



Defining Web 2.0

- **Web 2.0** refers to a perceived second generation of Web-based communities and hosted services
 - Began with a conference brainstorming session between O'Reilly and MediaLive International in 2004
 - *“Web 2.0 is the understanding that the network is the platform...the rules for business are different. And the cardinal rule is this one, users add value.”*
 - Tim O'Reilly
 - Kamla Bhatt Show - Tim O'Reilly on What is Web 2.0?
<http://www.youtube.com/watch?v=CQibri7gpLM>
- Transition of Web sites from isolated information silos to interlinked computing platforms that act like software to the user
- Includes a social element where users generate and distribute content, often with freedom to share and re-use

(http://en.wikipedia.org/wiki/Web_2)



Benefits of Web 2.0 Technologies

- Provides a significant enhancement over read-only, static Web sites that are not interactive
 - Ask.com Commercial
“Can your search engine do this?”
<http://uncutvideo.aol.com/videos/329b90013f6bc1d8404b4d2a62f5237d>
 - Web 2.0...The Machine is Us/ing Us
(Michael Wesch, Kansas State University)
http://www.youtube.com/watch?v=NLIgopyXT_g
- Information Sharing
 - RSS Feeds
 - Syndicated updated without the confusion of mass e-mail notifications
 - Alerts users of new content, including podcasts and videocasts (also called “vodcasts”); Media sharing
 - Wikis
 - Internal and/or external collaboration
 - Blogs
 - Allows on-the-fly posts and comments without knowledge of HTML



Defining Blogs

- A blog (derived from “Web log” or “Weblog”)
 - Entries are written in chronological order and displayed in reverse order
 - Combines text, images, and links to other blogs, Web pages, and other media related to its topic
- Browser-based software is commonly used for "blogging"
 - Blogs can be hosted by dedicated blog hosting services
 - Can be run using blog software, such as WordPress



Defining RSS

- **RSS** is a family of Web feed formats used to publish frequently updated content such as blog entries, news headlines or podcasts
 - Really Simple Syndication (RSS 2.0) format
 - Summary or the full text of content from an associated Web site
 - Automated updates that are easier than checking individual sites manually
- **RSS** content can be read using a standalone software called an RSS reader or built-in browser RSS readers
 - Users may subscribe to RSS feeds easily
 - RSS reader checks the subscribed feeds regularly for new content

([http://en.wikipedia.org/wiki/RSS_\(file_format\)](http://en.wikipedia.org/wiki/RSS_(file_format)))

