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Bernard Becker Medical Library acts as the information hub for Washington University School of Medicine.
A Brief Statement of the Library’s Place at Washington University School of Medicine

When I think about the future of medical libraries, a few clichéd phrases I have often heard come to mind: “adapt or die,” “the only constant is change” and “may you live in interesting times.” Upon reflection, all of these seem to imply that the library is on the verge of extinction, or at least irrelevance. Thankfully, neither is true. What they more accurately imply, however, is that successful libraries are redefining themselves and their missions in the face of sweeping advances in technology and information access. Our challenge is to make the transition from the library of the past to the library of the future while effectively communicating our new role and continued relevance to our community.

To help meet these challenges, Bernard Becker Medical Library embarked on a process that culminated in the creation of an updated strategic plan to illustrate how the library plans to align its talents and resources in support of the school’s mission. The intended audience of this document is our Washington University School of Medicine community. During the past year, library staff engaged faculty members to hear their ideas, consulted our peers at other academic medical center libraries and reflected on our own experiences to identify potential strategies. In the end we identified seven areas of emphasis for the upcoming years — areas in which we feel the library can and should play a vital role.

Fortunately, we have a talented and dedicated staff at Becker Library that has already made significant contributions, both locally and nationally, in several of the identified strategic areas. We are positioned well to build our future on a solid foundation of experience, success and motivation. So these are interesting times — in exciting and positive ways — and all of us at Becker Library are eager to chart the future and share it with our community.

— Paul A. Schoening
Associate Dean and
Director of the Bernard Becker Medical Library
Background

Bernard Becker Medical Library acts as the information hub for Washington University School of Medicine. It serves the medical school community by providing an extensive collection of information resources to support the school’s research, teaching and patient care missions. It also provides personal assistance to faculty, staff and students who have difficult or complex queries, or simply need help finding and using the appropriate resources. The library strives to keep its resources and services current and relevant to the ever-changing landscape of health sciences research. To ensure that it does so, the library embarks on a periodic planning process that identifies specific strategic directions to follow, reflecting the current strategies of the medical school and acknowledging the changing academic health sciences environment. This report is the culmination of Becker Library’s 2011 strategic planning process and details the library’s strategic directions for the next three years.

Mission Statement

Washington University School of Medicine’s mission is to “lead in advancing human health through outstanding clinical care, innovative research and the education of tomorrow’s leaders in biomedicine.” In its support of the school’s mission, Becker Medical Library brings together resources, information and expertise to deliver innovative support for advancing discovery and improving human health.

Vision Statement

In the pursuit of the Becker Medical Library mission we will:

- Commit to personal, timely and professional service.
- Provide a strong collection that is accessible anytime and anywhere.
- Partner with our school’s faculty, staff and students to anticipate and serve their needs.
Reflect our school’s programs and priorities in our strategic initiatives.

Apply emerging technology to improve access to information, teaching and learning.

Capitalize on the combined talents of our staff to foster innovation.

Creatively apply our expertise and resources to answering new and complex questions.

Provide leadership in defining the future roles of medical libraries.

The library’s mission and vision statements provided essential guidance to the planning committee as it discussed, deliberated and ultimately selected the strategic directions described in this report.

Any discussion of the future depends, to some extent, on past activities, so it is instructive to recall the strategic directions identified during Becker Library’s 2007 strategic planning effort:

1. **Enhance institutional partnerships.**

   In support of the School of Medicine’s close partnership with BJC HealthCare, Becker Library will enhance institutional partnerships to guarantee access to information for health care professionals supporting the School of Medicine patient care mission.

2. **Expand biomedical informatics services.**

   Given the rapidly changing landscape of research and medicine in the genomic age, Becker Library will cultivate and expand its biomedical informatics services and resources in alignment with the strategies of the School of Medicine, particularly BioMed21.

3. **Enhance curriculum support for lifelong learning.**

   The AAMC’s Medical Schools Project Report for Medical Informatics and Population Health outlined specific objectives to which medical school education should adhere. In support of these objectives, Becker Library will work with education programs to ensure that School of Medicine students adopt best-practice and best-evidence applications to make sound clinical and research decisions.
4. **Expand clinical library services.**

In recognition of the significant impact of information resources and expertise in clinical decision-making, Becker Library will provide a comprehensive clinical library service to work with the Medical Center’s health care teams to meet information needs for high quality patient care.

5. **Support scholarly communication.**

In its role as a steward of knowledge, Becker Library will develop a program to increase awareness among faculty of the issues related to scholarly and scientific communication and will develop options for dissemination and preservation of the scientific record.

6. **Foster consumer health literacy.**

In tandem with the School of Medicine’s community outreach efforts, Becker Library will advocate and develop programs to foster consumer health literacy.

