

Networks, Collaborations, and Emerging Fields

**Katy Börner, Cyberinfrastructure for Network Science Center
School of Informatics and Computing
Indiana University, USA**

*NSF Workshop on “Methodological Issues in the Evaluation of NSF’s
Interdisciplinary Research Programs”*

National Science Foundation, Arlington, D.C.

October 3, 2014



Map of Scientific Collaborations from 2005-2009



Olivier H. Beauchesne, 2011.
Map of Scientific Collaborations from 2005-2009.

Computed Using Data from Elsevier's Scopus

Visit *Mapping Science* exhibit at <http://scimaps.org> to see 100 S&T maps.



Science Maps in “Expedition Zukunft” science train visited 62 cities in 7 months. Opening was on April 23rd, 2009 by German Chancellor Merkel

LinkedIn: World's Largest Professional Network

<https://www.linkedin.com>

Launched in May 2003. More than 225 million users in June 2013.

in Search for people, jobs, companies, and more... Advanced 394 10

Home Profile Network Jobs Interests

⚠ Don't get locked out of your account! Please add another email to make sure you can always sign in. This is important.

Katy Borner
Member since: February 27, 2005

Primary Email Change/Add
katy@indiana.edu

Password Change

Account Type: Basic
Compare account types

Get More When You Upgrade!
• More communication options
• Enhanced search tools
Upgrade

Profile Privacy Controls Manage Advertising Preferences Email & Password Add & change email address Change password

Invitations (368)

- Eric Archambault, President and CEO, Science-Metrix (Oct 20)
- Jordan Lippman, Founder and Principal Scientist at NameGames, LLC (Oct 17)
- Julie Hewett, CMP, Owner JulNet Solutions, LLC - An Association & Event Management Company (Oct 17)

Messages (26)

- Marc Smith: Marc Smith invites you to... I would like to invite you to join my group on LinkedIn. -Marc (Sep 8)
- LinkedIn: Geoffrey Hobart has added you... (Jul 9)

Exemplary Expert Networking Service

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ResearchGate GmbH

<https://www.researchgate.net>

Launched in May 2008, has a user base of 2.3 million scientists worldwide in Aug .2013

ResearchGate

ASK A QUESTION ADD YOUR PUBLICATIONS

Your profile is 65% complete.

YOUR NETWORK ACTIVITY

Is your email address up to date?

Add an additional email address to make sure you never lose access to your account.

Add email address

Live Feed

Cassidy Sugimoto added 2 publications: 42m

Article: **Venue-author-coupling: a novel measure of identifying disciplines through author communities**

YOUR NETWORK ACTIVITY

Stasa Milojevic followed Cassidy Sugimoto and you. 21h

Mark Musen followed John Fox. 1d

Cassidy Sugimoto followed 26 researchers, including Mike Thelwall and Carol Tenopir. 2d

Robert Light updated their degree: BS (Computer Science), MLS. 2d

Exemplary Expert Networking Service

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Academia.edu—Share Research

<http://www.academia.edu>

Launched in Nov 2010.

Academia.edu share research

Search People, Research Interests and Universities

Home Log In Sign Up

Join a growing community of 4,980,378 researchers

Academia.edu is a place to share and follow research

Share your papers

See analytics on your profile and papers

Follow other people in your field

Sign Up to Academia.edu

Connect with Facebook

Connect with Google

or

First Name

Exemplary Expert Networking Service

6

Google Scholar

<http://scholar.google.com>

Launched in Nov. 2011. Has “unknown” number of profiles.



Anurag Acharya

Google Inc
scholarly communication - search engines
Verified email at google.com

Google scholar

Search Authors

My Citations - Help

Follow this author

5 Followers

Follow new articles
Follow new citations



Show: 20 1-20 Next >

Title / Author	Cited by	Year
Active disks: Programming model, algorithms and evaluation A Acharya, M Uysal, J Saltz ACM SIGPLAN Notices 33 (11), 81-91	361	1998
Sumatra: A language for resource-aware mobile programs A Acharya, M Ranganathan, J Saltz Mobile Object Systems Towards the Programmable Internet, 111-130	258	1997
History-based access control for mobile code G Edjlali, A Acharya, V Chaudhary Proceedings of the 5th ACM conference on Computer and communications ...	222	1998

Co-authors

- Joel Saltz
- Jeff Dean
- Alan Sussman
- Simon Tong
- Steve Lawrence
- Huican Zhu
- Milind Tambe
- Sanjeev Setia
- Bongki Moon
- C.J. Paul (CJ)
- Sanjay Ghemawat
- Jeffrey Hollingsworth
- Maximilian Ibel
- Tao Yang

Exemplary Expert Networking Service

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International Researcher Network Visualization 1.0

CNS Cyberinfrastructure for Network Science Center
cns.iu.edu

Map showing researcher locations across the globe. The map is overlaid with a grid and various colored markers representing different data types and system types.

Data Types

- People
- Publications
- Patents
- Funding
- Courses

System Types

- Convertis
- Elsevier SciVal Experts
- Harvard Catalyst Profiles
- Stanford CAP
- VIVO

Timeline

Jul, 2014

Jul, 2014 Jul, 2014

Play Pause Stop

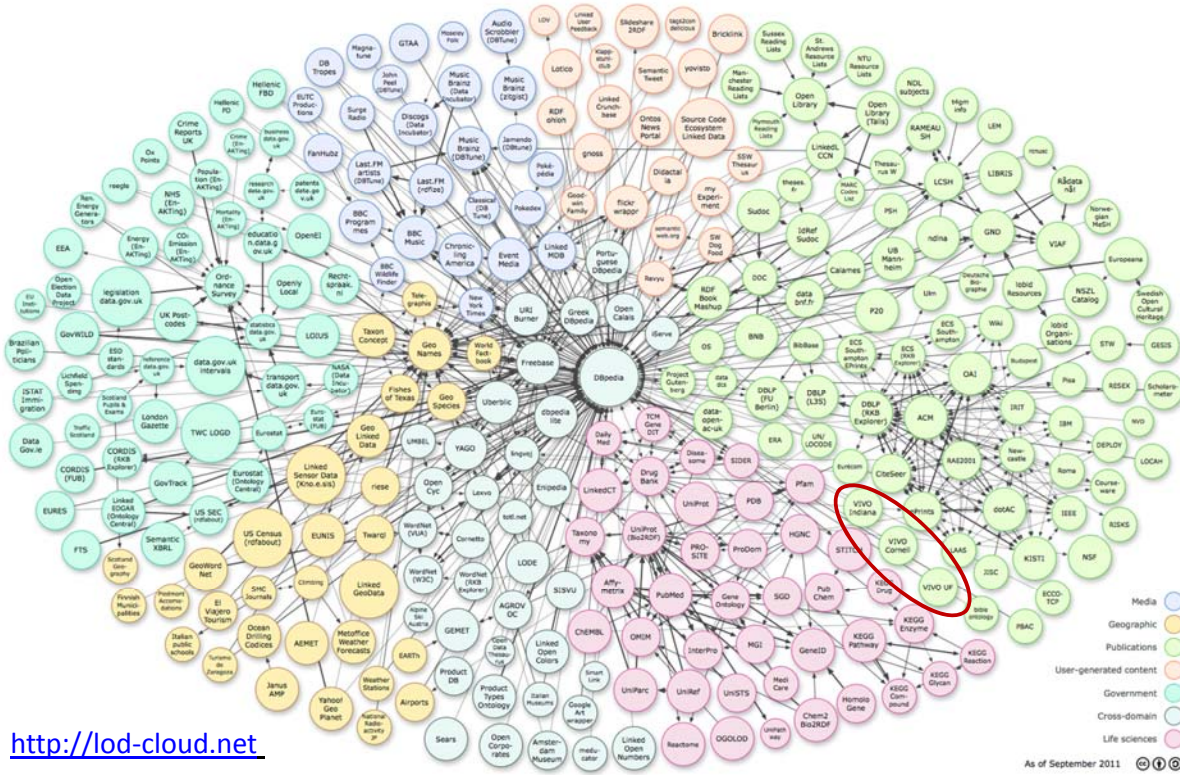
Hide Map ▲ Data Register About

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

Light, Robert, Chin Hua Kong, and Katy Börner. 2013. "An Automated System for Tracking the Growth of Expert Profiling Systems". Joint Conference on Digital Libraries (JCDL).

