University of Missouri – Kansas City
Life Sciences Millennium Committee
Mid Year Report

February 13, 2003
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Executive Summary

On September 9, 2002, Chancellor Martha Gilliland commissioned The Life Sciences Millennium Committee (LSMC) to establish a baseline inventory of UMKC’s life science strengths and assets, including researchers, institutional research focus areas, facilities and equipment, as well as support structures and processes.

The primary objective of the LSMC was to look at a series of life sciences related issues and make recommendations to the Chancellor; this report outlines some of the necessary steps to successfully establish the University’s niche in the life sciences.

According to Life Sciences & Missouri’s Economic Future: An Opportunity to build “One Missouri,” a January 2003 report prepared by the Battelle Memorial Institute for the State of Missouri, University of Missouri System, Danforth Foundation and Ewing Marion Kauffman Foundation, to create a life sciences strategy for Missouri, “the life sciences represent an opportunity for Missouri to diversify its economy, moving from durable manufacturing to value-added agriculture, manufacturing and product development. Building a strong life science industry will provide disposable income that also will enable services and other industries to grow in the state. It will mean keeping scientific and technological talent in Missouri and leveraging significant federal, industry and other funds, many fold what the state government itself invests.”

Much of the Committee’s focus and work was spent on the identification of the major impediments to effective life sciences research at UMKC. The Committee made recommendations on how to remove some of those impediments. Considerable effort was made to identify UMKC life sciences initiatives and strengths to delineate future opportunities.

The body of the report provides direction for capitalizing on opportunities and addressing key issues, most notably in the areas of institutional resources and policy enhancements deemed necessary to successfully compete in the life sciences, support the efforts of current faculty, and attract additional research talent and funding to sustain our efforts.

1 Battelle is recognized worldwide for technology development, management and commercialization, as well as the development of industry/government/academic partnerships. Battelle’s Technology Partnership Practice has assisted almost every state, numerous universities and many regional and locally based technology organizations in the development of technology strategies, policies and programs, as well as in the evaluation of such efforts. The organization is headquartered in Cleveland, Ohio.
Based on data acquired from UMKC faculty having grants of $50,000 or more, the following areas have been determined as current life science research strengths:

- Biomaterials
- Infectious Diseases
- Mineralized Tissue
- Molecular Recognition
- Translational Research/Health Outcomes

The Committee also recognizes that Bioinformatics and Proteomics are enabling technologies that are related to several areas of the identified research strengths.

Issues to resolve in order to fully capitalize on the above strengths centered on the establishment and governance of a state-of-the-art lab animal program, fundamental to the success of UMKC’s life sciences strategy going forward. Our recommendation calls for the immediate renovation and expansion of current facilities and putting into place the required expertise to support investigator initiated life sciences research and to support optimal animal care.

Additional concerns focused on supporting resources and policies necessary for life sciences research excellence. The priorities in this area are to:

- Provide an adequate library of research journals, databases and efficient access
- Create an environment and effective marketing tools that provide information on researchers and their projects to facilitate inter- and intra-University and community collaborative research initiatives
- Leverage the strengths of University of Missouri institutions by promoting collaborative initiatives
- Sustain advancement in life sciences research through the creation of institutional support services for grant application, CBARS, and lab equipment and maintenance
- Foster excellence among life sciences researchers through a structured mentoring program and recognition of research effort in the faculty tenure process

The LSMC wishes to emphasize the need for an efficient computational and communications infrastructure to enhance the opportunity for success of the life sciences strategy for UMKC. We strongly recommend that this infrastructure be viewed as integral to the annual infrastructure and budget planning process going forward and be considered as basic operations line items rather than building improvement options.
The UMKC Life Sciences Millennium Committee was charged by Chancellor Gilliland with the following responsibilities:

Establish a baseline inventory of UMKC’s life science assets: researchers, equipment, grants, current partnership efforts, graduate students, etc.

- Encourage completion of a similar baseline inventory for the Kansas City region working with KCALSI and others.
- Take initiative in identifying area wide life science strengths.
- Provide communication across campus in shaping life sciences, including web site development and dissemination format.
- Gather feedback, ideas, etc. from the campus community to feed back to the LSTF.
- Communicate the preliminary findings of the UMKC Life Sciences Task Force (LSTF) widely across the campus; collect reactions on what people like, dislike, what is missing, etc. and feed those reactions back to the LSTF.
- Develop (and implement) action items, timelines and possible revenue sources to further develop the ideas/plan from the LSTF.
- Coordinate opportunities internally and externally.
- Develop recommendations on possible structures to support UMKC taking a leadership role in life sciences in Kansas City.
- Develop and implement mechanisms to encourage and support interdisciplinary activities including facilitative groups and identification of target opportunities.

