO REVIEW HIS OWN PAPER MULTIPLE TIMES!
MOST RETRACTORS ARE MEN
"MORE & MORE LAWYERS ARE GETTING INVOLVED"
& ISSUES SURROUND IMAGE MANIPULATION
COUNTER-MEASURES?! (A.I. IMAGE RECOGNITION?)
"RETRACTION ISN'T THE BEST MECHANISM TO CLEANSE THE LITERATURE."
A PRE-HISTORY OF PEER REVIEW
PROPOSITION 1: "...IS AS OLD AS SCIENCE"
#SPOTON HISTORY
PROPOSITION 2: ...IS A UNITARY PHENOMENON
PROPOSITION 3: "ITS PURPOSE IS TO PRODUCE RELIABLE KNOWLEDGE"
PROPOSITION 4: ...A KEY PART OF THE PROFESSIONALISM OF SCIENCE
18TH CENTURY
20TH CENTURY
"PEER REVIEW" BORN
"MONTHLY NEWSLETTER"
H. OLDENBERG
21ST CENTURY?
EDITORIAL APPROACHES HAVE BEEN MANY & VARIED.
THE QUESTION IS HOW TO TAKE ITS MODERN INCARNATION FORWARD.
2 FUNCTIONS
• VET
• IMPROVE
THE LITERATURE
"DOING SCIENCE"
BLOGS
"CONVERSATIONS"
"THE LITERATURE"
"PUBLICATION" IN DIGITAL AGE AS A PROCESS.
AN OVERRULING EDITOR?
"WRITING IT UP"
RESEARCH INTEGRITY
#SPOTON ETHICS
IMPACT?
SOUNDNESS?
WHAT ARE WE REVIEWING FOR? AND WHEN?
R.I.T.
MOVING FROM TRUST-MODEL TO VERIFICATION-MODEL
OPEN - I.D. - REPORTS - PARTICIPATION
ACCOUNTABILITY?
OPEN-NESS LEADS TO ...
"SHARING KNOWLEDGE"
READY FOR MINING BY "DATA PARASITES"
IN THIS ERA OF CONSUMER REVIEWS & FEEDBACK, SHOULDN'T IT BE EASY TO GET PEOPLE TO DO PEER REVIEW?!
SO WHAT WILL IT LOOK LIKE BY...
2030
DOES THE OPEN-NESS OF PEER REVIEW WITH PRE-PRINT LET PSEUDO-SCIENCE IN THROUGH THE BACK DOOR?
SCIENCE CASTLE
OPEN
THE ROLE OF PUBLISHERS IN THE PRE-PRINT ERA
DISAPPEARING?
AND THE ROLE OF JOURNALISTS
#SPOTON PP
E.G. arXiv
IS IT DANGEROUS FOR THE PUBLIC TO SEE SCIENTISTS ARGUING IN PUBLIC?
RESEARCH
+ CONNECTED
+ EXPOSED
STILL RELEVANT AS MEDIATOR THAT ADDS VALUE?
#SPOTONLIGHT
#1 WELLCOME OPEN RESEARCH
#2 NATURE COMMUNICATIONS
OPENING PEER REVIEW
TRANSPARENT
#3 RESULTS FREE PEER REVIEW
PREVENT FLASHY RESULTS OBSCURING ROBUST SCIENCE.
TRAINING REVIEWERS
Publons
#4 "THE MINIMUM UNIT OF PUBLISHABLE MATERIAL"
AUTHOREA:
#5 NO TRANSPARENCY NO CONSENSUS
OPEN PLATFORM
INTEGRATED RAW DATA
#6 SAM ILLINGWORTH
POETRY
HOW TO MAKE IT USEFUL TO EXPERTS? (AS WELL)

- Tailoring & selection
- Diversity
- Experimentation
- Training
- Cross-publisher sharing/portability'/ efficiencies
- Recognition, credit & reward for reviewers
- Technology to improve effectiveness

Source: Digital Science (2016) What might peer review look like in 2030?

