

Atlas of Science: Envisioning Scholarly Data

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With special thanks to the members at the Cyberinfrastructure for Network Science Center, the Mapping Science exhibit map makers, the exhibit advisory board, and the VIVO Collaboration.

*HUBbub 2011: The HUBzero Conference (<http://hubzero.org/hubbub2011>)
April 6, 2011*

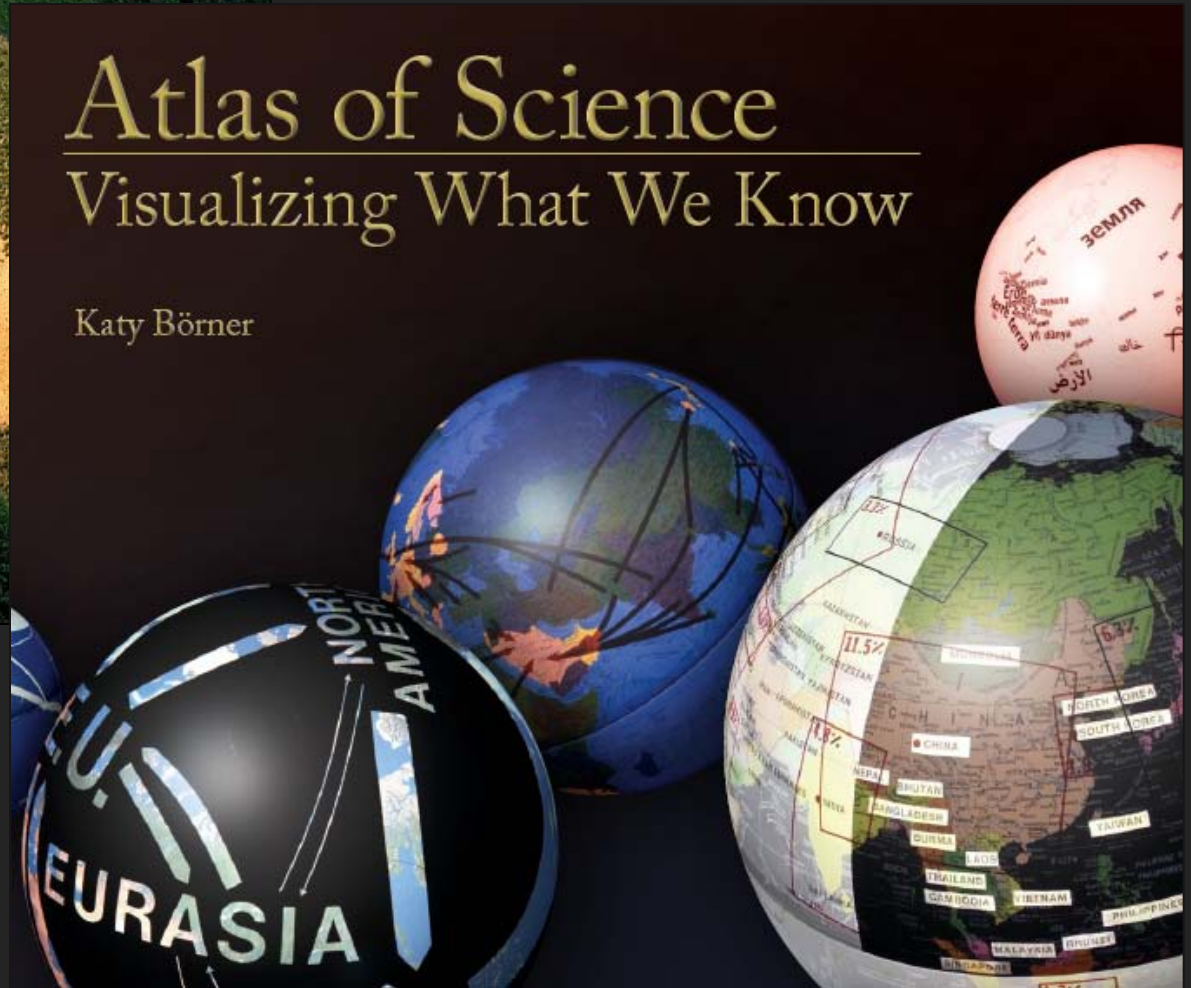
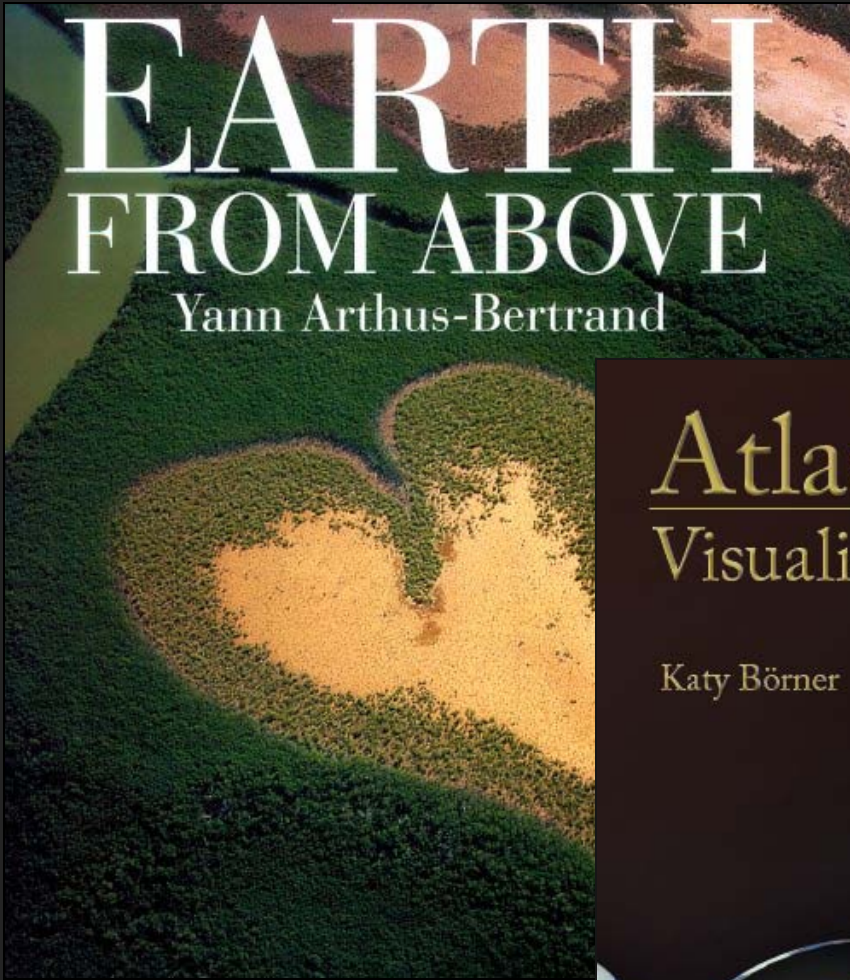


EARTH FROM ABOVE

Yann Arthus-Bertrand

Atlas of Science Visualizing What We Know

Katy Börner

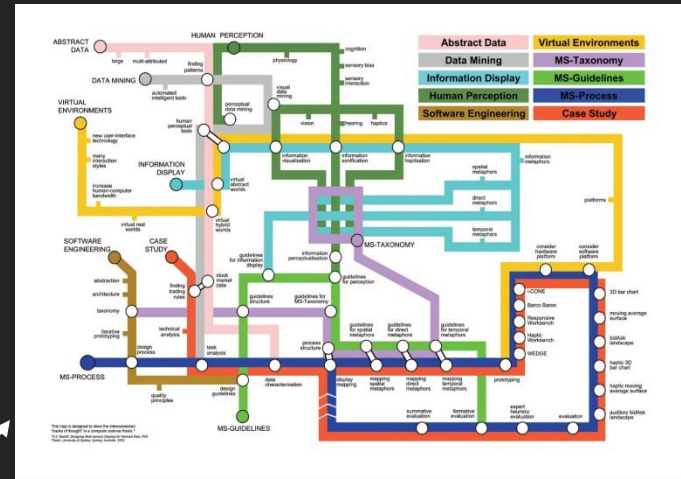


Take terra bytes of data



Take terra bytes of data

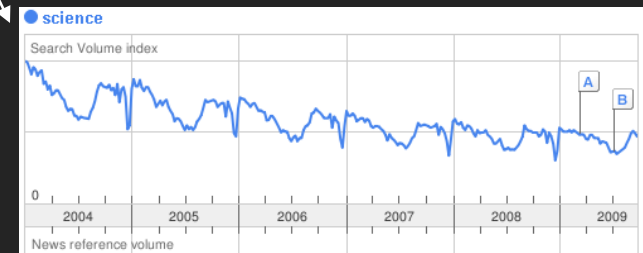
Black Box



Find your way



Find collaborators, friends



Identify trends

Mapping Science Exhibit – 10 Iterations in 10 years

<http://scimaps.org>

The Power of Maps (2005)



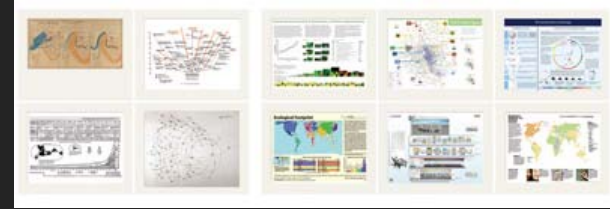
The Power of Reference Systems (2006)



The Power of Forecasts (2007)



Science Maps for Economic Decision Makers (2008)



Science Maps for Science Policy Makers (2009)



Science Maps for Scholars (2010)

Science Maps as Visual Interfaces to Digital Libraries (2011)

Science Maps for Kids (2012)

Science Forecasts (2013)

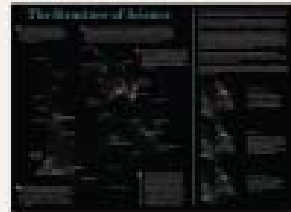
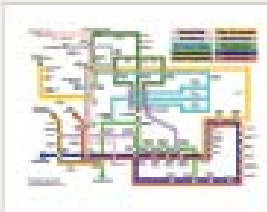
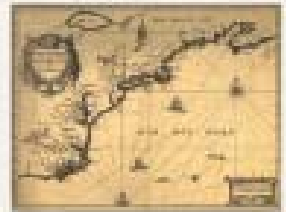
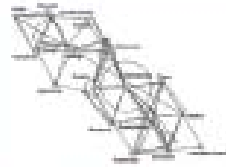
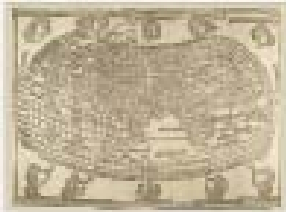
How to Lie with Science Maps (2014)

Exhibit has been shown in 72 venues on four continents. Currently at

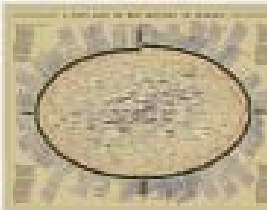
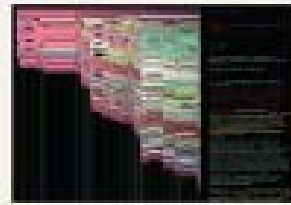
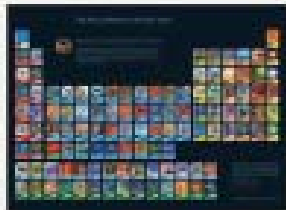
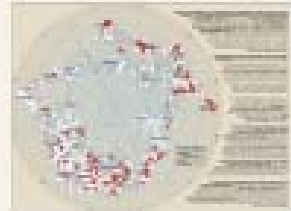
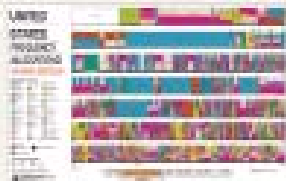
- NSF, 10th Floor, 4201 Wilson Boulevard, Arlington, VA
- Center of Advanced European Studies and Research, Bonn, Germany
- University of Michigan, Ann Arbor, MI



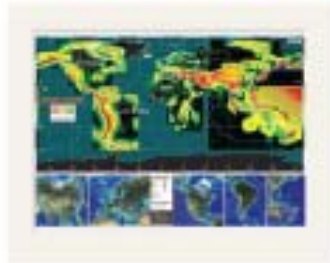
THE POWER OF MAPS 2005



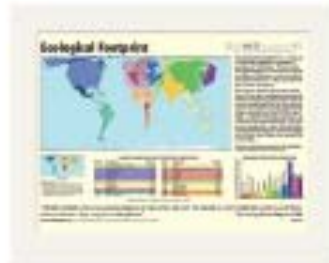
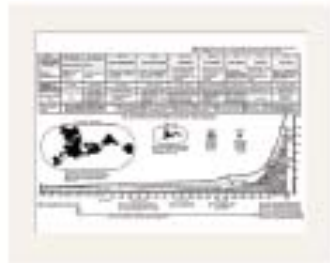
THE POWER OF REFERENCE SYSTEMS 2006



THE POWER OF FORECASTS 2007



SCIENCE MAPS FOR ECONOMIC DECISION MAKERS 2008



This map of science was constructed by sorting more than 16,000 journals into disciplines. Disciplines, represented as circles, are sets of journals that cite a common literature; links (the lines between disciplines) are pairs of disciplines that share a common literature. A three-dimensional model was used to determine the position of each discipline on the surface of a sphere based on the linkages between disciplines. The model treats links like rubber bands attempting to bring two disciplines close to each other. Pairs of disciplines without links tend to end up on different sides of the map.

The spherical map, which is not shown here, was unrolled in a mercator projection (the same one used to show the continents of the earth on a two-dimensional map) to give the large map shown below. This projection allows inspection of the entire map of science at once. Note that the disciplines tend to string along the middle of the map - if this were a map of the earth it would be like a single continent undulating along the equator. There are no disciplines at the top (north pole) or the bottom (south pole). Mercator projections also introduce distortions. We tend to forget that the left side is connected to the right side, and assume that the middle is most important. In this map, the social sciences (yellow) on the right connect with the computer sciences (pink) on the left in one continuous swath.

The six map projections shown at the bottom are images of what one would see if looking directly down at the south pole of the map, at six different rotations. When viewed this way, the map looks like a wheel with an inner ring and outer ring. This wheel of science corresponds very closely with the two-dimensional maps we have previously produced.

MAPS OF SCIENCE

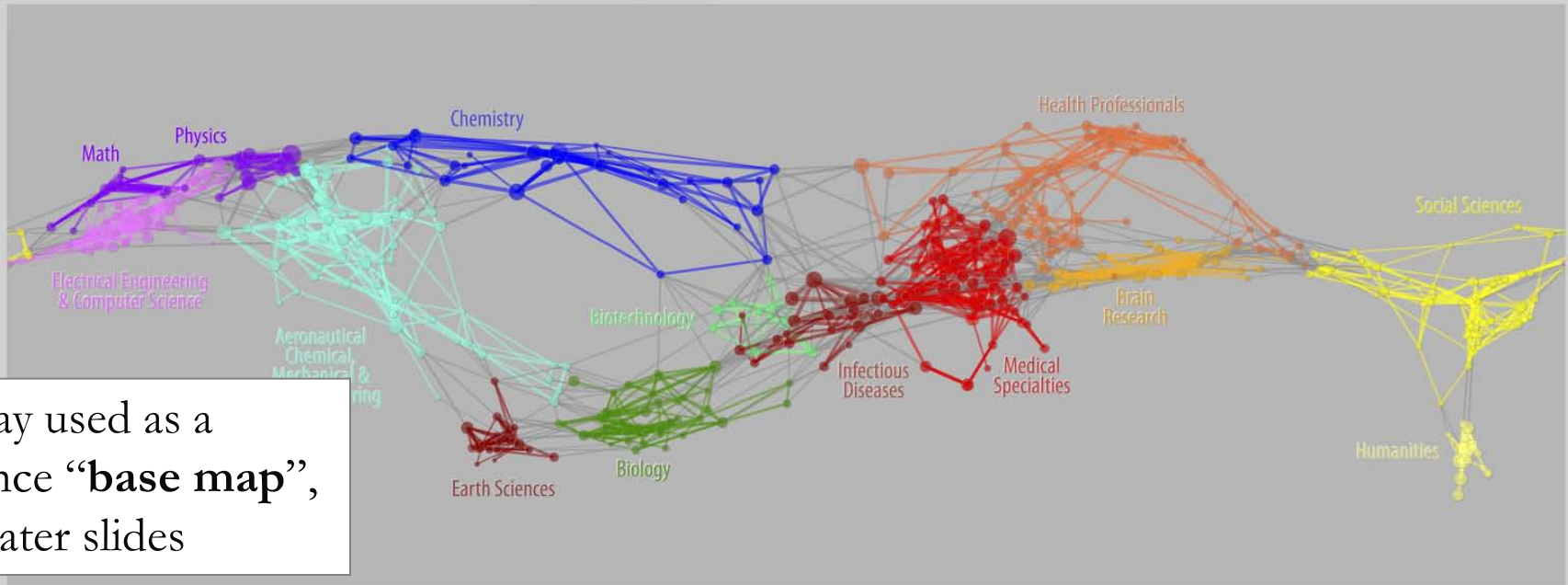
A visualization of 7.2 million scholarly documents
appearing in over 16,000 journals, proceedings or symposia
between Jan, 2001 and Dec, 2005

Forecasting Large Trends in Science

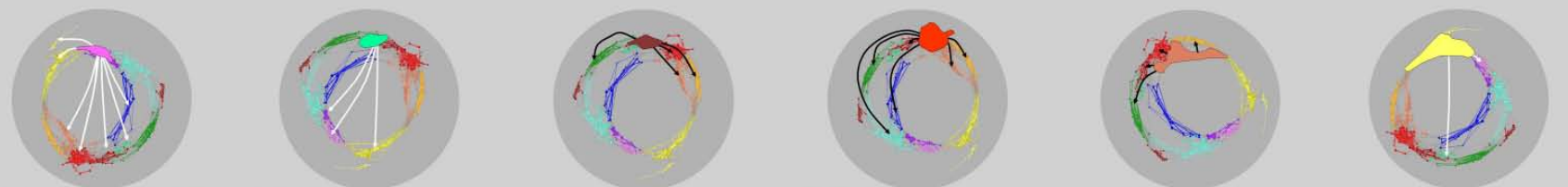
Calculations were performed using the large colored groupings of disciplines (fields) to determine if any of them were likely to cause large scale changes in the structure of science over time. Connectedness coefficients between fields were calculated for each individual year, 2001-2005. A simple regression analysis was conducted to see if there were significant changes in these connectedness coefficients from year-to-year.

