

Science Online: Bridging scientific disciplines

Monica M. Bradford, Executive Editor

ACS Fall 2005, Herman Skolnik Award Symposium



Outline of Presentation

- Background information about *Science*
- Electronic workflow for peer review
- History and details related to *Science Online*
- STKE as an example of tech tools
- If time permits:
 - Community Building
 - Zinio

Part journal, part news magazine

- Broad content base: interdisciplinary, primarily biological, physical, earth and planetary sciences
- Editorial page budget of ~5300 pages, 51 issues a year
- Content includes peer-reviewed research papers, news articles by journalists, and commentaries written by scientists
- International in terms of authors, readers, content

Science Peer Review Process

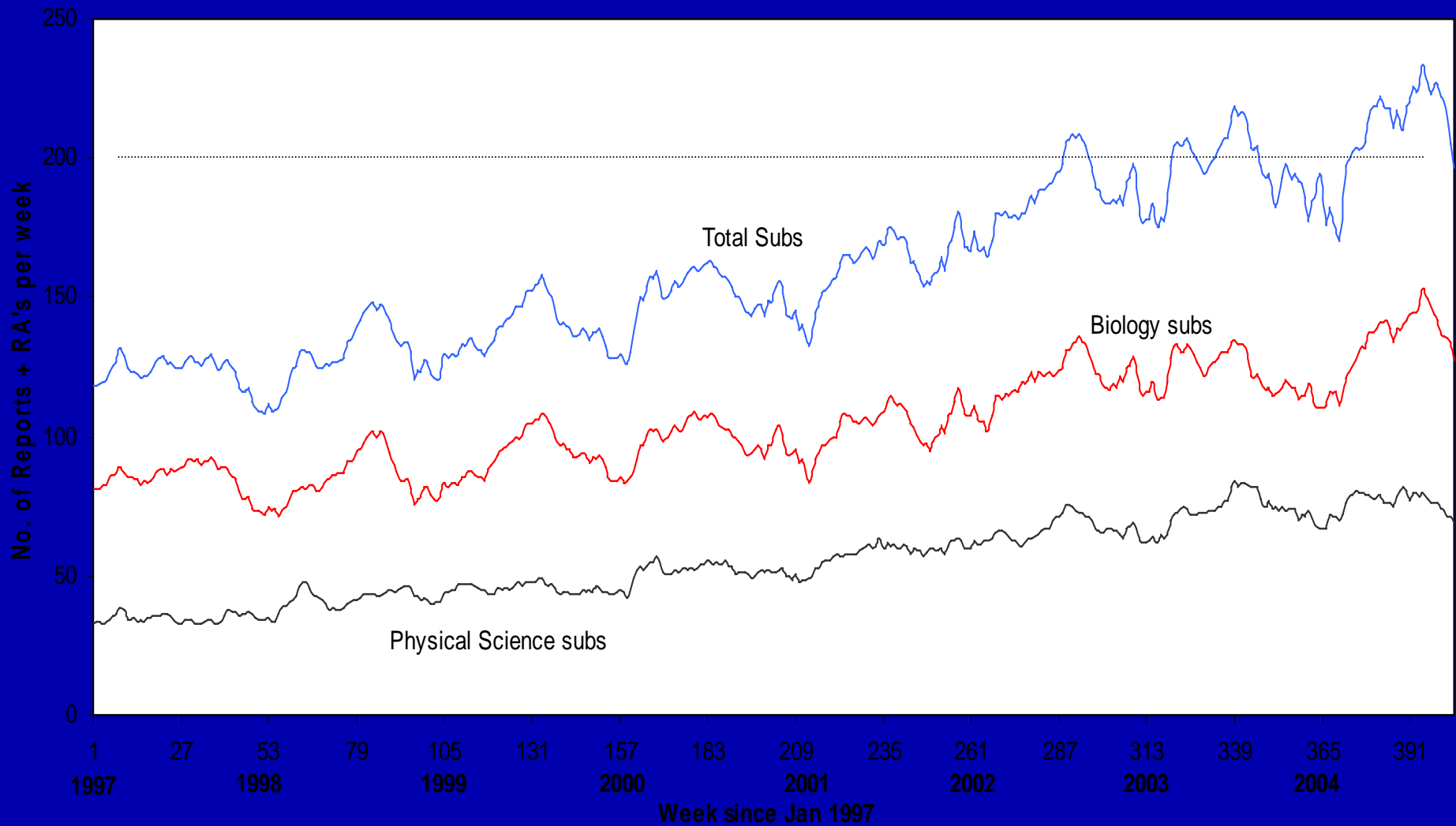
- 23 Editors (Ph.D. w/ Post-doc); avg. 8 years of experience.
- Based in Washington, DC, Boston, MA, Baltimore, MD, Cambridge UK, Manila, Geneva, London.
- >100 Scientific advisors worldwide.
- Rapid Publication (<10 days to 3-4 mo avg.). Fully electronic submission, review, and publication process.