8

Open Data: Linked Data, 2011



<http://lod-cloud.net>

As of September 2011

Expert Networking Services—60 More

This table provides general information for each tool: name, developing institution, external links to information, whether the code is **Open Source** and known adopters of the software.

Research Networking Tool	Link to Product Page	Developer/Owner	Open Source	Adopters
Activity Insight	Activity Insight	Digital Measures	No	USC Marshall School of Business
C-IKNOW ^{[5][6]}	C-IKNOW	Science of Networks in Communities (SONIC) - Northwestern University	Yes	National Cancer Institute, National Science Foundation
Collaborative Partnership / Profile System	Collaborative Partnership and Research Expertise at UT Arlington	University of Texas at Arlington	Yes	UT Arlington, UT Pan American, University of North Texas Health Science Center, UT El Paso, UT San Antonio, UT Tyler, UT Health Science Center, University of North Texas, UT Dallas, UT Health Center at Tyler, Texas Christian University, (plans to add Gulf Coast Consortia: Rice University, Baylor College of Medicine)
Community Academic Profiles - CAP	Community Academic Profiles	Stanford University	No	Stanford University
Curvita TM Profile Manager	Curvita Profile Manager	SciMed Solutions	No	University of North Carolina
CUSP - Columbia University Scientific Profiles	CUSP	Columbia University	No	Columbia University
Digital Vita	DigitalVita	Center for Dental Informatics - University of Pittsburgh	Yes	University of Pittsburgh, Pitt Health Sciences Center
Elsevier's SciVal Experts (formerly Collexis Expert Profiling)	SciVal Experts	Elsevier	No	45+ implementations worldwide containing profiles for researchers at 65+ institutions. Customers include Johns Hopkins University, Memorial Sloan-Kettering, Northwestern University, REACH NC, University of Michigan, University of Texas MD Anderson Cancer Center, and several institutions in Asia-Pacific, Europe and Latin America. See SciVal

http://en.wikipedia.org/wiki/Comparison_of_Research_Networking_Tools_and_Research_Profiling_Systems

Example:

Identifying (and Evaluating) 'Microbiome' Research

Using existing systems to identify expertise on 'Microbiome'

- CTSA DIRECT2Experts a pilot national network to demonstrate interoperability among research-networking platforms:
<http://direct2experts.org>
- NSF Award Search:
<http://www.nsf.gov/awardsearch>
- NIH Reporter:
<http://projectreporter.nih.gov>
- European Commission CORDIS FP7 data:
http://cordis.europa.eu/fp7/projects_en.html

To support

- Foresight + Context
- LOCAL Strategic Decision Making
- GLOBAL Networks and Insight



http://academy.asm.org/images/stories/documents/FAQ_Human_Microbiome.pdf



Phase 1 - Aggregate Search

Enter a search phrase, such as "informatics" in the form below to search for experts.

Find Experts:

Below are the number of matching people at participating institutions. Click an institution name to view the list of people. As you move your mouse over the different institution names, you will see important notes about that institution's data and a site preview on the right.

Institution	Matches
Albert Einstein College of Medicine	13
Arizona State University	4
Arthritis Foundation	8
Baylor College of Medicine	X
Boston University	X
Case Western Reserve University	19
Cornell University	34
CTSI at Children's National	7
David Geffen School of Medicine at UCLA	0
Educatio Társadalmi Szolgálató Nonprofit Kft.	2
Georgia Regents University	4
Harvard University	187
Indiana CTSI	0
Indiana University School of Medicine	6
Instituto Politecnico Nacional	0
John Hopkins University	24

Data Comments

Harvard University

Site Preview



Institution	Matches
Harvard University	187
University of Colorado Profiles	66
University of Florida	64
University of Michigan	44
Cornell University	34
University of Minnesota - Twin Cities Campus	33
University of Washington	27
John Hopkins University	24
UC Davis Health System	22
Case Western Reserve University	19
The University of Arizona	19
University of Maryland	17
University of Miami	17

808 experts found



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Harvard Catalyst Profiles

Keywords

Last Name

Institution

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Search Results (8) [More Search Options](#)

Click the **Why** column to see why an item matched the search.

Match	Type	Why
Microbiome, disease, and immune cell regulation in humans	Mentoring - Current Student Opportunity	Why?
Searching for Rare Bacterial Phyla in the Human Oral Microbiome	Mentoring - Completed Student Project	Why?
Identification of phenotypic subtypes of hidradenitis suppurativa through investigation of re-epithelialization and skin microbiota	Mentoring - Completed Student Project	Why?
Is Food Allergy an Infectious Disease? Surveying the Microbiome in Food Allergy	Mentoring - Completed Student Project	Why?
Composition of the Supra and Sub Gingival Microbiota in Adult Periodontitis in Subjects who are Current Smokers or who Have Never Smoked	Mentoring - Completed Student Project	Why?
Composition of the Supra and Subgingival Microbiota in Adult Periodontitis Subjects Who are current Smokers or Who Have Never Smoken	Mentoring - Completed Student Project	Why?
ENDOBIONT T. VAGINALIS VIRUSES WITH IMPACT ON WOMEN'S HEALTH	Mentoring - Current Student Opportunity	Why?

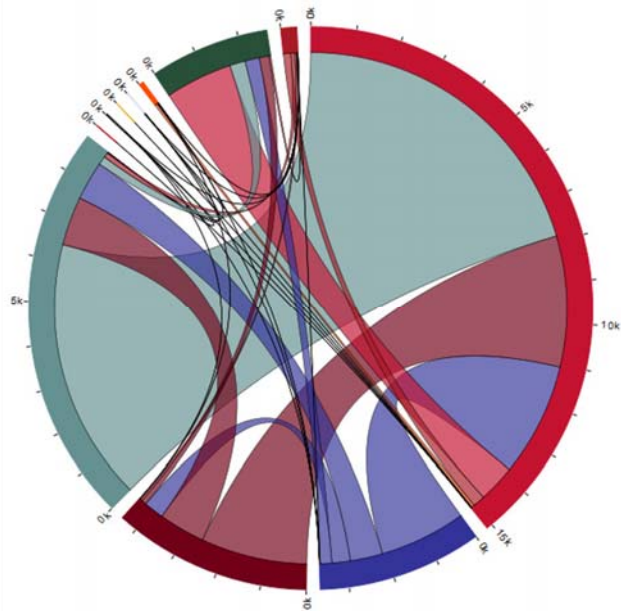
Search Criteria
microbiome

Search Options
[Modify Search](#)
[Search Other Institutions](#)

Filter by Type

- All (499)
- People (187)
- Research (303)
- Concepts (1)
- Mentoring (8)**

Institutions		
<input checked="" type="checkbox"/>	Harvard Med School	(15124)
<input checked="" type="checkbox"/>	Northwestern Med School	(3630)
<input checked="" type="checkbox"/>	U. of Minnesota	(4388)
<input checked="" type="checkbox"/>	U. California at San Fran	(8874)
<input checked="" type="checkbox"/>	Cornell	(1)
<input checked="" type="checkbox"/>	Cornell Medical	(32)
<input checked="" type="checkbox"/>	Ponce School of Med	(3)
<input checked="" type="checkbox"/>	Scripps Research Institute	(22)
<input checked="" type="checkbox"/>	Univ. of Florida	(100)
<input checked="" type="checkbox"/>	Washington U at St. Louis	(2635)
<input checked="" type="checkbox"/>	Mendeley	(352)



Inter-Institutional Collaboration Explorer

This visualization shows information about “collaborative publications” found at 2 or more Researcher Networking websites.