If the structure of science shown below is moving toward stability, we would expect connectedness between neighboring fields to increase, and connectedness between distant fields to decrease. We found the opposite, suggesting that the underlying structure is unstable and likely to change dramatically over the next decade.

Six stories, representing how the structure is likely to change, are provided below. Maps with white arrows represent instances of distant fields that are likely to be pulled closer to each other in the future. Maps with dark arrows represent fields that are currently close-knit, that are likely to become more dispersed. We expect that future maps of science will show changes in structure corresponding to these observations. Medicine will disperse slightly, while the physical sciences will tighten and draw closer to the medical fields.



Today used as a science “base map”, see later slides



Electrical Engineering & Computer Science (EE/CS), indicated by the pink shape in the view above, is a field whose connectedness has been increasing much more quickly (15%) than expected. Connectedness has increased between EE/CS and all other fields from 2001-2005. The connections with the largest annual increases (>10%) are shown by white arrows. Over time, these stronger connections will distort the map, and may bring EE/CS into a more central position.

Biotechnology, indicated by the light green shape above, has the largest overall increase in connectedness with other fields (16%). It has relatively few connections with the EE/CS, Math & Physics, and Social Sciences fields, but these three connections had the largest fractional increase. The connection with EE/CS, which had the single largest growth rate (91% of any connection, reflects recent growth in the area of bioinformatics).

Infectious Diseases, indicated by the dark red shape above, has an overall decrease in connectedness (2%) with other fields. Decreases in connection strength between this field and the fields of Biology, Medical Specialties, Health Professionals and Brain Research (all >3%) are shown as black arrows, and will drive a slow dispersion of the medical fields compared to the current structure.

Medical Specialties, indicated by the red shape above, has an overall decrease in connectedness (2%) with other fields. This is dominated by decreasing connection strength to the other medical fields and biology, as shown by the black arrows. The only connection increasing in strength is the one to EE/CS, which is not shown here, but was shown as a white arrow in the first story.

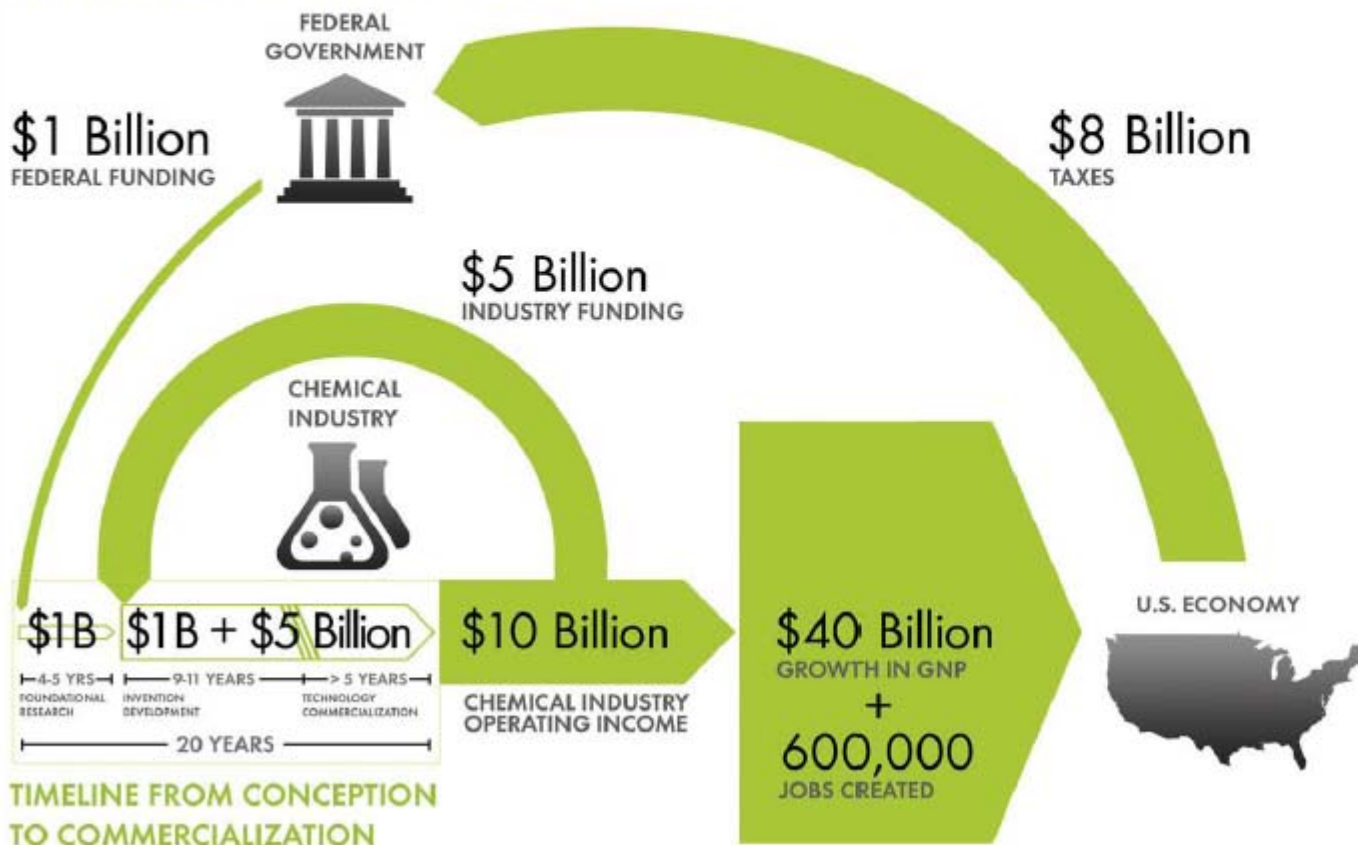
The **Health Professionals** field, indicated by the orange shape above, has the largest overall decrease in connectedness (4%) to other fields. As with the other medical fields, its connection strength with medicine and biology is decreasing in all cases, as shown by the black arrows. With the decreasing connection strengths throughout medicine, we expect the map structure in these areas to relax slightly over time.

The **Social Sciences**, indicated by the yellow shape above, had an overall increase in connectedness (9%) with other fields. Although its greatest connectedness gains were with EE/CS and Biotechnology (see white arrows), it also had consistent connection increases with nearly all the other fields. In general the fields of EE/CS, Biotechnology, and the Social Sciences are becoming more connected, and are pulling on the physical sciences as well.

Chemical Research & Development Powers the U.S. Innovation Engine

Macroeconomic Implications of Public and Private R&D Investments in Chemical Sciences

INVESTMENT IN CHEMICAL SCIENCE R&D

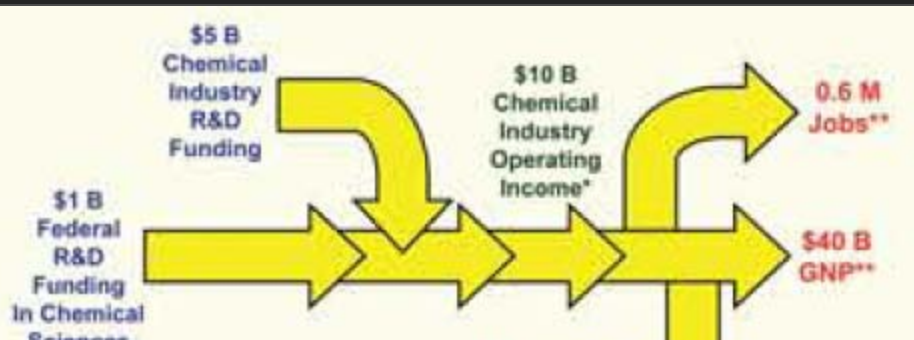


The Council for Chemical Research (CCR)

has provided the U.S. Congress and government policy makers with important results regarding the impact of Federal Research & Development (R&D) investments on U.S. innovation and global competitiveness through its commissioned 5-year two phase study. To take full advantage of typically brief access to policy makers, CCR developed the graphic below as a communication tool that distills the complex data produced by these studies in direct, concise and clear terms.



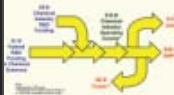
The design shows that an input of \$1B in federal investment, leveraged by \$5B industry investment, brings new technologies to market and results in \$10B of operating income for the chemical industry, \$40B growth in the Gross National Product (GNP) and further impacts the US economy by generating approximately 600,000 jobs, along with a return of \$8B in taxes. Additional details, also reported in the CCR studies, are depicted in the map to the left. This map clearly shows the two R&D investment cycles; the shorter industry investment at the innovation stage to commercialization cycle; and the longer federal investment cycle which begins in basic research and culminates in national economic and job growth along with the increase tax base that in turn is available for investment in basic research.



Notes:
*Estimated from CCR study
**Extrapolated from LIME study by Pridem, et al. April 2000 using R&M economic model

The Council

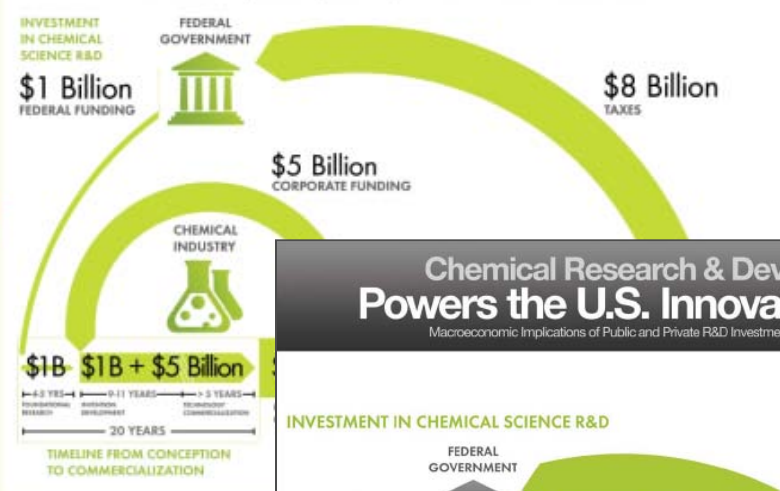
The Council for Chemical Research (CCR) has provided the US Congress and government policy makers with important results regarding the impact of Federal R&D investments on US innovation and global competitiveness through its commissioned 5-year two phase study. To take full advantage of typically brief access to policy makers, CCR developed the graphic below as a communication tool that distills the complex data produced by these studies in direct, concise and clear terms.



Simply put, the design shows that an input of \$1B in federal investment, leveraged by \$5B industry investment, brings new technologies to market and results in \$10B of operating income for the chemical industry, \$40B growth in the GNP and further impacts the US economy by generating approximately 600,000 jobs, along with a return of \$8B in taxes. Additional details, also reported in the CCR studies, are depicted in the map to the right. This map clearly shows the two R&D investment cycles: the shorter industry investment at the innovation stage to commercialization cycle; and the longer federal investment cycle which begins in basic research and culminates in national economic and job growth along with the increase tax base that in turn is available for investment in basic research.

Chemical R&D Powers the U.S. Innovation Engine

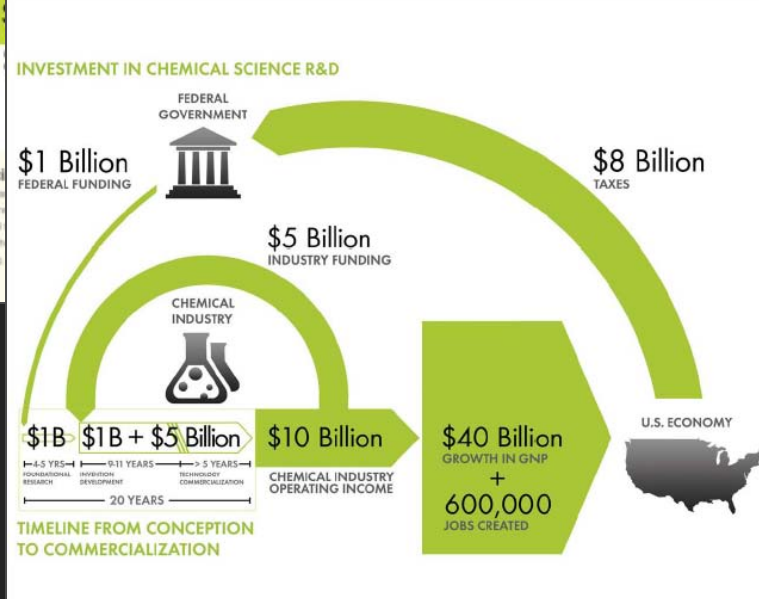
Macroeconomic Implications of public and private R&D Investments in Chemical Sciences



About the Council
CCR is an organization for membership represents in CCR was formed in 1979 research and encourage the science and engineering

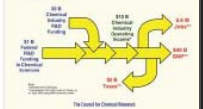
Chemical Research & Development Powers the U.S. Innovation Engine

Macroeconomic Implications of Public and Private R&D Investments in Chemical Sciences



The Council for Chemical Research (CCR)

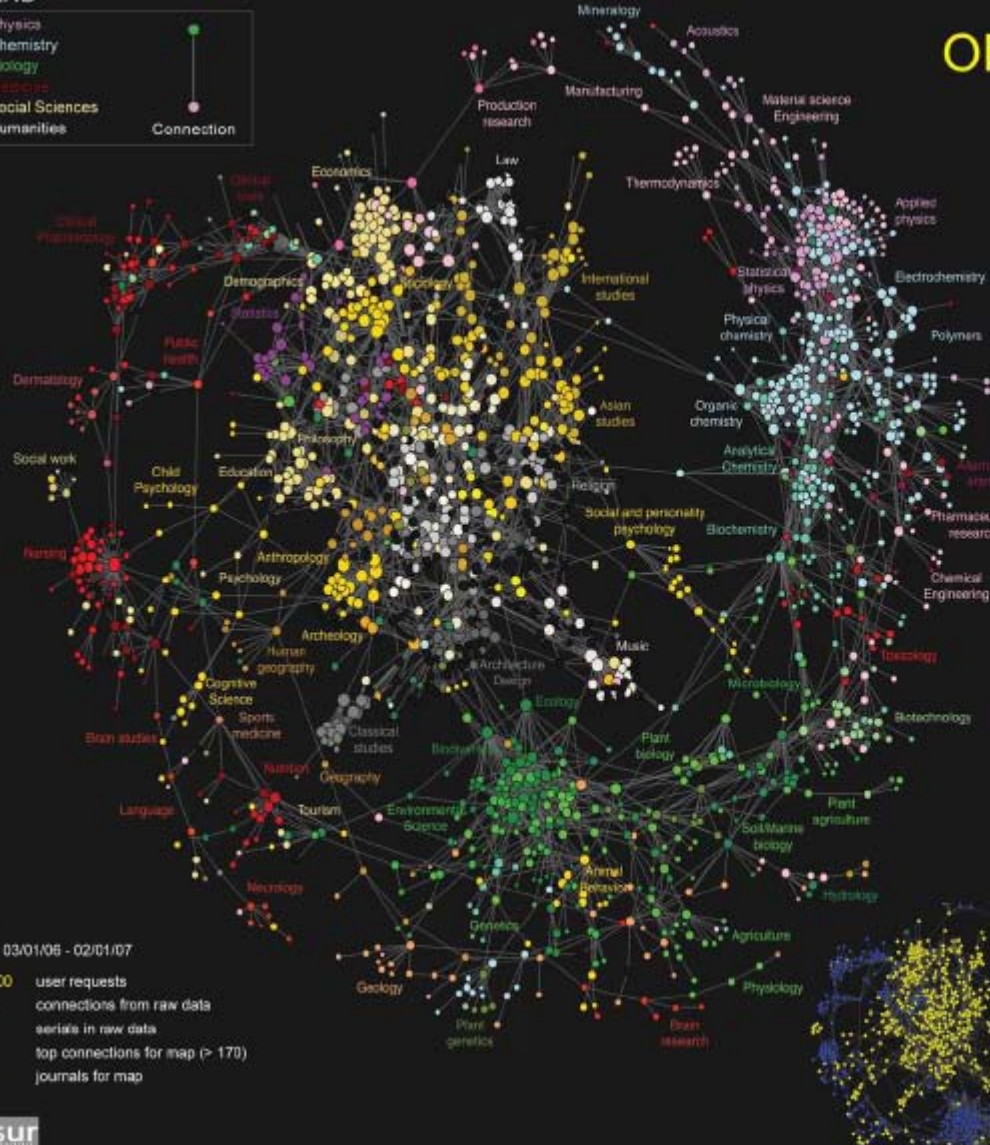
has provided the U.S. Congress and government policy makers with important results regarding the impact of Federal Research & Development (R&D) investments on U.S. innovation and global competitiveness through its commissioned 5-year two phase study. To take full advantage of typically brief access to policy makers, CCR developed the graphic below as a communication tool that distills the complex data produced by these studies in direct, concise and clear terms.



The design shows that an input of \$1B in federal investment, leveraged by \$5B industry investment, brings new technologies to market and results in \$10B of operating income for the chemical industry, \$40B growth in the Gross National Product (GNP) and further impacts the US economy by generating approximately 600,000 jobs, along with a return of \$8B in taxes. Additional details, also reported in the CCR studies, are depicted in the map to the left. This map clearly shows the two R&D investment cycles: the shorter industry investment at the innovation stage to commercialization cycle; and the longer federal investment cycle which begins in basic research and culminates in national economic and job growth along with the increase tax base that in turn is available for investment in basic research.

