EMBO Publications

Research Integrity @ Biological Science Journals

Transparency

Bernd Pulverer, EMBO

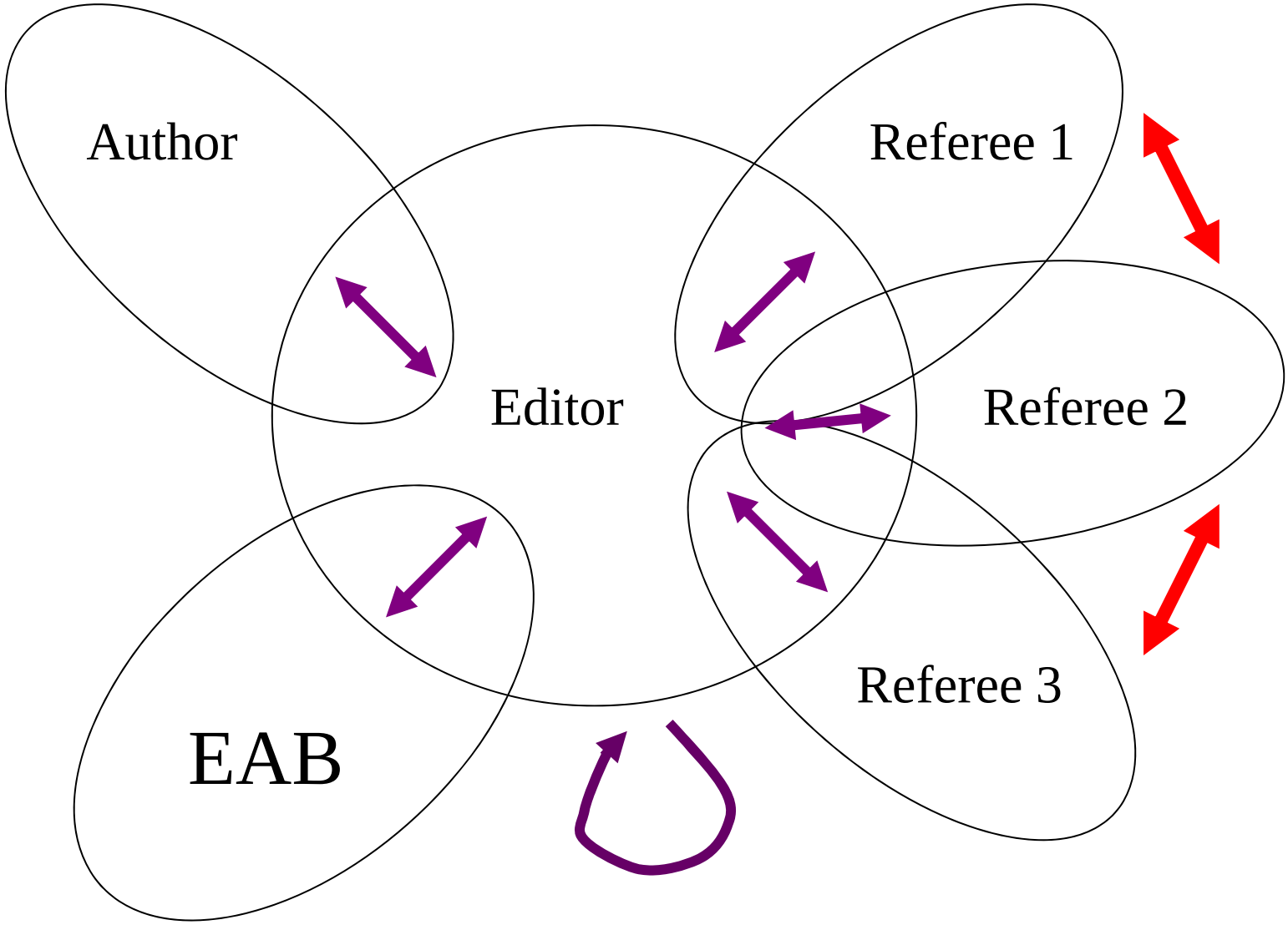
Singapore, 2010

Editors have to apply reasonable measures to ensure the published record is robust and to avoid misconduct

- Mandatory author contribution / conflict of interest declaration / ethics approval / consent / MTAs
- Contact all authors at submission and acceptance
- In house assessment of:
  - adequate citation: primary literature
  - adequate statistical description/standards
  - data repositories, adherence to community data standards
  - plagiarism and image manipulation screening
  - materials and methods: reagent transparency
- Full data display
- Allow refutations, corrigenda, 'expression of concern', clear retraction policy
- Report (suspected) misconduct, also prepublication, at institutional level
- Due care in referee selection (literature screen, database, honour reasonable exclusions); report (proven) reviewer misconduct; referee identity declaration
- Peer Review Process files
- Drop confidential referee comments
- Allow appeals

Detailed guide to authors

The editorial process @ *EMBO* Js.



Peer Review Process Files

Article

Subject Categories: Functional genomics | Computational methods

Molecular Systems Biology **6** Article number: 370 doi:10.1038/msb.2010.25
Published online: 8 June 2010
Citation: *Molecular Systems Biology* 6:370

Clustering phenotype populations by genome-wide RNAi and multiparametric imaging

Florian Fuchs[1,a], Gregoire Pau[2,3,a], Dominique Kranz[1], Oleg Sklyar[2], Christoph Budjan[1], Sandra Steinbrink[1], Thomas Horn[1], Angelika Pedal[1], Wolfgang Huber[2,3] & Michael Boutros[1]

1. German Cancer Research Center (DKFZ), Division of Signaling and Functional Genomics and Heidelberg University, Department of Cell and Molecular Biology, Medical Faculty Mannheim, Heidelberg, Germany
2. EMBL, European Bioinformatics Institute, Wellcome Trust Genome Campus, Hinxton, Cambridge, UK
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Correspondence to: Michael Boutros[1] German Cancer Research Center (DKFZ), Im Neuenheimer Feld 580, D-69120 Heidelberg, Germany. Tel.: +49 6221 421951; Fax: +49 6221 4259; Email: m.boutros@dkfz.de

Correspondence to: Wolfgang Huber[2,3] EMBL, Genome Biology Unit, Meyerhofstraße 1, 69117 Heidelberg, Germany. Tel.: +49 6221 387 8823; Fax: +49 6221 387 8166; E-mail: Email: whuber@embl.de

Received 27 October 2009; Accepted 12 April 2010; Published online 8 June 2010

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FULL TEXT

Previous article|Next article

Synopsis
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Abstract
Introduction
Results
Discussion
Materials and methods
Acknowledgements
Conflict of interest
References
Figures and tables
Supplementary info
Review Process
Export Citation
Export references
Papers by Huber

General supplementary information

Supplementary Information
Supplementary text, Supplementary figures
Download PDF file (5.14MB)

Supplementary Table XIII
Download Excel file (190KB)

Figure source data

Figure 2
- Source data for Figure 2B (6K)
- Source data for Figure 2C (1K)
- Source data for Figure 2D (56K)
- Source data for Figure 2E (5K)

Figure 3
- Source data for Figure 3C (739)
- Source data for Figure 3D (7K)

Figure 4
- Source data for Figure 4A (5K)
- Source data for Figure 4B (571)
- Source data for Figure 4D (1K)

Figure 5
- Source data for Figure 5B (2K)

Review Process

Review Process File (5.14MB)

Peer Review Process Files

- Handling stats: time line; % acceptance; referred journals
- Referee reports, editor communication, author rebuttal

The EMBO Journal Review Process File - EMBO-2009-72086
Manuscript EMBO-2009-72086

The structure of an integrin/talin com inside-out signal transduction

Kate Wegener, Feng Ye, Chungho Kim, Benjamin Goult, Edw
David R. Critchley, Mark H. Ginsberg, Iain Campbell
Corresponding author: Nicholas Anthis, University of Oxford

Review timeline:
Submission date: 01 August 2009
Editorial Decision: 25 Aug 28 August 2009
Revision received: 28 August 2009
Accepted: 03 September 2009

Transaction Report:
1st Editorial Decision 25 August 2009
....
REFEREE REPORTS
....
1st Revision - authors' response 28 August 2009
....
2nd editorial decision

MANUSCRIPT FLOW

	2008
Total submissions	**2918**
Total rejected before review	**76%**
Executive Editor Prescreen	16%
Rejected by Editorial Team	48%
Rejected by Editorial Board	12%
Sent for external peer review	**24%**
Success rate in peer review	41%
Total acceptance rate	**10%**

This overall acceptance rate may appear very low, but reflects the fact that many submissions are not in agreement with the expectations and standards of the Journal. For more information, please also see the accompanying document (fate of rejected manuscripts), which shows that the vast majority of studies rejected at *The EMBO Journal* are eventually published in journals of lower impact and/or more specialized interest.

