Overview

• What is VIVO?
• How does it work?
• How have we implemented it at Indiana University?
• What’s ahead?
  • Incentives
  • Challenges
**VIVO Collaboration:**

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

**VIVO is:**

A **semantic web application** that enables the discovery of research and scholarship across disciplines in an institution. Populated with **detailed profiles** of faculty and researchers; displaying items such as pubs, classes, service, and affiliations. A **powerful search functionality** for locating people and information within or across institutions.
VIVO is a resource of Indiana University that provides information on:

- people
- departments
- facilities
- courses
- grants
- publications

vivo.iu.edu

What is VIVO?

An open-source semantic web application that enables the discovery of research and scholarship across disciplines in an institution.

Populated with detailed profiles of faculty and researchers; displaying items such as publications, teaching, service, and professional affiliations.

A powerful search functionality for locating people and information within or across institutions.
VIVO harvests data from IU verified sources

Internal data sources:
- Faculty Systems (FAR > IUIE)
- HR System (HRMS > IUIE)
- Registrar System (SIS > IUIE)
- Research Data Systems (VPR > IUIE)
- Events and Seminars

External data sources:
- Publication warehouses—e.g. PubMed, Web of Science
- Grant databases—e.g. NSF/NIH
- National Organizations—AAAS, AMA, etc.

Data stored as RDF triples using standard ontology

Faculty and unit administrators can then add additional information to their profile.

VIVO data is available for reuse by web pages, applications, and other consumers both within and outside the institution.

Linked Data Principles

- Tim Berners-Lee:
  - Use URIs as names for things
  - Use HTTP URIs so that people can look up those names
  - When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL)
  - Include links to other URIs so that people can discover more things

- [http://www.w3.org/DesignIssues/LinkedData.html](http://www.w3.org/DesignIssues/LinkedData.html)
- [http://linkeddata.org](http://linkeddata.org)
- [http://data.gov.uk/](http://data.gov.uk/)
VIVO Standard Ontology

- **Network Structure**: foaf:Person, foaf:Organization, vivo:InformationResources

- **Individual**
  - Teaching (vivo:TeacherRole, vivo:AdvisingRelationship)
  - Services (vivo:Service, vivo:CoreLaboratory, vivo:MemberRole)
  - Expertise (vivo:SubjectArea)

Storing Data in VIVO

- Information is stored using the **Resource Description Framework (RDF)**.
- Data is structured in the form of “triples” as subject-predicate-object.
- Concepts and their relationships use a **shared ontology** to facilitate the harvesting of data from multiple sources.

```
Ying Ding

is member of

has affiliations with

author of

Book chapter

Subject  Predicate  Object
```

SLIS

Cognitive Science

VIVO Ontology Team

Journal article

Book

Book chapter
A VIVO profile will allow researchers to:

- Map colleagues by research area, authorship, and collaborations.
- Showcase credentials, expertise, skills, and professional achievements.
- Connect within research areas and geographic expertise.
- Display current research, and selected publications.
- Publish the URL or link the profile to other applications.
VIVO Implementation at IU

• Current Implementation at IU
  • Data Sources Used
  • Public Data
    • All is currently available for free or pay somewhere
  • Current Funding Model
  • Future Sustainability (IUScholarWorks)
Incentives

• Federated Searching Across Domains
  • CTSA Federated Search
  • VIVO Federated Search
  • NIH/NSF Biosketch Generation
  • Mapped Data from IU Institutional Data Sources
    • 80/20
  • Visualization and Scientometric Mapping Components
Visualization

- Display visualizations of complex research networks and relationships.

Challenges

- Faculty Annual Report Data
  - Gray Area of Use
  - Need partners to move forward appropriate use policy
- Name Disambiguation for Automated Sources
  - NIH PubMed
  - NIH RePORTER
  - NSF research.gov
  - NSF Grants
Future versions of VIVO will:

- Generate CVs and biosketches for faculty reporting or grant proposals - NIH/NSF.
- Incorporate external data sources for publications and affiliations.
- Link data to external applications and web pages.

### Principal Investigator/Program Director (Last, First, Middle):

**Biographical Sketch**

Provided following information for the key personnel and other significant contributions he/she listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position Title</th>
</tr>
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<tbody>
<tr>
<td>Scheyer, Titus</td>
<td>Associate Professor and Director, Center for Dental Informatics, University of Pittsburgh</td>
</tr>
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**Education/Training**

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<th>Institution and Location</th>
<th>Degree(s) &amp; Applicable Year(s)</th>
<th>Field of Study</th>
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<tbody>
<tr>
<td>The Fox School of Business, Temple University, Philadelphia, PA</td>
<td>MBA 1995</td>
<td>Health Administration</td>
</tr>
<tr>
<td>School of Dentistry and School of Medicine, University of Frankfurt am Main, Frankfurt/M., Germany</td>
<td>PhD 1989</td>
<td>Molecular Biology</td>
</tr>
<tr>
<td>School of Dentistry, University of Frankfurt am Main, Frankfurt/M., Germany</td>
<td>DMD 1987</td>
<td>Dentistry</td>
</tr>
<tr>
<td>Temple University, School of Dentistry, Philadelphia, PA</td>
<td>DMD 1991</td>
<td>Dentistry</td>
</tr>
</tbody>
</table>

A. Positions and Honors.

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### Other Profile Testing at IU

- Working Toward Unified Ontology Profile for IUIE
  - School of Medicine Faculty Profile System
  - CTSI Hub Profile System
  - CTSA Research Networking Pilot
- Departmental Tests for IUB FAR Data (VPFAA)
- IU System-Wide Tests for Preliminary IUIE Generated Profiles (VPR)
How Can I Get Involved?

Questions?
Robert McDonald
robert@indiana.edu

Thank you!