

Discussing research with the public in the blogosphere

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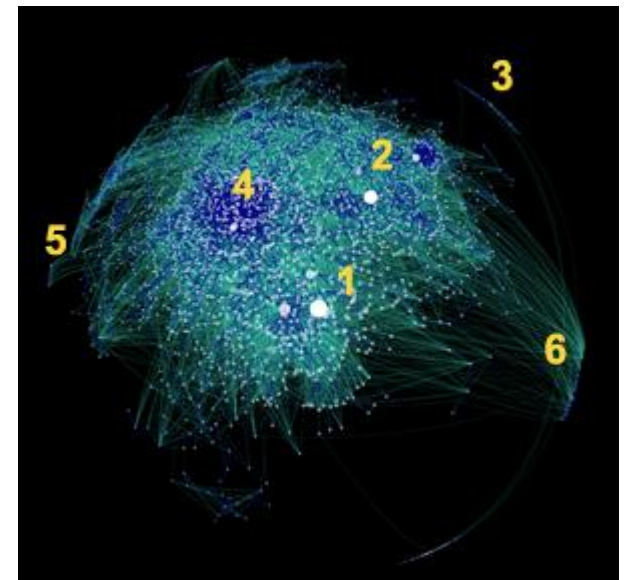
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Web 2.0 platforms

- ▶ Blogs, wikis, forums, Twitter, Facebook, Google+, etc.
- ▶ User-generated content
- ▶ Sharing, interacting, commenting
- ▶ Can be utilized to involve the public and to emphasize the societal impact of science



Blogosphere map by
Jenna Greenbaum


Pre-publication peer review

- ▶ In August 2010, Vijay Deolalikar sent his draft of proof of the major open question in theoretical computer science ($P \neq NP$) to a number of CS people, among them Dick Lipton, who has a professional blog
 - ▶ In the following days the proof was “dissected” by a huge number of scientists and non-scientists, and holes in the proof were found.
 - ▶ Deolalikar has withdrawn the draft, and announced that he will fix these problems. A new draft has not been submitted yet.
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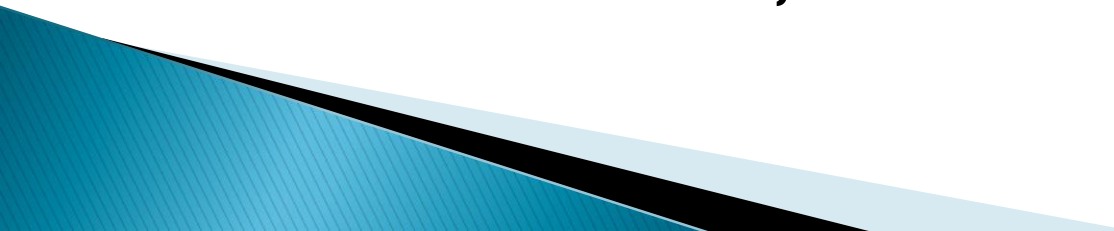
Blog post	Date	# Comments
A Proof That P Is Not Equal To NP?	August 8, 2010	199
Issues In The Proof That $P \neq NP$	August 9, 2010	127
Update on Deolalikar's Proof that $P \neq NP$	August 10, 2010	195
Deolalikar Responds To Issues About His $P \neq NP$ Proof	August 11, 2010	132
Fatal Flaws in Deolalikar's Proof?	August 12, 2010	325
The $P \neq NP$ "Proof" Is One Week Old	August 15, 2010	264
Projections Can Be Tricky	August 19, 2010	40
Einstein And The $P \neq NP$ Question	August 23, 2010	43
An Update On Vinay Deolalikar's "Proof"	September 15, 2010	52
Deolalikar's Claim: One Year Later	August 11, 2001	101

A total of 1478 comments, not only by established CS people

From the comments

- ▶ “I, for one, hope that P vs. NP remains open at least until I graduate. I would be really disappointing if the biggest open question in my field were solved ‘too soon’.” Hugo
 - ▶ “The internet truly has given us an amazing tool for collaboration.” Joe
 - ▶ “i am not a CS person.” Confused
 - ▶ “ ... We honestly wanted to understand what was going on in the paper, and figure out if it had a chance of working. After having spent that time (and collectively, everyone generated over a thousand blog comments), we made our conclusions.” Ryan Williams
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Post publication peer-review

