

Open-access (OA) journals and their impact on research and the practice of medicine

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This talk will cover the following topics.

1. What is open-access (OA)?
2. What are the historical antecedents to OA?
3. What are the costs and benefits of OA?
4. How you can help promote OA?

This presentation was inspired by a talk by Jim Pitman at the 2007 Joint Statistics Meetings and which is summarized on the web at stat-www.berkeley.edu/users/pitman/ims_pres_address.pdf

What is open-access?

Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions.

– www.earlham.edu/~peters/fos/brief.htm

A journal that has a restrictive copyright license but still offers its content digital, online, and free of charge is more properly characterized as Full Free Text on the Net (FUTON).

There are some gray areas for OA

There are many journals that have taken partial steps towards OA / FUTON. Some journals:

- allow OA / FUTON for some articles,
- allow OA / FUTON after a time delay, or
- allow authors to store copies of their publications on a personal web site or a centralized repository.

OA is not public domain

OA is not devoid of copyright restrictions.

Restrictions vary by the journal. The most common restriction on copyright is the

requirement that any user acknowledge the original source. Most OA journals allow

the author to maintain the original

copyright. This allows you to re-use your

own work without having to get permission first.

OA is not (necessarily) low quality

OA is compatible with the peer-review process and is capable of producing research of high quality.

“PLoS Biology is ranked as the most highly cited general biology journal by the Institute for Scientific Information (ISI), with an impact factor of 14.1.”

– www.plos.org/journals/index.html

The historical antecedents of OA

Major antecedents

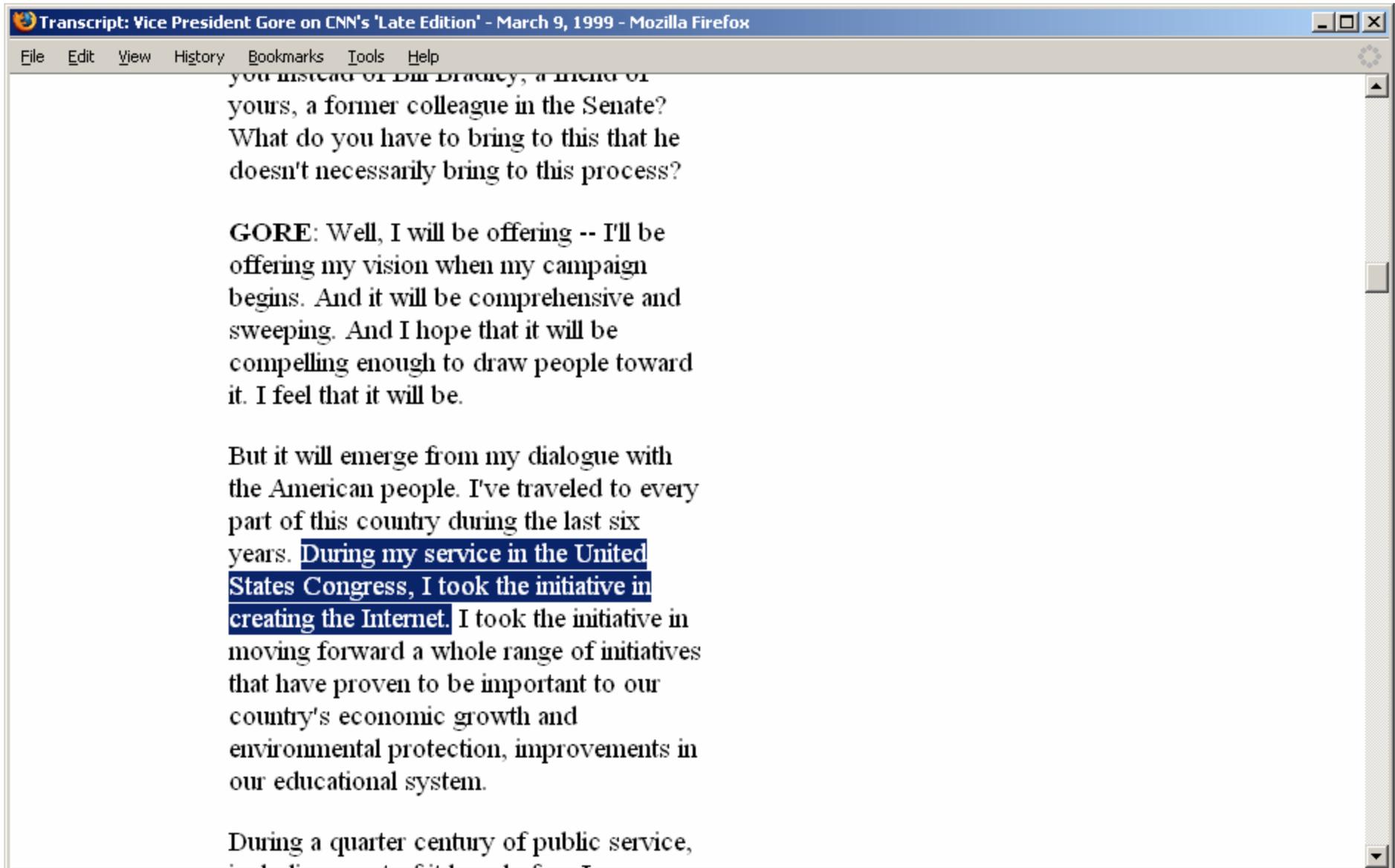
- The Internet
- GNU and FSF
- Cheap digital storage
- arXiv
- SPARC
- PMC
- BOAI
- PLoS
- Ancestor