Our recommendations as we head towards 2030 are that the research community:

- Find and invent new ways of identifying, verifying and inviting peer reviewers, focusing on closely matching expertise with the research being reviewed to increase uptake. Artificial intelligence could be a valuable tool in this.
- Encourage more diversity in the reviewer pool (including early career researchers, researchers from different regions, and women). Publishers in particular could raise awareness and investigate new ways of sourcing female peer reviewers.
- Experiment with different and new models of peer review, particularly those that increase transparency.
- Invest in reviewer training programs to make sure that the next generation of reviewers are equipped to provide valuable feedback within recognized guidelines.
- Work towards cross-publisher solutions that improve efficiency and benefit all stakeholders. Portable peer review has not taken off at any scale, but could make the publishing process more efficient for all involved.
- That funders, institutions and publishers must work together to identify ways to recognize reviewers and acknowledge their work.
- Use technology to support and enhance the peer review process, including finding automated ways to identify inconsistencies that are difficult for reviewers to spot.

HOW WE SHARE & TALK ABOUT RESEARCH IS CHANGING FAST

KUDOS

figshare

PLOS ONE
A peer-reviewed, open access journal

DataCite
International Data Citation

PeerJ

elixir

bioRxiv beta
THE PREPRINT SERVER FOR BIOLOGY

Euro Scientist

THE CONVERSATION

eLIFE

COMMONS
A forum for scientific discourse
PubMed

F1000Research
Open for Science

CENTER FOR OPEN SCIENCE

REINVENTING SCHOLARLY ‘PUBLISHING’

Beyond journals: beyond articles

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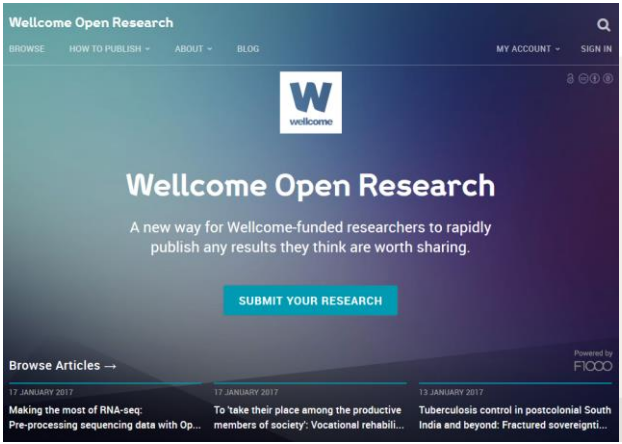
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SOFTWARE TOOL ARTICLE

Hierarchical Bayesian inference for ion channel screening dose-response data [version 1; referees: awaiting peer review]

Ross H Johnstone[1], Rémi Bardenet[2], David J Gavaghan[1], Gary R Mirams[1,3]

Author affiliations

Grant information

Abstract

Dose-response (or 'concentration-effect') relationships commonly occur in biological and pharmacological systems and are well characterised by Hill curves. These curves are described by an equation with two parameters: the inhibitory concentration 50% (IC50); and the Hill coefficient. Typically just the 'best fit' parameter values are reported in the literature. Here we introduce a Python-based software tool, *PyHillFit*, and describe the underlying Bayesian inference methods that it uses, to infer probability distributions for these parameters as well as the level of experimental observation noise. The tool also allows for hierarchical fitting, characterising the effect of inter-experiment variability. We demonstrate the use of the tool on a recently published dataset on multiple ion channel inhibition by multiple drug compounds. We compare the maximum likelihood,

Open Peer Review

Referee Status:

	Invited Referees	
Version(s)	1	2
Version 1 published 15 Nov 2016	read report	read report

1 **Hans Lassmann**, Medical University of Vienna, Austria
Simon Hametner, Medical University of Vienna, Austria

2 **George Harauz**, University of Guelph, Canada
Vladimir V. Bamm, University of Guelph, Canada

Data and software availability

Latest source code and datasets used in the publication: https://github.com/mirams/PyHillFit

Archived source code and datasets as at the time of publication: https://doi.org/10.5281/zenodo.163113 (Johnstone *et al.*, 2016b)

License: BSD 3-Clause

The code contains the experimental input data required to reproduce the examples shown here in comma separated value (CSV) format in the file `data/crumb_data.csv`. Installation instructions for the tool and its dependencies can be found in the README file, in the main folder at the above links.