CLICKSTREAM MAP OF SCIENCE

LEGEND



This is the first map created from large-scale, world-wide, scholarly usage data. It visualizes the collective flow of scientists' movements from one journal to another in their online navigation behavior.

The MESUR project (www.mesur.org) collected a database of nearly 1 billion user requests recorded by the web portals of some of the world's most significant publishers, aggregators and large university consortia, among them Thomson Scientific (Web of Science), Elsevier (Scopus), JSTOR, Ingenta, University of Texas (9 campuses, 6 health institutions), and California State University (23 campuses). All usage logs acquired by the MESUR project contain session identifiers that identify the individual clickstreams of individual scientists navigating from one article to the next.

Pairs of journals are connected when they have a high probability of being followed by each other in users' clickstreams. The circles represent individual journals. A line between two circles indicates that they are strongly connected in either direction. The colors indicate the scientific domain a journal belongs to according to their Dewey Decimal and JCR classification codes that were mapped into the Getty Research Center's Arts and Architecture Taxonomy (AAT) to allow classifications at various levels of detail. The size of circles corresponds to the strength (degree centrality) of a journal's connections in the map. The map is arranged by the Fruchterman-Reingold algorithm that treats connections like springs; connected journals are drawn together, but they are not allowed to get too close.

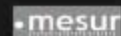
This map is derived from usage data and therefore also reflects the actions of those who read the literature but rarely publish themselves, e.g. practitioners and laypersons. As a result practitioner-driven domains such as nursing, social work, and tourism studies are prominently featured. The natural sciences vs. the social sciences and humanities emerge as two distinct clusters that are connected via various specific interdisciplinary spokes. Most domains are highly interdisciplinary, but this is more so the case for the social sciences and humanities. Surprisingly, mathematics and computer science are not represented as one specific cluster, but spread-out through the map.

Like citation maps, this map is based upon a particular sample of the scientific community, albeit one that includes non-publishing scientists and practitioners and a much greater sample of publications. From MESUR's database of 1 billion user events, we created a matrix of 6 million connections between approximately 100,000 journals. From that matrix we selected only 50,000 connections with the highest number of observations, ranging from approximately 40,000 to 170 observations. This subset of connections pertained to the 2,307 most used journals. This procedure may introduce specific biases which require investigation. This map should therefore not be construed as a final map of scientific activity, but as a showcase for the feasibility of tracking scientific activity from usage data. We hope this methodology will provide unique insights into the real-time structure of scientific activity as it can be observed from scholarly clickstream data.

When we cut the AAT taxonomy at the top level, only two directions remain: natural sciences (blue nodes) vs. the social sciences and humanities (yellow nodes). Some journals along the spokes of the wheel have classifications (colors) that do not correspond to their location in the map. This indicates either that journal in question is highly interdisciplinary, and/or has been assigned a classification that does not correspond to how scientists actually use the particular journal.

DATA 03/01/06 - 02/01/07

356,000,000	user requests
6,700,000	connections from raw data
97,532	series in raw data
50,000	top connections for map (> 170)
2,307	journals for map



More information on this map can be found in Bollen, J., Van de Sompel, H., Hagberg, A., Bettencourt, L., Chute, R., Rodriguez, M.A. and Balakireva, L. (2008) Clickstream Data Yields High-Resolution Maps of Science. *PLoS ONE* 4(3): e4803. doi:10.1371/journal.pone.004403 (Freely available online)

Design layout by Jeremy D. Chace



Debut of 5th Iteration of the Mapping Science Exhibit at MEDIA X was in 2009 at Wallenberg Hall, Stanford University, <http://mediax.stanford.edu>, <http://scaleindependentthought.typepad.com/photos/scimaps>



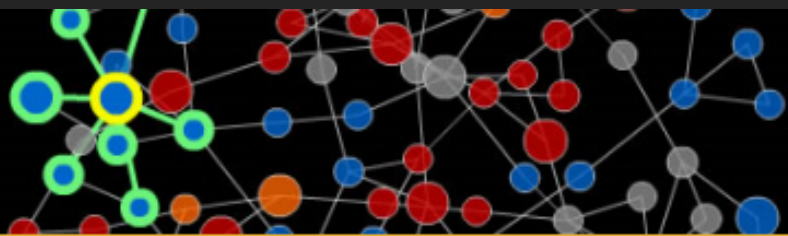


Science Maps in “Expedition Zukunft” science train visiting 62 cities in 7 months, 12 coaches, 300 m long. <http://www.expedition-zukunft.de>

Interactive S&T Maps



Scholarometer

[Home](#)[About](#)[Download](#)[Explore](#)[API](#)[FAQ](#)[Help](#)[Feedback](#)

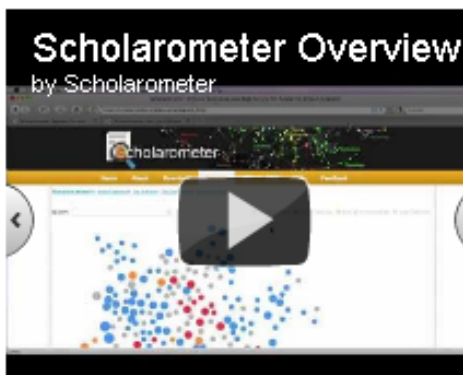
Scholarometer^(beta) is a social tool to facilitate citation analysis and help evaluate the impact of an author's publications.

DOWNLOAD
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Features



Statistics

Top authors by h index

y zhang	247
m cohen	235
j taylor	217
c smith	214
j walker	177
sh snyder	176
ha simon	173
r schwartz	173

Latest Updates

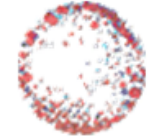


Scholarometer Tool
scholarometer

RA Robins and 1 other author in discipline #behavioral_sciences. <http://bit.ly/hQF3vw>
3 hours ago · reply

G Alexander and 1 other author in discipline #behavioral_sciences. <http://bit.ly/fuFWvg>
3 hours ago · reply

MAPS OF SCIENCE



BETTER MAPS • BETTER DECISIONS

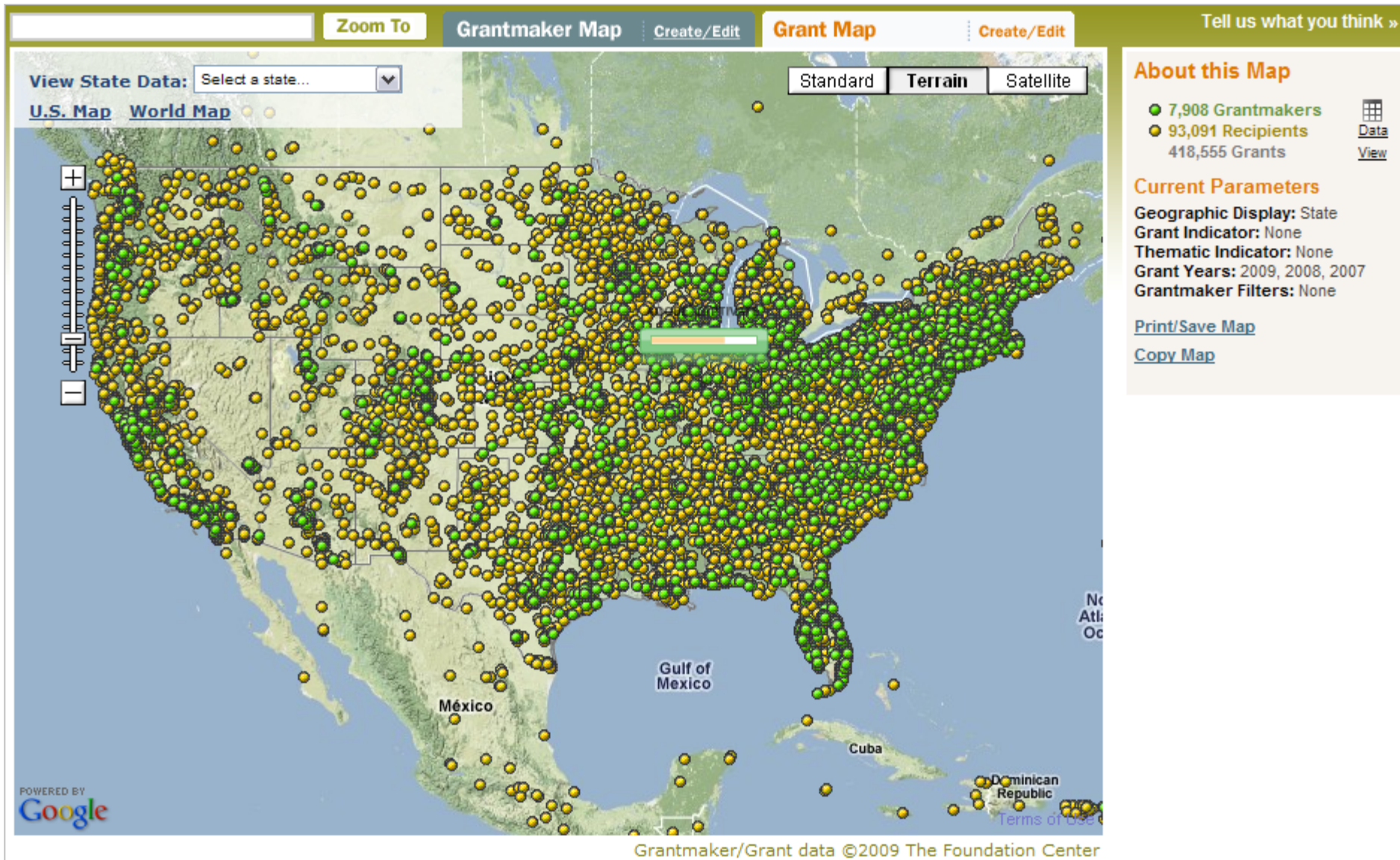


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<http://mapofscience.com> and SciVal by Elsevier

Interactive Maps of Science – Philanthropy



<http://www.philanthropyinsight.org>

Interactive World and Science Map of S&T Jobs

Angela Zoss, Michael Connover, Katy Börner (2010)

Visualization of Job Postings

Map of Science | Geographic

Visualization of Job Postings

Map of Science | Geographic

Postdoc at Harvard Medical School
[Link to Post](#)

Visualization of Job Postings

Map of Science | Geographic

Math and Physics

Chemistry

Health Professionals

Medical Specialties

Brain Research

Social Sciences

Humanities

Biology

Earth Sciences

Chemical, Mechanical, and Civil Engineering

Biotechnology

Infectious Diseases

Medical Engineering and Computer Science

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Search for Jobs

Map of Science

Scientific domains are highly interconnected. The boundaries between different domains are often fuzzy. One way of thinking about the relationships between domains is to conceptualize all scientific domains as existing within a large **network of research**.

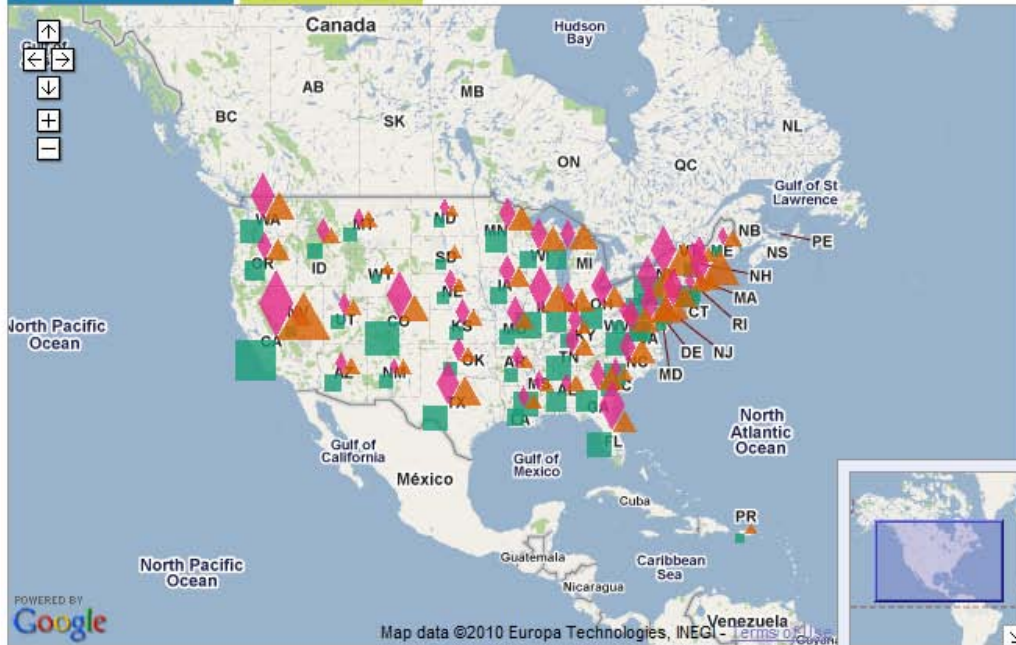
Creating a network of scientific research can be accomplished by looking at scientific journals and their articles. The UCSD Map of Science used here is the product of a large study by researchers at the University of California San Diego using 7.2 million papers and over 16,000 separate journals, proceedings, and series from Thomson Scientific and Scopus over the five year period from 2001 to 2005. The researchers used citations between the papers and journals to **cluster journals** into small groups of highly related journals.

Those clusters are represented by 554 individual nodes in the network. The links between the clusters show that some clusters are related to other clusters but are not as tightly connected as the journals that make up each cluster. Then the clusters are labeled both by the content area shared by the journals in the cluster and by the overarching scientific domain for that cluster (represented by one of 13 colors).

Maps of science like this one can be used to understand many different data sets and how they can be represented by topic. Here we are looking at the topics that appear in job postings from large job

Geographic Map

Science Map



Funding

NIH

NSF

USDA

Publications

DOE

ISI

Medline

Patents

USPTO

Citations Count

Amount Count

Citations Count

From year 1901 to year 2009

Search by keyword

Search

Detail

About

Geographic Visualization

Here we have a more traditional view of the records - a geographic overlay. Featured here are the records that list both a city and state in the United States. Feel free to search, zoom, pan, and click for descriptions.

<http://mapsustain.cns.iu.edu>



CYBERINFRASTRUCTURE for
NETWORK SCIENCE CENTER

School of Library and Information Science, Indiana University



About

A new field of *Sustainability Science and Engineering* is emerging that seeks to understand the fundamental character of interactions between nature and human society and to help steer the impact of humanity's needs on the planet's natural resources towards sustainable trajectories. The field is unified in clear terms by its ultimate goals but occupies an interdisciplinary position among traditional research fields, spanning both science and engineering and spreading across disciplines as diverse as agriculture, ecology, oceanography, climate studies, economics, a diverse set of social sciences, energy and materials and several additional aspects of engineering, physics, biology, and chemistry. Although Sustainability Science and engineering is by now widely discussed in the scientific and engineering community, and is beginning to be connected to the political agenda for economic and social development, it remains unclear to what extent its many facets are being integrated into a global perspective and whether researchers are utilizing it as a nexus to collaborate across traditional scientific and engineering fields.

Please consult the [Mapping the Structure and Evolution of Sustainability Science](#) workshop web page for further information and details.

Web Page Design

This web site provides an interactive interface to publication, patent, and funding data on 'biomass' and 'biofuel' research. Visitors are invited to explore what funding is available in what geospatial regions and in what areas of science and what publications and patents



Google Map JavaScript API was used to implement both maps with two aggregation layers for each. The geographic map aggregates to the **state level** and the **city level**. The science map has a high level of aggregation of 13 top-level scientific **disciplines** and a low level of 554 **sub-disciplines**.

Geographic Map

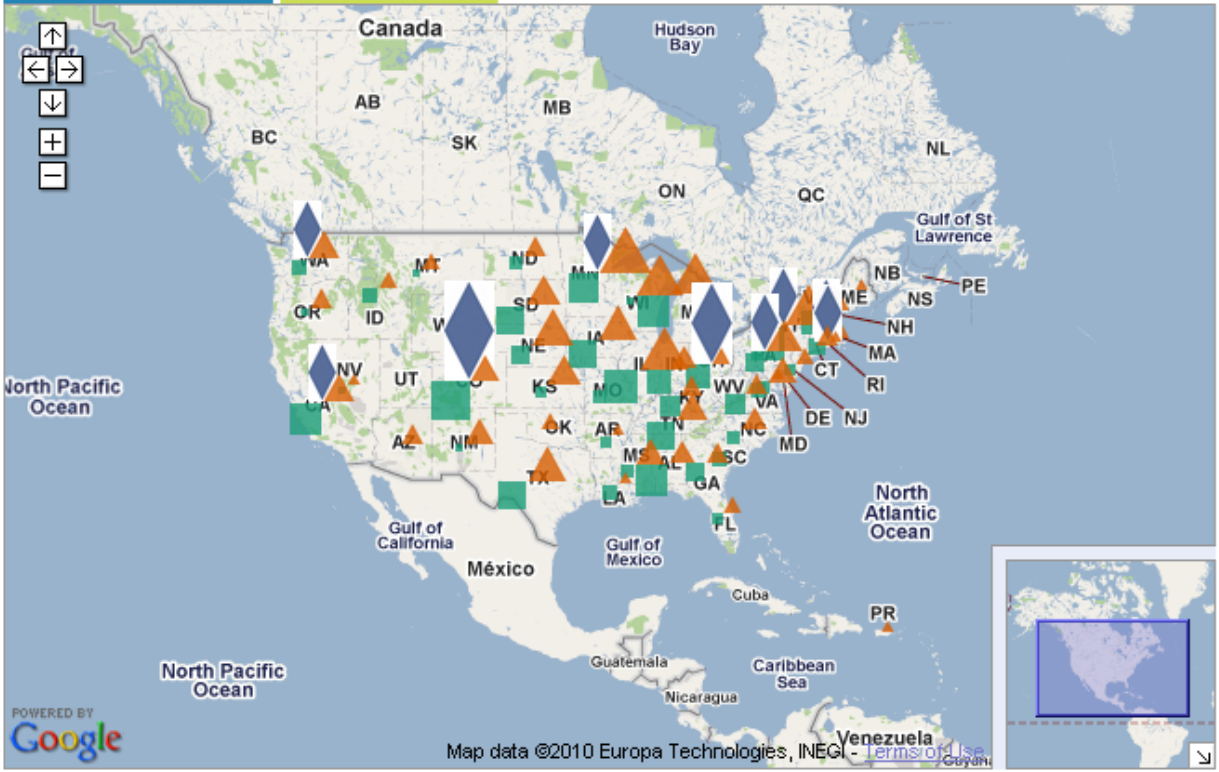
Science Map

Maps

Detail

Data

About



Funding ?
 NIH
 NSF
 USDA

Publications ?
 DOE
 ISI
 Medline

Patents ?
 USPTO

Datasets

The dataset covers 13,528 records on "biomass" and "biofuel" research and technology from seven different publication, patent, funding datasets for the years 1901 to 2010.