TIMINGS/EFFICIENCY

	2008
from submission to initial decision	4d
from submission to decision post review	31d
Average duration of revision	67d
Additional round of revision granted	42%
Average duration of extra revision	35d

APPEALS ON DECISIONS

	2008
Appeals on editorial rejection	**129 (6%)**
reconsidered via AEB or peer review	40 (31%)
successful	5 (3.9%)
Appeals on post-review rejection	**53 (13%)**
reconsidered via AEB or referees	11 (21%)
successful	4 (7.5%)

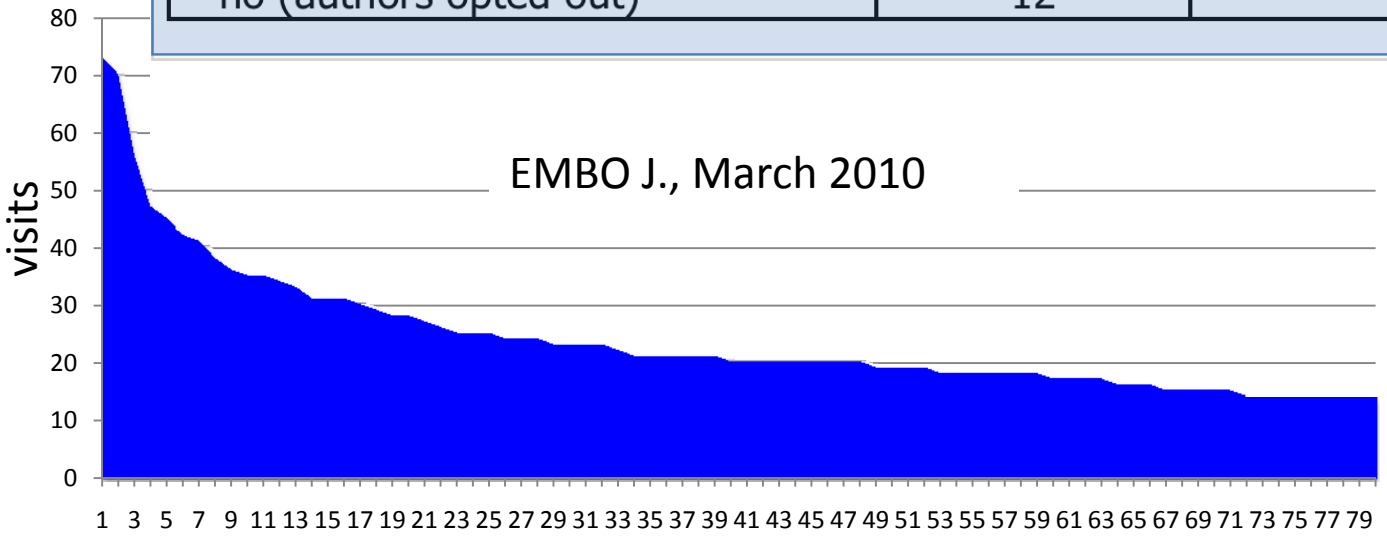
THE EMBO JOURNAL

1 year peer review process files

- **Started: Jan 2009**
- **7.7% author opt out; very few 'philosophically opposed'**
- **No qualitative change in reviews / decline rate unchanged**

EMBO Journal Peer Review Process

	Issue 28	Issue 29 -> 05FEB10	total
Yes	150	53	203
no (authors opted out)	12	5	17



THE EMBO JOURNAL

THE EMBO JOURNAL | EMBO reports | molecular systems biology | EMBO Molecular Medicine

Data Transparency

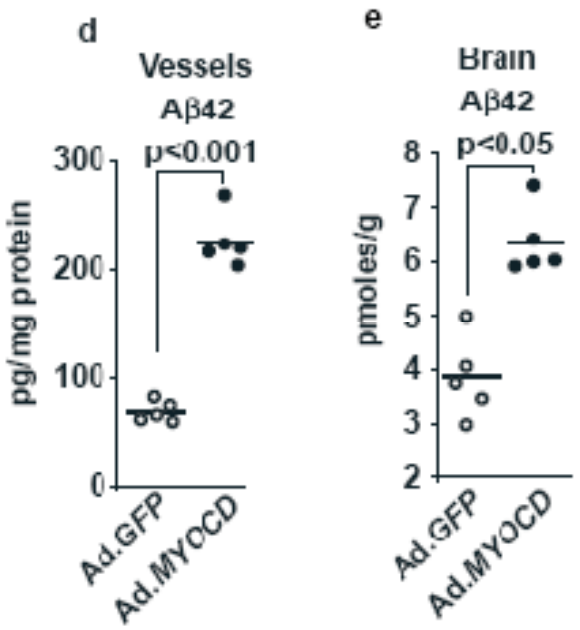
"From bench to website..."

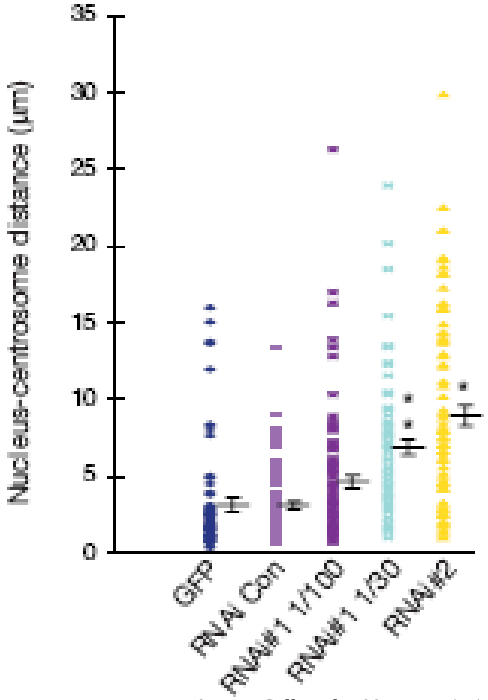
Reproducibility: availability of published material, data and software

- Datasets obtained by experimentation, computation or data mining, should be made freely available, without restriction.
- Software should be described in sufficient detail to allow reproduction. Free access for non-commercial users is strongly recommended.
- Deposition of data in public databases, as far as available.

Statistics in cell biology – a crisis?

- calculate stats only when justified (*n*>2!)
- *n* should be from *independent* experiments (specify)
- specify *n* for each measurement
- for n<5 show all data points alongside error bar





Kamiya A., Nat Cell Biol. 2005 Dec;7(12):1167-78.

