When decade-old functionality would be progress - the desolate state of our scholarly infrastructure

Björn Brembs

Universität Regensburg

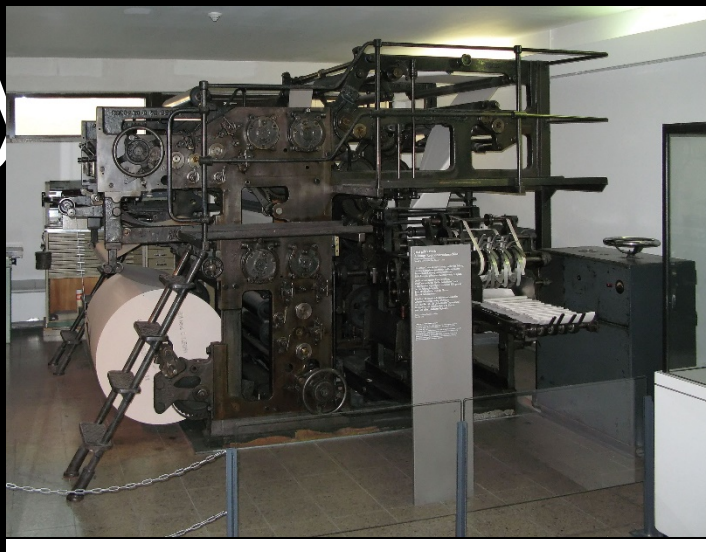http://brembs.net
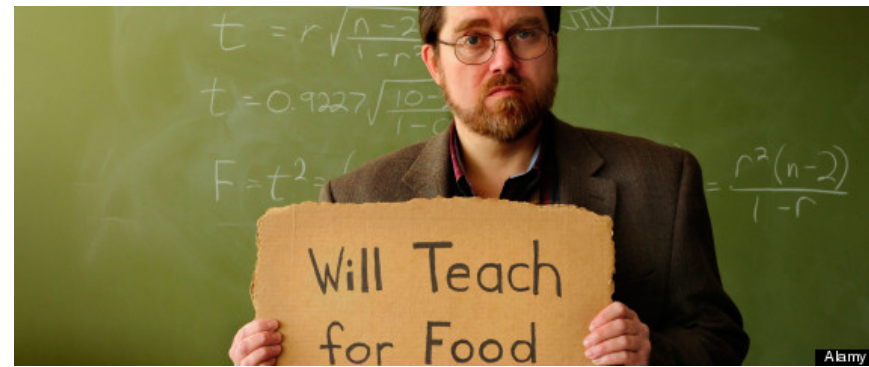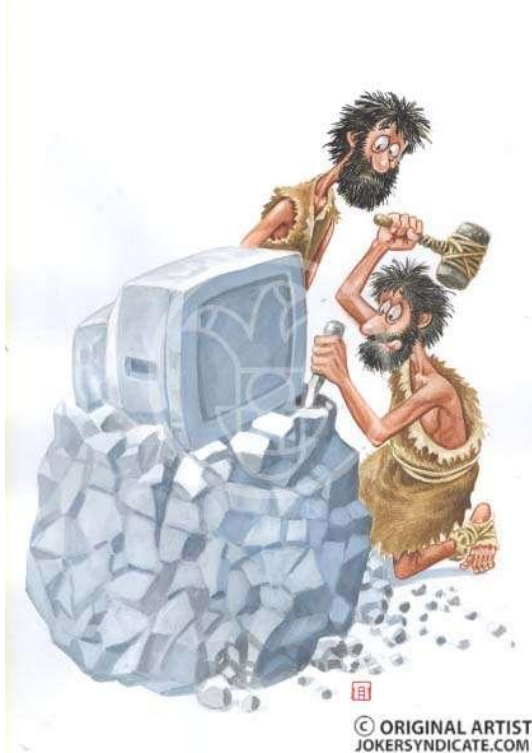
Life

change

yesterday

today

yesterday

today

SCHOLARSHIP

Institutions produce publications, data and software
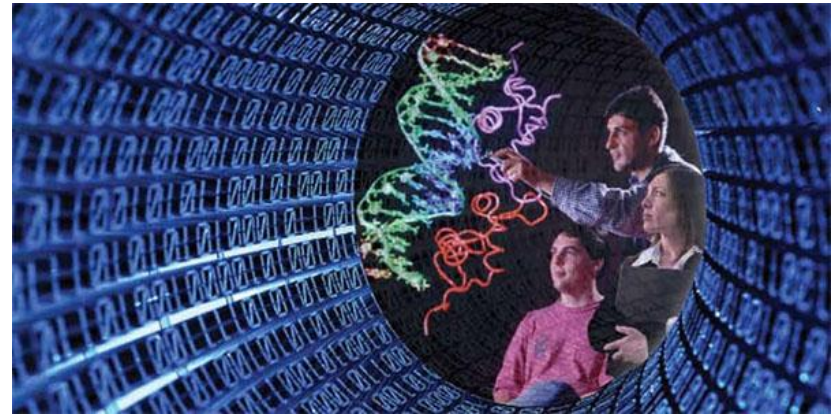
CRISIS I

Dysfunctional scholarly literature

Literature

© ORIGINAL ARTIST
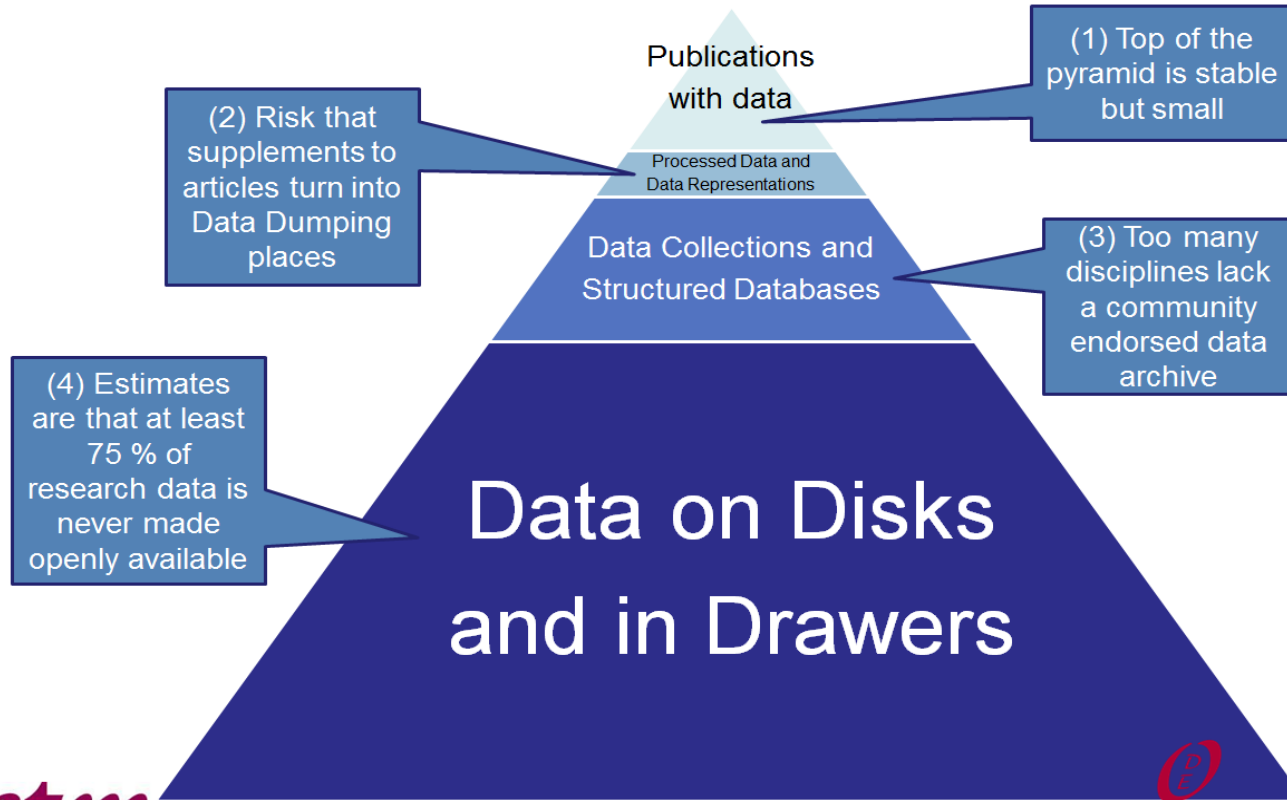JOKERSYNDICATE.COM

…it's like the web in 1995!

- Limited access
- No global search
- No functional hyperlinks
- No flexible data visualization
- No submission standards
- (Almost) no statistics
- No text/data-mining
- No effective way to sort, filter and discover
- No scientific impact analysis
- No networking feature
- etc.

CRISIS II

Scientific data in peril

Small Data – Long Tail

Publications with data

Processed Data and Data Representations

Data Collections and Structured Databases

Data on Disks and in Drawers

(1) Top of the pyramid is stable but small

(2) Risk that supplements to articles turn into Data Dumping places

(3) Too many disciplines lack a community endorsed data archive

(4) Estimates are that at least 75 % of research data is never made openly available

Opportunities for Data Exchange

PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed ⌄

Search

Advanced

Help

⚠ PubMed has been designated to be maintained with minimal staff during the lapse in government funding. The information on this website will be kept as up to date as possible, and the agency will attempt to respond to urgent operational inquiries during this period.

Updates regarding government operating status and resumption of normal operations can be found at http://www.usa.gov.

▸▸ Commendations for *Nature* News & Comment in the 2012 Online Media Awards

NATURE | NEWS

Databases fight funding cuts

Online tools are becoming ever more important to biology, but financial support is unstable.

Monya Baker

05 September 2012

ExPASy Proteomics Server

Databases Tools Services Mirrors About Contact

SWISS-PROT should have been 10 years old in July 1996, but it may disappear on June 30, 1996

Due to funding problems, SWISS-PROT as well as PROSITE, and the ENZYME nomenclature databases will disappear on June 30, 1996 if no solution is found before that date. The ExPASy WWW server and all services associated with it will also shut down. The distribution of the SWISS-2DPAGE database will also be discontinued. Other external databases, WWW services and software packages that depend on SWISS-PROT,

tair

| Search | Browse | Tools | Portals | Download | Submit | News | ABRC Stocks |

Home > About Us > About TAIR > TAIR Funding

TAIR Funding Updates and Discussion Forum

Jump to Comments

TAIR launches new corporate sponsorship program (7/23/2010)

Dear TAIR user community,

To help us through the current funding crisis we recently established a new TAIR corporate sponsorship program. We feel that this approach is preferable to implementing a subscription requirement for the private sector because it will allow us to keep TAIR open and free of login requirements, facilitating the free exploration of data by all scientists. Two companies (Dow AgroSciences and Syngenta) and one research organization (Gregor Mendel Institute) have already become TAIR sponsors. More information can be found on our sponsorship page.

TAIR Funding Crisis (10/16/2009)

Dear TAIR user community,

About TAIR
About TAIR
TAIR Staff
TAIR Board
TAIR Data Sources
Hyperlinking to TAIR
Citing TAIR
TAIR Database Schema
Publications
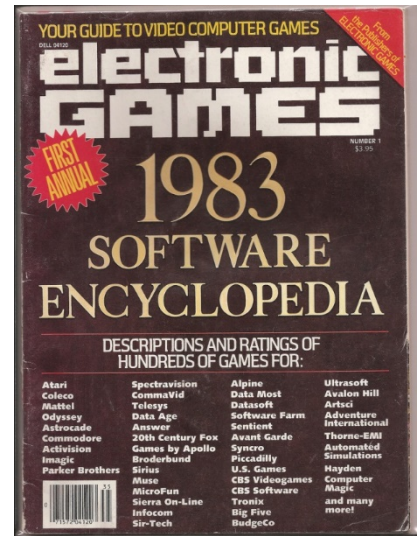TAIR Software
TAIR Database Statistics
TAIR Usage Statistics
TAIR Presentations (ppt)

CRISIS III

Non-existent software archives

Science The World's Leading Journal of Original Scientific Research, Global News, and Commentary.