Personal antecedents

(These are events in my professional career that made me recognize the need for OA.)

- StATS
- R
- Chance News
- Statistical Evidence

The Internet (1974)



GNU (1984) and FSF (1985)



The screenshot shows a Mozilla Firefox browser window displaying the GNU Project website. The browser's address bar shows the URL "About the GNU Project - GNU Project - Free Software Foundation (FSF) - Mozilla Firefox". The website has a red header with the GNU logo (a ram's head) on the left and the text "GNU's Not Unix! - Free Software, Free Society" in the center. Below the header, there are navigation links: "What is Free Software?", "Join the Free Software Foundation", and "Get FSF alerts". A "BAD VISTA" logo is visible on the right side of the header. A dark navigation bar contains links for "Home", "About GNU", "Software", "Philosophy", "Licenses", "Documentation", "Help GNU", and "Contact Us". A yellow banner below the navigation bar contains the text "Sign a petition against Microsoft's Office OpenXML becoming an ISO standard". The main content area is titled "About the GNU Project" and "Information about the GNU system". It features a list of links: "An overview of GNU", "A more detailed history of GNU", "The initial announcement of the project", "The GNU Manifesto", and "RYTF interview with Richard Stallman (1986)". On the right side, there is a "KEY RESOURCES" section with links: "Help a priority project", "Help revise GNU licenses", "Free GNU/Linux distributions", "Free Software Directory", and "GNU software packages". Below this is a "STAY UP TO DATE" section.

File Edit View History Bookmarks Tools Help

FSF FSF Europe FSF India FSF Latin America [Translations of this page](#)

 **GNU's Not Unix! - Free Software, Free Society**

[What is Free Software?](#) | [Join the Free Software Foundation](#) | [Get FSF alerts](#)



Home About GNU Software Philosophy Licenses Documentation Help GNU Contact Us

[Sign a petition against Microsoft's Office OpenXML becoming an ISO standard](#)