REINVENTING SCHOLARLY ‘PUBLISHING’

Beyond journals: beyond articles

Rethinking ‘authorship’

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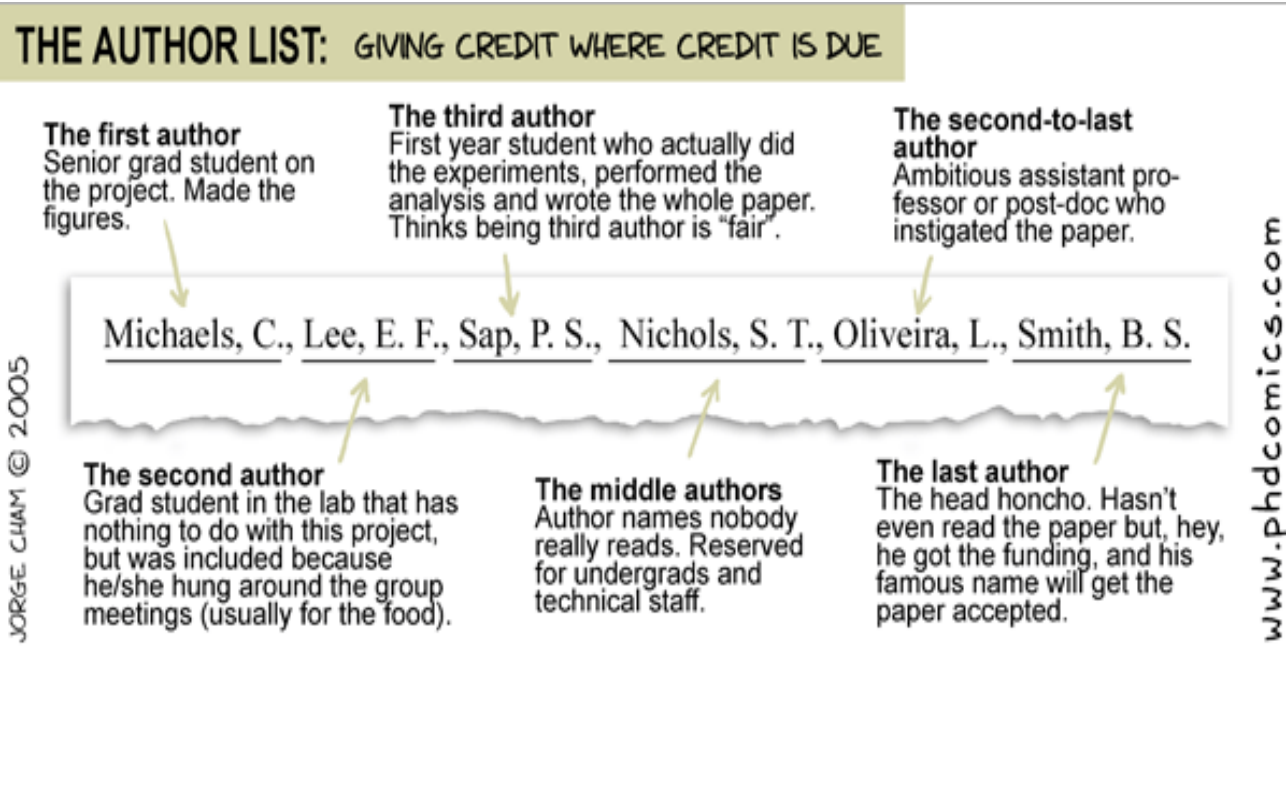
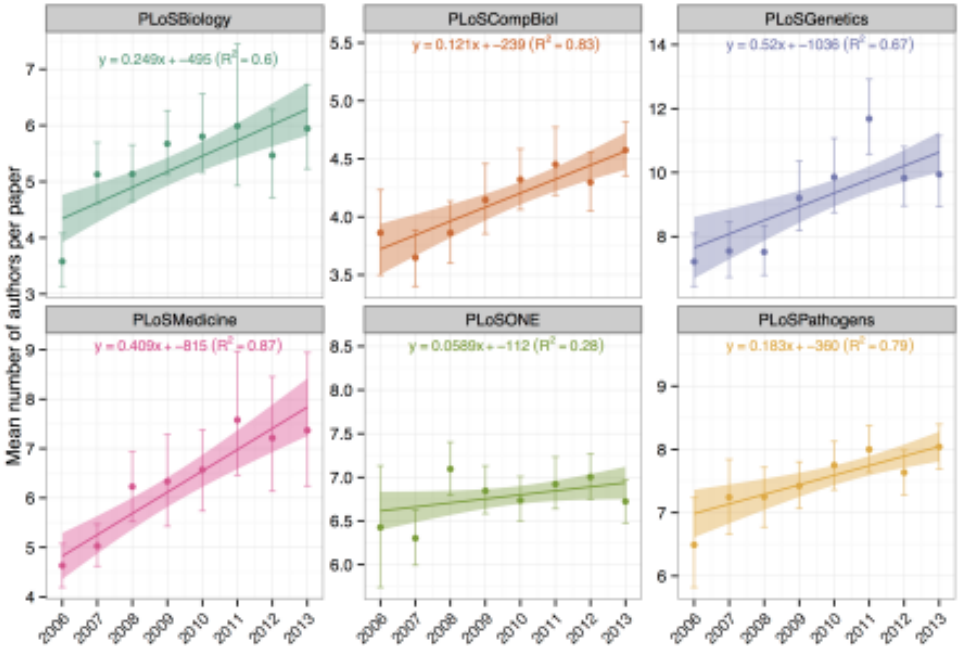
CHANGING CURRENCY OF AUTHORSHIP