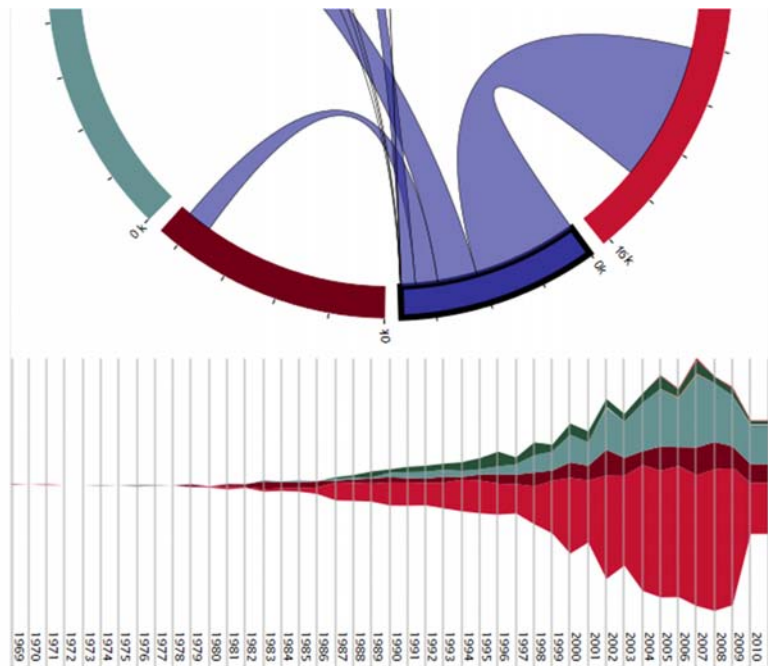
The idea that institutions don't work together and that biomedical research is conducted in silos is not true. Researchers, even when separated by great distances, are in fact willing to work together, and this visualization demonstrates that they often do.

Contact: Nick Benik (nbenik@gmail.com), Harvard Medical School, Boston, MA.

URL: <http://xcite.hackerceo.org/VIVOviz>

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Institutions		
<input checked="" type="checkbox"/>	Harvard Med School	(1813)
<input checked="" type="checkbox"/>	Northwestern Med School	(3630)
<input checked="" type="checkbox"/>	U. of Minnesota	(396)



Inter-Institutional Collaboration Explorer

The outer solid colored arcs represent the 11 institutions. The size of the arc is proportional to the number of collaborative publications found on the site. The inner colored bands represent the number of collaborative publications found between the two institutions that each band connects. Clicking an institution's arc will hide any bands not connected to that institution and will display a timeline of when that institution's collaborative publications were written.

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Simple Search Results

Search award for:

Export up to 3,000 Awards: [CSV](#) | [XML](#) | [Excel](#) | [Text](#) | [Email this Link](#) | [Export All Results](#)

Sort By: Relevance Results size: 30 per page Table | List Page 1 of 2 Displaying 1 - 30 of 54

You Searched For: microbiome

Active Awards: true

Refined by:

State: Alabama(1) California(2) Connecticut(1) District of Columbia(1) Delaware(2) Show More ...

NSF Organization: OFFICE OF THE DIRECTOR(1) Directorate for Mathematical & Physical Sciences (7) Directorate for Social, Behavioral & Economic Sciences (4) Directorate for Computer & Information Science & Engineering (2) Directorate for Geosciences(5) Directorate for Engineering(7) Directorate for Biological Sciences(22) Directorate for Education & Human Resources (6)

Award Amount: Less than or equal \$50,000(7) Between \$50,001 - \$100,000(2) Between \$100,001 - \$500,000(21) Between \$500,001 - \$1,000,000(16) More than \$1,000,000(8)

Award Instrument: Standard Grant(37) Continuing Grant(15) Fellowship(2)

Exploring the Niche Space of Human Microbiome Functions through Convex Geometry and Evolutionary Genomics
Award Number:1069303; Principal Investigator:Katherine Pollard; Co-Principal Investigator:; Organization:The J. David Gladstone Institutes;NSF Organization:DMS Award Date:08/15/2011; Award Amount:\$1,508,535.00; Relevance:43.04;

DISSERTATION RESEARCH: Is richer always better? Testing the biotic resistance hypothesis in ornamental fish microbiomes
Award Number:1402051; Principal Investigator:Linda Amaral Zettler; Co-Principal Investigator:Katherine Smith, Victor Schmidt; Organization:Marine Biological Laboratory;NSF Organization:DEB Award Date:07/01/2014; Award Amount:\$20,865.00; Relevance:43.04;

ATD: Algorithms for the analysis of microbiomes
Award Number:1043089; Principal Investigator:Khalid Sayood; Co-Principal Investigator:Steven Hinrichs; Organization:University of Nebraska-Lincoln;NSF Organization:DMS Award Date:09/15/2011; Award Amount:\$246,367.00; Relevance:43.04;

DIMENSIONS: Collaborative Research - Uncovering the novel diversity of the copepod microbiome and its effect on habitat invasions by the copepod host
Award Number:1046371; Principal Investigator:Joana Carneiro da Silva; Co-Principal Investigator:; Organization:University of Maryland at Baltimore;NSF Organization:OCE Award Date:11/01/2010; Award Amount:\$1,640,357.00; Relevance:43.04;

SusChEM: Converting Urban Wastes into Longer Chain Chemicals
Award Number:1336186; Principal Investigator:Largus Angenent; Co-Principal Investigator:; Organization:Cornell University;NSF Organization:CBET Award Date:09/01/2013; Award Amount:\$391,302.00; Relevance:43.04;

Adaptation to diet and its impact on the gut microbiome and genomic variation
Award Number:1317217; Principal Investigator:Sarah Tishkoff; Co-Principal Investigator:; Organization:University of Pennsylvania;NSF Organization:BCS Award Date:08/15/2013; Award Amount:\$306,600.00; Relevance:43.04;

DIMENSIONS: Collaborative Research - Uncovering the novel diversity of the copepod microbiome and its effect on habitat invasions by the copepod host
Award Number:1046372; Principal Investigator:Carol Lee; Co-Principal Investigator:; Organization:University of Wisconsin-Madison;NSF Organization:OCE Award Date:11/01/2010; Award Amount:\$726,561.00; Relevance:43.04;

EFRI-MIKS: Control of Signaling and Function by Design with Spatially Pre-Structured Microbial Communities
Award Number:1137089; Principal Investigator:Rustem Ismagilov; Co-Principal Investigator:Sarkis Mazmanian, Alexander Chervonsky, Folker Meyer, Christopher Henry; Organization:California Institute of Technology;NSF Organization:EFRI Award Date:09/01/2011; Award Amount:\$1,998,143.00; Relevance:41.65;

CAREER: Annotating the Microbiome using Machine Learning Methods
Award Number:1252318; Principal Investigator:Huzefa Rangwala; Co-Principal Investigator:; Organization:George Mason University;NSF Organization:IIS Award Date:03/01/2013; Award Amount:\$550,000.00; Relevance:41.65;

The Effect of the Microbiome on the Rice Transcriptome
Award Number:0923806; Principal Investigator:Harsh Bais; Co-Principal Investigator:Julin Maloof, Jonathan Eisen, Venkatesan Sundaresan;



69 NSF projects found.

They were awarded to 53 unique institutions.