Reflecting on Becker Library’s progress in the strategic directions identified in 2007, significant progress was made in bioinformatics, clinical library services, scholarly communication support and consumer health literacy. Less progress was made in the areas of enhancing institutional partnerships and educational curriculum support. While not directly identified as future directions to pursue going forward, curriculum support and enhancing the partnerships with our teaching hospitals remain important areas that we will continue to address through our new directions.
Environmental Factors Influencing the Library’s Directions

The academic health sciences environment is experiencing a period of exciting opportunities brought about by new discoveries as well as a time of financial uncertainty in the face of a struggling world economy. While Becker Library could pursue many new and interesting directions, the reality is that it must thoughtfully consider its future and adapt to the changing environment in a financially conservative way. External funding sources will be crucial to establishing new service programs unless other programs are eliminated.

Many other factors much more interesting than financial pressures influence the future of Becker Library. The planning committee reviewed the recent WUSM strategic plan and took into consideration changes in the nature of scientific research and how it is communicated, the impact of information technology on patient care and disruptive innovations in the delivery of information. Although it is not the purpose of this report to describe in detail all of the factors the planning committee considered, it is worthwhile to briefly list them to provide context.

- Washington University School of Medicine 2008 Plan for Excellence
- Changing nature of information, information technology and publishing
  - Further migration from paper-based resources
  - Mobile technologies, smart phones and tablet computers
  - Blogs, wikis and other social media
  - Mixed media scholarly publications, such as Journal of Visualized Experiments
  - Open Access publishing
  - Increasing copyright complexity in the digital age
  - Information and data security and integrity
Changing nature of scientific research

- Collaborative research
- E-research and informatics
- Emphasis on demonstrating impact of research

Changing nature of patient care

- Evidence-based practice
- Electronic medical records and point-of-care decision support
- Health literacy and community health initiatives
- Team-based health care

Core Competencies

Although the emphasis of Becker Library’s strategic planning effort was on identifying new opportunities, an important component was the reaffirmation of core competencies, that is, the essential services that Becker Library is obligated to provide. First and foremost among these core competencies is maintaining the library’s extensive collection of current books, journals and electronic databases as well as several significant rare book collections. Although circulating print material is in decline, the number of resources accessible online continues its rapid ascent. Becker Library now subscribes to only 11 print journals without digital equivalents. Book purchases are also shifting to the more convenient online formats, and while they still represent only 12 percent of the entire circulating book collection, the number of online books available has doubled each year for the past five years. Becker Library’s collection will continue to adapt to the expectation that it be available from anywhere in the world at any time. A related core competency to which Becker Library remains committed is providing accurate, efficient and timely access to our collection of resources and services via the library’s online catalog and website.

Providing quality customer service is another core competency. Becker Library staff members try to answer questions quickly and accurately. More than ever, they are taking their services to their customers rather than expecting customers to come to them. Becker Library will continue to engage faculty, staff and students to better understand how the library can best serve their needs.

Maintaining the library as a place for quiet reflection, uninterrupted concentration and community gathering is also central to the library’s
mission. While a large portion of Becker Library’s resources are available without setting foot in the library, many people still visit the library to seek refuge from the distraction of coworkers, telephones and email. Others meet in the small-group study areas or make use of the public computers. Becker Library has an obligation to serve as a peaceful retreat and a common community good and remains committed to improving its spaces to comfortably meet this obligation into the future.

Strategic Directions for 2012 and Beyond

Becker Library’s Strategic Planning Committee comprised library staff members from the library’s Health Information Resources, Collection Management, Translational Research Support and Business divisions. As strategic directions were identified, smaller task force groups were created to refine the directions, seek input from faculty, staff and students, and draft the final strategy statements. The final strategies, fully described in subsequent sections, are:

1. **Improve delivery of clinical information at the point of decision making.**
   Electronic health records and mobile devices are offering new avenues for delivering relevant information when it is most needed during the decision-making process. Becker Library will make every effort to ensure that its information resources are available directly through these platforms.

2. **Enhance biomedical informatics support.**
   Becker Library will support the community of researchers and students at Washington University School of Medicine through a core set of activities that continues to serve as the foundation of the Bioinformatics@Becker program.

3. **Improve health literacy in the community through partnerships.**
   Becker Medical Library will seek partnerships with School of Medicine programs that have community outreach components, offering the expertise and experience of its librarians in providing understandable and credible consumer health information.

4. **Expand support for authors and focus on measuring research impact.**
   Becker Library will increase its focus on post-publication issues brought about by the shift to a digital world and the changing nature and requirements of academic biomedical research.
5. **Strengthen efforts to preserve the heritage of Washington University School of Medicine.**

The Historic Preservation Strategy is a focused effort to increase communication and collaboration with departmental administrators at the medical school to facilitate the transfer of historically valuable records (paper or digital files) to the Becker Archives.