Funding

National Institutes of Health (NIH) awards retrieved from the Scholarly Database (<http://sdb.slis.indiana.edu>) at Indiana University on 11/20/2010. Search query used was biomass OR biofuel OR "bio mass" OR "bio fuel" in the 'All Text' field.

National Science Foundation (NSF) awards retrieved from the Scholarly Database (<http://sdb.slis.indiana.edu>) at Indiana University on 11/20/2010. Search query used was biomass OR biofuel OR "bio mass" OR "bio fuel" in the 'All Text' field.

US Department of Agriculture (USDA) awards made available by a staff member of the Office of Scientific and Technical Information from the US Department of Energy (DOE).

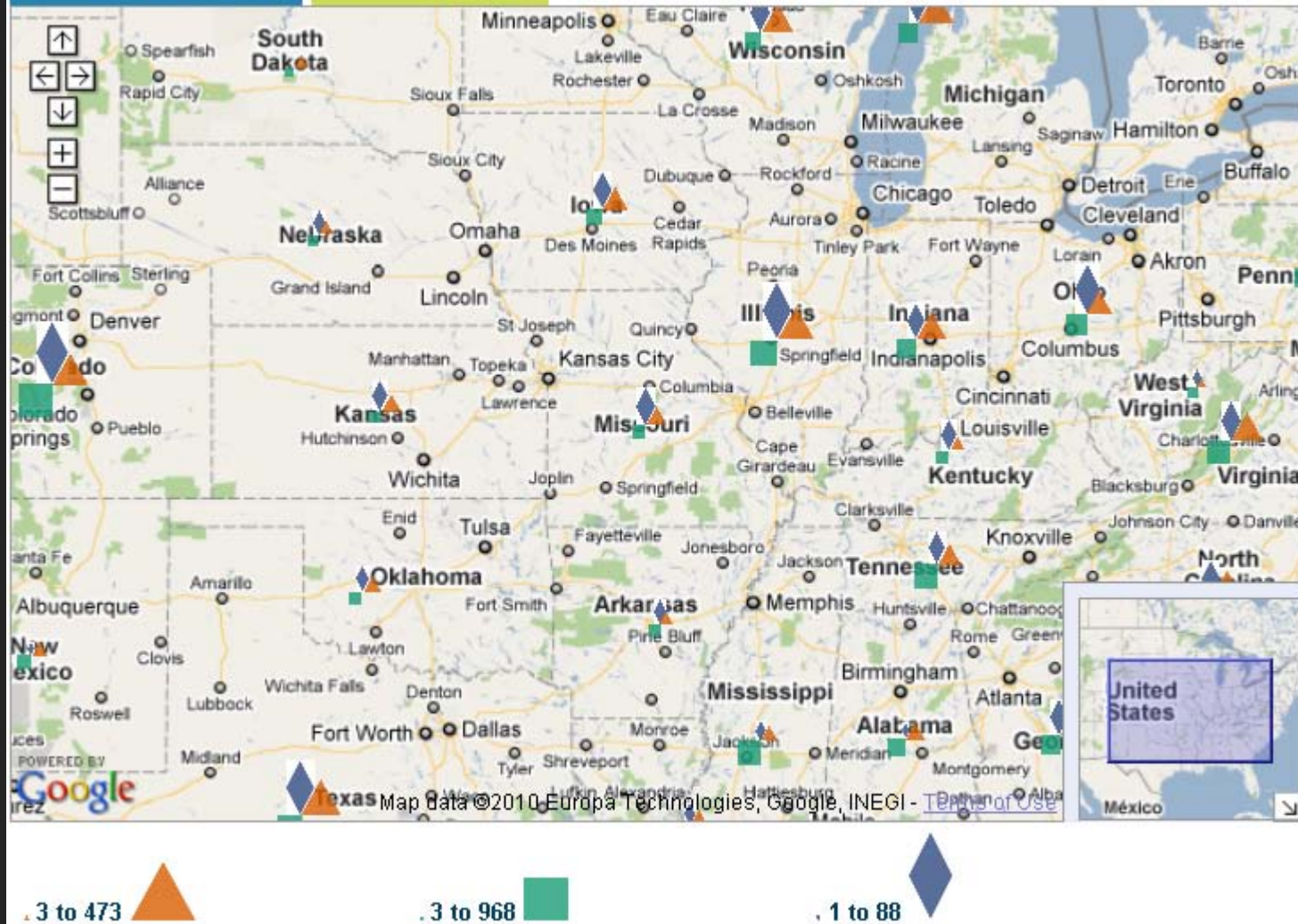
Publications

MEDLINE papers by the National Library of Medicine retrieved from the Scholarly Database (<http://sdb.slis.indiana.edu>) at Indiana University on 11/20/2010. Search query used was biomass OR biofuel OR "bio mass" OR "bio fuel" in the 'All Text' field.

The geographic map at state level.

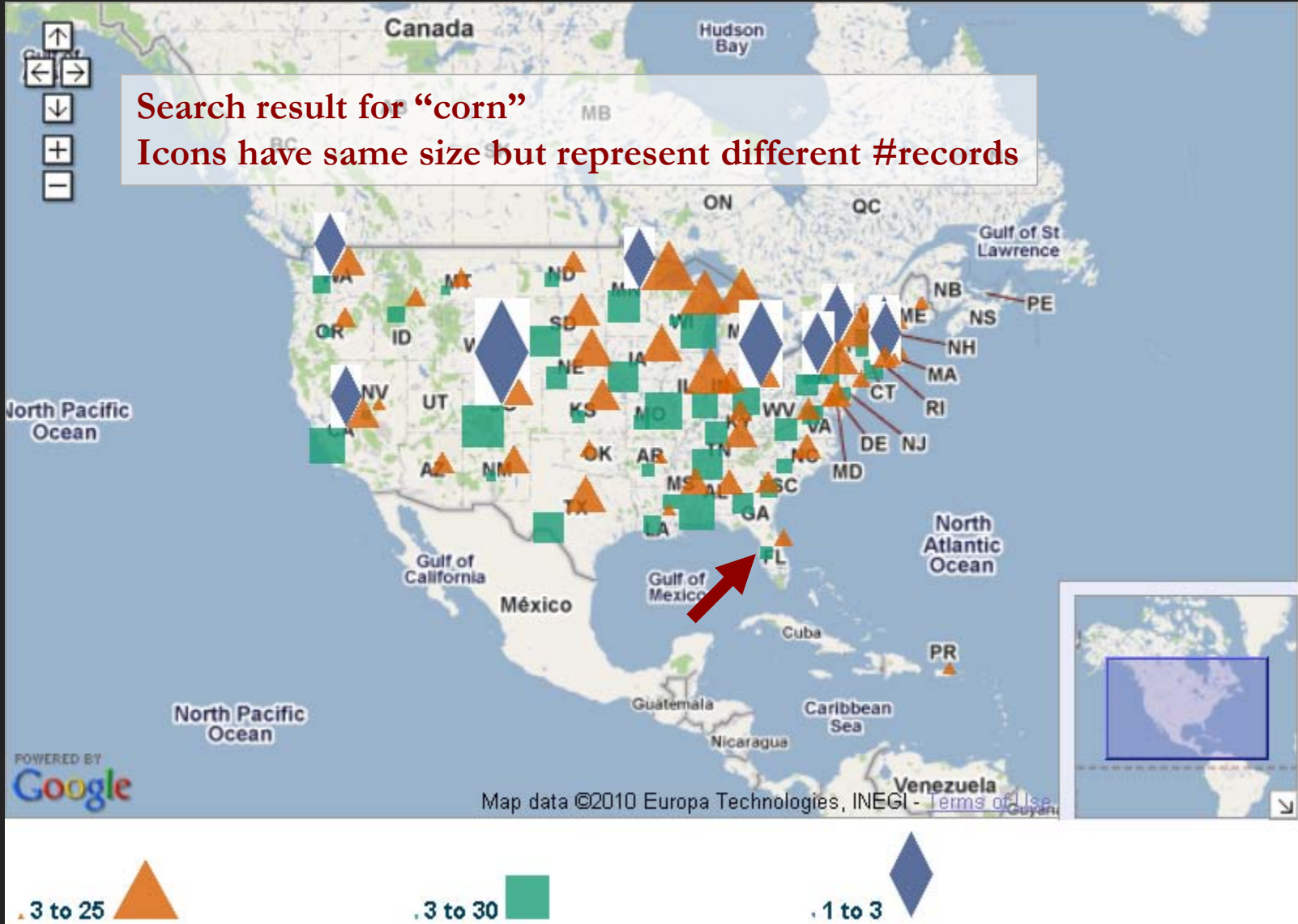
Geographic Map

Science Map



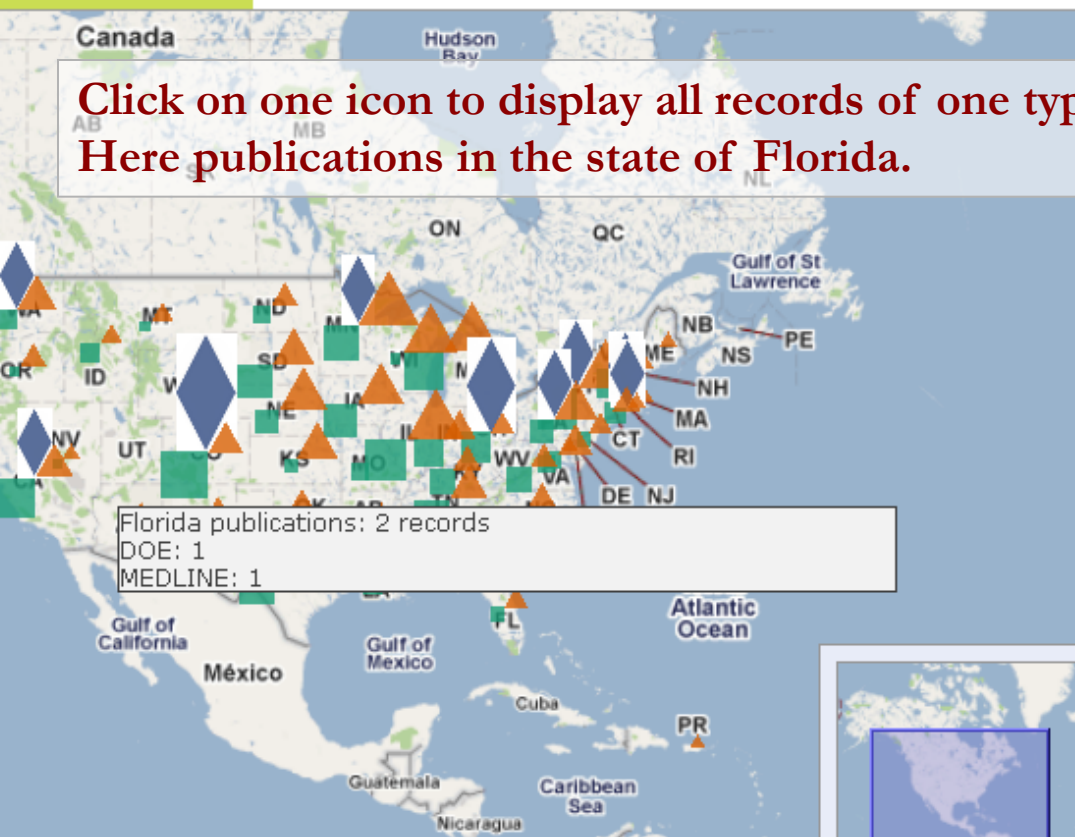
The geographic map at city level.

Search result for “corn”
Icons have same size but represent different #records



Science Map

Click on one icon to display all records of one type.
Here publications in the state of Florida.



Maps

Detail

Data

About

> Florida

MEDLINE
2002

- [Recovery Of Dairy Manure Nutrients By Benthic Freshwater Algae.](#)

DOE
1985

- [Enzymatic Hydrolysis And Fermentation Of Corn For Fuel Alcohol](#)



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Full Text Availability information may be found in the Availability, Publisher, Research Organization, Resource Relation and/or Author (affiliation information) fields and/or via the "Full-text Availability" link. For a journal article, please see the Resource Relation field.

Title Enzymatic hydrolysis and fermentation of corn for fuel alcohol
[Word Cloud](#) | [More Like This](#)

Creator/Author [Mullins, J.T.](#)

Publication Date 1985 Jan 01

OSTI Identifier OSTI ID: 5789929

Other Number(s) Journal ID: CODEN: BIBIA

Resource Type Journal Article

Resource Relation Journal Name: Biotechnol. Bioeng.; (United States); Journal Volume: 27:3

Research Org Univ. of Florida, Gainesville

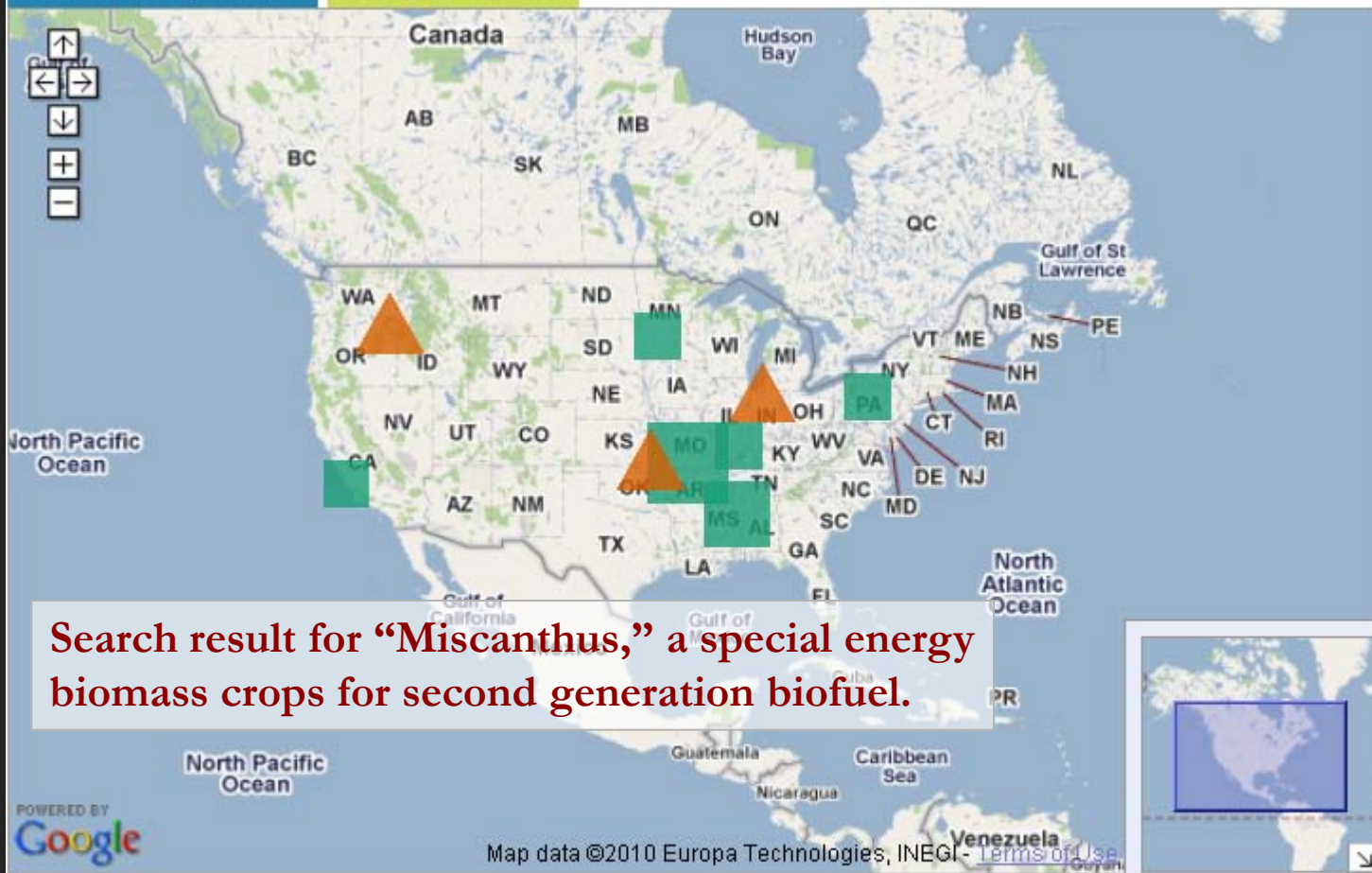
Subject 09 BIOMASS FUELS; 32 ENERGY CONSERVATION, CONSUMPTION, AND UTILIZATION; ETHANOL FUELS; BIOSYNTHESIS; MAIZE; ENZYMATIC HYDROLYSIS; FERMENTATION; PRODUCTIVITY; COST; ENERGY EFFICIENCY; EXPERIMENTAL DATA; WASTE PRODUCT UTILIZATION; ALCOHOL FUELS; BIOCONVERSION; CEREALS; CHEMICAL REACTIONS; DATA; DECOMPOSITION; EFFICIENCY; FUELS; GRASS; HYDROLYSIS; INFORMATION; LYSIS; NUMERICAL DATA; PLANTS;