THE DEMISE OF THE LONE AUTHOR



Journal of Instrumentation

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2,926 authors from 169 research institutions!

Journal of Instrumentation > Volume 3 > August 2008

The ATLAS Collaboration *et al* 2008 *JINST* **3** S08003 doi:10.1088/1748-0221/3/08/S08003

The ATLAS Experiment at the CERN Large Hadron Collider

OPEN ACCESS THE CERN LARGE HADRON COLLIDER: ACCELERATOR AND EXPERIMENTS

The ATLAS Collaboration, G Aad[81], E Abat[18], J Abdallah[162], A A Abdelalim[46], A Abdesselam[116], O Abdinov[10], B A Abi[111], M Abolins[86], H Abramowicz[150], E Acerbi[87], B S Acharya[159], R Achenbach[55], M Ackers[20], D L Adams[23], F Adamyan[169], T N Addy[53], M Aderholz[98], C Adorisio[35], P Adragna[72], M Aharrouche[78], S P Ahlen[21], F Ahles[45], A Ahmad[146], H Ahmed[2], G Aielli[133], P F Åkesson[28], T P A Åkesson[76], A V Akimov[93], S M Alam[1], J Albert[164], S Albrand[52], M Aleksa[28], I N Aleksandrov[62], M Aleppo[87], F Alessandria[87], C Alexa[24], G Alexander[150], T Alexopoulos[9], G Alimonti[87], M Aliyev[10], P P Allport[70], S E Allwood-Spiers[50], A Aloisio[101], J Alonso[14], R Alves[122], M G Alviggi[101], K Amako[63], P Amaral[28], S P Amaral[28], G Ambrosini[16], G Ambrosio[87], C Amelung[28], V V Ammosov[126], A Amorim[122], N Amram[150], C Anastopoulos[151], B Anderson[74], K J Anderson[29], E C Anderssen[14], A Andreazza[87], V Andrei[55], L Andricek[98], M-L Andrieux[52], X S Anduaga[67], F Anghinolfi[28], A Antonaki[8], M Antonelli[44], S Antonelli[19], R Apsimon[127], G Arabidze[8], I Aracena[142], Y Arai[63], A T H Arce[14], J P Archambault[27], J-F Arguin[14], E Arik[18], M Arik[18], K E Arms[108], S R Armstrong[23], M Arnaud[135], C Arnault[113], A Artamonov[94], S Asai[152], S Ask[79], B Åsman[144], D Asner[27], L Asquith[74], K Assamagan[23], A Astbury[164], B Athar[1], T Atkinson[84], B Aubert[4], B Auerbach[168], E Auge[113], K Augsten[125], V M Aulchenko[106], N Austin[70], G Avolio[28], R Avramidou[9], A Axen[163], C Ay[51], G Azuelos[91], G Baccaglioni[87], C Bacci[134], H Bachacou[135], K Bachas[151], G Bachy[28], E Badescu[24], P Bagnaia[132], D C Bailey[154], J T Baines[127], O K Baker[168], F Ballester[162], F Baltasar Dos Santos Pedrosa[28], E Banas[37], D Banfi[87], A Bangert[98], V Bansal[121], S P Baranov[93], S Baranov[5], A Barashkou[62], E L Barberio[84], D Barberis[47], G Barbier[46], P Barclay[127], D Y Bardin[62], P Bargassa[116], T Barillari[98], M Barisonzi[39], B M Barnett[127], R M Barnett[14], S Baron[28], A Baroncelli[134], M Barone[44], A J Barr[116], F Barreiro[77], J Barreiro Guimarães da Costa[54], P Barrillon[113], A Barriuso Poy[28], N Barros[122], V Bartheld[98], H Bartko[98], R Bartoldus[142], S Basiladze[96], J Bastos[122], L E Batchelor[127], R L Bates[50], J R Batley[26], S Batraneanu[28], M Battistin[28], G Battistoni[87], V Batusov[62], F Bauer[135], B Bauss[78], D E Baynham[127], M Bazalova[123], A Bazan[4], P H Beauchemin[91], B Beaugiraud[4], R B Beccherle[47], G A Beck[72], H P Beck[16], K H Becks[167], I Bedajanek[125], A J Beddall[18], A Beddall[18], P Bednár[143], V A Bednyakov[62], C Bee[81], S Behar Harpaz[149], G A N Belanger[27], C Belanger-Champagne[160], B Belhorma[52], P J Bell[79], W H Bell[50], G Bella[150], F Bellachia[4], L Bellagamba[19], F Bellina[167], G Bellomo[87], M Bellomo[117], O Beltramello[28], A Belymam[72], S Ben Ami[149], M Ben Moshe[150], O Benary[150], D Benchekroun[92], C Benchouk[81], M Bendel[78], B H

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Credit where credit is due
Liz Allen, Amy Brand, Jo Scott, Micah Altman and Marjorie Hlava are trialling digital taxonomies to help researchers to identify their contributions to collaborative projects.
Research today is rarely a one-person job. Original research papers with a single author are — particularly in the life sciences — a vanishing breed. Partly, the inflation of author numbers on papers has
Through the endorsement of individuals' contributions, researchers can start to move beyond 'authorship' as the dominant measure of esteem. For funding agencies, better information about the contributions of grant applicants would aid the decision-making
journal articles could be classified using a 14-role taxonomy (see 'Who did what?'). The survey was sent to 1,200 corresponding authors of work published in PLOS journals, Nature Publishing Group journals, Elsevier journals, Science and eLife. Corresponding authors were asked to indicate the contribu-