2004 Statistics

- Over 11,000 research papers submitted
- 75% rejected after initial screening
- 7% accepted for publication
- 54% of submitted papers from outside of USA
- 39% of published papers from outside of USA
- 60% of published papers are in the biological sciences

BV + RE + RA submissions since Jan 1997

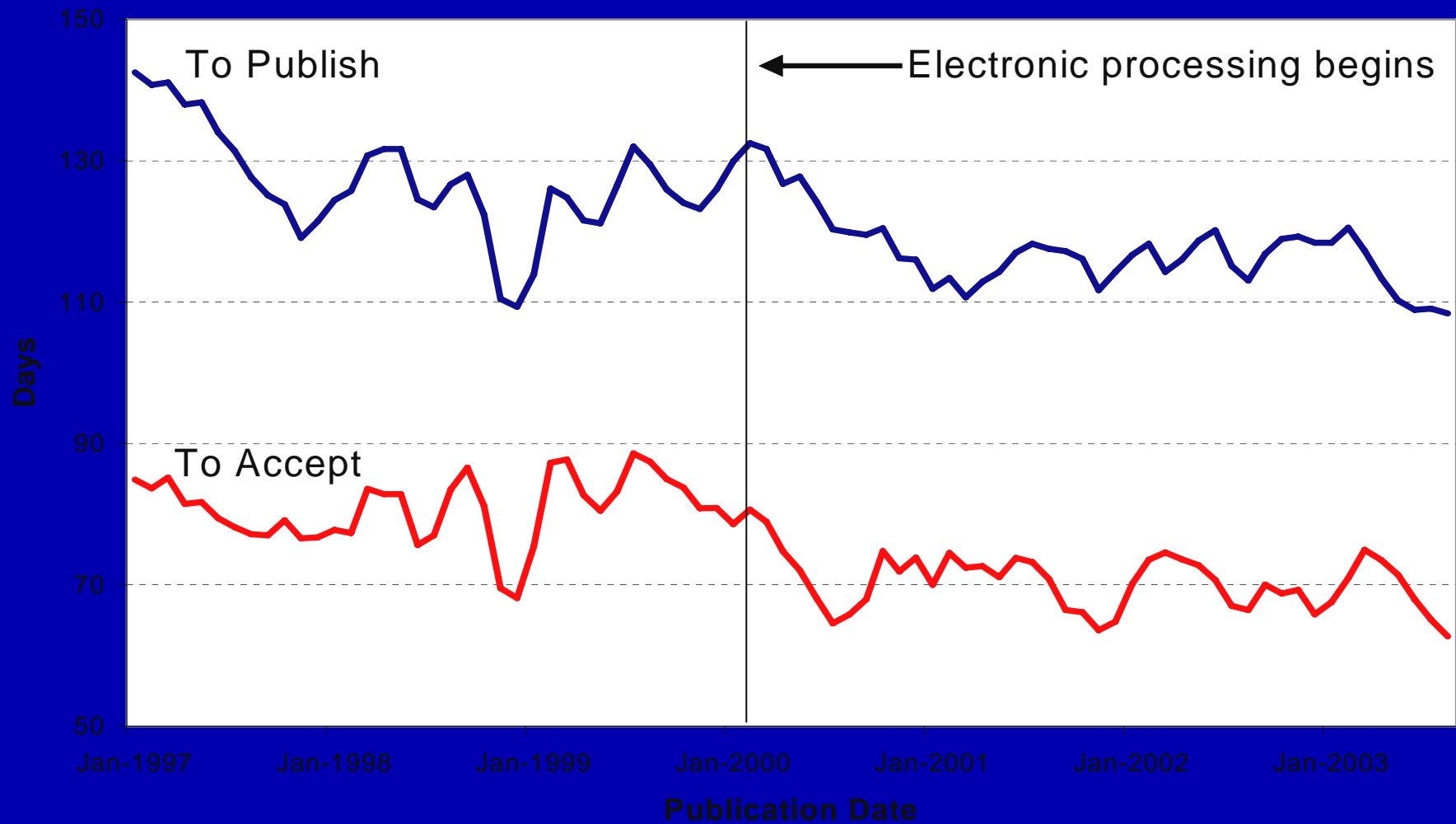
Data are smoothed w/ an 8 pt running avg



Total Electronic Work Flow

- Electronic submission via WWW site (95%) since February 2000.
- All Manuscripts automatically or manually converted to PDF
- Electronic review of PDFs via secure WWW sites and internally by editors distributed globally.
- Electronic return of revisions; click through for license and conflict of interest forms (new)
- Electronic delivery of galley proofs
- Self-developed database (Access/Sequel Server) linked to WWW sites.
- Electronic copyediting of manuscripts (in Word)—in place since 1997
- Working with eXtyles to automate some functions.

Editorial Times, Science



Advantages

- Reduced Fedex and mail costs by > \$200,000/year
- Allowed 50% increase in submissions to be managed.
- Reduced processing times by about 2-3 weeks
- Allowed expansion of our Board of Reviewing Editors by 30%
- Allowed consolidation of an assistant position and expansion of responsibilities of staff—nearly eliminated data entry while requiring more file processing.

Online offerings

- Online in 1995 w/TOC and abstracts
- Full-text HTML and PDFs added in 1996
- Careers and Next Wave
- Started a daily news service: *Science NOW*
- KEs developed 1998 through 2001
- Total back-file digitized by J-Stor
- Implemented online before print: *Science Express*
- Multi-media supplements and content collections

Science

online

HELP

SUBSCRIPTIONS

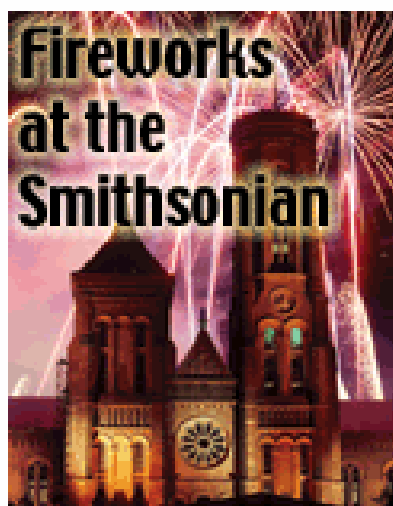
FEEDBACK

SIGN IN

SEARCH

▶ GUIDE TO SCIENCE ONLINE

Online submission of manuscripts & letters ▶



Science magazine

global weekly of research

- ▶ Current Issue of the Journal
- ▶ **Special Issue:** Vaccines and Immunity

Science now

daily news service

- ▶ Panel Named to Reorganize Smithsonian
- ▶ Japan's Push for Strategic Science Decried

