Subcommittee for Academic Matters

Final Report

September 7, 2009

Participating Members:

Bill Brinkley, BCM
Dan Carson, Rice
Jim Coleman, Rice (co-chair)
Steve Greenberg, BCM
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Bert O'Malley, BCM
Carol Quillen, Rice
Lyn Ragsdale, Rice
Rob Todd, BCM

1. Introduction

On April 24 2009, the Steering Committee for the Rice-BCM transaction, co-chaired by President Butler and President Leebron, charged four subcommittees to produce specific recommendations as to how a potential merger should be implemented. The committees were charged with focusing on academic matters, clinical matters, financial matters and regulatory matters. This report describes the deliberations and recommendations for academic matters.

The primary reason to pursue a BCM/Rice merger is the academic benefits that would accrue to each organization. The essential charge of the Subcommittee for Academic Matters (SAM) is the identification of the opportunities for synergy and the barriers/challenges for implementing the integration of the two institutions. The Committee focused on the question "how can we best identify and realize the academic benefits of selectively integrating research and education?

The SAM consisted of a Coordinating Committee, a Research Subcommittee and an Education Subcommittee. Each of these groups met between May-July, 2009. From the outset, the Coordinating Committee sought to insure that its work built on previous and ongoing efforts of the Rice Faculty Advisory Committee, the joint BCM-Rice Faculty committee and the Rice Faculty Merger Review Committee. Hence, the Coordinating Committee received input from and shared information with these groups. Additionally, the Research and Education subcommittees had members who also serve(d) on the Rice Faculty Advisory Committee, the Rice Faculty Merger Review Committee and the joint Rice-BCM faculty advisory committee.

II. Membership and Charges of the SAM Coordinating Committee and Research and Education Subcommittees

II.1 Membership of the SAM Coordinating Committee

Co-chairs

- Jim Coleman, Vice Provost for Research, Rice
- Adam Kuspa, Associate Dean of Research, BCM

Members

- Bill Brinkley, Dean of the Graduate School for Biomedical Sciences, BCM
- Dan Carson, Dean of the School of Natural Sciences, Rice
- Steve Greenberg, Dean of the School of Medicine, BCM
- Sallie Keller-McNulty, Dean of the School of Engineering, Rice
- Bert O'Malley, Chair of Molecular and Cellular Biology, BCM
- Carol Quillen, Vice Provost for Academic Affairs
- Rob Todd, Chair of Medicine, BCM
- Lyn Ragsdale, Dean of the School of Social Sciences

II.2 Charge to the SAM Coordinating Committee

The overarching Goals of the SAM were to:

1. Identify an initial list of academic opportunities for research and educational synergy, both at the graduate and undergraduate levels.

2. Recommend an approach to the integration of research and education infrastructure.
3. Develop process for identifying, reviewing, selecting, and implementing potential research and educational collaborations.
4. Provide recommendations for faculty governance structures and process as requested by the BCM-Rice Steering Committee.

The SAM Coordinating Committee focused its final recommendations on structure and processes required for realizing the academic benefits detailed in the reports of the Education and Research Subcommittees, as well as the report issued by the Rice Faculty Advisory Committee. The recommendations of the joint Rice-BCM Faculty Committee were also integrated into the Coordinating Committee's recommendations.

II.3 Membership of the Research Subcommittee

Co-chairs

- Richard Gibbs, Director of the Human Genome Sequencing Center, BCM
- Jennifer West, Chair of Bioengineering, Rice

Members

- Tim Palzkill, Chair of Pharmacology, BCM
- Seiichi Matsuda, Chair of Chemistry, Rice
- Mike Friedlander, Chair of Neuroscience, BCM
- Jim Pomerantz, Professor of Psychology, Director of Neuroscience and member Rice-BCM Faculty Advisory Committee, Rice
- Wah Chiu, Director, National Center for Macromolecular Imaging, BCM
- Janet Braam, Chair of Biochemistry and Cell Biology, Rice
- Laura Petersen, Chief, Health Services Research, BCM
- Vivian Ho, Associate Professor of Health Economics and member Rice-BCM Faculty Advisory Committee, Rice-BCM

II.4 Charge to the Research Subcommittee

The Research Subcommittee focused on the organization and implementation of programs, drawing from specific examples provided by the Rice/BCM faculty advisory groups, but with attention to generally applicability across missions.

1. They identified areas where research synergies are most likely and the infrastructural and administrative changes that might be needed to effectively encourage those opportunities?
2. They considered how research administration and compliance might be managed to maximize research opportunities (e.g., merged or separate OSRs; merged or separate IRB, IACUC, etc.).
3. They also examined how core facilities/shared equipment might be managed to maximize research opportunities?
4. They also considered institutional investments that would facilitate new BCM-Rice research programs?

The Research subcommittee approached this problem by discussing examples of different kinds of synergies that could be obtained through a merger – e.g., from enhancing single investigator

programs and individual departments, to building common infrastructure, to developing larger integrated research and training programs- and made some general recommendations for issues that need to be considered in facilitating the research synergies.

II.5 Membership of the Education Subcommittee

Co-chairs

- Paula Sanders, Dean of Graduate & Postdoctoral Studies, Rice
- Gil Gilbert, Associate Dean for Academics and Postdoctoral Research GSBS, BCM

Members

- Ken Whitmire, Associate Dean, School of Natural Sciences, Rice
- David Holcomb, Dean of the School of Allied Health Sciences, BCM
- Kathy Ensor, Chair of Statistics, Rice
- Baruch Brody, Director, Center for Medical Ethics and Health Policy, BCM-Rice
- John Boles, Professor of History and member Rice-BCM Faculty Advisory Committee, Rice
- John H. Wilson, Distinguished Service Professor, Biochemistry, BCM
- Michael Emerson, Professor of Sociology, Rice
- Jim Lomax, Assoc. Chair, Department of Psychiatry, BCM (Co-chair, BCM-Rice faculty advisory committee).
- Beth Nelson, Senior Associate Dean for Medical Education, BCM
- Clay Goodman Associate Dean for Undergraduate Medical Curriculum, BCM

II.6 Charge to the Education Subcommittee

The Education Subcommittee was asked to emphasize doctoral and postdoctoral programs (and M.S. programs and professional masters programs) related to BCM's graduate school of biomedical science and on potential joint MD/PhD degrees, since the opportunity for joint graduate programs is a potential academic benefit. However, the committee also considered ways that undergraduate education at Rice can be enhanced, as well as how medical education at BCM might be enhanced by opportunities presented by a merger:

1. What are the areas for the greatest potential for joint graduate programs and what other administrative/infrastructural issues would we need to deal with to effectively capture the opportunities?
2. How should existing graduate programs be managed and why (Should any existing programs merge? What process should be established to authorize new joint programs?)
3. What are the areas where BCM faculty can best contribute to undergraduate education? What issues need to be resolved to effectively facilitate these contributions. (administrative/infrastructure issues, salary issues or investments that would have to be made)?
4. Are there potential desirable new undergraduate programs at Rice that a merger would facilitate?
5. What would have to happen to effectively create cross-departmental graduate programs with Rice and BCM (e.g., differences in academic calendar, faculty appointment processes)?

6. How should we deal with differences in postdoctoral status between Rice and BCM? What issues need to be resolved to effectively facilitate these contributions (administrative/infrastructure issues; salary issues/or investments that would have to be made)?
7. How could Rice faculty enrich medical education or existing graduate programs at BCM?

The Education Committee took on this charge by producing a report that detailed the possible synergies, and issues that need to be considered in capturing the synergies, in several areas of education, including:

- Undergraduate Education
- Cross Institutional Teaching
- Major Integrated Initiatives (spanning research and education across the institutions)
- Ph.D. and M.S. Programs (not coupled to major initiatives)
- Dual Degree Programs
- Research Experiences Related to Education
- Other Opportunities in Collaborative Educations (e.g., postdoctoral programs, K-12 outreach)

III. RECOMMENDATIONS

III.1 Are there academic benefits to capture and how do we capture them?

The Coordinating, Research and Education Committees all discussed whether there were significant academic benefits that could be gained through a merger. The members of the Coordinating Committee identified and were enthusiastic about the potential academic benefits of a merger. The Committee identified numerous potential opportunities from enhancing individual research efforts to major integrated research and education thrusts in important theme areas such as genomics, neuroscience, global health and health policy and economics, to name just a few. In fact, because the number of potential opportunities seemed so vast, the Coordinating Committee focused on processes for evaluating, selecting and implementing academic initiatives proposed by our faculties. The Committee ultimately recommended that an Integration Coordination Office be created to manage these processes and to ensure transparency and rigor.