Article Views

› Abstract

› **Full Text**

› Full Text (PDF)

› Figures Only

Article Tools

› Leave a comment (2)

› Save to My Folders

› Download Citation

› Alert Me When Article is Cited

› Post to CiteULike

‹ Prev | Table of Contents | Next ›

Leave a comment (2)

PERSPECTIVE

Reproducible Research in Computational Science

Roger D. Peng

± Author Affiliations

To whom correspondence should be addressed. E-mail: rpeng@jhsph.edu

ABSTRACT

Computational science has led to exciting new developments, but the nature of the work has exposed limitations in our ability to evaluate published findings. Reproducibility has the potential to serve as a minimum standard for judging scientific claims when full independent replication of a study is not possible.

Home | News & Comment | Research | Careers & Jobs | Current Issue | Archive | Audio & Video | For Au

NATURE | PERSPECTIVES

The case for open computer programs

Darrel C. Ince, Leslie Hatton & John Graham-Cumming

Affiliations | Contributions | Corresponding author

Scientific communication relies on evidence that cannot be entirely
included in publications, but the rise of computational science has added
a new layer of inaccessibility. Although it is now accepted that data
should be made available on request, the current regulations regarding
the availability of software are inconsistent. We argue that, with some
exceptions, anything less than the release of source programs is
intolerable for results that depend on computation. The vagaries of
hardware, software and natural language will always ensure that exact
reproducibility remains uncertain, but withholding code increases the
chances that efforts to reproduce results will fail.

日本語要約

print

email

download pdf

view interactive pdf

download citation
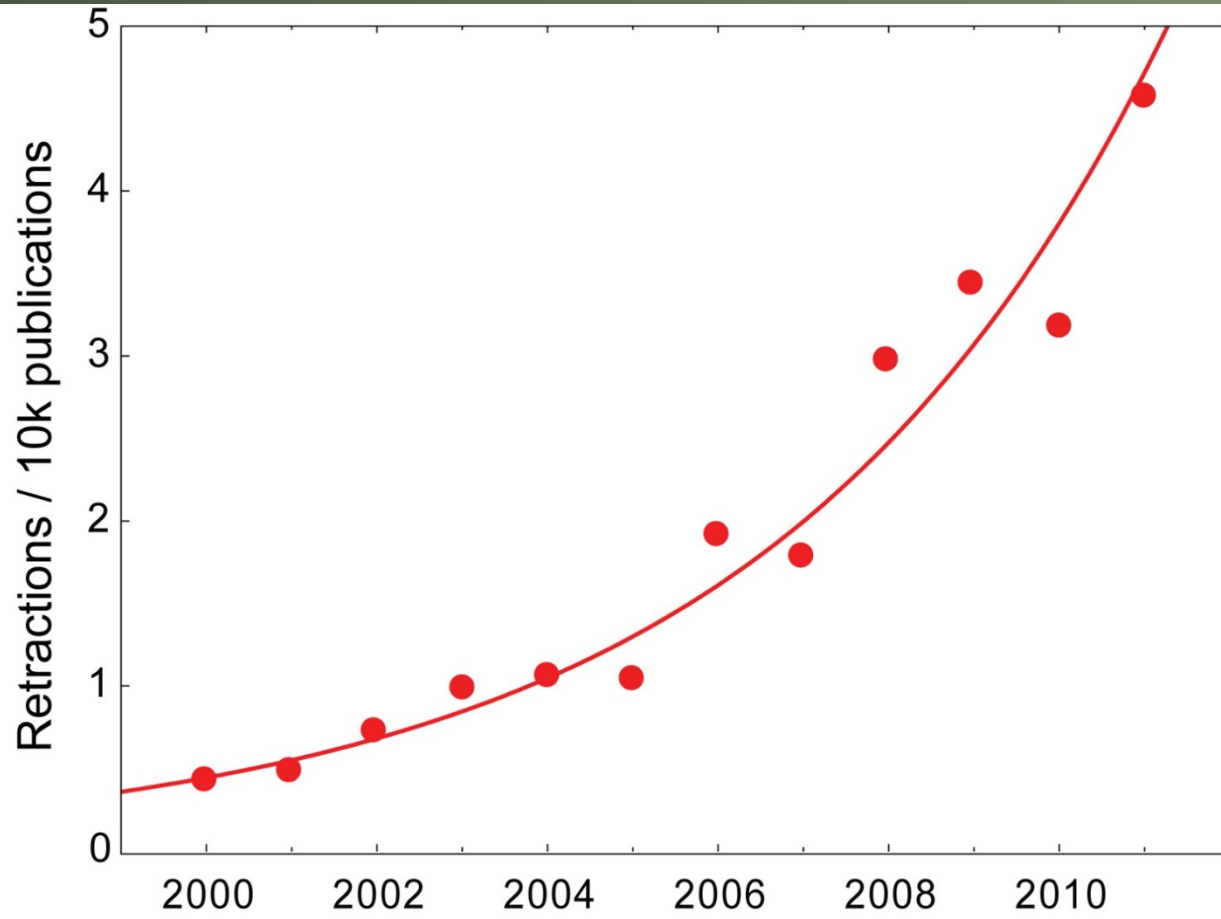
order reprints

rights and permissions

Today's Digital Dystopia

- Institutional email
- Institutional webspace
- Institutional blog
- Library access card
- Open access repository

- No archiving of texts
- No archiving of code
- No archiving of data

Consequences?

Journal Rank

Only read publications from high-ranking journals

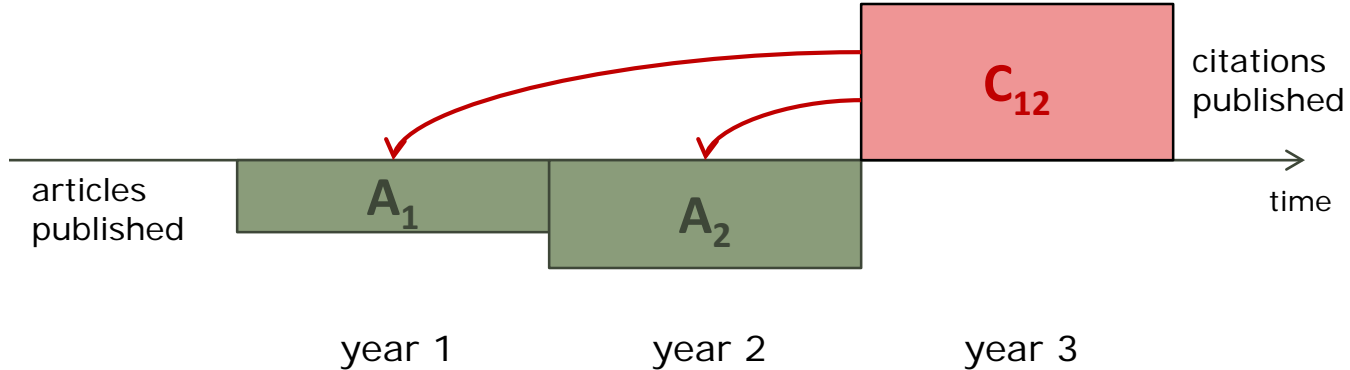# Journal Rank

Only publish in high-ranking journals

METRICS

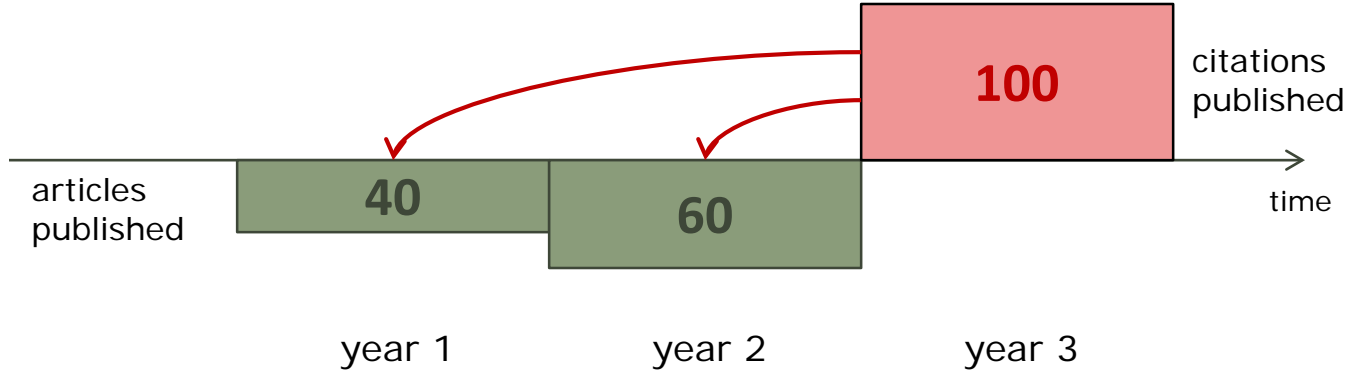

Is journal rank like astrology?

The Impact Factor

Introduced in 1950's by Eugene Garfield: ISI

$$IF(year\ 3) = \frac{C_{12}}{A_1 + A_2}$$

The Impact Factor

Introduced in 1950's by Eugene Garfield: ISI

$$IF(year\ 3)$$
$$= \frac{100}{40+60} = 1$$

The Impact Factor

Journal X IF 2013=

$$\frac{\text{All citations from TR indexed journals in 2013 to papers in journal X}}{\text{Number of citable articles published in journal X in 20011/12}}$$
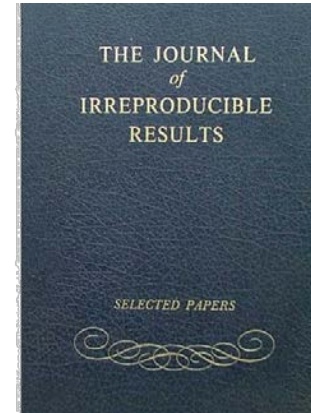
THOMSON REUTERS

€30,000-130,000/year subscription rates
Covers ~11,500 journals (Scopus covers ~16,500)
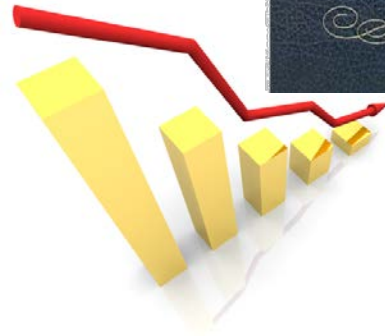
Main Problems with the IF

- Negotiable

- Irreproducible

- Mathematically unsound

Negotiable

- PLoS Medicine, IF 2-11 (8.4)
  (The *PLoS Medicine* Editors (2006) The Impact Factor Game. PLoS Med 3(6): e291. http://www.plosmedicine.org/article/info:doi/10.1371%2Fjournal.pmed.0030291)

- Current Biology IF from 7 to 11 in 2003
  – Bought by Cell Press (Elsevier) in 2001...