The Committee through its efforts was also to consider the following questions:

1. How do we build and maintain core labs and provide access to researchers within and outside of UMKC?
2. How do we develop an environment that fosters partnerships and multi-investigator large projects?
3. What are the impediments to conducting research and how do we reduce/eliminate them?
4. How can we capitalize on our current strengths in life sciences and position ourselves to be at the forefront in the future?
5. How can we provide leadership in furthering research in translational research, bioinformatics, biomaterials and biometrics (including pharmacogenomics), proteomics, and other areas impacting life sciences?
Committee Membership

Dr. Frank Horton, Interim Dean, School of Biological Sciences, Chair
Dr. Lynda Bonewald, School of Dentistry
Dr. Mary Lou Hines, Vice Provost, Strategic Partnerships
Dr. Tina Hines, School of Nursing
Dr. Kathleen Kilway, College of Arts & Sciences
Dr. Ron MacQuarrie, Dean, Graduate School and Vice Provost, Research
Dr. Deepankar Medhi, School of Interdisciplinary Computing and Engineering
Dr. Ashim Mitra, School of Pharmacy
Dr. David Morrison, School of Medicine
Dr. Michael Reed, Dean, School of Dentistry
Dr. Marilyn Yoder, School of Biological Sciences

Ex Officio Members:

Dr. Gary Allen, University of Missouri-Columbia, Bioinformatics Consortium
Dr. Mike Chippendale, University of Missouri-Columbia
Dr. Bill Duncan, Kansas City Area Life Sciences Institute
Dr. Andrea Hall, Midwest Research Institute
Dr. Ralph Kaufman, Children’s Mercy Hospital
Dr. Marjorie Smelstor, Truman Medical Center
Dr. John Spertus, St. Luke’s Hospital

Official Observers:

Dr. David Bodde, Bloch School of Business and Public Administration
Dr. Jennifer Jay, School of Education
Dr. Burnele Powell, School of Law
Dr. Ted Sheldon, Dean, University Libraries

Staff Support:

Debra MB Jarvis-Ferguson, Staff Coordinator & Administrative Assistant, Provost Office
Karen P. Schreiner, Special Assistant to the Vice Provost
Summary of Committee Meetings

The Life Sciences Millennium Committee met 14 times between September 2002 and February 2003. Minutes for all meetings are included in the Appendix.

1. September 9, 2002
   The inaugural meeting covered the Charge to the Committee as defined by Chancellor Gilliland and Committee Membership.

2. September 27, 2002
   The second meeting was devoted to review of the Life Sciences Task Force Interim Report Draft. Comments and recommendations were noted in the minutes, and formed the basis of the Committee’s Response which is included in this document.

3. October 2, 2002
   The LSMC conducted a brief discussion of the Life Sciences Leadership Position and finalized the LSMC Response to the LSTF Final Report Draft, which was to be presented by the Chair to the LSTF on October 9, 2002.

4. October 10, 2002
   Dr. Horton began this meeting by reviewing his presentation of the LSMC Response to the LSTF on October 9, 2002. Subsequently the Committee began to address several critical issues including: Life Sciences assets, initiatives and strengths at UMKC, impediments to Life Sciences research, communications of Life Sciences initiatives, coordination of responses to Life Sciences opportunities, and structural changes that would enhance UMKC’s leadership role in Life Sciences.

5. October 21, 2002
   This meeting was spent reviewing the Summary of Impediments to Research, and assignment of tasks to be completed by committee members, including access and quality of research data available to scientists, access to information about Life Scientists and their projects, adequate support and backup systems, centralized general stores for supplies, core facilities support, animal lab improvements, and research space allocation.

   October 29, 2002
   This meeting was cancelled by the Chair due to a lack of quorum of voting committee members present.

6. November 15, 2002
   Feedback from the Deans regarding research impediments was compiled into an Impediments to Research Summary and reviewed. Progress on various assignments was reported and noted in the minutes. Discussion began on the Programmatic Strengths Inventory Summary, compiled from feedback from another request to the Deans.
7. **December 11, 2002**

This meeting began with a review of a proposed *Table of Contents* for the LSMC Final Report. Dr. Horton reported that the LSFT Final Report will be delayed until after the first of the year. There was further discussion of the *Programmatic Strengths Summary* in light of the re-categorizing of topics under the four major focus groups in the Life Sciences of Bioinformatics, Biomaterials, Proteomics, and Translational Research. The *Core Resource Facilities* report was reviewed and approved with a few changes. A synopsis on the *Lab Animal Facilities* Report was also presented and discussed; a final report is to be presented for approval at the next meeting. All committee recommendations and changes were noted in the minutes.