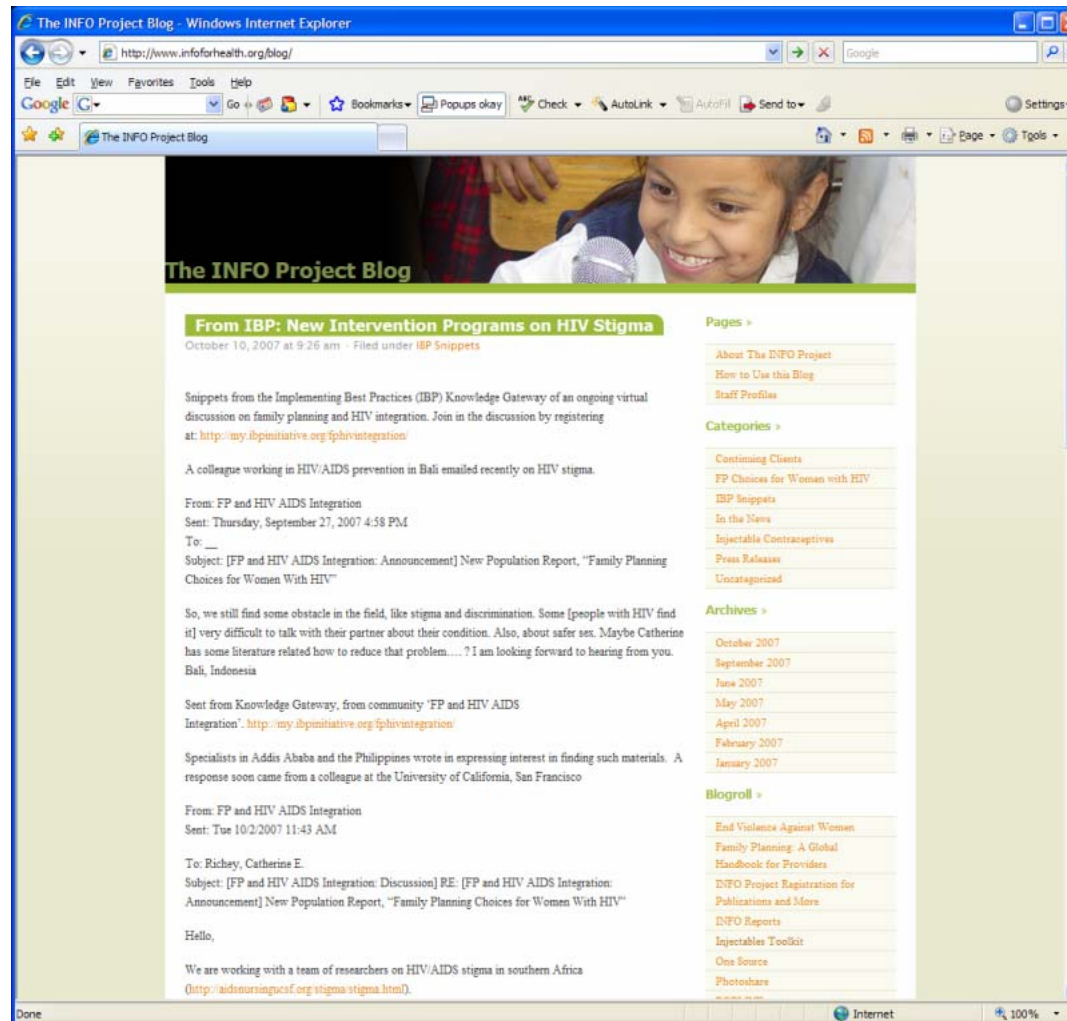


The INFO Project at Johns Hopkins

- Based at the Johns Hopkins Bloomberg School of Public Health's Center for Communication Programs
 - Envisions a world of interconnected communities where shared reproductive health information improves and saves lives
- Two aspects of Web 2.0 are deemed essential to realizing the INFO Project's vision—
 - Blogs
 - Gives INFO's consumers the ability to share views and experiences on various topics that directly impact human health
 - RSS feeds
 - Allows INFO to share modifications to their flagship database of six different resources including bibliographic records of latest research in the field of Family Planning and Reproductive Health

INFOforHealth Blogs

(<http://www.infoforhealth.org/blog/>)



Photoshare Blog

(<http://www.photoshare.org/blog/>)



INFOforHealth RSS and Blog RSS

The left screenshot shows the 'Results of One Source Search' page in Windows Internet Explorer. The search query is 'date_added:last_7_days'. The page displays search results for 'The INFO Project' website, including a search bar, navigation links, and a list of search results. The search results are sorted by relevance and include a list of narrow results by resource type and keyword.

The right screenshot shows the 'The INFO Project Blog' RSS feed page in Windows Internet Explorer. The page displays the RSS feed for the blog, including a 'Subscribe to this feed' button and a sample blog entry. The sample entry is titled 'From IBP: New Intervention Programs on HIV Stigma' and is dated Wednesday, October 10, 2007, 9:26:37 AM. The entry includes a snippet of text and a link to the full article.