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	20020	7.007	2.713	341	3.5	3.7
	Cited Journal Citing Journal Source Data Journal Self Cites							

CITED JOURNAL DATA   CITING JOURNAL DATA   IMPACT FACTOR TREND

Journal Information ⓘ

Full Journal Title: CURRENT BIOLOGY
ISO Abbrev. Title: Curr. Biol.
JCR Abbrev. Title: CURR BIOL
ISSN: 0960-9822
Issues/Year: 24
Language: ENGLISH
Journal Country/Territory: UNITED STATES
Publisher: CELL PRESS
Publisher Address: 1100 MASSACHUSETTS AVE, CAMBRIDGE, MA 02138
Subject Categories: BIOCHEMISTRY & MOLECULAR BIOLOGY   VIEW JOURNAL SUMMARY LIST

Journal Rank in Categories: JOURNAL RANKING

Journal Impact Factor ⓘ

Cites in 2002 to items published in: 2001 = 3314   Number of items published in: 2001 = 528

     2000 = 3917   2000 = 504

     Sum: 7231   Sum: 1032

Calculation: Cites to recent items $\dfrac{7231}{1032}$ = **7.007**

             Number of recent items

WELCOME | ? HELP | RETURN TO LIST

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	20020	7.007	2.713	341	3.5	3.7
	Cited Journal Citing Journal	Source Data	Journal Self Cites					

CITED JOURNAL DATA | CITING JOURNAL DATA | IMPACT FACTOR TREND

Journal Impact Factor ⓘ

Cites in 2002 to items published in: 2001 = 3314   Number of items published in: 2001 = 528
                                      2000 = 3917   2000 = 504
                                      Sum: 7231   Sum: 1032

Calculation: Cites to recent items   7231 = **7.007**
             Number of recent items   1032

Journal Citation Reports®

WELCOME | HELP | RETURN TO LIST

2002 JCR Science Edition

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	20020	7.007	2.713	341	3.5	3.7
		Cited Journal	Citing Journal	Source Data	Journal Self Cites			

CITED JOURNAL DATA | CITING JOURNAL DATA | IMPACT FACTOR TREND

Journal Impact Factor ⓘ

Cites in 2002 to items published in: 2001 = 3314   Number of items published in: 2001 = 528
                                     2000 = 3917   2000 = 504
                                     Sum: 7231   Sum: 1032

Calculation: Cites to recent items   7231 = **7.007**
             Number of recent items 1032

2003 JCR Science Edition

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	22589	11.910	2.683	331	3.8	4.0
		Cited Journal	Citing Journal	Source Data	Journal Self Cites			

CITED JOURNAL DATA | CITING JOURNAL DATA | IMPACT FACTOR TREND | RELATED JOURNALS

Journal Impact Factor ⓘ

Cites in 2003 to items published in: 2002 = 3628   Number of items published in: 2002 = 334
                                     2001 = 3923   2001 = 300
                                     Sum: 7551   Sum: 634

Calculation: Cites to recent items   7551 = **11.910**
             Number of recent items 634

Journal Citation Reports®

[WELCOME] [HELP] [RETURN TO LIST]

2002 JCR Science Edition

Journal: CURRENT BIOLOGY

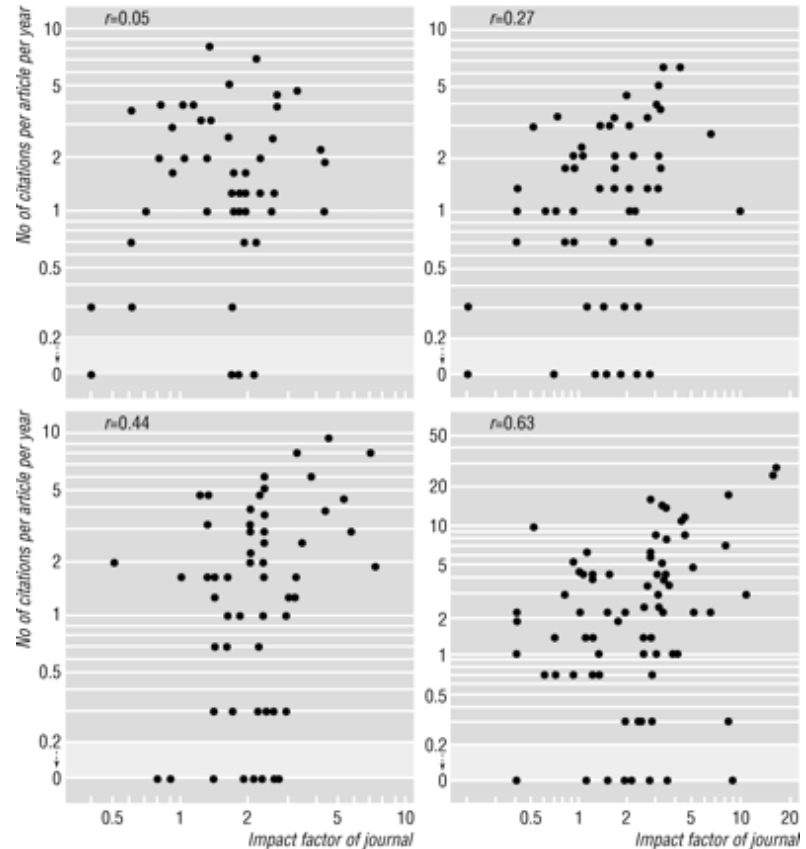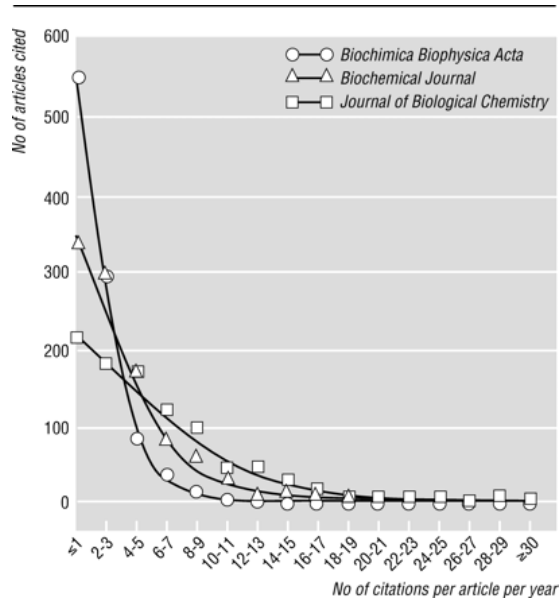| Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	20020	7.007	2.713	341	3.5	3.7
	Cited Journal	Citing Journal	Source Data	Journal Self Cites				

[CITED JOURNAL DATA] [CITING JOURNAL DATA] [IMPACT FACTOR TREND]

Journal Impact Factor ⓘ ▲

Cites in 2002 to items published in: 2001 = 3314 Number of items published in: 2001 = 528
2000 = 3917   2000 = 504
Sum: 7231   Sum: 1032

Calculation: Cites to recent items $\frac{7231}{1032}$ = **7.007**
Number of recent items

Journal Citation Reports®

[WELCOME] [HELP] [RETURN TO LIST]

2003 JCR Science Edition

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	22589	11.910	2.683	331	3.8	4.0
	Cited Journal	Citing Journal	Source Data	Journal Self Cites				

[CITED JOURNAL DATA] [CITING JOURNAL DATA] [IMPACT FACTOR TREND] [RELATED JOURNALS]

Journal Impact Factor ⓘ ▲

Cites in 2003 to items published in: 2002 = 3628 Number of items published in: 2002 = 334
2001 = 3923   2001 = 300
Sum: 7551   Sum: 634

Calculation: Cites to recent items $\frac{7551}{634}$ = **11.910**
Number of recent items

Journal Citation Reports®

[WELCOME] [HELP] [RETURN TO LIST]

2002 JCR Science Edition

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	20020	7.007	2.713	341	3.5	3.7
	Cited Journal	Citing Journal		Source Data	Journal Self Cites			

[CITED JOURNAL DATA] [CITING JOURNAL DATA] [IMPACT FACTOR TREND]

Journal Impact Factor ⓘ ▲

Cites in 2002 to items published in: 2001 = 3314   Number of items published in: 2001 = 528
                                      2000 = 3917   2000 = 504
                                      Sum: 7231   Sum: 1032

Calculation: Cites to recent items $\dfrac{7231}{\text{Number of recent items } 1032}$ = **7.007**

Journal Citation Reports®

[WELCOME] [HELP] [RETURN TO LIST]

2003 JCR Science Edition

Journal: CURRENT BIOLOGY

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Citable Items	Cited Half-life	Citing Half-life
☐	CURR BIOL	0960-9822	22589	11.910	2.683	331	3.8	4.0
	Cited Journal	Citing Journal		Source Data	Journal Self Cites			

[CITED JOURNAL DATA] [CITING JOURNAL DATA] [IMPACT FACTOR TREND] [RELATED JOURNALS]

Journal Impact Factor ⓘ ▲

Cites in 2003 to items published in: 2002 = 3628   Number of items published in: 2002 = 334
                                      2001 = 3923   2001 = 300
                                      Sum: 7551   Sum: 634

Calculation: Cites to recent items $\dfrac{7551}{\text{Number of recent items } 634}$ = **11.910**

Not Reproducible

- Rockefeller University Press bought their data from Thomson Reuters
- Up to 19% deviation from published records
- Second dataset still not correct

"My question is: Are we making an impact?"

Rossner M, van Epps H, Hill E (2007): Show me the data. The Journal of Cell Biology, Vol. 179, No. 6, 1091-1092 http://jcb.rupress.org/cgi/content/full/179/6/1091

Not Mathematically Sound

- Left-skewed distributions
- Weak correlation of individual article citation rate with journal IF

Seglen PO (1997): Why the impact factor of journals should not be used for evaluating research. BMJ 1997;314(7079):497 http://www.bmj.com/cgi/content/full/314/7079/497

