VIVO

enabling national networking of scientists

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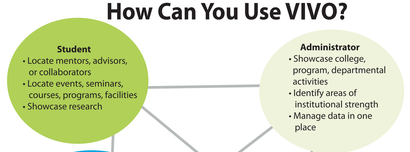
VIVO: A Tool for Collaboration in Public Health

What is VIVO?

- VIVO is an open source Semantic Web application that enables the discovery of research & scholarship.
- VIVO is populated with detailed profiles of faculty and researchers.
- VIVO provides a faceted search functionality for easily identifying people, activities, organizations, and other research-related information.
- VIVO is funded by a $12.2 million consortium grant with UF and 6 partner institutions from the National Institutes of Health, U24 RR029822, "VIVO: Enabling National Networking of Scientists."

Cornell University · Indiana University · The Scripps Research Institute · UF University of Florida · Washington University in St. Louis School of Medicine · Weill Cornell Medical College

How Can You Use VIVO?



- **Use VIVO for technical collaboration**
  Public health IT specialist Carl Stein plans to use VIVO to identify colleagues working on registries who may be able to suggest improvements to the new data security system he is developing. His colleague Lydia Bentham uses VIVO to identify colleagues using a specialized piece of equipment in the hope that they can provide calibration and programming advice.

- **Use VIVO to ID people with relevant data sets**
  Epidemiologist Martin Kwan can search VIVO for an institution or individual that he might approach for access to data sets he could use in development and testing of a new syndromic surveillance model.

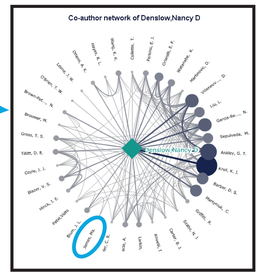
- **Use VIVO to discover opportunities**
  Fred Lopez uses VIVO to discover which funding sources have previously awarded environmental health projects similar to the one he hopes to conduct. Information about the location and size of the award helps him write a more competitive proposal, enhancing his chances of receiving funding.

- **Use VIVO to stay updated on developments in your field**
  Jocelyn Reed, an administrator in a health department, has just learned of a proposed new regulation that could impact her department and community. She searches VIVO to find research on the effects of similar regulations in similar jurisdictions so that she can better prepare her department and community.

- **Use VIVO to find mentors**
  George van Pelt is a grad student looking for a health policy or health economics expert to serve as an advisor for his dissertation.

VIVO Facilitates Research Discovery and Collaboration

VIVO is designed to connect and integrate information about grants, publications, and people in one location. VIVO displays data about researchers, their collaborators, their funding sources, and more.



VIVO's linked data supports browsing and research discovery. VIVO profiles contain visualizations of co-author and co-investigator networks, linking researchers to publication and funding collaborators. Through data linking, VIVO's diverse information is cross-searchable and ensures that users find accurate information quickly.

VIVO visualizations illustrate who a researcher is already working with on publications and grants. This enables searchers to discover relevant research information with just a few clicks of a mouse!

VIVO Data

VIVO obtains much of its data through verified sources through automated methods, therefore reducing the need for manual input of data and centralizing information in an integrated source. Private or sensitive information is not imported into VIVO. Only public information will be stored and displayed. VIVO data is stored and maintained at local VIVO institutions and can be updated regularly.

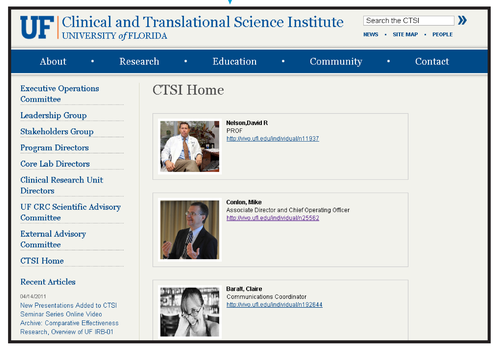
Faculty and unit administrators can then supplement profiles with additional information, such as: Research statements or Honors and awards