Term	Definition
Conceptualization	*Ideas; formulation or evolution of overarching research goals and aims.*
Methodology	*Development or design of methodology; creation of models.*
Software	*Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.*
Validation	*Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs.*
Formal Analysis	*Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesize study data.*
Investigation	*Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.*
Resources	*Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.*
Data Curation	*Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.*
Writing – Original Draft	*Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).*
Writing – Review & Editing	*Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages.*
Visualization	*Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.*
Supervision	*Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.*
Project Administration	*Management and coordination responsibility for the research activity planning and execution.*
Funding	*Acquisition of the financial support for the project leading to this publication.*

Contributorship badges: a new project

Posted on November 21, 2014 by Abigail Cabunoc Mayes

At the Science Lab, we're always looking for opportunities to work with the community to build prototypes that help research thrive on the open web. We find that these prototypes are best approached by bringing together existing tools and the right groups rather than starting from scratch. This way, we can bridge gaps in workflow and communities while building on existing work done in this space.

http://www.credit.org

REINVENTING SCHOLARLY ‘PUBLISHING’

Beyond journals: beyond articles

Rethinking ‘authorship’

Digitisation of research outputs & products

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5500+ publisher members

Metadata store of 80m+ scholarly content items

Persistent citation linking

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Data about content activity e.g. social, dataset links

DataCite Statistics Beta

Registrations by Allocators | Registrations by Datacentres | Registrations by Prefixes | Resolutions by Month