- ▶ Wolfe-Simeon et al. (2011). A Bacterium That Can Grow by Using Arsenic Instead of Phosphorus. *Science* (published online in December 2, 2010)
 - ▶ 8 comments published by *Science* on May 27, 2011
 - ▶ Extensively criticized in blogs as summed up on December 10, 2010
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Arsenic Bacteria link-dump

Posted on December 7, 2010 by Bora Zivkovic | 19 Comments

Just so I can have all of them in one place:

[Mono Lake bacteria build their DNA using arsenic \(and no, this isn't about aliens\)](#) and [Science gets it \(mostly\) wrong again: My take on the NASA astrobiology paper](#) and [Lots of Ink for a few extremophiles: We've been invaded by aliens, Monolakeans, from the Duncesap Galaxy](#) and [When life gives you arsenic, make arsenate-backed DNA, non-alien Halomonadaceae!](#)

[The Real Scoop on Aliens Oups Arsenic in Old Lakes](#) and [Bacteria Use Arsenic As Basic Building Block In A Pinch](#) and [Poison Nil: Mono Lake Bacterium Exhibits Exotic Arsenic-Driven Biological Activity](#) and [Arsenic and Odd Lake](#) and [It's not an arsenic-based life form.](#)

[Arsenic and Old Lakes: NASA Finds Life NOT As We Know It](#) and [Arsenic-Eating Bacteria Expands Definition of Life](#) and [It Came From Mono Lake](#) and [Complete heresy: life based on arsenic instead of phosphorus](#) and [Bacteria eat arsenic – and survive!](#)

[Arsenic-associated bacteria \(NASA's claims\)](#) and [Arsenic-permissive bacteria – implications for arsenical cancer chemotherapy](#) and [Are there viruses of arsenic-utilizing bacteria?](#) and [The 'Give Me a Job' Microbe](#)

[Of Arsenic and Aliens](#) and [NASA's real news: bacterium on Earth that lives off arsenic!](#) and [Close Encounters of the Media Kind](#) and [A Life Less Ordinary](#) and [Life With Arsenic: Who'd Have Thought?](#) and [Medicine! Poison! Arsenic! Life itself!](#)

[Why "alien" life, aka arsenic-loving bacteria, embargo fiasco was deja vu for Sun Spaceman Paul Sutherland](#) and [Did you know you could have bet on the NASA arsenic-based bacteria find?](#) and [Onscience blogs this week: Alien abductions](#) and [Nasa dismisses criticism of 'arsenic bacteria' research](#)

[Arsenic-Eating Bacteria May Not Redefine Life, But Could They Be Useful in Oil Spill Cleanup?](#) and [A new life form? Not so fast](#) and [Arsenic and Old](#)


- ▶ One of the major critics, Rosie Redfield from UBC, published her reservations on December 4, 2010, and these appear as one of the comments to the article in Science magazine
- ▶ Recently she submitted a manuscript showing that the results could not be reproduced. The paper is on Arxiv.org
- ▶ The process of publishing and publicizing (on Science News) without the paper first undergoing peer-review is criticized by biologist Debbie Knight in her blog Biologyze (top result in Google blog search on March 3, 2012)