Journal rank and citations

The weakening relationship between the Impact Factor and papers' citations in the digital age (2012): George A. Lozano, Vincent Lariviere, Yves Gingras arXiv:1205.4328
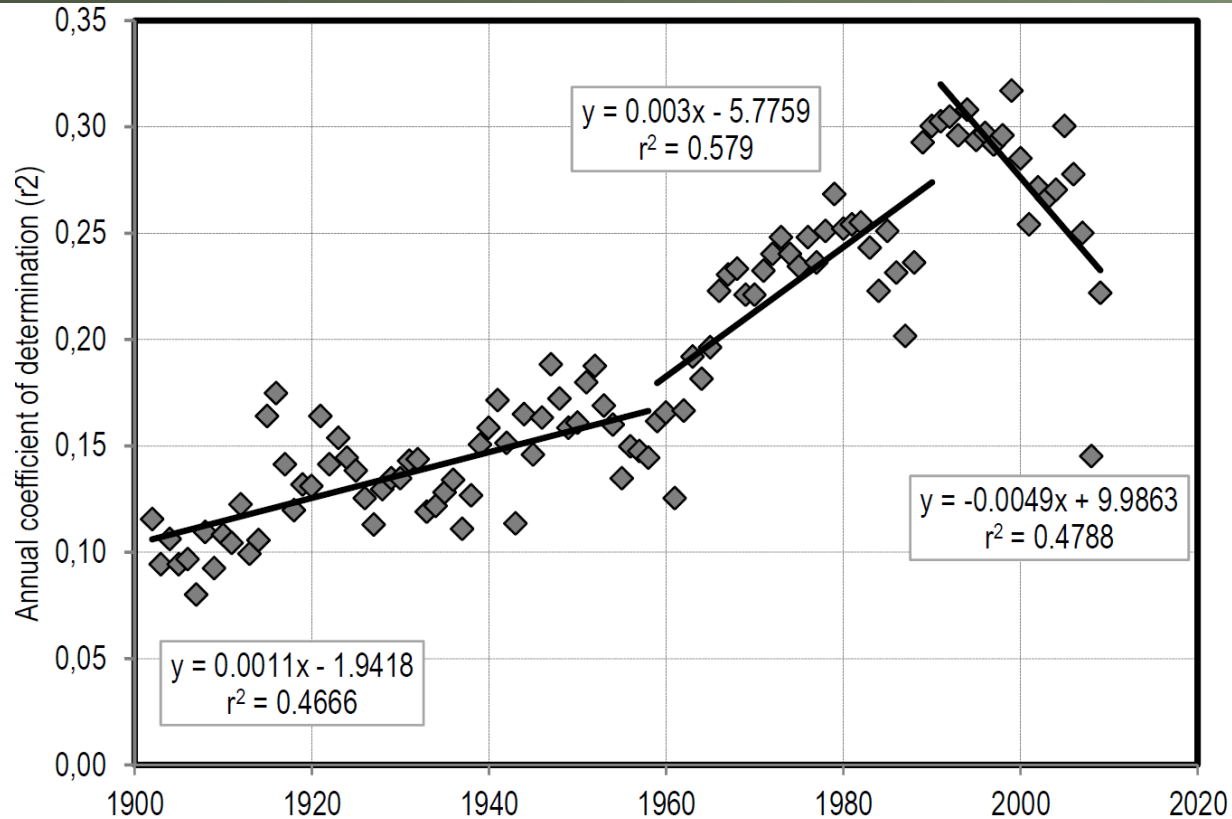
Journal Rank and Methodology

Brembs, B., Button, K., & Munafò, M. (2013). Deep impact: unintended consequences of journal rank. Frontiers in Human Neuroscience, 7. doi:10.3389/fnhum.2013.00291
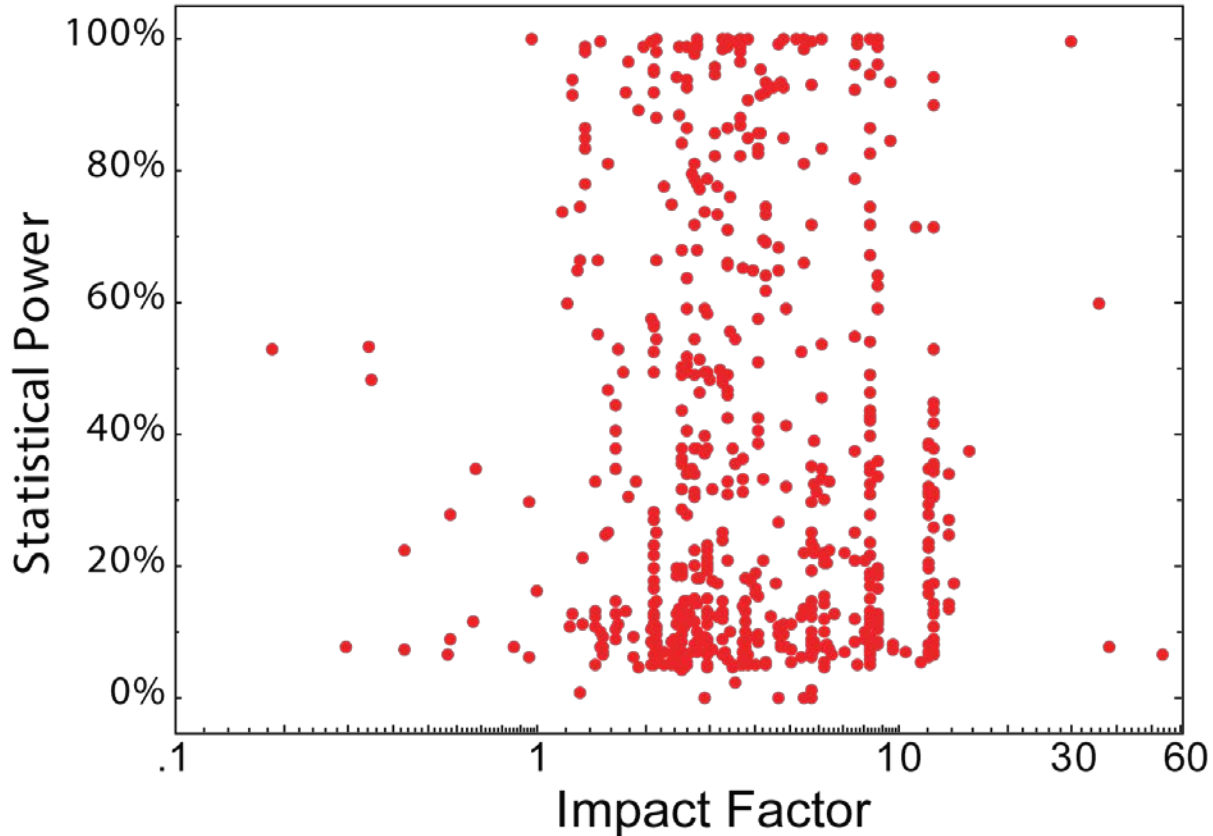
Journal Rank and Experimental Design
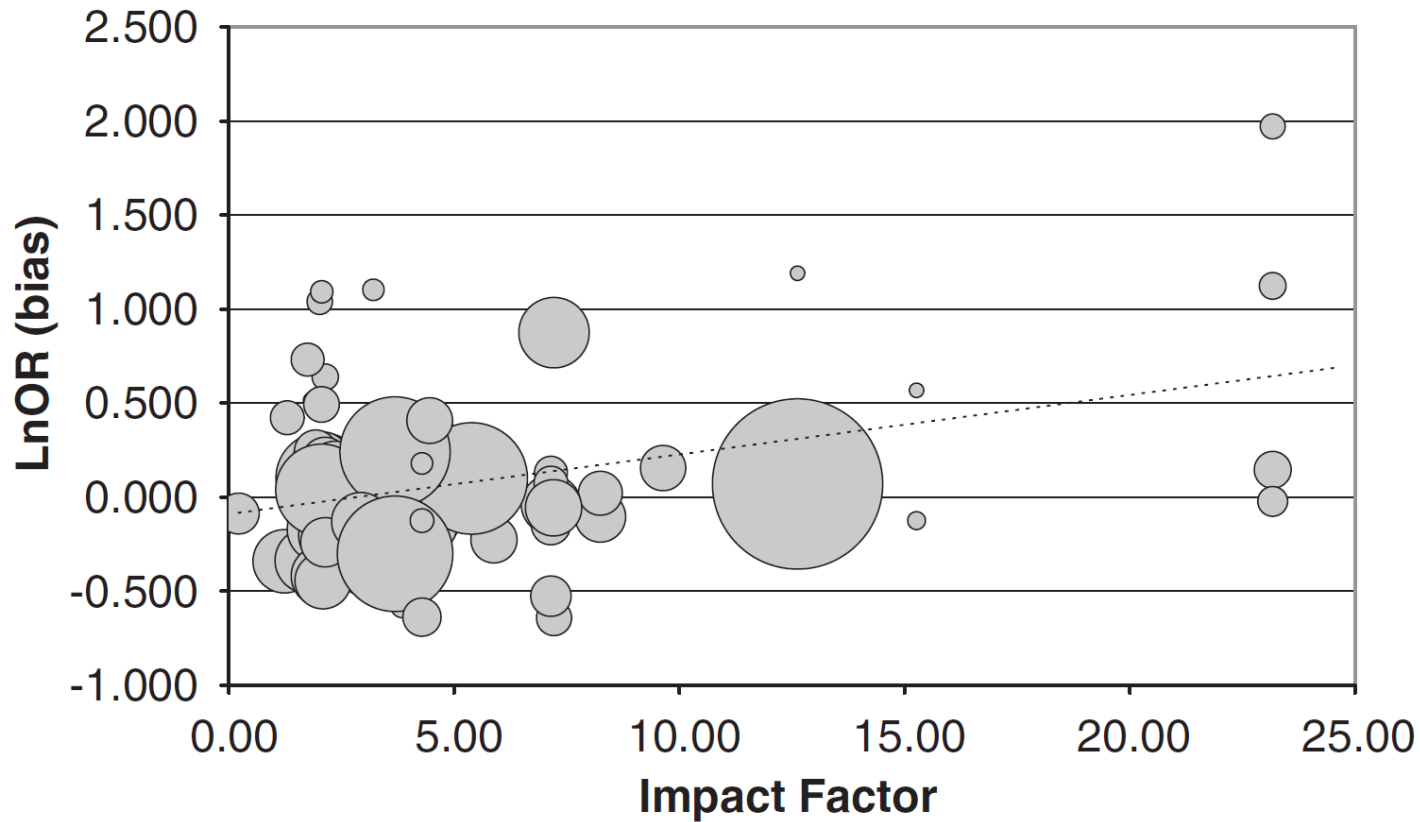
Journal Rank and Quality
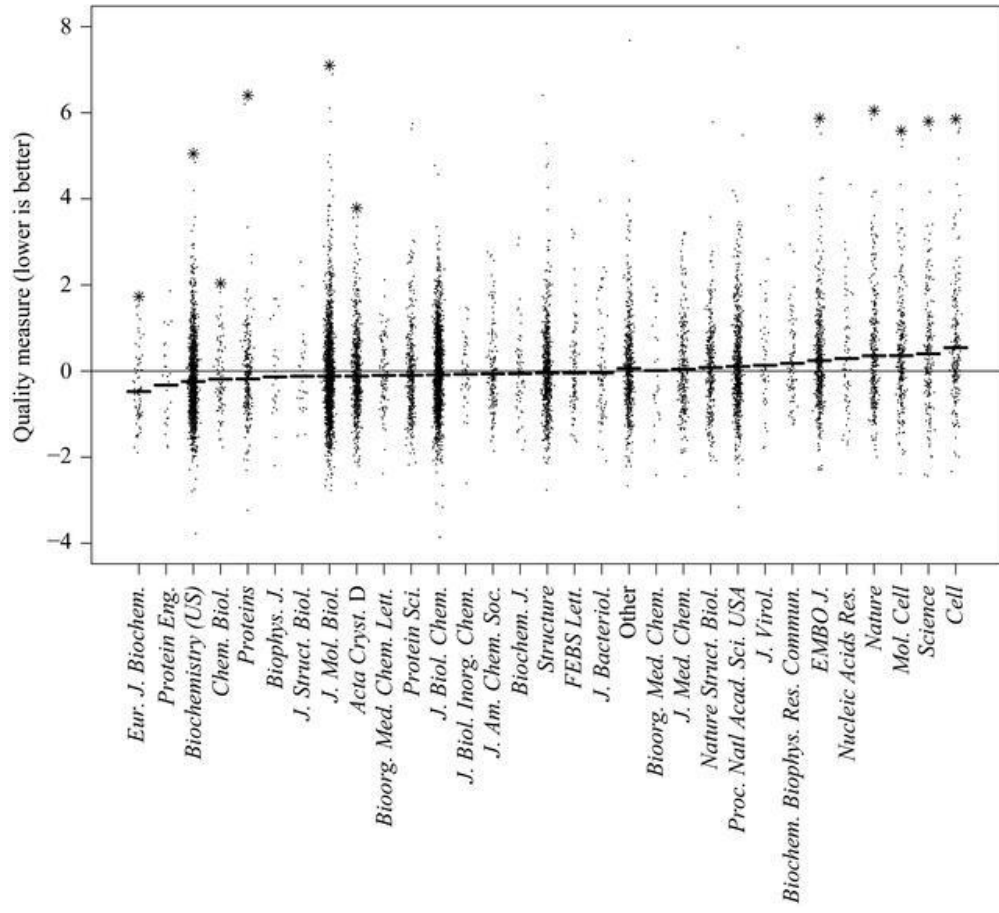
Journal Rank and Fraud/Error