8. **December 19, 2002**

The need for technology upgrades of facilities was identified as an additional impediment to research. The qualifications for the Leadership Position were outlined. The definition of Life Sciences was reviewed, with a comparison between the focus areas defined by KCALSI and the federal earmarks identified by the Chancellor. The revised Table of Contents was reviewed, and will become the checklist for progress and completion of final report sections (Report Outline). Sections 1-3, Lab Animal Facilities, Mechanisms, and the Appendices were approved by the committee. A request to the Deans for an inventory of lab resources is pending. A response to the letters sent to the Provost was received and reviewed. The chair announced that the Life Sciences Task Force Final Report will be released January 6th and presented January 7th.

9. **January 7, 2003**

The presentation of the Life Sciences Task Force Final Report was discussed briefly. A request went to the committee, and will go to the Deans for feedback. A revised draft of the Report Outline was distributed. Drafts of the Leadership Position and the Core Facilities document are still pending. The Networking draft was reviewed, and the committee requested that the costs and needs be broken out by school and by building. A matrix with this data was requested. The Lab Animal report was revisited and determined to be preliminary. A request was accepted to form a subcommittee to finish this section. The Database and Website section draft will be presented at the next meeting.

The Life Sciences Initiatives and Strengths section was discussed in some detail. Six focus areas each for Life Sciences and Health Sciences were identified, as well as the parameters for a survey of target researchers. A request will go to the target researchers to categorize their research into these areas. The Academic Program Development was briefly discussed, and a draft will be reviewed at the next meeting.

10. **January 13, 2003**

Feedback on the Life Sciences Task Force Final Report was reviewed. A preamble to this section will be drafted for the committee to review. The Life Sciences Initiatives and Strengths results were still pending, as was the web design and database structure section. Drafts will be prepared for the next meeting. The category of Health Outcomes was added to the focus areas. The Institutional Resource Facilities section was reviewed and approved. A subcommittee chair for the Lab Animal Facilities was identified and accepted.

11. **January 23, 2003**

The Chair recommended that the Millennium Committee continue as a group to monitor the progress of work done by the subcommittees. The need for hazardous waste removal was identified.
as missing from the centralized chemicals section. The Leadership Position draft was discussed in detail, with several suggested changes incorporated. A revised draft will be brought to the committee for approval at the next meeting. The database draft was reviewed. It will be expanded to include the website suggestions. The Institutional Resource Facilities section was approved. The Initiatives and Strengths results received so far were presented, with the majority of the responses indicating their research did not fit any of the categories. Another query will go to the target researchers with UMKC appointments/medical faculty for categorization of their research. The Library and Data Resources report was approved as an appendix. A summary will be drafted for the main report section. The Biostatistics and Research Design draft was discussed and approved with suggested changes. An update on the Animal Facilities subcommittee was given – work is progressing on this section. Change name to Lab Animal Program.

The committee approved the Leadership Position section. The Initiatives and Strengths report draft is still pending. A draft will be ready for review at the next meeting. The committee felt that the focus areas should have been kept separated into the two groups of Life Sciences and Health Sciences. These categories were redefined and the request will be made to recategorize the survey results ourselves. The Final Report in proper format was distributed for review – the format was approved. Several rearrangement and rewording changes were incorporated. The Lab Animal Program draft will be presented at the next meeting. The Networking Matrix is still pending – awaiting information from the CIO. The Faculty Club or Dining Room was approved with a name change to Faculty Commons.

13. February 6, 2003
The committee decided to make the request once more to the target researchers to categorize their research into the focus areas. The same criteria will be used, but the Life Sciences and Health Sciences need to remain separate. Adjunct appointments will not be included. The committee members will each collect this information for their academic unit. The Lab Animal Program draft will be reformatted for review at the next meeting. The committee will recommend that it continue as a standing committee to serve as an advisory group with an internal perspective, as well as to monitor and oversee the various outstanding requests and subcommittee work that will be ongoing. This will be included in the Future Role of the Committee section. The flowchart in the Institutional Resource Facilities document needs to be updated to reflect the various groups reporting to the new Leadership Position. The Networking Infrastructure Matrix was approved, with an added footnote on number of data jacks. Also add that this committee recommends that information technology needs be funded as an infrastructure item rather than an optional item. The Teaching Loads and Research in the Tenure Process section was approved. The Executive Summary draft was reviewed, and changes suggested. A draft will be brought to the next meeting. A cover letter draft will also be brought to the next meeting.

14. February 13, 2003
This was the last meeting of the LSMC with Dr. Horton as Chair. The Life Sciences Initiatives and Strengths survey results were reviewed and the presentation of data revised. Text was added to comment on the strengths and their relation to the focus areas identified by the Chancellor. The Lab Animal report was deemed preliminary and this change was made to the text. The lack of Proteomics and Bioinformatics in the areas identified by the LSMC and the UMKC faculty was addressed with a definitive statement stating they are enabling technologies applied to several funded
areas identified as strengths. This section will be redrafted and sent to the LSMC via Email for approval. The IRB statement was revised. The Executive Summary was reviewed, with revisions to be sent to the LSMC for approval via Email. The cover letter from Dr. Horton to the Chancellor was approved. It is recommended that this Committee continue, with Mary Lou Hines as Chair.