Researchblogging.org

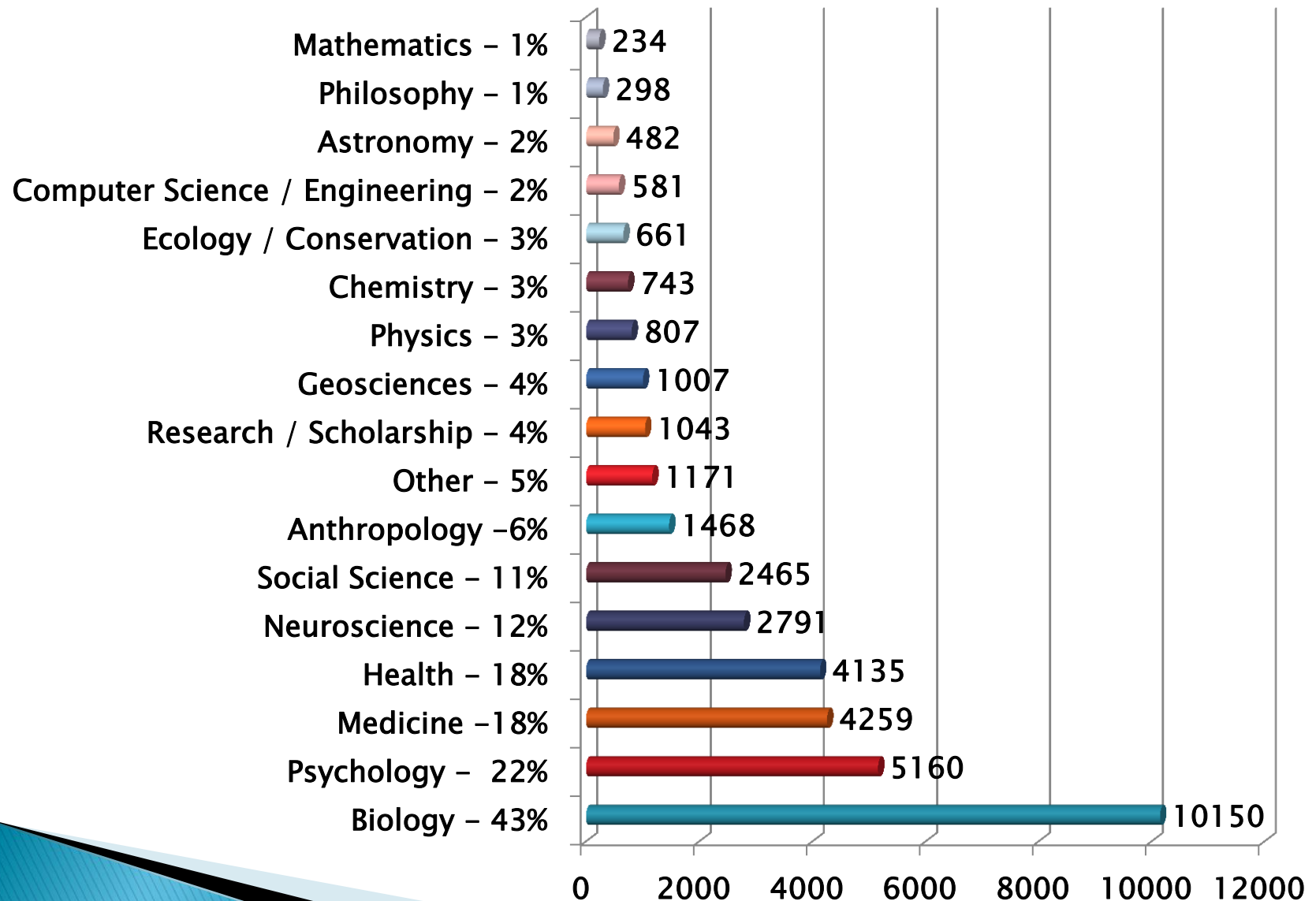


- ▶ “ResearchBlogging.org is a system for identifying the best, most thoughtful blog posts about peer-reviewed research”
- ▶ Participating bloggers mark their posts that meet the guidelines and these are aggregated by Researchblogging.org
- ▶ Started in 2007
- ▶ More than 23,000 posts

Researchblogging.org

- ▶ “Do you **write** about peer-reviewed research in your blog? Use **ResearchBlogging.org** to make it **easy for your readers** — and others from around the world — to find your serious posts about academic research.”
 - ▶ “Do you **like to read** about new developments in science and other fields? Are you tired of ‘science by press release’? ResearchBlogging.org is your place. ResearchBlogging.org allows readers to easily find **blog posts about serious peer-reviewed research**, instead of just news reports and press releases.”
- 

Topic distribution of blog posts (out of 23,400)



Sample studied

- ▶ 126 non-commercial blogs, authored by one or two authors, having more than 20 entries posted at RB during 2010
- ▶ Reviewed journals based on last five posts in each blog
- ▶ “Blog citation” – journal referenced in a blog post in our sample



March 2, 2012
10:21 AM
32 views

Could the Next Chemotherapy be Derived from a Weed?

by Sara Klink in Promega Connections

As much as I may complain about weeds, one that I enjoy (in moderation and not among my vegetables) is dandelions. The bright yellow flowers herald spring, and the seed puffballs, while not as visually interesting, offer entertainment as I watch birds landing on the shaft, bending it and eating the seeds. When I am [...]... [Read more »](#)