About the GNU Project

Information about the GNU system

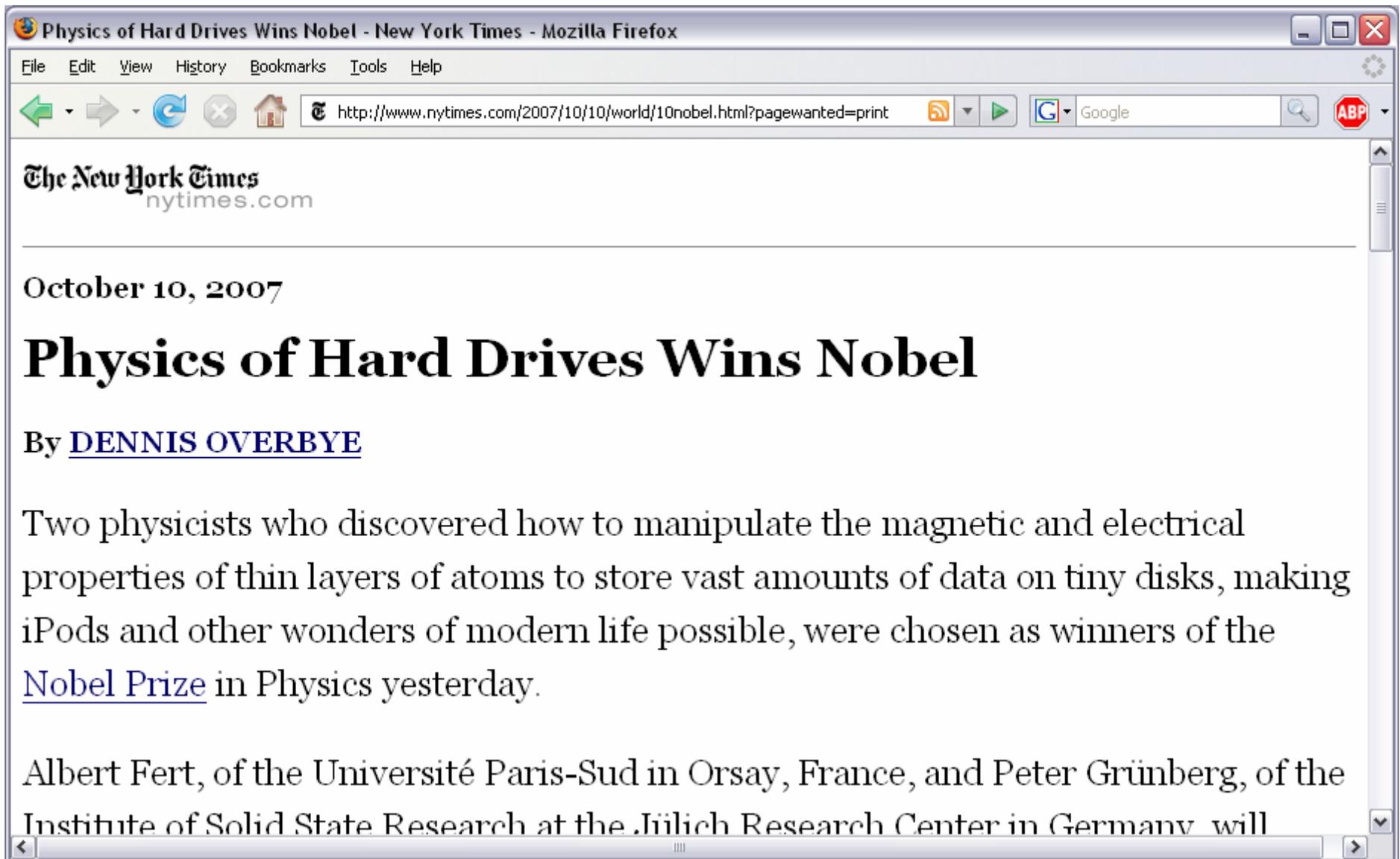
- [An overview of GNU](#)
- [A more detailed history of GNU](#)
- [The initial announcement](#) of the project
- [The GNU Manifesto](#)
- [RYTF interview with Richard Stallman \(1986\)](#)

KEY RESOURCES

- [Help a priority project](#)
- [Help revise GNU licenses](#)
- [Free GNU/Linux distributions](#)
- [Free Software Directory](#)
- [GNU software packages](#)

STAY UP TO DATE

Cheap digital storage (1988)



The screenshot shows a Mozilla Firefox browser window with the title bar "Physics of Hard Drives Wins Nobel - New York Times - Mozilla Firefox". The address bar contains the URL "http://www.nytimes.com/2007/10/10/world/10nobel.html?pagewanted=print". The page content includes the New York Times logo, the date "October 10, 2007", the headline "Physics of Hard Drives Wins Nobel", and the byline "By DENNIS OVERBYE". The main text begins with "Two physicists who discovered how to manipulate the magnetic and electrical properties of thin layers of atoms to store vast amounts of data on tiny disks, making iPods and other wonders of modern life possible, were chosen as winners of the Nobel Prize in Physics yesterday." The article is partially cut off at the bottom.

Physics of Hard Drives Wins Nobel - New York Times - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.nytimes.com/2007/10/10/world/10nobel.html?pagewanted=print

The New York Times
nytimes.com

October 10, 2007

Physics of Hard Drives Wins Nobel

By [DENNIS OVERBYE](#)

Two physicists who discovered how to manipulate the magnetic and electrical properties of thin layers of atoms to store vast amounts of data on tiny disks, making iPods and other wonders of modern life possible, were chosen as winners of the [Nobel Prize](#) in Physics yesterday.