**Life Sciences Task Force Report Response**

The Life Sciences Millennium Committee would like to take this opportunity to thank the Life Sciences Task Force for its groundbreaking work in establishing the direction for UMKC’s life sciences framework and focus. The formation of the Task Force was instrumental in moving the life sciences initiative forward, critical to the future success of UMKC. The Committee endorses the recommendations made by the Task Force and has incorporated many of the issues and priorities into the action plans associated with this Report, particularly recognizing that speed is of the essence to bring this initiative to reality.

**Life Sciences Initiatives and Strengths at UMKC**

The Committee conducted a survey of UMKC faculty with UMKC administered grants in the life sciences of $50,000 or more to determine institutional research areas of strength. The Millennium Committee identified seven focus areas relating to disease states (Area A), and six areas of basic life sciences (Area B) for the survey options. Those surveyed were instructed to identify one primary area of focus in either Area A or Area B and could indicate one secondary area of focus in whatever was the Area not selected as their primary focus. The results are presented in the table below. Based on the information received, the top five research areas of strengths and opportunities are (unordered):

- Biomaterials
- Infectious Diseases
- Mineralized Tissue
- Molecular Recognition
- Translational Research/Health Outcomes

The Committee recognizes that Bioinformatics and Proteomics are enabling technologies related to several areas of identified research strengths. We acknowledge that those investigators engaged in research programs that are not related to those identified above are vital to the research strengths of this university and should be encouraged to continue their efforts.

The Committee has also requested that a second survey be conducted in the near future that focuses on UMKC adjunct faculty with grants in excess of $50,000 that are administered by UMKC partner
institutions. Once this survey is completed, the Committee will make a determination regarding additional areas of strength.

The life sciences website, currently under development, will provide additional information and detail on these research areas through links to researchers, projects and research area definitions.

**UMKC Life Sciences Faculty Survey Results**

<table>
<thead>
<tr>
<th>UMKC Research Areas and Initiatives</th>
<th>Number of Responses</th>
</tr>
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<tbody>
<tr>
<td>Aging - Primary Focus</td>
<td>3</td>
</tr>
<tr>
<td>Aging - Secondary Focus</td>
<td>0</td>
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<tr>
<td>Cancer - Primary Focus</td>
<td>0</td>
</tr>
<tr>
<td>Cancer - Secondary Focus</td>
<td>1</td>
</tr>
<tr>
<td>Cardiovascular Research - Primary Focus</td>
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</tr>
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<td>Cardiovascular Research - Secondary Focus</td>
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</tr>
<tr>
<td>Infectious Diseases - Primary Focus</td>
<td>6</td>
</tr>
<tr>
<td>Infectious Diseases - Secondary Focus</td>
<td>5</td>
</tr>
<tr>
<td>Mineralized Tissue - Primary Focus</td>
<td>5</td>
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<tr>
<td>Mineralized Tissue - Secondary Focus</td>
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</tr>
<tr>
<td>Neurological Disease - Primary Focus</td>
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<tr>
<td>Neurological Disease - Secondary Focus</td>
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</tr>
<tr>
<td>Renal Disease - Primary Focus</td>
<td>0</td>
</tr>
<tr>
<td>Renal Disease - Secondary Focus</td>
<td>0</td>
</tr>
<tr>
<td>Biomaterials - Primary Focus</td>
<td>6</td>
</tr>
<tr>
<td>Biomaterials - Secondary Focus</td>
<td>4</td>
</tr>
<tr>
<td>Drug Design and Discovery - Primary Focus</td>
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</tr>
<tr>
<td>Drug Design and Discovery - Secondary Focus</td>
<td>1</td>
</tr>
<tr>
<td>Molecular Genetics - Primary Focus</td>
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<tr>
<td>Molecular Genetics - Secondary Focus</td>
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<tr>
<td>Molecular Recognition - Primary Focus</td>
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</tr>
<tr>
<td>Molecular Recognition - Secondary Focus</td>
<td>2</td>
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<tr>
<td>Structural Biology - Primary Focus</td>
<td>8</td>
</tr>
<tr>
<td>Structural Biology - Secondary Focus</td>
<td>7</td>
</tr>
<tr>
<td>Translational Research/Health Outcomes - Primary Focus</td>
<td></td>
</tr>
</tbody>
</table>
Survey based on responses from 66 UMKC faculty within the six life science Schools and the College of Arts & Sciences. Faculty surveyed currently have Research grants of $50,000 or more that are administered by UMKC.

