

# Bioinformatics, data management, and general information needs of clinical and translational science researchers

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## BACKGROUND

The UF Health Science Center Library (HSCL), as information partners to the entire Health Science Center, is committed to providing an information infrastructure to support the UF Clinical and Translational Science Institute (CTSI). In order to best serve this diverse population, the HSCL undertook a series of assessments in 2012 to determine the information needs of CTSI researchers. With the help of funding from the National Network of Libraries of Medicine/Southeast Atlantic Region, the HSCL performed the following assessments:

- Information needs related to data
- Information needs related to bioinformatics
- Services provided to clinical and translational researchers by other libraries around the country
- General information needs

## METHODS

### Research Data Needs

- 20-question online assessment asking CTSI researchers about their data management practices and needs, developed in collaboration with the High Performance Computing Center and Digital Library Center
- Interviews with CTSI researchers covering the following broad topics:
  - o What Is Your Data All About?
  - o What Kind of Data Do You Have?
  - o How Do You Work With Your Data?
  - o Preservation Concerns
  - o Data Sharing and Long-term Accessibility
  - o What Would Make Data Management Easier for You?

### Bioinformatics Needs

- Online assessment asking CTSI researchers about their needs for bioinformatics tools and training, covering the following broad topics:
  - o What resources should be licensed by the library?
  - o Which advanced courses should be developed?
  - o What sort of consulting services are needed?
- Interviews and focused discussions with researchers about what bioinformatics tools they use, need to use, and need to learn about

### Library Services for Clinical and Translational Researchers (External Assessment)

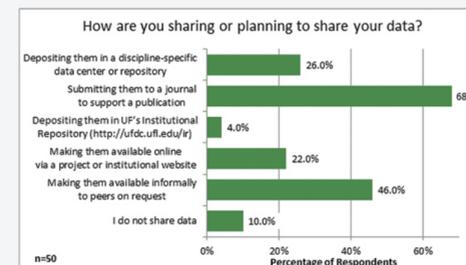
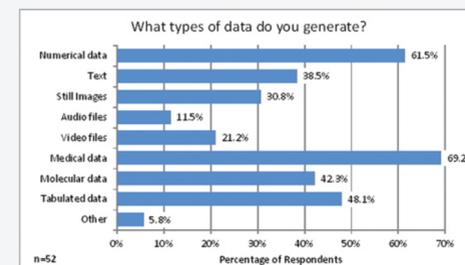
- Online assessment sent to libraries around the country and world using email listservs for various medical and science library organizations
- Covered the following areas of service provision:
  - o Searching (literature, systematic reviews, impact)
  - o NIH Public Access Policy/Open Access
  - o Institutional Repositories (or their equivalents)
  - o Community Engagement/Consumer Health
  - o Data Management, Curation
  - o Bioinformatics Support
  - o Facilitating Research Collaboration; Profiling Tools

### General Information Needs

- Online assessment asking CTSI researchers about their information needs and those of their post docs and students. Covered the following areas of service and instruction:
  - o Literature searching
  - o Bibliographic management tools
  - o Community engagement
  - o Facilitating collaboration
  - o Assessing research impact
  - o Visualizing co-author networks
  - o NIH Public Access policy, institutional repositories, open access
  - o Systematic review assistance
  - o Data and bioinformatics
- Interviews and focused discussions with researchers about their information needs

## RESEARCH DATA NEEDS

59 individuals from 9 UF colleges responded to the online assessment.

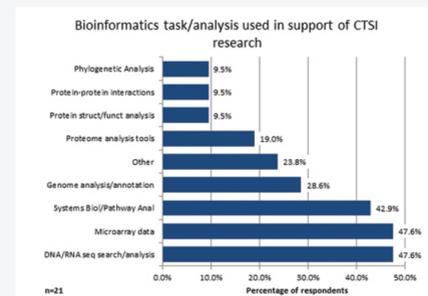
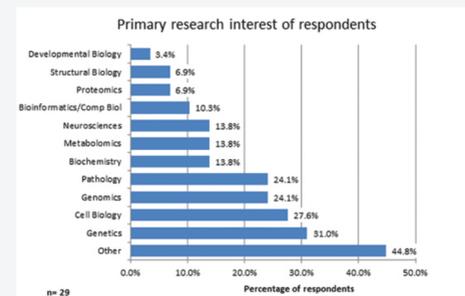


Data interviews revealed the following themes:

- Larger labs with many graduate students have trouble with consistency of data organization and documentation – best practices training would help.
- Storage isn't seen as much of a problem – researchers typically use departmental networks. This can mean problems with off-campus access to data.
- Manual lab notebooks are still used in some disciplines. Less thought is put into long-term preservation.
- Large collaborative projects may have some trouble with integrating data from ancillary projects.
- Resource-rich labs with dedicated data people have fewer problems.

