Library-based Support Translational Medicine

Bioinformatics Instruction & Consultation, Collaboration, Evaluation

AAAS/Science Translational Medicine Reception and Panel Discussion
Medical Library Association Annual Meeting
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Clinical and translational science is a bit like the London Underground

Intersections of people and roles across the research continuum from clinical, research, community, administrative and support perspectives

http://www.tfl.gov.uk/
Outline

• Bioinformatics (Bioinformatics@Becker)
  – Education
  – Consultation
  – Software
• Institutional Support
  – Collaboration, discovery
    • VIVO
  – Tracking & Evaluation
    • Social network analysis
    • Assessing the Impact of Research
    • Strategies to Enhance Research Impact
Bioinformatics@Becker

• Education
• Consultations
• Software

Staff = 2
 Lili Wang, MD, MS; Kristi Holmes, PhD

Users
 Graduate and medical students, fellows, post docs, research staff, faculty, administration, and anyone else who needs help!

Support
 Bioinformatics advisory group
 Other key partners on campus

CTSA
 Provide bioinformatics education
Education & Training

**Workshops & Courses**
- Variety of topics, formats, levels, audiences
- Credit, NC courses

**Sponsored Training Opportunities**
- ½ day – multi-day training sessions
- Presented by vendors, organizations, scientists
- NCBI, Partek, GeneGo, Jackson Lab, R/Bioconductor, OpenHelix, JMP Genomics

**Lunchtime Lecture Series**
- 12 topics, hour-long sessions
- Databases, Software
- Follow-up with an open Q&A session

**“Road Show”**
- Bioinformatics 101 – tools and tricks
- Clinical Genomics
- NCBI resources
- Taught in the departments

**Basics of Bioinformatics**
- 2-8 hours long (tailored to the group)
- Groups like the Dept. of Biostatistics and Molecular Pathology residents
- Taught off-site at other universities

**Special Projects**
- Introduction to Genomic Medicine
- Future plans to reach out to clinicians and community

**Enhanced online resources**
- PowerPoint presentations
- Step-by-step tutorials
- Sample problems/examples
- Video tutorials
Introduction to Genomic Medicine

- Offers a practical background in molecular biology, an introduction to genomic research and applications of genomic technologies in the research environment, and an understanding of the clinical application of gained knowledge.
- Sessions started in January and run through June; weekly attendance is 100-150+
- Wonderful collaboration
  - Department of Medicine
  - Becker Medical Library
  - Department of Genetics
  - Department of Pediatrics
  - Department of Pathology and Immunology
- Sponsored by the Washington University Institute of Clinical and Translational Sciences.

http://becker.wustl.edu/GenomicMedicine

Collaborators Drs. Govindan, Druley, and Dutcher
Bioinformatics@Becker

- Education
- Consultation Services
  - Answer questions, give advice on potential strategies, make referrals, serve as matchmaker...
  - Everything from simple requests to horrifying puzzles!
  - Requests via email, phone, web forms, and drop-ins
- Software
Bioinformatics@Becker

- **Software**
  - **Research Pod**
    - 2 Macs, 2 PCs loaded with many different types of software
    - Offers labs a place to try software or have access to packages that they might not be able to afford.
  - **Databases & Research Software**
    - DiscoveryGate/CSD
    - Mathematica
    - Partek Genomic Suite
    - GraphPad Prism
  - **Statistical Programs**
    - SAS
    - SPSS
    - Stata
    - Maple-Waterloo
  - **Presentation and Multimedia Tools**
    - Adobe Creative Suite
    - MSOffice & Visio
  - **Site licenses**
    - We negotiate site-wide agreements for the institution based on what people need
    - Pass these savings onto the labs (usually results in savings of 50-75% or more for a lab)
    - Partek Genomic Suite, GeneGo MetaCore, Lasergene, Spotfire, JMP Genomics, and more
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  – Tracking & Evaluation
    • Social network analysis
    • Assessing the Impact of Research
    • Strategies to Enhance Research Impact
    • Support of other initiatives
Collaboration

The effect of team research on phases of innovation

Disis M L, Slattery J T Sci Transl Med 2010;2:22cm9-22cm9
Collaboration: A library-based model of support

- Open-source semantic web application that enables the discovery of research and scholarship across disciplines
- Populated with detailed profiles of faculty and researchers; displays items such as publications, grants, teaching, service, and professional affiliations
- VIVO offers a powerful search functionality for locating specific information across institutions and elegant visualizations of the enterprise at all levels.

http://vivoweb.org
Why A Library-based support model?

**Libraries:**
- Are a trusted, neutral space
- Have a tradition of service and support
- Strive to serve all missions of the institution
- Are technology centers and have IT and data expertise

**Library Staff:**
- Have skills—information organization, instruction, usability, subject expertise, ontologies and controlled vocabularies
- Have close relationships with their clients (buy in)
- Understand user needs
- Understand the importance of collaboration and know how to bring people together
- Have knowledge of institution, research, education, clinical landscape
Evaluation

- Social network analysis
- Assessing the Impact of Research
- Strategies to Enhance Research Impact

Member of the Tracking and Evaluation team at Washington University Institute of Clinical and Translational Sciences

*Libraries are particularly well-poised to participate in evaluation activities*
SNA: ICTS Program Directors and Co-Directors

Databases Searched
- Web of Science
  - Science Citation Index Expanded
  - Social Sciences Citation Index
  - Arts & Humanities Citation Index

Criteria
- Affiliation = Washington University
- Document Type = manuscripts, meeting abstracts, proceeding papers, editorial materials, letters, reviews
- Timespan = 2006-2010

Formatted list for Network Workbench

Caveats
- List has not been fully vetted
- Modeling, layout and graphing choices are many
- Used co-authorship network model
- Displayed only authors with 2+ works

Other opportunities for network analysis
- Training grants
- Highlight interdisciplinary research centers
- WU-ICTS

Visualizations on the individual, local, and global level

A model for assessing research impact

Traditional citation analysis is insufficient to assess the impact of research discoveries

Becker Model for Assessment of Research Impact

Included are:
– guidelines for quantifying and documenting research impact
– resources for locating evidence of research impact.
– strategies that investigators can utilize in order to enhance the diffusion of research output

• Impact can be evaluated for individual papers, individual investigators or departments, and even institutes and entire institutions.
• Assessing the impact of CTSA-funded research at WUSM
• Currently under revision to reflect new trends and metrics – feedback is welcome!

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• Library-based informationists at a number of institutions
• Tracking & Evaluation Group at WU-ICTS

Image credit: http://www.flickr.com/photos/julianaorihuela/384300758/

Thank you!