Albert Fert, of the Université Paris-Sud in Orsay, France, and Peter Grünberg, of the Institute of Solid State Research at the Jülich Research Center in Germany will

arXiv (1991)

The screenshot shows a Mozilla Firefox browser window displaying the arXiv.org website. The browser's address bar shows the URL <http://www.arxiv.org/>. The website header features the Cornell University Library logo and the text "Cornell University Library". Below this, the "arXiv.org" logo is prominently displayed in white on a red background. To the right of the logo is a search bar with the placeholder text "Search or Article-id" and a "Go!" button. A dropdown menu next to the search bar is set to "All papers". Links for "(Help | Advanced search)" are also visible. The main content area of the page includes the text "Open access to 443,628 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology and Statistics". Below this is a "Subject search and browse:" section with a dropdown menu currently set to "Physics" and buttons for "Search", "Form Interface", and "Catchup". A date stamp "18 Jul 2007:" is followed by links for "Recent updates: PDFLaTeX, new identifiers, abs redesign, stat archive, math.IT." and a link to "See cumulative 'What's New' pages.". A warning message reads "Robots Beware: indiscriminate automated downloads from this site are *not* permitted.". The "Physics" section is highlighted, and a list of sub-fields is shown, including "Astrophysics (astro-ph new, recent, find)", "Condensed Matter (cond-mat new, recent, find)" with a list of sub-topics like "Disordered Systems and Neural Networks", "Materials Science", "Mesoscopic Systems and Quantum Hall Effect", "Other", "Soft Condensed Matter", "Statistical Mechanics", "Strongly Correlated Electrons", and "Superconductivity", "General Relativity and Quantum Cosmology (gr-qc new, recent, find)", and "High Energy Physics - Experiment (hep-ex new, recent, find)".

arXiv.org e-Print archive - Mozilla Firefox

File Edit View History Bookmarks Tools Help

<http://www.arxiv.org/> Google

Cornell University Library

Search Library Search Cornell

arXiv.org

Search or Article-id (Help | Advanced search)

All papers Go!

Open access to 443,628 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology and Statistics

Subject search and browse: Physics Search Form Interface Catchup

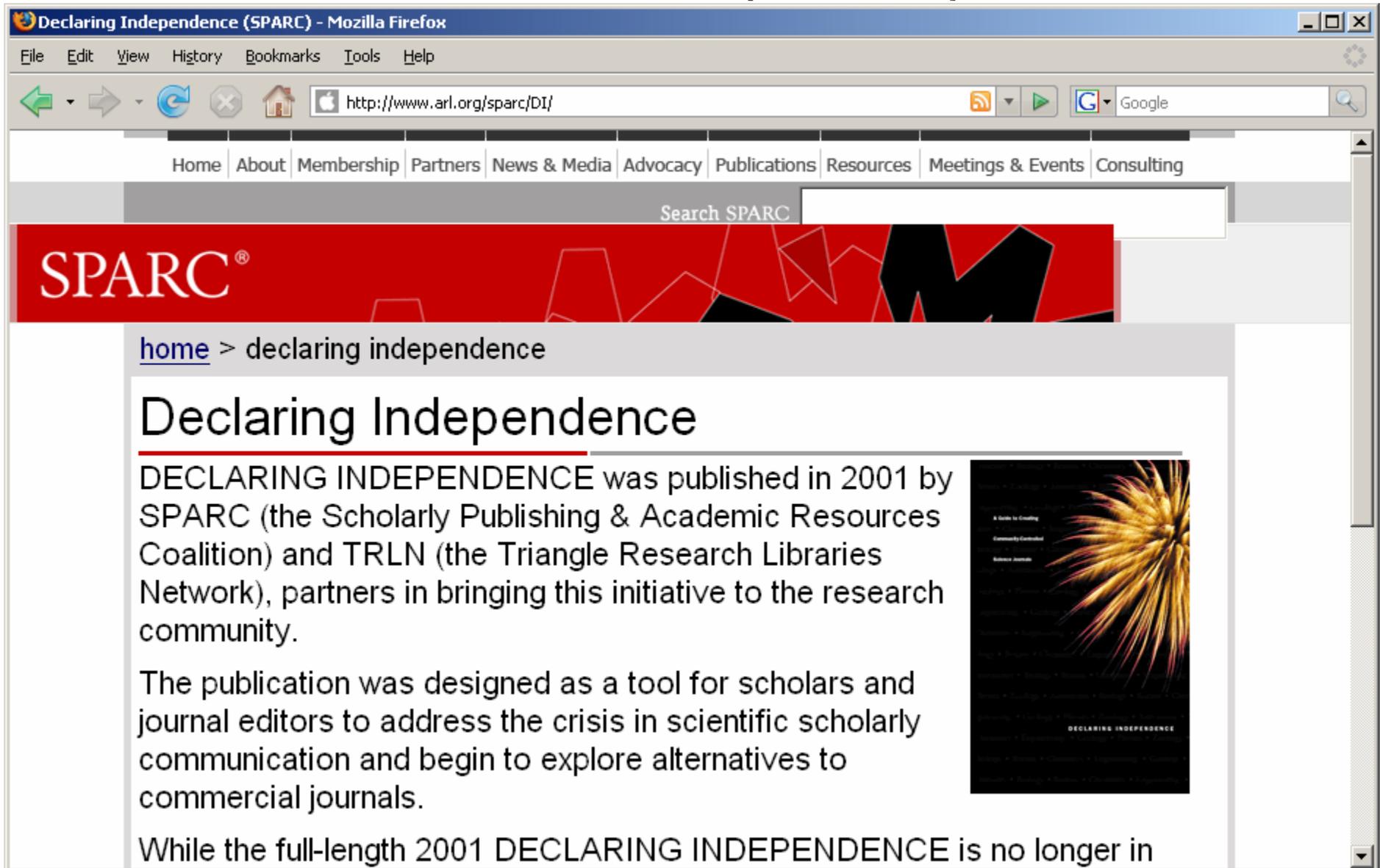
18 Jul 2007: [Recent updates: PDFLaTeX, new identifiers, abs redesign, stat archive, math.IT.](#)
See cumulative "[What's New](#)" pages.