## BIOINFORMATICS NEEDS

32 individuals from 9 UF colleges responded to the online assessment.



Others included: Epidemiology, Health Outcomes Research, Health equity, Immunology, Nutrition- food science, Physiology, Pain research, Pathophysiology, Protocol development, Evolutionary biology, Phenotyping, Population health, Social Sciences

Most of the UF-CTSI researchers who responded were not familiar with either commercial software packages (e.g. BIOBASE, CLC Genomics, Genego, etc) or the open access platform Galaxy

Commercial software that CTSI researchers would like to have available for use:

- CLC Genomics Workbench
- CLC Main Workbench
- Galaxy
- Ingenuity Pathway Analysis
- Pathway Studio from Ariadne

Categories that those who responded would like to receive training in:

- Statistical analysis software
- Genes and expression
- Next Gen Sequence analysis
- Genome browsers

Researchers selected online tutorials and in-person classroom instruction as the preferred means for receiving instruction on bioinformatics tools/resources. Based on CTSI researchers' interest in non-NCBI and commercial software, we wrote and have been awarded an FEO for \$44,000 to cover the costs of librarian training and bioinformatics program enhancement.

## LIBRARY SERVICES FOR CLINICAL AND TRANSLATIONAL RESEARCHERS (EXTERNAL ASSESSMENT)

120 individuals responded to the online assessment. Responses indicated that:

- Traditional searching services and systematic review assistance is provided by most libraries that serve clinical and translational researchers
- Data and bioinformatics support are considered important but actual services lag behind
- Assessing research impact, facilitating collaboration, and supporting community engagement are trends that are increasing

## GENERAL INFORMATION NEEDS

Thus far, 16 individuals from 6 UF colleges responded to the online assessment (which is still open for additional participants). The following results are preliminary.

Most popular services:

- Searches in support of IRB (92.2%)
  - General literature searches (91.7%)
  - Submit research products to Institutional Repository (90.0%)
  - Basic bioinformatics resource support (88.9%)
  - Perform animal alternative searches required by IACUC (85.7%)
  - Assist with systematic reviews (85.7%)
  - Citation checking for articles, grants, IRB/IACUC (85.7%)
- No service was chosen by fewer than 66.7%

Most popular areas for training:

- Best practices in data management and what's available at UF (100%)
  - Guidance in bioinformatics support available at UF (100%)
  - How to enhance impact of research (92.3%)
  - What is UF's Institutional Repository and how to submit to it (91.7%)
  - How to assess the impact of research (88.9%)
  - How to create NIH data management plans (88.9%)
- Lowest area of interest was how to use bibliographic citation software (54.5%)

## SERVING CLINICAL AND TRANSLATIONAL RESEARCHERS AT UF

- Given the responses to needs assessments thus far, the HSC Library has initiated a number of new services, trainings, and projects:
- Assistance offered to HSC faculty in developing systematic reviews
  - Best Practices in Research Data Management training offered by HSCL librarians
  - Enhancing Research Impact training for post docs offered by HSCL librarian
  - Introduction to Systematics Reviews training offered by HSCL librarian
  - Experts in data management and bioinformatics from other institutions brought to UF to provide training
  - Live broadcasts of NCBI Discovery workshops offered
  - Collaborations with UF High Performance Computing Center (HPCC) and discussions with Interdisciplinary Center for Biotechnology Research (ICBR)
  - Data Management/Curation Task Force
  - Research impact study for the CTSI External Advisory Committee
  - Research dissemination study for Office of Research

## NEXT STEPS

- Complete general information online needs assessment
- Perform interviews and focused discussions with researchers regarding general information and bioinformatics needs
- Continue to develop innovative and relevant services for UF's CTSI community including expanded bioinformatics, data, and impact classes
- Expand assessments to entire UF campus

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