

# Introduction to VIVO

VIVO 2014 Conference Workshop

Jon Corson-Rikert | Lamont Cannon | Kristi Holmes | Alex Viggio

# Overview

- Introductions all around
- Why VIVO?
- VIVO as a semantic web application
- Vitro as a platform
- The VIVO community
- Case study vignettes
- Planning and implementation
- Joining an open source community project

# Instructors

- Jon Corson-Rikert
  - VIVO Core Development WG lead
  - Head of Mann Library Information Technology Services, Cornell University Library
- Lamont Cannon
  - Outreach Coordinator for Faculty Data, Office of the Provost, Duke University
- Kristi Holmes
  - VIVO Engagement WG lead
  - Director, Galter Health Sciences Library, Northwestern University
- Alex Viggio
  - VIVO Implementation WG lead
  - Senior Technical Consultant, Symplectic, Ltd.



Why VIVO?

The value of scientific knowledge dispersed across the world can increasingly be captured by those who build networks to take the local to global scale and bring the global back for local impact.

From “The United States Looks to the Global Science, Technology, and Innovation Horizon,” E. William Colglazier and Elizabeth E. Lyons, citing *The New Invisible College*, Caroline S. Wagner, The Brookings Institution Press, 2008

# The research landscape

- Cross–disciplinary
- Multi-institutional
- Organizationally virtual
- Collaborative
- Competitive

Data, information, ideas, and technologies do not propagate within social networks simply on their own merits.

From “Enabling Scientific Collaboration and Discovery through Semantic Connection,” research proposal to NSF. Matthew Mayernik et. al., University Corporation for Atmospheric Research

# Latent connectivity

- Social connections fuel collaboration
- Many are not visible
- Finding additional potential connections is beneficial to research
- Transparency helps the public and policymakers as well



# Additional incentives

- OSTP mandate
  - Goes beyond publications
  - Emphasis on data
  - Obligation to maintain public access
- Trends in funding opportunities
- ORCID
- SciENCv

# Technology landscape

- Mobile platforms
- Lightweight interactive apps
- Visualization libraries
- Search technologies
- Multiplicity of collaboration platforms
- Hunger for alternatives to email, wikis, and websites

# Strategic opportunities

- Current Research Information Systems (CRIS) and research networking emerging from the early adopter phase
- Sense of urgency among funders
- Broader community of linked data
  - E.g., traction in libraries
- Global interest in entity resolution



What is VIVO?

# VIVO

- A semantic-web-based research and researcher discovery tool
  - People plus information on the research they do
- Publicly-visible information, across disciplines
  - For external as well as internal audiences
- An open, shared platform for connecting scholars, research communities, campuses, and the world using Linked Open Data (LOD)

# A brief VIVO history to the present

- 2003-2005 First realization for the life sciences at Cornell, as a relational database
- 2006-2008 Expansion to all disciplines at Cornell, and conversion to Semantic Web
- 2009-2012 National Institutes of Health-sponsored *VIVO: Enabling the National Networking of Scientists* project transforms VIVO to a multi-institutional open source platform
- 2013-2014 VIVO incubator project with DuraSpace for open community development

# Key VIVO principles

- Open software
- Open data
- Open ontology
- Open community
- Local control

# What VIVO does

- Integrates multiple sources of data
- Provides a content review and editing interface
- Provides a uniform, research-focused institutional web presence for search and browse
- Provides filterable feeds to other websites
- Serves local data to the global linked data cloud



# What VIVO models

- People and more
  - Organizations, grants, programs, projects, publications, datasets, events, facilities, and research resources
- Relationships among the above
  - Meaningfully typed
  - Bi-directionally navigable
- Links to global URIs
  - Vocabularies, ORCID iDs, DOIs, other identifiers for people, places, organizations, events

# People

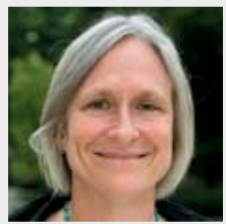
VIVO

Research & Expertise  
Across Cornell

Index | Log in

Search

Home | People | Organizations | Research | Events



**Riha, Susan Jean** | Charles L. Pack Professor in the Department of Earth and Atmospheric Sciences



## Positions

- ▶ Director New York State Water, [Earth and Atmospheric Sciences \(EAS\)](#), [College of Agriculture and Life Sciences \(CALS\)](#)

I am a professor in the department of Earth and Atmospheric Sciences, and joined the Cornell faculty in 1980. At that time, I was appointed the Charles L. Pack Research Professor of Forest Soils. My research interests are in the area of the interaction of plants with their physical environment and in dynamic simulation modeling. I work on both environmental and plant production problems on the state, national and international levels. I am a member of the graduate fields of Soil and Crop (... [more](#))

## Research Areas

[biocomplexity](#) | [biogeochemistry](#) | [climatology](#) | [computational biology](#) | [crop management or crop science](#) | [earth science](#) | [ecosystem biology](#) | [environmental sciences](#) | [forest management](#) | [hydrology](#) | [information science](#) | [integrated crop management](#) | [integrated pest management](#) | [international agriculture](#) | [land use](#) | [soil and crop science](#) | [surface processes, sedimentary basins, & paleontology](#) | [sustainable development](#) | [weed science](#)

## Geographic Focus

## Networks



[Co-author Network](#)

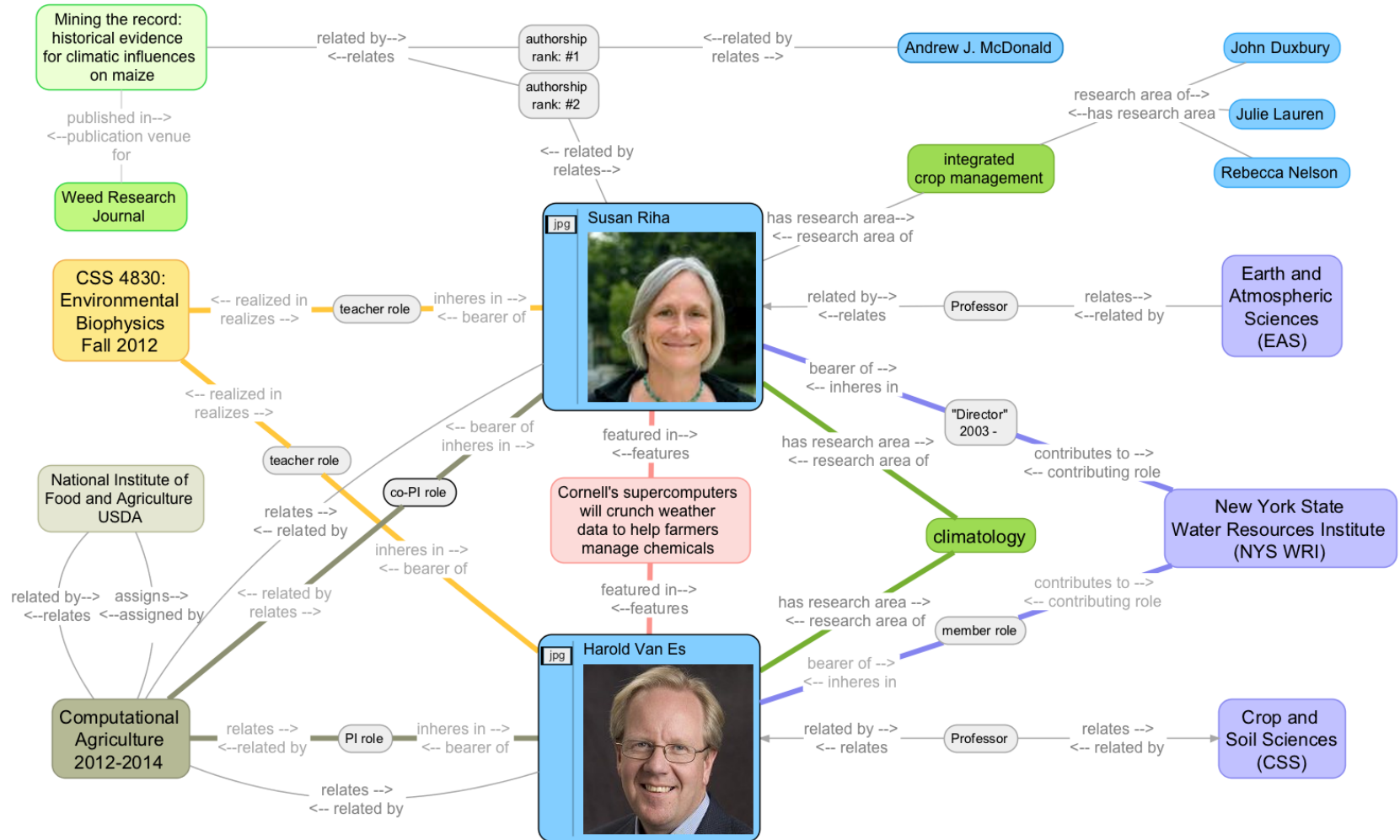


[Map of Science](#)



[Co-investigator  
Network](#)

# And how they connect



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

### Profile



**Riha, Susan Jean**

Charles L. Pack Professor in t...

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

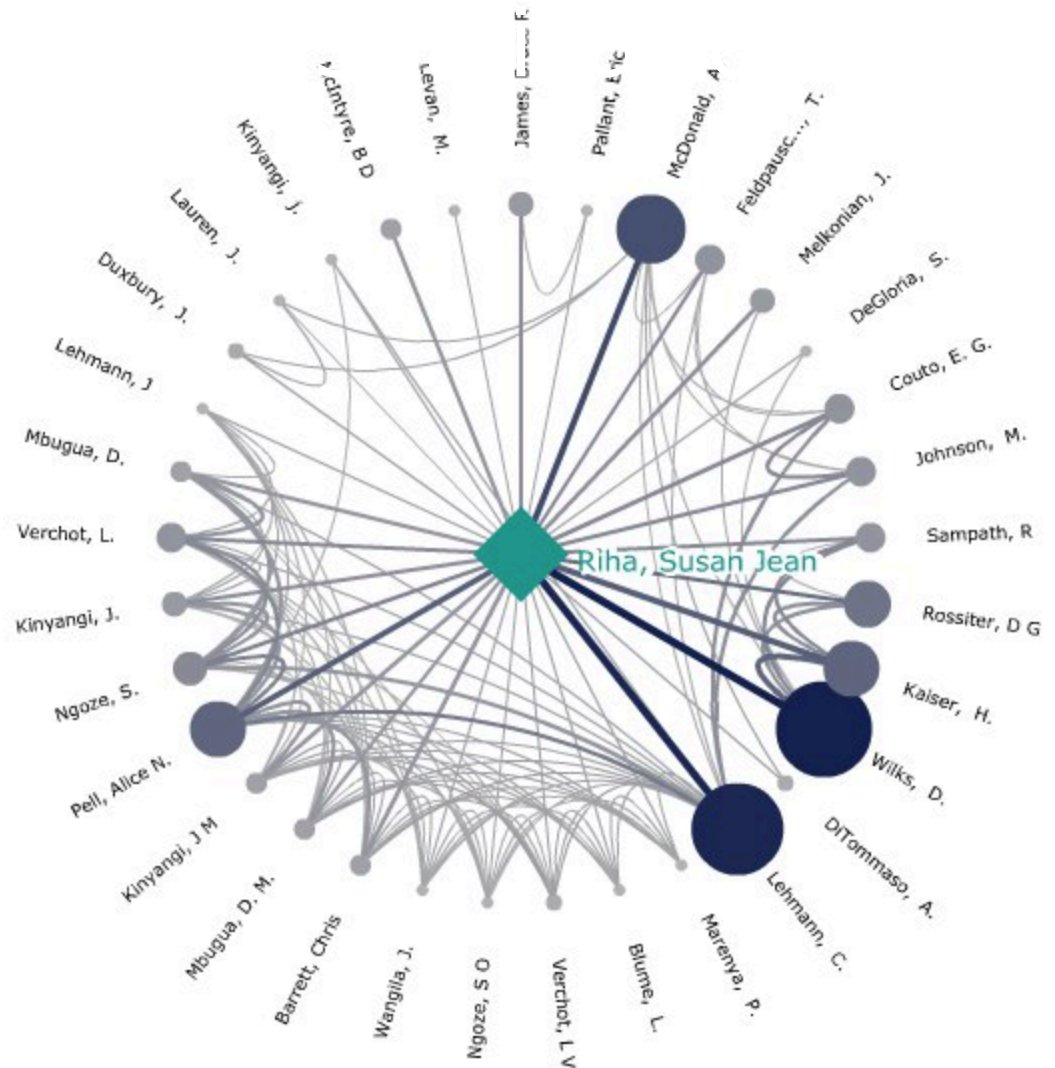
132 Publication(s)

33 Co-author(s)

1980 First Publication

2010 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.



# Typical data sources

- HR – people and their positions
- Research administration – grants & contracts
- Registrar – courses
- Faculty reporting – awards, professional service, education, research areas, geographic focus
- External repositories – Pubmed, Scopus, Web of Science, CrossRef
- Events calendar
- News -- internal and external
- Extension – outreach, technology transfer

# Value for institutions

- Common data substrate serving many functions
  - Cross-silo
  - Granular
  - Public-facing
- Distributed data entry and curation
  - Editing by proxy or through data relationships
  - Filling gaps between systems of record
  - Directing changes back to systems of record
- Direct linking across campuses
- Data sharable in a standard format

# Data ecosystem stewardship

- Manage data at its appropriate source with appropriate privacy
  - HR, grants management, registrar, graduate school, colleges and schools, research centers, extension
  - Department/agency/division/geographic location/research unit
- Consciously derive public data for exchange
- Engage stakeholders and build relationships
- Recruit power users for training and local knowledge
  
- Data that are visible get corrected!

# Enter data once, use it many times

The image displays a VIVO profile for Héctor D. Abruña, demonstrating how a single data entry is used across multiple organizational contexts. The profile is shown in two overlapping views: a general VIVO profile on the left and a more detailed Cornell University profile on the right.

**VIVO Profile (Left):**

- Header:** VIVO Research & Expertise Across Cornell
- Navigation:** Home, People, Organizations, Research, Events
- Admin Panel:** Edit this individual, Resource URI: <http://vivo.cornell.edu>
- Profile:** Abruña, Héctor D. Preferred Title: Emile M. Chamot Professor
- Positions:** Chemistry and Chemical Biology
- Overview:** The Abruña Group focuses on a wide variety of techniques for molecular electronics.
- Research Areas:**
- Web Pages:** Abruña Group, Chemistry and Chemical Biology profile
- Affiliation:** head of Cornell Fuel Cell Institute (CFCI)

**Cornell University Profile (Right):**

- Header:** Cornell University Chemistry and Chemical Biology
- Navigation:** Research, Faculty, Undergraduate, Graduate, Courses, Events and News, Directories
- Profile:** Abruña, Héctor D. E. M. Chamot Professor
- Contact:** email: [hda1@cornell.edu](mailto:hda1@cornell.edu), phone: 607-255-4720, room: Olin Chemistry Research Wing
- Websites:** Abruña Group
- Department Appointments:** Chemistry and Chemical Biology (CHEM)
- Graduate Fields:** Chemistry and Chemical Biology
- Other Affiliations:**

**Overview (Right):**

You are here: [Chemistry and Chemical Biology](#) > [Faculty](#) > [Faculty Detail](#)

**Overview**

The Abruña Group focuses on the development and characterization of new materials using a wide variety of techniques for fuel cells, batteries, and molecular assemblies for molecular electronics.