6. **Create services to support collaborative science.**

Becker Medical Library will be actively involved in identifying, developing and promoting tools and resources that help research faculty maximize their visibility and develop and sustain collaborations with other researchers here and across the world.

7. **Help researchers share their data.**

Becker Medical Library will develop a program to assist WUSM faculty members with preserving and sharing their research data in the spirit of the National Institutes for Health and National Science Foundation data-sharing requirements.

Many of these overlap or intermingle, but each offers a slightly different perspective on the future roles Becker Library intends to play within the School of Medicine.
Improve Delivery of Clinical Information at the Point of Decision Making

Electronic health records and mobile devices are offering new avenues for delivering relevant information when it is most needed during the decision-making process. Becker Library will make every effort to ensure that its information resources are available directly through these platforms. Becker Library will also work with the various university and hospital groups to pilot integration of access to information through the electronic health record.

Details of This Strategic Direction

Becker Library will identify preferred resources and mobile platforms and create educational guides to help our users get the most out of their mobile devices. Mobile devices present a host of issues that complicate the library’s ability to offer resources through them. Because mobile devices are generally a personal preference, there is no consistency among the library’s user base, making customization to a specific platform impossible. Furthermore, many information resource vendors do not offer mobile-friendly versions of their content, so the landscape today is confusing and frustrating for both users and libraries. While Becker Library is not in a position to mandate vendor actions, it will continue to actively track developments in this area and seek to influence vendor choices.

The library will identify potential partners and seek opportunities to make its clinical information resources available through electronic health record systems in place throughout Washington University Medical Center. The library currently subscribes to many resources that can provide support for evidence-based practice when accessed from an electronic health record. Integrating access to information resources from the electronic health record, as encouraged in the HITECH Act, 1,2 is a complex project requiring partnerships with and the skills of librarians, medical information officers, systems technicians and clinicians.

1http://waysandmeans.house.gov/media/pdf/110/hit2.pdf
2http://www.michbar.org/journal/pdf/pdf4article1873.pdf
Environmental Factors Supporting This Strategic Direction

With the increasing prevalence and sophistication of mobile devices, people are incorporating them into their workflows as important tools for enhancing individual efficiency and effectiveness. In particular, such devices offer the possibility of accessing exactly the right information at the right time in the right place to meet very specific needs. In the clinical care environment, this kind of access can have a profound impact on patient care and outcomes. According to a survey of 2,041 physicians released May 4, 2011, by Manhattan Research, 81 percent of physicians are using smart phones (up from 72 percent in 2010). Many others are early adopters of other mobile technologies such as tablet computers.

Although not as mobile, the electronic health record (EHR), which is being rapidly deployed to patients’ bedsides, also offers the opportunity to access relevant information that could dramatically improve care. The HITECH Act includes incentives related to the adoption of electronic health records and the promotion of “meaningful use.” Meaningful use can be shown through documented access to health information, enabling discovery of the best evidence-based practices.

The challenge today is both how to make the medical library’s extensive resources available through these devices and how to get the resources into the hands of practicing physicians at the point of need.

Despite the growth of mobile devices and applications, publishers and other content providers do not offer resources formatted for every mobile platform. Thousands of books, journals and databases purchased, subscribed to and licensed by Becker Library are web accessible, but few are optimized for use on mobile devices. Becker Library’s popular Mobile Medicine Guide (http://beckerguides.wustl.edu/mobileresources) provides information about and access to mobile tools available through the library, as well as recommendations for tools.
I wanted to create an environment where electronic decision-support tools from Bernard Becker Medical Library would be available to physicians at the point of medical decision-making. Although this is not necessarily the point of care, the point of medical decision-making is the time in the clinical workflow when clinicians make a decision in a clinical setting. In areas where Electronic Medical Records (EMRs) are deployed, clinicians may be interacting with the system, about to make the decision of ordering a medication or a lab test or entering a diagnosis. By partnering with the librarians, we were able to provide a link to specific content that is most useful for point-of-care decision making and included one-click access to contact the librarians directly. Including the library and librarians is an integral part of providing information in the clinical environment.

Feliciano B. Yu Jr., MD, MPH, MHS
Assistant Professor of Pediatrics
Chief Medical Information Officer,
St. Louis Children’s Hospital
Director, Washington University Pediatric Computing Facility

While Becker Library cannot directly ensure seamless access to its information resources through electronic health records in use across the medical center, it can stay abreast of the latest practices and mandates and work with our health-provider colleagues to find ways to most effectively provide access to Becker Library resources through their EHRs. Through its partnership with St. Louis Children’s Hospital to pilot the integration of library resources into their Emergency Department’s electronic health record, Becker Library has gained valuable experience in this area. This partnership has allowed everyone involved to capitalize on each other’s skills, including librarians, medical information officers, systems technicians and clinicians. The experience gained from this pilot will be used to pursue pilots with other clinical units.