The Life Sciences Leadership Position – Description of Responsibilities

UMKC, a university committed to being Kansas City’s university and helping to shape “a community of learners making the world a better place,” is involved in a university-wide transformation, with a clearly stated mission, vision, values and goals. It is a time in our university’s life that calls for a dynamic educational leader in the Life and Health Sciences who demonstrates an articulate, energetic and visionary style and who is capable of communicating effectively with many different groups, particularly with potential financial donors.

The Life and Health Sciences leader will be responsible for continuing the work of the Life Sciences Millennium Committee in identifying UMKC’s life sciences research strengths and collaborative partnerships, both within the university and with external institutions, then building upon those strengths and partnerships. We recommend that this position be fulfilled as outlined in the Life Sciences Task Force recommendations to build life sciences programs, focus on a few key areas to achieve world-class programs, and share life sciences research ideas and resources.

In addition to policy and portfolio authority, facilitating the development of life sciences partnerships and initiatives, and working with the Deans to further the life sciences goals, this position will work with the Chancellor to raise life sciences funding and play a critical role in advising the Provost on the allocation of funding to the life sciences. This person should have an outstanding record of research, funding, and publication in the life sciences. This person should be recognized as a national leader in the life sciences, preferably with life sciences policy or administrative experience.

Specific responsibilities are to include:

- coordinate current and future life sciences research to ensure maximum efficiency
  - identify collaborative opportunities and facilitate collaboration on those opportunities
  - reward and encourage the kind of cooperative behaviors necessary for success
  - identify and facilitate internal and external partnerships and collaborative opportunities
  - identify needs (people, equipment, space) and secure related funding
• facilitate and encourage the acquisition of individual grants and assist principle investigators in achieving their research objectives

• coordinate a framework for sharing assets between Schools, the College, and life sciences community partners
  o develop and administer policies on institutional and animal facilities
  o develop and administer policies related specifically to Life Sciences research

• provide advice on the development and delivery of life sciences curricula

• coordinate message about life sciences at UMKC
  o advocate for external funding (government - federal, state, local)

• outreach locally, regionally, nationally and internationally

Life Sciences Resources at UMKC

Life Sciences Resources Database and Website. The inability to access information about researchers via the website was identified as an impediment to collaborative research. One should be able to enter a few keywords regarding research and there would be available a straightforward mechanism to identify individuals doing research in that area. Alternatively, areas of research should be easily accessed. To address these information needs, a web accessible database is being developed which will include information about, initially, UMKC life sciences researchers, (and ultimately all UMKC researchers). It will be searchable by researcher’s name, by department, by focus area (once those are defined), and by keyword. The information in the database will be updatable by the individual researcher. This information will also be valuable in our interaction with KCALSI and their researcher database. The Committee wishes to underscore the importance of the website presence to the Life Sciences.

The searchable database will be accessed via the UMKC life sciences website. The UMKC life sciences website must serve as a portal for life sciences activities - the front door to life sciences. The purpose of that website is to inform visitors about life sciences at UMKC such that they will return to that site as the initial answer point for their questions about research programs, facilities, opportunities for interaction and partnership, etc. The development and deployment of that website could easily serve as the first excursion into re-designing and re-deploying the UMKC website as a whole.
Success Model: Office of SPRS
(Sponsored Programs and Research Support)

The Millennium Committee commends the staff of Sponsored Programs and Research Support, in particular Dr. John Baumann, for the outstanding support they provide to life sciences researchers in the pursuit of grants and contracts. Their focus on service makes them a true academic support program on this campus.

Summary of the Establishment, Support, Governance
And Oversight of Institutional Resources Facilities

UMKC is committed to leadership and excellence in life science research and education. Part of that commitment must be adequate support for all components of the research infrastructure. That research infrastructure includes institutional resource facilities, access to those facilities, and the policies and procedures necessary for efficient operation. Currently UMKC has no policies or procedures relating to the establishment, support, governance or oversight of institutional resource facilities. A subcommittee of the Millennium Committee met to discuss issues related to institutional resource facilities. The original charge to this subcommittee related to “core facilities;” the subcommittee recommends using the term “resource facilities” given the misconceptions and legacy issues associated with the term “core facilities.” The Resource Facilities Subcommittee established a framework within which it developed a recommendation for policies and procedures related to the establishment, support, governance, and oversight of institutional resource facilities. That framework and the recommended policy and guidelines for institutional resource facilities are included in the Appendix.

Impediments to Research
Problem Statements and Recommendations

- Lab Animal Program
  Fundamental to the success of the University’s Life Sciences efforts is our ability to secure and operate state-of-the-art lab animal facilities on the Volker and Hospital Hill campuses. Presently, our facilities fall woefully short of this objective with many researcher projects at risk due to inadequate housing, equipment and support services.