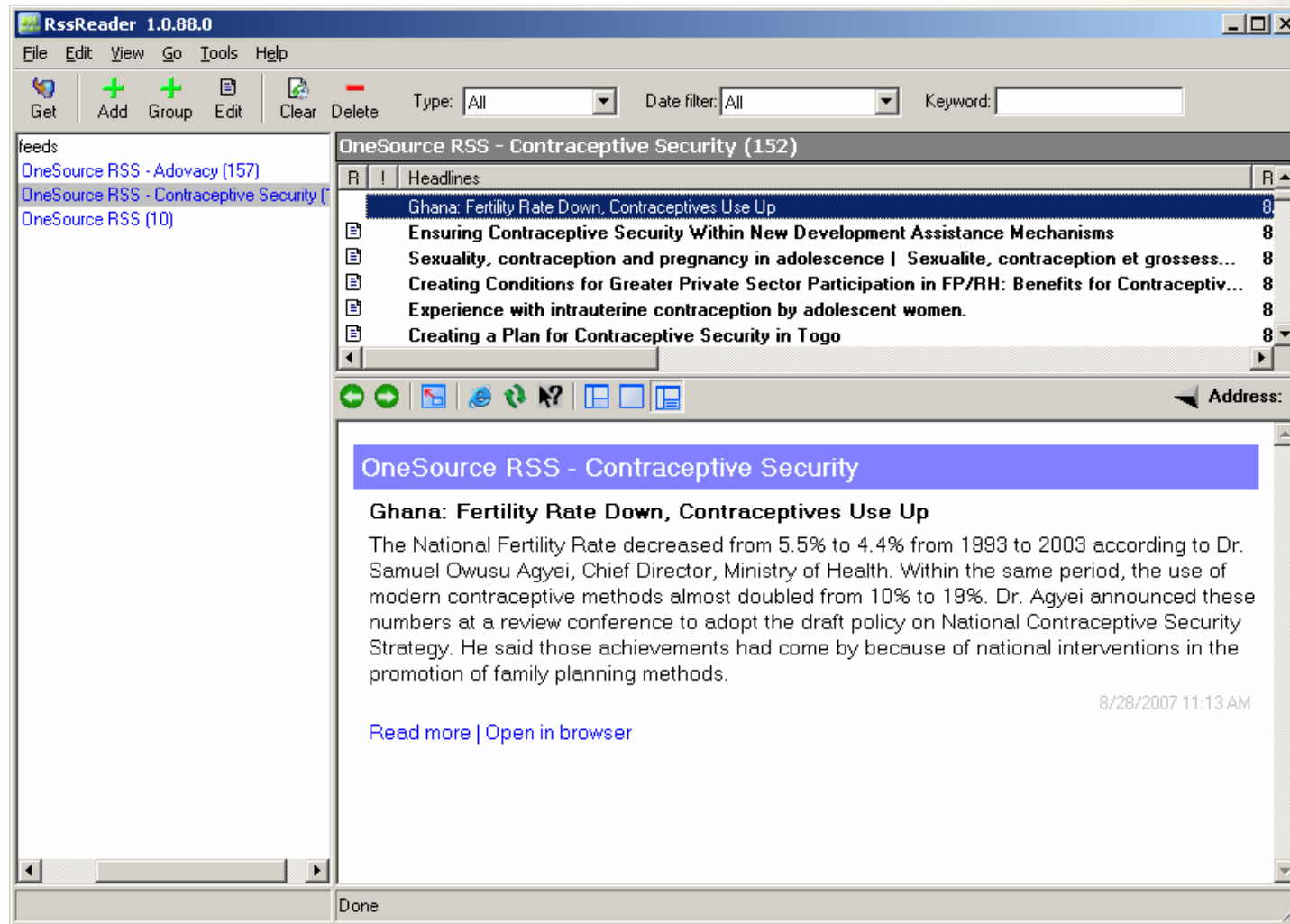
INFOforHealth RSS –Browser Reader and XML

The image displays two overlapping browser windows. The top window, titled 'OneSource RSS - Windows Internet Explorer', shows a web page with the URL http://www.infoforhealth.org/rss.php?query=date_added%3Alast_7_days. The page content includes a yellow box with the text: 'One Source RSS. You are viewing a feed that contains frequently updated content. When you subscribe to a feed, it is added to the Common Feed List. Updated information from the feed is automatically downloaded to your computer and can be viewed in Internet Explorer and other programs. Learn more about feeds.' Below this is a 'Subscribe to this feed' link. The main content area features a blue header for 'Abstinence and abstinence-only education.' followed by a paragraph of text. A second article header, 'Greater uterine artery blood flow during pregnancy in multigenerational (Andean) than shorter-term (European) high-altitude residents.', is also visible.