Science's next wave

career resources for scientists

- ▶ Training Tomorrow's Professors
- ▶ Alone in Good Company

Science careers

job search, meetings, graduate programs

- ▶ Science Career Fair: 13 August, Boston, MA
- ▶ Post your resume in our online resume/cv database

Science's stke

signal transduction knowledge environment

- ▶ Connections Map: T Cell Signal Transduction
- ▶ Focus on Immunology: Leukocyte Chemotaxis and T Cell Differentiation

Science

- ▶ Advances in Immunology and AIDS

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x AAAS members only

Web site!

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- This article appears in the following Subject Collections:
[Computers/Mathematics](#)

Links to related information

- **This article has been cited by other articles:**

Doebeli, M., Hauert, C., Killingback, T. (2004). The Evolutionary Origin of Cooperators and Defectors. *Science* 306: 859-862 [\[Abstract\]](#) [\[Full Text\]](#)

Schneider, B. L., Kulesz-Martin, M. (2004). Destructive cycles: the role of genomic instability and adaptation in carcinogenesis. *Carcinogenesis* 25: 2033-2044 [\[Abstract\]](#) [\[Full Text\]](#)

- **Related articles in Science:**

Biology by the Numbers

Gilbert Chin, Robert Coontz, and Laura Helmuth
Science 2004 303: 781. (in Introduction to special issue) [\[Summary\]](#)

- **Links from references**

Pubmed, ISI, Crossref, Full-text in other HighWire journals

Recent user research: two user types

- Researchers tied to the print product
 - Read the front of the magazine, use online for the research papers
 - Expect online to reflect the look and feel of the print
 - Tend to start with the Table of Contents
- Researchers that don't want/need print
 - Use search platforms to find content
 - Depend on e-mail alerts

Some common behaviors

- All like and use PDFs
- Not interested in and don't have the time to learn or set up customization or personalization
 - even if doing so would allow them to mimic behaviors such as storing papers in files
- All found access control online to be confusing and an unacceptable barrier
- Science brand most important attribute
- Think need print to attract authors, but don't read papers in the print copy

Strategy: integrate and differentiate?

- Think creatively – experiment
- Play to the strengths of each medium
- Integrate print and online to raise awareness of all content offerings
- Maximize the effectiveness of the print magazine for sharing knowledge across disciplines
- Maximize the effectiveness of the online product as a research tool
- Embrace multiple delivery platforms

Standard Practice: marketing content

- Push content to users:
 - *Science* Roundup
 - E-mail alerts: TOC, author, or keyword searches
 - RSS feeds
- Increase synergy between print and online
 - Combined special issues with jump pages and multi-media enhancements online
 - More call outs to additional online material in the print
 - *Science* Online TOC in print

Knowledge Environments: Our online sandbox

- My KE: Saved searches, customized views, file folders
- Different content formats
 - Virtual Journal
 - Connections Map
 - Knowledge Map
 - Teaching Resources: animations primarily
 - Blogs

Address <http://stke.sciencemag.org/>

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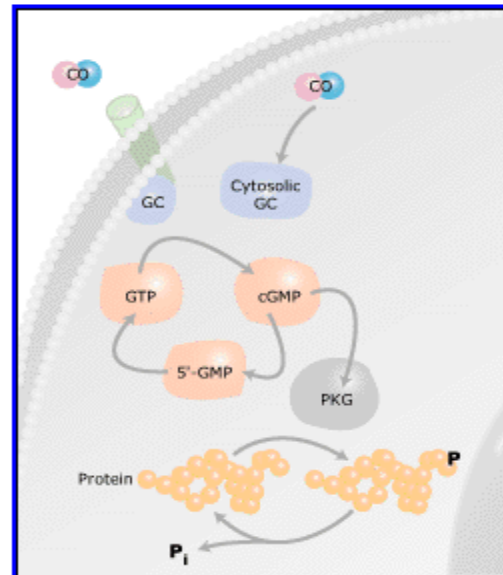
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What's New

Issue 230: 27 April 2004



Reviews

Carbon Monoxide: To Boldly Go Where NO Has Gone Before

Stefan W. Ryter, Danielle Morse, and Augustine M. K. Choi

[\[Abstract\]](#) [\[Full Text\]](#)

Resources

Glossary

New terms help guide users in the plethora of signaling acronyms and abbreviations [\[Glossary\]](#)

This Week in Signal Transduction

Issue 230: 27 April 2004

[Editor's Choice \(Free\)](#)

Deacetylating Microtubules at the Immune Synapse
Serrador *et al.* *Immunity* **20**, 417-428 (2004).