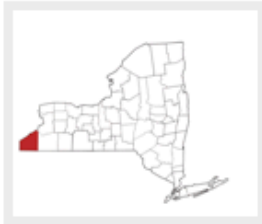
**Research**

Our research effort takes an interdisciplinary approach to the study of electrochemical phenomena. We employ electrochemical techniques as probes of a variety of chemical systems, and we use other techniques such as x-ray based methods, differential electrochemical mass spectrometry, in-situ FT-IR, scanned probe microscopies, scanning electrochemical microscopy, low temperature conductance and spectroscopic techniques to address problems of electrochemical interest. Current areas of research include:

- Fuel cells:
  - The use of ordered intermetallics, such as BiPt for the electrocatalytic oxidation of formic acid, methanol, ethanol and other small organic molecules of potential utility as fuels in fuel cells.
  - Use of Differential Electrochemical Mass Spectrometry (DEMS), in-situ FT-IR in for mechanistic studies related to fuel cells.
  - Development of in-situ TEM techniques for the study of fuel cell and battery materials
- Electrical Energy Storage (EES): Batteries and Supercapacitors
  - Computational screening synthesis and characterization of organic molecules for EES
  - In-situ testing of battery systems using in-situ x-ray based technique (XRD, EXAFS, XANES)

- Lithium/sulfur batteries





## Cornell Cooperative Extension Association of Chautauqua County

### Cornell Cooperative Extension Association [↗](#)

**WELCOME**

For almost a century, Cornell Cooperative Extension has worked in partnership with Chautauqua County government and Cornell University to address priority needs in agriculture, environment and energy, youth development, family services, and extended stewardship. Our signature programs continue to provide residents with valuable and unique access to scientific research and practical education—enabling individuals to improve their lives and communities.

We continue to change our direction as the needs in the community change as well. Although change is never easy, it does bring new opportunities to learn, grow and expand our programs and outreach efforts.

Cornell Cooperative Extension's access to university-based expertise is critically important to the vitality of our local economy. Students, business and others rely on us for training and research-based programs that help them improve their quality of life and their communities.

"The road is not a woman to be feared, but a lion to be tamed." Today, we continue an enduring commitment for inclusiveness and collaboration to spread knowledge and sustain lifelong learning. Of course, we could not do all of this work without the help of our volunteers who donate over 10,000 hours annually to support our signature program areas.

We invite you to take a tour of our website to learn more about our association, signature program areas and how you can become a member and/or volunteer.

**FOR MORE INFORMATION**

Cornell Cooperative Extension of Chautauqua County  
3542 Tupper Road  
Junkinsville, New York 14753  
(716) 864-5322 (phone)  
(716) 864-5322 (fax)  
chautauqua@cornell.edu

**2012 Board of Directors**

**Yves Proffers**, President  
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**Ted Card**, Ag Representative  
**Greg White**, Ag Representative

CCE Chautauqua Web Page

### Overview

local program

[4-H Beef Breeding Project at CCE Chautauqua](#)

[4-H Clothing and Textiles at CCE Chautauqua](#)



# CALS Research and Impact

Information about CALS research projects and their impact throughout the world

HOME

PROJECTS

PROJECT LOCATIONS

Search projects...



## 154 projects

### Increasing Resilience to Climate Change in Agriculture in the Middle East

2011 to 2013

Recent Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC) have stated that "warming of the climate system is unequivocal" and have documented widespread evidence of global warming and other major climatic changes, as well as their impacts. These impacts in rural areas – on agriculture, farmers, rural households and rural communities – can be expected to be increasingly substantial. This project reports the results of research to identify and prioritize stakeholder-driven, locally relevant response options to climate change affecting agriculture in the Middle East.

### Climate change impacts on Northeast agriculture

2007

Prior climate change studies have focused on major world food crops such as wheat and maize. But this is not relevant to the Northeastern U.S. (NE) agriculture economy, which is dominated by dairy and high-value horticultural crops.

### Climate change information for assessing impacts and adaptations

2007 to 2012

Temperature, precipitation, and other climate patterns have changed across the Northeast over the last 30 years, and these trends are expected to continue over the next several decades. Information on the magnitude, direction, and consequences of such trends is essential for farmers, water resource managers, environmental interests, and policy makers in the region. Through this project, we have been able to apply both historical and projected future climate conditions to climate-related decisions.

### Climate change and its impact on the distribution of invasive weeds

#### Search

climate change

#### Projects per page

10

Apply

Reset

[Printer-friendly version](#)  
 [PDF version](#)

#### Filter by Year

- [2020 \(4\)](#)
- [2019 \(4\)](#)
- [2018 \(4\)](#)
- [2017 \(6\)](#)
- [2016 \(9\)](#)

[Show more](#)

#### Filter by New York State County

- [Tompkins \(27\)](#)
- [Cayuga \(24\)](#)
- [Ontario \(16\)](#)
- [Niagara \(15\)](#)
- [Schuyler \(15\)](#)

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# CALS Research and Impact

Information about CALS research projects and their impact throughout the world

HOME

PROJECTS

PROJECT LOCATIONS

Search projects...



New York State

United States

International

## International

722 projects focusing on 134 locations

- Choose a location -

See projects





## My Collections

Create new collection

Curated Ecology Datasets	<b>14</b> datasets	<b>4</b> citations	<b>4</b> publication links
Institutional Philosophy Datasets	<b>21</b> datasets	<b>1</b> citations	<b>0</b> publication links
Curated Biology Datasets	<b>1</b> datasets	<b>24</b> citations	<b>4</b> publication links
Entomology Datasets	<b>14</b> datasets	<b>0</b> citations	<b>0</b> publication links
Analytics and Discovery Datasets	<b>4</b> datasets	<b>4</b> citations	<b>4</b> publication links



**Archaeological Findings** | All datasets

Cited  
**14**  
times

All citations

Linked to  
**23**  
publications

All links

Related datasets  
**2**

All related datasets

Part of  
**2** projects  
**9** collections

**Identifier**

DOI: 123234

**Authors**

Hardy, Thomas  
Jehan Sorour

**Contributors**

Dickens, Charles

**Description**

Description lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus viverra commodo purus sed euismod. Vestibulum volutpat pellentesque mauris, quis fringilla augue feugiat eget. Nulla quis nibh ac ligula condimentum mollis. Ut sit amet arcu diam, vel ornare dui. Aliquam vestibulum sodales mi non ultrices. Morbi tristique laoreet imperdiet. Proin

**Cite this dataset:**  
Why Cite?

**Thomas, Hardy,**  
URL: [www.urlsample.com](http://www.urlsample.com)

**Rights and Restrictions:**  
Rights and restrictions  
content.

Search

Home | People | Organizations | Research | Events



**Brittain, Charles** Professor



**Positions**

- ▶ Department Chairperson, [College of Arts and Sciences](#), [College of Arts and Sciences](#)
- ▶ Professor/Classics/Philosophy, [Classics \(CLASS\)](#), [College of Arts and Sciences](#)

Charles Brittain is a Professor of Classics and Philosophy, specializing in ancient philosophy.

His research is primarily concerned with Hellenistic philosophy (especially epistemology and ethics), Cicero, Augustine, and the Platonic tradition from Plato to Simplicius.

**Networks**

[Co-author Network](#)

[Map of Science](#)

**Websites**

- [Classics profile](#)
- [Philosophy profile](#)

Affiliations | Research | Publications | Teaching | Service | ...

**selected publications**

academic article

- [Posidonius' theory of predictive dreams](#) 2011
- [Cicero: On Academic Scepticism.](#) *Anzeiger für die Alte*
- [The New Academy's Appeals to the Presocratics.](#) *Phro*

book

[Philo of Larissa: The Last of the Academic Sceptics.](#) Oxford ; New York: Oxford University Press. 2001

philo of larissa All Fields Search  
Advanced Search | Search Tips  
or Start over

All Fields: philo of larissa Format: Book

1 - 5 of 5 20 per page

**1. Philo of Larissa : the last of the academic sceptics** 2001

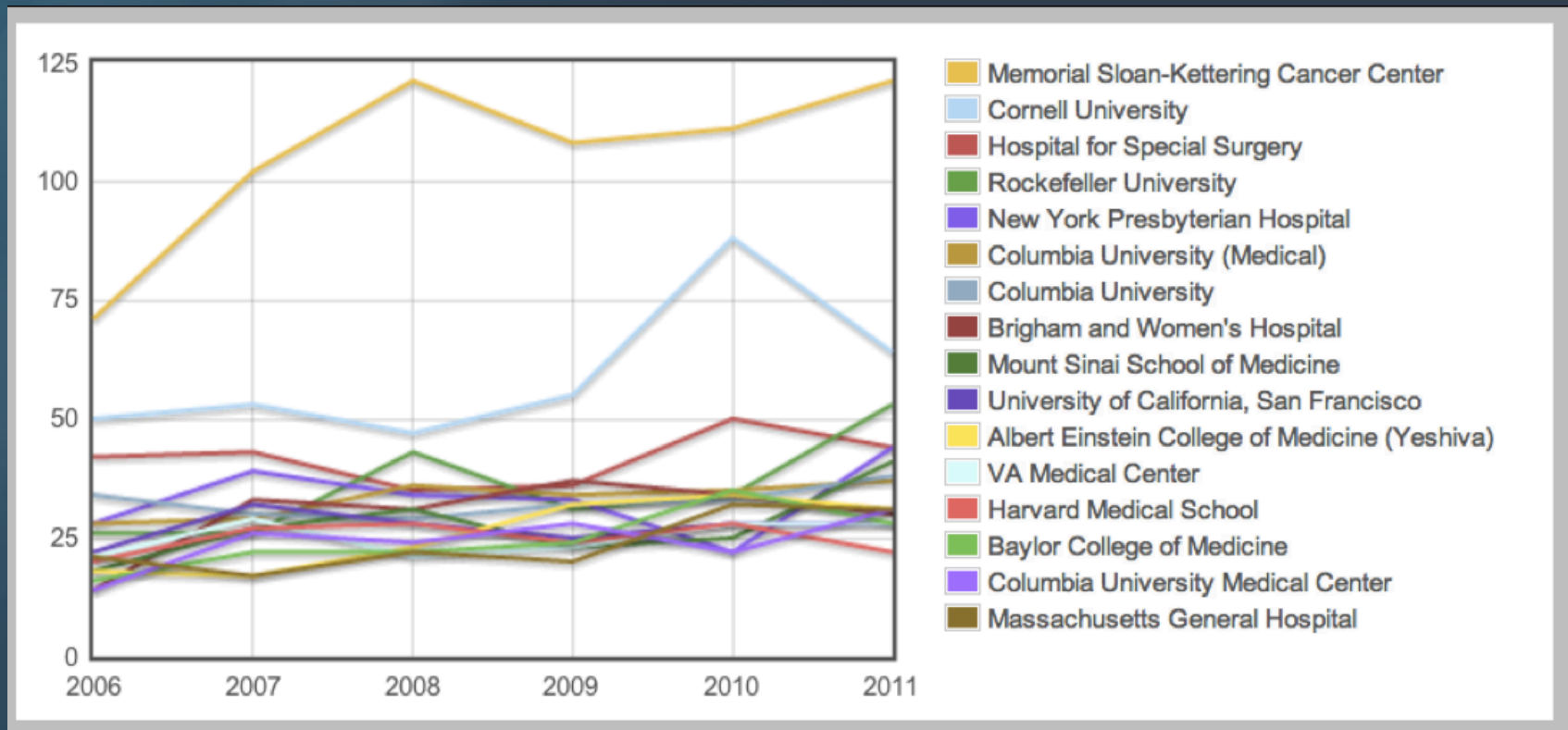
**Brittain, Charles**

**Book** Oxford ; New York : Oxford University Press, 2001. English  
 Text in English, with some Greek.  
 Olin Library B598.P34 B758x 2001

Linked  
Data  
For  
Libraries  
(LD4L)

# Weill Cornell data dashboard

- Publication co-authorships by institution



Publications

Co-Authors

Dual  
Appointments

Post-M.D.  
Appointments

Global Health

Request  
Analysis

All Most Cited

By Person

By Organization

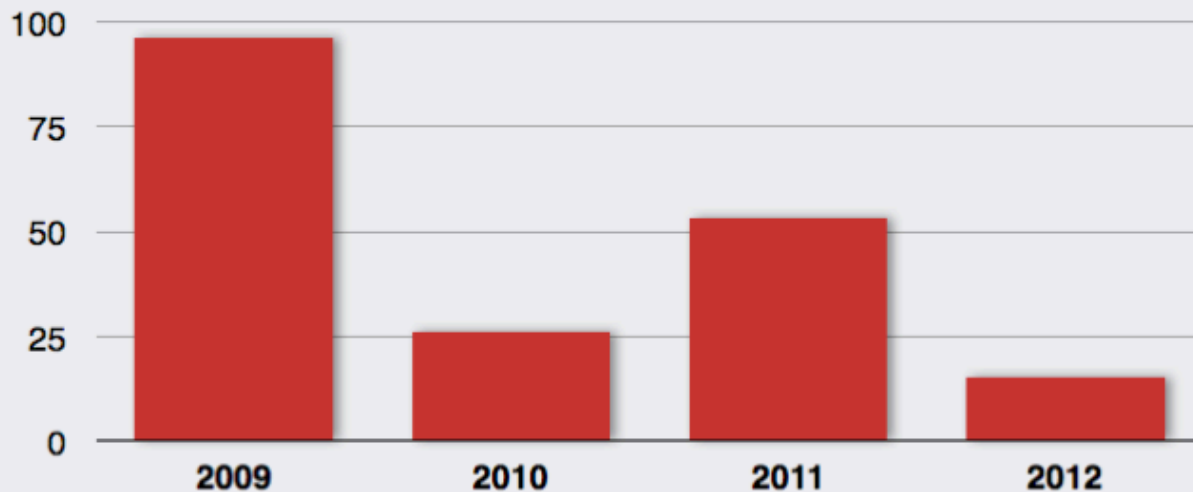
PubMed Central Deposits

## Papers created with federal funding but not deposited in PubMed Central

Graph

List

Create Alert



Federal law mandates publications resulting from NIH-funded research must be deposited in the open access archives PubMed Central within twelve months...[Read more](#)

### Refine Results

Year



### Publication Type

- Academic Article
- Comment
- Conference Paper
- Editorial
- In Press
- Letter
- Review

### Organization

Cardiothoracic Surgery

Cardiology (Pediatrics)

Cardiology (Medicine)

**Cardiothoracic Surgery**

Otolaryngology



# Driving questions - Weill Cornell

- Publications with a Weill researcher as first or last author
- PIs having the most collaborations based on grant support
- Publications co-authored with other institutions
- Papers having the most incoming citations
- Researchers publishing the most research articles within a given set of journals in the past 5 years
- Papers receiving federal funding but not deposited in PubMed Central
- Evidence for the institution's open access key opinion leaders

# Policy issues

- Dirty data
- Lack even of common definitions of organizational structure or who's faculty
- Data ownership
- Opt-in vs. opt-out and the many dimensions of privacy
- Short-term “go it alone” vs. common good

The background of the slide is a dark blue gradient. In the upper half, there is a complex pattern of thin, overlapping, wavy lines in various colors including white, light blue, green, yellow, orange, and purple. These lines create a sense of movement and interconnectedness.

# VIVO and Linked Open Data

# The Semantic Web

- Turn data into a web of simple links
- Use *ontology* to explain *how* things are linked
- Use *reasoning* to categorize and add new statements automatically
- Stay flexible and extensible

# What is Linked Open Data?

- Data
  - Structured information, not just documents and text
  - A common, simple format
- Open
  - Available, visible, mine-able
  - Anyone can post, consume, and reuse
- Linked
  - Directly by reference
  - Indirectly via common references and inference

# Linked Open Data

The image shows a web browser window displaying a VIVO profile for Michael Conlon. The browser's address bar contains the URL <http://vivo.ufl.edu/individual/n25562>, which is highlighted with a red box. The VIVO logo and tagline "Enabling National Networking of Scientists" are visible at the top. The profile header identifies Michael Conlon as an Associate CIO for IT Architecture. Below the header, there are navigation links for "Personal web page", "Clinical and Translational Science Institute Home Page", and "VIVO Home". A photograph of Michael Conlon is shown on the left. The "description" section begins with: "Dr. Conlon is Associate CIO for IT Architecture, interim Director of Biomedical Informatics in the Associate Director of the university's Clinical and Translational Science Institute, and Principal I National Networking of Scientists. His responsibilities include development of academic biomed integration of research and clinical information resources as well as strategic planning for univer Previously Dr. Conlon served as Chief Information Officer of the University of Florida Health Sci network and video services, desktop support, media and graphics, application development, tea planning and distance learning. He earned his Ph.D. degree in Statistics from the University of degrees in Mathematics and Economics from Bucknell University, and is the author of over 150".