Fang et al. (2012): Misconduct accounts for the majority of retracted scientific publications. PNAS 109 no. 42 17028-17033
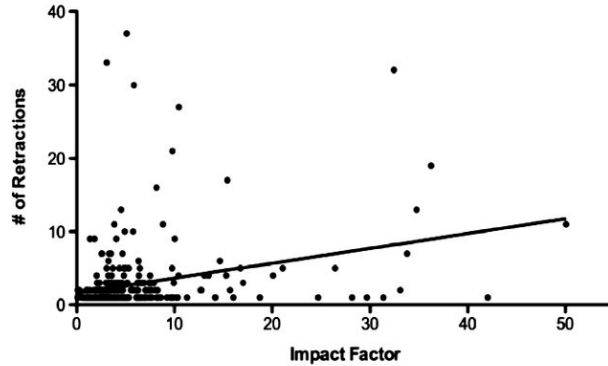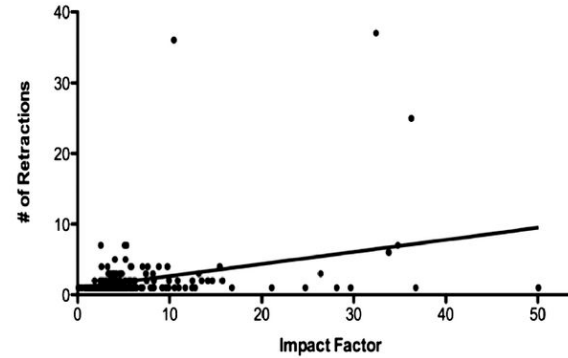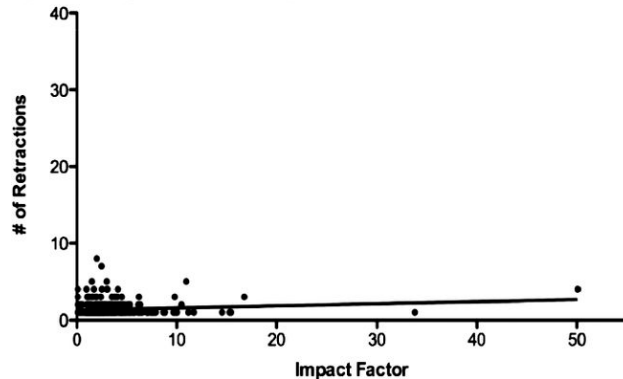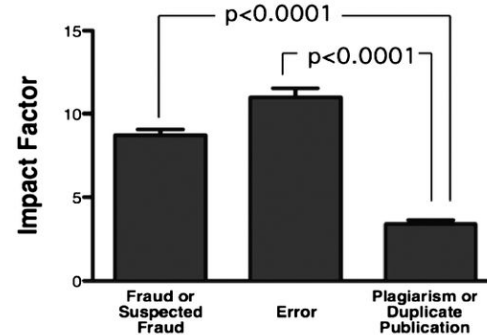
Journal Rank and Retractions
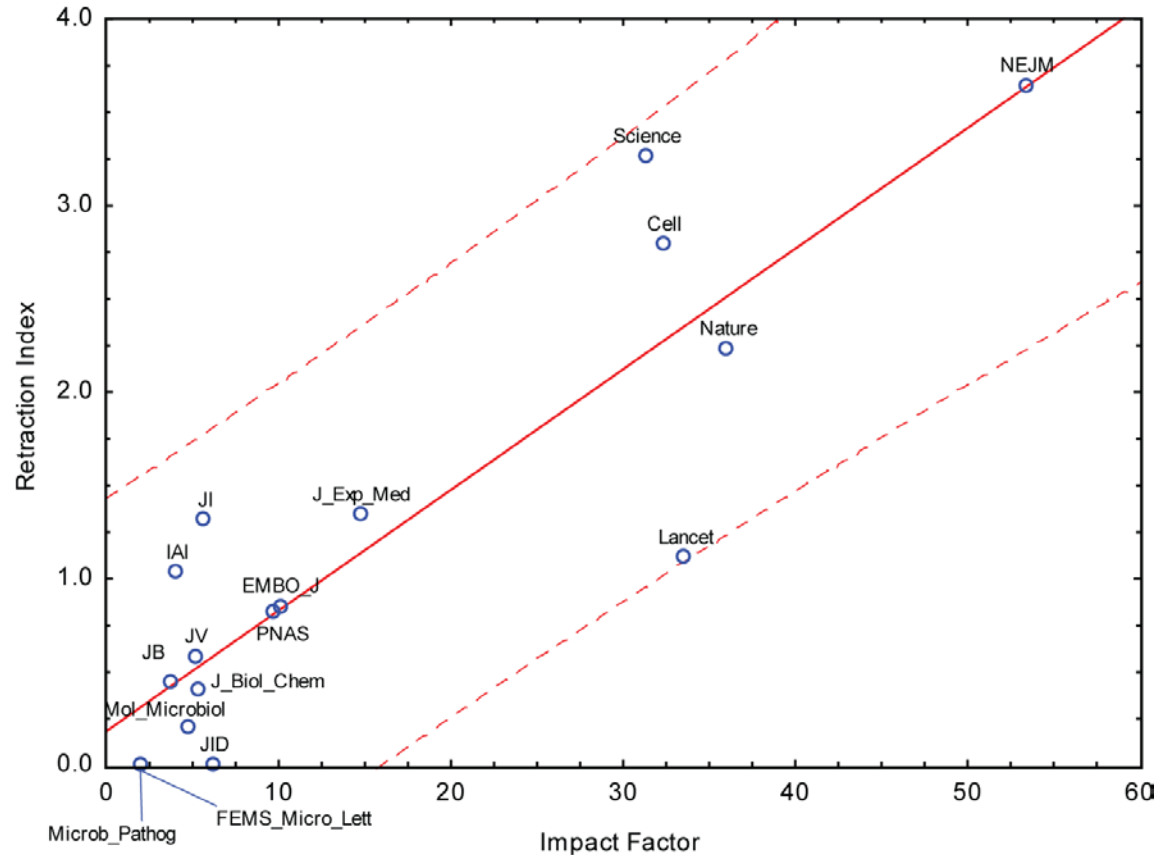
NO EVIDENCE

Journal rank is a figment of our imagination.

INCENTIVES

"High-Impact" journals attract the most unreliable research

The Economist

Britain's angry white men
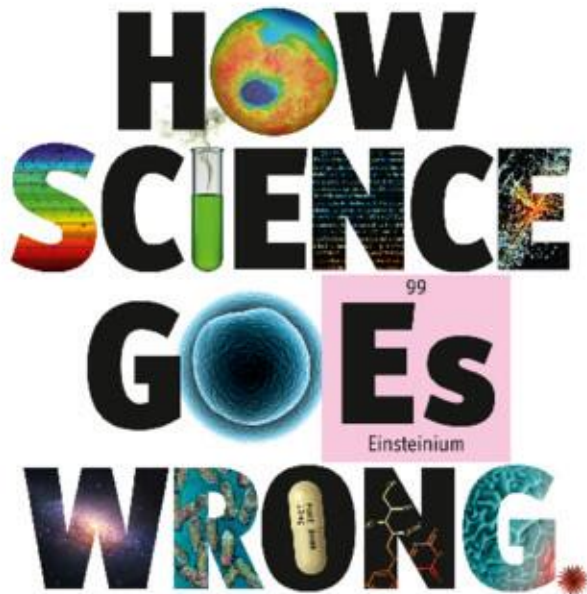
How to do a nuclear deal with Iran

Investment tips from Nobel economists

Junk bonds are back

The meaning of Sachin Tendulkar

HOW SCIENCE GOES WRONG

99
Einsteinium

OCTOBER 19TH – 25TH 2013   Worldwide cover

"Do you trust scientists?"

"Who can you trust these days?"

"Politicians? Financial experts? Realtors?"

The costs of legacy publishing
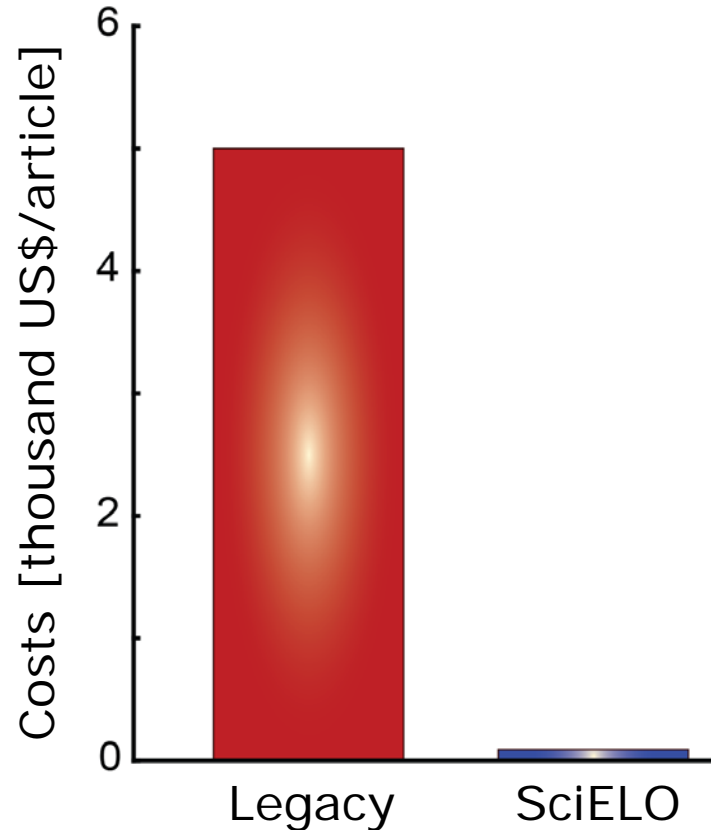
(Sources: Van Noorden, R. (2013). Open access: The true cost of science publishing. *Nature* 495, 426–9; Packer, A. L. (2010). The SciELO Open Access: A Gold Way from the South. *Can. J. High. Educ.* 39, 111–126)

The costs of legacy publishing
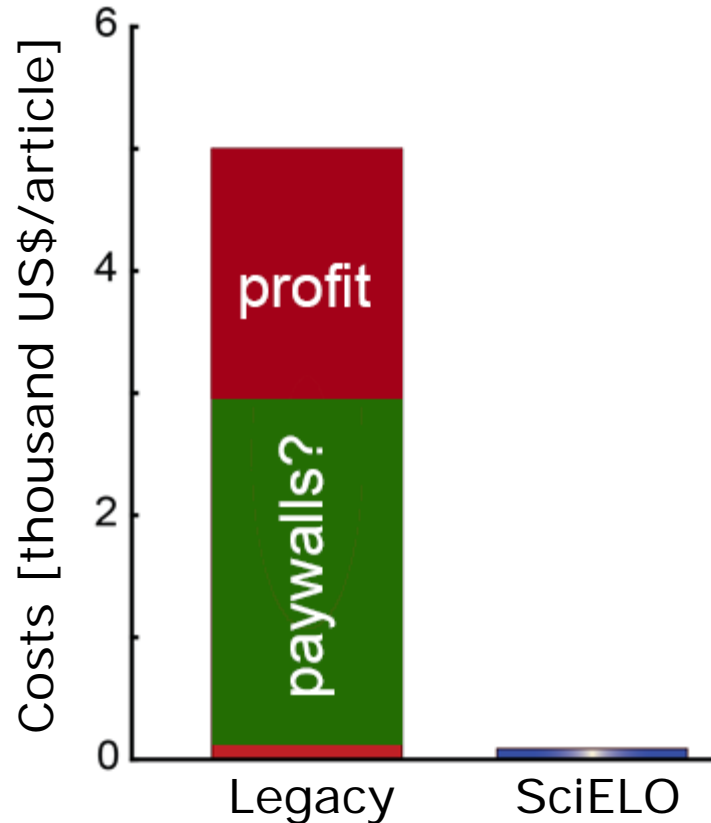
(Sources: Van Noorden, R. (2013). Open access: The true cost of science publishing. *Nature* 495, 426–9; Packer, A. L. (2010). The SciELO Open Access: A Gold Way from the South. *Can. J. High. Educ.* 39, 111–126)

Status Quo

Status Quo

Access?