The overall enthusiasm for the *potential* academic benefits of a merger was shared by the Research and Education Subcommittees, and is evident in the reports of the Rice Faculty Advisory Committee and the joint Rice-BCM faculty committee. These reports also stressed that selecting from among the many potentially valuable academic opportunities was a major challenge, as was implementation. These sentiments are demonstrated in the following quotes from their reports.

Research Subcommittee: "*The proposed merger affords an enormous number of opportunities to build new and successful programs, to drive innovation, and to train scientific pioneers. The scope and range that are indicated above have a common*

theme – combining disciplines of strength with programs of national opportunity. The major challenge will be to choose those particular areas that are judged to weigh most heavily in each instance, so that the vision of transforming medicine and science can be achieved. "

Education Subcommittee: *"The committee endorses the conclusions of the joint faculty committee that there are exciting opportunities for collaborative/joint programs among virtually all academic disciplines and educational venues at both institutions. These efforts could provide national models for integrating education between medical schools and universities."*

The Education Subcommittee also stated that *"an organizational structure and sufficient new funds must be provided to both initiate and maintain joint ventures not only at the research level but also at all the educational levels (undergraduate, medical, allied health, graduate, postgraduate, and educational outreach)*"

Rice-BCM Joint Faculty Committee: "*we could see no academic reasons that should prevent further consideration of a closer affiliation/merger between Rice and BCM*."

In order to capture the potential academic benefits this committee made two recommendations; the first called for *"the appointment of a high-level advisory committee, if and when it seems a merger is likely, to visit Houston to consult with personnel at both institutions in order to offer advise on how to maximize the academic/scientific benefits of a merger and minimize the risks…."*

The second recommendation was "*the creation of a senior administrative office (with sufficient staff), with personnel from both institutions, to identify and facilitate collaborative and interdisciplinary teaching and research possibilities across both campuses*" should a merger be approved

Rice Faculty Advisory Committee: "*A carefully designed and implemented merger can expand both research opportunities (in current and new areas) and research impact at Rice; can lead to joint graduate and postdoctoral training programs; can enrich and expand undergraduate courses of study and provide students in a variety of majors with additional research opportunities, internships, exposure to lecturers from BCM, and clinical experiences in certain courses, and can broaden and enrich the training of medical students by giving them more opportunities to take courses in such fields as the sociology of medicine, medical anthropology, religion and healing, philosophical bioethics, the history of medicine, the economics of health care delivery, health policy studies, and healthcare management."*

This committee also had concerns about capturing these academic benefits and hence recommended *"the creation of a senior administrative position, with sufficient staff support, to identify, encourage, and facilitate collaborative and interdisciplinary programs at Rice and BCM (and other Texas Medical Center institutions) that reach across all departments and programs.*"

The Coordinating Committee concluded that the work done to date by all of the faculty groups points to a generally accepted conclusion that a wide array of *potential* research and educational benefits *could* be realized through a merger. The word "potential" is important because each

report acknowledged the challenge of successfully identifying, selecting and implementing (e.g. including the allocation of appropriate funding; removal of administrative barriers, etc.) activities in order to capture the potential benefits.

A brief summary of the recommendations of the Education and Research Committees is described below followed by the overarching recommendations of the Coordinating Committee for the creation and function of an Integration Coordination Office.

The Coordinating Committee also supports the recommendation of the joint Rice-BCM faculty committee that, at the appropriate time, we engage a high level advisory committee to guide us in developing processes to optimize the academic benefits at a time when the potential merger is at a place where the appropriate questions can be asked in the right context – that may require a clear understanding of the clinical relationships and the governance structures.

III.2 Overarching Recommendations of the Education Subcommittee

The full report of the Education Subcommittee is attached to the report. Their overarching findings are presented below:

III.2.1 General Principles and Recommendations

- The Education Subcommittee endorses the conclusions of the joint faculty committee that there is a strong history of collaborative spirit on both campuses and numerous examples of successful inter-campus collaboration. Exciting opportunities exist to leverage the collaborative nature of our faculties to develop joint ventures that extend to virtually all academic disciplines and all educational activities on both campuses and include the Houston community and the nation. Such activities could create new paradigms and national models for integrating education and research between universities and medical schools.

- To capitalize on the opportunities, an organizational structure with sufficient new funds must be established to seed and sustain joint ventures not only at the research level but also at all educational levels (undergraduate, medical, allied health, graduate, postdoctoral training, and educational outreach) with minimal impact on existing and future biomedical and non-biomedical activities . Several other bodies, including the Joint Faculty Committee and the Rice Leaders Engagement Action Learning Project Committee, have recommended an Office of Integration.

- For new initiatives, administrative solutions must be developed that would promote joint faculty appointments and compensation mechanisms to guarantee adequate faculty commitment to the research and education programs for joint initiatives and to facilitate and enable collaboration.

- Mechanisms should be established to inform faculty on both campuses about common interests and opportunities for collaborations in education and about new initiatives that may be developed at each campus.

- The process to evaluate joint ventures should consider the impact on scholarship and education, innovation, feasibility, sustainability, the involvement of multiple academic disciplines and educational activities, and it should identify the commitments of the participating faculty, departments and schools. The process should achieve a reasonable balance between large and small initiatives and between the biomedical/health sciences and other academic disciplines.

- Successful joint ventures, regardless of size, require committed faculty and are likely to be those that come from faculty committed to collaboration on both campuses. The best and most enthusiastic of those ideas should be supported. The process to establish new joint ventures should not inhibit spontaneous collaborations that may exist already or arise outside the process.

III.2.2 Significant barriers that will need solutions

- Reciprocal faculty appointments, similar to BCM graduate faculty appointments, would be necessary to facilitate faculty serving as thesis advisors or committee members in collaborative, interdepartmental, or inter-campus initiatives.

- Mechanisms of funds flow for joint programs, including stipends for graduate students and funds for shared faculty to ensure that student and faculty participation in joint or cooperative programs is encouraged.

III.2.3 Changes to Infrastructure

- Synchronizing BCM GSBS calendar to match the Rice calendar can be accommodated.

- Changing the BCM UME and Allied Health Sciences academic calendars is not feasible without compromising current educational emphasis and programs at BCM; however, flexibility in scheduling of Rice/BCM courses to be offered to medical and allied health students will have to be coordinated with BCM student schedules. Several such opportunities could be identified. An overview of options and comparables from other institutions is included in the Rice Leaders Academic Integration Report (Appendix III).

- Currently, the existing infrastructure for education on both campuses can accommodate and enhance collaboration. Any infrastructure developed to facilitate new joint education initiatives and enhance established ones should be dedicated to removing barriers and encouraging faculty collaboration across campuses.

III.3 Overarching Recommendations of the Research Subcommittee

The full report of the Research Subcommittee is attached. Their overarching findings are presented below.

The Research Subcommittee overwhelmingly supported the view that a Rice-BCM merger represents a unique and extraordinary opportunity that could lead to the strengthening of existing programs, emergence of new ones, and facilitation of future joint efforts.

Rice/Baylor can be a top, internationally recognized, joint academic/medical research enterprise.

To enable this one time opportunity, several different models of cooperative research were recommended. These are described using examples of activities that can draw from strengths that exist currently at both institutions.

- **Collaborative Networking**
  Collaboration between Rice and BCM could be substantially enhanced by creation of an infrastructure that promotes formation of robust research networks .

- **Strengthening Existing Single Disciplines**. •
  There are many examples of strong groups at one or other institution that could utilize new resources to stimulate significant inter-institutional programs. One example of a model for creating collaborative bridges that create new synergisms is the enhancement of an existing, strong department at Rice (such as Bioengineering or Computer Science) with individuals from disciplines not currently represented and who could collaborate with BCM.

- **Focused Synergistic efforts**
  Relatively modest investments in areas of existing strength to promote synergism may elevate specific research programs to be unambiguously first rate. These investments would require additional, balanced support to areas of complementary strengths at Rice and Baylor.

- **Strengthening Existing Departments**:
  The two institutions share units with high quality research and investigators that, if jointly supported, would form new groups that could be nationally recognized. For example, the Department of Pharmacology at Baylor College of Medicine and the Department of Chemistry at Rice University would both benefit by establishing synthetic chemistry, chemical biology, and drug discovery as joint areas of strength.