Evaluating Progress in This Strategic Direction

Becker Library’s success in the strategic direction of providing information at the point of decision-making will be judged by:

- Increased use of e-books and mobile tools
- Increased perception of the library as a place to access and seek support in the use of those resources
- Successful integration of resources through electronic health records throughout the medical center


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Assistant Professor of Pediatrics
Chief Medical Information Officer,
St. Louis Children’s Hospital
Director, Washington University Pediatric Computing Facility

Becker Library will support the community of researchers and students at Washington University School of Medicine through a core set of activities that continues to serve as the foundation of the Bioinformatics@Becker program. These activities will include developing educational and training resources in response to user requests and changing trends in bioinformatics; providing access and support for tools used for processing and analyzing genomic information; providing professional expertise to groups and individuals as consultants; and serving as a bridge to the research community to identify and address common needs and interests.

Details of This Strategic Direction

Education and Training

The future direction of our education efforts will reflect the research community’s expressed desire for high-quality instruction, provided in multiple formats, and delivered in a variety of ways. Becker Library’s strategy will include the following components:

- The Bioinformatics@Becker program will continue to provide a group of foundational courses developed in house and offered periodically throughout the academic year to meet the interest in traditional hands-on, classroom-based instruction.
- To meet the increasing interest in “just-in-time” training and to provide the widest range of topics possible, Becker Library will continue to subscribe to high-quality, web-based tutorial services such as Open Helix.
- Becker Library will collaborate with training programs and research centers on campus to develop lectures and seminar series that use faculty expertise to address specific topics of interest.
- Becker Library will serve as a central clearinghouse of information on resources, training materials and software tools (both commercially available and locally developed).

Support for Software Tools

Becker Library’s program recognizes the need for researchers and students to have easy access to software tools for analyzing data and readily available expertise and support in their use. To meet these
demands, the library will continue to focus on identifying tools of interest to large segments of the community and work with vendors to provide economical licensing options and to serve as a coordinator for training and on-site consultation.

**Bridge to the Research Community**

A key component of Becker Library's bioinformatics support strategy will be to continue building relationships with individual researchers, labs, centers and core facilities to identify emerging trends and opportunities that will enhance the scope of library activities and benefit the greater research community. The Bioinformatics@Becker program is uniquely positioned to serve as a central resource and facilitator within a largely decentralized research environment. These relationships will inform the ongoing development of our core services and present new opportunities for the library to expand its support for the School of Medicine research community. A specific goal of this bridge-building effort will be to better connect researchers with potential collaborators within the university and to enhance their collaborative endeavors through training and/or consultation services.

**Environmental Factors Supporting This Strategic Direction**

Establishing a library-based set of support services has proven to be an efficient and valued approach for helping faculty, staff and students understand and use bioinformatics resources. Feedback from the research community has indicated that the library can continue to play an important role in this area. The success of the recent lecture series “Introduction to Genomic Medicine,” developed in collaboration with several campus departments and research centers, also demonstrates the role the library can play as a bridge to the information needs of the broader research community.

With an established record of providing professional expertise and broad-based support for information resources and analytical tools, Becker Library bioinformaticists have filled a unique role within the decentralized research environment at Washington University School of Medicine by serving as a central resource for students, staff and faculty across all disciplines. This has positioned the library to be able to identify common needs and interests among biomedical researchers and develop programs and expertise to benefit the widest possible audience. This has also resulted in new initiatives to
explore ways to enhance collaboration among researchers and evaluate their interest in methods and guidelines for sharing data. These initiatives have evolved to a point where they now stand on their own as major strategic directions for the library.

In light of its prior success, however, the primary challenge facing the library in furthering its support of bioinformatics will be to balance the pursuit of new initiatives with the limitations of available staff resources. In the absence of budgetary expansion, funding for additional staffing resources will be sought through partnerships with School of Medicine researchers and through external funding opportunities.

Becker Library is already a recognized leader in library-based bioinformatics support. By remaining focused on the core activities of the Bioinformatics@Becker program, the library will enhance its national leadership role in demonstrating the value and importance of library-based bioinformatics support programs.

**Evaluating Progress in This Strategic Direction**

Becker Library will evaluate the success of its Bioinformatics@Becker program through indicators such as:

- Increased use of services
- A survey of researchers and advisory group members to assess past efforts and identify areas for future development
Improve Health Literacy in the Community Through Partnerships

Becker Medical Library will seek partnerships with School of Medicine programs that have community outreach components, offering the expertise and experience of its librarians in providing understandable and credible consumer health information.