  It is the recommendation of the Committee that this impediment be considered the highest priority with proper management and sufficient budget provided immediately. A preliminary report is provided in the Appendix.
• **Institutional Research Board**
  This Committee has received a number of complaints regarding the IRB (Institutional Research Board). It is essential to the pursuit of the life sciences initiative to have a functioning IRB. The Committee has not addressed these complaints, but will turn its attention to this matter in the future.

• **Library and Data Resources**
  A number of questions were raised for consideration early in the deliberations of the UMKC Millennium Life Sciences Committee. One asked, “What are the impediments to conducting research and how do we reduce/eliminate them?” (August 26, 2002) Appearing first in the listing of campus-wide impediments to research (October 2, 2002) was the following item.

  “Access to information. Library resources must be improved; currently they are inadequate and ineffective. Electronic access to journals needs to be made available as soon as possible. Researchers cannot directly download needed research articles unless they use an expensive, outside system.”

Quick analysis reveals that within the Kansas City region, a significant amount of printed information in the life sciences exists and is available to UMKC researchers from such libraries as the Linda Hall Library of Science and Technology and the University of Kansas libraries. But in the case of electronic information resources, vendors maintain control of access to resources through U.S. copyright laws and sell access through annual licenses. While numerous types of licenses are offered by vendors of electronic information resources, UMKC needs the kind that provide access to UMKC life sciences affiliates anywhere they need the resources. The technology is available to do this; only the absence of licenses stands in the way of access.

UMKC's Libraries currently do not have funds to lease resources sufficient to remove this impediment to research. Further, efforts to arrange joint licensing of electronic resources with the Linda Hall Library and/or the Stowers Institute have been refused by vendors thus far.

To learn the nature and depth of the impediment, and the cost to resolve it, the UMKC Libraries asked faculty in the life sciences schools to identify those titles of electronic resources for which they have significant need in their research. Faculty also were asked to work with the Libraries to prioritize the listing of resources needed. The resulting list includes more than 500 titles of databases, full-text journals and other e-resources having an annual cost of $1,962,483. Also required is one FTE professional librarian position to initiate and maintain the licenses for these resources ($57,340), and one FTE technology support position to provide technology support for faculty researchers ($51,240). Total cost to remove this impediment is $2,071,063 in rate funds. Several opportunities can be explored to jointly license electronic life sciences resources using pre-existing consortia (e.g., the Kansas City Life Sciences Consortium, and the MERLIN/MOBIUS academic research library consortia for Missouri). Use of these or other consortial arrangements could save 20-30 percent of the cost of licenses.
- **Chemical Availability, Safe and Legal Transport, and Economical Removal of Hazardous Waste**
  The Committee identified the lack of a centralized general supply system that would enable researchers to obtain various types of chemicals and lab supplies for their research. Additionally, a system is needed for the safe and legal removal of hazardous waste. It was understood that Truman Medical Center and Children’s Mercy Hospital have such a centralized system in place. The Committee requested that the Chancellor analyze the administrative problem and identify an appropriate solution. It was suggested that perhaps UMKC could partner with these institutions in this effort. The Committee has been advised that this recommendation is under consideration.

- **Teaching Loads and Research in the Tenure Process**
  The Committee identified the recognition of research and the need to balance research with teaching loads as part of the tenure process as an impediment. The Committee requested of the Provost that the importance of research in attaining tenure be underscored. Also, that teaching load requirements and guidelines of the UM System be reviewed and revised to assist faculty in attaining their research goals, and to attract productive scholars when competing with other institutions of higher learning. The Committee advised it is prepared to go on record with appropriate governing bodies on this issue. The Committee received a favorable response to this request in that the development of workload policies by each individual School and the College is underway, at which point the UM System expectations will be addressed.

- **Mentors to Assist Junior Researchers**
  The Committee identified a problem of consistency within and among the Schools and the College regarding assignment of senior faculty mentors to assist newly appointed assistant professors. The Committee received a positive response to its recommendation from Provost Ballard to discuss this issue with the academic deans and develop a policy that insures that mentors are appointed. It was further recommended that the mentoring of junior faculty be considered a part of each School’s or the College’s Faculty Evaluation process. The Provost will provide the Committee with verification that the Schools and the College have adopted an appropriate policy.

- **Space Allocation for Life Sciences Research**
  One of the critical issues raised by faculty members, deans and others involved in life sciences research was the concern related to assigning research space. Historically there has been no oversight of space allocation among the Schools and the College by the Provost office. The Committee recommended, and the Provost concurred, that the Provost’s Office should have an adjudication role in the allocation of space among schools. Further, the Provosts’ Office and the deans must insure that research space be available for funded research. Provost Ballard agreed to devise a mechanism whereby a School or the College may seek his judgment in the allocation of space among schools and in those instances where space for funded research is necessary.