- **Research and training spanning multiple initiatives.**
  Neuroscience, is an example of how the breadth represented by the faculty at Rice and Baylor, affords new opportunities for interdisciplinary training and research that span several collaborative initiatives. In many areas, joint training could be enabled by a relatively modest investment and reorganization, and could immediately be recognized.

- **Infrastructure: Computers**
  In selected areas, shared physical infrastructure could enable activities not possible, or else are currently limited at either site. The best example of the possibility of sharing infrastructure are in the area of computational hardware and the associated faculty to manage and exploit its use. These resources are limiting in all aspects of academic research. Both BCM and Rice are well established in these areas and poised to make greater contributions as NIH and other agencies support new initiatives.

- **Perpetuating Collaborative Success.**
  The future is always hard to predict and so it is critical that we develop an infrastructure that will capture new opportunities as they arise. We suggest two examples of approaches to build infrastructure and provide opportunities with the potential to drive in novative idea implementation now and perpetuate collaborations in the future:
  1.Provide funded faculty sabbaticals for Rice faculty at BCM and BCM faculty at Rice.
  2. Develop a competitive, prestigious, interdisciplinary postdoctoral research program.

- **Administrative Infrastructure for Optimal Integration.**
  Administrative and bureaucratic issues have historically been a significant barrier to collaborative research between Rice and BCM. While many interesting collaborations have succeeded in spite of these barriers, the impediments have been substantial. A key benefit of a merger should be removal of these obstacles to expedite collaborative research.

III.4 Overarching Recommendations of the SAM Coordinating Committee

How do we create a transparent and rigorous process to inspire ideas to capture academic benefits of merging, review those ideas, and implement those ideas in a manner that will be effective and gives our faculty confidence that the best decisions are being made?

A few principles were clear from the discussions of the Coordinating Committee, coupled with the recommendations made by the Research and Education Subcommittee and the reports of the Rice Faculty Advisory Committee and the joint Rice-BCM faculty committee.

- The success of any endeavors in research and education will require the passion and leadership of key faculty members whose commitment to the activity will be required for success. Thus, any process that is put in place to capture the academic benefits of a merger must engage faculty and must allow for ideas to “bubble up” from the faculty.

- The concepts and practices of using formal “Requests for Proposals” (RFPs) as a means of “identifying, reviewing, selecting, and implementing” collaborations was discussed. The committee is committed to the principles that an RFP(s) process(es) is a useful tool, especially for smaller, grassroots initiatives aimed, for example, at seeding collaborative research programs. Both the Research and Education subcommittee reports were enthusiastic regarding programs targeted at a small number of faculty or students that would fit the RFP model. But, these committees were also enthusiastic about potential transformational opportunities that would involve integration of research and educational programs across disciplines. These large initiatives would not only require faculty support, but also require involvement of Deans in their early stages. Thus, the success of these transformational initiatives will not only be dependent on faculty, but also on their being identified as strategic priorities for the institution. Thus, institutional-level strategic planning needs to play a part in the selection and implementation of transformational kinds of activities.

- Activities aimed at identifying, selecting, implementing and assessing activities aimed at capturing the academic benefits of a merger are going to be critical for the success of a merger, and are going to be time consuming. The Coordinating Committee agreed with the sentiment expressed in all the faculty reports that the level of integration we are seeking is going to require full-time staff that has the responsibility for developing and managing processes relating to institutional integration. There also needs to be robust mechanisms for oversight, assessment and accountability of funded programs.

- Activities that are chosen for investment of resources need to be based on strong plans for sustainability including "detailed business plans", matching commitments from stakeholders at respective institutions, or other advantageous leveraging.

- We should use the appropriate administrative structure of the respective institutions (curriculum committees, academic senates, etc.) to vet the selected programs for implementation (e.g., new educational programs would need to go through regular curriculum committee review before implementation).

- We need to develop tools that make it easier for BCM and Rice faculty to identify potential collaborators in education and research.

- Proposals for investment in activities to capture the academic benefits of a merger should identify best practices from past collaborative programmatic developments that worked well (Keck Center) as models for new programs.

Given these principles, the bulk of the recommendations by the SAM Coordinating Committee relate to processes to identify, select, implement and assess activities to capture the academic benefits of a merger. The Committee's ultimate focus was on the creation of an Integration Coordination Office, its staffing needs, and the different kinds of activities it would need to manage. The Committee made this recommendation based on its collective judgement of how to optimize the academic benefits of a merger assuming that some level of investment might be made toward that end. The actual details of our recommendations, however, would need to be adjusted in light of the magnitude of any investments.

III.4.1 Functions and responsibilities of an Integration Coordination Office (ICO).

- **Strategic Function**. The ICO should be responsible for managing (Baylor/Rice) strategic planning processes. The ICO's role would not be to develop the plan, but to facilitate the planning, without creating roadblocks to new ideas and without preventing consideration of ideas from outside the formal integration administrative structure. Ideally, the planning process would include not just the actual topics, but also what is tactically acceptable for consideration by the ICO as a joint program, for purposes of integration. The strategic plans could then

naturally feed into the other functions of the ICO. Many kinds of strategic planning activities might be adopted.

- **Tactical Function**. The ICO should run the review processes used in selecting the activities for investment. Initially, we propose that two standing advisory committees be assembled (for Education and Research) from deans, chairs and senior faculty from both institutions. The committees would help work out the specifics of the review processes. Protocols would be developed and disseminated over websites that explain the how faculty would apply for different types of programs. The ICO would also develop and maintain databases that would aid the strategic planning, reviews and implementation (faculty interests, current joint ventures in development, what departments are developing). These databases can facilitate the awareness of synergistic interests across the entire Rice-BCM faculty and would enable the ICO to facilitate new interactions. The ICO would also provide guidance in the production of business/sustainability plans for the proposed investments.

- **Implementation Function**. The ICO should also aid in the implementation of joint programs by acting as a "project manager." The project manager function would include the timely implementation of programs within the budget specified and the removal (or facilitating the overcoming) of barriers at both institutions (e.g., stimulating the review of a new course by the curriculum committees at Rice and Baylor). In order to successfully implement projects, the ICO would control some amount of the funding that would be allocated through review processes for small projects as well as managing the recommended funding for larger projects.

- **Assessment Function**: The investments made to integrate Rice-BCM need to be assessed to ensure that we are on target to capture the academic benefits, and programs should be adapted or stopped if it becomes clear that are not on a path to meet their strategic goals. The ICO will be responsible, in a project management function, to develop tools for assessment and to be the conduit for detailed information on the success of integration activities to institutional leaders.

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III.4.2 Examples of the types of activities and role of the ICO office:

SAM considered several "straw man" scenarios to work out how the ICO might handle different types of integration proposals in order to better illustrate the role of the ICO.

- A group of Rice-BCM faculty have an idea for a joint research collaboration that needs to be seeded to potentially get sustainable funding? What process would work best for vetting this against other possible ideas? *The ICO would work with the research and/or education advisory committee to issue an RFA, manage the review process, and implement the decision of the advisory committee with continuous review by appropriate standing committee, adding ad hoc members as needed.*

- A group of Rice-BCM faculty or departments has an idea for research/education program that requires targeted faculty hires. What process should we use to get these ideas, vet them and ultimately fund them? *Such program development would have to interface in some way with the strategic planning. The ICO would be responsible for managing and facilitating the strategic planning efforts that would lead to the prioritization of these kinds of investments.*

- A Rice or BCM Faculty member wishes to take an "integration sabbatical" as proposed by the Research Subcommittee. *The ICO would work with campus leadership to develop recurring RFAs specifying the details for this announcement and selection would be made through peer review guided by the Education and Research Advisory Committees*.