Details of This Strategic Direction

Going forward, Becker Library will emphasize collaborations with the Institute of Public Health’s Center for Community Health Partnerships and the Institute for Clinical and Translational Science’s Our Community, Our Health division, as well as continue its work with the Alvin J. Siteman Cancer Center’s Program for the Elimination of Cancer Disparities (PECaD) and the St. Louis Integrated Health Network. Our focus will be on working with faculty members who are leading projects with a community outreach component. Becker Library’s expertise in educating health providers and the public on locating and disseminating credible health information has the potential to enhance the quality of faculty projects with a community component.

Although the library will play mainly a supporting role in outreach, it will occasionally take a leadership role by directly sharing its expertise with the community when relevant opportunities arise. A recent example is Becker Library’s Mobile School Health Information (MoSHI) project, funded by the National Network of Libraries of Medicine, to provide training for K-12 school librarians in finding and using credible health information to improve school health programs.

Becker Library will undertake the following initiatives as it continues to strengthen its support of and role in community health and health literacy:

- Target Becker Library resources and staff for work on projects aligned with the health priorities identified by community leaders.

- Develop a more proactive and systematic process for identifying School of Medicine faculty projects with a community component. This may include a closer working relationship with Our Community, Our Health or the identification of collaborative networks.
Develop resources to help faculty seeking information about community engagement principles and science.

Identify relevant community experiences in School of Medicine academic programs, and offer Becker Library services to enhance those experiences.

Environmental Factors Supporting This Strategic Direction

Communities have not necessarily been the beneficiaries of clinical research studies that rely on their members. The result has been a loss of trust from those communities toward academic medical centers and skepticism when approached to participate in new studies. In response, academic medical centers are rethinking how they engage communities in the research process in an effort to restore trust and, ultimately, improve the health of those communities. At the federal level, the Centers for Disease Control has defined community engagement as “the process of working collaboratively with groups of people who are affiliated by geographic proximity, special interests, or similar situations with respect to issues affecting their wellbeing.” Washington University School of Medicine identified community engagement as a strategic priority in its 2008 Plan for Excellence. Shortly thereafter, the Institute for Public Health was formed under the schools of social work and medicine. Its goal is “to facilitate ground-breaking research, orchestrating thought leaders from a broad range of different disciplines to develop evidence-based solutions that positively impact public health in the St. Louis region and around the globe.” Becker Library at the same time established a public health librarian position to focus on ways the library can support the medical school’s involvement in the Institute’s activities. Since then the library has worked in varying capacities with several medical school groups who are actively engaged in community outreach.

The impact that Becker Library’s efforts in this direction will have on the community is unknown, as there are many sources of information available to citizens of St. Louis. However, the disparities in health status experienced within St. Louis suggest that its residents probably also experience disparities in accessing and using credible health information. Broadband internet connections are unaffordable for some people, and many services at public libraries require a
永久地址以获取图书馆的借书卡。此外，很少有其他信息组织拥有贝克尔图书馆在提供可信健康信息方面的知识和背景。我们的努力与教员和社区成员的合作旨在减轻圣路易斯社区的这些访问障碍。

**Evaluating Progress in This Strategic Direction**

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- 贝克尔图书馆开发的资源的网络指标

Monique M. Williams, MD
Assistant Professor of Medicine and Instructor in Psychiatry

For a variety of reasons, I chose to include staff at Bernard Becker Medical Library in an infrastructure proposal for a comprehensive, multifaceted approach to reducing health disparities for African Americans. The staff at Becker has considerable expertise in developing and implementing training in accessing quality, credible health information to increase capacity in health education for local community organizations. For example, their successfully funded project training K-12 librarians in the metropolitan area is an educational model that School of Medicine faculty could modify and replicate for capacity building in community organizations. The library staff's experience providing relevant health information to a diverse public makes it a key asset for the school's faculty who are planning community engagement projects.

Monique M. Williams, MD
Assistant Professor of Medicine and Instructor in Psychiatry
Expand Support for Authors and Focus on Measuring Research Impact

Since its creation, Becker Library’s scholarly communications program has focused primarily on providing assistance to authors during the creation and distribution phases of producing journal articles. Going forward, the Becker Library will increase its focus on post-publication issues brought about by the shift to a digital world and the changing nature and requirements of academic biomedical research. Through these efforts, the program will be able to serve as a resource for our authors at all levels of the scholarly communication process and be equipped to respond and adapt to new demands as they arise.

Details of This Strategic Direction

Measuring the Impact of Scholarly Research
The library will enhance its suite of services that help authors better judge the impact of their scholarly work and administrators demonstrate the impact of the various research programs at Washington University. Becker Library has already established a framework for measuring impact (https://becker.wustl.edu/impact/assessment/index.html) and will work to refine this framework, build an educational outreach program to make faculty members and administrators aware of it and expand the support of the program within the library.