On the right side, a "marbles" interface overlay is shown. It features a search bar with the same URL <http://vivo.ufl.edu/individual/n25562> and an "Open" button. Below this, the profile name "Conlon, Michael" is displayed. The "type" section lists several categories: Person, Thing, Agent, <http://vivoweb.org/ontology/core#FacultyMember>, and <http://vivoweb.org/ontology/core#Faculty>. The "label" section shows "Conlon, Michael". Below that, a "featuredIn" section lists several related VIVO profiles: <http://vivo.ufl.edu/individual/n6868>, <http://vivo.ufl.edu/individual/n3884>, <http://vivo.ufl.edu/individual/n6584>, <http://vivo.ufl.edu/individual/n180>, and <http://vivo.ufl.edu/individual/n1162>. A large blue arrow points from the "featuredIn" list to a network graph visualization. The graph consists of numerous green nodes connected by lines, with some nodes highlighted in orange and yellow, representing a complex web of relationships between individuals.

# Linked data in OpenAGRIS

**Source:**

Centralna Biblioteka Rolnicza/Central Agricultural Library

CBR is a scientific library subordinated to the Ministry of Agriculture and Rural Development. It has branch in Pulawy. CBR collections - thematically restricted to agriculture, food processing industry and rel [...]

HOME PAGE: <http://www.cbr.edu.pl/eng/index.php>

COVERAGE: Europe

## Length-frequency compositions and weight-length relations for bigeye tuna, yellowfin tuna, and albacore (Perciformes: Scombrinae) in the Atlantic, Indian, and eastern Pacific oceans [2008]

[RDF](#) [lod:live](#)

Zhou, Y.  
Zhu, G.  
Dai, X., Tuna Fishery Technical Working Group of China, Shanghai, China  
Xu, L., Shanghai Ocean University, Shanghai (China). College of Marine Sciences

**Abstract:**  
Bigeye tuna, *Thunnus obesus* (Lowe, 1839), yellowfin tuna, *Thunnus albacares* (Bonnaterre, 1788), and albacore, *Thunnus alalunga* (Bonnaterre, 1788), are very important species for world fisheries. The weight-length relations (WLRs) of the three species were studied using commonly accepted methodology. Significant differences can be found from the fork length distributions and the WLRs of the above 3 tuna species and the relations of gilled-gutted and whole weight of bigeye and yellowfin tunas collected from the Atlantic, Indian, and Eastern Pacific Oceans. Significant differences of fork length distributions can be found for bigeye tuna, yellowfin tuna, and albacore from the three areas. The data collected will be useful for the fisheries management of the three species studied

Read the article: <http://www.aiep.pl/>

Data from [www.nature.com](http://www.nature.com)

- ▶ Climatology: Extremes in the Indian Ocean
- ▶ Marine biogeochemistry: The ups and downs of ocean oxygen
- ▶ Earth science: Subtle minds and mid-ocean ridges
- ▶ Ocean-atmosphere coupling: Mesoscale eddy effects

Data from **DBpedia**:

- ▶ Body weight
- ▶ Atlantic ocean
- ▶ Tuna
- ▶ Indian ocean
- ▶ Thunnus
- ▶ Pacific ocean

Data from World Bank (double-click an area to zoom)

**Fish species, threatened**

1 212

**Thunnus obesus** distribution map. Data from Global Biodiversity Information Facility (GBIF)

View a larger map

**Thunnus obesus - Global Capture Production (FAO Fishery Statistic)**

**Agrovoc Keywords:**

- Thunnus obesus
- body weight
- Atlantic Ocean
- fishery data
- statistical data
- Animal growth forms
- Tuna
- Indian Ocean
- Thunnus albacares
- Thunnus alalunga
- Animal physiology
- Pacific Ocean
- Thunnus
- Fishery production
- body measurements
- Fishery management
- Animal developmental stages

**Acta Ichthyologica et Piscatoria (Journal)**

FREQUENCY: Semiannual (2 numbers a year)

START DATE: 1972

**Agris articles from the same journal:**

- On the occurrence of Salomon (*Salmo salar* L.) in the Szczecin Firth and the Lower Odra in 1977 [Poland].
- Wpływ detergentu DBS na aktywność niektórych enzymów mózgu, skrzeli i surowicy narybku karpia (*Cyprinus carpio* L.).
- Attainment of sexual maturity by hybrids of rudd, *Scardinius erythrophthalmus* (L.) and carp bream, *Abramis brama* (L.) under experimental conditions
- No relationship between fecundity and annual reproductive rate in bony fish

# OpenAgris search augmentation

OpenAGRIS  AGRIS About Feedback

## Search Results

Query: maize  
Results 1 - 10 of 68,194

### Maize based cropping systems for sustainable agriculture in semi-arid areas of Ethiopia

Habtamu Admasu; Reddy, M.S.; Teshale Alemu; Jibril Mohamed (IAR, Addis Ababa (Ethiopia))

In peasant subsistence agriculture use of appropriate cropping systems enable the farmers to use natural resources efficiently. Lack of appropriate cropping systems to suit maize production was identified as one of the major production constraints in the semi-arid areas of Ethiopia. To alleviate this problem the possibility of intercropping, relay cropping or alley cropping of maize with efficient legumes, and development of appropriate crop rotation system for improved maize production in the d ...

In AGRIS collection since: 1997

### Pigeonpea intercropping in maize based cropping systems

Karsono, S.; Flyod, C. (Balai Penelitian Tanaman Pangan Malang (Indonesia))

In Probolinggo area the predominant maize based "lega" (dry land) cropping system is a rainy season maize monocrop followed by a maize/lab-bean intercrop. The maize in the maize/lab-bean intercrop is harvested shortly after the end of the reliable rainy season. The lab-bean grows through into the dry season, utilising residual soil moisture and the variable late rains. Pigeonpea could be used in a similar way to lab-bean to utilize dry season soil moisture. A randomized block field e ...

In AGRIS collection since: 1994

### Breeding of speciality maize for industrial purposes

Pajic, Z., Maize Research Institute Zemun Polje, Belgrade - Zemun (Serbia); Radosavljevic, M., Maize Research Institute Zemun Polje, Belgrade - Zemun (Serbia); Filipovic, M., Maize Research Institute Zemun Polje, Belgrade - Zemun (Serbia); Todorovic, G., Institute for Medicinal Plant Research Dr Josif Pancic, Belgrade (Serbia); Srdic, J., Maize Research Institute Zemun Polje, Belgrade - Zemun (Serbia); Pavlov, M., Maize Research Institute Zemun Polje, Belgrade - Zemun (Serbia)

The breeding programme on speciality maize with specific traits was established at the Maize Research Institute Zemun Polje, Belgrade - Zemun (Serbia) several decades ago. The initial material was collected, new methods applying to breeding of speciality maize, i.e. popping maize, sweet maize and white-seeded maize, were introduced. The aim was to enhance and improve variability of the initial material for breeding these three types of maize. Then, inbred lines of good combining abilities were d ...

In AGRIS collection since: 2010

### Determination of plant population and planting time in maize (Zea mays L.) and climbing bean (Phaseolus vulgaris L.) intercropping system

Negash Geleta (Bako Agricultural Research Center, Bako (Ethiopia)); Chemedi Daba (Bako Agricultural Research Center, Bako (Ethiopia)); Setegn Gebeyehu (Bako Agricultural Research Center, Bako (Ethiopia))

The experiment was conducted at Bako research center in 1998 and 1999 cropping seasons. The objectives of the study were to determine agronomically optimum plant population of maize and climbing bean in an intercropping system; and to determine appropriate planting time of climbing bean to be grown with maize for high total system productivity. Factorial combinations of three maize plant populations (50, 75 and 100% of optimum planting densities attained by planting 2 seeds per hill spaced at 10 ...

In AGRIS collection since: 2005

### Effects of groundnut and green manure legumes intercropped to maize on yields of the intercrop maize, weeds and moisture of black clay soil

Ammat Suwanarit; Jarong Rungchuang; Sompom Thongdang (Kasetsart Univ., Bangkok (Thailand). Faculty of Agriculture. Department of Soil Science)

Field experiment was conducted on Takhlil soil series (Typic Calcustolls) in a farmer's field in Pakhong, Nakhon Ratchasima, to examine effects of intercropping groundnut and green manure legumes to maize on the yields of the intercrop maize, weed incidence and moisture status of the soil, as an effort to find green-manure legumes that could be intercropped to maize with minimum detrimental effect on the intercrop maize and could continue to grow during the fallow period after harvest of the int ...

In AGRIS collection since: 2005

### Refine your search

Sort by:  
 Relevance  
 Submission Date

Order:  
 Ascending  Descending

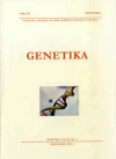
### Results research area

- zeas mays (24442)
- maize (11422)
- crop yield (4069)
- varieties (2445)
- hybrids (2373)
- yields (2280)
- growth (1710)
- silage (1660)

Data from Europeana

### Genotype and environmental interaction effect on heterosis expression in maize

Kresović Branka J.



Publication date: 2004  
Language: sr  
Data provider: Narodna biblioteka Srbije - National Library of Serbia (NLS)  
Type: TEXT  
[Go to reference](#)

- Quality protein maize: QPM
- Breeding of maize types with specific traits at the Maize Research Institute, Zemun Polje
- Maize rough dwarf - Maize rough dwarf fiji virus
- Biotechnology in maize breeding

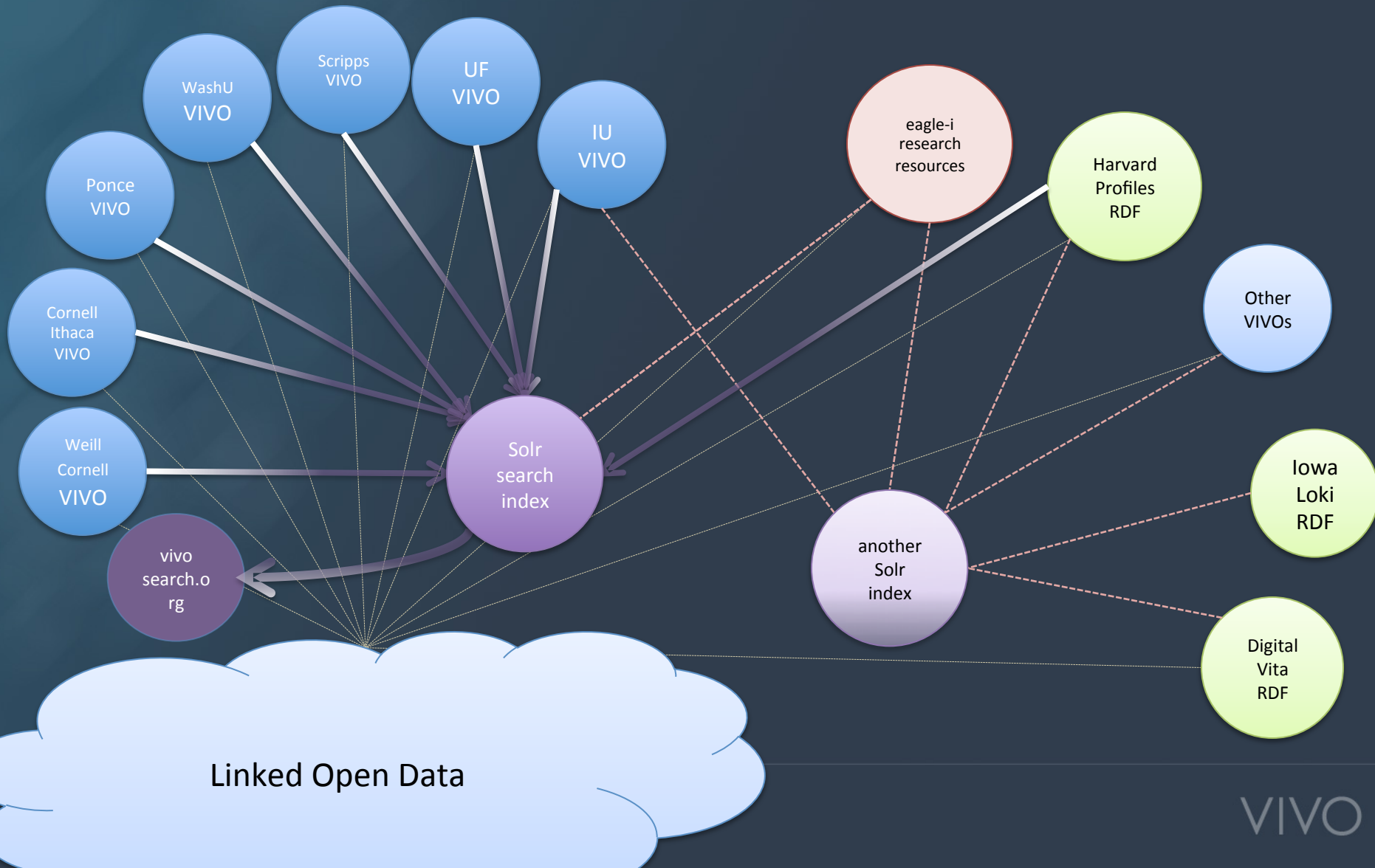
Data from [www.nature.com](http://www.nature.com)

- A crop of maize variants
- A transposon in *tb1* drove maize domestication
- US processor rejects maize that EU won't take
- A cornucopia of maize genes

<http://agris.fao.org/openagris/searchIndex.do?query=maize>



# 2011 VIVOsearch LOD approach



# VIVO Search

**Known Issue:** Data for Cornell University and Indiana University is incomplete. We continue to gather complete data from the seven partner institutions.

## Find research and expertise

Enter keywords...

- Publications
- People
- Publications
- Organizations
- Activities
- Events
- Courses
- Equipment



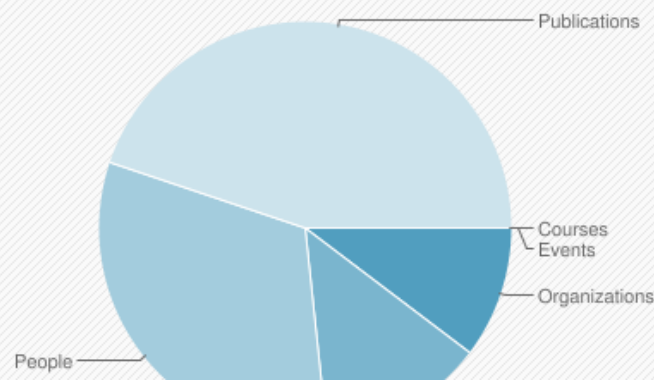
People include faculty members, librarians, and staff.  
Try these keywords: [alternative energy](#)

### A demonstration of multi-institutional search

A group of seven top research institutions dedicated to facilitating global research efforts recognize the challenges faced by researchers in uncovering parallel and related efforts, and have decided to join forces in standardizing the way institutional data gets published. Each institution uses the VIVO software to manage and publish up-to-date information about researchers and their activities.

This website provides a working example of how a multi-institutional search functions, allowing you to search across all seven partner institutions and across all disciplines to find people and information that could dramatically

Distribution of Institutional data



## Find research and expertise

People



People

Publications <sup>14</sup>

Organizations <sup>6</sup>

Activities <sup>3</sup>

Events

Courses

Equipment

13 results

### Ley, Ruth E.

... Ley, Ruth E. A core gut **microbiome** in obese and lean twins Ley, Ruth E. Succession of microbial consortia in the developing infant gut **microbiome** Ley ...

Cornell University

### Wang,Gary Ping-Chuan

... Wang,Gary Ping-Chuan AST PROF Wang,Gary Ping-Chuan Wang,Gary Ping-Chuan Human Oral **Microbiome** in Periodontal Disease and Hiv Infection Hcv ...

University of Florida

### Wolan, Dennis

... **Microbiomes** and Disease Associations between human microbial environments and the onset of human diseases are rapidly materializing. Elucidation ...

The Scripps Research Institute

### Heath,Andrew C

... Spencer T. Olin Prof of Psychology in Psych Heath,Andrew C Heath,Andrew C A core gut **microbiome** in obese and lean twins. Heath,Andrew C Peer ...

WashU in St. Louis School of Medicine

### Results by Institution

University of Florida	7
Cornell University	2
The Scripps Research Institute	2
WashU in St. Louis School of Medicine	2
Harvard University	0
Indiana University	0
Ponce School of Medicine	0
Weill Cornell Medical College	0

### Results by Type

Faculty Member	13
----------------	----

# VIVO

# Searchlight

A convenient way to find researchers

Searchlight is a small app that automatically shows you VIVO profiles related to the page you're reading.