The bottom window, titled 'Microsoft Internet Explorer', shows the raw XML source code for the RSS feed. The code includes the following elements:

```
<?xml version="1.0" encoding="iso-8859-1" ?>
<rss version="2.0">
<channel>
<title>OneSource RSS</title>
<description>OneSource combines the resources of six unique databases from INFO and the Health Communication Partnership. You can search all of them combined, each one separately, or a combination that best meets your needs. POPLINE - the world's largest database on reproductive health, provides more than 335,000 citations with abstracts to scientific articles, reports, books, and unpublished reports in the field of population, family planning, and related health issues. Some include links to full text. You can also limit your search to peer-reviewed journal articles. POPLINE Web site: www.popline.org. Photoshare - a one-of-a-kind online photo collection covering a broad range of subjects in international development, with a focus on public health. Photoshare currently contains more than 10,000 images related to global health, which can be ordered for use on Web sites, in presentations, for publications and personal use. Photoshare Web site: www.photoshare.org. The Pop Reporter - published weekly by INFO, The POP REPORTER electronic magazine provides access to the latest research and news stories related to family planning, reproductive health, HIV/AIDS, maternal and child health, men's health, population, women's health, and adolescent health. PopReporter home page: http://www.infoforhealth.org/popreporter/current.shtml Health Communication Materials Database - the world's largest collection of health communication materials hosted by the Media/Materials Clearinghouse (M/MC). M/MC home page: http://www.m-mc.org/ Netlinks - an online database of over 2,000 organizations working in global health and development with up-to-date contact information and Web site links. Q&As - Q&As is designed to include USAID's Dr. Jim Shelton's Pearls (http://www.infoforhealth.org/pears/archive.shtml), Healthwise (http://www.hcpartnership.org/Healthwise/index.php) and other Frequently-Asked-Questions (FAQs)</description>
<link>http://www.infoforhealth.org</link>
<item>
<title>Abstinence and abstinence-only education.</title>
<description>The objective was to review recent literature on medical accuracy, program effectiveness, and ethical concerns related to abstinence-only policies for adolescent sexuality education. The federal government invests over 175 million dollars annually in 'abstinence-only-until-marriage' programs. These programs are required to withhold information on contraception and condom use, except for information on failure rates. Abstinence-only curricula have been found to contain scientifically inaccurate information, distorting data on topics such as condom efficacy, and promote gender stereotypes. An independent evaluation of the federal program, several systematic reviews, and cohort data from population-based surveys find little evidence of efficacy and evidence of possible harm. In contrast, comprehensive sexuality education programs have been found to help teens delay initiation of intercourse and reduce sexual risk behaviors. Abstinence-only policies violate the human rights of adolescents because they withhold potentially life-saving information on HIV and other sexually transmitted infections. Federal support of abstinence-only as an approach to adolescent sexuality education is of much concern due to medical inaccuracies, lack of effectiveness, and the withholding and distorting of health information. (author's)</description>
<link>http://www.infoforhealth.org/search/search_results_single.php?start_num=0&fullrecordID=4223398&fullrecordtype=7&query=oid%3A4223398&subquery=</link>
<guid isPermaLink="true">http://www.infoforhealth.org/search/search_results_single.php?start_num=0&fullrecordID=4223398&fullrecordtype=7&query=oid%3A4223398&subquery=</guid>
</item>
<item>
<title>Greater uterine artery blood flow during pregnancy in multigenerational (Andean) than shorter-term (European) high-altitude residents.</title>
```