molecular systems biology

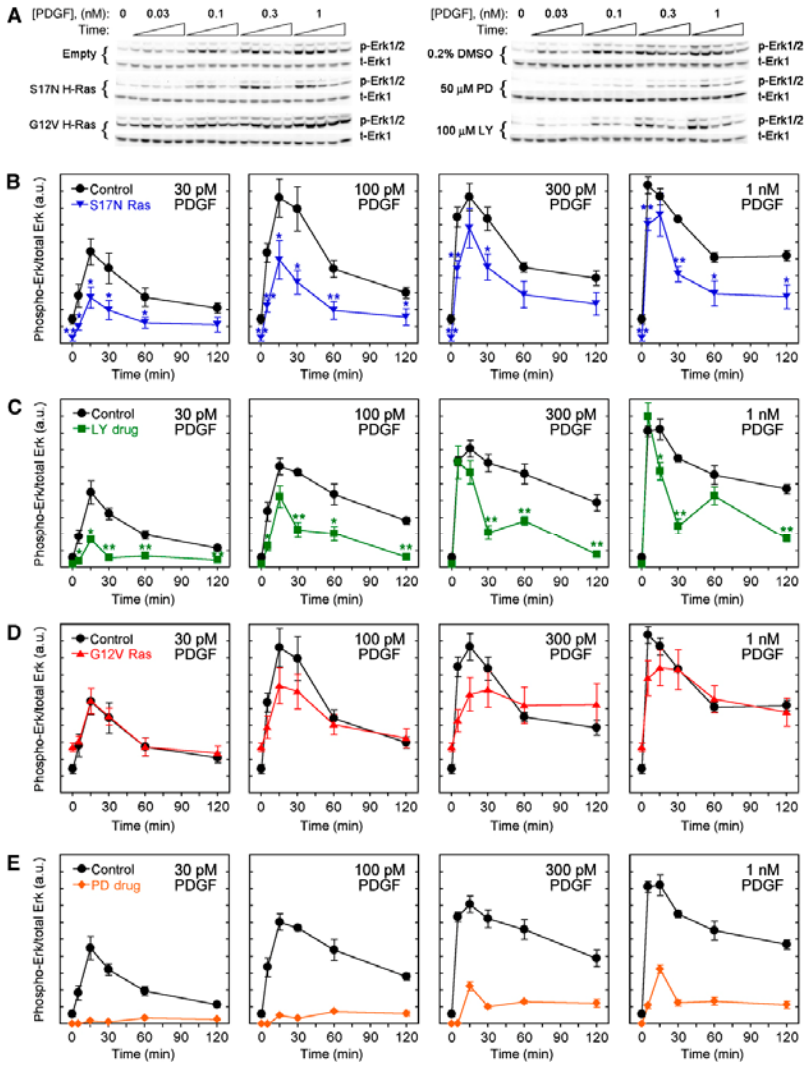


Figure 1

Systematic analysis of PDGF-stimulated Erk phosphorylation kinetics. (**A**) Immunoblots, representative of five or six independent experiments, used to quantify relative amounts of phosphorylated Erk (p-Erk1/2) and total Erk (t-Erk1). NIH 3T3 fibroblasts were modulated by retroviral induction of dominant-negative (S17N) or constitutively active (G12V) H-Ras expression or incubation with inhibitors of PI3K (100 μM LY294002) or MEK (50 μM PD098059). The respective controls are empty pBM-puro vector or 0.2% DMSO. Lysates were prepared from cells that were unstimulated or stimulated with PDGF-BB for 5, 15, 30, 60, or 120 min. (**B–E**) Quantification of Erk phosphorylation, normalized as described under Materials and methods, comparing either S17N Ras expression (B; n=6), PI3K inhibition (C; n=5), G12V Ras expression (D; n=6), or MEK inhibition (E; n=5) with their respective controls. Values are reported as mean±s.e.m., and comparisons to control in (B, C) are by Student's t-test: $^{*}P<0.05$; $^{**}P<0.01$. Source data is available for this figure at www.nature.com/msb.

Full figure and legend (660K)

Source data for figure 1BD (6K)

Source data for figure 1CE (5K)

Figures & Tables index

molecular systems biology

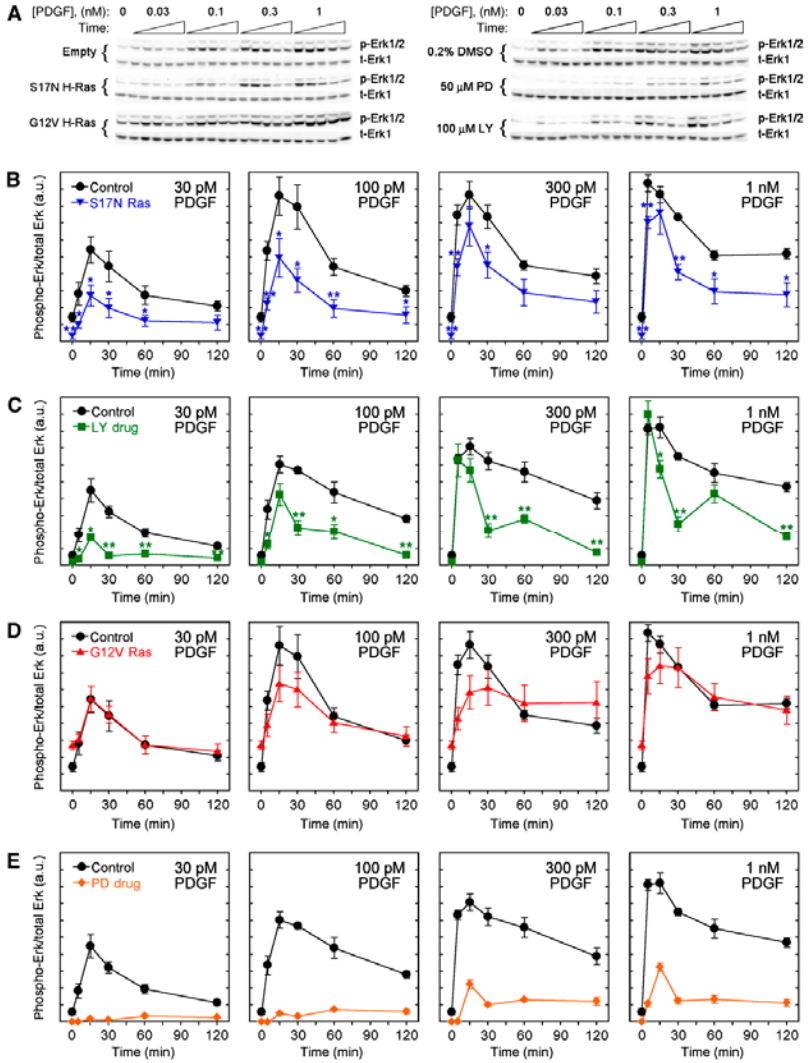


Fig1b&d_raw.txt

	A	B	C	D
1	Fig1b&d-Column1	Fig1b&d-Column2A	Fig1b&d-Column2B	Fig1b&d-Column2C
2	Time (min)	p-Erk/t-Erk, 30 pM PDGF, control vector, Expt. 1	p-Erk/t-Erk, 30 pM PDGF, control vector, Expt. 2	p-Erk/t-Erk, 30 pM PDGF, control vector, Expt. 3
3	0	0.194672394	0.201524091	0.339116171
4	5	0.395173883	0.389974466	0.555355249
5	15	0.690917146	1.236910363	1.632582883
6	30	0.394324884	0.72081196	1.488299981
7	60	0.38782972	0.38107614	0.428561181
8	120	0.384442827	0.216360469	0.458929493
9				
10				

Fig1b&d_raw.txt

Ready

- Data ‘transparency’
- Re-visualization
- Re-analysis
- Data integration
- Data ‘searchability’

Fig1b&d_raw.txt

	A	B	C	D
1	Fig1b&d-Column1	Fig1b&d-Column2A	Fig1b&d-Column2B	Fig1b&d-Column2C
2	Time (min)	p-Erk/t-Erk, 30 pM PDGF, control vector, Expt. 1	p-Erk/t-Erk, 30 pM PDGF, control vector, Expt. 2	p-Erk/t-Erk, 30 pM PDGF, control vector, Expt. 3
3	0	0.194672394	0.201524091	0.339116171
4	5	0.395173883	0.389974466	0.555355249
5	15	0.690917146	1.236910363	1.632582883
6	30	0.394324884	0.72081196	1.488299981
7	60	0.38782972	0.38107614	0.428561181
8	120	0.384442827	0.216360469	0.458929493
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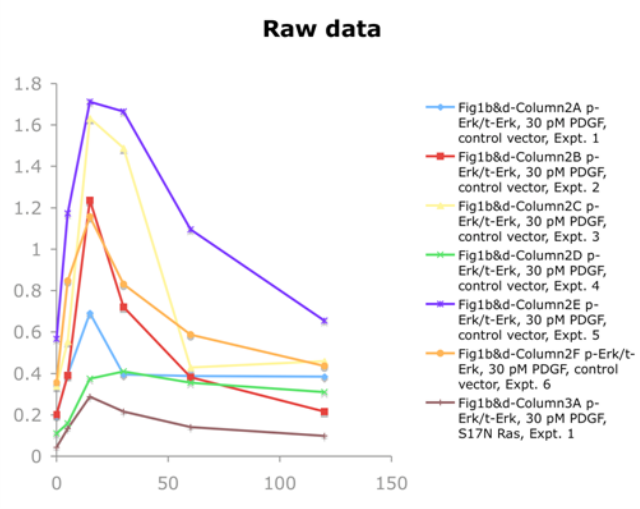
Fig1b&d_raw.txt