- **Networking and Computational Support**
  A member of the UMKC Life Sciences Millennium Committee voiced concern regarding the current state of systems and support available to life sciences researchers. A request was made of the CIO to provide an update of the status and plans for updating facilities that would adequately support research needs. The current status and plans for providing advanced
networking access in the buildings that support Life Sciences research follow. This committee recommends that Information Technology be funded as an infrastructure item rather than as an optional item.

**Arts and Sciences** – The College’s faculty are spread across many campus buildings. Those who are located in Flarshiem Hall have access to the advanced networking capabilities, while those in the Spencer Chemistry building and Cockefair Hall do not. Both the Spencer Chemistry building and Cockefair Hall lack the basic physical infrastructure to support advanced networking capabilities. Space has been identified for renovation in Spencer Chemistry but not in Cockefair Hall. Cockefair Hall is the site of the Bioinformatics storage area network (SAN) and computational cluster. The power and cooling capacity of this facility has been reached precluding the expansion of shared computational resources in this space. Plans should include the eventual construction of a new computational facility for these resources. College faculty who are located in Royal, Haag and Manheim Halls do not have access to advanced networking capabilities. The physical infrastructure of these buildings was renovated in 1998 and brought to a level that would support advanced networking capabilities. Replacement of the network electronics would bring advanced networking capabilities to the scientists located in these buildings.

**Dentistry** – Advanced networking capabilities are currently provided in the recently renovated building. The current equipment should meet the advanced networking needs for the next three to five years. Plans should be made to replace electronic components somewhere around 2006.

**SBS** – Work on providing advanced networking access in Biological Sciences/Spencer Chemistry buildings has begun with in-house resources. Telecommunications closets have been constructed in Biological Sciences and core electronic components have been ordered. This foundation will allow the provisioning of advanced networking access in high priority areas and in newly renovated labs. Work has not begun on the Spencer Chemistry side of the building. Conversion of the existing (old) networking services will be phased in as resources allow. It is anticipated that complete replacement will take 2-3 years. Plans should include accounting for ongoing operating and maintenance costs of the new infrastructure.

**SICE** – Advanced networking capabilities are currently provided in the newly completed Flarshiem Hall. The current equipment should meet the advanced networking needs for the next three to five years. Plans should be made to replace electronic components somewhere around 2006.

**Nursing and Pharmacy** – Advanced networking access will be designed into the new building, therefore, no plans have been made to renovate current facilities. Planning should include the costs of expanding capacity of the outside cable plant that links the Hospital Hill campus to the Volker campus. Plans should include accounting for ongoing operating and maintenance costs of the new infrastructure.

**Medicine** – Minor investments have been made in the Medical School building to increase the current capacity. However, the current infrastructure does not meet the advanced networking needs of the Medical School faculty. Complete renovation and accounting for ongoing operating costs are required to provide advanced networking access in the Medical School.
Advanced Networking – Advanced Networking Access is defined as a network connection that provides 1) high capacity 100 or more megabits per second up to 1000 megabits per second; 2) dedicated service, not shared, providing the full capacity of the connection to the end-user; 3) supports quality of service (QOS) parameters to differentiate between low and high priority traffic; 4) supports next generation Internet addressing Internet Protocol version 6 (IPv6); 5) supports Internet broadcasting via multi-cast; and 6) next generation Internet applications for security and address name resolution.

Wireless Networking – Mobile and un-tethered computing is the wave of the future. Our planning would be incomplete if we didn’t include provisioning wireless networking in all of these facilities. With the wireless capability dependent upon the wired infrastructure, a wireless strategy does not preclude the need to implement the wired infrastructure. Our planning should include wireless networking.

Life Sciences Partner Participation

Stowers Institute – UMKC has established a fiber-optic high performance network connection to the Stowers Institute. This connection facilitates the use of shared computational facilities located at partner institutions and positions UMKC as the logical site for hosting shared computation facilities. Conversations are underway that would have UMKC host a jointly funded genome sequence analyzer in its campus data center. As these activities increase, UMKC will need to construct a larger computational facility that would host these expanding activities.

St. Lukes Medical Center – UMKC has established a wireless radio network connection to the Mid-America Heart Center located within St. Luke’s Hospital. This link is currently used to exchange research data among collaborating centers and to provide direct access to UMKC administrative applications such as email and PeopleSoft. Faculty and students in the School of Interdisciplinary Computing and Engineering (SICE) are jointly developing biomedical research databases in collaboration with the physicians at the Mid-America Heart Institute. As needs grow, UMKC will need to plan on replacing this link with one that would support advanced networking capabilities.