	DOI Registrations				Metadata			
Allocator	Total	This Year	Last 30 Days	Last 7 Days	Searchable	Hidden	Missing	Ratio
ANDS - Australian National Data Service	162 881	153 072	1 813	194	161 683	292	906	99%
BIBSYS - BIBSYS	154	104	85	6	153	1	0	100%
BL - The British Library	955 430	79 401	11 418	1 863	948 431	6 975	122	99%
CDL - California Digital Library	2 234 452	129 554	12 885	1 910	1 584 065	650 387	5	99%
CERN - CERN - European Organization for Nuclear Research	307 409	265 131	153 424	1 276	303 907	3 502	0	100%
CISTI - National Research Council Canada	170 851	83 819	11 007	1 378	169 747	1 086	18	99%
CRUI - CRUI2011	53 130	8 279	926	40	49 929	74	3 127	94%
CSIC - CSIC	7 185	7 185	9	5	7 172	13	0	100%
DATACITE - DataCite	49	23	5	0	49	0	0	100%
DELFT - TU Delft Library	53 622	4 899	317	42	53 312	35	306	99%
DK - Technical Information Center of Denmark	230 649	123 388	10 057	2 621	230 587	61	1	99%
ESTDOI - Tartu University	490 083	2 385	66	2	490 081	2	0	100%
ETHZ - ETH Zurich	1 163 442	124 122	57 158	7 106	1 160 093	1	3 348	99%
FIGSHARE - figshare	449 570	256 960	7 246	1 431	449 555	15	0	100%
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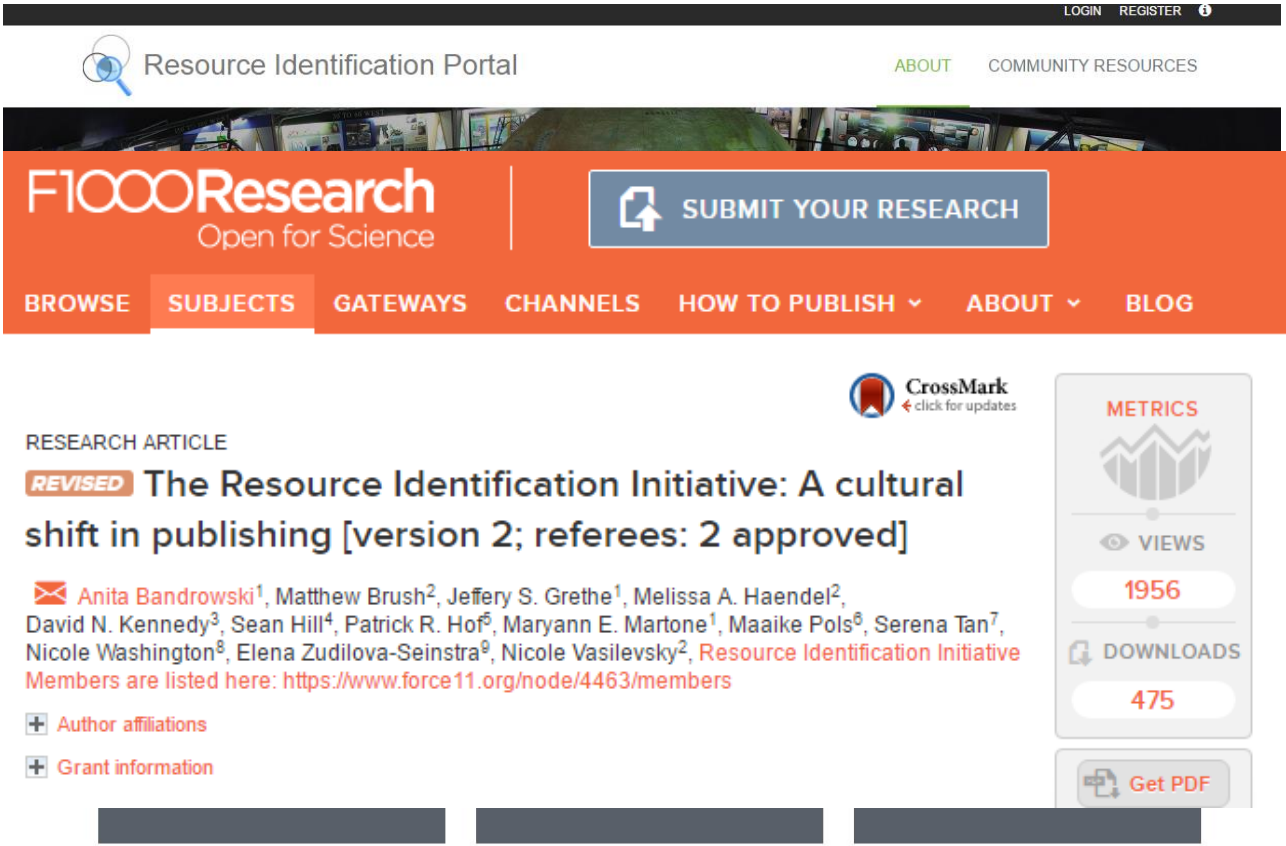