Institution	#Awards	Institution	Sum of Awarded AmountToDate
University of Illinois at Urbana-Champaign	3	University of Illinois at Urbana-Champaign	3,263,277
University of Texas at Austin	3	University of North Carolina at Chapel Hill	2,496,169
University of Wisconsin-Madison	3	University of Delaware	2,143,438
Cornell University	2	University of Connecticut	2,000,000
Duke University	2	California Institute of Technology	1,998,143
Gordon Research Conferences	2	University of Wisconsin-Madison	1,758,524
Marine Biological Laboratory	2	University of Maryland at Baltimore	1,734,624
Michigan State University	2	University of Utah	1,700,000
SUNY at Stony Brook	2	The J. David Gladstone Institutes	1,508,535
University of Delaware	2	Cornell University	1,342,609
University of Maryland at Baltimore	2	University of Washington	1,019,366
University of Nebraska-Lincoln	2	Florida Agricultural and Mechanical University	997,214
University of Washington	2	Washington State University	950,000
		Bigelow Laboratory for Ocean Sciences	900,000
		University of Hawaii	842,000
		TERC Inc	822,919
		Michigan State University	779,220
		University of Nebraska-Lincoln	741,685
		University of Texas at Austin	726,806
		Marine Biological Laboratory	723,528
		University of Miami School of Medicine	708,360



69 NSF projects found.
They were awarded to 53 unique institutions.



Search Results

Back to Query Form Save Query Share Query

Export All Projects GO

T	Act	Project	Year	Sub #	Project Title	Contact PI/ Project Leader	Organization	FY	Admin IC	Funding IC	FY Total Cost by IC	Similar Projects
<input type="checkbox"/>	5	R01	NR014792	02	A MULTOMIC APPROACH TOWARDS DECIPHERING THE INFLUENCE OF THE MICROBIOME ON PRE	AAGAARD-TILLERY, KJERSTI MARE	BAYLOR COLLEGE OF MEDICINE	2014	NINR	NINR	\$539,616	
<input type="checkbox"/>	4	UH2	HG007008	02	HVN H3 AFRICA BIODEPOSITORY INITIATIVE	ARIMKU, ALASH'LE G.	INSTITUTE OF HUMAN VIROLOGY	2013	NHGRI	NICHD OD	\$19,400 \$97,000	
<input type="checkbox"/>	1	U19	AI110819	01	6908 GENOMICS OF ANTIBIOTIC RESISTANCE IN BACTERIAL PATHOGENS	ADAMS, MARK D	J. CRAIG VENTER INSTITUTE, INC.	2014	NIAD		\$310,095	
<input type="checkbox"/>	1	U19	AI110819	01	6912 TECHNOLOGY CORE	ADAMS, MARK D	J. CRAIG VENTER INSTITUTE, INC.	2014	NIAD		\$1,239,523	

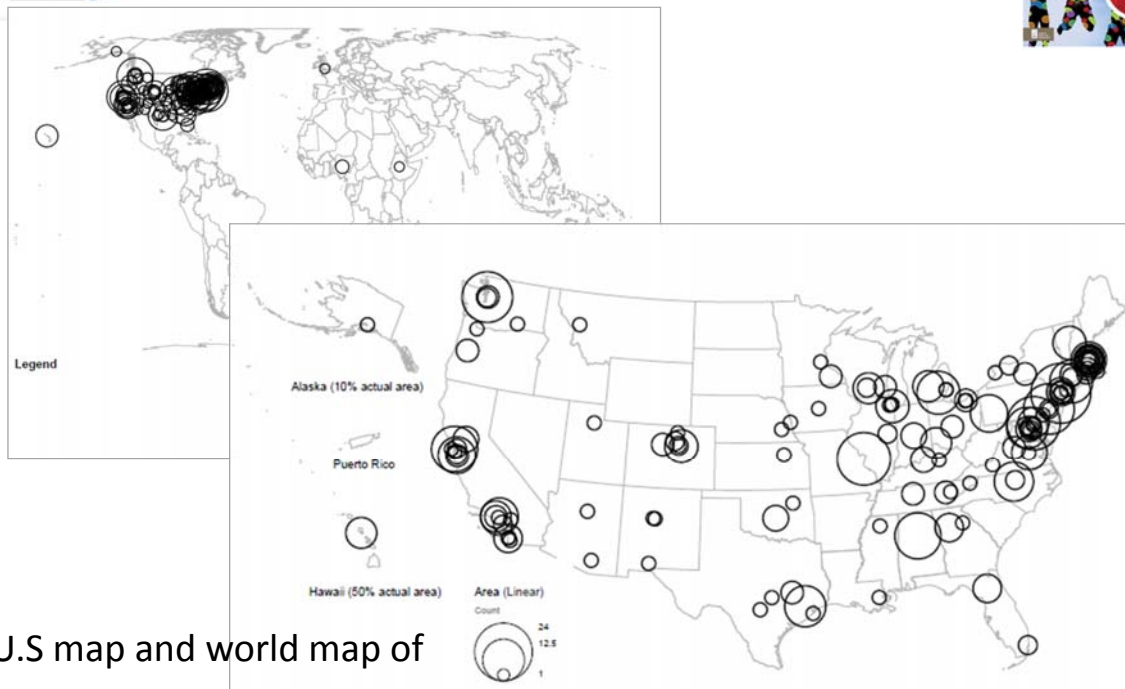
537 NIH awards found on 7/19/2014.

544 NIH awards found on 7/20/2014. Omitted 34 records with missing values.




Institution	#Awards	Year	#Awards
NEW YORK UNIVERSITY SCHOOL OF MEDICINE	24	2009	1
UNIVERSITY OF MARYLAND BALTIMORE	19	2010	3
WASHINGTON UNIVERSITY	18	2011	7
UNIVERSITY OF PENNSYLVANIA	17	2012	36
UNIVERSITY OF WASHINGTON	17	2013	166
UNIVERSITY OF ALABAMA AT BIRMINGHAM	14	2014	324
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO	14		
UNIVERSITY OF MICHIGAN	12		
BAYLOR COLLEGE OF MEDICINE	11		
J. CRAIG VENTER INSTITUTE, INC.	11		
YALE UNIVERSITY	11		
UNIV OF NORTH CAROLINA CHAPEL HILL	10		
CALIFORNIA INSTITUTE OF TECHNOLOGY	9		
UNIVERSITY OF PITTSBURGH	9		
BROAD INSTITUTE, INC.	8		
STANFORD UNIVERSITY	8		
VIRGINIA COMMONWEALTH UNIVERSITY	8		
DARTMOUTH COLLEGE	7		
UNIVERSITY OF CHICAGO	7		

Country	#Awards
UNITED STATES	503
CANADA	2
NIGERIA	2
ETHIOPIA	1
SOUTH AFRICA	1
UNITED KINGDOM	1



U.S map and world map of #projects per geolocation.