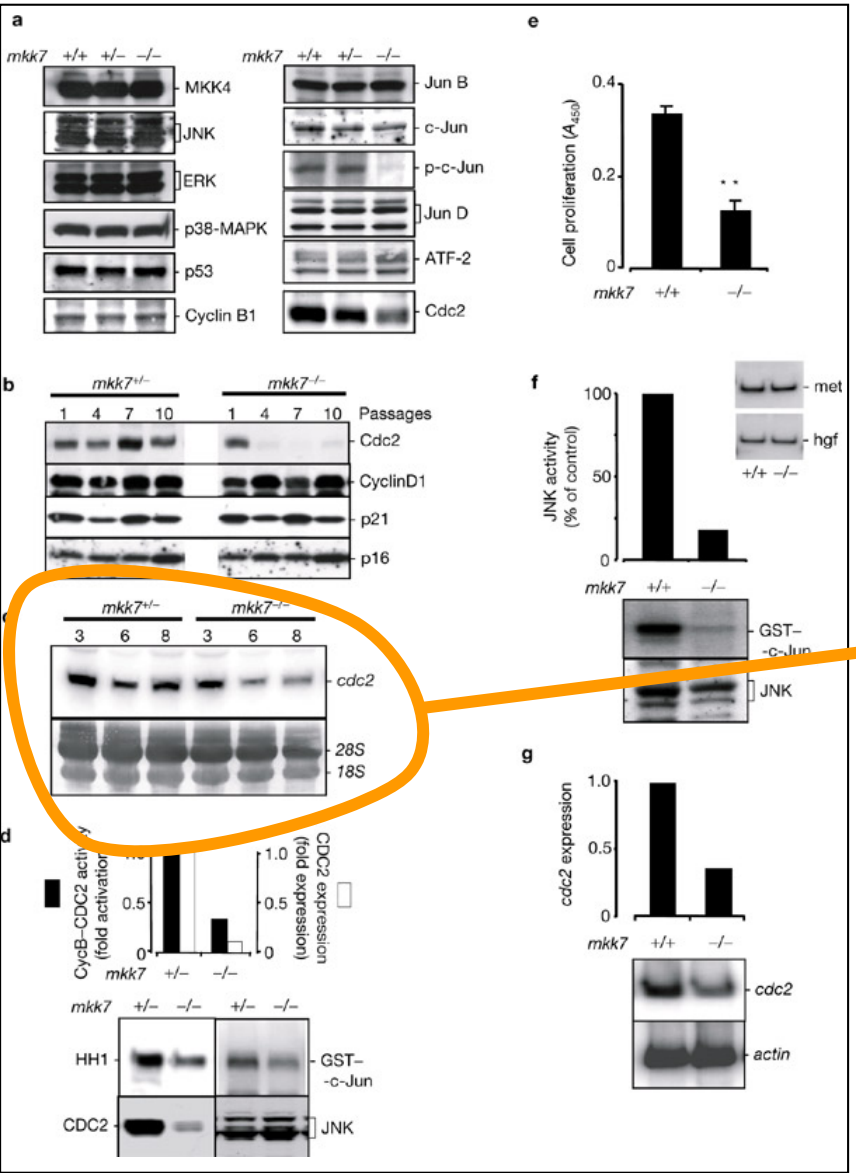
Ready

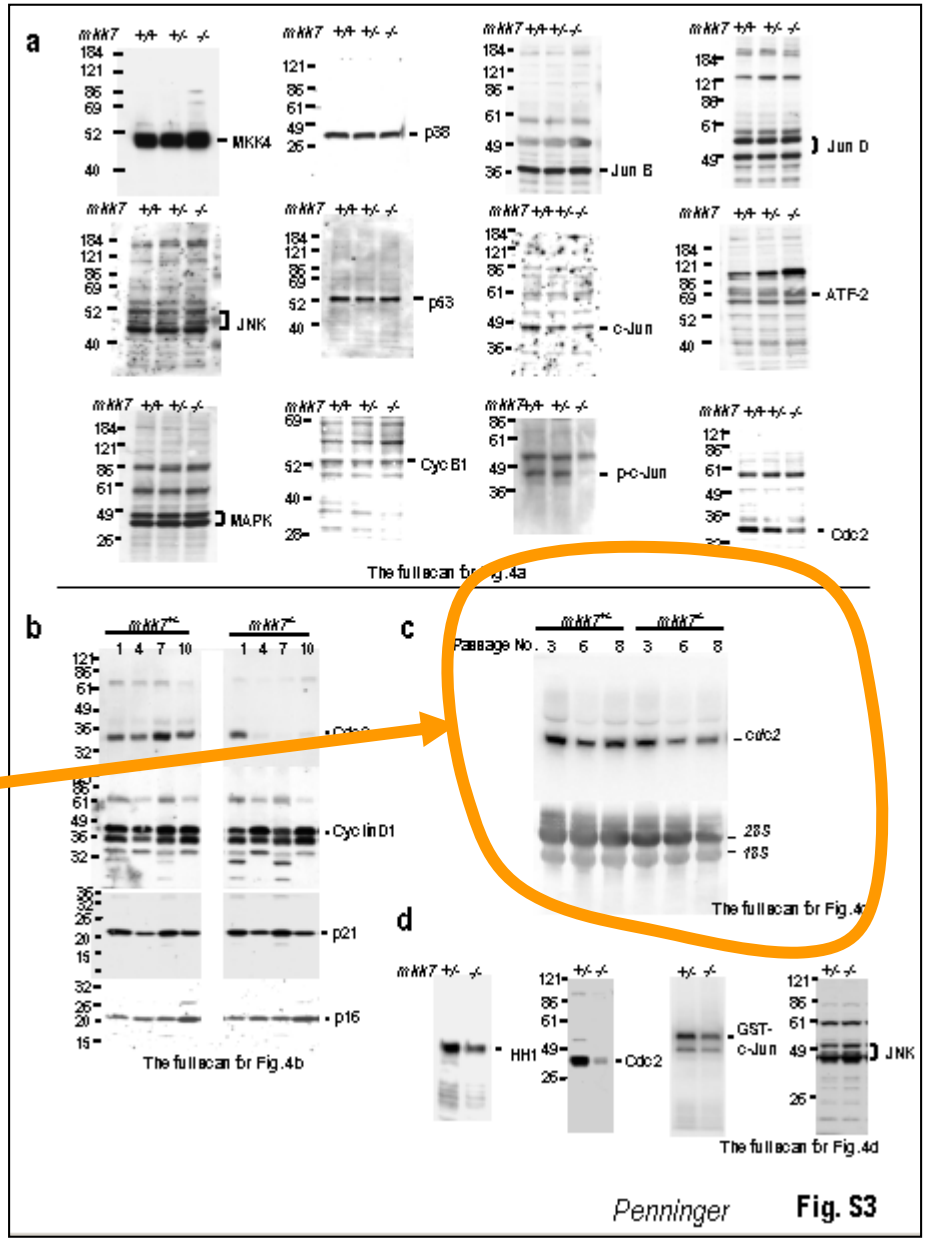


Article *Nature Cell Biology* 6, 215 - 226 (2004)
Published online: 22 February 2004; |
doi:10.1038/ncb1098

MKK7 couples stress signalling to G2/M cell-cycle progression and cellular senescence

Teiji Wada[1, 2], ... & Josef M. Penninger[1, 2]