INFOforHealth RSS – Standalone Reader



National Institutes of Health / NIGMS

- National Institute of General Medical Sciences (NIGMS)
 - One of the National Institutes of Health
 - Supports research that is the foundation for disease diagnosis, prevention, and treatment
 - Uses communication tools to promote the institute's vision and goals
 - Aspects of Web 2.0 essential for vision
 - RSS
 - Podcasts/Vodcasts

NIGMS Home | Site Map | Staff Search Search: GO

National Institute of General Medical Sciences
One of the National Institutes of Health

Featured Areas | Research Funding | Training & Careers | Minority Programs | News & Events | Publications | About NIGMS

Supporting research that is the foundation for disease diagnosis, treatment, and prevention

Funding Opportunities

- [Genetic and Genomic Resources for Emerging Non-Mammalian Model Organisms \(R24\)](#)
September 28, 2007 • PA-07-457
- [Research on Research Integrity \(R21\)](#)
September 28, 2007 • RFA-RR-07-003
- [Development of High Resolution Probes for Cellular Imaging \(R01\)](#)
September 17, 2007 • RFA-GM-08-009
- [New Technology for Proteomics and Glycomics \(SBIR IR43/R44\)](#)
September 10, 2007 • PA-07-451
- [New Technology for Proteomics and Glycomics \(STTR IR41/R42\)](#)
September 10, 2007 • PA-07-452
- [International Cooperative Biodiversity Groups \(ICBG\) IU01](#)
September 5, 2007 • RFA-TW-08-003
- [Tools for Germplasm Cryopreservation \(SBIR IR43/R44\)](#)
August 29, 2007 • RFA-RR-07-007
- [Tools for Germplasm Cryopreservation \(STTR IR41/R42\)](#)
August 29, 2007 • RFA-RR-07-008
- [Extramural Pediatric Research Loan Repayment Program \(LRP\)](#)
August 21, 2007 • PA-07-440

[More Funding Opportunities](#)

Results

- [Genome of Chlamydomonas Alga](#)
October 11, 2007 • University of California, Los Angeles
Researchers from around the world, funded in part by NIGMS, have sequenced the genome of a green alga, revealing genes relating to photosynthesis and cilia, whose dysfunction causes human diseases.
- [Pinch Helps Bacteria Divide](#)
October 11, 2007 • Johns Hopkins University
NIGMS-funded engineers have shed light on how rod-shaped bacteria like E. coli divide by having a structure called a Z-ring pinch through their bodies.
- [Control of Stem Cell Aging](#)
October 10, 2007 • Stowers Institute for Medical Research
Using fruit fly ovarian cells, NIGMS-funded researchers examined the factors that control stem cell function. The declining function of stem cells may be a primary cause of aging.
- [Insights into the Evolution of the Human Genome](#)
October 8, 2007 • University of California, San Diego
NIGMS-funded researchers have worked out the evolutionary history of duplications in the human genome that are responsible for both disease and genetic innovations.
- [NIGMS Grantees Win Nobel Prize for Gene Targeting](#)
October 8, 2007 • National Institute of General Medical Sciences
Statement from NIGMS Director Jeremy M. Berg on Nobel Prize in physiology or medicine to

CURRENT ISSUE BIOMEDICAL BEAT
A monthly digest of research news from NIGMS

Quick Links


- [New on This Site](#)
- [Strategic Planning](#)
- [Congressional Materials](#)
- [NIGMS Feedback Loop](#)
- [Biomedical Beat](#)
- [Free Publications](#)
- [Advisory Council](#)
- [Job Vacancies](#)
- [Media Resources](#)
- [Image Galleries](#)

PODCAST ▶
[What Wins Nobel Prizes?](#)