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Find a project

Project details are published on CORDIS after the negotiation and the signature of the grant agreement between the European Commission and the beneficiaries. This follows the publication of [calls for proposals](#) and the selection procedure where they are selected by the European Union to be partly financed by the Commission.

Search Projects:

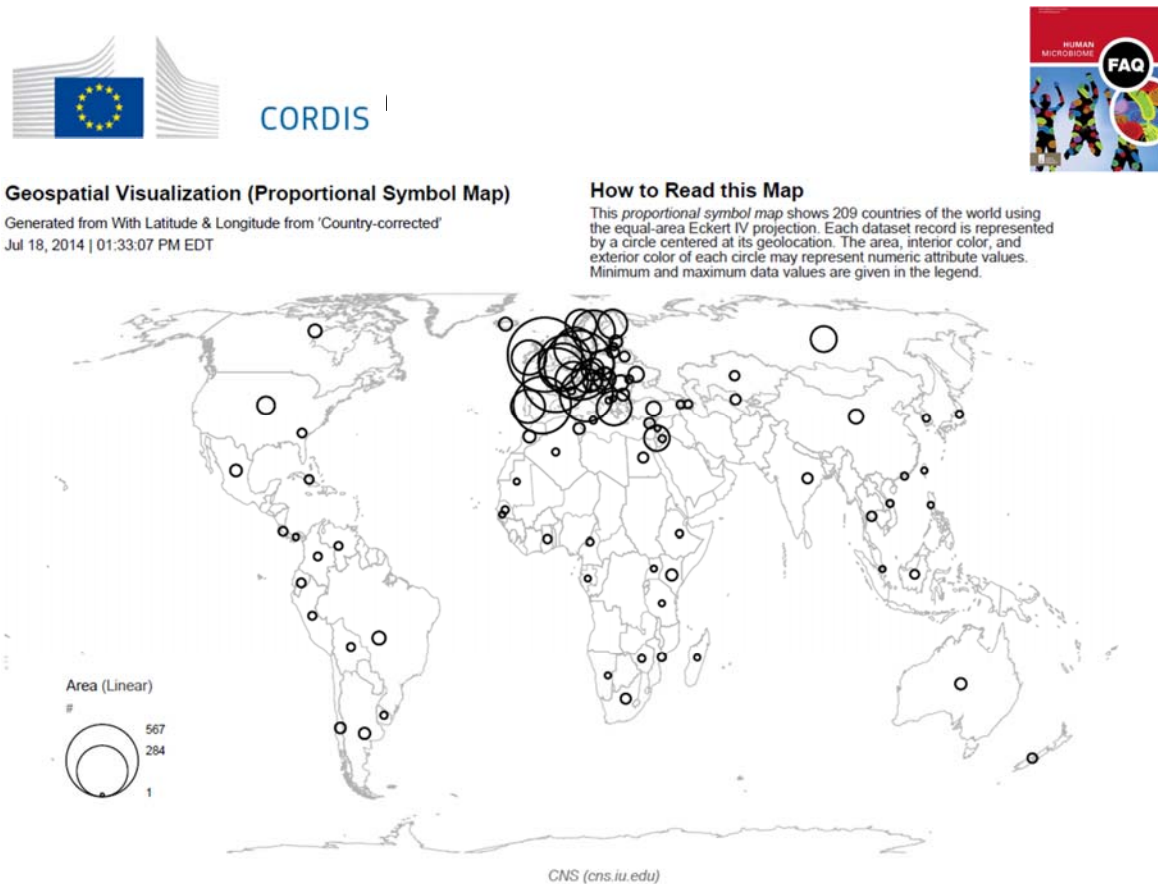
Enter search term(s):

Project Acronym:

* You can search by individual terms or project acronyms from this page. Other search options are available on the advanced search page

1,406 projects with 4,326 participating countries (96 unique) found

23



24

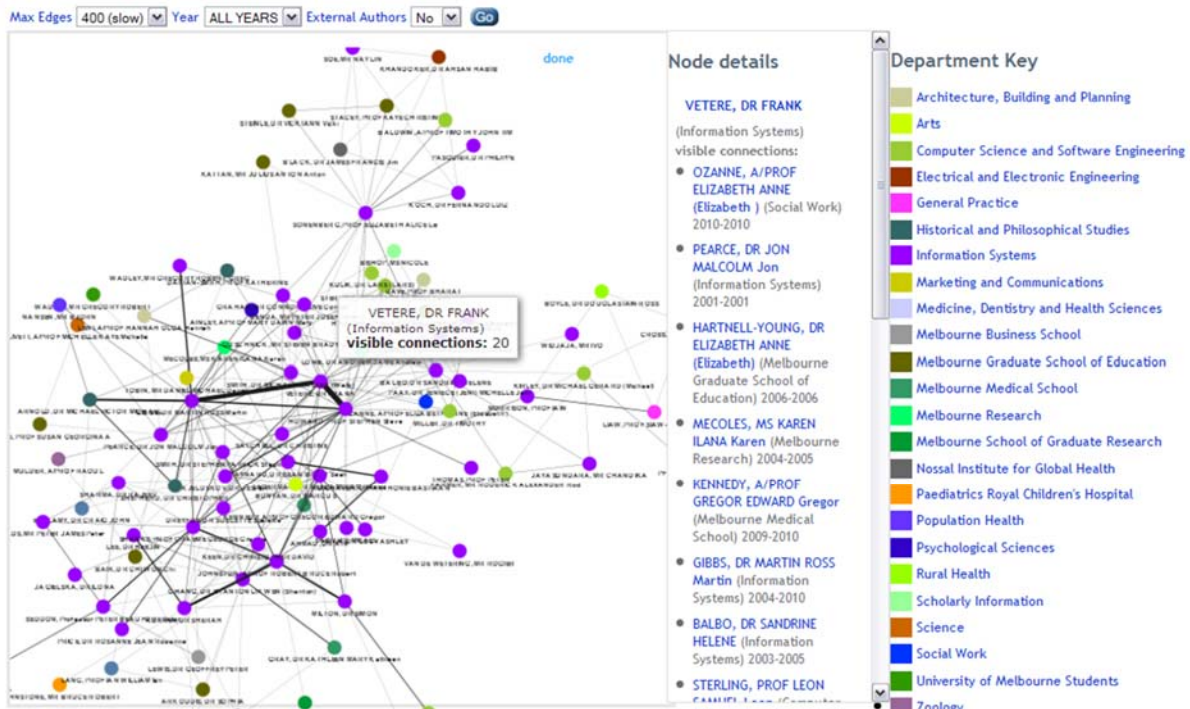
International Researcher Network Visualization 1.0