JCB Data Viewer

GLENCOE SOFTWARE

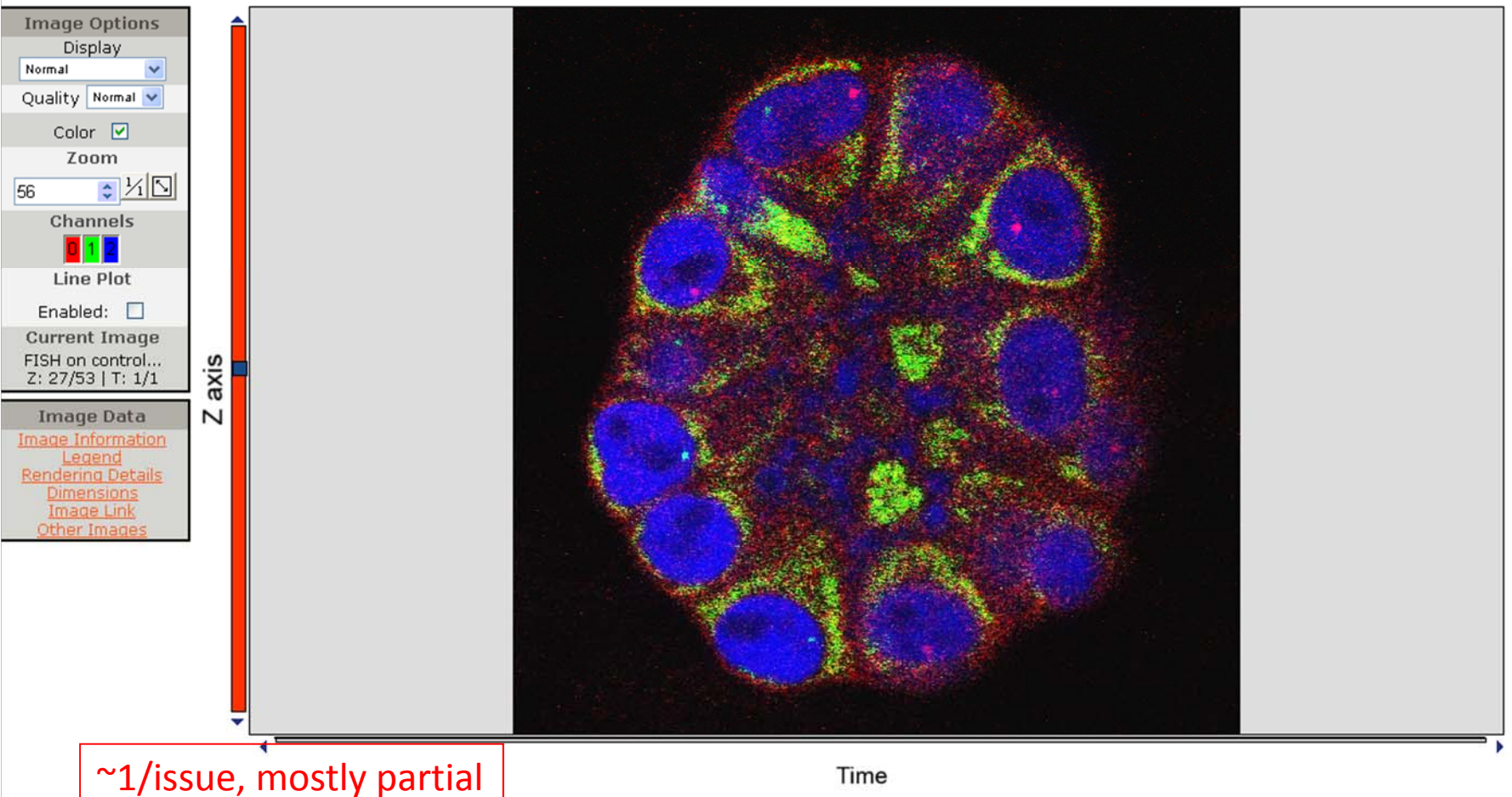
THE ROCKEFELLER UNIVERSITY PRESS
QUALITY AND INTEGRITY

log in

DATAVIEWER HOME | ARCHIVE | SUPPORTED FILE TYPES | INSTRUCTIONS FOR USE | CONTACT | ABOUT

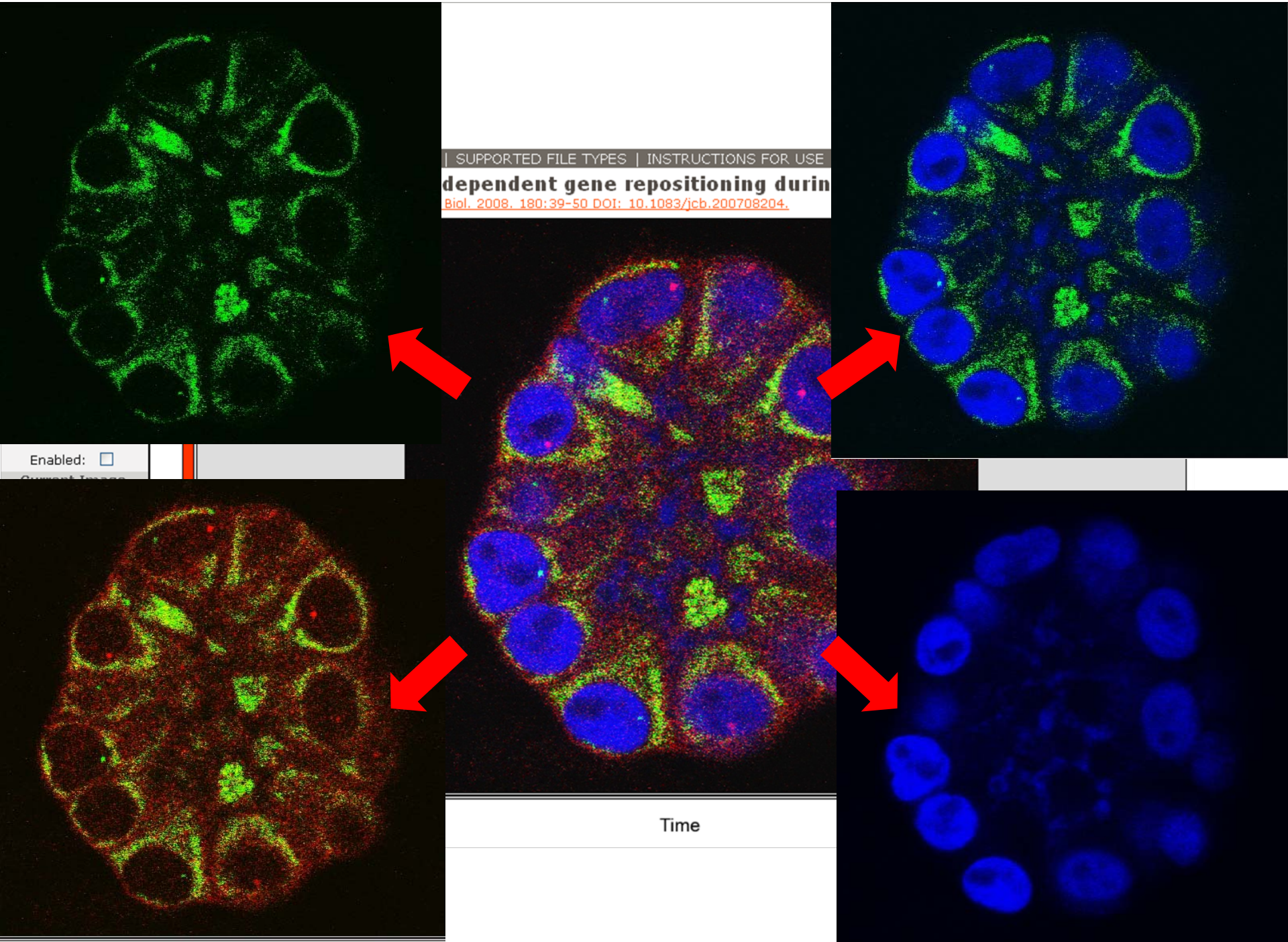
Locus-specific and activity independent gene repositioning during early tumorigenesis

J Cell Biol. 2008. 180:39-50 DOI: 10.1083/jcb.200708204.



~1/issue, mostly partial
Few have source data
M

Metadata guidelines


| SUPPORTED FILE TYPES | INSTRUCTIONS FOR USE
dependent gene repositioning durin
Biol. 2008. 180:39-50 DOI: 10.1083/jcb.200708204.
Enabled:
Time

Where Manipulation Happens

- Experimental design
- Data Acquisition
- Image Manipulation (Photoshop)

IT allows easy image manipulation

"Seeing is no longer believing. Actually, what you see is largely irrelevant" Hany Farid, 2006