[Full List of This Week's Summaries](#)

[Featured in Science Magazine](#)

Connections Maps



[Canonical Circadian Pathway](#)

ONLINE JOURNAL ASPECTS

- **Weekly Electronic Journal**
 - Reviews, Protocols, Perspectives, Editorial Guides
- **Weekly Highlights**
 - editor-written summaries of current, exciting research
- **Alerting Service**
 - ETOC alerts, keyword and author alerts, CiteTrack alerts

KEY FEATURES

- **Knowledge Management and Information Discovery Tools**
 - Folders, Display Settings, Saved Searches, Related Resources, Section browsing
- **Teaching and Learning Tools**
 - Teaching Resources, Glossary
- **Signal Transduction Database**
 - Connections Maps
- **Community**
 - Comments, Discussion Forums, Directory
- **Virtual Library**
 - Full-text access to signal transduction-related articles in 50 journals from participating HighWire publishers

Searching Tools

- Quick Search and Advanced Search
- Saved Searches
- Display Settings
 - Limit results to a subset of your favorite journals in the Virtual Journal
 - Limit results to those that are new since your last visit

Browsing Tools

- Issue Archives
- Section-specific indices and archives
- Discipline, organism, and component type menus for Connections Maps resources
- Related Resources
- Editorial Guides

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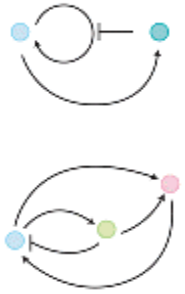
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Issue Archive
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 28 Sep 1999 - 11 May 2004

Current Issue:

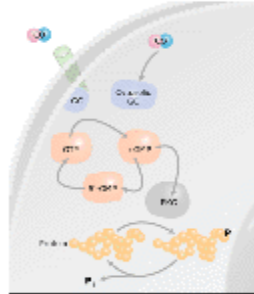


11 May 2004
 Vol. 2004, Num. 232

Recent Issues:



4 May 2004
 Vol. 2004, Num. 231





27 April 2004
 Vol. 2004, Num. 230

Full Text and Abstracts: 28 Sep 1999 - 11 May 2004

2000s	2000	2001	2002	2003	2004	-	-	-	-	-
1990s	-	-	-	-	-	-	-	-	-	1999

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Advanced Search

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Search criteria:

Person (Last Name, First Initial)
 (and) **Person** (Last Name, First Initial)
 (and) **Word(s) in Title or Abstract**
 (and) **Word(s) Anywhere in the Content**

Search these areas of Science's STKE:
 (Search all areas, or choose specific areas from the list below)

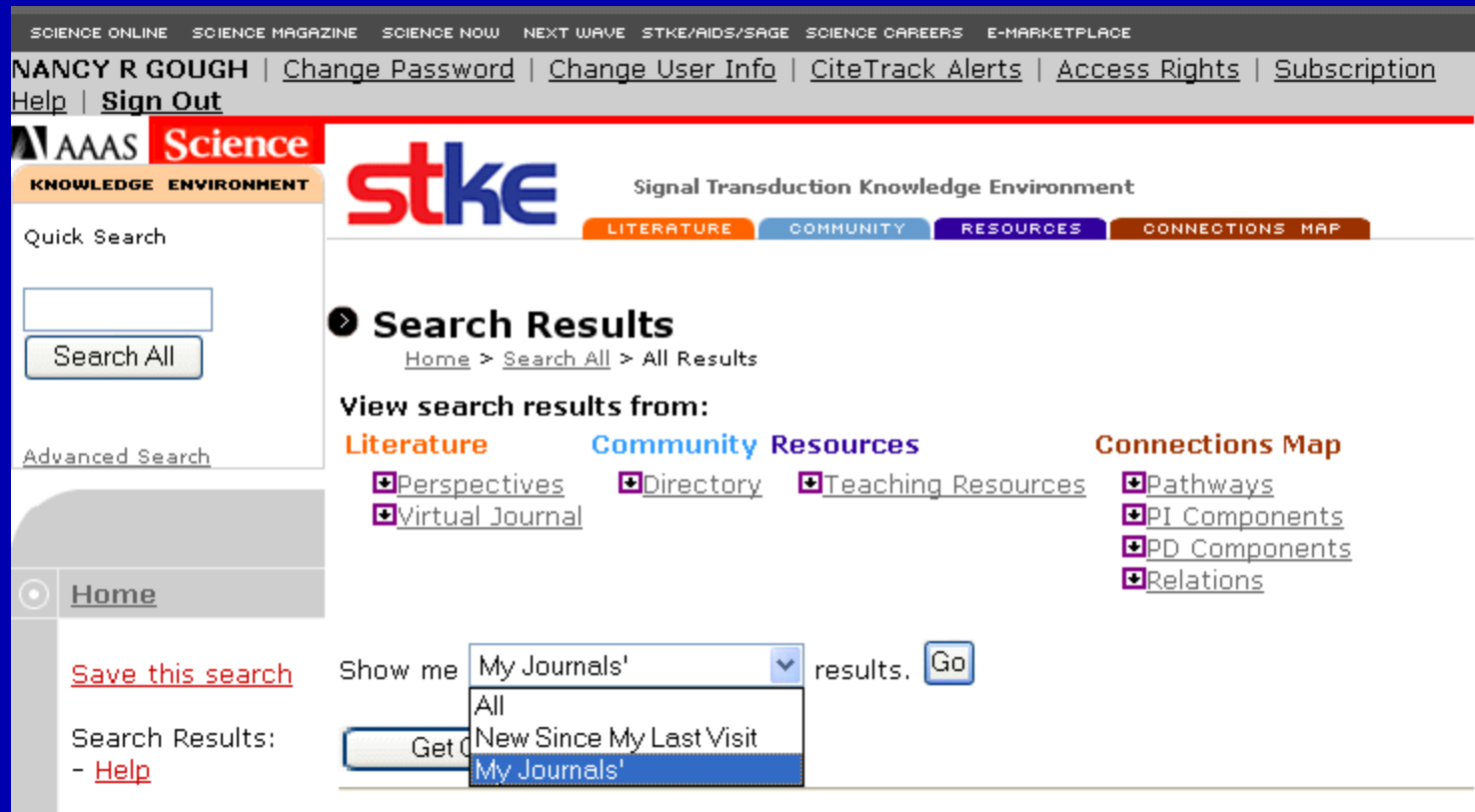
Search All Areas

<p>Literature</p> <ul style="list-style-type: none"> <input type="checkbox"/> Editorial Guides <input type="checkbox"/> Perspectives <input type="checkbox"/> Protocols <input type="checkbox"/> Reviews <input type="checkbox"/> STKE Preview <input type="checkbox"/> This Week in ST <input type="checkbox"/> Virtual Journal 	<p>Community</p> <ul style="list-style-type: none"> <input type="checkbox"/> Forums <input type="checkbox"/> Comments <input type="checkbox"/> Directory <p>Resources</p> <ul style="list-style-type: none"> <input type="checkbox"/> Teaching Resources <input type="checkbox"/> ST on the Web <input type="checkbox"/> Events
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Connections Map