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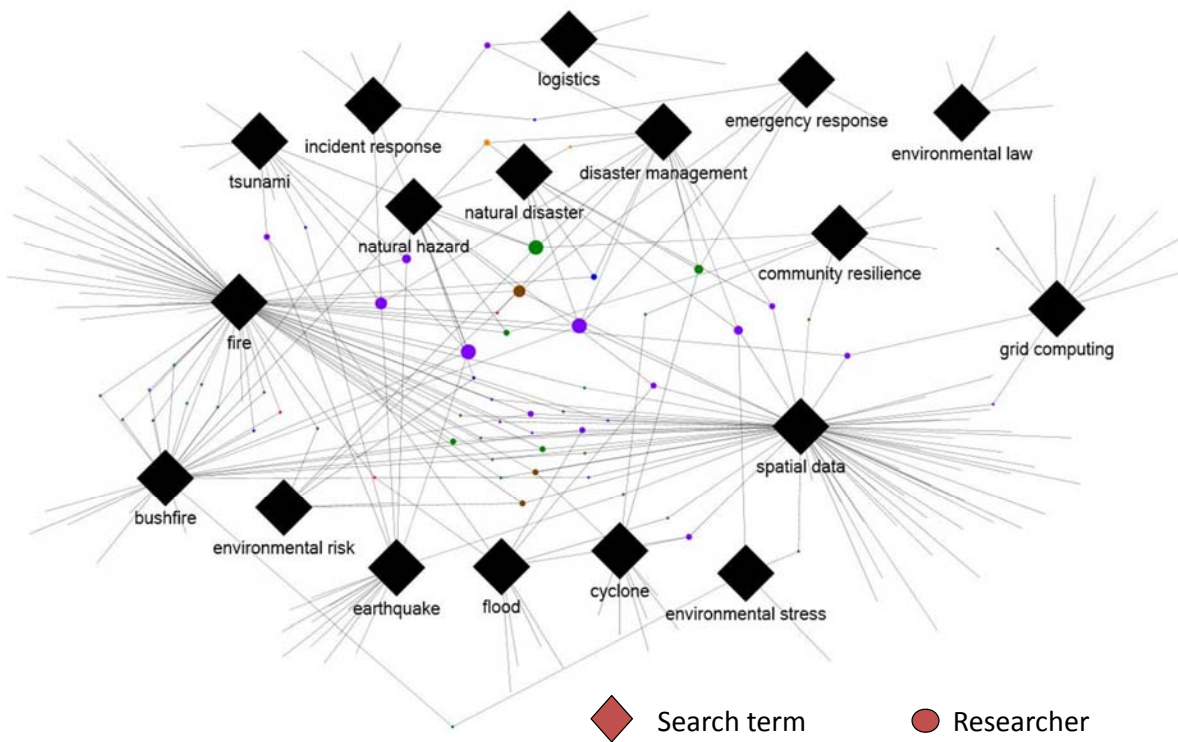
Light, Robert, Chin Hua Kong, and Katy Börner. 2013. *"An Automated System for Tracking the Growth of Expert Profiling Systems"*. Joint Conference on Digital Libraries (JCDL).

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Co-authorship network for the department of Information Systems

Source: Melbourne Research Windows. Contact Simon Porter simon.porter@unimelb.edu.au



Bimodal network of search terms and researchers extracted from research profile search results to show the **University's capability in Disaster Management** to the Government
 Contact: simon.porter@unimelb.edu.au

International Researcher Network Visualization 1.0

CyberInfrastructure for Network Science Center
cns.iu.edu

Data Types

- People
- Publications
- Patents
- Funding
- Courses

System Types

- Converis
- Elsevier SciVal Experts
- Profile RNS
- Lattice Grid
- Loki
- Stanford CAP
- VIVO

Timeline

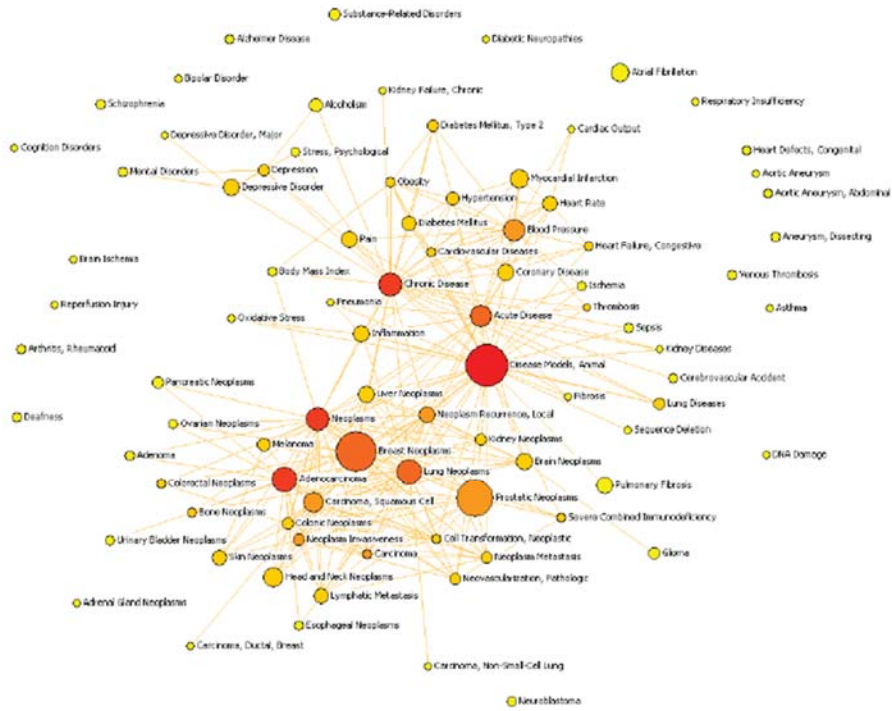
Jul, 2014

Jul, 2014 Jul, 2014

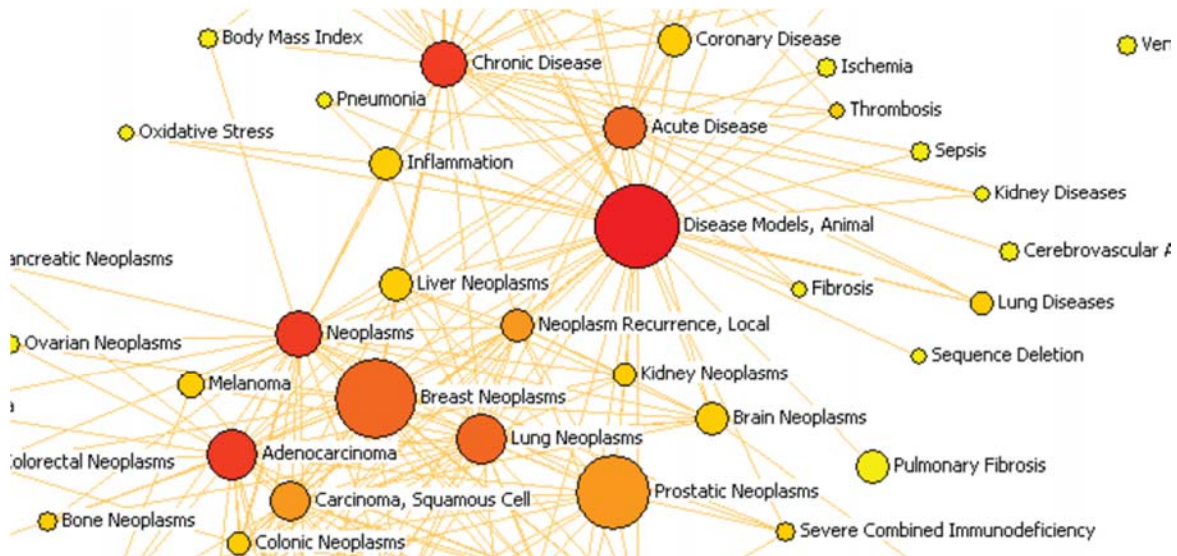
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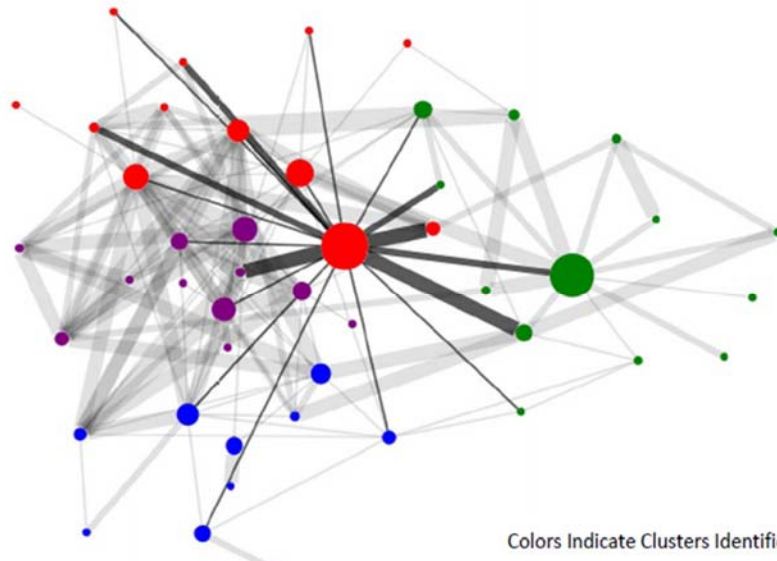
Light, Robert, Chin Hua Kong, and Katy Börner. 2013. "An Automated System for Tracking the Growth of Expert Profiling Systems". Joint Conference on Digital Libraries (JCDL).