The screenshot shows a web browser window with the address bar displaying [www.ncbi.nlm.nih.gov/pubmed/21791874](http://www.ncbi.nlm.nih.gov/pubmed/21791874). The VIVO Searchlight interface is overlaid on the page, showing a navigation bar with the VIVO logo and several researcher profiles: Schlegel, Peter N (Weill Cornell), Fox, Geoffrey (Indiana University), Head, Steve (Scipps Research Institute), Baldwin, Kristin (Scipps Research Institute), and Provines, Michael A (WashU in St. Louis). The profile for Kristin Baldwin is highlighted, showing her name, title (Assistant Professor), affiliation (The Scripps Research Institute), a photo, and a brief description of her research. Below the profiles, the PubMed article page is visible, showing the title "A new twist on behavioral genetics by incorporating wild-derived mouse strains" and the abstract text.

<http://about.vivosearchlight.org>

VIVO



## Search for Investigators at Multiple Institutions

Display map

Text only

Text and UMLS concepts

UMLS concepts (including support for boolean search using &,|, and !)

## Current Status

- SPARQL endpoints queried: 10
- Institutions indexed: 19
- Total persons indexed: 124,945
- Total publications by those persons indexed as part of their profile: 1,325,716
- Total co-author pairs (two people on the same paper): 2,036,131
- The harvesting times listed below are the times required to interrogate the respective SPARQL endpoints and cache the results locally at Iowa.

Currently Harvested Sites	Platform	Harvesting Time
Chicago Women in STEM (Argonne National Lab, Fermilab, Northwestern, U. Chicago)	SciVal Experts and VIVO	1:11:12
Cornell University	VIVO	38:24
Duke University	VIVO	1:07:42
Harvard University	Profiles	1:22:42
Indiana University	SciVal Experts and VIVO	17:07
Northwestern University	SciVal Experts and VIVO	1:43:53
<i>Oregon Health Science University</i>	<i>SciVal Experts</i>	*
State University of New York – REACH (Stony Brook University, SUNY College of Optometry, SUNY Downstate Medical Center, University at Buffalo, Upstate Medical University)	VIVO	0:44
University of California, Davis	SciVal Experts and VIVO	19:43
<i>University of California, San Francisco</i>	<i>Profiles</i>	*
University of Florida	VIVO	1:19:40
University of Iowa	Loki	6:01

Note: sites in italics are currently harvested by means other than SPARQL queries on LOD.

# CTSAsearch

## Search for Investigators at Multiple Institutions

- Text only  
 Text and UMLS concepts  
 UMLS concepts (including support for boolean search using &, |, and !)

microbiome

Search

### UMLS concepts recognized in your query:

■ [C1956108](#) – microbiome

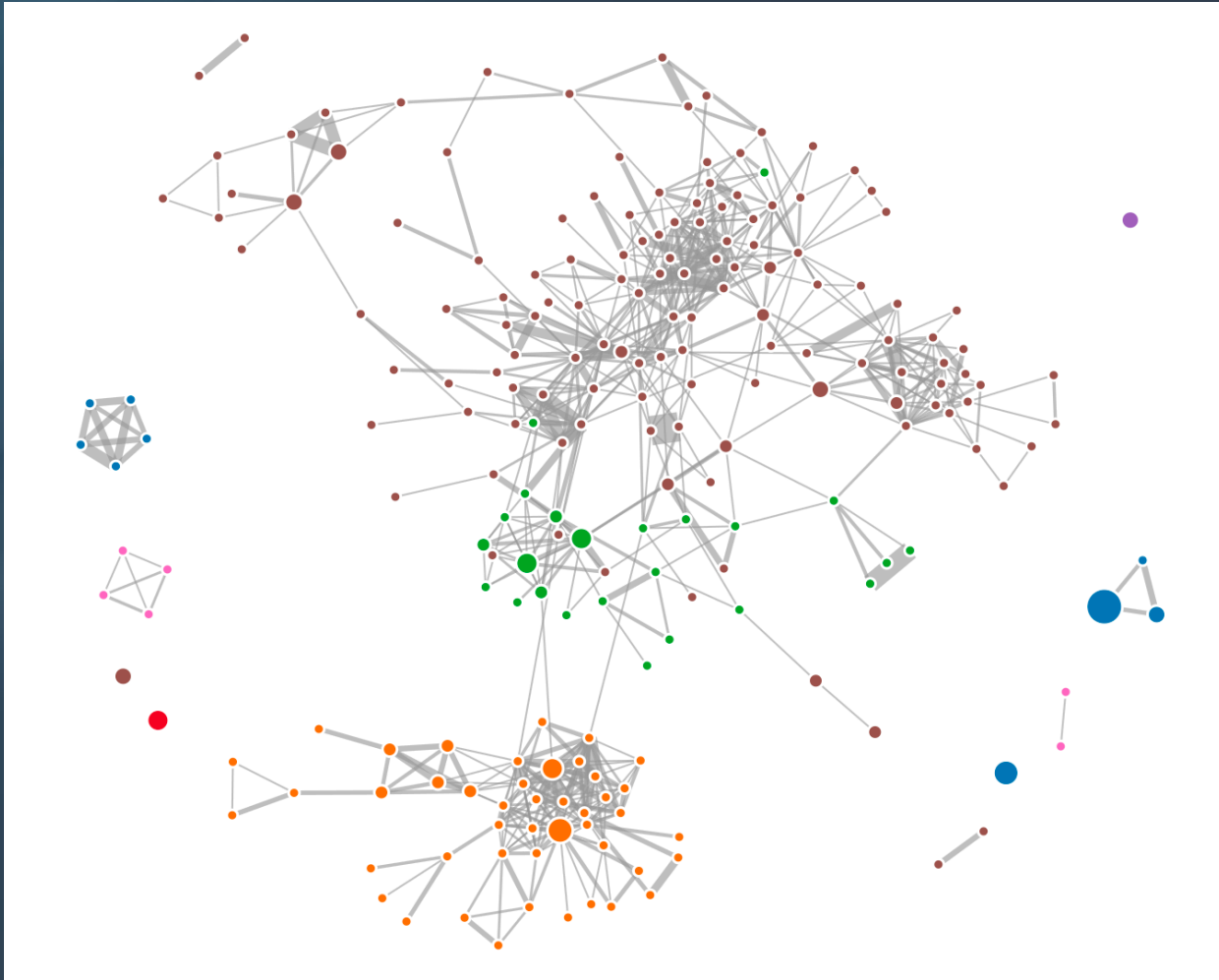
### [Map view of this query](#)

### Search Results: microbiome C1956108

Result Count: 296

Person	Title	Email Address	Phone Number	Score
<a href="#">Ruth Ley</a>		rel222@cornell.edu		74.39
<a href="#">Maureen Hanson</a>	Liberty Hyde Bailey Professor of Plant Molecular Biology	mrh5@cornell.edu		52.24
<a href="#">Volker Mai</a>	Assistant Professor	vmai@epi.ufl.edu	(352) 273-9398	48.85
<a href="#">Josef Neu</a>	Professor	neu@ufl.edu	(352) 273-8985	46.53
<a href="#">Susan Lynch</a>	Associate Professor in Residence	susan.lynch@ucsf.edu	415-476-6784	45.53
<a href="#">Yvonne Huang</a>	Assistant Professor	yvonne.huang@ucsf.edu	415-476-9456	43.26

# 'Microbiome' network graph



# Multi-institutional scenarios

- Multiple campuses of one university
- University and federal lab connections
  - *E.g.*, Colorado
- Consortia
  - 60 NIH Clinical & Translational Science Awards adopted VIVO as an ontology standard in 2011
- International
  - Instituto Interamericano de Cooperación para la Agricultura (IICA)
  - AgriVIVO.net



# International engagement



Home

ABOUT

PROGRAM


UPDATES

Home » About » Announcements »

## VIVO joins CASRAI in advancing research interoperability

---

Posted by Asha Law on Mon, 2012-04-23 09:18

The Leaders of the VIVO Project team ([VIVO](#) ) and the Consortia Advancing Standards in Research Administration Information (CASRAI) are today announcing a collaboration to advance a common global approach to research interoperability.

VIVO is an open source ontology and software system designed at Cornell University for researchers and used in many universities in the USA that has attracted interest more widely internationally. It is based on the Semantic Web / Linked Open Data

# CASRAI contributor roles working group

## Harvard-Wellcome draft contributor role taxonomy

Taxonomy category	Description of role
Study conception	Ideas; formulation of research question; statement of hypothesis.
Methodology	Development or design of methodology; creation of models.
Computation	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms.
Formal analysis	Application of statistical, mathematical or other formal techniques to analyse study data.
Investigation: performed the experiments	Conducting the research and investigation process, specifically performing the experiments.
Investigation: data/evidence collection	Conducting the research and investigation process, specifically data/evidence collection.
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation or other analysis tools.
Data curation	Management activities to annotate (produce metadata) and maintain research data for initial use and later re-use.
Writing/manuscript preparation: writing the initial draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft.
Writing/manuscript preparation: critical review, commentary or revision	Preparation, creation and/or presentation of the published work, specifically critical review, commentary or revision.
Writing/manuscript preparation: visualization/data presentation	Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.
Supervision	Responsibility for supervising research; project orchestration; principal investigator or other lead stakeholder.
Project administration	Coordination or management of research activities leading to this publication.
Funding acquisition	Acquisition of the financial support for the project leading to this publication.

# International engagement

News Release Share Printer friendly version 





Please register to view contact details

## Strategic partnership of euroCRIS and VIVO

23 November 2011 [euroCRIS](#)

euroCRIS, a not-for-profit scientific association registered in the Netherlands, and the leaders of the project team of VIVO, an open source Semantic Web software application originally developed at Cornell University, have entered into a strategic partnership.

euroCRIS ([www.eurocris.org](http://www.eurocris.org)) is furthering the implementation and linking of Current Research Information Systems (CRIS) based on the Common European Research Information Format (CERIF) - commonly indicated with the acronym CERIF-CRIS - and promotes best practice in CRISs, spanning the field from raw experimental and simulated data through research management systems to research publications.

# AgriVIVO



AgriVIVO

HOME

SEARCH

TOOLS

ABOUT

CONTACT

AgriVIVO is a search portal built to facilitate connections between all actors in the agricultural field, bridging across separately hosted directories and online communities.

You can search for [people](#), [organizations](#) and [events](#). Read more on [how to have data included](#) in AgriVIVO. Read our new [F.A.Q.](#) and our [terms of use](#).

[Read more](#)



## Search for people

Examples: ["climate change"](#), ["capacity building"](#), ["rural development"](#), ["information management"](#)

## Search by location

[View map](#)

10

DATA PROVIDERS

788

PEOPLE

4,742

ORGANIZATIONS

225

EVENTS

<http://agrivivo.net>

VIVO

# AgriVIVO

## Search



People

Organizations

Events

### Current search

- plant protection

### Narrow your results

plant protection

Search

### Filter by expertise:

- Plant Protection 45
- Crop Management 39
- Entomology 5
- Botany 2
- Information Science 2

Show more

### Filter by location:

- The United Kingdom Of Great Britain And Northern Ireland 17
- Switzerland 14
- Kenya 1

Last import date: 12/07/2013

Show map

## 57 people

Name: [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)



**Yelitza Colmenarez**

CABI

Brazil

Source: CABI

The background of the slide is a dark blue gradient. In the upper half, there is a complex pattern of thin, overlapping, wavy lines in various colors including white, light blue, green, yellow, orange, and purple. These lines create a sense of movement and interconnectedness.

# The VIVO-ISF ontology

# Ontology definition

- In the context of computer and information sciences, an ontology defines a set of representational primitives with which to model a domain of knowledge or discourse
  - Tom Gruber, 2007

# Gruber definition, continued (2)

- The representational primitives are typically classes (or sets), attributes (or properties), and relationships (or relations among class members)
- The definitions of the representational primitives include information about their meaning and constraints on their logically consistent application



# Gruber definition (3)

- In practice, the languages of ontologies are closer in expressive power to first-order logic than languages used to model databases
- For this reason, ontologies are said to be at the "semantic" level, whereas database schema are models of data at the "logical" or "physical" level

# Gruber definition (4)

Due to their independence from lower level data models, ontologies are used for

- integrating heterogeneous databases
- enabling interoperability among disparate systems, and
- specifying interfaces to independent, knowledge-based services

# Otherwise notable

- An ontology is itself embedded as RDF so data becomes self-describing
  - Definitions are available via the namespace URI
- The VIVO-ISF ontology reuses significant parts of common ontologies typically organized by domain
- Local extensions roll up into VIVO-ISF for comparison across sites

# VIVO ontology goals

- Describe people, organizations, and research resources in the **process** of doing research
- Stay discipline neutral
- Use existing scientific domain terminology to describe **content** of research

# CTSAconnect project (2012-13)

- Aligned and integrated the VIVO 1.5 ontology with the eagle-i ontology for research resources
- The Integrated Semantic Framework, or ISF, includes this work and added some extensions in the clinical domain
- VIVO 1.6+ and eagle-i each use an overlapping set of modules from the ISF
  - Modularity allows selectivity based on local needs



# VIVO-ISF Design Patterns

- Support for information integration
  - Vcard ontology
  - Authorships
- Support for temporal information
- Support for relationships, roles, and processes
- Connections to geography

# Roles and 'ships

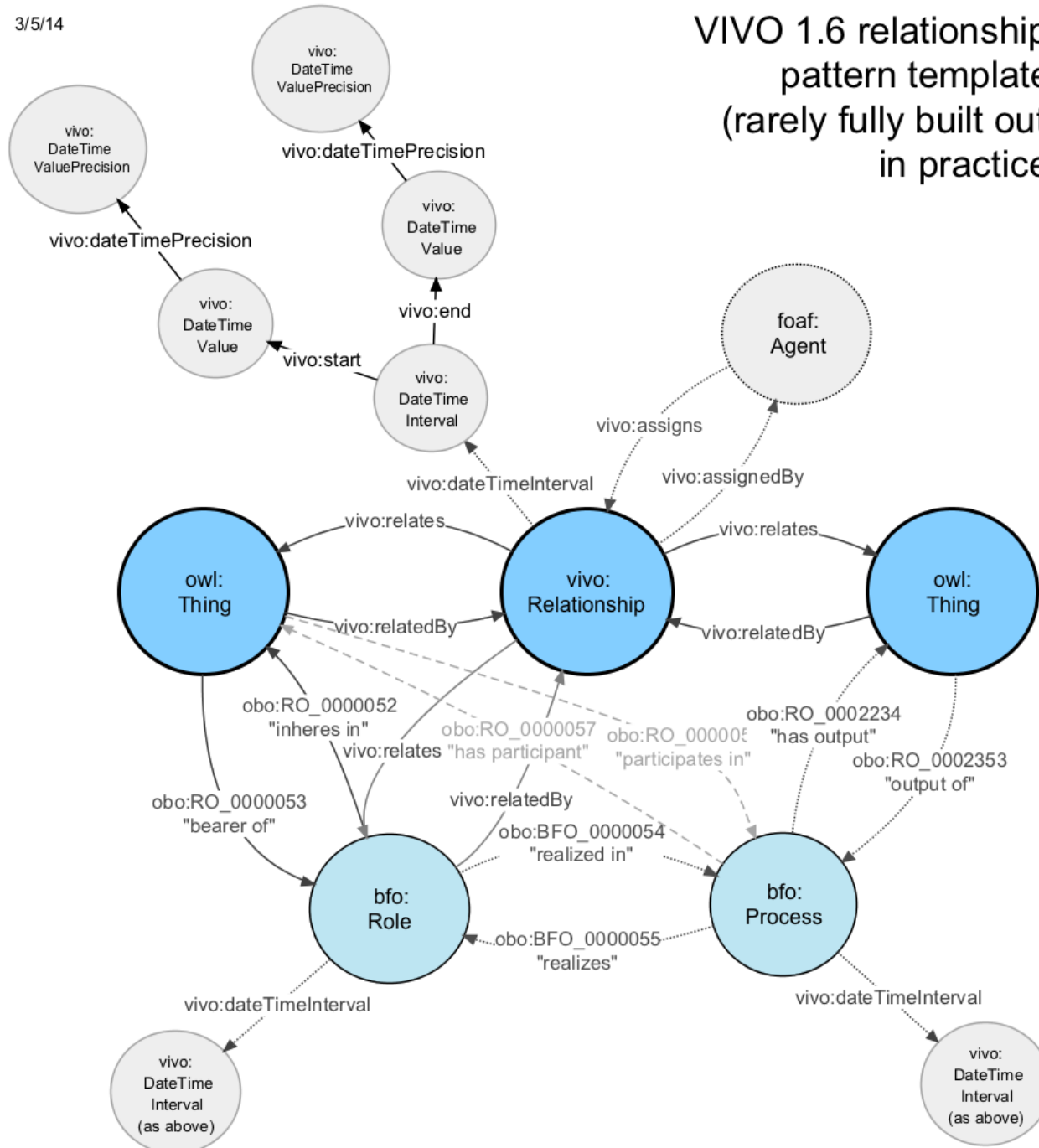
- Typical pattern in RDF is to link two entities via an object property – a simple relationship
- In VIVO-ISF, relationships are entities
- This enables them to hold temporal and/or other information such as author rank
- Often the relationship references a role