Also include:

- PubMed



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Search Results
Home > Search All > All Results

View search results from:

Literature **Community** **Resources** **Connections Map**

- Perspectives
- Virtual Journal
- Directory
- Teaching Resources
- Pathways
- PI Components
- PD Components
- Relations

Show me results.

New Since My Last Visit
My Journals'

Sorting and Limiting Advanced Search Results

- Sorted searches are slow. Fast searches are essential. Allow relevancy ranking or date order results options.
- Search results need a common citation style. Challenges exist for non-literature resources.
- Search limiters (My Display Settings) are underutilized either because of user confusion or because they are not popular.
- Saved Searches is a popular customization tool.

Customizable Tools: MY KE

- **My Folders**
 - Users have an online personal filing cabinet to organize the KE content for easy reference
- **My Saved Searches**
 - Users can save search parameters that provide results of interest to execute on demand
- **My Display Settings**
 - Users can limit search results at the KE to expedite finding the most relevant information
- **My Alerts**
 - Users choose to receive email notification when information of interest is added to the KE

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Feedback

ST on the Web
 Home > Resources > ST on the Web > Educator Sites

Educator Sites


[BBID-Biological Biochemical Image Database](#)

The Biological Biochemical Image Database is a searchable database of images (mostly figures from published papers) of putative biological pathways, macromolecular structures, gene families, and cellular relationships. The images have PubMed links to the citations from which they are derived. The figures themselves are of limited use to a signal transduction aficionado, but may help a novice see the different views in the field. An educator may find these images useful in lecture preparation. (Free Site)

 [Put in Folder](#)


[BioSciEdNet \(BEN\)](#)

BEN is a portal to peer-reviewed teaching resources available in the digital libraries of partnering professional societies. The portal allows educators to search the information about the resources or to browse the resources that have been cataloged. The user is then sent to the societies' digital libraries to access the resources. Many of the indexed resources in BEN cover topics in microbiology, physiology, and ecology. With new partners building and cataloging their collections, BEN should become a leading search engine for finding biological science teaching resources. Selected STKE resources will be indexed with BEN. (Free Site)

 [Put in Folder](#)

[Cytokines Online Pathfinder Encyclopedia](#)

The Cytokines Online Pathfinder Encyclopedia (COPE) is part of a site designed at help users "Cope with Cytokines."

 [Put in Folder](#)

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Main Archive

Perspectives

- Sankar Adhya (3 June 2003)
Suboperonic Regulatory Signals
Science's STKE 2003 (185) : pe22 [\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)
- Adrian Merlo and Bernhard Bettler (20 April 2004)
Glioblastomas on the Move
Science's STKE 2004 (229) : pe18 [\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)

Directory

- [Elizabeth M Adler](#)

Pathways

- Sally J. Leever
Drosophila PI3K Pathway
Sci. STKE (Connections Map), http://stke.sciencemag.org/cgi/cm/stkecm;CMP_7053. [\[Pathway\]](#)

Forum Messages

- [Opening Remarks](#)

checked items. or checked items to

Folders:

- [Book reviews](#) (1)
- [Dynamic items](#) (2)
- [Main Archive](#) (5)
- [Meeting reports](#) (0)
- [PI3K](#) (0)
- [STOW](#) (3)
- [Smads](#) (2)
- [Updated files](#) (2)
- [VJ](#) (1)
- [movies](#) (4)
- [Trash](#) (0)

Create a new folder:

- Book reviews
- Dynamic items
- Meeting reports
- PI3K**
- STOW
- Smads
- Updated files
- VJ
- movies
- PI3K

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Feedback

stke
Sponsors

12th
International
Conference
on Second
Messengers and

Lesson Learned: Which Tools are Most Popular with STKE Users?

My Folders

560 accesses*

My Saved Searches

379 accesses*

My Alerts

610 eTOC alerts,
23,333 keyword, author,
CiteTrack alerts**



*average unfiltered data Jan-Mar 2004

**1 May 2004

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Andrew Chan (15 February 2005)

Ras-MAPK Pathways

Sci. STKE 2005 (271), tr5. [DOI: 10.1126/stke.2712005tr5]

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#) [\[Slides\]](#)

Ravi Iyengar (8 February 2005)

Introduction: Overview of Pathways and Networks and GPCR Signaling

Sci. STKE 2005 (270), tr4. [DOI: 10.1126/stke.2702005tr4]

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#) [\[Slides\]](#)

Ravi Iyengar, Maria Diverse-Pierluissi, Daniel Weinstein, and Lakshmi A. Devi (1 February 2005)

Cell Signaling Systems: A Course for Graduate Students

Sci. STKE 2005 (269), tr3. [DOI: 10.1126/stke.2692005tr3]

[\[Abstract\]](#) [\[Syllabus\]](#)

Thierry Galli and Volker Haucke (18 January 2005)