Internal data sources:
HR directory
Office of Sponsored Research
Institutional Repositories
Registrar System
Faculty activity systems
Events and seminars

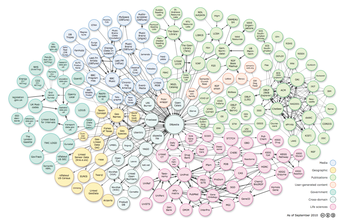
Data stored as RDF triples using standard ontology

External data sources:
Publication warehouses
PubMed, Scopus, etc.
Grant databases
NIH RePORTER
Organizations and societies
AAAS, AMA, etc.

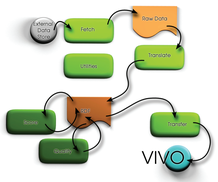
VIVO data is available for reuse by web pages, applications, and other consumers both within and outside the institution, as seen on this departmental webpage.



Linked Open Data



By storing data in VIVO in RDF and using standard ontologies, the information in VIVO can either be displayed in a human-readable web page or delivered to other systems as RDF. This allows the open researcher data in VIVO to be harvested, aggregated, and integrated into the Linked Open Data cloud. SPARQL is an RDF query language which allows users to construct globally unambiguous queries from across diverse data sources.



The Harvester is an extensible data ingest and updating framework with sample configurations for loading PubMed publications, grants, and human resources data. Version 1.0 of Harvester was recently released and is available for download on the SourceForge community site. Watch for updates and training opportunities that focus on Harvester.
http://sourceforge.net/projects/vivo

VIVO Open Source Community

http://vivo.sourceforge.net

Core project development is augmented with contributions and feedback by other developers across multiple institutions on SourceForge.

More content will be added to SourceForge in the coming months to support implementation, adoption, and development efforts.

Moving Forward

National Search

A national search feature will allow users to access the rich data available in VIVO and other compatible platforms and enable meaningful searches across a series of semantically available endpoints.

VIVO Collaborative Research Projects Program

Joomla! · digital vita · google-refine · DukeMedicine · HUB · Unified Medical Language System® (UMLS®) · crossref

- **VIVO Widgets**
  Ricardo Pietrobon, Duke University with Richard Outten, Mark McCahill, and Paolo Mangiafico
  This effort proposes to create a set of widgets that display information from VIVO profiles in blogs, portals, and departmental and lab pages. This will simplify the display of authoritative VIVO information on other sites and will include links back to the original VIVO profile.

- **Digital Vita Documents (DV Docs) for VIVO**
  Titus Schleyer and Michael Beich – University of Pittsburgh
  The aim of this proposal is to import DV's document generation functions to the VIVO platform, generalize them, and provide a simple web application for VIVO users to manage and generate NIH biosketches.

- **The VIVO platform and ORCID in the scholarly identity ecosystem**
  Gudmundur A. Thorisson, University of Leicester, United Kingdom; Geoffrey W. Bilder, CrossRef, Oxford, United Kingdom; and Martin Fenner Hannover Medical School, Germany on behalf of ORCID (http://www.orcid.org)
  The overall aim of this project is to understand how VIVO and ORCID can interact in the scholarly identity ecosystem by working with the VIVO platform to develop extensions to the VIVO platform to support ORCID use cases such as search/retrieve/ingest bibliographic information from CrossRef and secure exchange of profile information between VIVO and an external system, such as a manuscript tracking system.

- **Integrating the UMLS Ontology into VIVO for Linking Biomedical Scientists**
  Moises Eisenberg and Janos Hajagos – Stony Brook University Dept of Medical Informatics/SUNY REACH Web Presence Team
  The aim of this proposal is to create an open-source tool that uses domain-specific ontologies to normalize research interests in the VIVO platform. This effort should help facilitate inter-institutional searching for biomedical researchers.