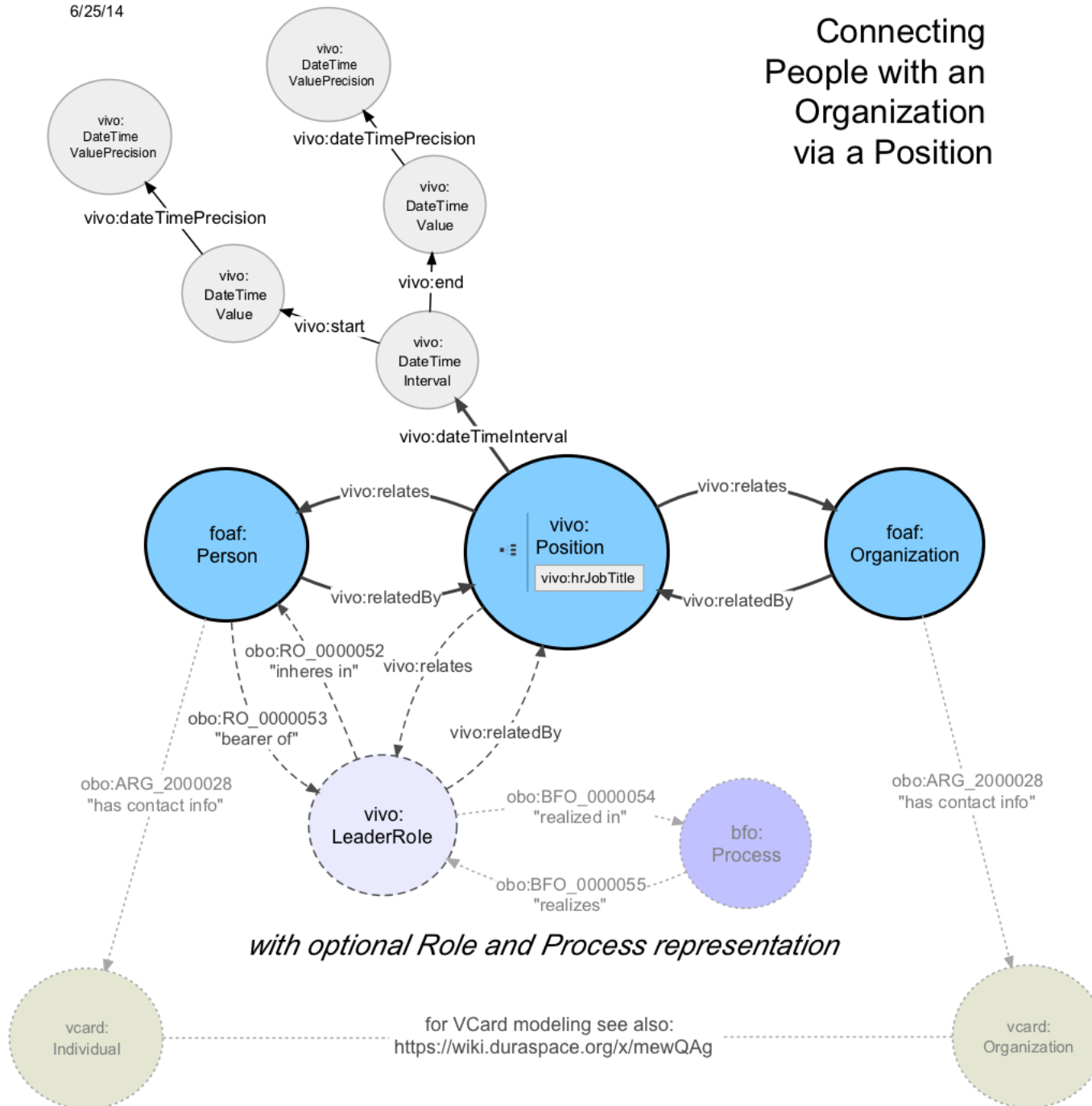
# Roles and processes

- When you have the information, it's useful to represent the role and the process(es) involved
  - E.g., with a grant, the project and/or investigations
- In VIVO-ISF, the role is distinct (but closely tied to) the relationship
- This model has been applied at Duke for representing humanities scholarship

# VIVO 1.6 relationship pattern template (rarely fully built out in practice)



# Connecting People with an Organization via a Position





# Other ontologies

- VIVO-ISF uses elements from an expanding list of a dozen or more ontologies
- Data interoperability is enhanced by reusing existing ontologies
- The VIVO application adapts to reflect new classes and properties added
  - Some custom forms and “list views” may be needed to support more intuitive editing



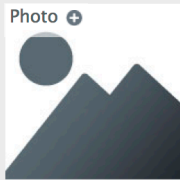
Demo: Vitro

# What is Vitro?

- The software platform for the VIVO application
  - Approximately 90% of the VIVO code base
- VIVO without the VIVO-ISF ontology and associated customizations and visualizations
  - A blank slate for ontology development and application prototyping

# Vitro prototyping exercise

- Local Foods

Photo + 

[Admin Panel](#) [Edit this individual](#) Verbose property display is **off** | [Turn on](#)

Resource URI: <http://vitro.vivoweb.org/individual/n5234>

**Morning Glory produce at Ithaca Farmers Market** | [Farmers Market Opportunity](#)

Other

**goods distributed** +

vegetable

- [green beans](#) | [edit](#) | [delete](#)
- [sweet corn](#) | [edit](#) | [delete](#)

**distributor** +

farm

- [Morning Glory Farm](#) | [edit](#) | [delete](#)

**distribution outlet** +

farmers market

- [Ithaca Farmers Market](#) | [edit](#) | [delete](#)





# Optional self-study

# Optional VIVO & linked data

## Learning about VIVO adopters

- Browse any of the [publicly available VIVO implementations](#) to compare interfaces, branding, and unique features
- Browse the [VIVO Map](#) on our wiki
- Visit [vivo.vivoweb.org](http://vivo.vivoweb.org) (ask us for a login)

## Multi-institutional search

- Experiment with [vivosearch.org](http://vivosearch.org)
- Try [Polyglot](#), a search across multiple NIH Clinical and Translational Research Awards by Dr. David Eichmann of the University of Iowa

## Understanding Linked Open Data (LOD) and basic SPARQL queries

- Exercise:  
[Finding VIVO Data with the University of Florida's public SPARQL endpoint](#)

The background of the slide is a dark blue gradient. Overlaid on this are numerous thin, wavy lines in various colors including white, light blue, green, yellow, orange, and purple. These lines flow across the frame in a somewhat chaotic but rhythmic pattern, creating a sense of movement and complexity.

# Case Study: Scholars@Duke

# VIVO at Duke

- Project team under Provost's Office
- Developers in University IT group
- Elements team in Library
- Currently: 5,685 faculty in 9 schools plus university institutes and centers, 200K+ pubs
- Replacing two legacy systems

# Scholars@Duke: Mission

- Create profiles for all Duke faculty representing their interests and accomplishments

scholars.duke.edu

The screenshot shows a faculty profile for Dan Ariely on the Scholars@Duke website. The page features a blue header with the Duke University logo and 'SCHOLARS@DUKE' text. A search bar is located in the top right corner. The profile includes a navigation menu with 'Home', 'People', 'Schools / Institutes', 'Research', and 'About'. The main content area displays the name 'Dan Ariely' and his title 'James B. Duke Professor of Behavioral Economics'. Below this, there is a section for 'Appointments and Affiliations' with a list of roles and dates. A 'Contact Information' section provides his address and email. On the right side, there are buttons for 'Manage This Profile' and 'Add Data to my Website', a profile picture, a 'Publications in VIVO' line graph, and links for 'Co-Author Network' and 'Co-Investigator'.

Support | Index

Search People, Places or Things Search

Duke UNIVERSITY | SCHOLARS@DUKE

Home > People Schools / Institutes Research About

**Dan Ariely**  
James B. Duke Professor of Behavioral Economics

**Appointments and Affiliations**


- > James B. Duke Professor of Behavioral Economics, [Fuqua School of Business, Duke University](#) 2008 -
- > Professor of Business Administration, [Fuqua School of Business, Duke University](#) 2008 -
- > Adjunct Professor of Psychiatry and Behavioral Sciences, [Psychiatry and Behavioral Sciences, Clinical Science Departments](#) 2010 -
- > Professor of Economics, [Economics, Trinity College of Arts & Sciences](#) 2008 -

**Contact Information**  
2024 W Main Street, C104F, Durham, NC 27705  
Box 90420, Durham, NC 27705  
✉ [dan@danariely.com](mailto:dan@danariely.com) ☎ (919) 660-7703


[Bio](#)  
[Professional Page](#)


Manage This Profile

Add Data to my Website



Publications in VIVO

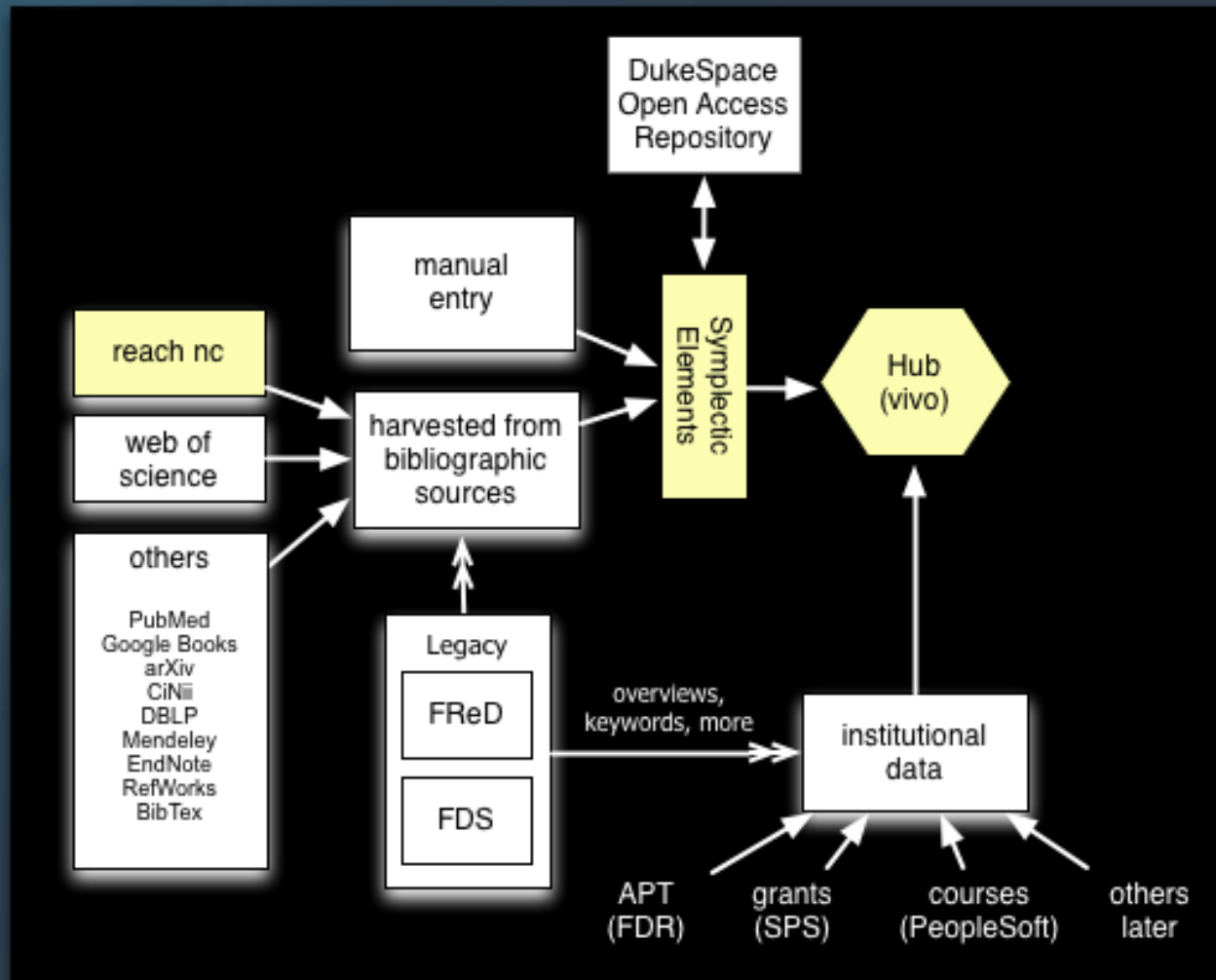


100 in the last 10 full years (187 total) 

[Co-Author Network](#)

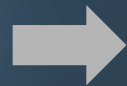
[Co-Investigator](#)

# Data Sources



# Scholars@Duke publications

Harvest



Manage



Display

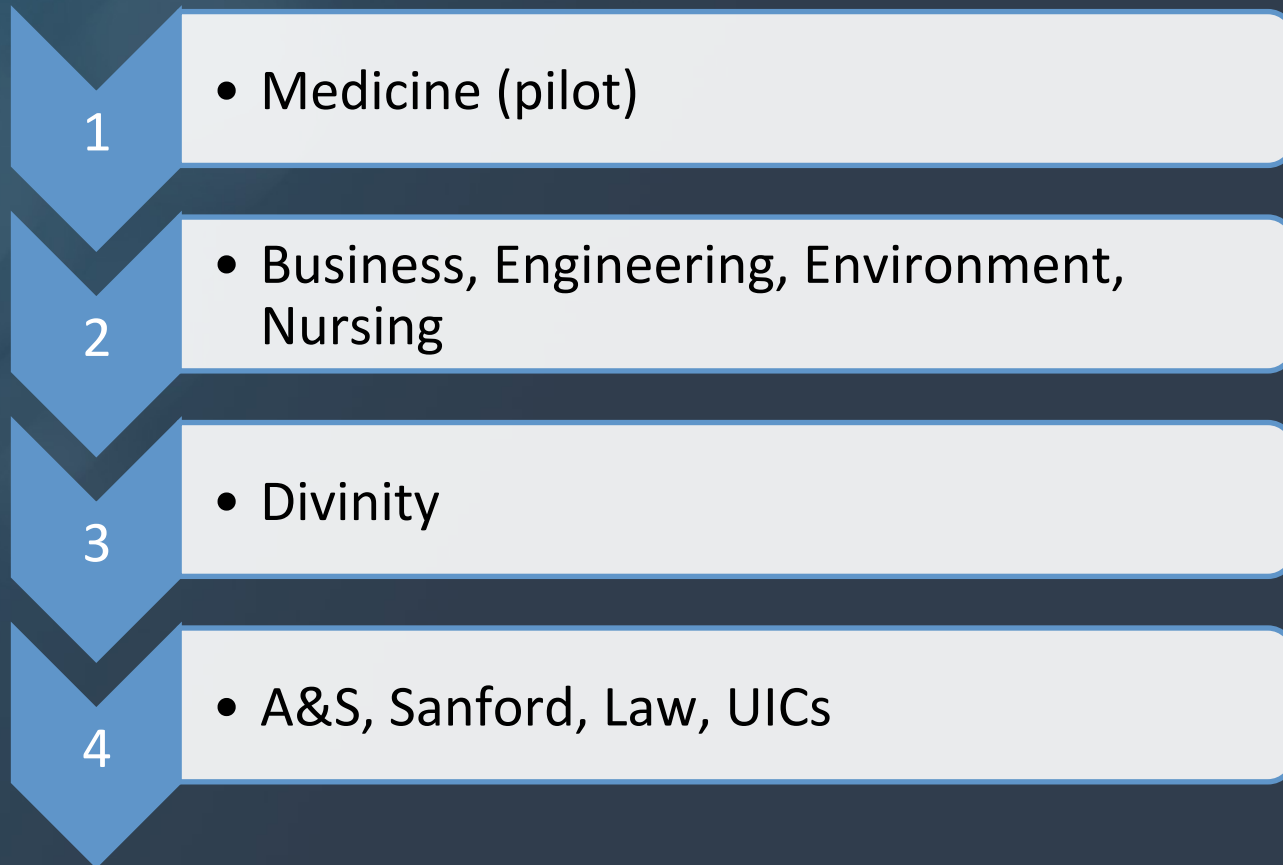
- Source of articles and keywords
- Identifies authors
- Works well in STEM fields