A Model for Fast-Track Exocytosis of Synaptic Vesicles

Sci. STKE 2005 (267), tr2. [DOI: 10.1126/stke.2672005tr2]

[\[Abstract\]](#) [\[Resource Details\]](#)

Thierry Galli and Volker Haucke (18 January 2005)

Calcium-Triggered Exocytosis and Clathrin-Mediated Endocytosis of Synaptic Vesicles

Sci. STKE 2005 (267), tr1. [DOI: 10.1126/stke.2672005tr1]

[\[Abstract\]](#) [\[Resource Details\]](#)

Jennifer L. Santos and Kazuhiro Shiozaki (7 December 2004)

Phosphorelay Signaling in Yeast in Response to Changes in Osmolarity

Sci. STKE 2004 (262), tr12. [DOI: 10.1126/stke.2622004tr12]

[\[Abstract\]](#) [\[Resource Details\]](#)

Amy M. Fowler and Elaine T. Alarid (7 December 2004)

- All of Science's STKE
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Ras-MAPK Pathways (PowerPoint Slides)

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Feedback

Description

These PowerPoint slides were designed for a lecture covering three kinase-mediated signaling pathways. This lecture is part of the course "Cell Signaling Systems: A Course for Graduate Students." The focus of the lecture is three major signaling cascades that are implicated in cell proliferation, survival, and stress response. They are, respectively, the mitogen-activated protein kinase (MAPK), phosphatidylinositol 3-kinase (PI3K), and Jun N-terminal kinase (JNK) cascades. The aim of this lecture is to review the major players of these intracellular signaling cascades in mammalian cells. In addition, emphasis is placed on understanding the dynamic, rather than linear, nature of signal transduction in determining cellular responses to external stimuli.

[\[Access slides\]](#)

Educational Details

Learning Resource Type: PowerPoint slides

Context: Undergraduate upper division, graduate, professional (degree program)

Intended Users: Teacher, learner

Intended Educational Use: Teach, learn

Discipline: Cell biology, molecular biology

Keywords: signal transduction, MAPK cascade, tumor-associated genes, Ras, B-Raf,

Browse STKE's cell signaling database of components and their relations.

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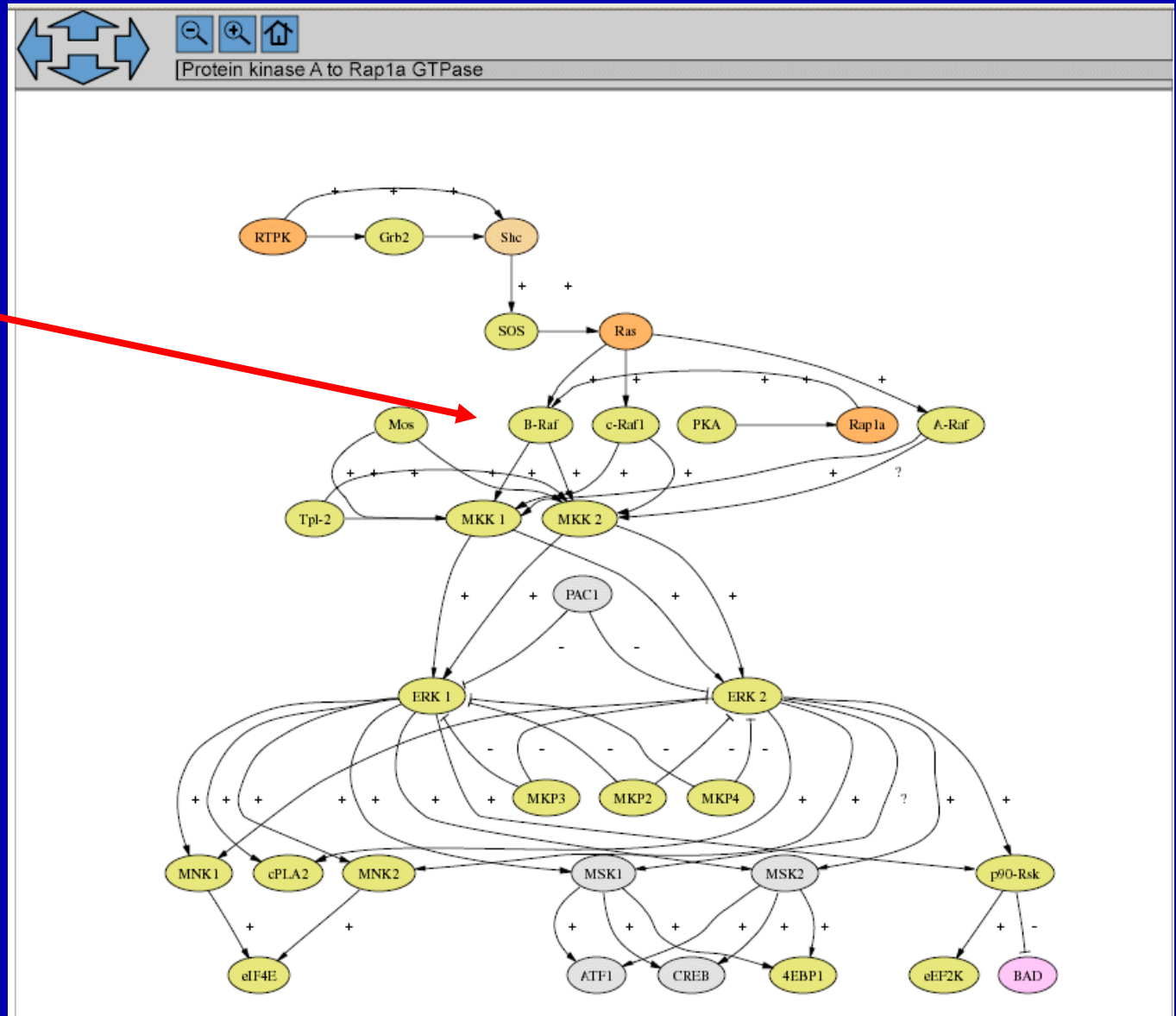
- ▼ By Subject
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 - [Developmental Biology](#) (9 Pathways)
 - [Immunology](#) (12 Pathways)
 - [Microbiology](#) (3 Pathways)
 - [Neurobiology](#) (6 Pathways)
 - [Plant Biology](#) (7 Pathways)
- ▶ By Scope
- ▼ By Model Organism
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 - [Bacteria](#) (0 Pathways)
 - [Invertebrates](#) (7 Pathways)
 - [Mycetozoa](#) (2 Pathways)
 - [Plants](#) (3 Pathways)
 - [Vertebrates](#) (7 Pathways)
- ▶ By Science Issue