- A Rice department thinks a course(s) taught by BCM faculty could greatly enhance their undergraduate and/or graduate curriculum but needs support to pay for the time of the faculty. What process should we use to get these kind of ideas, vet them and ultimately fund them? *ICO might provide temporary salary funds (vetted by the education advisory subcommittee) that might later be picked up by the department. Again, continuous review by appropriate standing committee adding ad hoc members as needed*

- A group of Rice-BCM faculty or departments want to create a cross-departmental, theme based graduate programs. How would we identify and select among these ideas? What kinds of support are needed to seed these ideas? *The ICO along with the education and research advisory committee might issue an RFA once per year with 18-month lead time. The Education subcommittee would be responsible for outlining the process (identify faculty, etc.) and developing criteria for selection. The ICO would facilitate the appropriate institutional approvals (e.g., working with curricular committees) and help navigate other institutional issues relating to the starting of the program. The ICO would also ensure continuous review by the education advisory committee.*

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- A group of faculty think an acquisition of equipment or instrumentation could dramatically increase collaboration. How would we identify and select among these ideas*? An RFA on a continuous review cycle would be developed by the research advisory committee with the proposal review managed by the ICO. The Research subcommittee would advise on process initially.*

- A group of Rice-BCM faculty and/or departments see an opportunity for the creation of an "institute" or "center" around a theme (e.g., neuroscience; health policy) that could involve targeted faculty hires; postdoc programs; curriculum and teaching issues- e.g., undergraduate majors or minors/ graduate programs; infrastructure including space, etc. What process should we use to vet and select among these kinds of ideas. *Such program development would have to interface in some way with the strategic planning and involve Deans at an early stage. The*

ICO would be responsible for managing and facilitating the strategic planning efforts that would lead to the prioritization of these kinds of investments.

- One key area of academic integration will be maximally taking advantage of the BRC. What process should we to identify key faculty and resources that would allow for highest impact? *The ICO could be involved in working with the research advisory committee to solicit and review proposed ideas for occupying the BRC.*

- The Research Subcommittee recommended a competitive interdisciplinary postdoctoral program, how would this work? *The ICO would issue recurring RFAs for this program based on guidance from the Research and Education Advisory committees, and proposals would be competitively peer reviewed under the guidance of the advisory committees.*

III.4.2 Potential Staffing of the ICO office

Given the roles of the ICO, the committee felt that the Office needs to be led by an individual at a senior level, such as a Vice Provost with a staff capable of functioning in the facilitation and project management activities discussed above. Below is a proposed staffing model.

- Director (Vice Provost for Integration). The VP would make final project funding recommendations to the Provost/President, direct the ICO, and act as a liaison with the relevant deans, chairs and committees required for implementation of programs.

- Financial administrator. Significant investments will be made into integrative activities and this person would be responsible for fiscal oversight and developing and implementing fiscal accountability measure.

- Technical project manager(s). The technical project manager(s) would construct and maintain databases and websites for organizing and communicating across both institutions; facilitate strategic planning sessions; develop program announcements; manage the review process with the appropriate committee; capture information on current/planned department investments in research programs (faculty hires, core labs, etc.) to be used in decision making; and manage the oversight processes.

- Administrative coordinator. The Administrative Coordinator would provide appropriate administrative support such as setting up committee meetings and assisting in implementation of new programs.

APPENDIX I

REPORT OF RICE UNIVERSITY - BAYLOR COLLEGE OF MEDICINE
RESEARCH SUB-COMMITTEE

07/31/2009

Members:
Braam, Janet, Rice
Chiu, Wah, BCM
Friedlander, Mike, BCM
Gibbs, Richard, BCM – Co-Chair
Ho, Vivian, Rice-BCM
Matsuda, Seiichi, Rice
Palzkill, Tim, BCM
Petersen, Laura, BCM
Pomerantz, Jim, Rice
West, Jennifer, Rice, Co-Chair

1. Committee Aims and the Merger

This group was charged with the evaluation of the research component of the proposed Rice-Baylor merger. The charge included exploration of institutional strengths, opportunities, likely areas for synergies, and the administrative changes required to achieve them. The committee was also asked to comment on the possibilities for merging supportive infrastructure, how to manage shared, and what types of institutional investments would facilitate these programs.

The group recognized the challenges – but ***overwhelmingly supported the view that this is a unique and extraordinary opportunity that could lead to the strengthening of existing programs, emergence of new ones, and facilitation of future joint efforts. Rice-Baylor can be a top, internationally recognized, joint academic-medical research enterprise.*** To realize this vision the merger must optimize activities at each site, carefully manage integration, and develop a process to select specific arenas for joint support. Much synergy will be realized by new collaborations using existing resources, and with additional support and philanthropic investment, dramatic possibilities emerge.

Rice and BCM possess unique and complementary strengths, most of which have been well documented at each site. Rice is a highly regarded comprehensive institution of higher learning, while Baylor is a top ranked biomedical research institution. There are already many active collaborations between the institutions that have been catalogued by the Faculty Advisory Committee at Rice. For example every faculty member in Bioengineering at Rice has an active funded collaboration with Baylor. The Baylor Human Genome Sequencing Center (HGSC) has had NIH and NSF supported collaborations with Rice Departments of Chemistry, and Biochemistry and Cell Biology. Preservation of these interactions is vital for continued success. Stimulation of other Departments to achieve similar levels of interaction is one goal of the merger.

There are many areas worthy of joint support, and it is not possible to name and rank all in this report. Together these institutions pursue interdisciplinary efforts ranging from cells to society – incorporating all areas from genomics to health care policy, chemistry to informatics, and engineering to cognitive neuroscience. The merger should build bridges to join these areas effectively. The long term consequences of meeting this vision are that medicine and research may be transformed. This would be impossible for either institution alone, as the complementary strengths do not exist within either organization alone.

Innovation in health care is one of the major research priorities for this decade. New models for research organization are emerging, with emphasis on larger, multidisciplinary, collaborative networks. Many examples are highlighted in the NIH Roadmap. In 2009 the NIH received an *additional* $10.4B for health-related research, promoting individual investigators, interdisciplinary approaches, and multi-institutional programs. This year the Texas State will dedicate $300M for cancer research. Academic institutions that facilitate collaborations are most likely to be successful in these programs.

These research structures will impact research in many disease areas. For example, curing cancer or heart disease will require advances in multiple areas – genomics, genetics, basic cellular biology, early diagnostic technologies including imaging, development of new therapies, and delivery of these advances to patients, together with outcomes measurement. ***The execution of the merger should embody principles that facilitate the activities of these large team efforts that are being called by Federal programs to accomplish these ambitious goals.***

2. Models for Major Collaborative Initiatives

To enable this one time opportunity we recommend pursuit of several different models of cooperative research. These are described using examples of activities that can draw from strengths in both institutions. Our list is far from exhaustive. Each activity has commonalities in terms of opportunities, reasons why there are not already active collaborations on a large scale, and potential for external follow-on support. All represent the international forefront of research. The individual illustrative activities can be categorized into seven general areas: ***Collaborative Networking; Strengthening Existing Single Disciplines; Focused Synergistic efforts; Bridges to New Strengths; Training; Infrastructure; and Vehicles for New Collaborative Environments.***

(i). Collaborative Networking: Clinical and Translational Science Awards (CTSA)

Collaboration between Rice and BCM could be substantially enhanced by creation of an infrastructure that promotes formation of robust research networks. In this example, a collaborative environment is stimulated in order to enhance success in gaining support for a CTSA:

As part of its Roadmap for Medical Research, the NIH expressed its intent to grant 60 CTSAs across the country, with the aim of improving human health by facilitating the transformation of laboratory discoveries to treatments for patients. The NIH has granted 39 CTSAs to date, with 3 in Texas. BCM has been hindered in obtaining CTSA support because of the lack of clarity of collaborations at local institutions and by a lack of robust biostatistics programs. A Rice-BCM application will have greater likelihood of success in meeting the CTSA review criteria. CTSAs are awarded to programs that can provide new approaches to integrate clinical, basic, and other relevant disciplines. CTSA awardees are also expected to be at the forefront of engaging communities in biomedical research, technology transfer, and training of new researchers. While BCM has some of the nation's premier researchers in biomedical fields such as genomics, neuroscience, and cancer, it currently lacks the methodological breadth that Rice can contribute. In particular, Rice's expertise in biostatistics, computer science, engineering, and health policy are key components to conducting translational research successfully. The combined faculty and graduate programs of Rice-BCM would also bolster the application's credentials in providing multidisciplinary training. Obtaining a CTSA for BCM will enable our institutions to become the academic home of multidisciplinary research from bench to bedside that will likely lead to some of the most significant improvements in human health in the coming decades.