- Harvests from REACH NC
- Adds other pubs
- Links to full text publications
- Private profiles

- Publication list displayed on profile
- Profile data can be re-purposed
- Public profiles

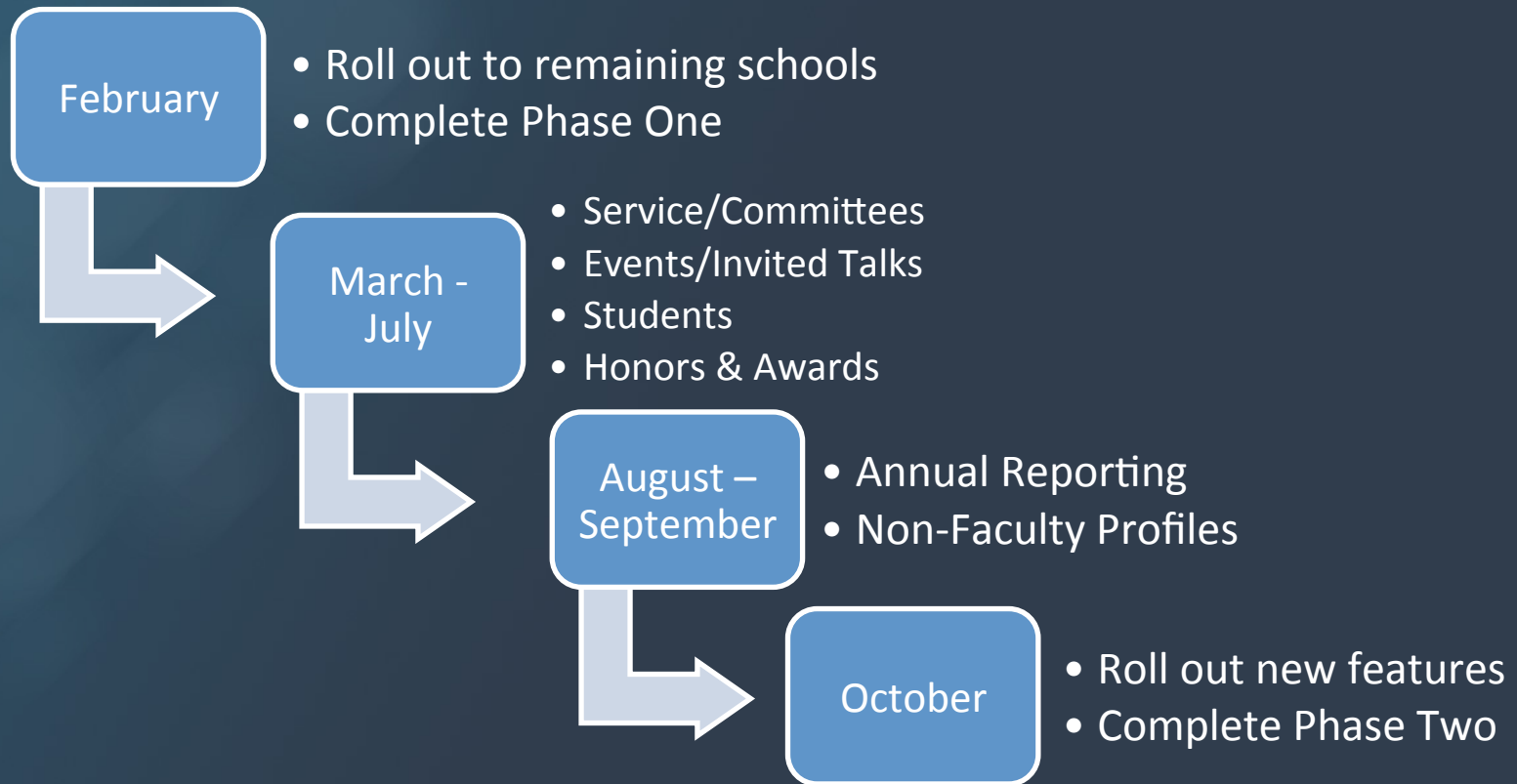


# Rollout Phases





# 2014 Road Map: Phase Two



# Scholars@Duke

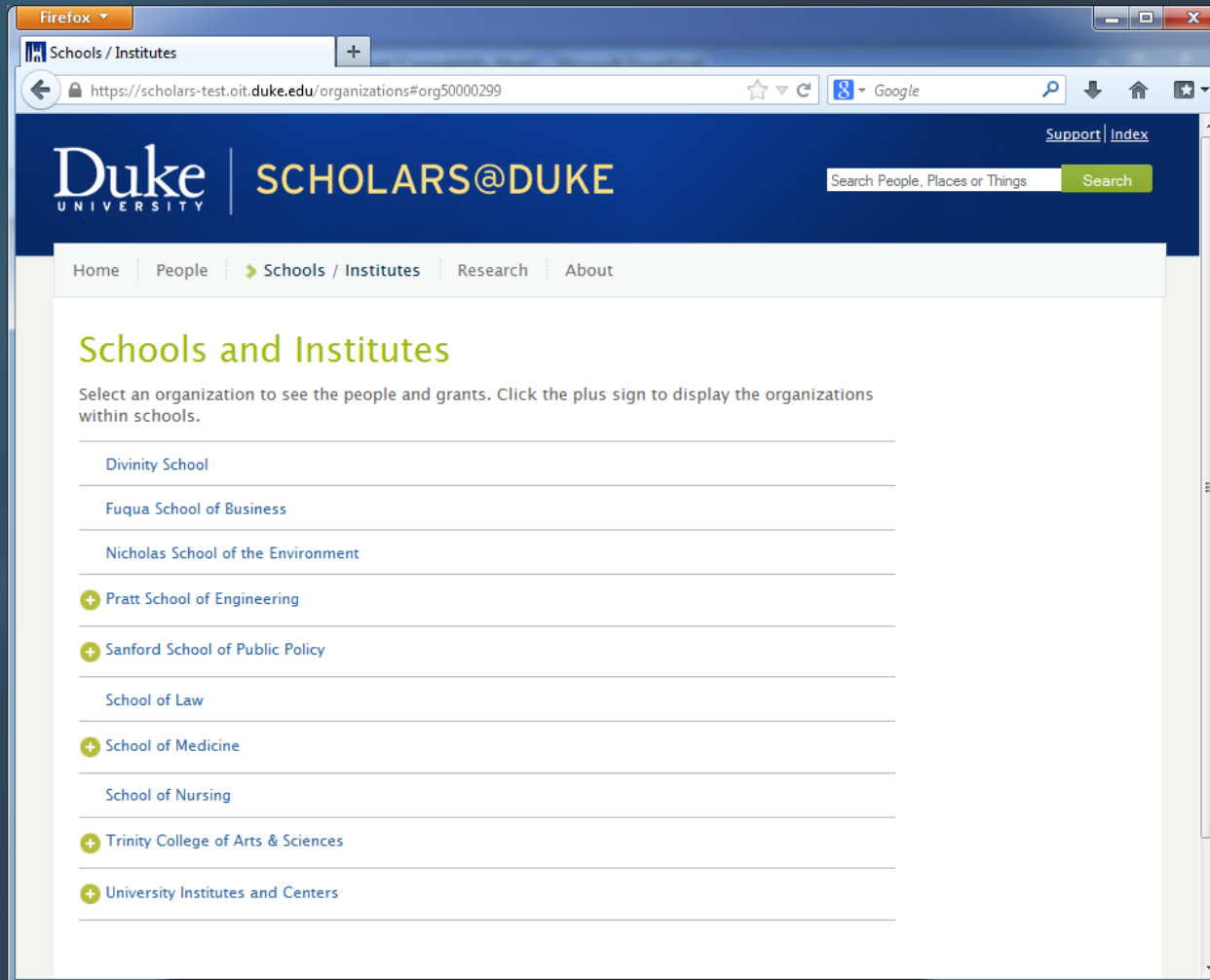


The screenshot shows a Firefox browser window displaying the Scholars@Duke website. The browser's address bar shows the URL <https://scholars.duke.edu>. The website header features the Duke University logo and the text "SCHOLARS@DUKE" in a large, bold font. A search bar is located in the top right corner of the header, with the placeholder text "Search People, Places or Things" and a "Search" button. Below the header is a navigation menu with links for "Home", "People", "Schools / Institutes", "Research", and "About".

The main content area is divided into several sections. On the left, there is a large photograph of a woman in a white lab coat, likely a faculty member, in a laboratory setting. Below this photo is the heading "Scholars@Duke" in a green font, followed by a paragraph: "Scholars@Duke is a hub that brings together the research and teaching activities of all Duke faculty members. Information about faculty comes from institutional and public data sources, gathered by a suite of tools. Scholars@Duke includes an expertise network, web profiles, and an archive of publications." Below this text is another paragraph: "Based on VIVO, the research-focused discovery tool, Scholars@Duke helps local and global communities connect to Duke scholarship."

On the right side of the main content area, there are two vertical panels. The top panel is titled "Research Events" and lists two events: "Basal Ganglia Circuit Function in Health and Disease" on MAY 21 at 12:00 PM, and "What Do Astrocytes Do?" on MAY 22 at 12:30 PM. The bottom panel is titled "Research Stories" and features a sub-heading "An Ocean Filled with Stars". Below this is a small image of a green fluorescent micrograph showing star-shaped cells. To the right of the image is a text block: "Researchers at the Duke-NUS Graduate Medical School in Singapore captured this image of astrocytes (star-shaped glial cells of the brain) that were developed from neural stem cells of mice in a lab dish. The nuclei of the cells are stained pink and the green dye is specific to a protein that marks them as astrocytes. Astrocytes are helpers and supporters of the brain's neurons and they perform repairs after a brain injury." Below this text is a "read more" link.

# Organizations



The screenshot shows a web browser window with the URL <https://scholars-test.oit.duke.edu/organizations#org50000299>. The page header includes the Duke University logo and the text "SCHOLARS@DUKE". A search bar is present with the text "Search People, Places or Things" and a "Search" button. The navigation menu includes "Home", "People", "Schools / Institutes", "Research", and "About". The main content area is titled "Schools and Institutes" and contains the following text: "Select an organization to see the people and grants. Click the plus sign to display the organizations within schools." Below this text is a list of schools and institutes, each with a plus sign icon to its left:

- Divinity School
- Fuqua School of Business
- Nicholas School of the Environment
- + Pratt School of Engineering
- + Sanford School of Public Policy
- School of Law
- + School of Medicine
- School of Nursing
- + Trinity College of Arts & Sciences
- + University Institutes and Centers

# Profile Page

The screenshot shows a Firefox browser window displaying the profile page for Michael Louis Platt on the Duke University SCHOLARS@DUKE website. The browser's address bar shows the URL <https://scholars.duke.edu/display/per8059762>. The page header includes the Duke University logo and the text "SCHOLARS@DUKE". A search bar is located in the top right corner. The main navigation menu includes "Home", "People", "Schools / Institutes", "Research", and "About".

The profile section for Michael Louis Platt includes the following information:

- Michael Louis Platt**  
Professor of Neurobiology, with tenure
- Our lab tries to understand how the brain makes decisions. We are particularly interested in the biological mechanisms that allow people and other animals to make decisions when the environment is ambiguous or complicated by the presence of other individuals. We use a broad array of techniques, including single neuron recordings, microstimulation, neuropharmacology, eye tracking, brain imaging, and genomics to answer these questions. Our work is motivated by ethology, evolutionary biology (... [more](#))
- Appointments and Affiliations**
  - Professor of Neurobiology, with tenure, [Neurobiology, Basic Science Departments](#) 2010 -
  - Professor in the Department of Evolutionary Anthropology and Anatomy, [Evolutionary Anthropology, Trinity College of Arts & Sciences](#) 2010 -
  - Professor in the Department of Psychology and Neuroscience, [Psychology and Neuroscience, Trinity College of Arts & Sciences](#) 2010 -
  - Director of the Duke Institute for Brain Sciences, [Duke Institute for Brain Sciences, University Institutes and Centers](#) 2011 - 2017
  - Director of the Center for Cognitive Neuroscience, [Duke Institute for Brain Sciences, University Institutes and Centers](#) 2009 - 2014
- Contact Information**  
B243f LSRC Building, Center for Cognitive Neuroscience, Durham, NC 27708  
Box 90999, Center for Cognitive Neuroscience, Durham, NC 27708

On the right side of the profile, there are several interactive elements:

- [Manage This Profile](#)
- [Add Data to my Website](#)
- A portrait photograph of Michael Louis Platt.
- A line graph titled "Publications in VIVO" showing a peak in the last 10 full years (95 total) with 76 publications.
- [Co-Author Network](#)
- [Co-Investigator Network](#)

# Profile Page, part 2

Firefox

Platt, Michael Louis

https://scholars.duke.edu/display/per8059762

Google

**+ Keywords**

**- Education and Training**

Ph.D., [University of Pennsylvania](#) 1994

**- Selected Publications**

**Academic Articles**

Klein, JT; Platt, ML. [Social Information Signaling by Neurons in Primate Striatum.](#) *Current Biology*. 2013 [Full Text](#)

Brent, LJ; Maclarnon, A; Platt, ML; Semple, S. [Seasonal changes in the structure of rhesus macaque social networks.](#) *Behavioral Ecology and Sociobiology*. 67:349-359. 2013 [Full Text](#)

Chang, SW; Gariépy, JF; Platt, ML. [Neuronal reference frames for social decisions in primate frontal cortex.](#) *Nature Neuroscience*. 16:243-250. 2013 [Full Text](#)

Brent, LJ; Heilbronner, SR; Horvath, JE; Gonzalez-Martinez, J; Ruiz-Lambides, A; Robinson, AG; Skene, JH; Platt, ML. [Genetic origins of social networks in rhesus macaques.](#) *Scientific Reports*. 3:1042. 2013 [Full Text](#)

Chang, SWC; Gariépy, JF; Platt, ML. [Neuronal reference frames for social decisions in primate frontal cortex.](#) *Nature Neuroscience*. 16:243-250. 2013 [Full Text](#)

[more...](#)

**+ Selected Federal Grants**

**- Recent Courses**

[NEUROBIO 393: Research Independent Study](#) Instructor

[NEUROBIO 751: Neuroscience Bootcamp](#) Instructor

[NEUROBIO 793: Research in Neurobiology](#) Instructor

[NEUROSCI 493: Research Independent Study 1](#) Instructor

[NEUROSCI 494: Research Independent Study 2](#) Instructor

[NEUROSCI 495: Research Independent Study 3](#) Instructor

# Widget Example

The screenshot shows a Firefox browser window displaying the website for The Kornbluth Laboratory at Duke University School of Medicine. The browser's address bar shows the URL `sites.duke.edu/kornbluthlab/publications/`. The website header includes the lab's logo and name, and a navigation menu with links for Welcome, People, Publications, Resources, and Contacts. A search bar is also present. The main content area is divided into three sections: a list of publications, a 'Links' section, and a 'Calendar of Scientific Events' section.