SO MUCH FOR THAT

The disaster that is our digital infrastructure

WHAT NOW?

Science, tear down this paywall!

UTOPIA 8.535 km

Potential for innovation
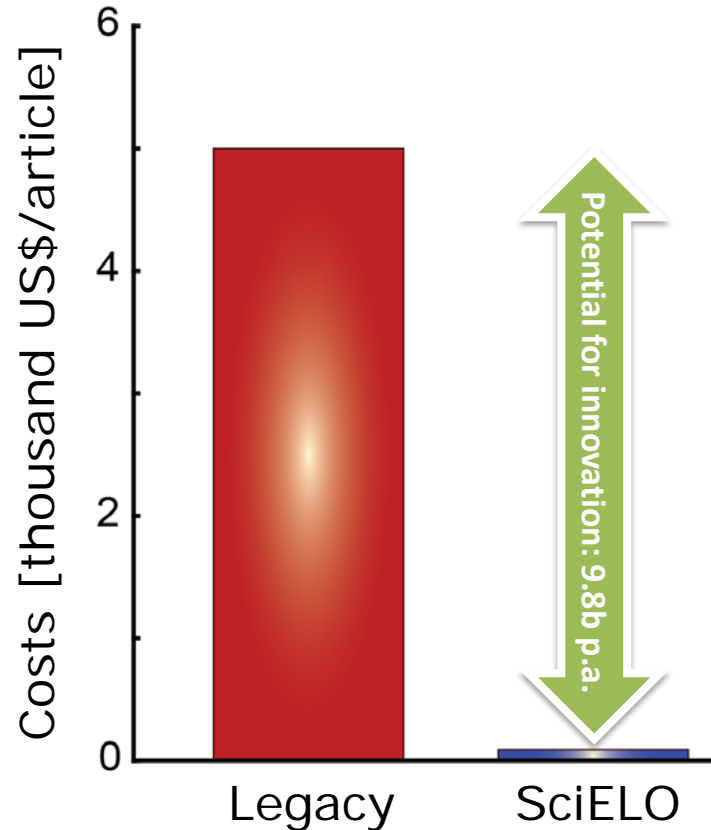
(Sources: Van Noorden, R. (2013). Open access: The true cost of science publishing. *Nature* 495, 426–9; Packer, A. L. (2010). The SciELO Open Access: A Gold Way from the South. *Can. J. High. Educ.* 39, 111–126)

2. Hire software developers

3. Cancel all subscriptions

Superior Alternative

- Sustainable, global search and access for all literature, code and data

- Intelligent sort, filter and discover functionalities

- Scientific, evidence-based reputation system

- Authoring tools for collaborative writing and single-click submission

- Orders of magnitude cheaper: US$90/paper (e.g. SciELO) vs. US$5,000/paper (subscription)

JULIEN COLOMB

One person is not an institutional infrastructure
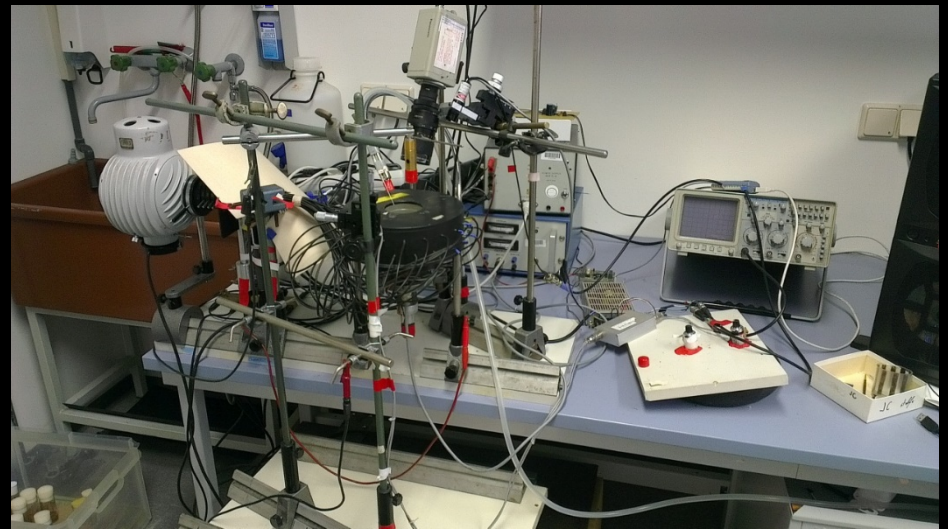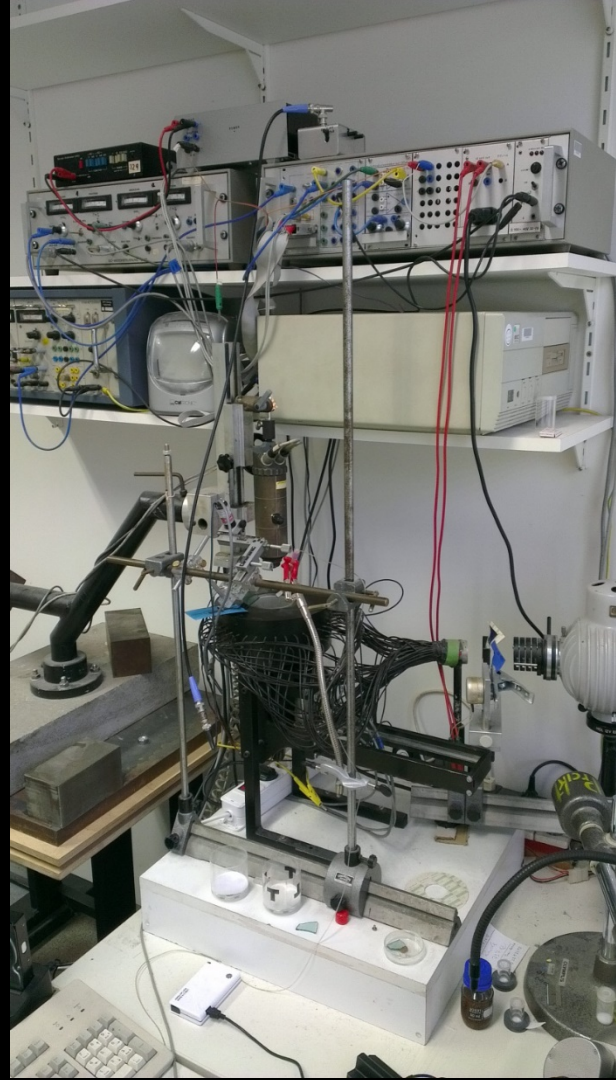
Software to control the experiment and save the data

Software to analyze and visualize the data

buridan.sourceforge.net

Buridan ⚫ brembs, jwessnit, lutzer, thrawny

Summary   Files   Reviews   Support   Develop

Home

Name ⬍	Modified ⬍	Size ⬍	
📁 other(blueprints)	2012-09-17		Stats
📁 Analysis	2012-09-17		Stats
📁 Tracker	2011-11-30		Stats
📁 data examples	2011-04-11		Stats

Totals: 23 Items   778.9 MB

GitHub

Scientific Code with Persistent Identifiers

zenodo

Research. Shared.

Search

Filter by types

GitHub integration

Want to preview the public beta of GitHub integration? Just Sign In with your GitHub account and click here.

Recent Uploads

13 September 2013 **Journal article** **Embargoed access**

View

Segmentation of dynamic PET images with kinetic spectral clustering

Mouysset, S ; Zbib, H ; Stute, S ; Girault, JM ; *et al*

Segmentation is often required for the analysis of dynamic positron emission tomography (PET) images. However, noise and low spatial resolution make it a difficult task and several supervised and unsupervised methods have been proposed in the literature ...

Uploaded by yannic on 05 March 2014.

New to ZENODO?

- **Research. Shared.** — all research outputs from across all fields of science are welcome!
- **Citeable. Discoverable.** — uploads gets a Digital Object Identifier (DOI) to make them

Search articles...

GO

Advanced Search

Browse RSS

Home   Browse Articles   About   For Readers   For Authors and Reviewers

Journals   Hubs   PLOS.org

RESEARCH ARTICLE

OPEN ACCESS

Open Source Tracking and Analysis of Adult *Drosophila* Locomotion in Buridan's Paradigm with and without Visual Targets

Article | Metrics | Related Content | Comments: 1

Julien Colomb[1*], Lutz Reiter[1], Jedrzej Blaszkiewicz[1], Jan Wessnitzer[2], Bjoern Brembs[1,3]

1 FB Biologie, Chemie, Pharmazie, Institut für Biologie-Neurobiologie, Freie Universität Berlin, Berlin, Germany, 2 Institute for Perception, Action and Behaviour, School of Informatics, University of Edinburgh, Edinburgh, United Kingdom, 3 Department of Genetics, Universität Leipzig, Leipzig, Germany

✎ To **add a note**, highlight some text. Hide notes

💬 Make a general comment

Jump to

Abstract
Introduction
Materials and Methods
Results
Discussion
Supporting Information
Acknowledgments
Author Contributions
References

📊 View All Figures

Abstract   Top

Background

[1] Insects have been among the most widely used model systems for studying the control of locomotion by nervous systems. In *Drosophila*, we implemented a simple test for locomotion: in Buridan's paradigm, flies walk back and forth between two inaccessible visual targets [1]. Until today, the lack of easily accessible tools for tracking the fly position and analyzing its trajectory has probably contributed to the slow acceptance of Buridan's paradigm.

Methodology/Principal Findings

Download: PDF | Citation | XML

Print article

EzReprint New & improved!