(ii). Strengthening Existing Single Disciplines

There are many examples of strong groups at one or other institution that could utilize new resources to stimulate significant inter-institutional programs:

One example of a model for creating collaborative bridges that create new synergisms is the enhancement of an existing, strong department at Rice (such as Bioengineering or Computer Science) with individuals from disciplines not currently represented and who could collaborate with BCM. The next wave of quality and efficiency gains in health care will likely come from the application of systems engineering principles (supply chain approaches; process mapping) to health care. Innovative strategies of applying and implementing these principles will need to be tested and evaluated through partnerships with health services and outcomes researchers and clinicians at BCM. Systems engineering is not well represented at Rice, but adding one or two faculty to the School of Engineering could create innovative collaborations with Health Services Research at BCM and Health Policy at Rice. The School of Engineering at Rice is much better positioned to recruit strong faculty members in Systems Engineering than is BCM. This is an example of how together, the two entities could address important problems in health care that cannot and will not be solved independently.

Similarly, very large investments in Health Information Technology (HIT) are being made now by the federal government as part of the ARRA. The danger is that health care will suffer from the use of thousands of autonomously functioning, home-grown electronic health record systems that do not share information, that require specialized technical support, and that unintentionally create more problems for patient care and data privacy than they solve. At BCM there is a strong effort underway in clinical informatics in the Biological Research Laboratory – additional faculty recruits there could build bridges to Computer Science (and related disciplines) at Rice and could create important synergy with a dynamic group of HIT researchers at BCM to address quality and safety issues in this next wave of HIT innovations.

(iii). Focused Synergistic efforts: Genomics and Personalized Medicine

Relatively modest investments in areas of existing strength to promote synergism may elevate specific research programs to be unambiguously first rate. These investments would require additional, balanced support to areas of complementary strengths at Rice and Baylor.

As one example, the enormous national interest in promoting personalized medicine can be served by combining clear clinical and biomedical research strengths at BCM with the broad multidisciplinary strengths at Rice. The practice of personalized medicine will certainly have whole human genome sequencing as one predominant component, with the subsequent use of that information divided between distinct disciplines. For example, cancer diagnostics and treatment will be guided by complete analysis of tumor DNA and its comparison with the 'normal' DNA from that individual. Similarly the diagnosis of genetic disease that is currently performed by single gene studies will be soon achieved by complete genome sequencing. These kinds of efforts are already being piloted here.

To fully enable and integrate deep genomic data into medical practice is a large challenge, one that goes beyond the identification of the clinical problem and the generation of DNA sequence information. The information must be processed, interpreted, and made accessible to physicians. To achieve this there must be development of rigorous data standards, meaningful and robust health policy, and a solid infrastructure for service delivery.

The requirements for full development of activities for genomics and personalized in medicine go beyond the networking model illustrated above with the CTSA, and they are different from the requirements for strengthening single disciplines, as discussed below. To take full advantage of this merger, in this example we envisage a new Center for Genomics and Personalized Medicine where investment in a joint program fosters full enablement of the areas of greatest synergism. The new Center would include the following components: interface to clinical problems and opportunities; genome data generation; discovery of functional significance of genome variation; computational resources; medical informatics and biostatistical support; health outcomes research; health policy; ethical issues in consent and disclosure of information; cognitive psychology; physician-patient communication; innovative treatments development; technology development.

This initiative would not simply replicate current programs but would strive to combine components of current excellence. The BCM Human Genome Sequencing Center, Department of Genetics, Cancer Center, Health Services Research Center, and Gene Therapy Centers would each play a role. At Rice the Departments of Computer Science, Computational and Applied Mathematics, Statistics, and Bioengineering can all offer key ingredients.

Modest investment could combine these interests with targeted efforts to particular diseases – for example cardiovascular disease or cancer – in a virtual organization. More significant investment could give rise to exciting opportunities. Current and new recruits could be jointly housed and equipped for the mission. The unique position already occupied by BCM in biomedical research and innovative healthcare delivery, coupled with Rice's strengths in academic supportive disciplines, suggest that a significant investment in a joint initiative could be transformative – both for our two institutions and for healthcare. While Personalized Medicine, Genomics, and translational medicine have been well used buzzwords, little has been actualized in other efforts. Here we have all the components to recognize new developments.

(iv). Strengthening Existing Departments: Development of Joint Chemical Biology and Drug Discovery Research

The two institutions share units with high quality research and investigators that, if jointly supported, would form new groups that could be nationally recognized:

The Department of Pharmacology at Baylor College of Medicine and the Department of Chemistry at Rice University would both benefit by establishing synthetic chemistry, chemical biology, and drug discovery as joint areas of strength. These research areas are important to both departments and building towards one another would strengthen both departments.

Synthetic chemistry is among the classical disciplines of chemistry, in which efficient reactions are devised to construct desired molecules. The emphasis of modern synthesis is to make molecules that are useful, and perhaps the most interesting and important current topic is the design of pharmaceutically relevant molecules. Strong interactions with the medical community are essential for synthetic chemists working in this area.

Chemical biology is a discipline that involves the application of synthetic chemistry methods to study biological and biochemical systems. Research in this area also benefits from a collaborative environment with biologists and chemists.

The Department of Pharmacology is in the process of rebuilding its faculty base with a focus on drug discovery via recruitment of expertise in medicinal and combinatorial chemistry. The Department recently hired a faculty in synthetic chemistry and wishes to further expand this area of expertise. The Department of Chemistry at Rice University is also interested in chemical biology from the standpoint of expanding expertise in synthetic organic chemistry that is focused on biomedical applications. The complementary goals of these departments in the area of chemical biology and drug discovery would be met by recruiting faculty members with expertise in synthetic chemistry as applied to biomedical research. Chemistry faculty at medical schools can be at a disadvantage in recruiting coworkers because chemistry graduate students and postdoctoral associates are somewhat resistant to leaving conventional chemistry programs. Medicinal chemists at universities are often too isolated from real world medical problems to choose important problems and to develop the connections needed for testing. By constructing a position in which chemists will be integrated into both communities, a joint BCM-Rice effort should be positioned to recruit exceptional people, further expand expertise in this area, and foster collaborations.

The advantage that could be gained by favoring hires that bridge departments is by no means limited to Rice Chemistry and Baylor Pharmacology. A great many departments at Rice and Baylor could similarly benefit by hiring a new faculty member whose work is relevant to a department in the other institution. To be a productive long-term strategy it will be essential to construct any bridging positions in a way that benefits that individual and works to the advantage of both departments.

(v). Research and training spanning multiple initiatives: Neuroscience

The breadth represented by the faculty at Rice and Baylor affords new opportunities for interdisciplinary training and research that spans several collaborative initiatives. In many areas, joint training could be enabled by relatively modest investment and reorganization, and could immediately be recognized nationally.

As an example, neuroscience training in the newly integrated Rice-BCM milieu should operate at a variety of levels, integrating experiences for undergraduate, graduate students, and postdoctoral/resident/fellows. There is already considerable strength in BCM at the graduate student training level, including a newly awarded competitive renewal of an NIH Neuroscience predoctoral training grant (through 2014) that supports students in a program that has 55 training faculty (from 12 departments) and 53 PhD students (including 8 MD/PhD students) in various stages of their training.

New initiatives at Rice to form a Neuroscience undergraduate minor or major should seed the interest in more formal undergraduate involvement in Neuroscience training as well as potentially lead to a major in this area that would incorporate the teaching (including formal coursework as well as research mentoring opportunities) of BCM Neuroscience faculty and

faculty from several Rice departments. This would also provide enhanced opportunities for research experiences for Rice undergraduates in the full range of subdisciplines in Neuroscience.

There also are opportunities for new NSF-supported undergraduate Neuroscience training support, interactions with the Gulf-Coast Consortium Computational and Theoretical Neuroscience Graduate Training Program and for the development of new research initiatives and collaborative efforts between BCM and Rice faculty and students. Examples that should likely provide readily accessible opportunities in the immediate future include the areas of human social cognition, group dynamics and decision-making, functional brain imaging studies of influence and reciprocity, neuroeconomics, genetic basis of normal and pathological behavior and personality, computational modeling and analysis of large scale neuronal networks, optical imaging of in vivo large scale cellular network activity and the development and application of brain-machine interfaces for enhanced perception, sensori-motor transform enhancement and bypass, and computationally-assisted information processing in health and disease.

The successful implementation of such a vertically and horizontally integrated training plan in Neuroscience will require input, program development, investment and recruitment in a variety of programs at Rice and BCM. In addition to the Neuroscience Department and Training Program at BCM that spans 12 departments, Rice's programs in Bioengineering, Computational and Applied Math, Computer Science, Psychology, Economics, Political Science, Biology, Chemistry, and Physics should all be involved with the training mission in Neuroscience. Such interaction will provide a unique blend of expertise, breadth and depth to the integrated training in the full range of contemporary Neuroscience.