The impact of an article can act as a feedback mechanism to the creation stage by informing the author about alternative modes of publishing the work (digital repositories, wikis, blogs, etc.) as well as alternative publications such as presentations, data sets or other supplemental material that can all further enhance the visibility of their research and its impact.
Supporting Our Authors

Specific initiatives that Becker Library will pursue in its ongoing support of Washington University authors will include:

- Strengthen and broaden the program for educating School of Medicine faculty authors about the university’s Open Access Resolution.

- Develop and publish a position paper on Becker Library’s digital repository (DigitalCommons@Becker) that will address many of the misconceptions regarding digital repositories and more clearly state the case for promoting and maintaining a digital repository at the School of Medicine.

- Take a more active role in resolving author name ambiguity within databases such as Medline, Scopus and Web of Science by developing an educational program for faculty members and working directly with database vendors to disambiguate names. Becker Library will actively participate in broader efforts, such as ORCID (Open Researcher & Contributor ID), in this area as well.

Environmental Factors Supporting this Strategic Direction

With the opportunities available in today’s digital world and the changing nature of the research process, both authors and university administrators must deal with a host of challenges imposed from both outside and inside their institutions. These include increased requirements to comply with responsible conduct of research practices; data sharing and management; competition for grant funding; author and affiliation ambiguity; compliance with public access and data-sharing mandates and institutional resolutions; and fulfilling tenure requirements, to name a few.

Growth in activism on the part of consumers seeking health-related information has led to demands for transparency and accessibility of research findings to effectively target and disseminate research findings suitable for laypersons. Moreover, there is a growing trend toward “Open Science,” or the sharing of research data and findings in the interest of promoting scientific discovery. This has sparked contentious debate related to copyright and intellectual property issues, as well as disclosure versus secrecy norms. In addition, authors are expected to demonstrate tangible outcomes and benefits of their scholarly output to the public, their institutions and funding
bodies. University administrators also face increased pressure to analyze research productivity and impact to establish strategic directions, and to demonstrate a return on investment from research.

All of these issues require a balancing act on the part of authors and university administrators in navigating the regulatory, legal, institutional and funding body requirements while promoting the mission of the university and engaging in the pursuit of scientific discovery. Washington University recently took a step toward promoting greater access to the research it undertakes through its adoption of an Open Access Resolution that encourages authors to publish in open-access journals and deposit their articles in a university digital repository.

Becker Library currently provides services to faculty authors through the three stages of the lifecycle of an article — creation, distribution and impact. When authors are beginning to consider publishing an article, Becker Library can (1) assist in identifying an appropriate journal, (2) educate the author about the benefits of publishing in an open-access journal, and (3) provide advice on how to ensure the article is correctly associated with the author’s other work when indexed in large databases. In preparation for publishing the completed article, Becker Library offers information on retaining certain rights to the article as well as assistance in depositing the article into an open-access digital repository.

**Evaluating Progress in This Strategic Direction**

Becker Library’s success in supporting scholarly communication within Washington University School of Medicine will indicated by the following:

- A significant increase in the number of authors actively depositing their work in DigitalCommons@Becker
- An increase in the number of requests to assist with demonstrating research impact both from authors and administrators
- Adoption of common naming standards for School of Medicine research units and authors
Strengthen Efforts to Preserve the Heritage of Washington University School of Medicine

The Historic Preservation Strategy is a focused effort to increase communication and collaboration with departmental administrators on the medical campus to facilitate the transfer of historically valuable records (paper or digital files) to the Becker Archives.

Details of This Strategic Direction

Becker Library will actively engage departmental administrators to educate them about the value of historical records and to establish regular transfers of paper and digital records to the Becker Archives. Records that document policy development and precedents or major projects or that have been vital to the operation of the division, department, school or university are valuable additions to the Becker Archives. Specific examples include:

- Correspondence and subject files of the dean, director or chair of a department
- Publications, such as newsletters and annual reports
- Records of program or curriculum development
- Departmental minutes, committee agendas, meeting minutes and reports
- Self-studies, histories and accreditation reports
- Records about symposia and special projects
- Records about cooperative efforts with other institutions
- Photographs (if identified)

Transferring these records to one central repository will allow the Library Archives to better document the development and progress of the medical center for future generations.

Furthermore, Becker Library will seek to partner with the school’s central information technology service to develop and implement a plan for ensuring the secure long-term preservation of digital files.
Environmental Factors Supporting This Strategic Direction

Washington University School of Medicine and its affiliated hospitals are among the most influential medical institutions in the country. As such, the departments and programs at the medical center have a responsibility to document institutional policies, procedures and activities for a variety of administrative, legal, financial and historical reasons.

To date, most of the material in the Becker Archives has been collected through random transfers of records from a limited number of medical center offices. Unfortunately, this method has led to a very uneven cache of records. Some departments have transferred large numbers of records to the library and are therefore well-represented in the archives, while other offices have failed to transmit any records to the library, leaving inadequate documentation in the archives to reconstruct the history of these departments and programs.