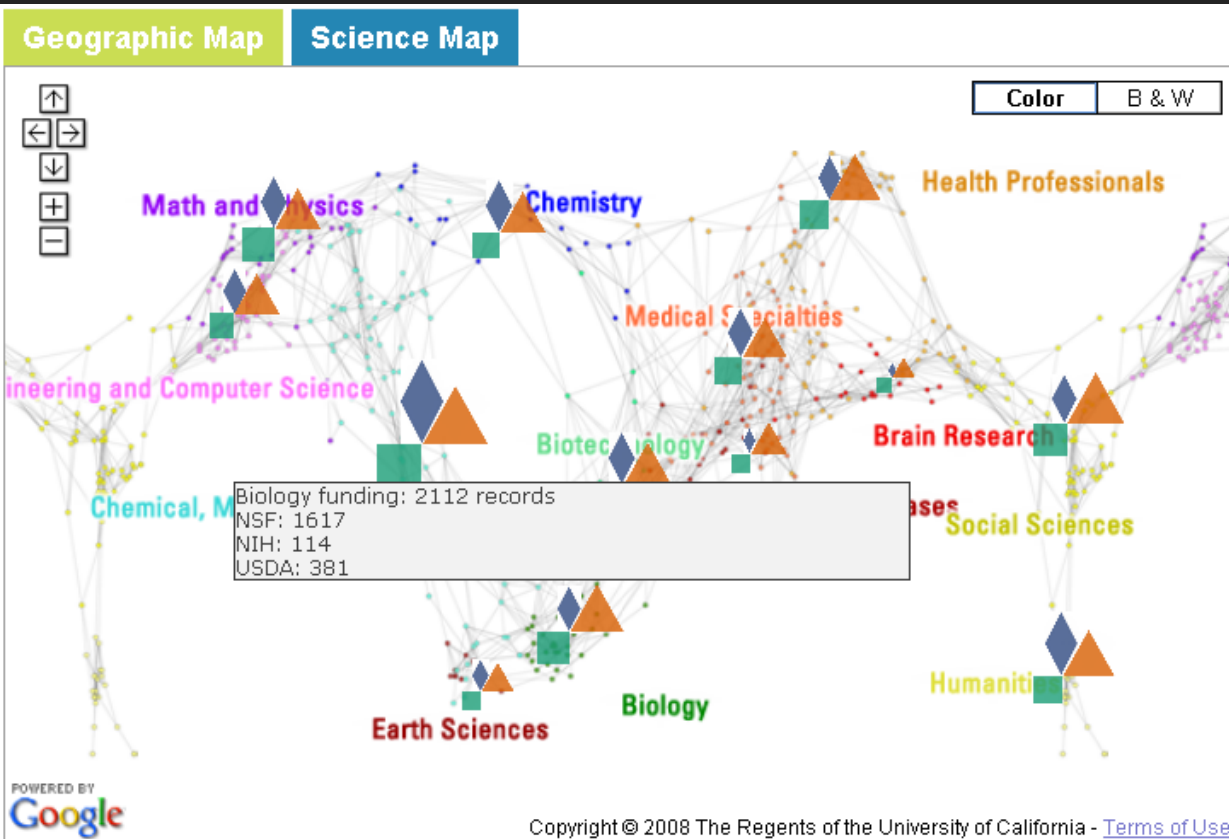
Done

**Detailed information on demand
via original source site for exploration and study.**

Geographic Map

Science Map





Maps

Detail

Data

Ab

> Biology

NIH
2009

- [Label-Free And Simultaneous Detection Of Multiple Bacterial Pathogens And Virulen](#)
- [Mechanism Of Psrc Mediated Adhesion](#)
- [Label-Free And Simultaneous Detection Of Multiple Bacterial Pathogens And Virulen](#)
- [Novel Mechanism Of Uranium Reduction Via Microbial Nanowires](#)
- [Nano-Scale Mechanisms Of Metal\(Loid\) Rhizostabilization In Desert Mine Tailings](#)
- [Label-Free And Simultaneous Detection Of Multiple Bacterial Pathogens And Virulen](#)
- [Mechanism Of Psrc Mediated Adhesion](#)

2008

- [The Effect Of Inter-Species Interactions On The Virulence Of Streptococcus Mutans](#)
- [Cookstove Replacement For Prevention Of Ari And Low Birthweight In Nepal](#)
- [Diverse Drug Lead Compounds From Bacterial Symbionts In Tropical Marine Mollusks](#)
- [Remote Sensing Of Wildfire Smoke Exposures To Assess Health Effects](#)
- [Cookstove Replacement For Prevention Of Ari And Low Birthweight In Nepal](#)

The science map at 13 top-level scientific disciplines level.

Geographic Map

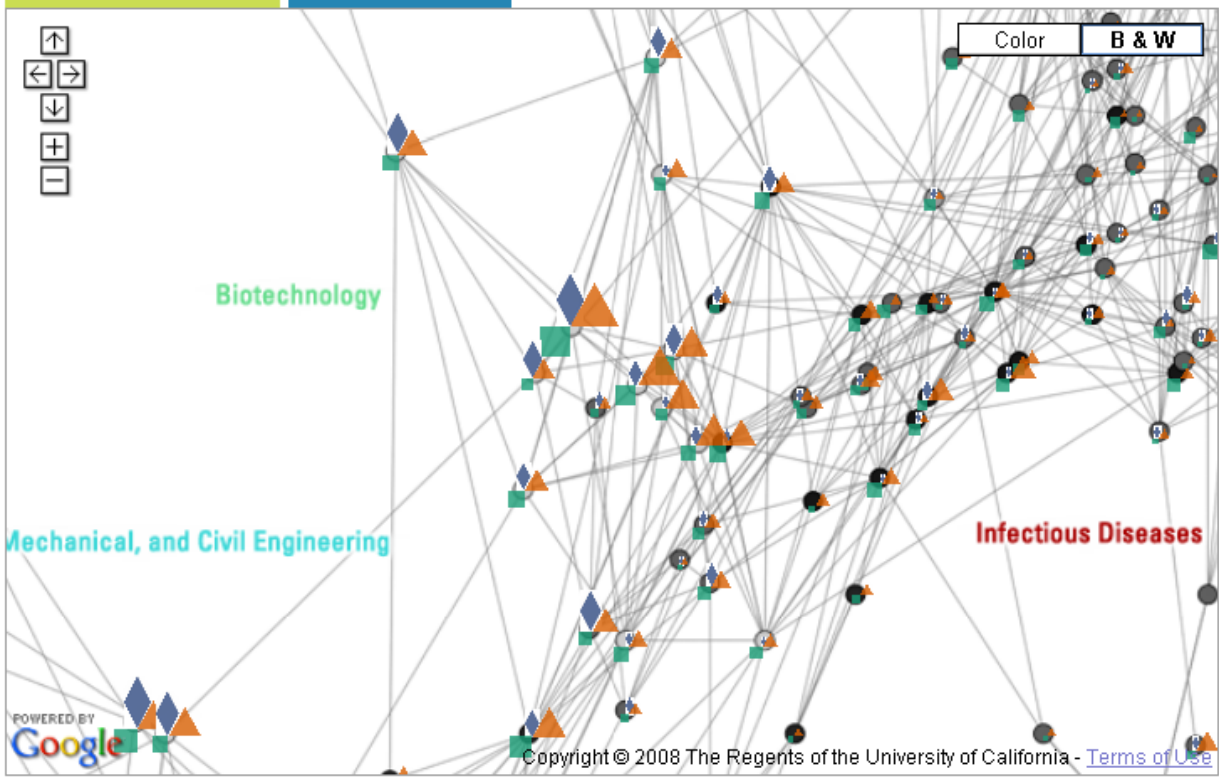
Science Map

Maps

Detail

Data

About



> Chemistry

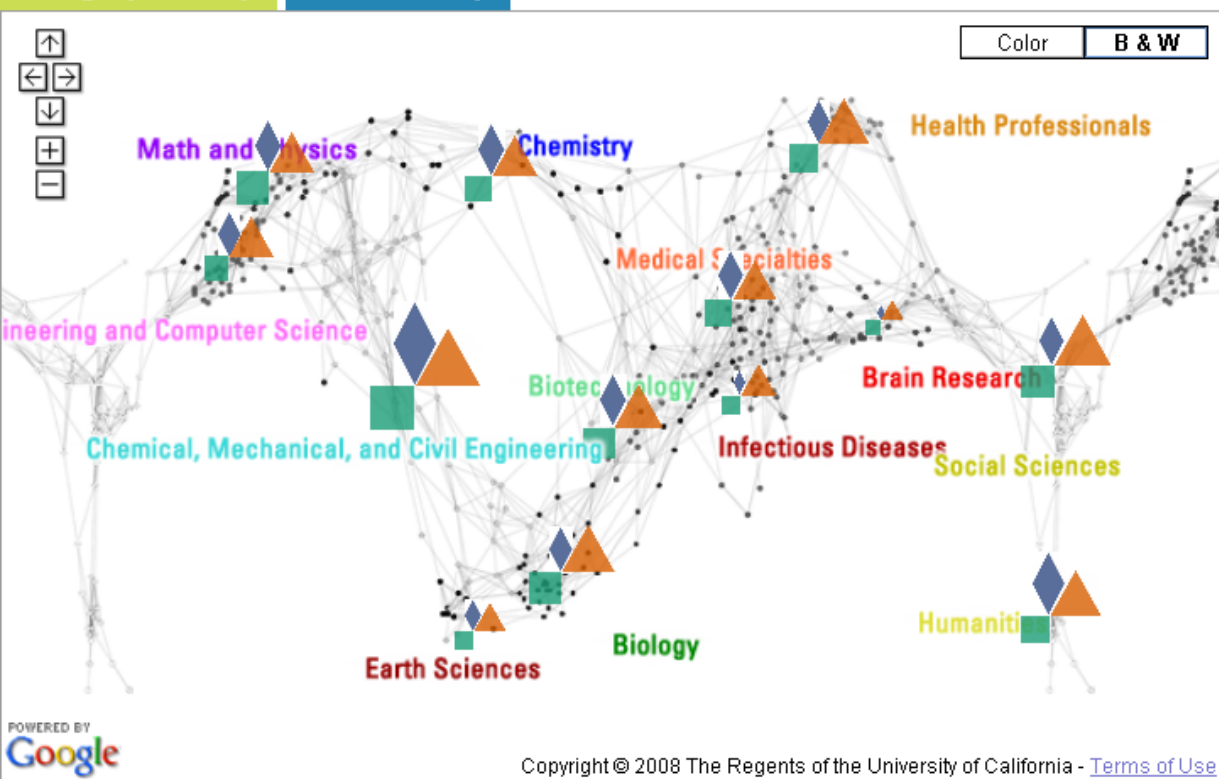
USPTO
2009

- [Automated Accelerated Extraction Of Trace Elements From Biomass](#)
- [Biomass Based Michael Addition Compositions](#)

2008

- [Thermal Tolerant Avicelase From](#)
- [Chitosan And Method Of Preparing Chitosan](#)
- [Process For Pyrolytic Heat Recovery Enhanced With Gasification Of Organic Material](#)
- [Chitosan And Method Of Preparing Chitosan](#)
- [Self-Contained Microelectrochemical Bioassay Platforms And Methods](#)
- [Highly Active Xylose Reductase From](#)
- [Process For The Solvent-Based Extraction Of Polyhydroxyalkanoates From Biomass](#)
- [Process For The Solvent-Based Extraction Of Polyhydroxyalkanoates From Biomass](#)
- [Process For The Solvent-Based Extraction Of Polyhydroxyalkanoates From Biomass](#)
- [Light Sensing Instrument With Modulated Polychromatic Source](#)
- [Method For Purifying Water](#)
- [Synthesis Of Caprolactam From Lysine](#)

The science map at 554 sub-disciplines level.



> Chemistry

USPTO
2009

- [Automated Accelerated Extraction Of Trace Elements From Biomass](#)
- [Biomass Based Michael Addition Compositions](#)

2008

- [Thermal Tolerant Avicelase From](#)
- [Chitosan And Method Of Preparing Chitosan](#)
- [Process For Pyrolytic Heat Recovery Enhanced With Gasification Of Organic Material](#)
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Math & Physics	Biotechnology	Medical Specialties
Chemistry	Earth Sciences	Brain Research
Computer Science & EE	Biology	Health Professionals
Other Engineering	Infectious Diseases	Social Sciences
		Humanities

United States Patent: 7364890 - Mozilla Firefox
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(1 of 1)

United States Patent 7,364,890
Ding, et al. April 29, 2008

Thermal tolerant avicelase from *Acidothermus cellulolyticus*

Abstract

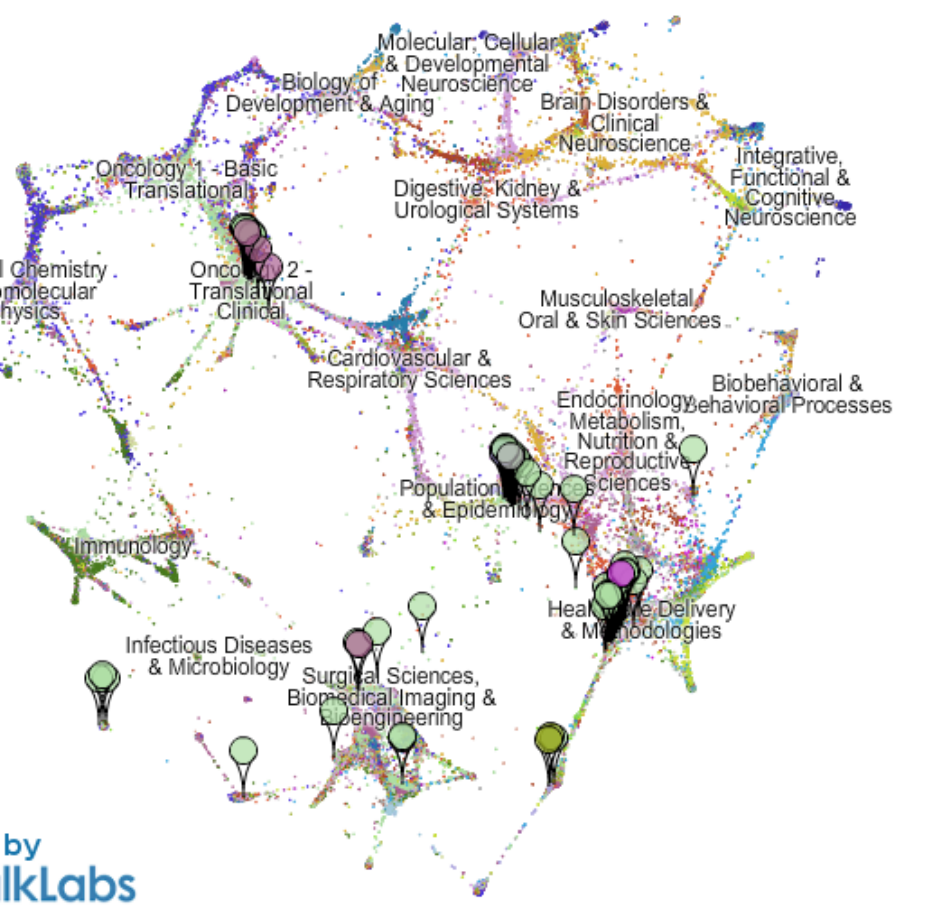
The invention provides a thermal tolerant (thermostable) cellulase, Av^{III}, that is a member of the glycoside hydrolase (GH) family. Av^{III} was isolated and characterized from *Acidothermus cellulolyticus* and, like many cellulases, the disclosed polypeptide and/or its derivatives may be useful for the conversion of biomass into biofuels and chemicals.

Inventors: **Ding; Shi-You** (Golden, CO), **Adney; William S.** (Golden, CO), **Vinzant; Todd B.** (Golden, CO), **Himmel; Michael E.** (Littleton, CO)
Assignee: **Midwest Research Institute** (Kansas City, MO)
Appl. No.: **00/017,276**

Done

Navigation and interaction controls:

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- Markers: On
- Labels: IRG



- Legend for Institutes:
- FIC
 - NCCAM
 - NCI
 - NCMHD
 - NCRR
 - NEI
 - NHGRI
 - NHLBI
 - NIA
 - NIAAA
 - NIAID
 - NIAMS
 - NIBIB
 - NICHD
 - NIDA
 - NIDCD
 - NIDCR
 - NIDDK
 - NIEHS
 - NIGMS
 - NIMH
 - NINDS
 - NINR
 - NLM
 - OD
- Settings

Institutes (9) ?

NIH Inst	#Grants	Count	+
NCI		116	
NCRR		10	
NEI		5	
NIEHS		1	
NCMHD		1	
NIA		1	

Topics ?

%	Title Words	+
25.9	breast, cancer, cancer_risk, women, cancer_sur	
3.86	risk, risk_factors, cancer, prospective, women,	
3.76	genome_wide_association, loci, genome_wide,	
3.70	genetic, genetics, genes, gene_environment, (
3.60	management, treatment, outcomes, patients,	

Grants (137) ?