A major strength and unique national resource at BCM is the high-throughput functional human neuroimaging cluster that also serves as the world-wide hub for interactive hyperscanning and the development of large scale combined identification of human behavioral endophenotypes with concordant genomic analysis. Coupled with Rice's strengths in the neuro-cognitive social sciences and engineering, the synergy for positioning the institutions at the leading edge of the biological basis of human social cognition and decision-making in health and a wide range of brain/behavioral disorders is great and strongly enabling for the planned CTSA.

(vi) Infrastructure: Computers

In selected areas shared physical infrastructure could enable activities not possible or else currently limited at either site:

The best example of possiblities for sharing infrastructure are in the area of computational hardware and the associated faculty to manage and exploit its use. These resources are limiting in all aspects of modern academic research. Both BCM and Rice are well established in these areas and poised to make greater contributions as NIH and other agencies support new initiatives. Depsite the stellar track record at both institutions and the great promise of the near future, there are serious limitiations within the current infrastructure.

Those immersed in computational biology at the two institutions can easily justify 10-fold increases in computer hardware. Acquisition, housing ,and maintenance of new hardware could be jointly achieved in many instances. There are already many mutual efforts in building and

maintaining the local connection grid – this activity can be expanded and enhanced to ensure immediate and maximum opportunity for local investigators.

(vii) Perpetuating Collaborative Success

The future is always hard to predict and so it is critical that we develop an infrastructure that will capture new opportunities as they arise:

Imagining the next big breakthrough and the transformative technological advances of the future is always a great challenge. We must be at the forefront of knowledge and technology, positioned at the edges of multidisciplinary advancement, to have the vision to recognize the necessary connections, see the potential of new directions, and take risks with inventive ideas. Here we suggest two examples of approaches to build infrastructure and provide opportunities with the potential to drive innovative idea implementation now and perpetuate collaborations in the future.

* Provide funded faculty sabbaticals for Rice faculty at BCM and BCM faculty at Rice. Inter-institutional research sabbaticals will build strong, lasting, relationships and promote diverse expertise development for faculty at all stages.

* Develop a competitive, prestigious, interdisciplinary postdoctoral research program. Postdoctoral candidates will propose pioneering research projects that integrate expertise of two faculty mentors within disparate research fields. The program will link diverse disciplines and the faculty mentors through the interdisciplinary training of the postdoctoral fellows. The diverse skills and experience generated through this training are essential for the next generation of successful biomedical innovators.

3. Administrative Infrastructure for Optimal Integration

Administrative and bureaucratic issues have historically been a significant barrier to collaborative research between Rice and BCM. While many interesting collaborations have succeeded in spite of these barriers, the impediments have been substantial. A key benefit of a merger should be removal of these obstacles to expedite collaborative research. Overall we recognize the value of centralization of structures such as sponsored research or technology transfer: cost, efficiency, stimulation of collaborative research. The counters are the loss of specialization and the intimacy of contact with the different offices. At Rice, the personal interactions afforded by the small scale of the university have been valued by the faculty and staff. This asset could be lost in a merger that is not carefully managed. We also note that most of these administrative units at each institution are already operating at or near capacity.

One possible scenario for merger of some of these units, such as sponsored research/projects, would be to maintain two offices, but rather than have one for the medical school and one for the remainder of the university, divide the work load to provide optimal specialization of expertise, for example one office to handle NIH grants and another to handle NSF, DOD, DOE, etc. IRB and IACUC infrastructure at BCM is robust and could support Rice activities with joint membership (although particular needs should be carefully evaluated). Integration of these structures could considerably facilitate collaborative research projects involving animals or humans. Access to core research facilities should be maximized for individuals at both

institutions. A unified set of management principles for core facilities should be established. This could significantly expand the research capabilities of individuals at both institutions.

4. Summary and Conclusions

The proposed merger affords an enormous number of opportunities to build new and successful programs, to drive innovation, and to train scientific pioneers. The scope and range that are indicated above have a common theme – combining disciplines of strength with programs of national opportunity. The major challenge will be to choose those particular areas that are judged to weigh most heavily in each instance, so that the vision of transforming medicine and science can be achieved.

APPENDIX II
REPORT OF RICE UNIVERSITY - BAYLOR COLLEGE OF MEDICINE
EDUCATION SUB-COMMITTEE

Participating Members:

John Boles, Rice
Baruch Brody, Rice -BCM
H. F. Gilbert (co-chair), BCM
Michael Emerson, Rice
Kathy Ensor, Rice
Clay Goodman, BCM
David Holcomb, BCM
Jim Lomax, BCM
Beth Nelson, BCM
Paula Sanders (co-chair), Rice
Ken Whitmire, Rice
John Wilson, BCM

Summary:
The education sub-committee has met five times to discuss the opportunities and challenges in joint education initiatives throughout all education venues of Rice and BCM. We identified numerous potential educational synergies among virtually all academic disciplines and educational activities on both campuses. Joint and collaborative educational programs between Rice and BCM can create new models for integrating education between universities and their medical schools and provide an impressive array of educational benefits and opportunities for our faculties, students, trainees, and the Houston, national, and international communities. There are few significant barriers to integrating educational programs. Suggestions for mechanisms to establish, review and maintain new collaborative/joint programs are provided and potential barriers have been identified.

General Principles and Recommendations

- The committee endorses the conclusions of the joint faculty committee that there are exciting opportunities for collaborative/joint programs among virtually all academic disciplines and educational venues at both institutions. These efforts could provide national models for integrating education between medical schools and universities.

- An organizational structure and sufficient new funds must be provided to both initiate and maintain joint ventures not only at the research level but also at all the educational levels (undergraduate, medical, allied health, graduate, postgraduate, and educational outreach)
- Mechanisms should be established to inform and educate faculty on both campuses about common interests, opportunities for collaboration in education, and new initiatives that may be developing at the individual campuses.
- BCM and Rice educational administration must facilitate and enable collaboration/joint ventures within whatever organizational framework is established
- The formation of joint centers and inter-campus initiatives should include a comprehensive plan that involves the education of undergraduates, medical and allied health students, graduate students (Master's and Ph.D.), postdoctorals (including medical residents and fellows), and the community.
- Successful joint ventures, regardless of size, require a committed group of participating faculty and are likely to be those that bubble up from committed faculty on both campuses so that there needs to be a mechanism and funding to support the best and most enthusiastic of those ideas.

Significant barriers that will need solutions

- Reciprocal faculty appointments, similar to BCM graduate faculty appointments, are needed to allow faculty to serve as thesis advisor or committee members in collaborative, interdepartmental, cross-campus initiatives.
- Mechanisms of funds flow for joint programs, including stipends for graduate students and funds for shared faculty are needed to ensure that student and faculty participation in joint or cooperative programs is encouraged

Changes to Infrastructure

- Synchronizing BCM GSBS calendar to match Rice calendar is not problematic
- Changing the BCM Medical School and Allied Health Sciences academic calendars is not feasible without compromising current educational emphasis and programs at BCM; however, flexibility in scheduling of Rice/BCM courses to be offered to medical and allied health students will have to be coordinated with BCM student schedules. Several such opportunities could be identified.
- Currently, the existing infrastructure for education on both campuses can accommodate and enhance collaboration. Any infrastructure developed to facilitate new joint education initiatives and enhance established ones should be dedicated to removing barriers and encouraging the faculty collaborate across campuses.