## Publications

- Kurokawa, M; Ito, T; Yang, CS; Zhao, C; Macintyre, AN; Rizzieri, DA; Rathmell, JC; Deininger, MW; Reya, T; Kornbluth, S(2013). "Engineering a BCR-ABL-activated caspase for the selective elimination of leukemic cells.." Proceedings of the National Academy of Sciences of USA.110(6): 2300- 2305 [More info](#)
- Andersen, JL; Kornbluth, S(2013). "The Tangled Circuitry of Metabolism and Apoptosis." Molecular Cell.49(3): 399- 410 [More info](#)
- Zhang, L; Huang, NJ; Chen, C; Tang, W; Kornbluth, S(2012). "Ubiquitylation of p53 by the APC/C inhibitor Trim39.." Proceedings of the National Academy of Sciences of USA.109(51): 20931- 20936 [More info](#)
- Califf, RM; Kornbluth, S(2012). "Establishing a framework for improving the quality of clinical and translational research.." Journal of Clinical Oncology.30(14): 1725- 1726 [More info](#)
- Huang, NJ; Zhang, L; Tang, W; Chen, C; Yang, CS; Kornbluth, S(2012). "The Trim39 ubiquitin ligase inhibits APC/CCdh1-mediated degradation of the Bax activator MOAP-1.." The Journal of Cell Biology.197(3): 361- 367 [More info](#)
- Kim, J; Parrish, AB; Kurokawa, M; Matsuura, K; Freel, CD; Andersen, JL; Johnson, CE; Kornbluth, S(2012). "Rsk-mediated phosphorylation and 14-3-3 $\epsilon$  binding of Apaf-1 suppresses cytochrome c-induced apoptosis.." The EMBO Journal.31(5): 1279- 1292 [More info](#)
- Andersen, JL; Kornbluth, S(2012). "Mcl-1 rescues a glitch in the matrix." Nature Cell Biology.14(6): 563- 565 [More info](#)

## Links

- [DCI Flow Scheduling](#)
- [Duke University School of Medicine](#)
- [LMCF Reservations](#)
- [Proteomics Sample Submission System](#)

## Calendar of Scientific Events

- [Basal Ganglia Circuit Function in Health and Disease](#)  
Tue, May 21, 2013 12:00 PM - Tue, May 21, 2013 01:00 PM Bryan Research 103. [...]
- [What Do Astrocytes Do?](#)  
Wed, May 22, 2013 12:30 PM - Wed, May 22, 2013 01:30 PM Nanaline Duke 147. [...]
- [Iron-Sulfur Protein Biogenesis in Eukaryotes: Mechanisms, Diseases and Role in Genome Maintenance](#)  
Fri, May 24, 2013 12:00 PM - Fri, May 24, 2013

# Support for Scholars@Duke

Faculty member



Delegate



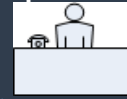
Admin staff



Power user



Help Desk



Faculty Data Project team



OIT Developers



Library



Data Owners



# Outreach and Training

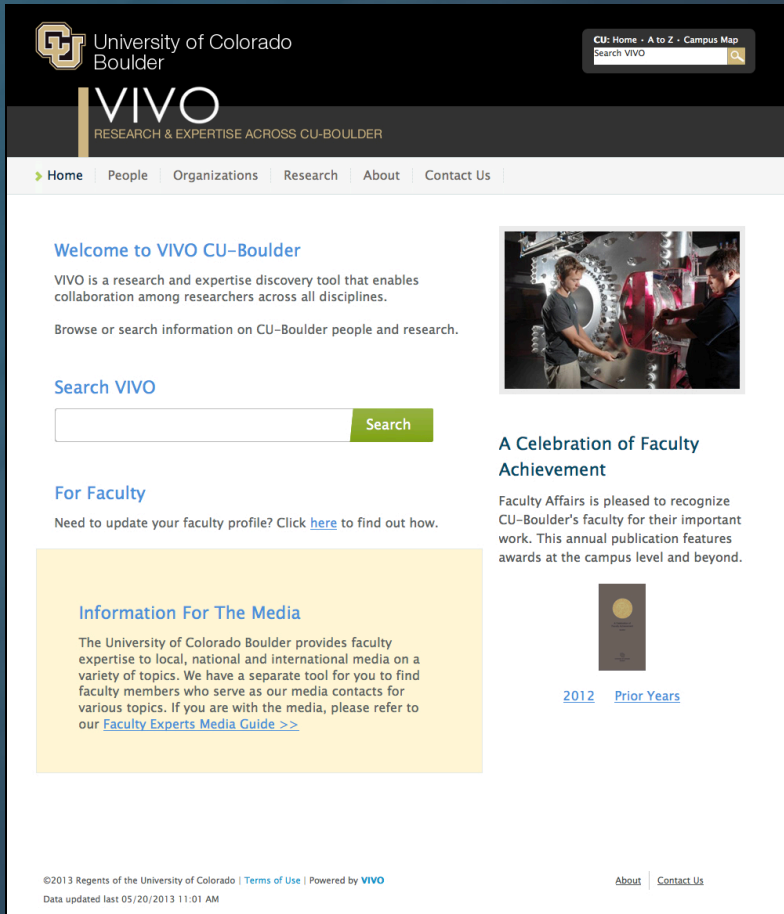
- User Group Meetings
- Power User Training Sessions
- Joint Scholars@Duke & Elements Training Workshops
- Demos at Department Meetings
- Individual Feedback Meetings





# VIVO vignettes

# VIVO CU-Boulder



University of Colorado Boulder

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**Welcome to VIVO CU-Boulder**

VIVO is a research and expertise discovery tool that enables collaboration among researchers across all disciplines.

Browse or search information on CU-Boulder people and research.

Search VIVO

Search

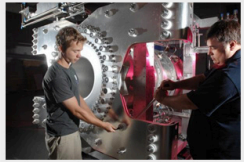
**For Faculty**

Need to update your faculty profile? Click [here](#) to find out how.


**Information For The Media**

The University of Colorado Boulder provides faculty expertise to local, national and international media on a variety of topics. We have a separate tool for you to find faculty members who serve as our media contacts for various topics. If you are with the media, please refer to our [Faculty Experts Media Guide >>](#)

**A Celebration of Faculty Achievement**



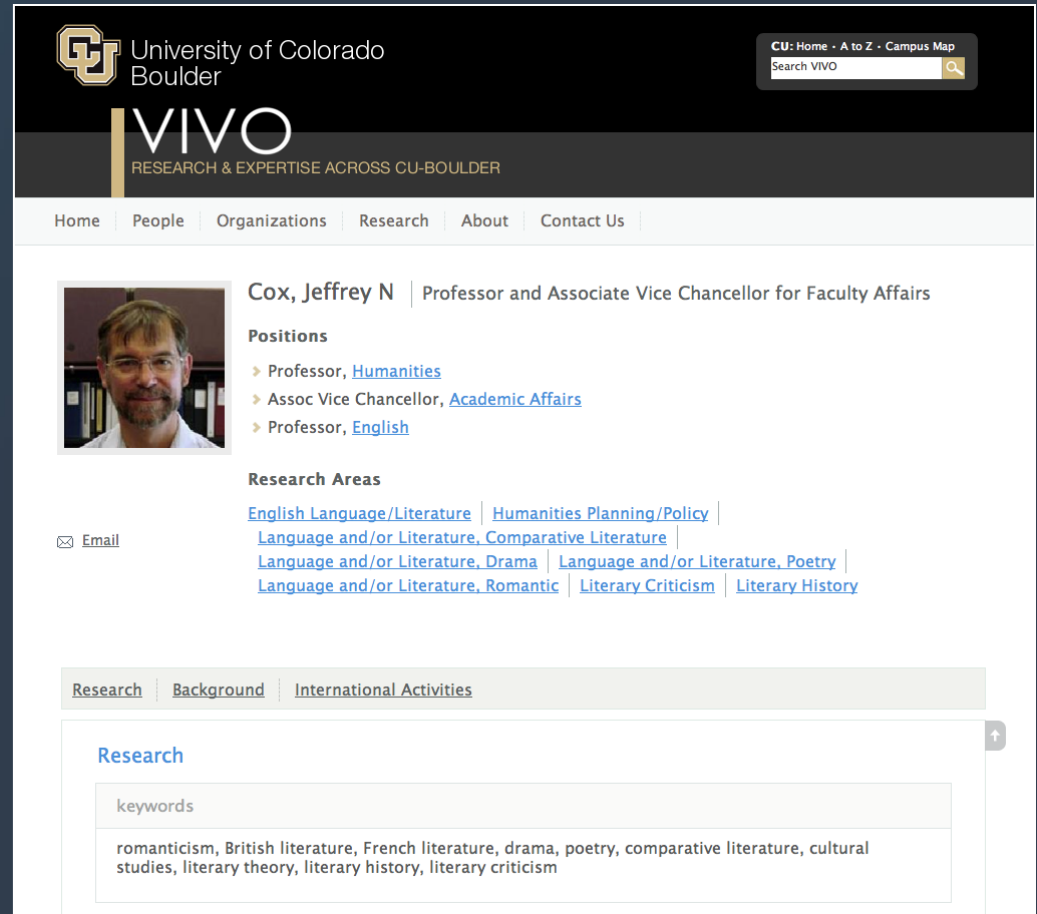
Faculty Affairs is pleased to recognize CU-Boulder's faculty for their important work. This annual publication features awards at the campus level and beyond.



2012 [Prior Years](#)

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**Cox, Jeffrey N** | Professor and Associate Vice Chancellor for Faculty Affairs

**Positions**

- ▶ Professor, [Humanities](#)
- ▶ Assoc Vice Chancellor, [Academic Affairs](#)
- ▶ Professor, [English](#)

**Research Areas**

[English Language/Literature](#) | [Humanities Planning/Policy](#) | [Language and/or Literature, Comparative Literature](#) | [Language and/or Literature, Drama](#) | [Language and/or Literature, Poetry](#) | [Language and/or Literature, Romantic](#) | [Literary Criticism](#) | [Literary History](#)

Email

[Research](#) | [Background](#) | [International Activities](#)

**Research**

keywords

romanticism, British literature, French literature, drama, poetry, comparative literature, cultural studies, literary theory, literary history, literary criticism

# Atmospheric & space physics

The image shows two overlapping screenshots of the LASP website. The left screenshot displays the profile of Thomas N. Woods, Associate Director of Technical Divisions. It includes a photo of him, a QR code, and a list of research areas: Astrophysics and Solar Physics. It also shows a 'Publications in VIVO' section with a line graph and a 'Co-Author Network' link. The right screenshot shows the 'Total Irradiance Monitor (TIM)' instrument page, featuring a photo of the instrument, a description of its function, and a list of supported publications.

**Woods, Thomas N** | Associate Director of Technical Divisions

Dr. Tom Woods is Associate Director of Technical Divisions at the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado. He obtained his BS in Physics in 1981 from Southwestern at Memphis (now Rhodes College) and his PhD in Physics in 1985 from the Johns Hopkins University under the direction of Dr. Paul Feldman. Tom joined LASP in 1987 to work on the UARS SOLSTICE program under the direction of Dr. Gary Rottman. He originally served as the SORCE Project Scientist (...  
[more](#))

**Research Areas**  
[Astrophysics](#) | [Solar Physics](#)

**Publications in VIVO**

3 in the last 10 full years (14 total)

[Co-Author Network](#)

[Map Of Science](#)

**Affiliation** | **Publications**

**Affiliation**

Principal Investigator Of

- [Extreme Ultraviolet Variability Experiment \(EVE\)](#)
- [Solar Extreme Ultraviolet Experiment \(SEE\)](#)
- [Solar Radiation and Climate Experiment \(SORCE\)](#)
- [Solar Stellar Irradiance Comparison Experiment \(SOLSTICE\)](#)

**Home** | **Flight Equipment** | **People** | **Research** | **Storage**

**Home** | **Flight Equipment** | **People** | **Research** | **Storage**

**Total Irradiance Monitor (TIM)** | Instrument

**Overview** | **Publications** | **Other**

**Overview**

**Description**

The Total Irradiance Monitor (TIM) measures the total amount of radiation coming from the Sun. The sensor uses what is known as an absolute radiometer and houses four cone-shaped cavities. One of the cavities has an oscillating shutter that allows direct sunlight to shine into one of the cones. The material in the cone absorbs nearly all the Sun's energy and heats up. By measuring the voltage needed to bring this heated cone back to the same temperature as one of the other "reference" cones, which are kept at a constant temperature, the instrument can obtain an extremely accurate reading of the TSI in watts.

**Is an Instrument on**

[SORCE \(January 25, 2003 – Present\)](#)

**Publications**

supported publications

- [A new, lower value of total solar irradiance: Evidence and climate significance](#)
- [Intercomparison of SCIAMACHY and SIM vis-IR irradiance over several solar rotational timescales](#)
- [Solar total irradiance in cycle 23](#)

## Flight Equipment

[Instrument \(42\)](#)

[▶ Space Craft \(8\)](#)

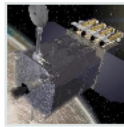
### Space Craft

[▶ All](#) [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)



[Cassini Orbiter](#)

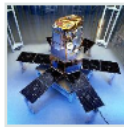
### [POLAR](#)



[Solar Dynamics Observatory \(SDO\)](#)



[Solar Mesosphere Explorer \(SME\)](#)

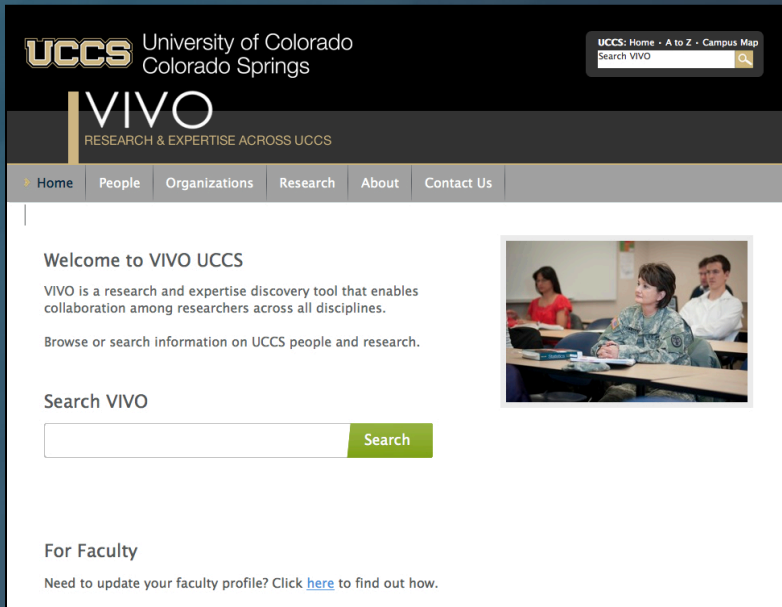


[Solar Radiation and Climate Experiment \(SORCE\)](#)

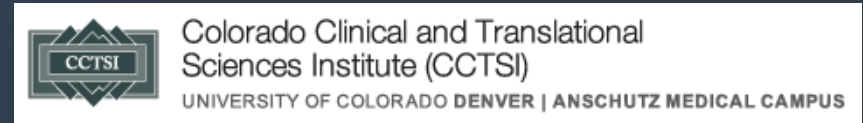


[Student Nitric Oxide Explorer \(SNOE\)](#)

# Regional Linked Data Efforts



The screenshot shows the VIVO UCSS website. At the top left is the UCSS logo and the text "University of Colorado Colorado Springs". To the right is a search bar labeled "UCSS: Home - A to Z - Campus Map" with "Search VIVO" entered. Below this is the "VIVO" logo and the tagline "RESEARCH & EXPERTISE ACROSS UCSS". A navigation menu includes "Home", "People", "Organizations", "Research", "About", and "Contact Us". The main content area features a "Welcome to VIVO UCSS" message, a description of VIVO as a research and expertise discovery tool, and a search bar with a "Search" button. A small photo of three people in a classroom is also visible.



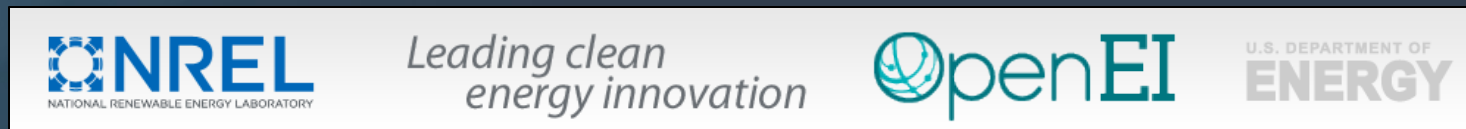
The logo for CCTSI features a stylized diamond shape with the acronym "CCTSI" inside. To the right, the text reads "Colorado Clinical and Translational Sciences Institute (CCTSI)" and "UNIVERSITY OF COLORADO DENVER | ANSCHUTZ MEDICAL CAMPUS".