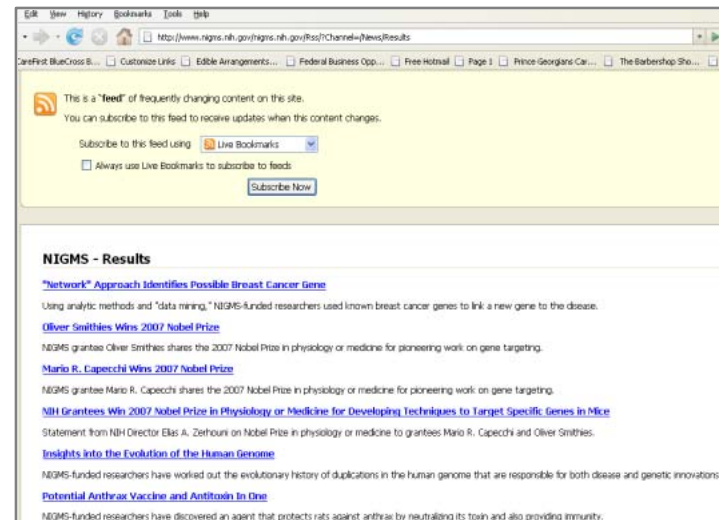
Free Publications

[computing life](#)

NIGMS – RSS Feeds

- NIGMS currently maintains five RSS feeds on their site (indicated by the  icon)
 - New on the NIGMS Web Site
 - Results
 - E-newsletters
 - *Biomedical Beat*
 - *Feedback Loop*
 - *Minority Programs Update*
- NIGMS RSS Feeds and Help <http://www.nigms.nih.gov/RSS>

```
<rss version="2.0" encoding="UTF-8" ?>
<rss version="2.0" ?>
  <channel>
    <title>NIGMS - What's New</title>
    <link>http://www.nigms.nih.gov/
    <description>Supporting research that is the foundation for disease diagnosis, treatment, and prevention. One of the U.S. National Institutes of Health.
    <generator>NIGMS RSS Feeder 2.0</generator>
    <atom:link href="http://www.nigms.nih.gov/Publications/Findings.htm" type="application/atom+xml" rel="self"/>
    <item>
      <title>Findings</title>
      <link>http://www.nigms.nih.gov/Publications/Findings.htm</link>
      <pubDate>Wed, 10 Oct 2007 08:17:07 EST</pubDate>
      <guid isPermaLink="false">{7626A08B-9098-4410-802E-0E48D7D1E36A}</guid>
      <description>Findings is an NIGMS feature publication highlighting the research of selected NIGMS-funded scientists. It also includes recent, clinically relevant NIGMS-funded research studies and a crossword puzzle containing words used in the stories.</description>
    </item>
    <item>
      <title>Minority Programs Update</title>
      <link>http://www.nigms.nih.gov/Publications/MPU.htm</link>
      <pubDate>Tue, 9 Oct 2007 14:12:06 EST</pubDate>
      <guid isPermaLink="false">{7A6829E7-77FD-42A9-9C4D-D0E48B8A5493}</guid>
      <description>Have about NIGMS minority programs and information of interest to participants in these and other minority programs.</description>
    </item>
    <item>
      <title>NIGMS Grantees Win Nobel for Gene Targeting</title>
      <link>http://www.nigms.nih.gov/News/Results/10082007a.htm</link>
      <pubDate>Mon, 8 Oct 2007 12:08:08 EST</pubDate>
      <guid isPermaLink="false">{72859315E-659C-88D1-4F85-33F565771510}</guid>
      <description>The Nobel Prize in physiology or medicine was awarded to three scientists, including NIGMS grantees Mario R. Capecchi and Oliver Smithies, "for their discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells."</description>
    </item>
    <item>
      <title>NIGMS Grantees Win Nobel Prize for Gene Targeting</title>
      <link>http://www.nigms.nih.gov/News/Results/nobel_10082007.htm</link>
      <pubDate>Mon, 8 Oct 2007 12:08:08 EST</pubDate>
      <guid isPermaLink="false">{678ED140-1252-4F4F-BB7F-0B464F77F4F0}</guid>
      <description>Statement from NIGMS Director Jeremy M. Berg on Nobel Prize in physiology or medicine to grantees Mario R. Capecchi and Oliver Smithies.</description>
    </item>
    <item>
      <title>New Centers Add Momentum to Systems Biology</title>
      <link>http://www.nigms.nih.gov/News/Results/SysBio09252007a.htm</link>
      <pubDate>Mon, 8 Oct 2007 12:08:08 EST</pubDate>
      <guid isPermaLink="false">{818D8074-38C2-4C95-9C8E-406990C76F3F}</guid>
      <description>Three new NIGMS-supported centers join a national effort to advance the study of complex biological systems.</description>
    </item>
    <item>
      <title>Bally Lee Appointed NIGMS Executive Officer</title>
      <link>http://www.nigms.nih.gov/News/Results/NIGMSExecutiveOfficer09212007.htm</link>
      <pubDate>Fri, 5 Oct 2007 16:17:01 EST</pubDate>
      <guid isPermaLink="false">{F842600C-1268-4470-80A0-8080A0000000}</guid>
    </item>
  </channel>
</rss>
```