Working Outline - Education Opportunities Committee
Rice-BCM Academic/Education Committee

Schedule of Meetings

Friday May 22	12:00-1:30	BCM	**Alkek Graduate Sciences Building N202**
Thur May 28	4:00-5:30	Rice	**Allen Center 3rd floor conference room**
Friday June 5	12:00-1:30	BCM	**Alkek Graduate Sciences Building N202**
Thur June 11	4:00-5:30	Rice	**Allen Center 3rd floor conference room**
Friday June 19	12:00-1:30	BCM	**Alkek Graduate Sciences Building N202**

Membership

Rice	Paula Sanders (co-Chair)	Dean Graduate and Postdoctoral Studies	sanders@rice.edu
BCM	Gil Gilbert (co-Chair)	Associate Dean for Academic Affairs GSBS,	hgilbert@bcm.edu
Rice	Ken Whitmire	Associate Dean School of Natural Sciences	whitmire@rice.edu
BCM	David Holcomb	Dean of the School of Allied Health Sciences	jholcomb@bcm.edu
Rice	Kathy Ensor	Chair of Statistics	ensor@rice.edu
Rice-BCM	Baruch Brody	Director, Center for Medical Ethics and Health Policy and member Rice-BCM Faculty Advisory Committee	bbrody@bcm.edu
Rice	John Boles	Professor of History	boles@rice.edu
BCM	Jim Lomax	Assoc. Chair, Department of Psychiatry(Co-chair, BCM/Rice faculty advisory committee)	jlomax@bcm.edu
Rice	Michael Emerson	Professor of Sociology, and member Rice-BCM Faculty Advisory Committee	moe@rice.edu
BCM	John Wilson	Distinguished service professor of Biochemistry	jwilson@bcm.edu
BCM	Beth Nelson	Sr. Associate Dean for Medical Education (ad hoc member)	enelson@bcm.edu
BCM	Clay Goodman	Assoc Dean for UME curriculum	jgoodman@bcm.edu

Joint/Cooperative Educational Activities

Deliverables

- Initial list of academic opportunities for research and educational synergy at both the graduate and undergraduate levels that includes potential opportunities among all of the academic disciplines on each campus.
- Recommend an approach to the integration of education infrastructure.
- Define the areas of greatest potential for joint graduate programs and infrastructure issues involved, including a process to authorize and fund joint programs.
- Define the areas of greatest potential where BCM faculty can contribute to undergraduate education at Rice and Rice faculty can contribute to medical (Medical School and School of Allied Health Sciences) at BCM and identify mechanisms that would be needed.
- Define educational opportunities for joint/cooperative postgraduate education (postdocs, residents) and any changes to infrastructure that could be realized.

General Principles and Recommendations

- The committee endorses the conclusions of the joint faculty committee that there are exciting opportunities for collaborative/joint programs among virtually all academic disciplines and educational venues at both institutions. These efforts could provide national models for integrating education between medical schools and universities.
- An organizational structure and sufficient new funds must be provided to both initiate and maintain joint ventures not only at the research level but also at all the educational levels (undergraduate, medical, allied health, graduate, postgraduate, and educational outreach)
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- The formation of joint centers and inter-campus initiatives should include a comprehensive plan that involves the education of undergraduates, medical and allied health students, graduate students (Master's and Ph.D.), postdoctorals (including medical residents and fellows), and the community.
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- currently, the existing infrastructure for education on both campuses can accommodate and enhance collaboration. Any infrastructure developed to facilitate new joint education initiatives and enhance established ones should be dedicated to removing barriers and encouraging the faculty collaborate across campuses.

Undergraduate Education

Executive Summary.

There are rich opportunities for Rice/BCM educational collaboration at the undergraduate level that could potentially involve virtually all schools, departments and academic disciplines at both institutions. Of note would be the possibility of new undergraduate majors/minors in international health, health policy, medical humanities, health information sciences, informatics, neurosciences, biomedical sciences, and many others. No insurmountable obstacles to implementation were identified.

Summary

Rice/BCM cooperation in undergraduate, medical and allied health education would provide substantial synergy in the ability to create new undergraduate majors and concentrations and enhance the educational experience of all Rice/BCM students by drawing on the expertise and enthusiasm of Rice and BCM faculty from virtually all academic disciplines, departments and schools on both campuses. There is a significant level of current collaboration that can be strengthened and numerous opportunities exist for new undergraduate majors/minors drawing on BCM faculty expertise.

Mechanisms and policies are already in place at Rice for the faculty to develop and approve new courses, majors and minors. BCM medical, allied health and graduate student participation would add new perspectives and opinions to advanced undergraduate courses while providing the BCM student with information and thought processes that are often not available in traditional biomedical education programs. Undergraduate students would also be placed in contact with more advanced students who may serve as role models or mentors.

Enrollment issues can be accommodated through the current flexible system Rice has for allowing students to participate in the same course at different levels. The major impediment for participation of BCM medical and allied health students in undergraduate courses is their time and content-intensive curriculum. Offerings of undergraduate courses would have to be coordinated to times of day and year when BCM students have time flexibility. In contrast to Rice faculty, BCM faculty generally spend a much smaller fraction of their time in didactic teaching so that a mechanism will be required to fund teaching time. A resource to help Rice and BCM faculty and students find collaborative opportunities would facilitate the development

of new cooperative intellectual ventures. This resource might also facilitate cross-teaching opportunities (Rice faculty teaching BCM students and *vice versa*), which would have to be identified on a case by case basis depending on individual curricular needs.

Current Individual Programs Discussed

- Undergraduate Programs (Rice)
- Undergraduate Medical Education (BCM)
- Allied Health Sciences (BCM)

Current Joint/Cooperative Programs

- Rice-BCM B.S./M.D. Program
- BCM Graduate Students enroll in advanced (Rice Undergraduate/Graduate courses) already
- Smattering of audits in other advanced undergraduate courses where BCM medical student will audit Rice course

Potential Areas for New Undergraduate Majors/Minors/Concentrations (in cooperation with new/strengthened Centers):

- International Studies /International Medicine/International Health
  International Pediatric Aids Initiative-Baker Institute
- Health policy Studies - strengthened Health Policy Forum/Baker Institute)
  potential areas identified by faculty committee - development economics, neuroeconomics, political science of health policy
- Medical Humanities Research Center:
  potential areas identified by faculty committee: 20th century US Medical History, ethics, art history, English, religious studies, history, music,
- Neuroscience
  potential new major with coordinated Rice/BCM hires
- Other Natural Sciences/Engineering
  potential areas identified by faculty committee - bioenergy, bioinformatics/medical informatics, biophysics, biostatistics, cell & gene therapy, computational and mathematical biology, developmental biology, ecology and evolution of human diseases and pathogens, genetics, genomics, global health technologies, infectious diseases, information technology, medicinal chemistry/pharmacology, molecular imaging, imaging instrumentation, image analysis, model organism biology, molecular medicine/personalized medicine, nanotechnology, neuroscience, regenerative medicine and stem cell engineering, synthetic biology.
- Health Information Systems/Bioinformatics
  an area of concentration or interdepartmental undergraduate program in collaboration with Health Outcomes Research, bioinformatics, and epidemiology at BCM.
- Chemical Biology
  Rice Chemistry, Biochemistry and BCM Biochemistry and Pharmacology departments
- Biomedical Sciences

Rice upperclass major/concentration focusing on providing students with course work and research experiences in biomedicine including biomedical/translational research, medicine

Synergy Realized

- BCM medical, allied health, and graduate students participation brings new perspectives to Rice undergraduate courses and BCM education
- Medical School Tracks (International Health, Ethics) benefit from involvement of diverse faculty and course offerings in international issues, history, ethics, religious studies, anthropology
- Recruiting undergraduates into medicine, medical/biomedical research, and health services careers

Barriers/Problems to Solve

- To attract BCM medical and allied health students into Rice advanced courses will need some flexibility in scheduling course offerings to mesh with available time within BCM curriculum

Cross-Teaching

Executive Summary

Numerous venues exist where BCM faculty can contribute to Rice courses and where Rice faculty can contribute to BCM courses. There are few academic barriers to cross-teaching since one campus would have the primary responsibility approval, content and evaluation. Cross teaching involving a few lectures would pose minimal problems except for identifying areas of faculty expertise and interest which should be one of the responsibilities of any implementation strategy. More extensive time commitments would require mechanisms to cross-compensate the faculty.

Summary

Opportunities for cross-teaching, i.e. BCM faculty teaching in Rice courses and vice vesa are numerous and they would enhance the education programs on both campuses. Potential areas include a large number of the academic disciplines of both campuses and the cross-teaching would enhance existing educational program and lead to further collaborative/joint education and research opportunities. Generally, Rice and BCM faculty have a limited ability to dedicate major time commitments to cross teaching so that some mechanism to compensate faculty for major time commitments will be necessary. In addition, limited knowledge of cross-teaching needs and opportunities provide barriers. A resource to identify faculty expertise and interests on both campuses will be required.

Potential areas for Cross-Teaching (Rice faculty teaching in BCM courses and *vice versa*).

- A very large number of opportunities exist to enhance the individual educational programs of both campuses among virtually all levels of education and among most all schools, departments and programs.
- A significant number of faculty would be likely to participate in cross-teaching efforts that involve a small time commitment (the equivalent of 2-5 lectures per year).