Browse Components

- ▶ By Alphabetical List
- ▼ By Model Organism
 - [Algae and Fungi](#) (72 Components)
 - [Bacteria](#) (1 Component)
 - [Invertebrates](#) (72 Components)
 - [Mycetozoa](#) (61 Components)
 - [Plants](#) (62 Components)
 - [Vertebrates](#) (192 Components)
- ▶ By Type

[Information about terms, software tips, attributes of the data records.](#)

Dynamic graphical interface to the Connections Maps cell signaling database: Click on any symbol or shape to get detailed information.



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Connections Map

[Home](#) > [Connections Map](#) > [ERK1/ERK2 MAPK Pathway](#) > Mitogen-activated protein kinase kinase 2

This node is public

Pathway-Dependent Component Information

Component: Mitogen-activated protein kinase kinase 2 (MKK 2)

Scope: Canonical

Type: protein : kinase : protein kinase : dual specificity protein kinase

Subcellular Localization: Cytosol

Interacting Components: [Upstream](#) | [Downstream](#)

Citations: [Literature](#)

Authority: [Gary L Johnson](#)

Canonical Pathway: [ERK1/ERK2 MAPK Pathway](#)

Pathway-Independent Component Information: [Mitogen-activated protein kinase kinase 2 \(MKK2\)](#)

Description

This record contains information about the [Mitogen-activated protein kinase kinase 2 \(MKK2\)](#) component in the context of the [ERK1/ERK2 MAPK Pathway](#).

See [general information for this component](#)

Components Immediately Upstream of Mitogen-activated protein kinase kinase 2 (MKK 2) in ERK1/ERK2 MAPK Pathway

Upstream Component	Relationship	Relation Information
B-Raf kinase (B-Raf)	Demonstrated, stimulatory	Relation Record
Mos (Mos)	Demonstrated, stimulatory	Relation Record
Tpl-2 (Tpl-2)	Demonstrated, stimulatory	Relation Record
c-Raf1 (c-Raf1)	Demonstrated, stimulatory	Relation Record

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Signal

Pathway-centric information and general component information are at your fingertips.

Connections
Maps cell
signaling
database:
Information about
molecules and
components that
participate in cell
signaling.

Only Connections Map

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Feedback

Pathway-Independent Component Information

Component: Mitogen-activated protein kinase kinase 2 (MKK 2)	Scope: Canonical
Type: protein : kinase : protein kinase : dual specificity protein kinase	Canonical Pathways: See List
Synonyms: MAP2K2, MAPK/ERK KINASE 2, MAPKK2 stkecm, MEK2, PRKMK2, protein kinase, mitogen-activated, kinase 2, p45 (MAP kinase kinase 2)	
Citations: Literature	
Authority: Gary L Johnson	

Description

This record contains general information about the Mitogen-activated protein kinase kinase 2 (MKK 2) component independent of any pathway in which it appears.

Mitogen-activated protein kinase (MAPK) kinase 2 (MKK2) is part of the MAPK cascade, phosphorylating and activating extracellular signal-regulated kinase (ERK) 1 and ERK2. The downstream effectors of MAPK cascades include transcription factors that regulate genes involved in inflammation, cell growth, survival, and differentiation. The ERK1/2 pathway, of which MKK2 is a component, is regulated by cell surface receptors such as G protein-coupled receptors (GPCRs), growth factor receptor tyrosine kinases, and Src family tyrosine kinases. Small guanosine triphosphatases (GTPases) such as Ras and Rap1 regulate Raf kinases that phosphorylate and activate MKK1 and MKK2. Phosphorylated ERK1/2 activates transcription in a cascade where other kinases, such as p90-Rsk, mitogen- and stress-activated protein kinase (MSK) 1 and MSK2, and MAPK-interacting kinase (MNK) 1 and MNK2, and transcription factors such as ELK-1, are substrates for phosphorylation. The *Bacillus anthracis* LF acts as a protease that cleaves MKK1 and MKK2, inhibiting activation of the ERK1/2 pathway.