INIST - Institute for Scientific and Technical Information	17 739	5 860	935	164	17 572	167	0	100%
JALC - Japan Link Center	20	18	0	0	20	0	0	100%
MTAKIK - MTA Könyvtára	2 335	708	118	24	2 335	0	0	100%
NRCT - National Research Council of Thailand	79 296	27 483	2 119	781	78 933	363	0	100%
NRF - National Research Foundation of South Africa	2	2	0	0	2	0	0	100%
OSTI - Office of Scientific and Technical Information (OSTI), US Department of Energy	70 717	51 596	233	9	69 298	1 419	14	99%
PURDUE - Purdue University Library	13 209	4 568	418	52	12 621	588	0	100%
RG - ResearchGate	483 225	167 294	13 594	3 048	409 108	74 117	0	100%
SND - Swedish National Data Service	2 952	188	60	0	2 948	4	0	100%
SPBPU - SPbPU	1 266	1 266	213	55	1 266	0	0	100%
SUBGOE - Niedersächsische Staats- und Universitätsbibliothek Göttingen	382	176	30	0	382	0	0	100%



Source: https://scicrunch.org/resources

REINVENTING SCHOLARLY ‘PUBLISHING’

Beyond journals: beyond articles

Rethinking ‘authorship’

Digitisation of research outputs & products

Making connections: inter-operability

F1000

ORCID
Connecting Research and Researchers

ENGAGING RESEARCHERS

"Researchers want to be read, acknowledged, and quoted."