Robots Beware: [indiscriminate automated downloads from this site are *not* permitted.](#)

Physics

- [Astrophysics \(astro-ph new, recent, find\)](#)
- [Condensed Matter \(cond-mat new, recent, find\)](#)
includes: [Disordered Systems and Neural Networks](#); [Materials Science](#); [Mesoscopic Systems and Quantum Hall Effect](#); [Other](#); [Soft Condensed Matter](#); [Statistical Mechanics](#); [Strongly Correlated Electrons](#); [Superconductivity](#)
- [General Relativity and Quantum Cosmology \(gr-qc new, recent, find\)](#)
- [High Energy Physics - Experiment \(hep-ex new, recent, find\)](#)

SPARC (1998)



The screenshot shows a Mozilla Firefox browser window with the address bar displaying <http://www.arl.org/sparc/DI/>. The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The website's navigation menu contains links for Home, About, Membership, Partners, News & Media, Advocacy, Publications, Resources, Meetings & Events, and Consulting. A search bar labeled 'Search SPARC' is visible. The main content area features a red banner with the SPARC logo and a breadcrumb trail: [home](#) > declaring independence. The title 'Declaring Independence' is underlined. The text describes the 2001 publication by SPARC and TRLN, its purpose as a tool for scholars and journal editors, and notes that the full-length 2001 version is no longer available. A small image of the book cover is shown on the right.

[home](#) > declaring independence

Declaring Independence

DECLARING INDEPENDENCE was published in 2001 by SPARC (the Scholarly Publishing & Academic Resources Coalition) and TRLN (the Triangle Research Libraries Network), partners in bringing this initiative to the research community.

The publication was designed as a tool for scholars and journal editors to address the crisis in scientific scholarly communication and begin to explore alternatives to commercial journals.

While the full-length 2001 DECLARING INDEPENDENCE is no longer in



PMC (2000)

The screenshot shows the PubMed Central homepage in a Mozilla Firefox browser window. The browser title is "PubMed Central Homepage - Mozilla Firefox". The menu bar includes "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". The page header features the PubMed Central logo (a classical building) and the text "PubMed Central". To the right, a blue banner reads "A free archive of life sciences journals" with navigation links for "About PMC", "Journal List", "For Publishers", and "Utilities".

The main content area begins with a paragraph: "PubMed Central (PMC) is the U.S. National Institutes of Health (NIH) free digital archive of biomedical and life sciences journal literature." Below this is a search bar with a "Find Articles" button and a link to "Advanced search".

A section titled "Browse PMC journals:" lists links for "[A-B]", "[C-H]", "[I-M]", "[N-S]", "[T-Z]", "[Full List]", and "[New Journals]".

There are two columns of text below:

- Left Column:**
 - Receive notice of new journals and other major updates to PMC: join the [PMC News mail list](#) or subscribe to the PMC News [RSS feed](#) .
 - All the articles in PMC are free (sometimes on a delayed basis). Some journals go beyond free, to [Open Access](#). Find out what that means.
 - PMC's [utilities](#) include an OAI service that provides XML of the full-text of some articles, functions for scripting PMC searches and linking to specific PMC articles from your site, and more
- Right Column:**
 - The [PMC journal list](#) comprises journals that deposit material in PMC on a routine basis and generally make all their published articles available here. Find out how to [include your journal](#) in PMC.
 - PMC also has the [author manuscripts](#) of articles published by NIH-funded researchers in various non-PMC journals. Increasing free access to these articles is the goal of the **NIH Public Access** policy. Similar manuscripts from researchers funded by the Wellcome Trust are available in PMC as well.