“You can make up almost any image you want nowadays”
Tom Misteli, 2005

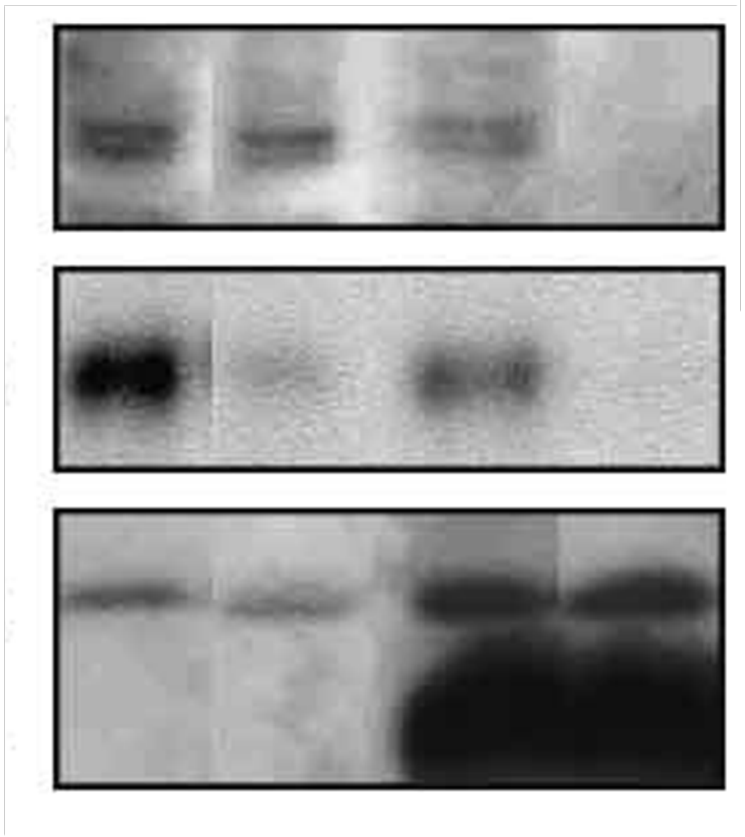
Image Manipulation

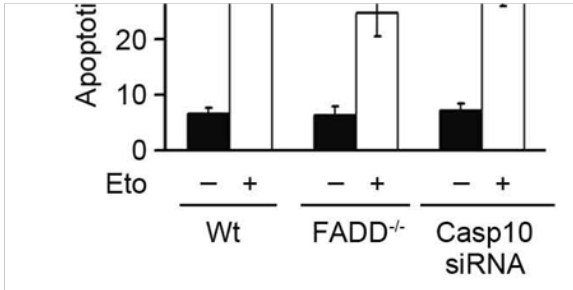
Beautification =Falsification		Fabrication = Fraud

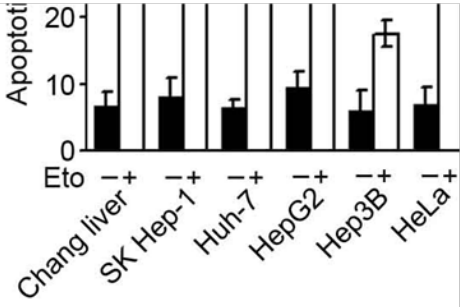
- Aim:
  - Clarification
  - Aesthetics
- Result:
  - Loss of Information
  - Misrepresentation

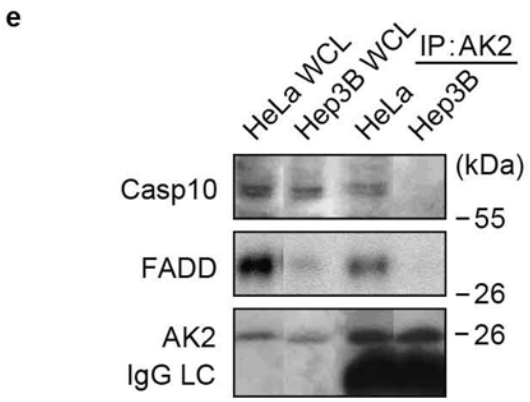
- Deliberate manufacturing of data that was never obtained experimentally

