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TRANSLATIONAL SCIENCE



Tracking for Translation: Novel Tools for Evaluating Translational Research Training Programs

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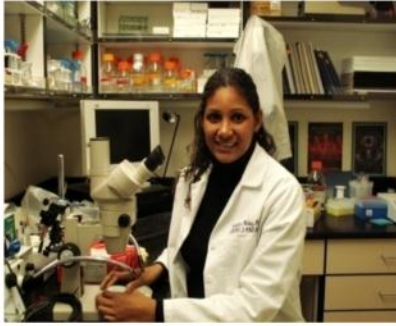
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Outline

- **1. Context:**
Translational Science Research Training Initiatives
- **2. Challenge:**
Tracking translational collaborations
- **3. UC Davis solution:**
New methods and tools for translational training outcomes visualization
- **4. Conclusions and next steps**

Translational Research

BENCH



BASIC SCIENCE

PRE-CLINICAL STUDIES
STEM CELL THERAPIES
GENOMIC MANIPULATION
ANIMAL RESEARCH

Translational
Research

BEDSIDE



CLINICAL APPLICATIONS

NOVEL THERAPIES
NEW DEVICES
CLINICAL TRIALS
IMPROVED PATIENT CARE

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Translational Research Training

Short- and Long-term Outcomes:

- Develop translational researchers
- Create team scientists
- Promote interdisciplinary knowledge
- Change the culture of science & medicine

Evaluation Challenges

- Challenging to measure team science and translational research
- Difficult to define, track and collect information for measurement

UC Davis Solution

- Visualization of research networks using Social Network Analysis (SNA) enables evaluators to easily view and track collaborations over time.
- Translational networks evolve into richer and more diverse as basic scientists collaborate with clinicians
- Developed tracking process that collects data from multiple sources

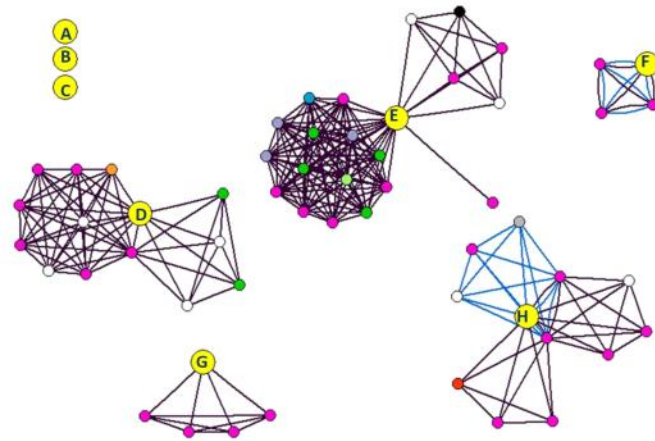
Case Study 1

- **Howard Hughes Medical Institute-Integrating Medicine Into Basic Science (HHMI-IMBS)**
- **One-year training program**
- **Trains basic science pre-doctoral students to conduct translational research**

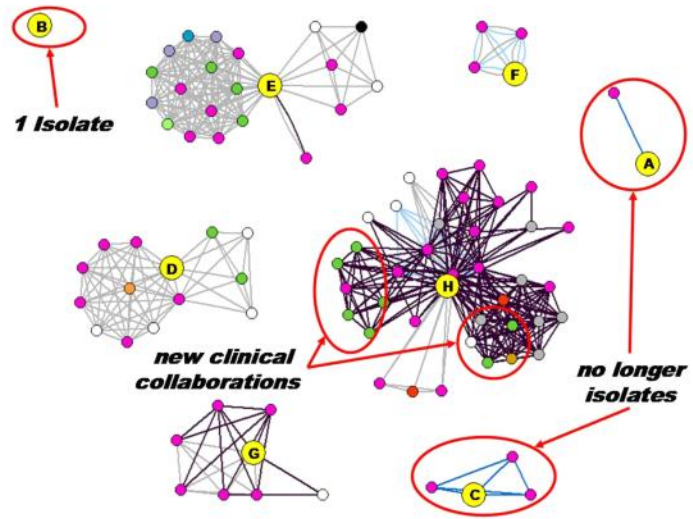
Classification

- HHMI Scholar
- DO, PhD
- BSc
- MD
- MD, PhD
- MHS
- MSc
- PhD
- PostDoc
- SRA
- Student
- Unknown
- na