The logo for LASP includes the CU Boulder logo and the acronym "LASP" in large blue letters. Below it, the text reads "Laboratory for Atmospheric and Space Physics". To the right is a photo of a person working at a computer workstation.



The logo for NCAR/UCAR features the acronym "NCAR" and "UCAR" in white on a blue background, followed by the text "University Corporation for Atmospheric Research".



This block contains three logos: "NREL NATIONAL RENEWABLE ENERGY LABORATORY", the slogan "Leading clean energy innovation", and "OpenEI" with a globe icon. To the right is the "U.S. DEPARTMENT OF ENERGY" logo.

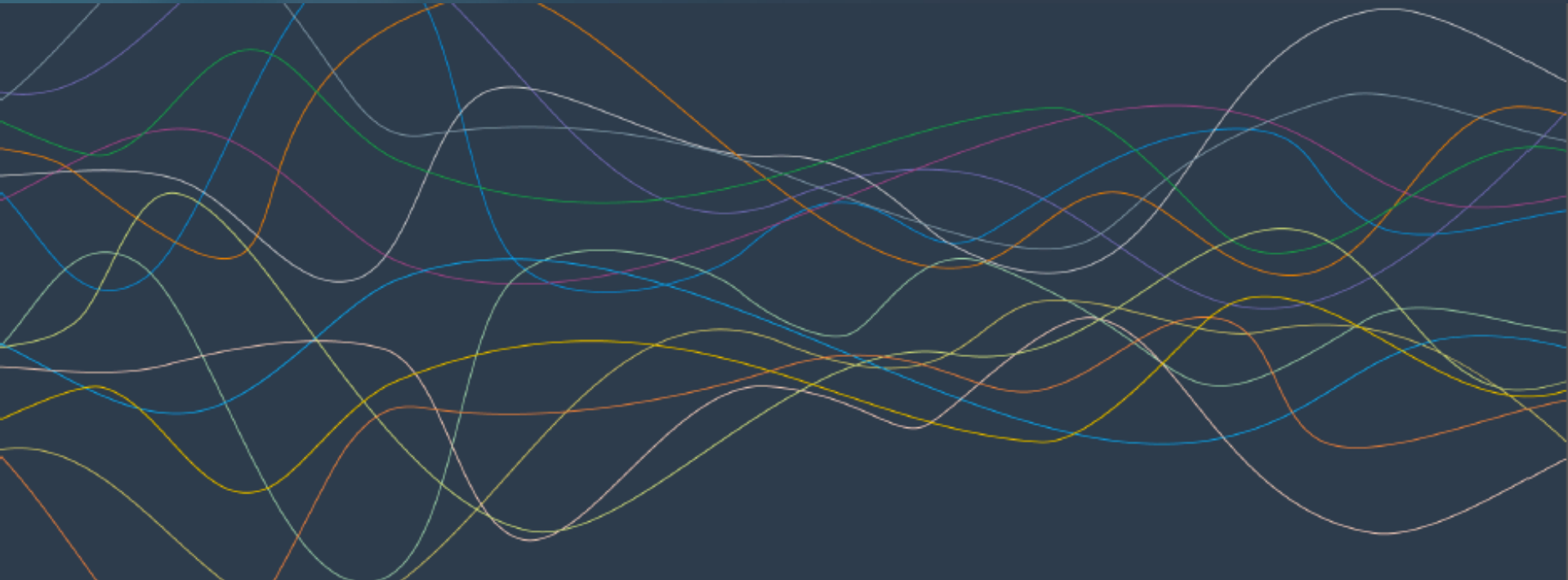
Host institution of 2012 and 2013 VIVO Implementation Fests  
<http://2013vivoimplementationfest.sched.org>

# CU-Boulder Lessons Learned

- An incremental, value focused approach works for VIVO implementation
- Address faculty concerns as a priority
- Be proactive on data quality
- Build the campus initiative with internal PR
- VIVO's low cost makes it harder to justify resource needs
- VIVO builds campus conversations about Big Data, Linked Open Data, Open Access

# vivo.vivoweb.org

- A “VIVO on VIVO” maintained largely by the community
- A resource to find other VIVOs and learn contact names and associated skills



# The VIVO Community



# VIVO/DuraSpace Partnership

- DuraSpace is a not-for-profit organization supporting the DSpace and Fedora repository platforms and related services
- Proven track record of managing community developed open source projects
- VIVO is 18 months into a 2-year initial startup period
- Several events at the Conference address VIVO's relationship to DuraSpace

# The VIVO community worldwide



# VIVO community in North America



# Where to start?

- Assessing whether VIVO is a good fit for your institution or virtual organization is more about your goals than the technology
- Fundamentally, it's about understanding your needs, VIVO's fit with those needs, and your capacity to sustain the effort

# Important indicators

- Do you have institutional sponsors?
  - Starting as a skunk works project is okay but not the best recipe for long-term success
- Does VIVO align with a key institutional initiative?
  - Strategic reinvestment, new academic programs, new senior hires needing information
- Can you marshal resources?

# It takes a network

- VIVO is cross-functional
  - Policy, communications, research, library
  - Multiple sources of data
- Requires stakeholder engagement
- VIVO needs to be transparent and fit the research/scholarship culture
  - Not just an “administrative thing”
- It helps to have strong project management
  - It’s usually obvious whether it’s there

# Be realistic

- Small, successful pilots targeting one or two constituencies can build momentum
  - Relates closely to CTSA goals but there are equally dynamic initiatives in earth & atmospheric sciences, social sciences, and humanities
- Timelines must allow for ramping up people and technology

# Think sustainability

- Loss leader efforts are tempting but if they can't be sustained may backfire
  - E.g., entering a lot of data on behalf of people with no clear update path
- Work with data stewards
  - First, to get access to data you need (public data)
  - To help them better meet your needs via improved APIs or web services
  - To alert them to data issues you may discover
  - VIVO is adept at making problems in source data visible



# Reach out

- Interview researchers to learn what they need and want
  - Especially up and coming people building a reputation and more interested in strong online presence
- Create and use an advisory board
- Create a support network
  - Duke has “power users”
  - Provide materials and training

# Benefits across institutions

- Sharing experience provides clarity and new ideas
- Incentives from sharing development, tools, customizations
- Potential data-level connectivity
  - Research is happening increasingly in teams that span institutions
  - Meeting the needs of short and long-term virtual organizations

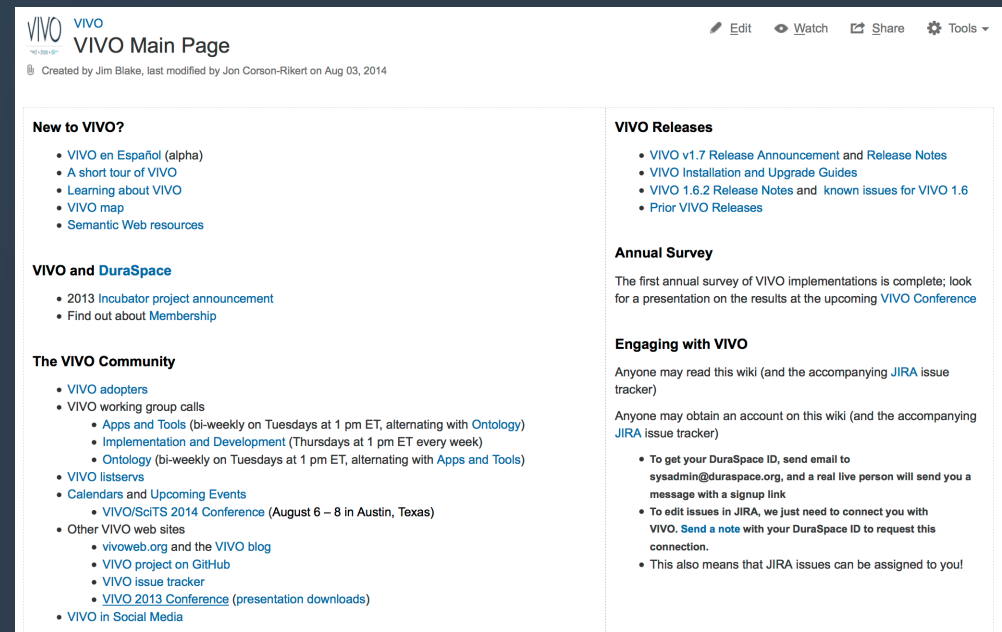
# Use the VIVO community

- We're approachable
- Someone very likely has encountered a similar question or issue before
- Your ideas will be welcome

# Use and contribute to the VIVO community resources!

- Wiki
- Listservs
- Regular phone calls
- VIVO events
- Develop local interest groups (e.g., NYC-area sites)

<https://wiki.duraspace.org/display/VIVO>



The screenshot shows the VIVO Main Page on the Duraspace Wiki. The page title is "VIVO Main Page" and it was created by Jim Blake, last modified by Jon Corson-Rikert on Aug 03, 2014. The page is divided into several sections:

- New to VIVO?**
  - [VIVO en Español \(alpha\)](#)
  - [A short tour of VIVO](#)
  - [Learning about VIVO](#)
  - [VIVO map](#)
  - [Semantic Web resources](#)
- VIVO and DuraSpace**
  - [2013 Incubator project announcement](#)
  - [Find out about Membership](#)
- The VIVO Community**
  - [VIVO adopters](#)
  - [VIVO working group calls](#)
    - [Apps and Tools](#) (bi-weekly on Tuesdays at 1 pm ET, alternating with [Ontology](#))
    - [Implementation and Development](#) (Thursdays at 1 pm ET every week)
    - [Ontology](#) (bi-weekly on Tuesdays at 1 pm ET, alternating with [Apps and Tools](#))
  - [VIVO listservs](#)
  - [Calendars and Upcoming Events](#)
    - [VIVO/SciTS 2014 Conference](#) (August 6 – 8 in Austin, Texas)
  - [Other VIVO web sites](#)
    - [vivoweb.org](#) and the [VIVO blog](#)
    - [VIVO project on GitHub](#)
    - [VIVO issue tracker](#)
    - [VIVO 2013 Conference](#) (presentation downloads)
  - [VIVO in Social Media](#)
- VIVO Releases**
  - [VIVO v1.7 Release Announcement and Release Notes](#)
  - [VIVO Installation and Upgrade Guides](#)
  - [VIVO 1.6.2 Release Notes and known issues for VIVO 1.6](#)
  - [Prior VIVO Releases](#)
- Annual Survey**

The first annual survey of VIVO implementations is complete; look for a presentation on the results at the upcoming [VIVO Conference](#)
- Engaging with VIVO**

Anyone may read this wiki (and the accompanying [JIRA](#) issue tracker)

Anyone may obtain an account on this wiki (and the accompanying [JIRA](#) issue tracker)

  - To get your DuraSpace ID, send email to [sysadmin@duraspace.org](mailto:sysadmin@duraspace.org), and a real live person will send you a message with a signup link
  - To edit issues in JIRA, we just need to connect you with VIVO. [Send a note](#) with your DuraSpace ID to request this connection.
  - This also means that JIRA issues can be assigned to you!

# Collaborations – ORCID

- Open Researcher and Contributor ID
  - Attribution for works of any type
- ORCID and VIVO
  - ORCID iD is a property in a VIVO profile
  - VIVO was involved in 3 ORCID Application & Integration grants (Sloan Foundation funds)
  - VIVO 1.7 supports submission and validation of researcher registrations from VIVO, as well as adding VIVO URIs to a researcher's ORCID record

# For more information

[vivoweb.org](http://vivoweb.org) , [vivoweb.org/blog](http://vivoweb.org/blog)

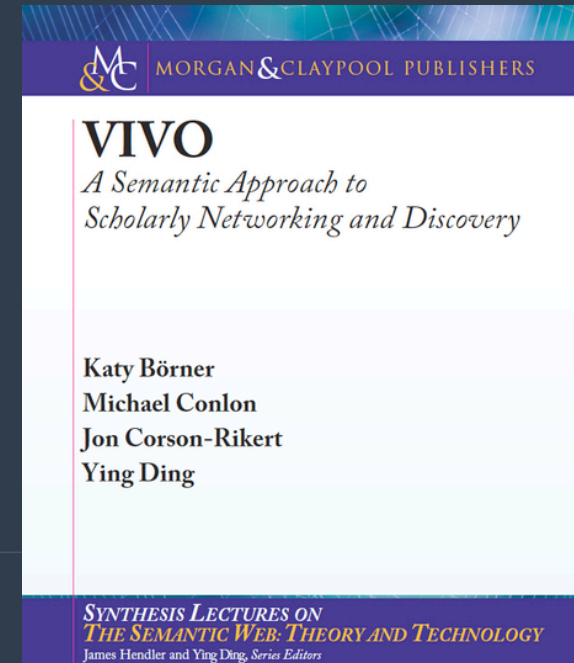
[wiki.duraspace.org/display/VIVO](http://wiki.duraspace.org/display/VIVO)

[linkedin.com/groups/VIVO-connect-share-discover](https://www.linkedin.com/groups/VIVO-connect-share-discover)

[facebook.com/VIVOcollaboration](https://www.facebook.com/VIVOcollaboration)

[github.com/vivo-project](https://github.com/vivo-project)

@VIVOcollab





# Implementation

# Implementation from a technical vantage point

- Options and typical solutions
- Skills and FTE requirements
- Learning about your source data
- Developing an ingest and update strategy
- Leveraging vendor solutions as well as open source communities



# Major options

- Physical or virtual hardware
- Choice of OS and base software
- Division of labor
- Approach to data
  - Especially for publications
- Staging strategy
- Hosted options?

# Physical or virtual?

- Likely depends mostly on your institution's IT environment
  - Physical servers take an up-front investment but may give you more control
  - Virtual servers can usually be scaled according to need
  - Hosted virtual servers can compensate for lack of server administration resources

# Choice of OS and software

- Windows or Linux
  - Linux more common, but some IT shops have a big Windows investment
- Database – MySQL is default, Oracle Enterprise Database an option
- Servlet engine – Tomcat is default, Glassfish and others supported
- Web server optional but recommended – Apache HTTP Server

# Division of labor

- Skills/roles needed (often from the same person)
  - Sysadmin
  - Database Admin
  - Data conversion/ETL specialist (Java/Python)
  - Data curator
  - Web developer (HTML/CSS)
  - Java developer (optional) for customizing VIVO or adding custom forms
  - User training and support
  - Project management
- Not all need to be full time

# Approach to data

- Negotiate with data stewards
- Tools options
  - Harvester updated for VIVO 1.6/1.7
  - Karma, Open (Google) Refine and RDF/semantic tools
  - Python and R, Ruby
- Service providers
- Important to think through data updates, not just a one-time load

# Staging strategy

- Allow your techs time to learn Semantic Web concepts and tools
  - Karma is a good way to work with ontologies and RDF and work up to producing VIVO data
  - Enter sample data through the VIVO interface, export it, and study what VIVO itself produces
- Don't start with the most complex data
- Think through what will be interactively updated vs. batch update/replacement
- Test and refine at smaller scales

# Resources

- VIVO DuraSpace Wiki
- VIVO Mailing lists
- Weekly dev/implementation and biweekly ontology and apps&tools calls
  - Updates
  - Bug reports and issue discussion
  - Demos of implementations
  - Invited guest presentations
- <https://wiki.duraspace.org/display/VIVO>

# VIVO working groups

- Apps & Tools
- Development
- Engagement
- Implementation
- Ontology



# VIVO Implementation Fests

- Four successful events, 2011-2014
- Increasingly about sharing and collaboration more than presentations
- Emphasis on small-group interactions
- Reaching out to related tool providers

# VIVO Hackathons

- 2011 hackathon at University of Florida during NIH grant
- March, 2014 event in conjunction with I-Fest
  - Organized by Apps & Tools working group leads Chris Barnes and Ted Lawless
- October 13-15, 2014 at Cornell to grow the committer base for VIVO and tools

# 4 kinds of open source communities

- Single vendor open source projects
- Development communities
- User communities
- Open source competence centers

**What are/will be the salient features of the VIVO community?**

The background of the slide is a dark blue gradient. Overlaid on this are numerous thin, wavy lines in various colors including orange, green, purple, blue, yellow, and white. These lines flow across the frame, creating a sense of movement and complexity.

Discussion

# Starting a VIVO in the context of an open source community



Wrap up

Q&A: technical, policy, or  
strategic issues