Metrics ⓘ

Total Article Views: 1,144
Published on August 9, 2012

Citations
No citations found

Social Networks
Facebook (13)
Twitter (3)
Mendeley (8)

More

Related Content

Related Subject Categories
Biology and life sciences, Computer and information sciences, Engineering and technology, Physical sciences

Related Articles on the Web
Google Scholar
PubMed

More

Share this Article ⓘ

Email this article
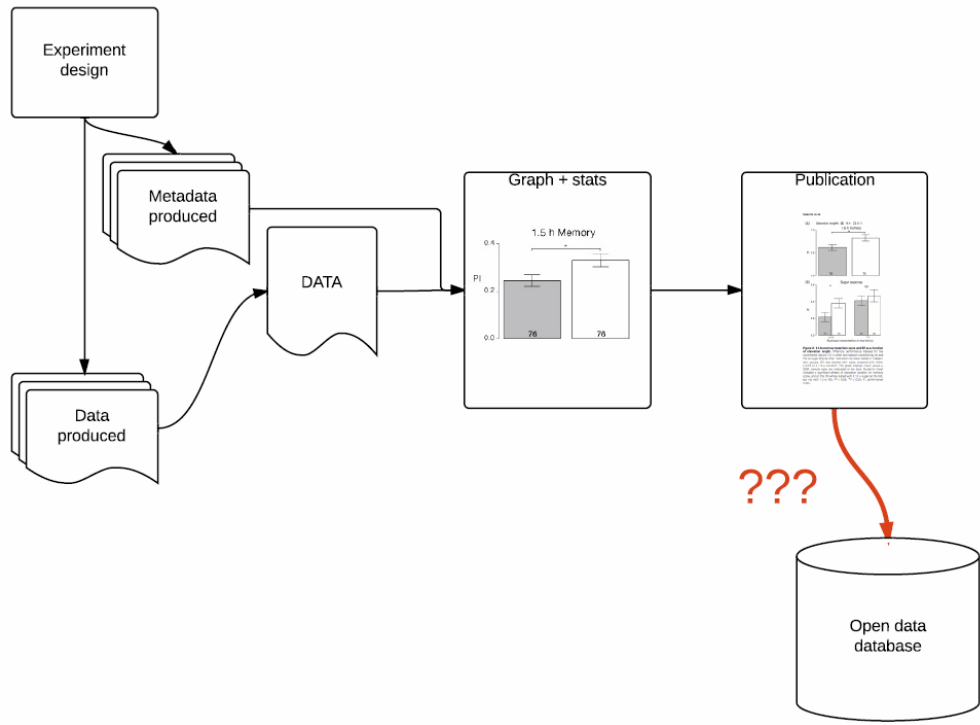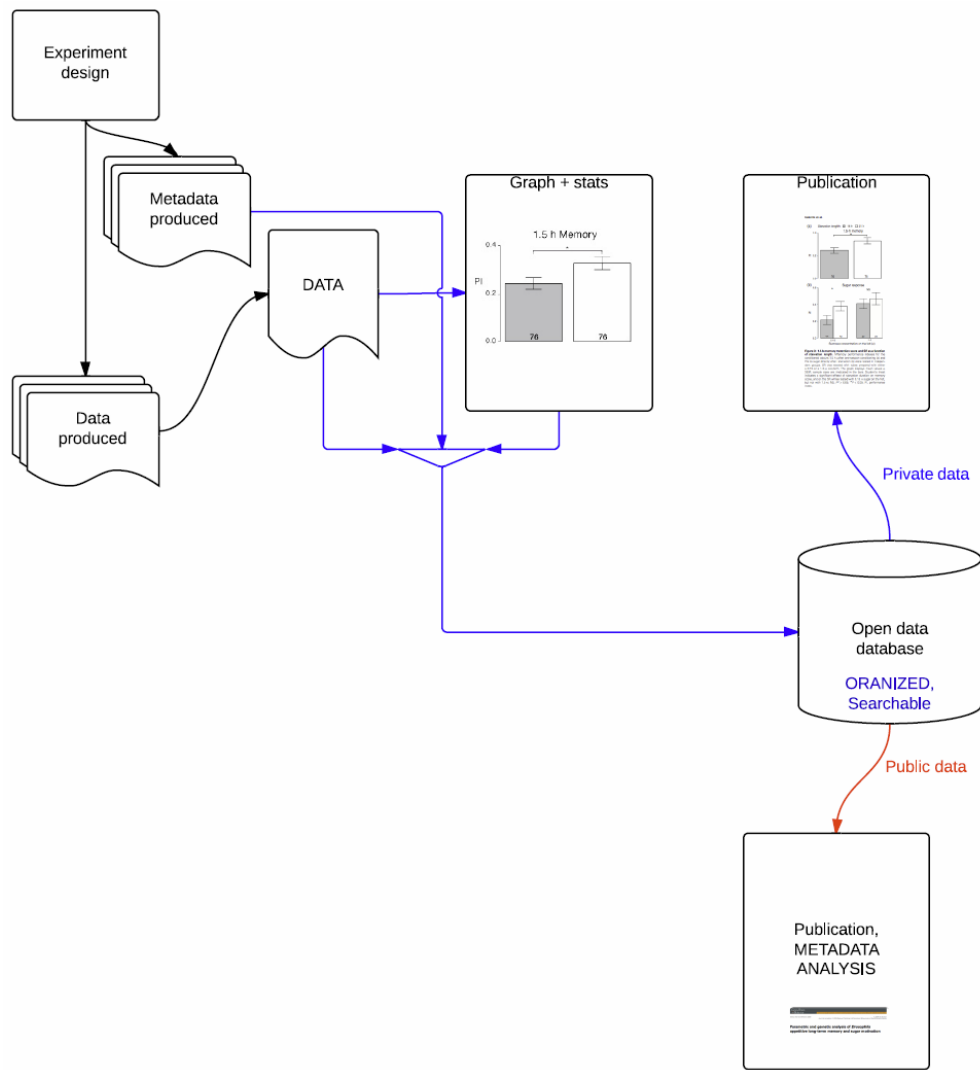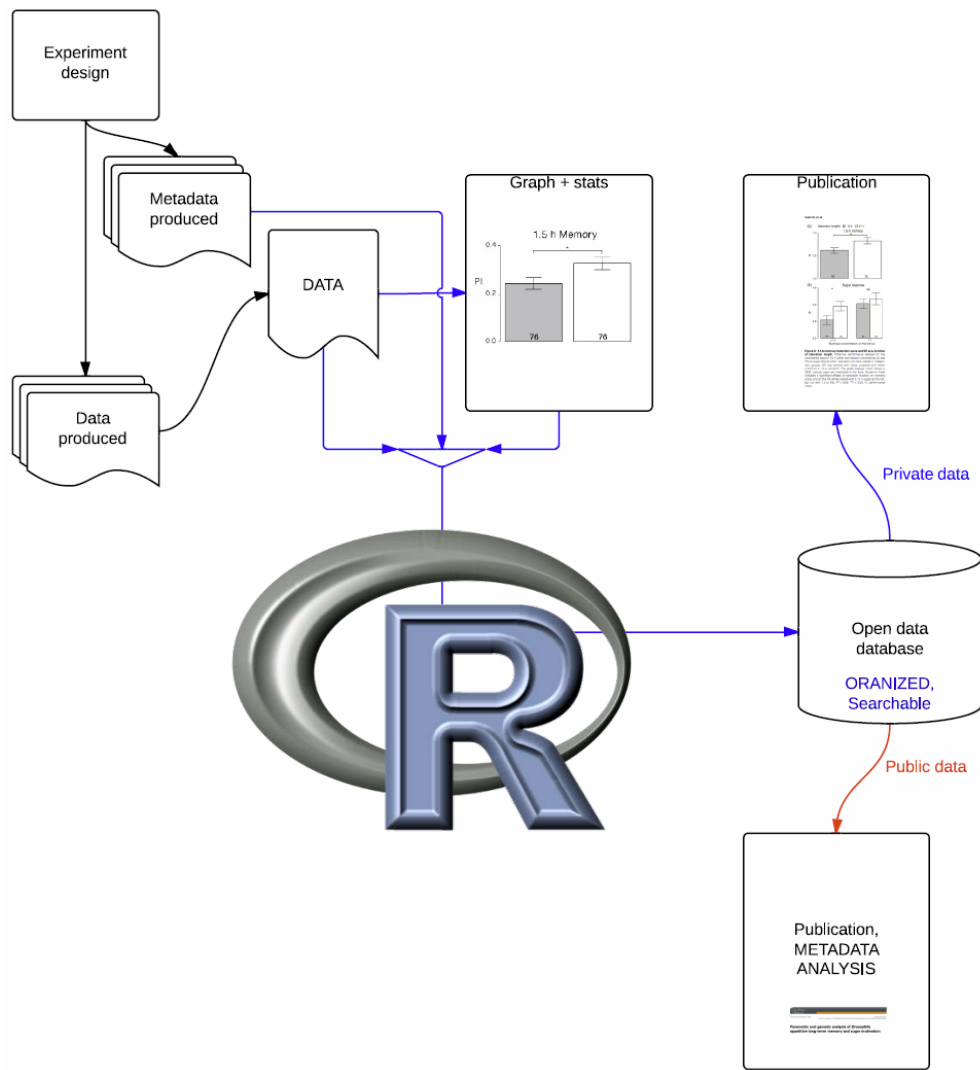
Features

1GB of private space

taggable and easily filtered, your research data is better managed and easy to locate
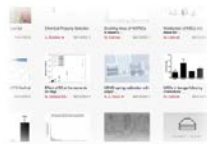
Unlimited public space

upload to your heart's content the more - the better
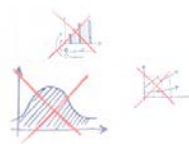
Publish negative data

all published research is citable

Upload all formats

all research outputs welcomed – images, graphs, videos, datasets

Quick & simple upload

upload to your heart's content the more - the better

Cloud based

Secure and accessible from anywhere

API

Desktop uploader

Collaborative spaces

rfigshare

Programmatic interface to Figshare.com

Installing Stable version available

Development Version   🔑 API Keys

```
install.packages('rfigshare')
# If you would like to install a development version:
library(devtools)
install_github("rfigshare", "ropensci")
```

The dev version of rfigshare has newer functions currently in development. Some of these may not be stable.

🐙 View this project on github

Quick start guide

```
library("rfigshare")
```

For a full list of functions and a web manual, visit the package repository on GitHub.

Tutorials

Tutorials coming shortly.

Use cases & resources

If you have ideas for use-cases or have written about this package anywhere, please drop us a line.

Add new, or update an existing article

```
55  #brembs lab account
56  options(FigshareKey = "A                    g")
57  options(FigsharePrivateKey = "0            SA")
58  options(FigshareToken = ")                              Q")
59  options(FigsharePrivateToken = "0         A")
60  ###end figshare info
61
62  require(rfigshare)
63  fs_auth()
64
65  ##need to create the article and get its id here: do it only once, then write the id and comment this part:
66
67 - if (is.na(id_test)){
68  #    article_title= "d42Gal4 UPKCi experiment: with and without UASGFP and chaGal80"
69  #    article_description = "this is a temporary article"
70  #    article_type =  "figure"   #, "dataset" #,"media", "poster", "paper", "fileset"
71  #    article_tags = c("self-learning","genetics")
72  #    article_categories="Neuroscience"
73  #    article_files = "T:dataforfigshare.png"
74  #    article_visibility=   "draft" #"private" "public" #
75  #    article_authors= c("julien colomb")
76  #    article_links="http://lab.brembs.net"
77
78
79    id <- fs_new_article(title = article_title, description = article_description,
80                         type = article_type, tags = article_tags, categories=article_categories ,
81                         files = article_files, visibility= article_visibility, #authors = article_authors,
82                         links=article_links)
83    ##add björn as author (the "ö" leads to error on figshare at this time):
84    rfigshare:::fs_add_author(article_id = id_test, author_id = 96464)
85
86    id
87 - }else{
88    newfile= "T:dataforfigshare.png"
89    fs_upload(id_test, file =newfile)
90  }
91
```
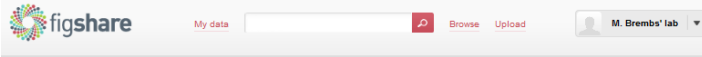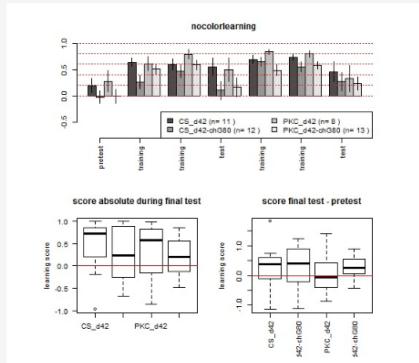
Run your script and...