NIH Inst	Grant	+
NCRR	3P20RR011792-10S2 6914 OBESITY, INSULIN RESISTANCE, IGF'S, AND BREAST CANCER RISK IN AFRICAN AMERICANS PI: CUI, YONG	
NCI	3R01CA120562-03S1 Commonly Used Medications and Breast Cancer Recurrence PI: BOUDREAU, DENISE M	
NCI	5R01CA120562-03 Commonly Used Medications and Breast Cancer Recurrence PI: BOUDREAU, DENISE M	
NCI	5R01CA093772-06 Long-term Survivorship in Older Women with Early Stage Breast	



[NLM](#)
[NCI](#)
[NEI](#)
[NCCAM](#)
[NIEHS](#)
[NIGMS](#)
[NINR](#)
[NICHD](#)
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[NIAAA](#)
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[NHGRI](#)
[FIC](#)
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[NIDCR](#)
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[NIDA](#)

[NIDCD](#)

Institute: NCI - National Cancer Institute

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Top Topics

%	Topic	Topic Words	Title Words	Phrases
4.05	210	cancer cancer_center program cancer_research	cancer_center, program, cancer, core, spore, tra	anderson cancer_center, shared resource, canc
2.42	597	cancer tumor tumorigenesis tumors myc tumor_	cancer, tumorigenesis, myc, tumor_suppressor,	tumor progression, malignant transformation, tu
2.28	430	cancer treatment therapy patients tumor diseas	cancer, therapy, treatment, tumor, prostate, bre	cancer treatment, treatment cancer, metastatic
1.73	16	metastasis invasion tumor metastatic progressi	metastasis, cancer, invasion, breast, tumor, pro	tumor progression, invasion metastasis, cancer
1.47	345	clinical_trials trials oncology cancer treatment di	clinical_trials, clinical_oncology, oncology, unit, p	clinical_trials unit, phase_i clinical_trials, cancer
1.43	686	cancer breast cancers cancer_risk cancer_patier	breast, cancer, cancer_risk, women, cancer_sur	breast cancer, breast cancer_risk, breast cancer
1.41	370	tumor immunotherapy t_cells t_cell immunity an	tumor, immunotherapy, t_cell, immunity, t_cells,	antitumor immunity, adoptive immunotherapy, ti
1.14	480	therapeutic agents treatment therapies targets	therapeutic, targeting, agents, treatment, ther	therapeutic agents, therapeutic targets, therap
1.08	346	biomarkers markers biomarker disease patients	biomarkers, biomarker, markers, disease, cance	disease progression, biomarker validation, seru
0.98	660	prostate cancer pca cancer_cells lncap androge	prostate, cancer, cancer_cells, androgen_recepi	prostate cancer, prostate cancer_cells, prostate
0.90	171	scientific committee administrative management	core, administrative, administration, planning, a	steering committee, internal external, institutor
0.87	182	breast cancer her2 cancer_cells human mcf7 neu	breast, cancer, cancer_cells, her2, human, estr	breast cancer, breast cancer_cells, her2 neu, br
0.85	437	risk risk_factors cases cohort prospective high_	risk, risk_factors, cancer, prospective, women, e	cases controls, prospective cohort_study, modif
0.85	23	tumor tumors tumor_growth mice treatment tun	tumor, tumors, cancer, tumor_growth, targeting	tumor regression, tumor burden, tumor progres
0.85	695	core statistical projects biostatistics investigat	core, biostatistics, data_management, bioinform	biostatistics core, projects core, data_managen
0.79	603	intervention interventions program prevention p	intervention, prevention, interventions, program	randomized_controlled trial, intervention reduce

Topics by NIH Institute

Topics by Category

2009

?

add

delete

AND

▼

Exact Text

▼

cancer

Search

Clear Search

2009 Grants (137)

Institutes (9)

Col	NIH Inst	Project/Subproje	Title	Investigator(s)	# 1 Topic	# 1 Topic Worc	+	NIH Inst	#Grants	Count	+
	NCRR	3P20RR011792-10S2 6914	OBESITY, INSULIN RESISTANCE, IGF'S, AND BREAST CANCER RISK IN AFRICAN AMERICANS	CUI, YONG	686 (50%)	cancer brea...		NCI		116	
	NCI	3R01CA120562-03S1	Commonly Used Medications and Breast Cancer Recurrence	BOUDREAU, DENISE M	686 (42%)	cancer brea...		NCRR		10	
	NCI	5R01CA120562-03	Commonly Used Medications and Breast Cancer Recurrence	BOUDREAU, DENISE M	686 (42%)	cancer brea...		NIEHS		5	
	NCI	5R01CA093772-06	Long-term Survivorship in Older Women with Early Stage Breast Cancer	SILLIMAN, REBECCA A	686 (42%)	cancer brea...		NCMHD		1	
	NCI	5R01CA064277-11	Shanghai Breast Cancer Study	ZHENG, WEI	686 (41%)	cancer brea...		NIA		1	
								NCCAM		1	
								NIHCHD		1	
								NINR		1	
								NHGRI		1	

Topics

Similar Grants

Show Top 100 on Map

%	Topic	Topic Words	Title Words	+	Simil: C	NIH Ins	Grant	+
25.91	686	cancer breast cancers cancer_risk cancer_patients	breast, cancer, car		6.51	NCI	1R01CA129639-01A2 Genome-Wide Association Study of Radiation Exposure and Bilateral Breast Cancer PI: BERNSTEIN, JONINE LISA	
3.86	437	risk risk_factors cases cohort prospective high_ris	risk, risk_factors, i		6.46	NCI	1K07CA136758-01A1 Genetic variants in the PI3K pathway in mammographic density and breast cancer PI: THOMPSON, CHERYL L.	
3.76	544	snps snp genome_wide_association cases genes	genome_wide_ass		6.31	NCI	5P50CA116199-05 UTMDOCC SPORE in Breast Cancer PI: HORTOBAGYI, GABRIEL N	
3.70	173	genetic genes risk susceptibility polymorphisms g	genetic, genetics,		6.02	NCI	2R01CA050385-21A1 Risk Factors for Breast Cancer in Younger Nurses PI: WILLETT, WALTER C.	
2.62	252	treatment patients management patient outcome	management, trea		4.6	NCI	5R01CA127617-02 Who Cares For Older Breast Cancer Survivors And How Does It Affect Quality? PI: MANDELBLATT, JEANNE	
1.64	235	conference meeting workshop symposium scienti	th, conference, sy					
1.63	351	community implementation community_based he	community, preve					
1.54	325	million disease treatment united_states public_he	disease, treatmen					
1.51	580	training candidate career skills applicant program	treatment, depres					

3P20RR011792-10S2 6914

Map Viewer

Topic Browser

Export Data

Methods

Feedback

2009 NCRR CUI, YONG

NIH RePORTer

Map Similar Grants

Highlight on Map

Show Parent/Other Subs

OBESITY, INSULIN RESISTANCE, IGF'S, AND BREAST CANCER RISK IN AFRICAN AMERICANS

The purpose of this study is to better understand how lifestyle factors and their interaction with genetic factors influence a women's risk of developing breast cancer. In order to learn more about the causes of breast cancer, we need to compare the lifestyles of people who have breast cancer with those who do not. 600 women are expected to be enrolled.

Top Topics

50.00	686	cancer breast cancers cancer_risk cancer_patients women cancer_surviv
11.54	378	african_american white ethnic racial african_americans black race whites
11.54	548	obesity weight bmi obese overweight weight_loss body_mass_index kg

Tags

NIH Reporting Categories
Breast Cancer... Cancer... Obesity
NIH Concept Keywords
African American... cancer risk... Clinical Research... Computer Retrieval of Information on

Similar Grants

Similar	Co	NIH Insti	Project/Subprojec	Title	Investigator(s)	#1 Topic	#1 Topic Words	+
0.54		NCI	3K22CA127519-03S1	Beyond Adiposity: Insulin and Inflammation in Postmenopausal Breast Cancer	NUNEZ, NOMELI PANIAGUA	686 (33%)	cancer breast...	
0.54		NCI	5K22CA127519-03	Beyond Adiposity: Insulin and Inflammation in Postmenopausal Breast Cancer	NUNEZ, NOMELI PANIAGUA	686 (33%)	cancer breast...	
0.48		NCI	5R01CA128799-02	Mechanisms for Increased Breast Cancer Risk in Type 2 Diabetes	LEROITH, DEREK	66 (17%)	diabetes diab...	
0.48		NCI	3P30CA013696-36S2 0007	BREAST CANCER RESEARCH	PARSONS, RAMON E	210 (40%)	cancer cancer...	
0.48		NCI	3P30CA013696-36S3 0007	BREAST CANCER RESEARCH	PARSONS, RAMON E	210 (40%)	cancer cancer...	

2009

?

add

delete

AND

Related Grants

?

7960745

Top 100

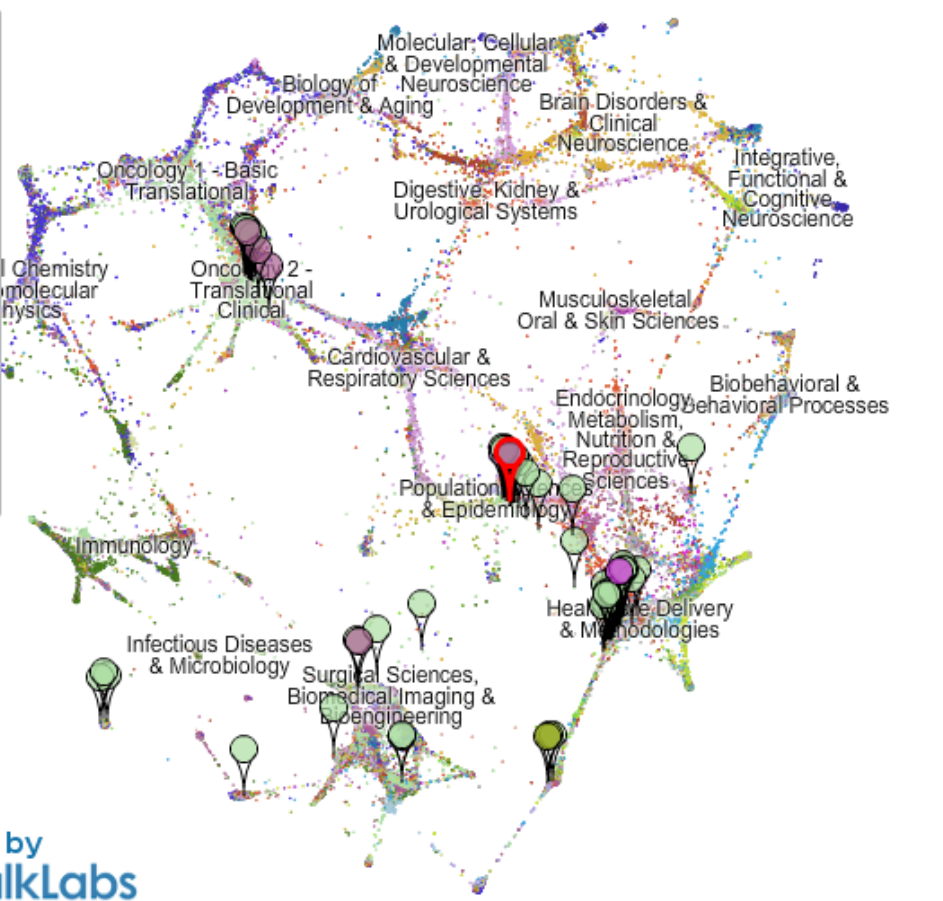
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- Labels: IRG



- FIC
- NCCAM
- NCI
- NCMHD
- NCRR
- NEI
- NHGRI
- NHLBI
- NIA
- NIAAA
- NIAID
- NIAMS
- NIBIB
- NICHD
- NIDA
- NIDCD
- NIDCR
- NIDDK
- NIEHS
- NIGMS
- NIMH
- NINDS
- NINR
- NLM
- OD

Settings

Institutes (3) ?

NIH Inst	#Grants	Count	+
NCI		94	
NCRR		6	
NCMHD		1	

Topics ?

%	Title Words	+
14.7%	breast, cancer, cancer_risk, women, cancer_sui	
11.0%	breast, mammography, mammographic, cance	
9.60%	risk, risk_factors, cancer, prospective, women,	
3.23%	genome_wide_association, loci, genome_wide,	
0.01%	genetic, genetic_genes, gene_expression	

Grants (101) ?

NIH Inst	Grant	+
NCRR	3P20RR011792-10S2 6914 OBESITY, INSULIN RESISTANCE, IGF'S, AND BREAST CANCER RISK IN AFRICAN AMERICANS PI: CUI, YONG	
NCI	3R01CA120562-03S1 Commonly Used Medications and Breast Cancer Recurrence PI: BOUDREAU, DENISE M	
NCI	5R01CA120562-03 Commonly Used Medications and Breast Cancer Recurrence PI: BOUDREAU, DENISE M	
NCI	5R01CA093772-06 Long-term Survivorship in Older Women with Early Stage Breast	



Publications

Discover Publications by clicking on map or using the options below.

Illinois

NIH/NSF

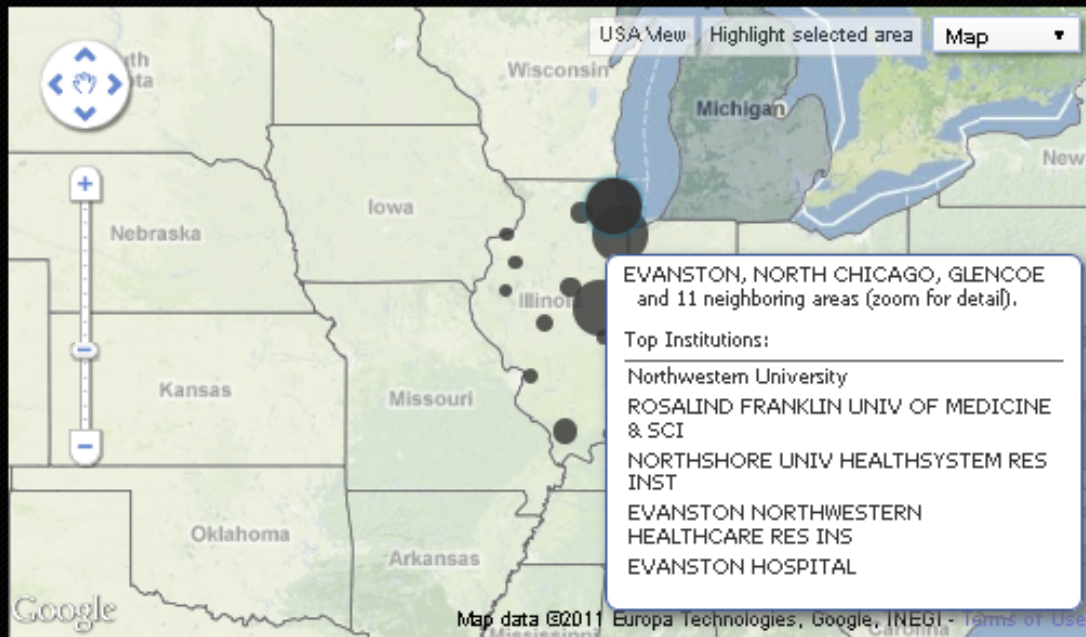
Year(s): 2000-2009

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 - Northwestern University
 - University of Chicago
 - RUSH UNIVERSITY MEDICAL CENTER
 - LOYOLA UNIVERSITY CHICAGO
 - Southern Illinois University at Carbondale

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Year	Publication Number	Grant Number	Federal Agency	Receiving Institution
2009	PMID 19129223	1R01HL094585-01	NIH	CHILDREN'S MEMORIAL HOSPITAL



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Publications

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Illinois

National Science Foundation

Year(s): 2000-2009

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 - economic policy market decision public**
 - technology engineering team technologies

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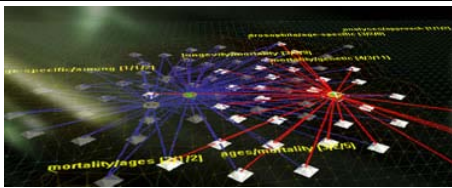
Select multiple topics by clicking on each topic; to de-select, click again.