BOAI (2001)



PLoS (2001)

The screenshot shows the PLoS website in a Mozilla Firefox browser window. The browser title bar reads "Public Library of Science - Mozilla Firefox". The menu bar includes "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". The website header features the PLoS logo and the text "PUBLIC LIBRARY of SCIENCE". A navigation bar contains links for "Home", "About PLoS", "Open Access", "PLoS Journals", "Support PLoS", and "News & Events". Below this, there are buttons for "Posters & Media" and "Search".

The main content area is divided into three columns. The left column contains a paragraph about PLoS as a nonprofit organization, with a link to "core principles". Below this is a button labeled "» MORE ABOUT PLoS". The middle column features a quote in blue italicized text: "I thoroughly support universal free access to research. The wonderful thing about ideas is more people being exposed to more ideas leads to still more ideas." attributed to Dr. Richard Smith, former Editor of the British Medical Journal. The right column is titled "PLoS JOURNALS" and lists various journals: PLoS Biology, PLoS Medicine, PLoS Computational Biology, PLoS Genetics, PLoS Pathogens, PLoS ONE, and PLoS Neglected Tropical Diseases. Below this list is a button labeled "PLoS HUBs".

At the bottom left, there is a section for "Open Access" with a padlock icon, stating "Everything we publish is freely available online for you to read, download,". At the bottom center, there is a globe icon and the text "SUPPORT PLoS".

Ancestor (2007)

The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://ancestor.podshow.com/`. The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The website's header features the PodShow logo with the tagline "play · collect · share · create" and a "Un-BETA" badge. A prominent blue banner on the right of the header says "31 seconds to REGISTER JOIN NOW it's FREE". Below the header is a navigation menu with links for SHOWS, CHANNELS, VIDEOS, MUSIC, PEOPLE, and UPLOAD. A secondary menu includes master control, my profile, my collection, my images, my video, my inbox, and invite. On the right side, there is a login form with fields for email and password, a "Login" button, and links for "forgot password?" and "Remember Me".

The main content area features a large, stylized red title "ANCESTOR" in a gradient font. Below the title, it reads "THE CHART-TOPPING PODCAST NOVEL" and "#1 ON iTUNES". To the right of the text is a graphic of a clear glass vial with a black cap and four thin, black, spider-like legs extending from the top. The vial contains a red liquid and has several red blood splatters on the white surface to its right.

StATS (1997)

Interesting article: Making a difference: the clinical research programme for children (September 26, 2007) - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.childrens-mercy.org/stats/article/ResearchForChildren.asp