HHMI Scholars Before HHMI Program



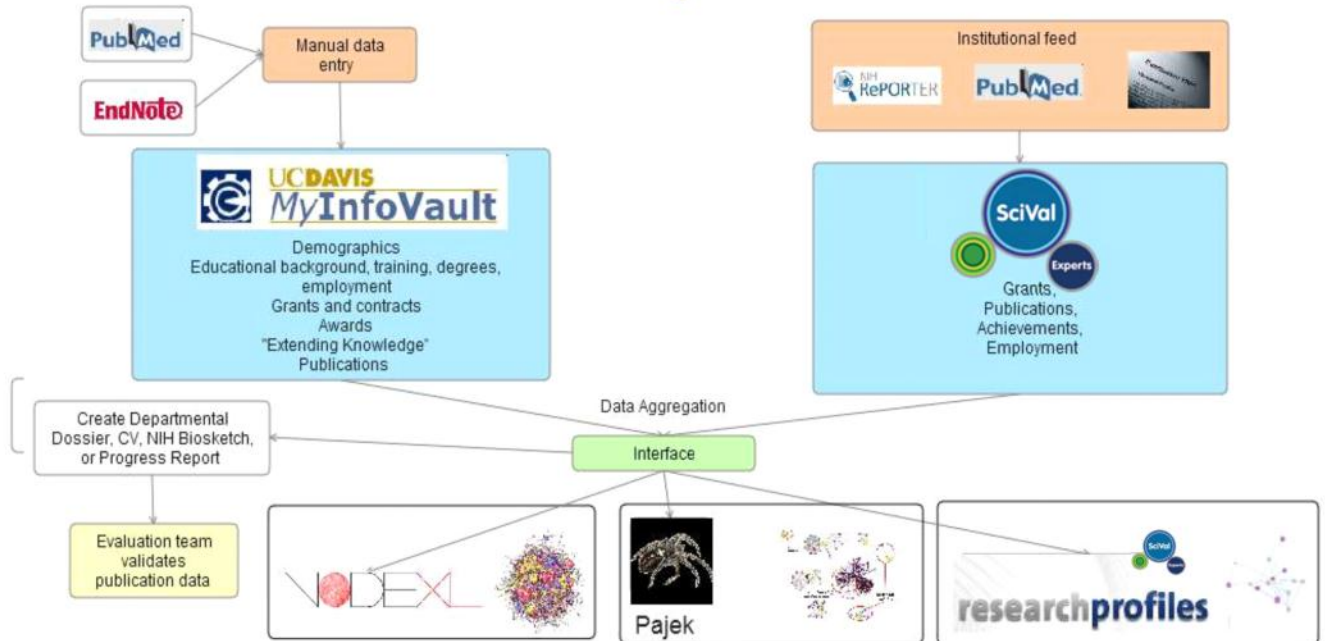
HHMI Scholars After HHMI Year 1



Type of Link

- Poster/Verbal Presentations Before HHMI
- Poster/Verbal Presentations During HHMI
- Publication Before HHMI
- Publication During HHMI

Case Study 2



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Sci-Val Research Profiles*

- Online subscription tool used to identify biomedical research experts and their publications by their area of expertise
- Based on published output indexed in PubMed and grants in NIH RePORTER.
- Research Network: Visualized networks of a featured researcher and their co-author collaborators.