Children’s Mercy Hospital – Dr. Peter Rogan has received NSF funding to establish an advanced networking connection between Children’s Mercy Hospital and UMKC. Dr. Rogan is using this connection to develop computational analysis techniques of fluorescent DNA probes with computer scientists at UMKC and MU. Currently, Dr. Rogan is using UMKC’s Bioinformatics computational cluster to perform genome sequence analysis. The advanced network connection will become active mid-year 2003.

• Biostatistics and Research Design
A critical feature of translational, clinical and health services research is the appropriate design, analysis and interpretation of clinical data. Often established clinical faculty and trainees desire to conduct research that leverages their clinical experience, yet lack the infrastructure to develop databases, design case report forms, conduct analyses and interpret results. In addition, those faculty members participating in multi-center clinical trials have the privilege of accessing large datasets to answer clinically relevant questions and yet, lack
the training to craft the hypotheses, design the analyses and interpret the results. Accordingly, a significant impediment to research at UMKC is access to the appropriate infrastructure for designing research and conducting biostatistical analyses.

To overcome this challenge, it is recommended that a resource facility be created to assist in Research Design and Biostatistics. This institutional resource would house (space and supplies) a Facility Director, either a PhD-level statistician or a health services trained professional, who would oversee the center and be responsible for creating a Research Design Consultation Committee (RDCC) to provide consultative support in research design for investigators. It is the recommendation of the LSMC that this facility be established in accordance within the framework developed by the **Institutional Resource Facilities Sub-Committee** who developed recommendations for policies and procedures related to the establishment, support, governance, and oversight of institutional resource facilities.

- **Faculty Commons**
  There were a number of discussions about the need to create a space where faculty can congregate for informal discussions - a common meeting space that would be available to all academic units. Vice Chancellor Long pointed out one option that could be considered is the new Student Center. The Center will include amenities such as expanded dining, retail outlets, a fireplace lounge and a coffee shop. Opportunities exist for a special faculty area. To move this part of the overall Student Center project forward, costs and funding for developing, furnishing and equipping a faculty meeting space would need to be identified.

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**Mechanisms to Encourage and Support Interdisciplinary Research Activities in the Life Sciences**

A. Current activities, initiatives

1. The Office of Sponsored Programs and Research Support (SPRS) manages a listserv to disseminate information about grant opportunities, seminars, workshops and other meetings related to research; and to foster collaboration among researchers.
2. The SPRS Office and Vice Provost for Research convene groups to pursue multi-investigator grant opportunities.
3. Stowers Institute hosts a website for regional seminar announcements. Participants include Stowers, KU-Lawrence, KU Med, and UMKC.
4. “UMKC Announcements” are sent by email to faculty. Information about local events is included.
5. The SPRS website (www.umkc.edu/research) contains a list of life sciences faculty and their research interests.
6. SPRS maintains a subscription to COS, which hosts a searchable database of faculty at more than 1,000 universities. Information on more than 300 individuals from UMKC is a part of the database. Some of the bios are 3-4 years out of date. SPRS will solicit COS for updates to the bio sketches of faculty researchers.
7. The KCALSI offers multiple opportunities for inter-institutional collaborations by disseminating information, hosting meetings, managing proposal development, and providing grant funding.

8. Deans and department chairs play important roles in fostering communication and collaboration by distributing information and bringing together individuals to pursue research initiatives.

9. Various “Research Days” are scheduled throughout the year. These include campus and region-wide events, school events, and student events.

10. Various types of formal appointments with academic units can be used to foster collaboration. These include joint appointments between UMKC schools as well as various appointments for individuals at other institutions (such as adjunct faculty appointments, adjunct doctoral appointments, and “without compensation” appointments).

B. Potential new activities to foster collaboration

1. Establish a campus-wide life sciences seminar series.
2. Establish a faculty club.
3. Establish research focus groups to bring together researchers with common interests.
4. Offer “open house” opportunities for faculty in different schools to visit each other’s labs.

**Academic Program Development in the Life Sciences**

The Committee endorses the Life Sciences Task Force recommendation that UMKC develop joint graduate programs and undergraduate training curriculum with the Kansas City Region’s Life Sciences institutions of higher education, such as KU Med.

The committee believes that it would be inappropriate to identify specific academic programs at this time. As the research programs evolve and mature specific master's and Ph.D. programs may well be identified. There should be continuous monitoring of research development and collaborative research efforts in order to ascertain when specific academic program proposals should be developed.

**Future Role of the Life Sciences Millennium Committee**

The Millennium Committee recommends that it continue as an internal advisory group to the Life Sciences Leadership Position to provide an internal perspective from life sciences faculty and researchers. This purpose is in concert with the continuation of this committee in a monitoring role to oversee the completion of the various projects, some of which will not be completed by the time this report is released. It is recommended that members of this committee have specific terms of office, and that these terms be staggered. It is also recommended that committee members be active researchers in the life sciences.