Biology
Chemical Biology
Molecular Biology
Biotechnology
Genetics
Cell Biology

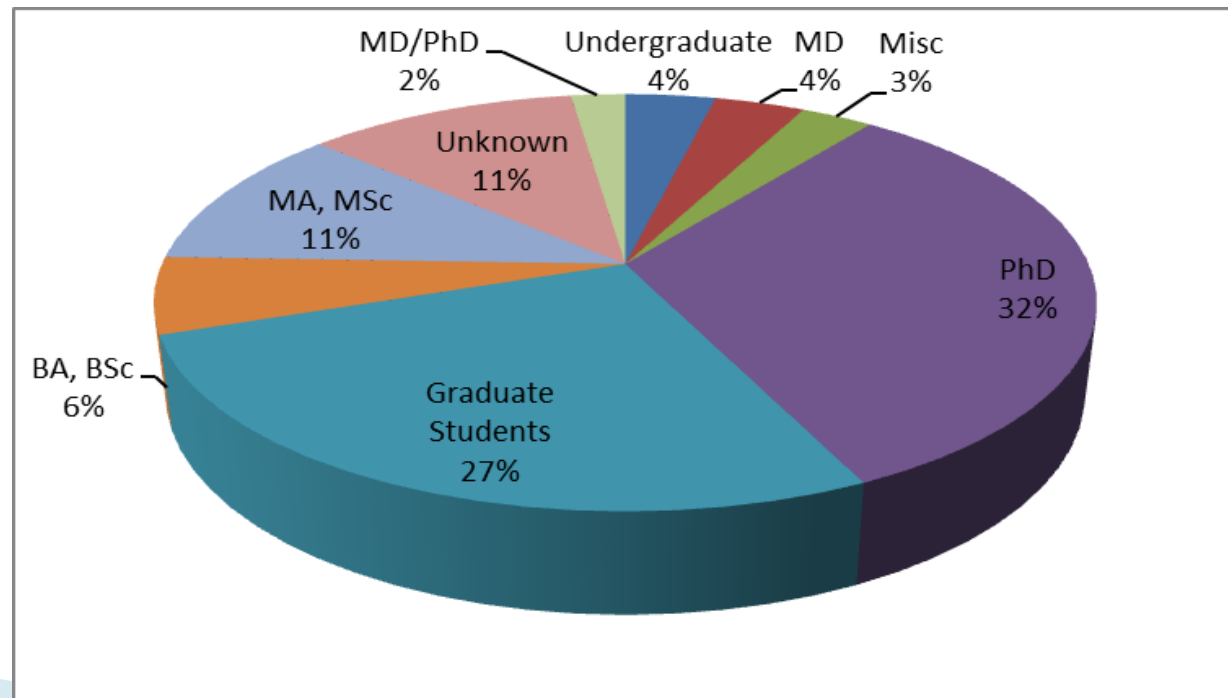
Ovadjie, P., Hamm, C., & Pandey, S. (2012) [Efficient Induction of Extrinsic Cell Death by Dandelion Root Extract in Human Chronic Myelomonocytic Leukemia \(CMML\) Cells](#). PLoS ONE, 7(2). PMID: 22363452

Most cited journals according to number of blog citations


Journal	Number of blog citations
Science	61
Nature	53
Proceedings of the National Academy of Sciences	43
PLoS One	37
Psychological Science	16
Proceedings of the Royal Society B- Biological Sciences	11
BMJ- British Medical Journal	10
JAMA-Journal of the American Medical Association	10
Physical Review Letters	10
Biology Letters	9
Journal of Neuroscience	9
Cell	7
NEJM- New England Journal of Medicine	7
Journal of Personality and Social Psychology	6
Molecular Biology and Evolution	6
Pediatrics	6

Bloggers in the sample

- ▶ Mostly male (more than 70%)
- ▶ Have Twitter accounts (75%)
- ▶ Highly educated:



Topics Discussed in the Research and Scholarship Category related to E-science

- ▶ About 14% of the posts in the category during 2010 and 2011 were concerned with e-science (106 posts out of 747)
 - ▶ Specific topics
 - Social media use for scientists
 - Open science, including open access, data sharing and data archiving
 - Search tools, reference managers and data mining
 - Online learning
 - Science reporting, including peer review and new forms of publishing
- 

Researchblogging – Readership

- ▶ Alexa (March 2012)
 - Researchblogging.org's three-month global Alexa traffic rank is 337,812.
 - “Relative to the overall population of internet users, this site's audience tends to be users who have **postgraduate educations**
 - They are also disproportionately childless women aged 25–45 and 55–65 who have incomes between \$60,000 and \$100,000 and browse from work.”



Summary

- ▶ The examples presented emphasize the need to study and understand the effects of
 - discussing and sharing scientific results on the Internet
 - with the public
 - with peers
 - the power of crowdsourcing
- ▶ Some warn against science blogging (credibility, qualification). See:
 - Murray R (2010). Science Blogs and Caveat Emptor. *Analytical chemistry*