The screenshot shows a web browser window with the address bar displaying <http://www.nigms.nih.gov/RSS/Channel=NewsResults>. Below the address bar, there is a yellow box with an RSS icon and the text: "This is a 'feed' of frequently changing content on the site. You can subscribe to this feed to receive updates when this content changes." Below this text, there is a "Subscribe to this feed using" dropdown menu set to "Live Bookmarks", a checkbox for "Always use Live Bookmarks to subscribe to feeds", and a "Subscribe Now" button.

Below the subscription box, the page displays a section titled "NIGMS - Results" with a list of news items:

- ["Network" Approach Identifies Possible Breast Cancer Gene](#)
Using analytic methods and "data mining," NIGMS-funded researchers used known breast cancer genes to link a new gene to the disease.
- [Oliver Smithies Wins 2007 Nobel Prize](#)
NIGMS grantee Oliver Smithies shares the 2007 Nobel Prize in physiology or medicine for pioneering work on gene targeting.
- [Mario R. Capecchi Wins 2007 Nobel Prize](#)
NIGMS grantee Mario R. Capecchi shares the 2007 Nobel Prize in physiology or medicine for pioneering work on gene targeting.
- [NIH Grantees Win 2007 Nobel Prize in Physiology or Medicine for Developing Techniques to Target Specific Genes in Mice](#)
Statement from NIH Director Elias A. Zehrour on Nobel Prize in physiology or medicine to grantees Mario R. Capecchi and Oliver Smithies.
- [Insights into the Evolution of the Human Genome](#)
NIGMS-funded researchers have worked out the evolutionary history of duplications in the human genome that are responsible for both disease and genetic innovations.
- [Potential Anthrax Vaccine and Antitoxin In One](#)
NIGMS-funded researchers have discovered an agent that protects rats against anthrax by neutralizing its toxin and also providing immunity.

Defining Podcasts / Vodcasts

- A **podcast** is a digital recording made available online or for download to an MP3 player and via RSS
- A **video podcast** or “vodcast” is a video distributed online in the same manner
 - Recent NIGMS Nobel Prize podcast and vodcast



- **Podcast** [Jeremy Berg on Nobel Prizes](#)

Interview with NIGMS Director about Nobel Prizes to NIGMS grantees
(October 2, 2007)

NIGMS – Computing Life

- Newest NIGMS science education booklet
 - Showcases the exciting ways that scientists are using the power of computers to expand our knowledge of biology and medicine
- *Computing Life*
 - <http://publications.nigms.nih.gov/computinglife/>
 - HTML version includes Web extras
 - Features material like movies, podcasts, and “other cool stuff” only available online