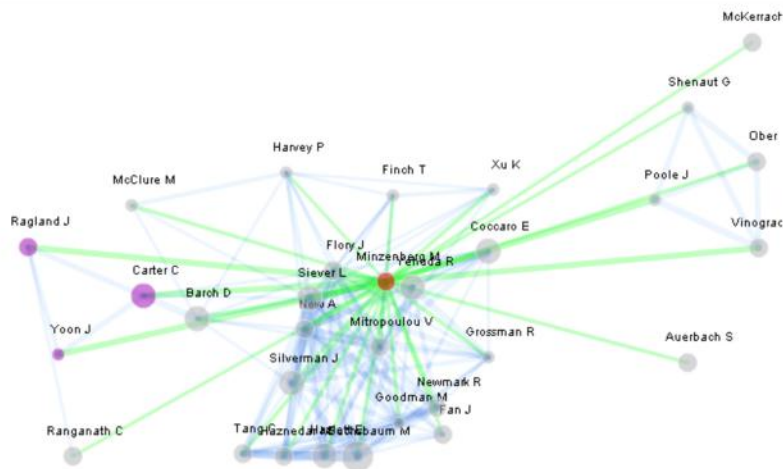
<http://www.experts.scival.com/ucdavis/default.asp>

* formerly Collexis

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Research Network

● Profiled researcher ● Internal collaborator ● External collaborator



Minzenberg, Michael

Profile

more >

- 1. Borderline Personality Disorder
- 2. Schizophrenia
- 3. Prefrontal Cortex
- 4. Cognition Disorders
- 5. Neuropsychological Tests
- 6. Cognition
- 7. Adult
- 8. Frontal Lobe
- 9. Gyrus Cinguli
- 10. Magnetic Resonance Imaging

Publications

more >

1. Yoon Jong H; Maddock Richard J; Rokem Ariel; Silver Michael A; Minzenberg Michael J; Ragland J Daniel; Carter Cameron S
GABA Concentration Is Reduced in Visual Cortex in Schizophrenia and Correlates with Orientation-Specific Surround Suppression.
The Journal of neuroscience : the official journal of the Society for Neuroscience 2010;30(10):3777-81.

Grants

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No Grants published.

Minzenberg, Michael
Psychiatry and Behavioral Sciences

Research Network

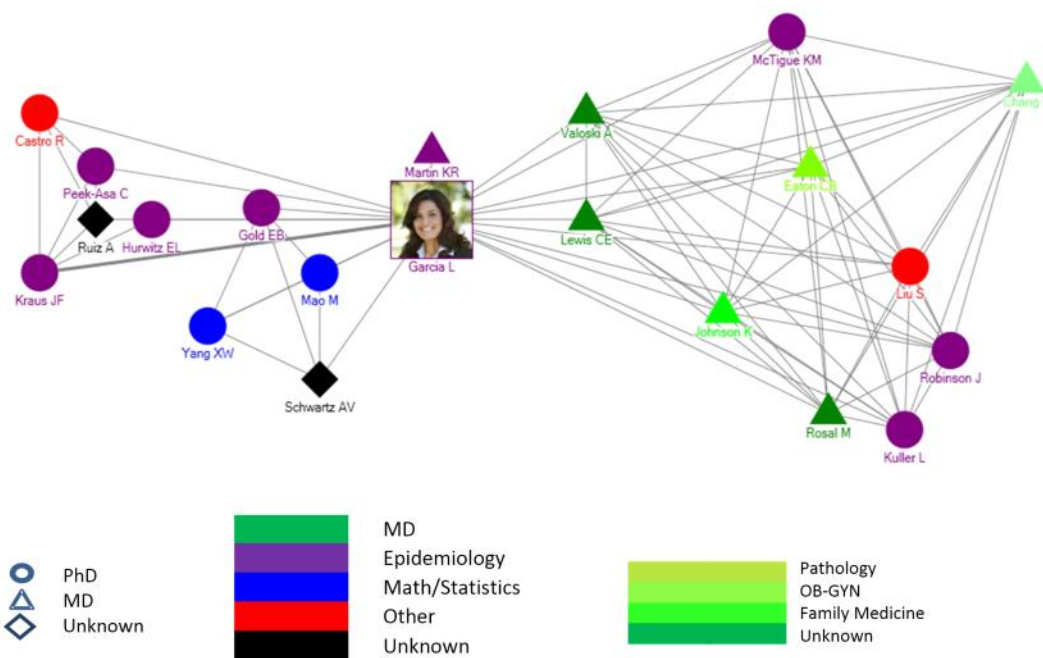
The SciVal application creates a map of the connections between this researcher and their collaborators. The circles represent individual researchers and the lines connecting them represent papers that they have published together. The size of each indicates the number of publications; a larger line = more collaborations; a larger circle = more publications.