Search:

Year	Publication Number	Grant Number	Federal Agency	Receiving Institution
2009	PUB 5767715	0848647	NSF	American Bar Foundation

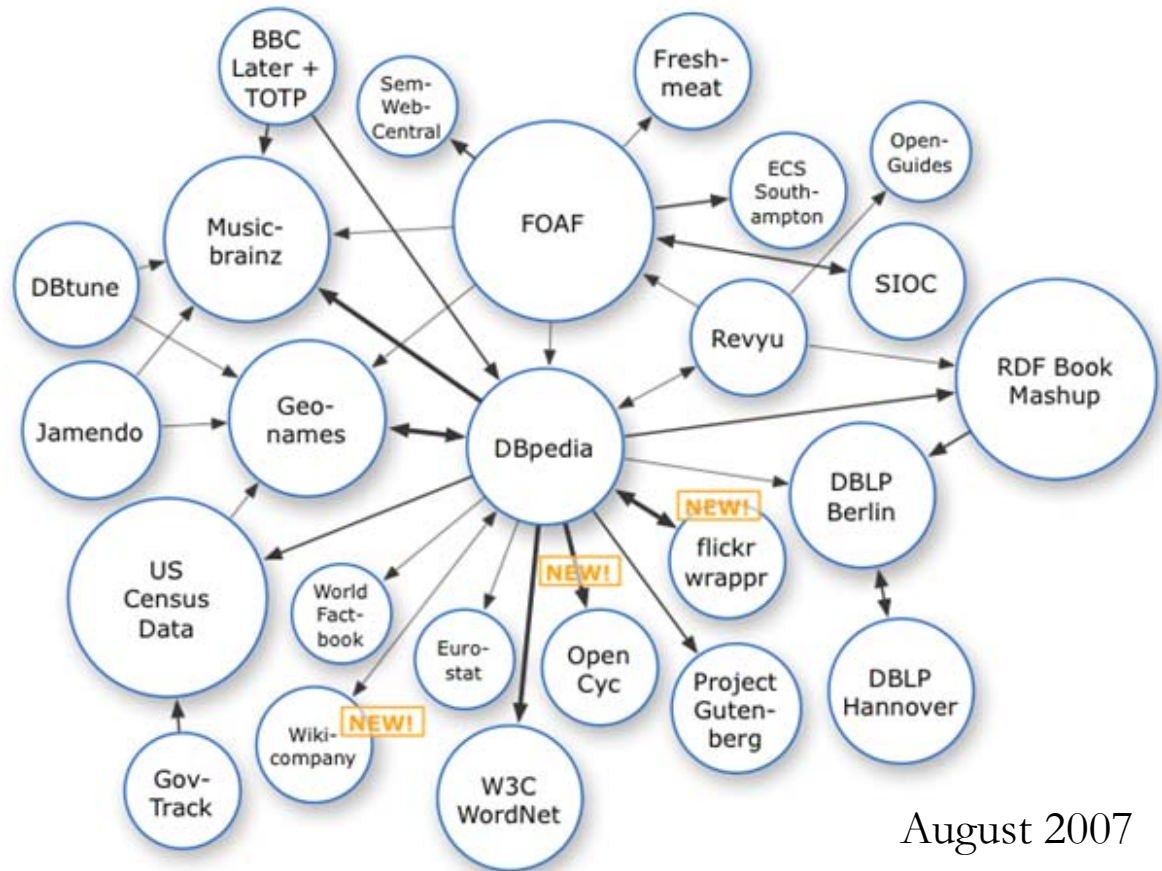
S&T Studies Using Semantic Web Data



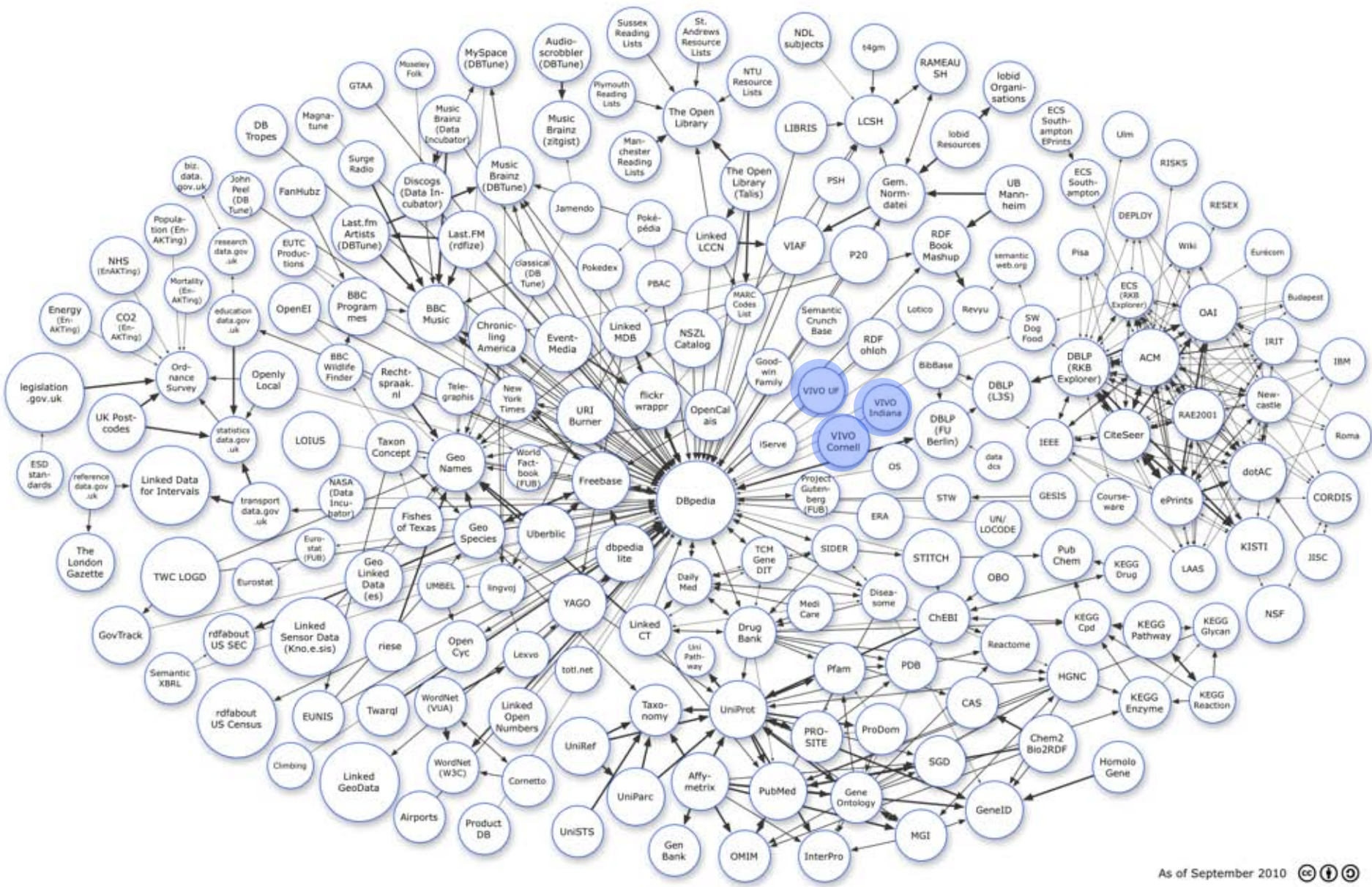
Linked Open Data

- Interlinking existing data silos and
- Exposing them as structured data
- Adding new high quality data relevant for S&T studies

<http://linkeddata.org>



August 2007



VIVO: A Semantic Approach to Creating a National Network of Researchers (<http://vivoweb.org>)

- Semantic web application and ontology editor originally developed at Cornell U.
- Integrates research and scholarship info from systems of record across institution(s).
- Facilitates research discovery and cross-disciplinary collaboration.
- Simplify reporting tasks, e.g., generate biosketch, department report.

The screenshot shows the VIVO website interface. At the top, there is a red header with the Cornell University logo and the text 'VIVO RESEARCH & EXPERTISE ACROSS CORNELL'. Below the header, there is a navigation bar with links for 'Home', 'People', 'Academic Units', 'Events & Seminars', and 'Research'. The main content area is titled 'VIVO is a research-focused discovery tool' and includes a search bar and a 'Search VIVO' button. There are also sections for 'Making Headlines' with featured articles and a sidebar with 'Faculty and Staff' and 'Upcoming Seminars'.

Funded by \$12 million NIH award.

Cornell University: Dean Krafft (Cornell PI), Manolo Bevia, Jim Blake, Nick Cappadona, Brian Caruso, Jon Corson-Rikert, Elly Cramer, Medha Devare, John Ferreira, Brian Lowe, Stella Mitchell, Holly Mistlebauer, Anup Sawant, Christopher Westling, Rebecca Younes. **University of Florida:** Mike Conlon (VIVO and UF PI), Cecilia Botero, Kerry Britt, Erin Brooks, Amy Buhler, Ellie Bushhousen, Chris Case, Valrie Davis, Nita Ferree, Chris Haines, Rae Jesano, Margeaux Johnson, Sara Kreinest, Yang Li, Paula Markes, Sara Russell Gonzalez, Alexander Rockwell, Nancy Schaefer, Michele R. Tennant, George Hack, Chris Barnes, Narayan Raum, Brenda Stevens, Alicia Turner, Stephen Williams. **Indiana University:** Katy Borner (IU PI), William Barnett, Shanshan Chen, Ying Ding, Russell Duhon, Jon Dunn, Micah Linnemeier, Nianli Ma, Robert McDonald, Barbara Ann O'Leary, Mark Price, Yuyin Sun, Alan Walsh, Brian Wheeler, Angela Zoss. **Ponce School of Medicine:** Richard Noel (Ponce PI), Ricardo Espada, Damaris Torres. **The Scripps Research Institute:** Gerald Joyce (Scripps PI), Greg Dunlap, Catherine Dunn, Brant Kelley, Paula King, Angela Murrell, Barbara Noble, Cary Thomas, Michaeleen Trimarchi. **Washington University, St. Louis:** Rakesh Nagarajan (WUSTL PI), Kristi L. Holmes, Sunita B. Koul, Leslie D. McIntosh. **Weill Cornell Medical College:** Curtis Cole (Weill PI), Paul Albert, Victor Brodsky, Adam Cheriff, Oscar Cruz, Dan Dickinson, Chris Huang, Itay Klaz, Peter Michelini, Grace Migliorisi, John Ruffing, Jason Specland, Tru Tran, Jesse Turner, Vinay Varughese.

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Davis, Valrie I | AST UNIV LIBRA

Positions

- Marston Science Library, Outreach Librarian for Agricultural Sciences 2005 -
- Marston Science Library, Stack Maintenance Supervisor 2001 - 2003

10 publications within the last 10 years (11 total)

RDF

AST UNIV LIBRARIAN

vsdavis@ufl.edu

3522732880

Primary Web Page

- Marston Science Library profile
- UF VIVO

Affiliation Publications Research Background Contact Other

Affiliation

preferred title

Outreach Librarian for Agricultural Sciences

VIVO enabling national networking of scientists

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Home People Organizations Research Events

University of Florida

How do you want to compare?

by Publications

Who do you want to compare?

Search: X

Records 1 - 10 of 13

Entity Name	Publication Count	Entity Type
<input checked="" type="checkbox"/> Interdisciplinary Center for Biotechnology Research	68	UF Center, Agent, Center
<input checked="" type="checkbox"/> Continuing Education	24	UF Department, Agent, Non-Academic Department, Department
<input checked="" type="checkbox"/> Levin College of Law	17	Agent, UF College, College
<input checked="" type="checkbox"/> College of Agricultural and Life Sciences	14	Agent, UF College, College
<input type="checkbox"/> Warrington College of Business Administration	14	Agent, UF College, College
<input type="checkbox"/> Evelyn F. and William L. McKnight Brain	5	UF Center, Agent, Center

Comparing Publications of Organizations in University of Florida

Total Number of Publications

You have selected 4 of a maximum 10 organizations to compare. Clear

- College of Agricultural... 14
- Levin College of Law 17
- Continuing Education 24
- Interdisciplinary Cent... 68

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geriatrics

Home People Organizations Research Events

Search results for 'geriatrics'

Show only results of this type: [people](#) [activities](#) [organizations](#) [research](#)

[AMERICAN GERIATRICS SOCIETY](#)

[Geriatrics Education for Specialty Residents \(Gsr\) Program](#)

[Evidence Based Decision-Making In Geriatric Genitourinary Oncology](#)

[AMERICAN GERIATRICS SOCIETY](#)

[Hartford Geriatrics Leadership Scholar](#)

[Geriatric and Aging Research/Institute on Aging \(UF\)](#)

[ASSN DIR GERIATRICS ACADEMIC PROGRAMS](#)

[US HLTH RESOURCES AND SERV ADMN](#)

[Eufortvyn Study](#)

[2003 Scholar, Hartford Institute of Geriatric Nursing Research, John A. Hartford Institute for Geriatric Nursing, New York University](#)

[Gene Polymorphism and Prevention of Disability](#)

[Supplement to the Ipa for April Tilton](#)

[Cardiac Mitochondrial Biogenesis and Macroautophagy](#)

[AMER ACAD OF NURSING](#)

[The Epidemiology of Stress and the Metabolic Syndrome](#)

[Supplement to a Ipa for April Tilton](#)

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Welcome to VIVO

VIVO is a research-focused discovery tool that enables collaboration among scientists across all disciplines.

Browse or search information on people, departments, courses, grants, and publications.

Search VIVO

Search

Log In

Email: ejc12

Password: *****

Log In

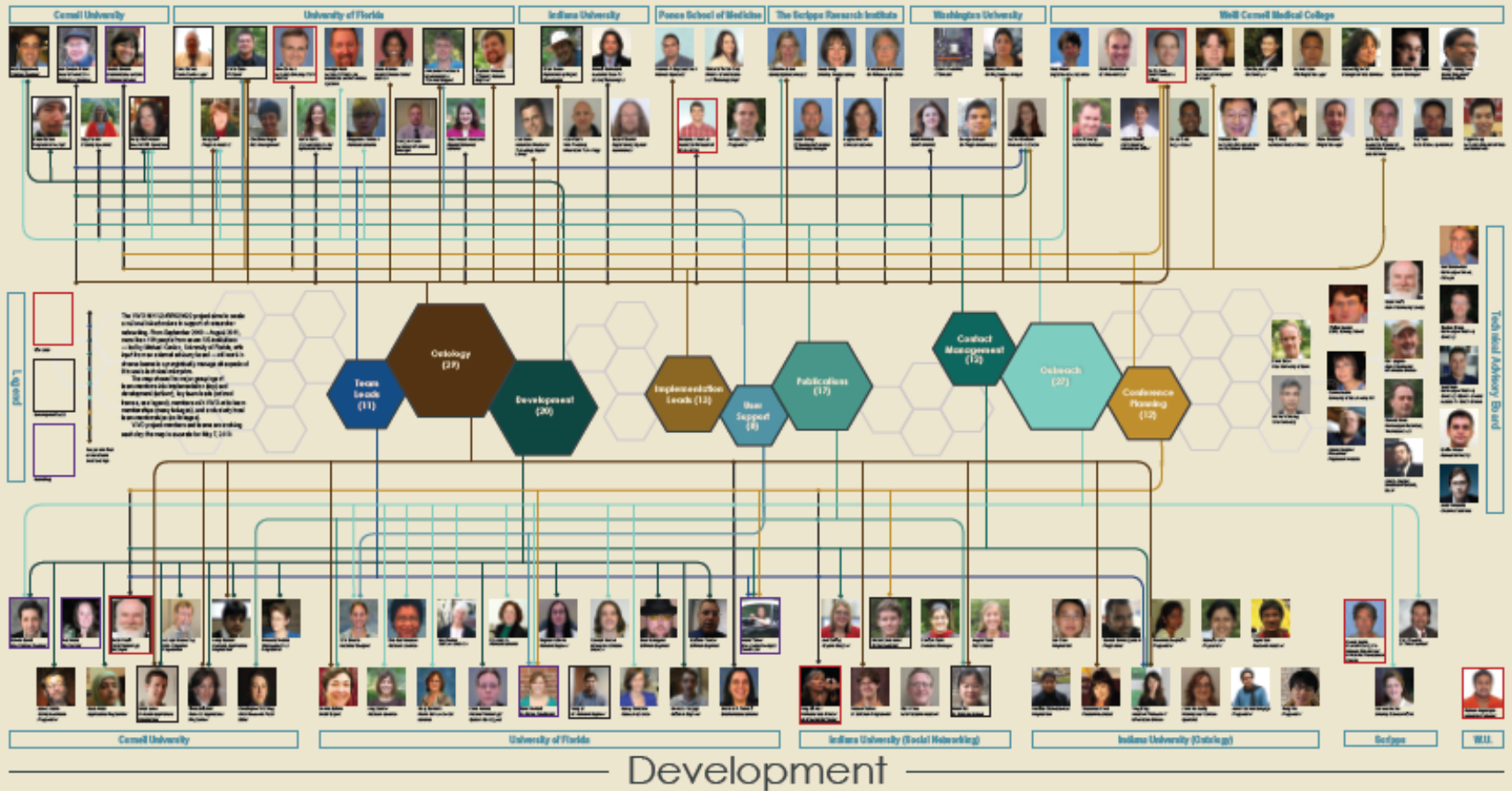
Browse by

- Grants (15,954)
- People (49,727)
- Activities (15,959)
- Courses (110)
- Events (379)
- Organizations (20,328)
- Research (17,667)
- Locations (275)

- Faculty Member (6662)
- Graduate Student (1)
- Librarian (67)
- Non-Academic (7568)
- Non-Faculty Academic (12)
- Person (49727)
- Professor Emeritus (892)

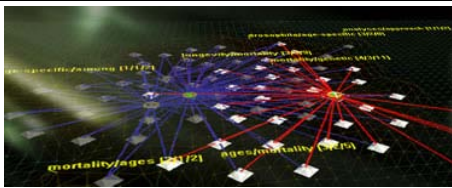
VIVO Enabling National Networking of Scientists Project Members and Teams

Implementation



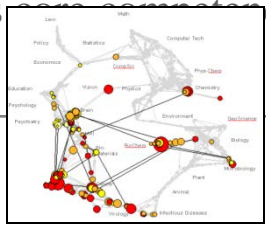
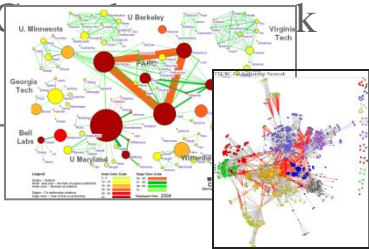
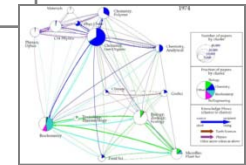
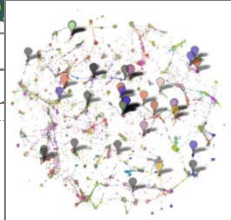
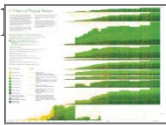
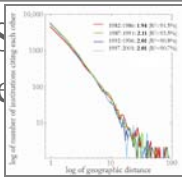
Please send comments and questions to [Janet Colley](mailto:Janet.Colley@indiana.edu) <Janet.Colley@indiana.edu> (design) and [Valerie L. Davis](mailto:Valerie.L.Davis@duke.edu) <Valerie.L.Davis@duke.edu> (data acquisition) and [Katy Somer](mailto:Katy.Somer@vivo.org) (concept).
For more information, visit www.vivoweb.org.

2010.05.07



Type of Analysis vs. Level of Analysis

	<i>Micro/Individual</i> (1-100 records)	<i>Meso/Local</i> (101-10,000 records)	<i>Macro/Global</i> (10,000 < records)
Statistical Analysis/Profiling	Individual person and their expertise profiles	Larger labs, centers, universities, research domains or states	All of NS SA, all of sci
Temporal Analysis (When)	Funding portfolio of one individual	Topic bursts of PNAS	113 Years of P Research
Geospatial Analysis (Where)	Career trajectory of one individual	Mapping a st intellectual l	PNAS
Topical Analysis (What)		flows in research	VxOrd/Topic r NIH funding
Network Analysis (With Whom?)	NSF one work of	U. Minnesota, U. Berkeley, Virginia Tech, Georgia Tech, Bell Labs, U. Maryland	NIH's network connectivity



How do you want to compare?

by Grants

Who do you want to compare?