Google

Children's Mercy
HOSPITALS & CLINICS
www.childrens-mercy.org

StATS
Steve's Attempt to
Teach Statistics

STATS Homepage
Children's Mercy Homepage
CMH&C Research
Email Dr. Simon

Steve Simon, Ph.D., Research Biostatistician

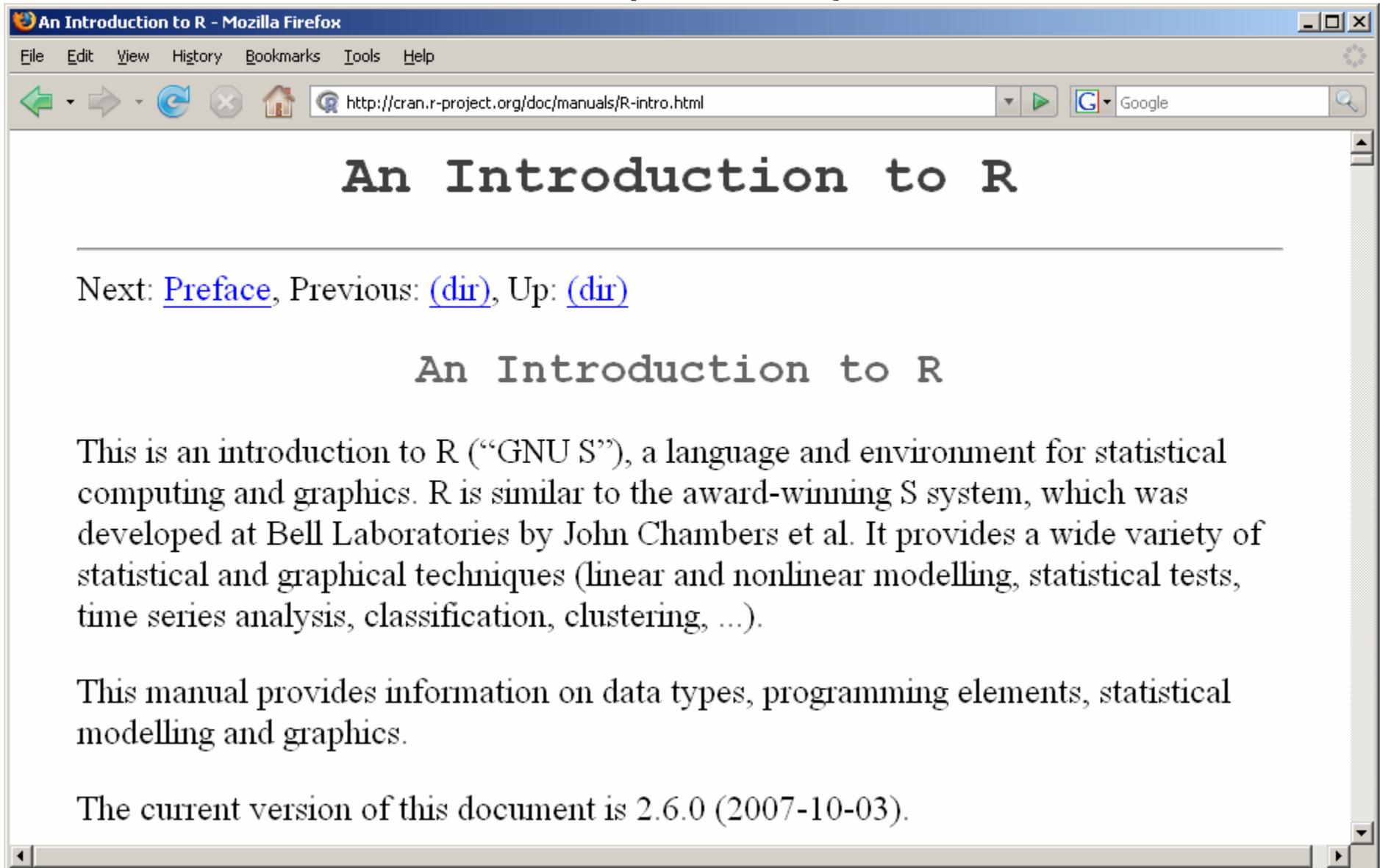
Search

Interesting article: Making a difference: the clinical research programme for children. Rosalind L Smyth. Archives of Disease in Childhood 2007;92:835-837; doi:10.1136/adc.2006.113357. [\[Full text\]](#) [\[PDF\]](#)

This paper identifies ten highly cited research trials involving children and discusses how these trials have had an impact on practice. The authors also describe a recent initiative, the Medicines for Children Research Network.

The description of this article was written by Steve Simon on 2007-09-26, edited by Steve Simon, and was last modified on 2007-10-09. This page needs no revisions. [Category: Interesting articles](#), [Category: Children in research](#)

R (2000)



Chance News (2005)

The screenshot shows a Mozilla Firefox browser window with the title "Chance News 30 - ChanceWiki - Mozilla Firefox". The address bar displays the URL "http://chance.dartmouth.edu/chancewiki/index.php/Chance_News_30". The browser's menu bar includes "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". The search bar contains "Google". A user profile icon is visible with the text "Create an account or log in".

The main content area features a navigation menu with tabs for "article", "discussion", "edit", and "history". The title "Chance News 30" is prominently displayed. Below the title is a "Table of contents [hide]" section listing the following items:

- 1 Quotations
- 2 Forsooth
- 3 Supplement may help treat gambling addiction
 - 3.1 Discussion
- 4 Excel 2007 arithmetic error
 - 4.1 Questions
- 5 Uncertainties of Life
 - 5.1 Discussion
- 6 Depressed people follow a different power law distribution
 - 6.1 Questions
 - 6.2 Further reading

On the left side of the page, there is a "navigation" section with a list of links: "Main Page", "Community portal", "Current events", "Recent changes", "Random page", and "Help". Below this is a "search" section with a text input field and "Go" and "Search" buttons. At the bottom left, there is a "toolbox" section with a left-pointing arrow.

Statistical Evidence (2006)

1.9 On your own

1. Review the following abstracts, all from studies where randomization was not done. Speculate on the reason that randomization was not performed.