The image displays two screenshots of the NIGMS Computing Life website. The top screenshot shows the main page with a navigation bar at the top containing the NIGMS logo and links for 'Order a Free Copy', 'Feedback', 'More Publications', and 'NIGMS Home'. The main content area is titled 'computing life' and features several sections: 'Overview' (Scientists are using computers to understand fundamental biological processes), 'Sim Sickness' (Scientists create virtual worlds to study how contagious diseases could spread), 'Searching for Genetic Treasures' (With computing advances, scientists uncover new details about diseases, drug treatments, and even crimes), 'Integrating Biology' (Researchers combine real data and computer models to diagram everything from how cells move to how hearts beat), 'The Next Top Protein Model' (Scientists harness...), and 'Made Possible By...' (Read about the different types of...). There is also a 'What's New' section with a 'Cool Facts' section below it. The bottom screenshot shows the 'Web Extras: Movies, Podcasts, and Other Cool Stuff' page, which states 'This page features material only available in the online version of Computing Life.' It lists several multimedia resources: 'Movies' (Simulation of potential pandemic flu in the United States, Runtime: 00:1:19 | 8.9 MB), 'Podcasts' (Interview with Drew Endy on his science (MP3) | Transcript, Date: 11/00/2006 | Runtime: 00:30:21 | 17.3 MB; Interview with Drew Endy on his life (MP3) | Transcript, Date: 11/00/2006 | Runtime: 00:5:24 | 3.1 MB), and 'Other Cool Stuff' (Article: Working Hand in Glove with Computational Biology, Runtime: 00:9:25 | 4.3 MB; Article: Simple Answers; Comic: Programming DNA). The footer of the page includes the NIGMS logo, the text 'National Institute of General Medical Sciences National Institutes of Health, Bethesda, MD', and the date 'April 2007'.



Defining Wikis

- A **Wiki** allows users to easily create and edit collaborative Web sites; “Wiki” is the Hawaiian word for fast
- NIH Wiki Workgroup
 - Established to understand potential applications of wikis within the NIH community
 - NIH Wiki Fair, February 2007
 - Video: <http://videocast.nih.gov/ram/wiki022807.ram>
- Collaboration
 - Wikis at NIH
<http://enterprisearchitecture.nih.gov/About/NewsEvents/News/WikisAtNIH.htm>
 - COLAB: Collaborative Work Environment Community Wiki
<http://colab.cim3.net/cgi-bin/wiki.pl>
 - Brainstorming Web 2.0 at NIH
<http://colab.cim3.net/cgi-bin/wiki.pl?BrainStormingWeb2.0atNIH-Notes>



Existing and Future Role of Web 2.0

- Health communications
 - RSS feeds
 - For example, CDC RSS *MMWR* Feeds
<http://www.cdc.gov/mmwr/rss/rss.html>
 - Videocasts (also called Vodcasts)
 - For example, NIH YouTube Channel
<http://www.youtube.com/NIHOD>
- Blogging at higher levels
 - HHS Secretary Mike Leavitt's Blog
<http://secretarysblog.hhs.gov/>
 - Allows site visitors to comment; Updated relatively frequently with timely content
For example, October 25th post on MRSA
- Other Web 2.0 technologies
 - Social Networking (ex. MySpace, LinkedIn - professional networking site)
 - Virtual Environment (ex. Second Life)
 - CDC, <http://www.cdc.gov/about/stateofcdc/everywhere/secondLife.htm>
 - Mashups (ex. <http://mashupawards.com/>)



Next Steps

- Evaluate the top tasks and goals of your site visitor
 - Identify most appropriate Web 2.0 technology (if applicable) based on user needs
 - Avoid “force fitting” solutions
- Repurpose content for Web 2.0 applicability
 - For example,
 - Create podcasts from existing content
 - Videotape interviews for posting
 - Make RSS feeds available for news releases or other frequently updated content



Contact Information

- Camille Haylock
chaylock@constellagroup.com
301-402-2545

- Muhammad Rabi
mrabi@constellagroup.com
410-659-6383