The Bioinformationist: NCIBI and the Health Sciences Libraries

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Bioinformationist Defined

Bioinformationists are “information specialists who have received graduate training and practical experience that provides them with disciplinary background both in biomedical, behavioral or biological sciences and information sciences/informatics” as defined by the National Library of Medicine (NLM). Informationists or “information specialists in-context” are able to provide a unique perspective in the acquisition, analysis and management of discipline specific information resources. NLM strongly advocates the integration of information professionals into the priority discipline of biomedical studies in order to improve research and decision outcomes.

The Bioinformationist Community

Informationists are widely employed across the United States. These individuals are often supported by a health sciences library although some also are funded by biomedical centers and institutes. Their educational backgrounds vary but generally include specialized undergraduate or graduate health science related degrees and/or professional bench science or clinical experience which has imbued them with the necessary subject expertise for the centers that they support.

- The NIH (National Institutes of Health) Library has 14 biomedical librarians/informationists on staff.
- The National Center for Biotechnology Information (NCBI) has a technical Information Specialist who provides training and research support.
- NLM supports the training of informationists through their Individual Fellowship for Informationist Training (F7) (PAR-06-509) award which prioritizes several areas of study including biomedical research and education.
- The Medical Library Association (MLA) devoted a special focus issue of the Journal of the Medical Library Association in July 2006 to the support services provided by bioinformationists/information specialists/informationists in medical and health sciences libraries for bioinformatics research.

Selected Examples of Bioinformaticsists

<table>
<thead>
<tr>
<th>Institution</th>
<th>Title</th>
<th>Years</th>
<th>Education</th>
<th>Subject Headings</th>
<th>Instruments/Methods</th>
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</thead>
<tbody>
<tr>
<td>Cornell University</td>
<td>Bioinformatics and Life Science Specialist</td>
<td>2004</td>
<td>B.S.</td>
<td>-Workshops -Consultations</td>
<td></td>
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<tr>
<td>Harvard University</td>
<td>Molecular Biocomputing Specialist</td>
<td>2002</td>
<td>M.D. -M.B.A.</td>
<td>-Bioinformatics Week -Creation of Faculty Librarians’ Bioinformatics Initiative Group</td>
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<tr>
<td>Stanford University</td>
<td>Bioinformatics Specialist</td>
<td>2006</td>
<td>Ph.D.</td>
<td>-Web portal -Workshops -Consultations -Bioinformatics Week</td>
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<tr>
<td>University of Florida</td>
<td>Bioinformatics Librarian</td>
<td>2001</td>
<td>Ph.D. -M.S.</td>
<td>-Workshops -Lectures -Consultations -Coursework -Outreach, Workshops -Consultations -Bioinformatics Week</td>
<td></td>
</tr>
<tr>
<td>University of Pittsburgh</td>
<td>Information Specialist in Molecular Biology and Genetics</td>
<td>2002</td>
<td>B.S.</td>
<td>-Web portal -Workshops -Lectures -Consultations -Coursework -Bioinformatics Week</td>
<td></td>
</tr>
<tr>
<td>University of Southern California</td>
<td>Bioinformatics Specialist</td>
<td>2005</td>
<td>B.S.</td>
<td>-Workshops -Lectures -Consultations -Outreach, Workshops -Consultations -Bioinformatics Week</td>
<td></td>
</tr>
<tr>
<td>University of Utah</td>
<td>Bioinformatics Information Specialist</td>
<td>2001</td>
<td>B.S.</td>
<td>-Workshops -Consultations -Outreach, Workshops -Consultations -Bioinformatics Week</td>
<td></td>
</tr>
<tr>
<td>University of Washington</td>
<td>BioResearch Librarian</td>
<td>2002</td>
<td>B.S.</td>
<td>-Web portal -Workshops -Lectures -Consultations -Coursework -Outreach, Workshops -Consultations -Bioinformatics Week</td>
<td></td>
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University of Michigan Pilot

The growth of molecular information in the biomedical, clinical, and public health disciplines to discover novel scientific research is well illustrated by the exponential increase in the number of databases, data sets, tools and software being used to store, retrieve and analyze proteomic, genomic, and metabolomic data. Through the collaboration of the National Center for Integrative Biomedical Informatics (NCIBI) and the Health Sciences Libraries (HSL) at the University of Michigan, a four month pilot position, the Informationist, was created to provide a proof-of-concept model for a viable informationist in the Health Sciences Libraries and for the National Center for Integrative Biomedical Informatics (NCIBI) and the Health Sciences Libraries at the University of Michigan.

Outcomes

1. A permanent, dedicated informationist or bioinformationist or information specialist in bioinformatics should be created.
2. The qualified person should hold in the least an undergraduate degree in a basic science that supports bioinformatics research.
3. Creation of a meaningful classification schema for the center’s publications, tools, and technology seminars for organization on the center’s portal is under development.
4. Provided information on library resources such as full-text article acquisition through MGetIt button, journal impact factor analysis using Thomson Scientific’s Journal Citation Reports, and facilitating deposits of research materials into the library’s Deep Blue repository.

Needs Assessment

Much initial time investment during the pilot was spent on needs assessment. The informationist met with core NCIBI staff including the center’s project manager, senior scientific directors/core leads, and senior developers in order to gain an understanding of the work being conducted at the center and to determine where the informationist skills could provide effective contributions. In addition, the informationist made contacts with the librarian for biological sciences, the librarian for electrical engineering/computer science, and the Electronic Resources Officer (ERO) of the University Library in order to facilitate future collaborations between NCIBI activities and the resources for which these individuals maintained expertise.

Establishing appropriate collaborative relationships was vital in making the informationist an integral team member within the center and the library system.

Publicity

Working with human genetics HSL liaison to publicize NCIBI tools during the in-house NCBI provided short course training in Fall 2007 and continuing the NCBI Annual Research meeting poster session at Taubman Medical Library.

Current Awareness

Relay current event news on open source data management such as Bio2D (Biomolecular Interaction Network Database) acquisition by Thomson Scientific.

Usage

Volunteering library resources for usability testing of NCBI tools such as MiSearch, the automated profile learning bibliographic search tool and suggesting relevancy testing for tools using literature search results based on MeSH (Medical Subject Headings) with the “major” qualifier added.

Data Acquisition

Ongoing negotiations with the Electronic Resources Office to acquire additional full-text data sets for natural language processing (NLP) development from targeted publishers such as Elsevier and Nature Publishing Group.

Recommendations

The pilot informationist position created at the University of Michigan has produced tangible evidence that a bioinformationist position would be beneficial for the bioinformatics research community at the university. NLM also has placed a high priority on these types of information professionals. Many other research organizations already have a bioinformationist in place to support the needs of their scientists and have clearly demonstrated the high demand of their services.

1. A permanent, dedicated informationist or bioinformationist or information specialist in bioinformatics position should be created at the University of Michigan.
2. The qualified person should hold in the least an undergraduate degree in a basic science that supports bioinformatics research such as biology, molecular biology, or genetics.
3. A collaborative bioinformatics informationists interest group that includes the diverse areas of the health sciences, basic sciences, and engineering sciences should be created to support the bioinformatics research goals of the university.

References


Acknowledgements

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