This strategy strengthens Becker Library’s commitment to the remarkable heritage of the School of Medicine, its individual departments, and the associated hospitals and research institutions at the medical center. Through its pursuit, Becker Archives staff will raise awareness of the value of preserving archival records among medical center administrators in an effort to improve the kinds and amount of material transferred as well as to achieve a more balanced archive.

One prominent issue to address is how to manage the long-term preservation of digital records and the allocation of future space for electronic storage. Though they may be in a different format than the paper records typically found in the Becker Archives, digital records can also have long-term administrative and historical value. In fact, many records are no longer available in paper format and exist only on departmental and divisional servers. Whereas paper records can endure on their own without much human intervention, digital records require routine and planned attention to survive and remain accessible. In order to improve the chances that the Medical Center’s records will be preserved and retrievable in the future, collaboration between the Becker Library and the various departmental offices is necessary to identify digital files that are appropriate to transfer to the Becker Archives.
Evaluating Progress in This Strategic Direction

Becker Library's success in this strategic area can be verified by

- The detailed collection statistics reported by the Becker Archives each year

While the overall number of records transfers should increase, this strategy is expected to substantially escalate the transfers of digital files to the archives. However, success will depend largely upon cooperation with medical center staff. In particular, collaboration with departmental administrators at the medical school will lead to better documentation of the history of the medical center and contribute to the further prestigious recognition of the School of Medicine and its affiliated hospitals and to the history of medicine and medical education.
Collaboration plays an increasingly significant role in all stages of the research “lifecycle” in the academic research environment. Becker Medical Library will be actively involved in identifying, developing and promoting tools and resources that help research faculty maximize their visibility and develop and sustain collaborations with other researchers here and across the world. Becker Medical Library will focus on three general areas: finding collaborators, facilitating collaboration and understanding the impact of collaboration.

Details of This Strategic Direction

Finding Collaborators
Interdisciplinary teams are a critical component of successful research efforts. These interdisciplinary teams are composed of various people from divergent backgrounds, interests and areas of expertise. Therefore, establishing such a team can often pose a real challenge. Other challenges to researchers include finding resources and facilities for projects. The library will continue to help researchers locate these important research components using a variety of resources. To address these needs, the library and the Center for Biomedical Informatics joined forces to implement VIVO (vivo.wustl.edu) on the School of Medicine campus. VIVO is a national and international open-source research discovery platform for hosting information about scientists and their interests, activities and accomplishments.

Facilitating Collaboration
There are a number of tools and resources (e.g., SharePoint, project wikis) that can support collaborative activities of research teams. The library will make information about these tools available to everyone through the library website and through the development of resource guides on this (and related) topics.
Understanding the Impact of Collaboration

The library will play a role in helping collaborative projects identify and track project outputs (e.g., publications, data and more) using the Becker Medical Library Model for Assessment of Research Impact. The library will also help collaborative teams understand their own teams through social network analysis and other analyses/evaluations of project output.

Specific initiatives the library will undertake in the near term along this strategy include:

- Compiling lists and developing resource guides on topics related to collaboration, team science and social network analysis
- Continuing to support VIVO efforts on campus through presentations, workshops and marketing
- Developing services to help facilitate the collaboration process and using social network analysis approaches to help WU investigators visualize these efforts
- Taking action to ensure that library staff members have opportunities for training and support in topics related to collaboration, team science and social network analysis

Environmental Factors Supporting This Strategic Direction

Today’s research requires an interdisciplinary approach, in terms of topics as well as teams. While researchers and scholars are often familiar with topics and expertise in their own discipline, they face significant challenges when trying to locate collaborators outside of their specific area of focus. Greater emphasis has been placed on team-based efforts, and indeed around a new field of study, Team Science, which focuses on a variety of issues related to successful interdisciplinary team-based efforts.

The library has a successful history with matching the research community to resources, core facilities, opportunities and potential collaboration partners. The proposed work aligns with the role of the library in its service to the School of Medicine and is strongly supported by our expertise and interest in topics related to this area.

The library also has a strong presence on the VIVO project, both locally by collaborating with the Center for Biomedical Informatics and nationally through participation on the national leadership team and
the Clinical and Translational Science Awards (CTSA) Informatics Key Function Committee, Research Networking Group. New work with the Olin Library is under way to help with VIVO adoption on the university’s Danforth Campus.

Members of the Translational Research Support group have a small amount of expertise in social network analysis, primarily examining collaboration through co-authorship relationships.

Evaluating Progress in This Strategic Direction

Several approaches will be taken to evaluate the services and products related to this strategic direction, including:

- Tracking use of services, consultation activities and training opportunities related to efforts described above
- Developing a LibGuide and other online resources on collaboration-related topics, using page views as an indicator of use of the resource
- Participating in the local and national-level researcher networking activities to be indicative of the success of our contributions in this area

The Washington University Institute of Clinical and Translational Sciences (ICTS) has a number of successful collaborations with Bernard Becker Medical Library. I appreciate the library as a true partner in our work supporting translational science.