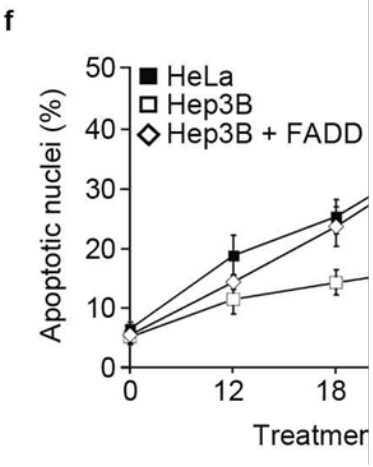
Beautification

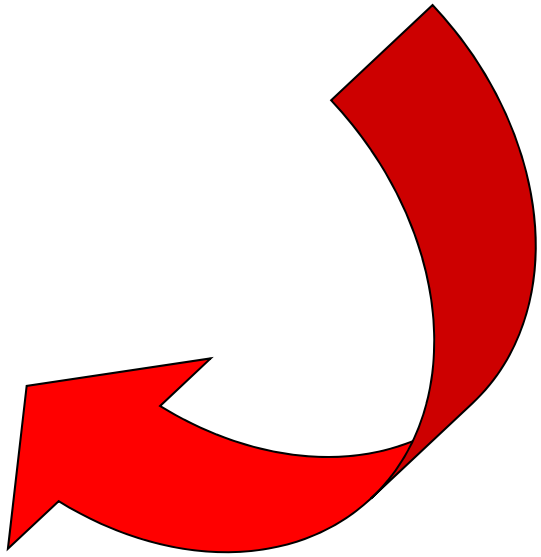




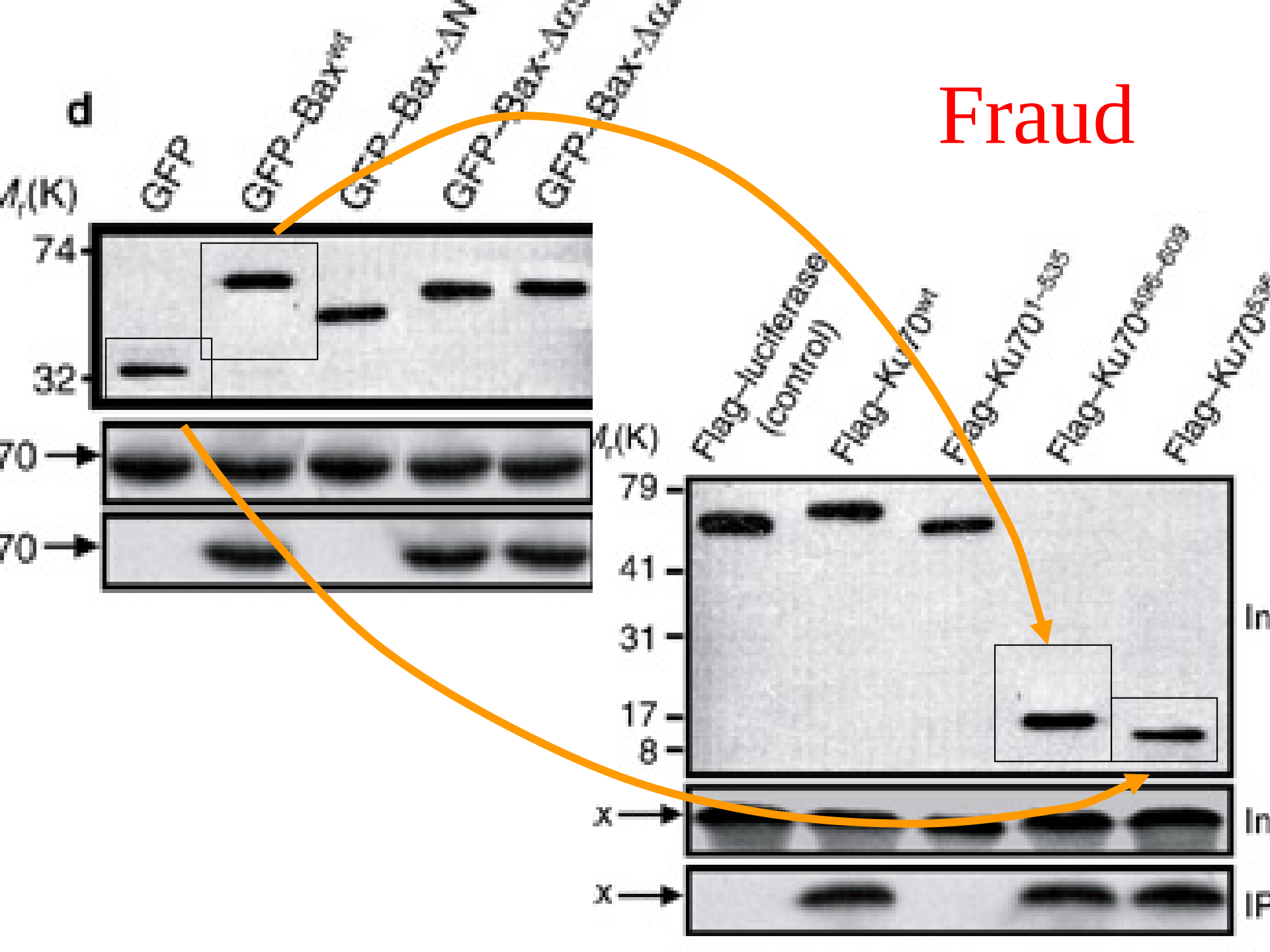








NCB manuscript, 2.7.07


Fraud
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GFP
GFP–Bax^wt
GFP–Bax-ΔN
GFP–Bax-Δ
GFP–Bax-Δ
M_r(K)
74
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Flag–luciferase (control)
Flag–Ku70^wt
Flag–Ku70^1–535
Flag–Ku70^498–609
Flag–Ku70^53
M_r(K)
79
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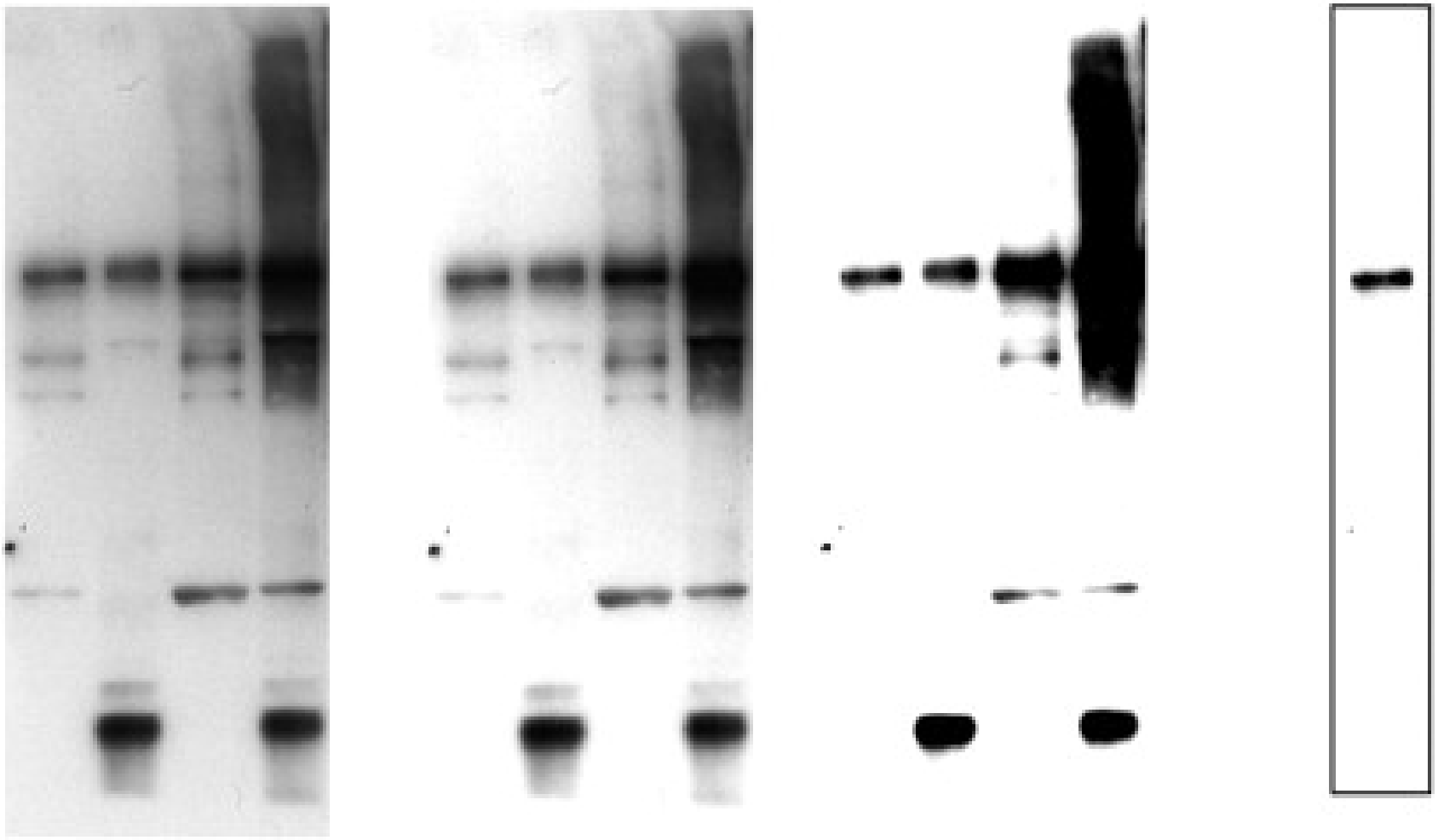
North Korea, 2008

Is Kim Jong-il sick?

Imagej.lnk

use ImageJ (instead of photoshop)

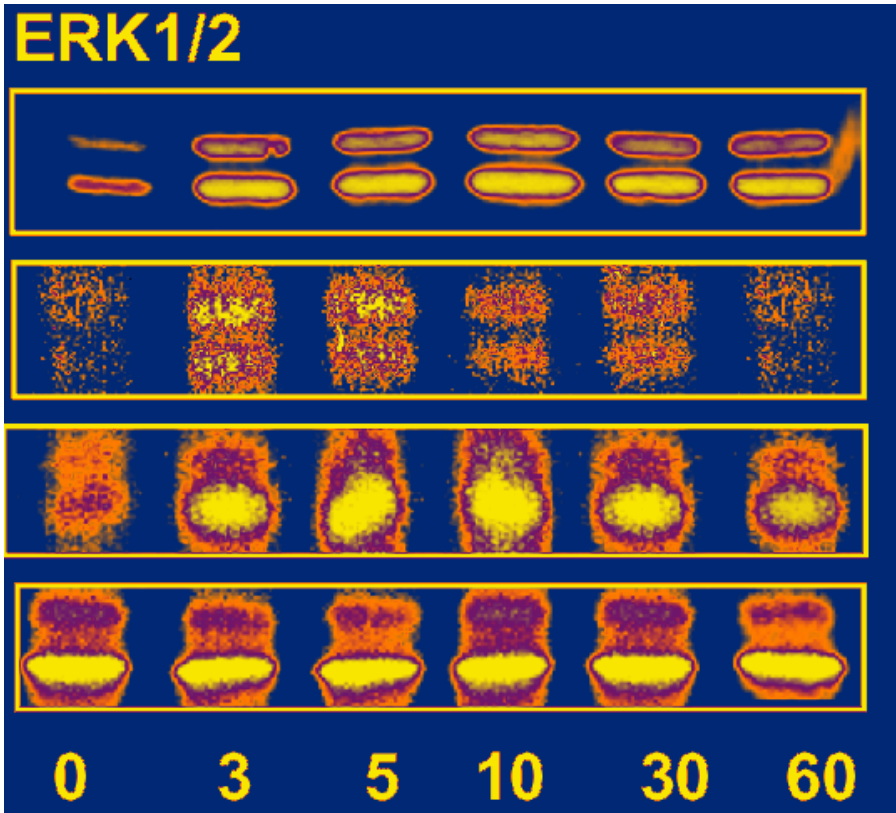
Contrast



How to detect illicit image manipulation?

- Peer review
- Manual checks by editors
- Automated
- Post publication feedback

- Publication of raw data/metadata



JCB: 20% of accepted manuscripts contain data that has to be revised

….despite editorial assessment this has grown to 25%

….1% cannot be revised

EDITORIAL

nature cell biology

Beautification and fraud

Publication rates are increasing in line with accelerating scientific progress that is boosted by buoyant funding and advances in facilitating technologies. Equally, the time-lag from bench to journal is decreasing and the pressures to publish mount with the increased chance of duplicated research and competitiveness. The old adage of 'publish or perish' is ever more pertinent and it is not surprising that sloppiness, plagiarism and even fraud rear their ugly heads. Ethics can fall by the wayside all too easily in today's intense research atmosphere.

None of these issues are new and it is hard to quantify whether the number of cases uncovered is rising faster than the increase in research output (*Nature* 435, 737–738 (2005)). Nevertheless, alarm bells have

director. Corresponding authors carry responsibility for evaluating the primary data and for confirming that the published data is real and properly processed. Editors and referees evaluate the importance and quality of data submitted for publication, but they cannot and should not be expected to view every submission as potentially fraudulent. Editors are not 'data police' and neither are referees. Additional data screening will be useful for filtering out 'beautified' data, but will not catch anyone but the most naive cheats. Well-crafted fraud is essentially impossible to detect without assessing the primary data or indeed being present throughout the experimentation.