Same type of experiments → same script

Default: → same categories
            → same tags
            → same authors
            → same links
            → same description
→ One complete article, in one click.

<u>Update the figure</u>:
Higher sample size directly published while analysed, your boss may see the results before you do! (or you may see the results of your student before they do)

Possibility to make it public and citable in one click or directly in the R code.

Citable?

http://dx.doi.org/10.6084/m9.figshare.97792

Citable!

FlyBase

Allele Dmel\Pkc53E^MB02781

Home	Tools	Files	Species	Documents	Resources	News	Help	Archives

Jump to Gene | Go

Profile Manager [▼] + − ?

Help | Open All | Close All

General Information

Symbol	Dmel\Pkc53E^MB02781	Species	*D. melanogaster*
Name		FlyBase ID	FBal0197029
Feature type	allele	Associated gene	Dmel\Pkc53E

Map (GBrowse)

```
                              2R
                              ├─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┤
                                      12820k                        12830k
          Pkc53E
          ├────────────────────────────────────────────────────────────►
                                                    CG43788
                                                     ▷
                                                       CG43789
                                                        ▷
            PBac{SAstopDsRed}LL04932        Mi{ET1}Pkc53E[MB02781]   PBac{PE
            ◄                                ◄                        →
            PBac{SAstopDsRed}LL04932
            ◆
                    P{GSV2}GS51513
                    ◆
```
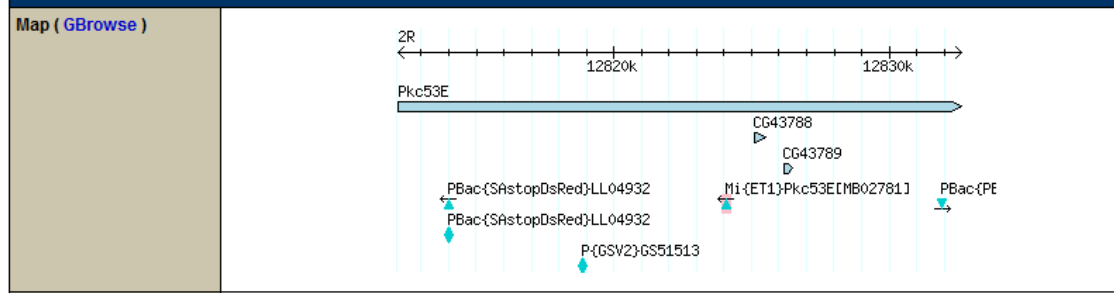
Allele class	
Mutagen	

⊞	Recent Updates
⊞	Nature of the Allele
⊞	Phenotypic Data
⊞	Interactions
⊞	Complementation & Rescue Data
⊞	Stocks (1)
⊞	Notes on Origin
⊞	External Crossreferences & Linkouts
⊞	Synonyms & Secondary IDs (1)
⊞	References (1)

Contact FlyBase   Cite FlyBase   Site Map

F1000Research » Articles

CrossMark
click for updates

RESEARCH ARTICLE

Sub-strains of *Drosophila* Canton-S differ markedly in their locomotor behavior [v1; ref status: indexed, http://f1000r.es/3is]

Julien Colomb[1], Björn Brembs[2]

➕ Author affiliations

Views 2273   Download As ▾ 143   🔖 Cite   ✉ Ⓜ 🐦 📘 Share   Track

Abstract

We collected five sub-strains of the standard laboratory wild-type *Drosophila melanogaster* Canton Special (CS) and analyzed their walking behavior in Buridan's paradigm using the CeTrAn software. According to twelve different aspects of their behavior, the sub-strains fit into three groups. The group separation appeared not to be correlated with the origin of the stocks. We conclude that founder effects but not laboratory selection likely influenced the gene pool of the sub-strains. The flies' stripe fixation was the parameter that varied most. Our results suggest that differences in the genome of laboratory stocks can render comparisons between nominally identical wild-type stocks meaningless. A single source for control strains may settle this problem.

✉ **Corresponding author:** Björn Brembs

How to cite: Colomb J and Brembs B. Sub-strains of *Drosophila* Canton-S differ markedly in their locomotor behavior [v1; ref status: indexed, http://f1000r.es/3is] *F1000Research* 2014, 3:176 (doi: 10.12688/f1000research.4263.1)

Competing interests: No competing interests were disclosed.

First published: 30 Jul 2014, 3:176 (doi: 10.12688/f1000research.4263.1)
First indexed: 15 Aug 2014, 3:176 (doi: 10.12688/f1000research.4263.1)
Latest published: 30 Jul 2014, 3:176 (doi: 10.12688/f1000research.4263.1)

Open Peer Review   ❓

Invited Referee Responses

	1	2	3
version 1 published 30 Jul 2014	✅ report	✅ report	✅ report

1   **Gregg Roman**, University of Houston, USA

2   **Josh Dubnau**, Cold Spring Harbor Laboratory, USA

3   **Hiromu Tanimoto**, Tohoku University, Japan **Vladimiros Thoma**, Tohoku University, Japan

Comments

No comments | Add Comment

Articles that may interest you

✅✅✅

RESEARCH ARTICLE

Variation in candidate genes *CLOCK* and *ADCYAP1* does not consistently predict differences in migratory behavior in the songbird genus *Junco* [v1; ref status: indexed, http://f1000r.es/11p]

DATA ARTICLE   ❓❓✅

The effects of behavioral control over stress on

Figure 3. The different sub-strains show a large spectrum of values for the stripe deviation parameter.

For every movement of the fly, the angle between its direction and the direction toward the stripes was calculated. The median of these angles was calculated for each fly, representing a quantification of stripe fixation by the fly. The value of each sub-strain in each session is depicted in boxplots: for each group, we represent the median, 25–75% quantiles and the total spread of the values (excluding outliers) as line, box and whiskers, respectively. The version of this figure on the *F1000Research* website is interactive, readers can define the type of whiskers displayed as either the 10th–90th percentiles (A) or Tukey whiskers (1.5 x IQR from 1st/3rd quartile; B). The text color code used for the genotypes is analogous to that used in Figure 2. The red horizontal line corresponds to the median value for random walks: 44°. Sample size is 11–12 for each boxplot. No statistical analysis was performed.

Re-Plot Figure

Define Whisker

Tukey ▾

Whiskers extend to values 1.5 x IQR from 1st/3rd quartile

Apply   Reset

HELP

Select option in the dropdown box and click Apply to re-plot figure. Click Reset to return to the default figure display.

Loading . . . Please Wait

Figure 3.The different sub-strains show a large spectrum of values for the stripe deviation parameter.

For every movement of the fly, the angle between its direction and the direction toward the stripes was calculated. The median of these angles was calculated for each fly, representing a quantification of stripe fixation by the fly. The value of each sub-strain in each session is depicted in boxplots: for each group, we represent the median, 25–75% quantiles and the total spread of the values (excluding outliers) as line, box and whiskers, respectively. The version of this figure on the *F1000Research* website is interactive, readers can define the type of whiskers displayed as either the 10th–90th percentiles (A) or Tukey whiskers (1.5 x IQR from 1st/3rd quartile; B). The text color code used for the genotypes is analogous to that used in Figure 2. The red horizontal line corresponds to the median value for random walks: 44°. Sample size is 11–12 for each boxplot. No statistical analysis was performed.

Re-Plot Figure

Define Whisker

Tukey

Whiskers extend to values 1.5 x IQR from 1st/3rd quartile

Apply   Reset

HELP

Select option in the dropdown box and click Apply to re-plot figure. Click Reset to return to the default figure display.
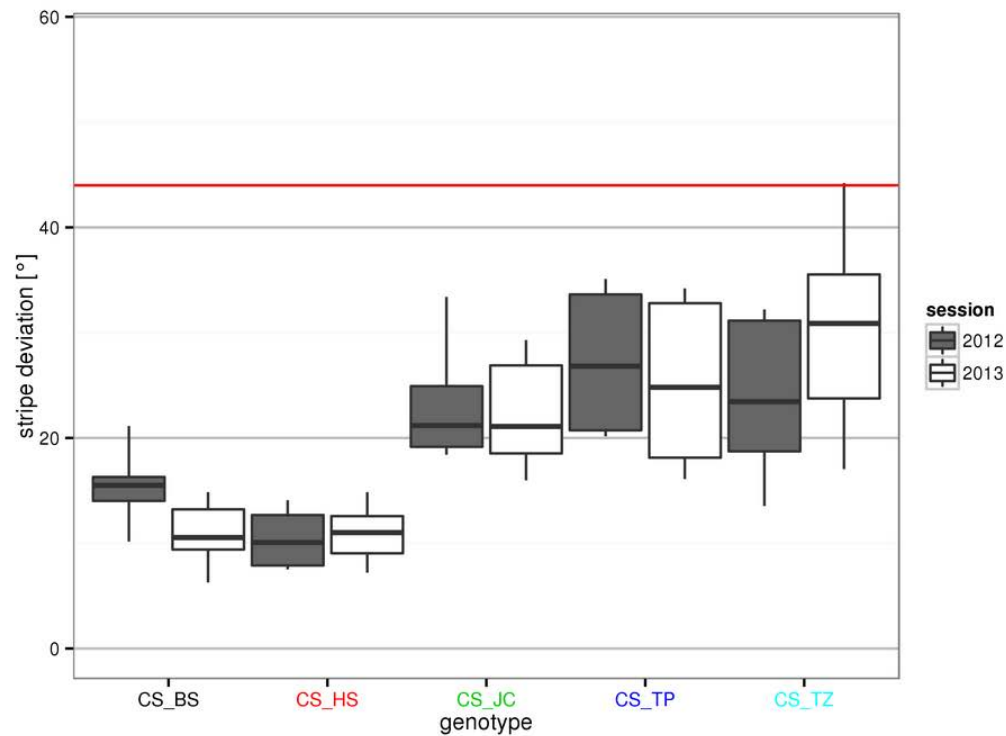
Figure 3. The different sub-strains show a large spectrum of values for the stripe deviation parameter.

For every movement of the fly, the angle between its direction and the direction toward the stripes was calculated. The median of these angles was calculated for each fly, representing a quantification of stripe fixation by the fly. The value of each sub-strain in each session is depicted in boxplots: for each group, we represent the median, 25–75% quantiles and the total spread of the values (excluding outliers) as line, box and whiskers, respectively. The version of this figure on the *F1000Research* website is interactive, readers can define the type of whiskers displayed as either the 10th–90th percentiles (A) or Tukey whiskers (1.5 x IQR from 1st/3rd quartile; B). The text color code used for the genotypes is analogous to that used in Figure 2. The red horizontal line corresponds to the median value for random walks: 44°. Sample size is 11–12 for each boxplot. No statistical analysis was performed.

Re-Plot Figure

Define Whisker

10th-90th %tile ▼

Whiskers extend to 10th/90th percentiles. Dots are values below/above whiskers

Apply   Reset

HELP

Select option in the dropdown box and click Apply to re-plot figure. Click Reset to return to the default figure display.