Body fatness during childhood and adolescence and incidence of breast cancer in premenopausal women: a prospective cohort study. Baer, H.J., Colditz, G.A., Rosner, B., Michels, K.B., Rich-Edwards, J.W., Hunter, D.J., and Willett, W.C. *Breast Cancer Research* 2005, 7:R314–R325 doi:10.1186/bcr998. **Introduction:** Body mass index (BMI) during adulthood is inversely related to the incidence of premenopausal breast cancer, but the role of body fatness earlier in life is less clear. We examined prospectively the relation between body fatness during childhood and adolescence and the incidence of breast cancer in premenopausal women. **Methods:** Participants were 109,267 premenopausal women in the Nurses' Health Study II who recalled their body fatness at ages 5, 10 and 20 years

Who pays the bills?

There are many economic models for publication, but the most common models are:

- “Author pays” model
- “Reader pays” model

There are also hybrid models that combine these two approaches. Other revenues, such as advertising apply equally well to both models.

Academia journals are a “paradise” for publishers.

“First the public pays for most scientific research through, for example, the National Science Foundation. Then universities pay the salaries of scientists who do virtually all the writing, reviewing and editing. Universities sometimes even provide free office space to journals. Finally, authors typically sign over their copyright to publishers, who can sometimes bring in many millions of dollars a year in subscriptions for a single high-priced journal — subscriptions paid by university libraries supported by tax dollars and tuition.”

query.nytimes.com/gst/fullpage.html?res=9D03E1DC173AF93BA35751C1A96E958260

Who benefits from OA?

Although there is controversy over the general benefits versus costs of OA, some parties clearly benefit:

- Medical professionals in the developing world.
- Patients researching their own disease.
- Students/teachers (especially high school).
- Researchers studying research publications at the “Meta” level.

OA increases research visibility

“A total of 1,492 original research articles were analyzed: 212 (14.2% of all articles) were OA articles paid by the author, and 1,280 (85.8%) were non-OA articles. In April 2005 (mean 206 d after publication), 627 (49.0%) of the non-OA articles versus 78 (36.8%) of the OA articles were not cited (relative risk = 1.3 [95% Confidence Interval: 1.1–1.6]; $p = 0.001$). 6 mo later (mean 288 d after publication), non-OA articles were still more likely to be uncited (non-OA: 172 [13.6%], OA: 11 [5.2%]; relative risk = 2.6 [1.4–4.7]; $p < 0.001$). The average number of citations of OA articles was higher compared to non-OA articles (April 2005: 1.5 [SD = 2.5] versus 1.2 [SD = 2.0]; $Z = 3.123$; $p = 0.002$; October 2005: 6.4 [SD = 10.4] versus 4.5 [SD = 4.9]; $Z = 4.058$; $p < 0.001$).”

biology.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pbio.0040157

Some major research groups that support for OA

The Medical Library Association

www.mlanet.org/government/info_access/openaccess_statement.html

The U.S. National Institutes for Health

grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html

The Wellcome Trust

www.wellcome.ac.uk/doc_WTD002766.html

The Max Planck Society

www.mpg.de/pdf/openaccess/BerlinDeclaration_en.pdf

What can you do to support OA

Readers:

- “Encourage your librarians to subscribe to journals published by societies supporting OA.”
- “Encourage your departments and universities to support OA publication.”
- “Acknowledge the value of high quality OA publications in promotion cases.”

stat-www.berkeley.edu/users/pitman/ims_pres_address.pdf

What you can do to support OA

Authors:

- “Preferably submit your articles to society-run journals with copyright agreements which allow self-archiving of final versions on arXiv; open access to publisher version, at least after some delay; and re-use of content in derivative works.”
- “Don’t sign restrictive copyright agreements: amend them to retain the right to post the final version of your work on arXiv or other open access repository.”

stat-www.berkeley.edu/users/pitman/ims_pres_address.pdf

What you can do to support OA

Referees/editors:

- “Refuse to work for journals with overly restrictive copyright policies.”
- “Work for society-run journals which promote OA publication.”
- “Work to raise the standard of OA journals to be more attractive to authors than commercial journals.”

stat-www.berkeley.edu/users/pitman/ims_pres_address.pdf

Summary

OA journals offer digital content at no cost and with limited copyright restrictions. OA journals offer benefits to medical professionals in developing countries, improve the visibility of your research. Since so much of the research endeavor is supported by taxpayer money, there is an obligation to offer this research openly and without limitation. There are many things that you can do to promote OA.