- **A HUBzero/Joomla! VIVO Application**
  William K. Barnett, Robert H. McDonald, and Anuraj Shankar – Indiana University
  Joomla! is a portal engine and content management system similar to Drupal. This work proposes to develop a Joomla! extension of the VIVO application to be integrated within HUBzero. This will offer a number of ways of restructuring and restyling VIVO content.

- **Google Refine and VIVO – Weill Cornell Medical College**
  Curtis Cole, Dan Dickinson, Kenneth Lee, and Eliza Chan – Weill Cornell Medical College
  Google Refine provides an easy-to-use toolset to assist in the extraction, review, transformation, and export of datasets, providing the VIVO community an attractive tool for data ingest from a variety of formats.

Join us for the 2011 VIVO Conference!

*VIVO Collaboration: **Cornell University:** Dean Krafft (Cornell PI), Manolo Bevia, Jim Blake, Nick Cappadona, Brian Caruso, Jon Corson-Rikert, Elly Cramer, Medha Devare, Elizabeth Hines, Huda Khan, Brian Lowe, Deepak Konidena, Brian Lowe, Joseph McEnerney, Holly Mistlebauer, Stella Mitchell, Anup Sawant, Christopher Westling, Tim Worrall, Rebecca Younes. **University of Florida:** Mike Conlon (VIVO and UF PI), Beth Auten, Michael Barbieri, Chris Barnes, Kaitlin Blackburn, Cecilia Botero, Kerry Britt, Erin Brooks, Amy Buhler, Ellie Buckhousen, Linda Butson, Chris Case, Christine Cogar, Valerie Davis, Mary Edwards, Nita Ferree, Rolando Garcia-Milan, George Hack, Chris Haines, Sara Henning, Rae Jesano, Margeaux Johnson, Meghan Latorre, Yang Li, Jennifer Lyon, Paula Markes, Hannah Norton, James Pence, Narayan Raum, Nicholas Rejack, Alexander Rockwell, Sara Russell Gonzalez, Nancy Schaefer, Dale Scheppler, Nicholas Skaggs, Matthew Tedder, Michele R. Tennant, Alicia Turner, Stephen Williams. **Indiana University:** Katy Borner (IU PI), Kavitha Chandrasekar, Bin Chen, Shanshan Chen, Ryan Cobine, Jeni Coffey, Suresh Deivasigamani, Ying Ding, Russell Duhon, Jon Dunn, Poornima Gopinath, Julie Hardesty, Brian Keese, Namrata Lele, Micah Linnemeier, Nianli Ma, Robert H. McDonald, Asik Pradhan Gongaju, Mark Price, Michael Stamper, Yiqin Sun, Chintan Tank, Alan Walsh, Brian Wheeler, Feng Wu, Angela Zoss. **Ponce School of Medicine:** Richard J. Noel, Jr. (Ponce PI), Ricardo Espada Colon, Damaris Torres Cruz, Michael Vega Negrón. **The Scripps Research Institute:** Gerald Joyce (Scripps PI), Catherine Dunn, Sam Katov, Brant Kelley, Paula King, Angela Murrell, Barbara Noble, Cary Thomas, Michaeleen Trimarchi. **Washington University School of Medicine in St. Louis:** Rakesh Nagarajan (WUSTL PI), Kristi L. Holmes, Caerie Houchins, George Joseph, Sunita B. Koul, Leslie D. McIntosh. **Weill Cornell Medical College:** Curtis Cole (Weill PI), Paul Albert, Victor Brodsky, Mark Bronnimann, Adam Cheriff, Oscar Cruz, Dan Dickinson, Richard Hu, Chris Huang, Itay Klaz, Kenneth Lee, Peter Michelini, Grace Migliorisi, John Ruffing, Jason Specland, Tru Tran, Vinay Varughese, Virgil Wong. This project is funded by the National Institutes of Health, U24 RR029822, "VIVO: Enabling National Networking of Scientists".*