Canonical pathways in which Mitogen-activated protein kinase kinase 2 (MKK 2) occurs

Pathway-Dependent Component Information	In Canonical Pathway
Mitogen-activated protein kinase kinase 2 (MKK 2)	ERK1/ERK2 MAPK Pathway
Mitogen-activated protein kinase kinase 2 (MKK 2)	B Cell Antigen Receptor
Mitogen-activated protein kinase kinase 2 (MKK 2)	MAP Kinase Pathway
Mitogen-activated protein kinase kinase 2 (MKK 2)	Toll-Like Receptor Pathway

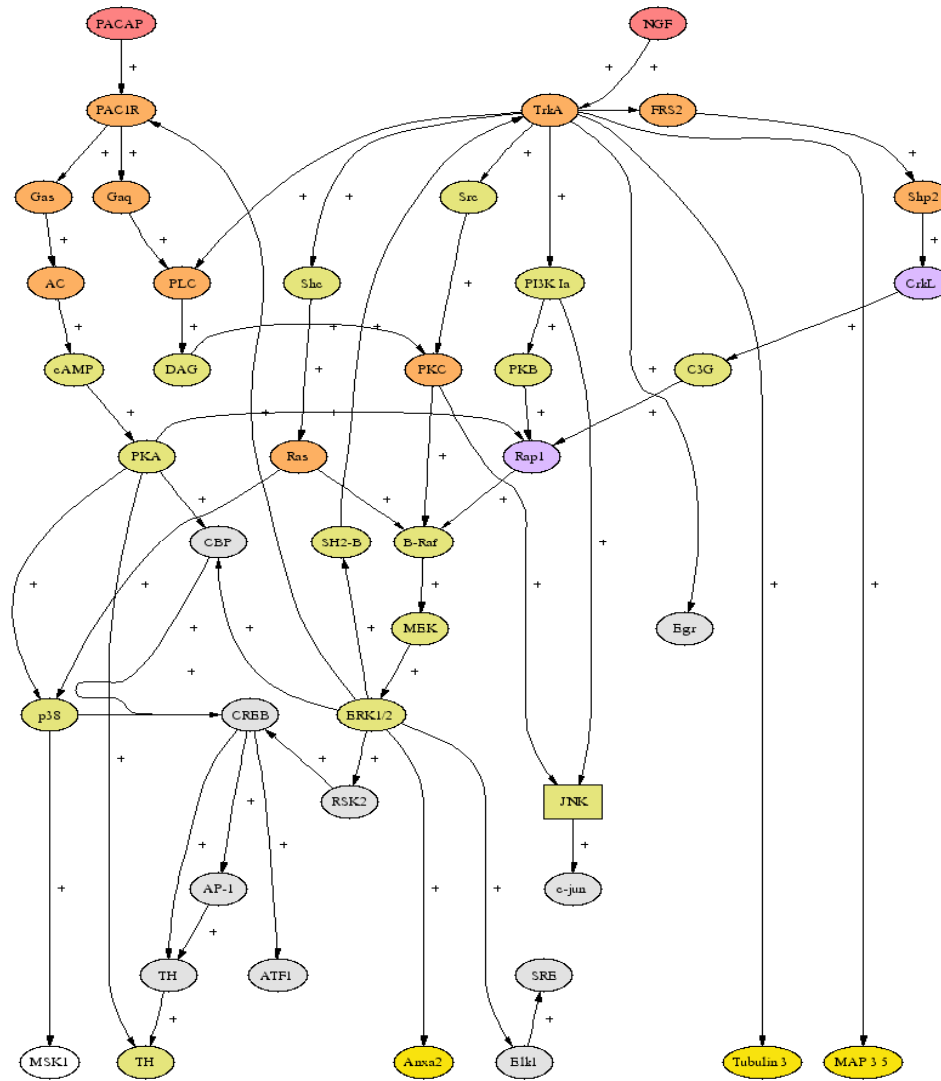
Authority

Corresponding Authority: Gary L Johnson (gary.johnson@uchsc.edu)



12th
International
Conference
on Second
Messengers and
Phosphoproteins





David Vaudry, Philip Stork, Philip Lazarovici, Lee Eiden, **Differentiation Pathway in PC12 Cells.**
Sci.STKE (Connections Map, as seen October 2004), http://stke.sciencemag.org/cgi/cm/stkecm;CMP_8038.

Defining Elements of a Virtual Community

- Distinctive focus
- Capacity to integrate content and community
- Appreciation of member-generated content
- Access to competing publishers and vendors
- Commercial Orientation

*(from Net Gain by Hagel and Armstrong, as described in
Hosting Web Communities by Cliff Figallo)*

Real Communities Have Social Dynamics

- Member feels part of a larger social whole
- Interwoven web of relationships between members
- Ongoing exchange between members of commonly valued things
- Relationships between members last through time: shared histories

(Figallo, C. *Hosting Web Communities*, p. 15)

What we didn't do

- Commit to bringing the user's voice to the project
- Hire staff to build/nourish the community
- Determine if the mission of the community matched ours
- Be proactive with the community
- Define the community narrowly or identify sub-groups

Based on Sage Advice

- Engaged the community from the very beginning
- Very active Scientific Advisory Board
 - Assistants Program funds 0.5 FTE Postdoc per member
 - Ass't. spends 15 hours a week on site related activities
 - Seeking funding to expand program
- Test, create buzz, and actively build links between content and community

“Most online community sites are not economically viable and never will be”

“Top Ten Trends for Online Communities”

-Jim Cashell, *Online Community Report*

July 2001

Experiment: Digital version

- Zinio: PDF-based version of the entire magazine
- Subscriber downloads the Zinio Reader (10Mb)
- Receives e-mail notifying that the issue is ready
- Downloads issue to display the content, ads, and images just as they appear in print
 - Compressed files: 10 – 12 Mb in size
 - Download happens in background
 - Reader imitates the look and feel of page turning

Digital version continued

- Special features
 - Highlight text
 - Jump directly from TOC to article
 - Make notes: saved in an annotated lists sections
 - URLs and links are hot when connected to internet
- Benefits for AAAS
 - Subscriptions count as part of audited circulation
 - Faster and cheaper for non-US subscribers
 - Appeals to those who believe less paper is good