Top MeSH Disease Concepts Appearing in PubMed Publications by the University of Michigan Medical School. Links connect concepts where 100+ authors published about both concepts within the span of their careers.
 Contact: Jeffrey Horon, J.Horon@elsevier.com



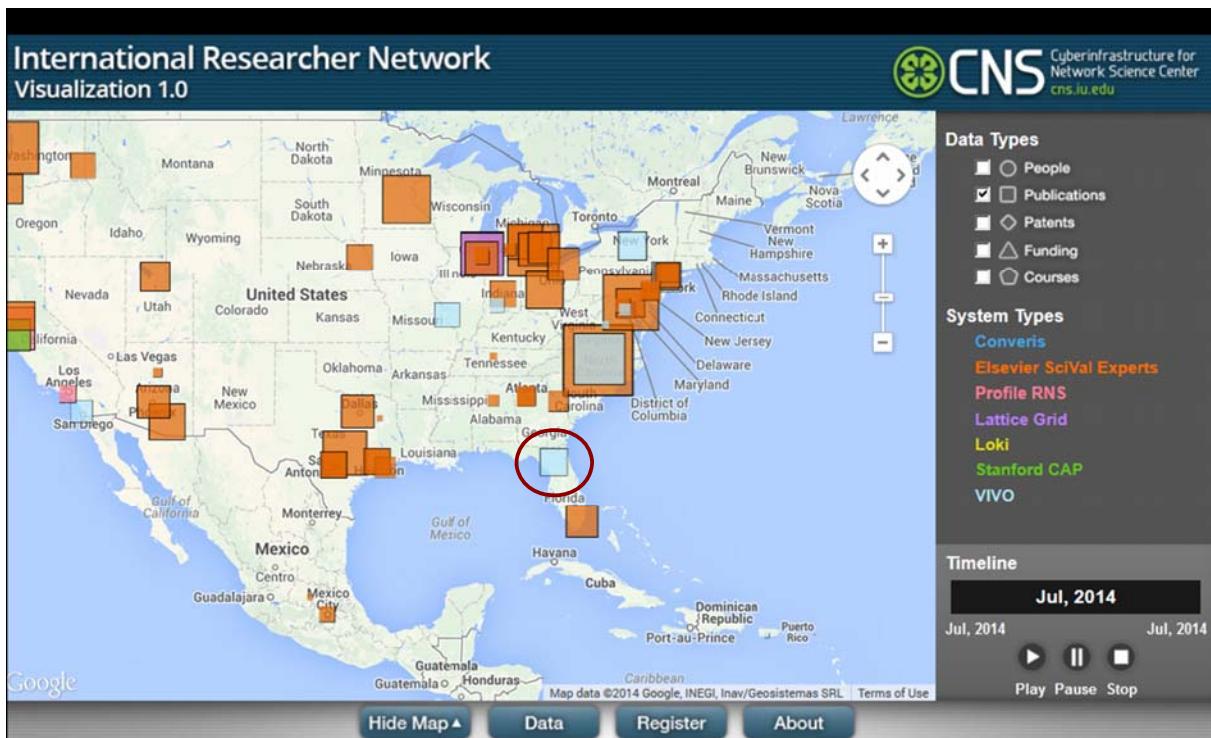
Top MeSH Disease Concepts Appearing in PubMed Publications by the University of Michigan Medical School. Links connect concepts where 100+ authors published about both concepts within the span of their careers.
 This visualization revealed that **animal disease models** were central to disease research at U-M which encouraged additional thought and attention to animal husbandry, animal expenses, and core/shared services overall.
 Contact: Jeffrey Horon, J.Horon@elsevier.com



Colors Indicate Clusters Identified by Algorithm

Key
 ● Researcher ●●● Increasing 'Betweenness Centrality' (Bridging Effect on Network)
 — Co-Authorship — Co-Participation on Sponsored Project — Co-Authorship and Co-Participation on Sponsored Project

P30 Member Collaborations – Sponsored Project Co-Participation and Co-Authorship Network. Used in **successful!** P30 funding application. Shows the PI's relationships with various P30 members, conveying that the PI was not only the formal center of the group but also the informal center and the person who exhibited the highest betweenness centrality. Contact: Jeffrey Horon, J.Horon@elsevier.com



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

Light, Robert, Chin Hua Kong, and Katy Börner. 2013. *"An Automated System for Tracking the Growth of Expert Profiling Systems"*. Joint Conference on Digital Libraries (JCDL).

University of Florida i

Explore 487 publications activity across 554 scientific sub-disciplines i

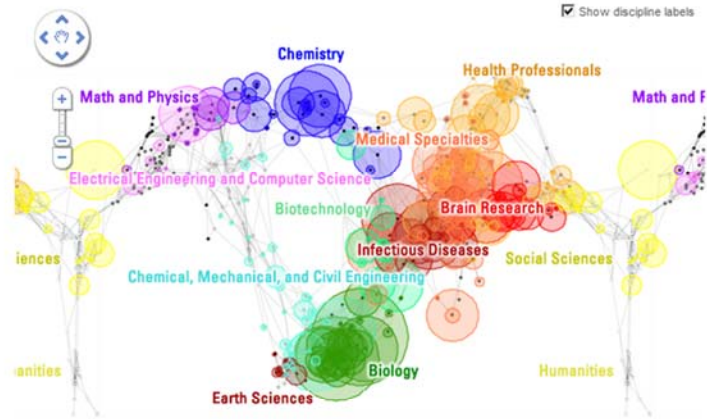
13 Disciplines | 554 Sub-Disciplines i

Search: X

1 - 13 of 554 [First](#) [Prev](#) [Next](#) [Last](#) »

Sub-Disciplines	# of pubs.	% activity
Pest Management Science	24.2	5.0
Wildlife Research	19.1	3.9
Protein Science	13.1	2.7
Clinical Cancer Research	12.6	2.6
Pain	12.0	2.5
Environmental Contamination	11.2	2.3
Insect Physiology	11.1	2.3
Organic Chemistry	10.9	2.2
Marine Biology	10.3	2.1
Computer Aided Molecular Design	10.2	2.1
BioStatistics	9.0	1.9
Dental Education	9.0	1.8
Hormone Research	9.0	1.9

[Export Complete Table](#)



Show discipline labels

Top 290 disciplines shown

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mapped 14.55% of 3,346 publications i