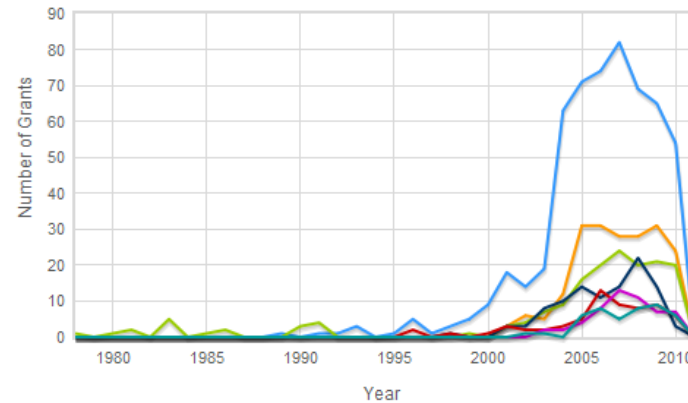
Search: X

Records 1 - 10 of 30 [« First](#) [« Prev](#) [Next »](#) [Last »](#)

Entity Label	Grant Count	Entity Type
<input checked="" type="checkbox"/> Continuing Education	562	UF Department, Agent, Non-Academic Department, Department
<input checked="" type="checkbox"/> Florida Museum of Natural History	203	Museum, Agent
<input checked="" type="checkbox"/> College of Agricultural and Life Sciences	166	Agent, UF College, College
<input checked="" type="checkbox"/> College of Engineering	103	Agent, UF College, College
<input checked="" type="checkbox"/> Evelyn F. and William L. McKnight Brain Institute of the University of Florida	64	UF Center, Agent, Center
<input checked="" type="checkbox"/> International Center	54	UF Department, Agent, Non-Academic Department, Department
<input checked="" type="checkbox"/> Florida Sea Grant	44	UF Center, Agent, Center
<input type="checkbox"/> Whitney Laboratory for Marine Bioscience	42	UF Research Laboratory, Agent, Laboratory, Research Laboratory
<input type="checkbox"/> Water Institute	38	UF Center, Agent, Center
<input type="checkbox"/> College of Dentistry	35	Agent, UF College, College

[Save as CSV](#) [Clear](#)

Comparing Grants of Organizations in University of Florida

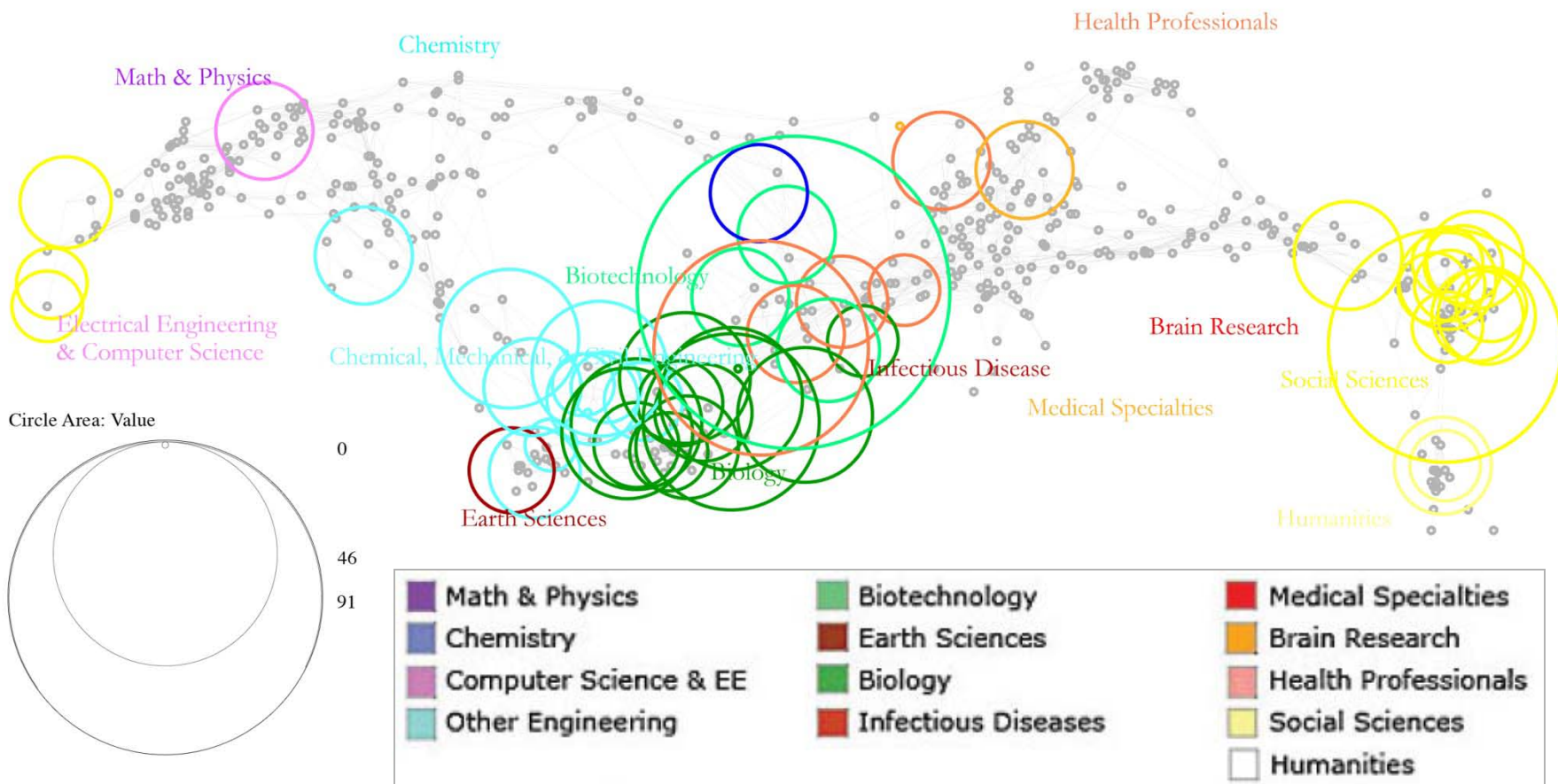


Total Number of Grants

You have selected 7 of a maximum 10 organizations to compare. [Clear](#)

- Florida Sea Grant 44
- International Center 54
- Evelyn F. and William... 64
- College of Engineeri... 103
- College of Agricultur... 166
- Florida Museum of N... 203
- Continuing Education 562

Temporal Analysis (When) Temporal visualizations of the number of papers/funding award at the institution, school, department, and people level



Copyright (c) 2008 The Regents of the University of California

Topical Analysis (What) Science map overlays will show where a person, department, or university publishes most in the world of science. (in work)

Co-Author Network [\(GraphML File\)](#)

Profile

Conlon, Mike

Associate Director and Chief O...

[VIVO profile](#) | [Co-author network](#)

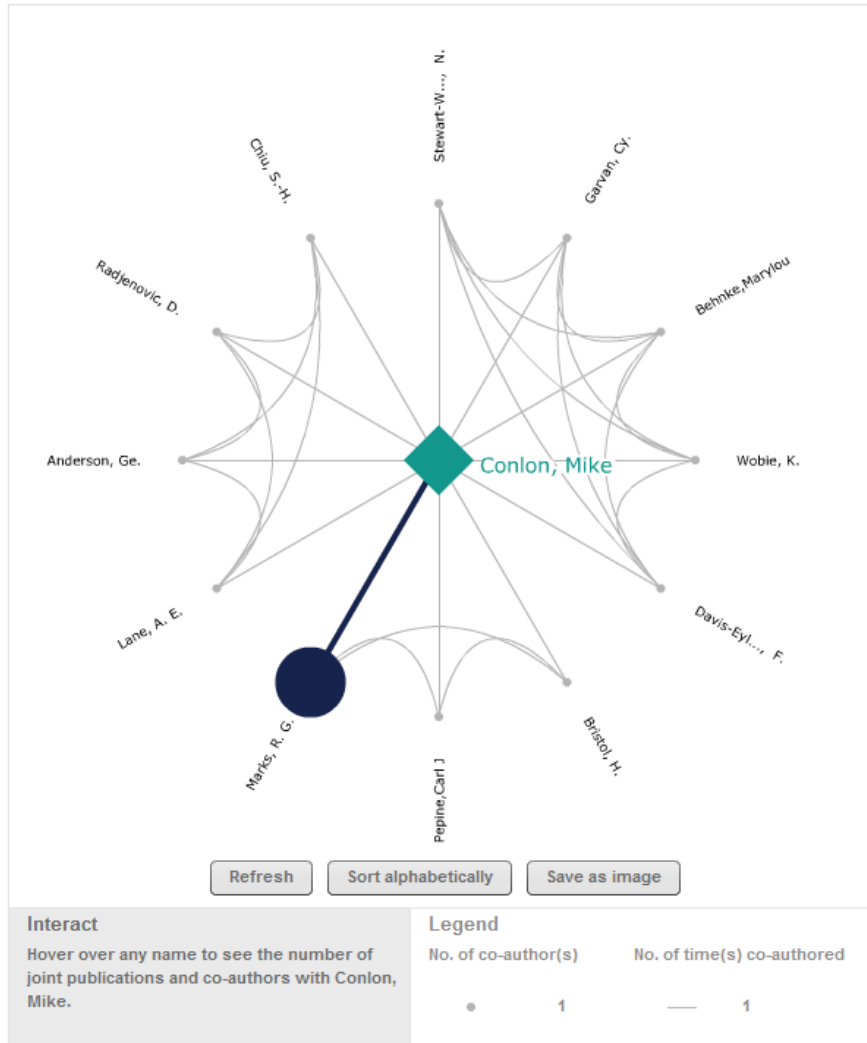
5 Publication(s)

12 Co-author(s)

1991 First Publication

2004 Last Publication

Note: This information is based solely on publications which have been loaded into the VIVO system. This may only be a small sample of the person's total work.



Interact

Hover over any name to see the number of joint publications and co-authors with Conlon, Mike.

Legend

No. of co-author(s) No. of time(s) co-authored

• 1 — 1

Network Analysis (With Whom?) Who is co-authoring, co-investigating, co-inventing with whom? What teams are most productive in what projects?

This XML file does not appear to have any style information associated with it. The document tree is shown below.

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Networks and Complex Systems Research at Indiana University

This VIVO instance provides information on networks and complex systems

- [Faculty](#) and their [departments](#)
- [Publications](#)
- [Grants](#)
- [Courses](#)

at Indiana University. The site was created in support of a NSF IGERT grant application. A major intent is to cross-fertilize between research done in the social and behavioral sciences, research in natural sciences such as biology or physics, but also research on Internet technologies.

The site will be continuously updated to help

- New faculty to get in contact with relevant researchers.
- Faculty and policy makers to pool teams in response to funding solicitations.
- Faculty to coordinate research efforts – collaborations using existing funding/resources.
- Faculty to coordinate teaching.
- Students identify relevant courses, potential advisors, funding.
- Organize the Mon talk series on [Networks and Complex Systems](#).
- Arrange research meetings for visitors with relevant faculty/students

<http://vivo-netsci.cns.iu.edu>

Profile

Daniels, Michael Joseph

PROFESSOR

[VIVO profile](#) | [Co-investigator network](#)

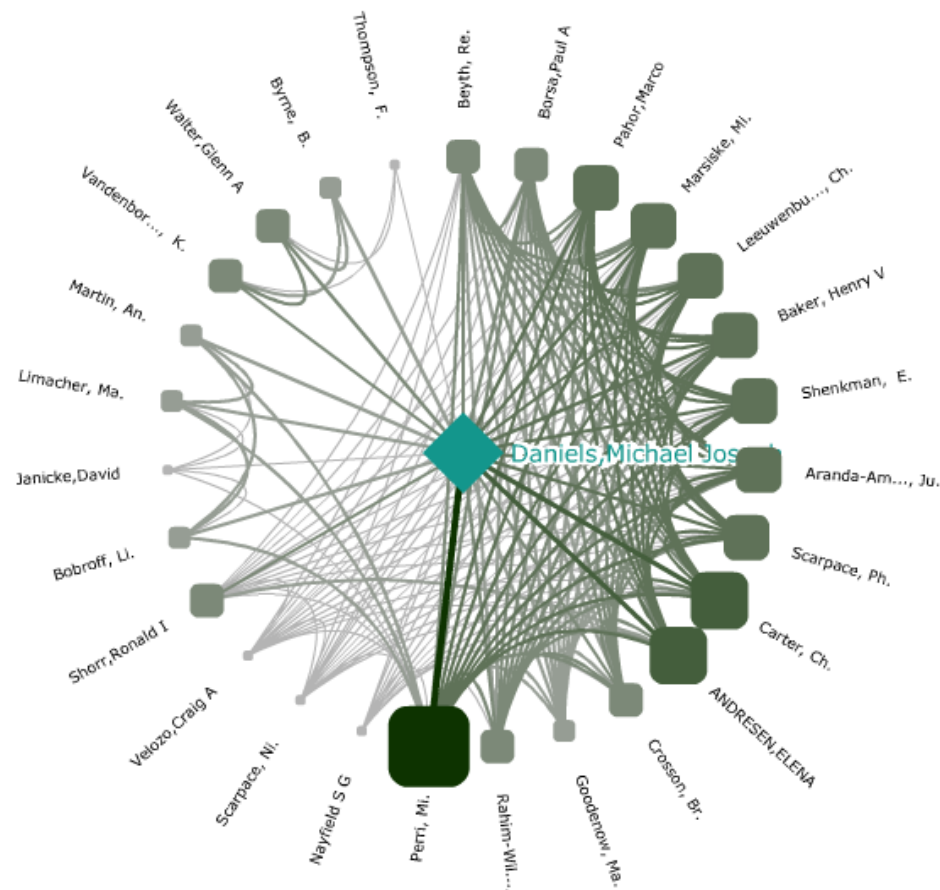
17 Grant(s)

27 Co-investigator(s)

2003 First Grant

2010 Last Grant

Note: This information is based solely on grants which have been loaded into the VIVO system. This may only be a small sample of the person's total work.



Refresh Sort alphabetically Save as image

Interact
Hover over any name to see the number of joint grants and co-investigators with Daniels, Michael Joseph.



Sorted into communities: Co-investigators are placed near one another if they frequently co-investigate grants.

This information is based solely on publications which have been loaded into the VIVO system. This may only be a small sample of the person's total work.

General Statistics

35 publication(s) from 2001 to 2010 [\(.CSV File\)](#)
 67 co-author(s) from 2001 to 2010 [\(.CSV File\)](#)

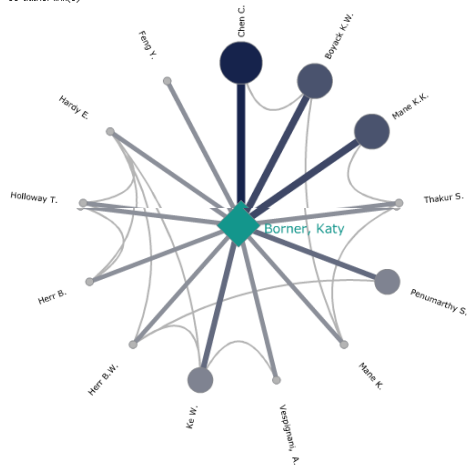
Co-Author Network [\(GraphML File\)](#)

13 co-author(s)
 25 co-author link(s)

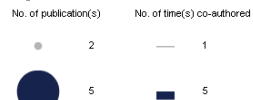
Borner, Katy

Person
[VIVO profile](#) | [Co-author network](#)

35 Publication(s)
 13 Co-author(s)
 2001 First Publication
 2007 Last Publication



Legend



Interact

Hover over any name to see the number of joint publications and co-authors with Borner, Katy. Click on a name to see details on the right.

Thresholding

Only people that co-authored more than 1 paper(s) with Borner, Katy are shown.

Sorted into communities: Co-authors are placed near one another if they frequently collaborate with each other and each other's co-authors in the graph.

[Change to log scale](#) [Refresh](#) [Sort alphabetically](#) [Save as image](#)

Tables

Publications per year [\(.CSV File\)](#)

Year	Publications
2001	2
2002	4
2003	2
2004	7
2005	7
2006	3
2007	10

Co-authors [\(.CSV File\)](#)

Author	Publications with Borner, Katy
Chen C.	5
Boyack K.W.	4
Mane K.K.	4
Ke W.	3
Penumarthy S.	3
Vesplgnani, Alessandro	2
Herr B.	2
Hardy E.	2
Holloway T.	2
Herr B.W.	2
Thakur S.	2
Feng Y.	2
Mane K.	2

Data Download Support

General Statistics

- 36 publication(s) from 2001 to 2010 [\(.CSV File\)](#)
- 80 co-author(s) from 2001 to 2010 [\(.CSV File\)](#)

Co-Author Network

[\(GraphML File\)](#)

Save as Image [\(.PNG file\)](#)

Tables

- Publications per year [\(.CSV File\)](#)
- Co-authors [\(.CSV File\)](#)



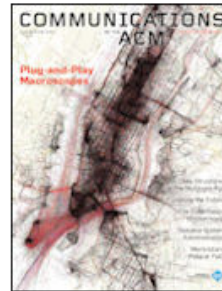
Video and paper at

<http://www.scivee.tv/node/27704>

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Plug-and-Play Microscopes
 Scientists can use frameworks to create microscopes with little help from CS.
 by Katy Börner

CURRENT ISSUE ■ MARCH 2011



Fumbling the Future

Computer and Information Science and Engineering: One Discipline, Many Specialties

B.Y.O.C (1,342 Times and Counting)

TABL
DIGIT
DIGIT
PAST



VIVO Research Networking

<http://vivoweb.org>



Network Workbench Tool & Community Wiki

<http://nwb.cns.iu.edu>



Science of Science (Sci²) Tool

<http://sci2.cns.iu.edu>



Epidemics Cyberinfrastructure

<http://epic.cns.iu.edu>