"Researchers want to spend their time on research, not reporting"

REINVENTING SCHOLARLY 'PUBLISHING'

Beyond journals: beyond articles

Rethinking 'authorship'

Digitisation of research outputs & products

Making connections: inter-operability

Understanding impact: access, use, re-use & impact

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IMPACT: MANY THINGS TO MANY PEOPLE

Source: HEFCE (REF) 2014

NEW WAYS TO ASSESS RESEARCH (& RESEARCHERS)

- **Quality & excellence**
- **Knowledge progression**
- **Attention/engagement**
- **Use & re-use**
- **Behaviours: *funding, sharing, openness, peer review, governance …***
- **Potential impact upon the field**
- **Broader impact**

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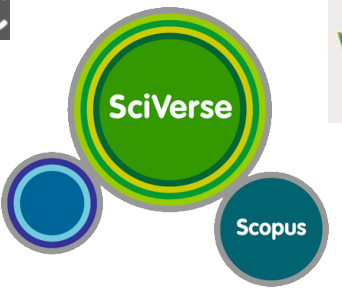
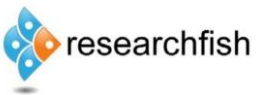
EXPANDING TOOLKIT FOR RESEARCH ASSESSMENT





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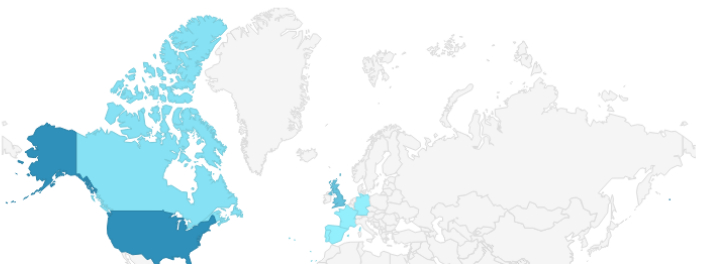

Source: https://www.altmetric.com/details/2653335

November 9, 2016

Journal article | Open Access

A dataset of fishes in and around Inle Lake, an ancient lake of Myanmar, with DNA barcoding, photo images and CT/3D models

Kano, Yuichi; Musikasinthorn, Prachya; Iwata, Akihisa; Tun, Sein; Yun, LKC; Win, Seint; Matsui, Shoko; Tabata, Ryoichi; Yamasaki, Takeshi; Watanabe, Katsutoshi

Inle (Inlay) Lake, an ancient lake of Southeast Asia, is located at the eastern part of Myanmar, surrounded by the Shan Mountains. Detailed information on fish fauna in and around the lake has long been unknown, although its outstanding endemism was reported a century ago.

Based on the fish specimens collected from markets, rivers, swamps, ponds and ditches around Inle Lake as well as from the lake itself from 2014 to 2016, we recorded a total of 948 occurrence data (2120 individuals), belonging to 10 orders, 19 families, 39 genera and 49 species. Amongst them, 13 species of 12 genera are endemic or nearly endemic to the lake system and 17 species of 16 genera are suggested as non-native. The data are all accessible from the document "A dataset of Inle Lake fish fauna and its distribution (http://ipt.pensoft.net/resource.do?r=inle_fish_2014-16)", as well as DNA barcoding data (mitochondrial COI) for all species being available from the DDBJ/EMBL/GenBank (Accession numbers: LC189568–LC190411). Live photographs of almost all the individuals and CT/3D model data of several specimens are also available at the graphical fish biodiversity database (http://ffish.asia/INLE2016; http://ffish.asia/INLE2016-3D). The information can benefit the clarification, public concern and conservation of the fish biodiversity in the region.

Preview

Publication date:
November 9, 2016

DOI:
DOI 10.3897/BDJ.4.e10539

Keyword(s):
Myanmar | Shan State | Inle Lake | freshwater fishes | endemic species | alien | GBIF | mitochondrial DNA | COI | CT scan | 3D model,

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Biodiversity Data Journal: 4 pp. e10539.

Communities:
Zenodo

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