Google

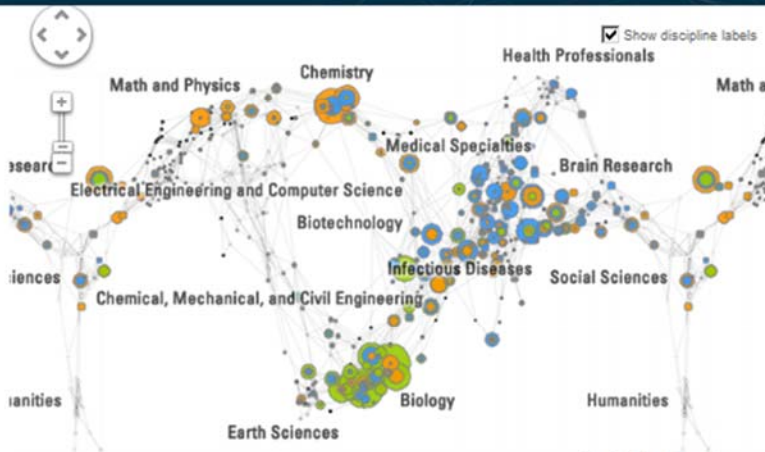
Compare organizations i

Organizations i

Search: X i

1 - 10 of 12 [First](#) [Prev](#) [Next](#) [Last](#) »

Organization	# of pubs.
<input checked="" type="checkbox"/> Office of the Senior Vice President for Health Affairs	2940
<input checked="" type="checkbox"/> Office of the Provost and Senior Vice President for Academic Affairs	1419
<input checked="" type="checkbox"/> Institute of Food and Agricultural Sciences	848
<input type="checkbox"/> Office of the Vice President for Research	393
<input type="checkbox"/> Office of the Senior Vice President for Administration & Business Ventures	149
<input type="checkbox"/> Division of Student Affairs	1
<input type="checkbox"/> Office of Development and Alumni Affairs	1
<input type="checkbox"/> General Counsel	0



Show discipline labels

Top 289 disciplines shown

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Google

Office of the Senior Vice President for Health Affairs		Office of the Provost and Senior Vice President for Academic Affairs		Institute of Food and Agricultural Sciences	
Subdisciplines	# of pubs.	Subdisciplines	# of pubs.	Subdisciplines	# of pubs.
Neuroscience; ...	20.3	Organic Chemistry	19.8	Pest Management ...	24.3
Pain	19.0	BioStatistics	11.0	Wildlife Research	24.1
Clinical Cancer	14.5	Computer Aided	10.0	Insect Physiology	11.1



Make sure to register your institution's researcher networking system at
<http://nrn.cns.iu.edu>

Example: Evaluating Interdisciplinary Research

Measuring Interdisciplinary Scientific Research

Wagner, Caroline, J. David Roessner, Kamau Bobb, Julie Thompson Klein, Kevin W. Boyack, Joann Keyton, Ismael Rafols, and [Katy Börner](#). 2011. "[Approaches to understanding and measuring interdisciplinary scientific research \(IDR\): A review of the literature](#)". *Journal of Informetrics* 5(1): 14-26.




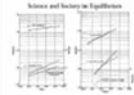



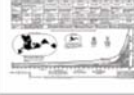












Type of Interdisciplinary

Input	Process	Output
Interdisciplinarity	Interdisciplinarity	Interdisciplinarity

How Measured

What expertise	Shared expertise	#Papers, citations
References are cited	data, methods, tools	products, new expertise
Etc.	Etc.	Etc.

Types of Analysis and Visualization

TYPES	LEVELS		
	MICRO: Individual Level about 1-1000 records	MESO: Local Level about 1001-100,000 records	MACRO: Global Level more than 100,000 records
Statistical Analysis 	 Knowledge Cartography p. 137	 Productivity of Russian life sciences research teams p. 105	 Science and history in Equilibrium Number of scientists vs. population and R&D costs vs. GDP in U.S. p. 103
WHEN: Temporal Analysis 	 Visualizing decision making processes p. 95	 Key events in the development of the video tape recorder p. 83	 Increased travel and communication speeds p. 83
WHERE: Geospatial Analysis 	 Cell phone usage in Milan, Italy p. 109	 Victorian poetry in Europe p. 137	 Ecological niches of countries p. 99
WHAT: Topical Analysis 	 Building patent holdings of Apple Computers and Jerome Lemelson p. 89	 Solving journal networks in neuroscience p. 139	 Product space showing co-export patterns of countries p. 93
WITH WHOM: Network Analysis 	 World Finance Corporation network p. 87	 Electronic and new media art networks p. 133	 World-wide scholarly collaboration networks p. 157

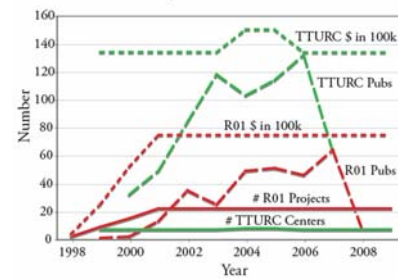
Mapping Transdisciplinary Tobacco Use Research Centers Publications

Compare R01 investigator based funding with TTURC Center awards in terms of number of publications and evolving co-author networks.

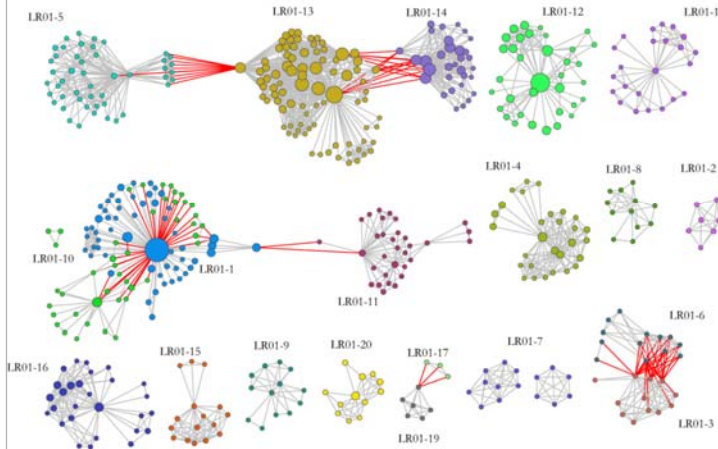
Stipelman, Hall, Zoss, Okamoto, Stokols & Börner, 2014

Supported by NIH/NCI Contract HHSN261200800812

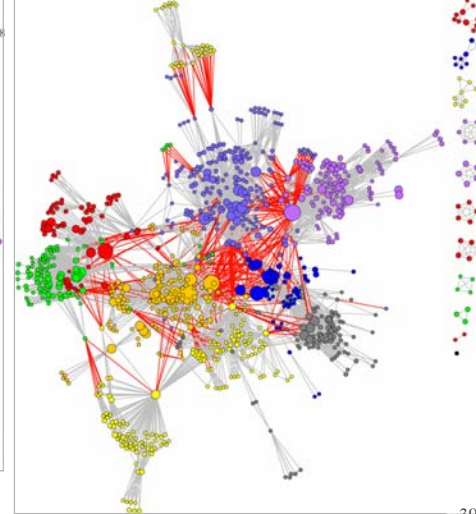
R01 & TTURC Project Information



Longitudinal R01 Co-Authorship Network



TTURC Co-Authorship Network



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All papers, maps, tools, talks, press are linked from <http://cns.iu.edu>

These slides will soon be at <http://cns.iu.edu/docs/presentations>

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