It is important to remember that fraud is always doomed, in that

- Editors & referees are not 'data police'
- Well crafted fraud is essentially impossible to detect
- Corresponding authors ultimately carry responsibility for data

Nature Cell Biology 8, 101-102 (Feb 2006)

Routine Plagiarism check of pre-accepted manuscripts via Crosscheck

Does not detect 'mutated' text: concepts, results, selective citation

iThenticate®

Oncogenic signalling by polyoma virus MT occurs...

As of: Jul 22, 2010 12:05:33 PM EDT
9,896 words - 121 matches - 83 sources

Similarity Index
11%

Mode: Similarity Report Include Quotes Include Bibliography Exclude small matches

amino acid sequence of wild type MT is shown [2]

at the top, together with the sequence of three mutants where the HA epitope (shown on the right) is attached to MT. The

designation of each MT species is listed on the left. The [1]
hydrophobic region of

MT is identified with a space either side, and the HA tag also marked by a space between it and MT. B. Transformation assays using the mutants shown in A. Plasmid DNA encoding each of the mutants

shown in panel A. were transfected into Rat2 fibroblasts and stained [1]
for foci formation after 14 days. The MT species used is indicated
above each

1 130 words / 1% - Internet from Jul 22, 2010
www.nature.com

2 71 words / 1% - CrossCheck
Stephen M Dilworth. "Association between src-kinases and the polyoma virus oncogene middle T-antigen requires PP2A and a specific sequence motif", Oncogene, 08/03/1999

3 47 words / < 1% match - CrossCheck
Stephen M Dilworth. "Cell transformation by the middle T-antigen of polyoma virus", Oncogene, 11/26/2001

4 28 words / < 1% match - Internet from Jul 22, 2010
www.nature.com

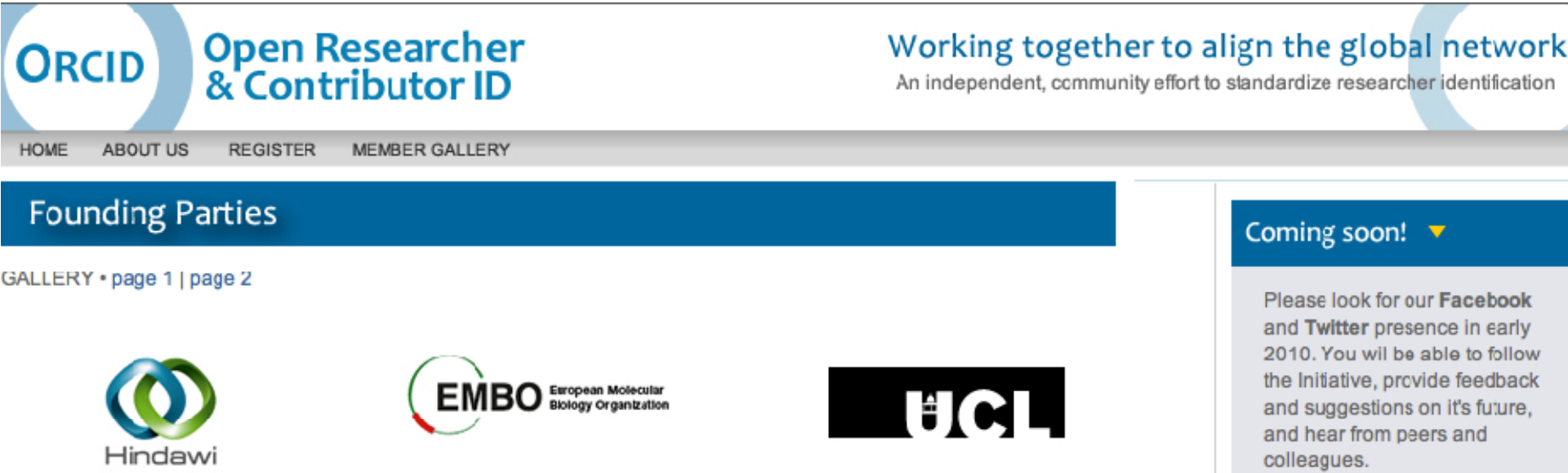
5 27 words / < 1% match - Internet from Jan 20, 2010
www.nature.com

6 25 words / < 1% match - CrossCheck
T. Hunter. "THE CROONIAN LECTURE 1997. The phosphorylation of proteins on tyrosine: its role in cell growth and disease", Philosophical Transactions of The Royal Society B Biological Sciences, 04/29/1998

7 19 words / < 1% match - CrossCheck
"Topic 13. Other", Yeast, 07/19/2009

Transparency

- Peer Review Process Files
- ‘Real data’
- Author contribution, Financial declaration, MTA
- ORCID (Open Researcher Contributor Identification Initiative)
- ‘Microattribution’: credit where credit is due



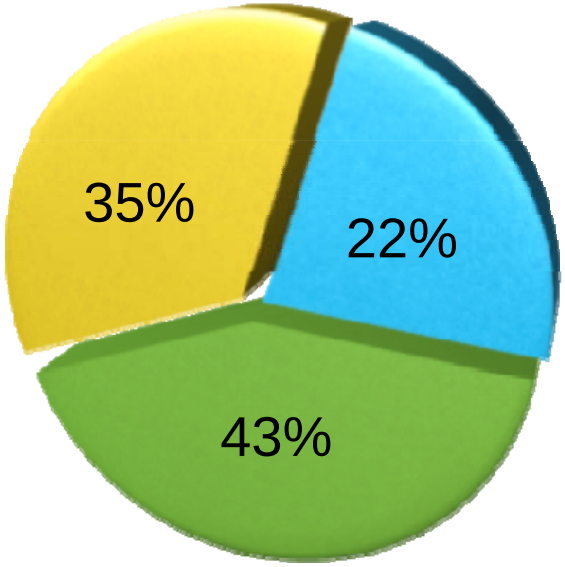
Sent: Sun 2009-02-01 02:13
Dear Editor,
Could you tell me whether this decision was based
on the abstract/summary alone
or on the entire paper?

What else could be done?

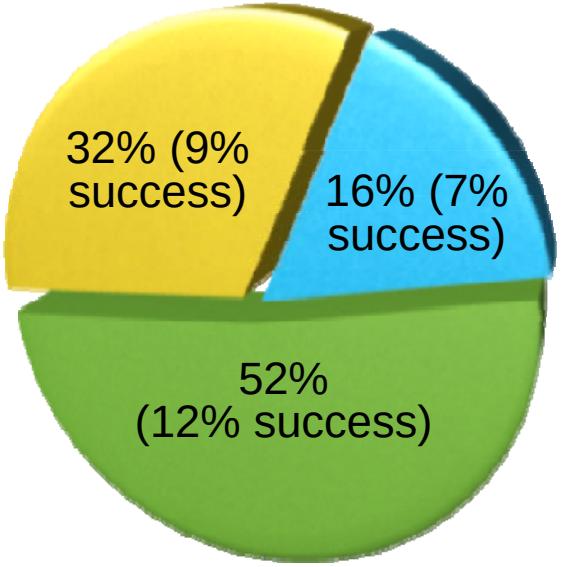
- How much image checking is beneficial?
- Microattribution
- Double blind review
- Diversify referee pool
- Interjournal fraud alert: e.g. anonymized via COPE?
- Interjournal exchange on QRP referees?

Geographical distribution

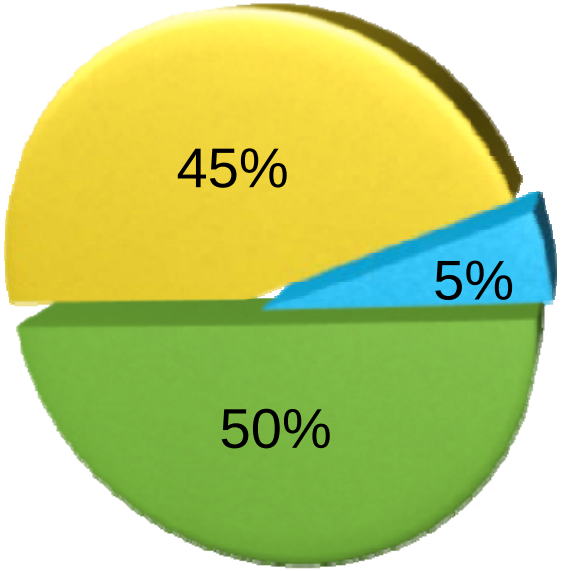
submissions



accepts



referees



Asia/Pacific Europe Americas

2008

science & society