Visualizing Collaborator Networks*

Case 1: Lorena Garcia, M.P.H., Dr. P.H.

Assistant Professor: Department of Public Health Sciences

Mentors: Ellen Gold, Ph.D.; Ray Rodriguez, Ph.D.



* Approach using various data sources (Applications, APRs, PubMed, CVs) and software tools (scholar survey, NodeXL)

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Alternative approach steps:

1. **Create EndNote library** of selected publications from various data sources
2. **Output Authors only**, delimited format; used custom EndNote styleImport Authors – delimited file
3. **Use macros to create all possible pairs** of authors
4. **Import pairs into NodeXL**
5. **Survey scholars to collect degree/discipline information**
 - PhD categorization “Survey of Earned Doctorates” NORC
 - MD categorization matches UC Davis School of Medicine
6. **Customize author information** using color and shapes to visualize characteristics (e.g. degree, discipline, or other)
7. **Create diagrams in NodeXL**

Visualizing Collaborator Networks: Standard versus Alternative Methodologies

Case 1: Lorena Garcia, M.P.H., Dr. P.H.

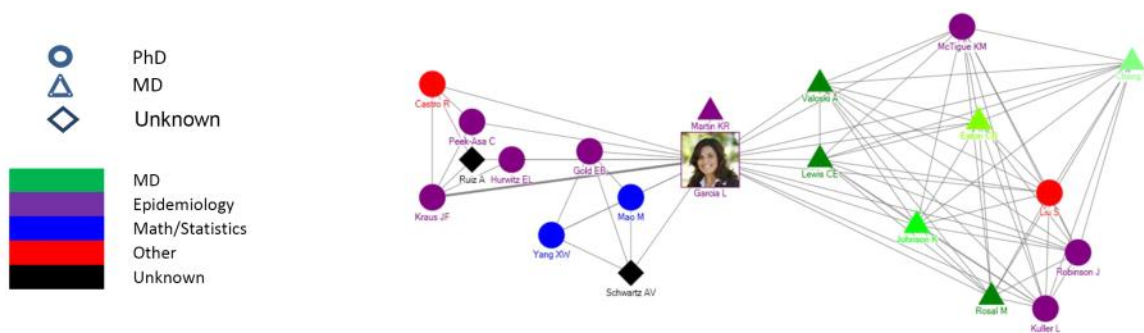
Assistant Professor: Department of Public Health Sciences

Mentors: Ellen Gold, Ph.D.; Ray Rodriguez, Ph.D.

Standard: Biomed Experts and SciVal



Alternative: In-house approach using various data sources (Applications, APRs, PubMed, CVs) and software tools (scholar survey, NodeXL)



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Conclusions

- **Challenges Remain**

- SciVal diagrams have limitations – the picture is incomplete
- Need Better data (e.g., grants), additional nodes (e.g., all external collaborators), better description of nodes qualities (departments, disciplines, areas of expertise)
- Resource intensive to link up to HR data (MIV). Some manual data entry and validation by investigator or trainee still required



Conclusions

- Promising next steps
 - Visualizations of collaborators and their successes are possible
 - Identification of experts to form teams for research or mentoring



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Thank You & Financial Disclosure

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