A Becker librarian provided solutions for tracking of publications, created alerts in various databases and recommended strategies for exporting publication data.

The library provided NIH Policy compliance support for ICTS administrators and training for ICTS investigators and trainees as well as consultation on author rights, name variant issues and strategies for enhancing impact.

Becker analyses have demonstrated an increase in interdisciplinary interactions between ICTS investigators and collaborative research proposals among ICTS members, as well as publication of significant papers that exceed average citation rates.

Bradley Evanoff, MD, MPH
Richard A. and Elizabeth Henby Sutter Professor of Occupational, Industrial, and Environmental Medicine in the Department of Medicine, Professor of Occupational Therapy and Assistant Dean for Clinical and Translational Research
Becker Medical Library will develop a program to assist School of Medicine faculty members with preserving and sharing their research data in the spirit of the National Institutes for Health and National Science Foundation data-sharing requirements for all grantees.

Details of This Strategic Direction

To reduce the barriers to data sharing, Becker Medical Library will develop staff expertise and library services that minimize the burden on investigators who would like to share their data. The library’s program will focus on best practices for

- Data sharing related to controlling the use of data
- Ensuring formal recognition by those using shared data
- Making data sets findable
- Guaranteeing the ongoing integrity of shared data

The library will not offer or seek to provide data-management or data-hosting services; nor will it require investigators to relinquish any control over their research data.

In the near term, the library will undertake a set of specific initiatives to ensure that its program is of the highest quality and meets the needs of researchers. These include:

- Surveying research faculty members about their data-sharing experiences, needs and wants
- Identifying a staff member within the library to act as the strategic lead and local expert on the topic
- Creating a short Becker on the Road talk on issues related to data sharing to present at faculty meetings
- Establishing a LibGuide or other web-based resource that consolidates information on topics related to data sharing
- Approaching specific researchers to work with in implementing data-sharing plans according to best practices
Environmental Factors Supporting This Strategy

Data sharing has become an expectation for research funded by the National Institutes of Health (NIH) since 2003, when the NIH established its statement on sharing research data.

NIH reaffirms its support for the concept of data sharing. We believe that data sharing is essential for expedited translation of research results into knowledge, products and procedures to improve human health. The NIH endorses the sharing of final research data to serve these and other important scientific goals. The NIH expects and supports the timely release and sharing of final research data from NIH-supported studies for use by other researchers. Starting with the October 1, 2003 receipt date, investigators submitting an NIH application seeking $500,000 or more in direct costs in any single year are expected to include a plan for data sharing or state why data sharing is not possible.4

A similar requirement was adopted by the National Science Foundation in 2011.

Investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections and other supporting materials created or gathered in the course of work under NSF grants. Grantees are expected to encourage and facilitate such sharing.

Proposals submitted or due on or after January 18, 2011, must include a supplementary document of no more than two pages labeled “Data Management Plan.” This supplementary document should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results.5

Although large formal data repositories exist for sharing data among various disciplines such as genetics, neuroscience and proteomics, a significant amount of data generated by research still remains on the relatively isolated computers of individual investigators or labs. The technical and administrative details necessary to share this isolated data often act as barriers to already over-burdened investigators. In the end, data remains hidden and unavailable even if the investigator is interested in sharing it.

A data-sharing program through the medical library will have a positive impact on the medical school in several significant ways. It will reduce the administrative burden on researchers willing or required to share their data, move the school closer to complying with the intent of the NSF and NIH data-sharing requirements, increase collaborative opportunities for researchers by making their research data more visible on the Internet and, ultimately, improve the integrity of research data within the School of Medicine.

**Evaluating Progress in This Strategic Direction**

The success of our data-sharing program will be judged on the number of research faculty consultations and implemented data-sharing plans. Results will be published in the library’s annual report.
The Bernard Becker Medical Library is committed to providing outstanding resources and services to meet the needs of our faculty, staff and students. As we view the changes under way in information technology, health care practice and biomedical research, Becker Library has crafted a set of strategic directions to meet this commitment well into the future. With these directions as our guide and a close working collaboration with our community, the library will be positioned to deliver innovative programs and services that make a meaningful contribution to the School of Medicine’s pursuit of excellence.
Acknowledgements

Finding our directions would not have been possible without the insight gained from our conversations with researchers, physicians, nurses, administrators, and students here at the School of Medicine. Library staff members got us started off on the right path with their great input at our planning retreat and with their comments along the way.

The hard work of distilling the great ideas into a manageable set of achievable directions was accomplished by our dedicated library planning committee.

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Thank you all.