- As part of any new organizational structure developed to foster joint initiatives, a resource is needed to inform faculty of individuals on both campuses who have the expertise and willingness to become involved in cross-campus teaching efforts.

Synergy Realized

- Expertise and interests of BCM and Rice faculty can be used to supplement content of existing education programs
- Collaboration in cross-teaching efforts will build new system of contacts that may lead to new joint educational programs and research initiatives

Barriers/Problems to Solve for Cross Teaching

- Rice faculty are directly involved in teaching, generally with the responsibility of a full semester course assigned to one individual.
- BCM faculty are much less involved in teaching and must dedicate most of their time to research and/or clinical practice.
- BCM courses are almost all team taught with a few lectures from a larger number of faculty
- A mechanism is required to make each group of faculty aware of the expertise and opportunities for cross-teaching
- A funding mechanism will be needed to allow one campus to "buy" faculty time when major teaching involvement is required.
- Specific "courses" are difficult to identify in the BCM basic science curriculum but it is possible to identify specific expertise that might be useful

Major Integrated Initiatives

Executive Summary.

Major integrated initiatives are those that involve extensive collaboration between campuses in both research and education. They provide extensive opportunities to build new scholarly disciplines, enhance research, and for the faculty to develop comprehensive educational programs involving undergraduates, graduate students, medical and allied health students, postdoctorals and the community-at-large. They can create new paradigms for integrating education between universities and their medical campus at all levels and among all disciplines. Potential areas include but are not limited to a Health Care Management Center, Health Policy Forum, Medical Humanities Research Center, Health Information Sciences and Bioinformatics, and numerous areas in the biomedical and physical sciences, computer science and engineering. A process is needed to propose, evaluate and periodically review these joint initiatives and to provide committed and ongoing funding and space.

Summary.

Major integrated initiatives are those that involve extensive collaboration between campuses in both research and education. Integrated, collaborative programs with dedicated research and education components can provide new opportunities for research, new areas of scholarship, innovative ways to integrate health-related research and education into the university environment, and new mechanisms to inform the Houston community and the nation. They provide the opportunity to involve faculty from a wide range of academic disciplines and to

expand the new knowledge and educational paradigms from undergraduates through graduate and postgraduate programs. Creating new areas and mechanisms for scholarship will enhance funding opportunities, including philanthropy, an provide new paradigms for collaborative research and education.

A mechanism for identifying specific areas that provide these opportunities will be required along with a significant source of ongoing funding to support new faculty hires and new educational programs. Criteria for evaluating these initiatives should include an assessment of their potential for innovative research and scholarship that also includes new ways to educate undergraduates, medical and allied health students, graduate students, postdoctoral scholars and the community at large. Periodic review (five years) must ensure that the programs remain collaborative, integrated, and contribute in a broad way to education at all levels.

Both Rice and BCM have a history of interdepartmental and inter-institutional research and education programs, and both have developed administrative solutions as problems arise. For these new initiatives, administrative solutions must be developed that would promote joint faculty appointments and compensation mechanisms to guarantee adequate faculty commitment to the research and education programs of the initiative. Procedures and policies already exist to develop new undergraduate majors/minors and new educational opportunities for medical and allied health students on the appropriate campus. For M.S. and Ph.D. programs, a mechanism will be needed to enable the awarding of a joint degree that includes approval by the faculty. A central location (BRC) for the program's administrative structure (research and education) would brand the program as a joint effort. Rice and BCM support first year graduate students by different mechanisms, so that any Ph.D. students in a joint degree program must have a stipend funding mechanism that does not make the stipend support provided by the major advisor more expensive than students from traditional programs.

Mechanisms to Establish and Review Joint Initiatives

- New initiatives for creative and workable joint efforts tend to arise from the faculty and require ongoing faculty support. A mechanism must be established to encourage faculty input and to consider creative ideas from all sources.
- Sustainability is an important issue and consideration should be given to enhancing current programs where there is a significant nucleus of committed faculty on both campuses.
- New initiatives with a limited number of committed faculty on either or both campuses should include a plan for new joint faculty hires and sustainable research and education programs.
- Significant consideration should be given to initiatives that will enhance opportunities for obtaining external support, including grants, fellowships, and philanthropy
- In addition to enhancing faculty scholarship on both campuses, new programs should develop related education programs at all levels, from undergraduates through postgraduates and the community that encompass students from both campuses.
- New research and education programs will require seed funding and an ongoing financial support for education.
- Once established, an ongoing review and funding process (5-years) must includee an evaluation that the program is maintaining balanced participation of faculty and students from each campus.

Potential Collaborative Initiatives

- Healthcare Management Center - Jones School
  - advanced management training in healthcare issues
- Health Policy Forum - Baker Institute
  - addiction health policy
    - anthropology, sociology, psychology and others
  - mentally ill offenders
    - Psychiatry, psychology, economics, anthropology
- International Health care
  - pediatrics, anthropology, sociology, psychology, BCM International Pediatric AIDS Initiative
- Medical Humanities/Social Sciences Research Center
  - end-of-life issues
    - Internal Medicine, Menninger, psychiatry, religious studies
- Health/Information Sciences
  - bioinformatics, epidemiology, statistics, health-care effectiveness

Synergy Realized

- Integrated research and education initiatives that center on the individual strengths and complementarity of Rice and BCM faculty
- Enhanced funding opportunities for innovative research and education initiatives
- Ability to integrate research and education across disciplines, across degree and post-degree levels to enhance education, mentorship and career development.

Barriers/Problems to Solve for Joint Initiatives

- Funding mechanisms for new programs, including educational programs in current and new centers/institutes/programs
- Mechanisms for enrollment of students in joint/cooperative programs
- Academic appointment processes for faculty based on final organizational structure of the institution that encourage faculty involvement
- Funding mechanism for involved faculty that ensures adequate and ongoing commitment.

Education Potential for Joint Initiatives and Barriers/Problems to Solve that are specific to the educational level

Undergraduate Programs

- New majors/minors, including new courses and research and scholarship opportunities should be developed as part of any major joint initiative.
- Mechanisms and policies already exist for creating new interdepartmental undergraduate majors/minors including approval by the faculty.
- Funding of faculty undergraduate teaching efforts must provide incentive for continued participation

Graduate Programs (M.S. and Ph.D.)

- Rice and BCM have different mechanisms to fund first-year stipends for Ph.D. students. At Rice, some programs fund first-year stipends from tuition recovery by charging tuition to mentors' grants for students beyond their first year. BCM funds first-years stipends with institutional funds and some training grants and endowments. A funding mechanism for graduate programs will be required that does not make the major advisor's cost for ongoing funding of these students higher than students from other programs, maintains an ongoing student stipend at the same level regardless of which faculty is chosen as the thesis advisor
- For the major joint initiatives, mechanisms for offering a joint degree should be sought. These must include procedures for approval by the faculty, curriculum committees, and accrediting agencies.
- An administrative mechanism should be developed to enable graduate programs associated with these initiatives to recruit, admit, and support graduate students enrolled in a joint program.
- Mechanisms must be established to determine how any teaching requirements and the attendant support for teaching, would be handled for joint degree students.
- Participating faculty must be responsible for maintaining the joint nature of the program.

Ph.D. and M.S. Programs (not coupled to Major Joint Initiatives)

Executive Summary.

Graduate education (M.S. and Ph.D.) offers a wide spectrum of potential collaboration that would not fall under the overall umbrella of Integrated Joint Initiatives. These include joint graduate/degree programs, inter-campus graduate programs, and one-campus programs with joint appointments for BCM or Rice Faculty. Given the flexibility of such arrangements, opportunities exist to create new programs and new areas of scholarly activity among virtually all of our combined academic interests, including all of the Colleges at Rice and BCM that have graduate programs. There are no significant barriers to establishing or enhancing these programs.

Summary.

Graduate education (M.S. and Ph.D. programs) provide numerous opportunities to create joint programs in new areas and to enhance existing programs at both institutions through faculty participation. The range of joint participation could be variable, from joint-degree programs, inter-campus programs where degrees are granted by an individual campus with faculty and students drawn from both campuses. Several such programs exist already and they could be strengthened by increased awareness and participation on both campuses.

The areas of potential collaboration for new graduate programs include those described under Large Integrated Initiatives (see above) but increased collaboration and participation of faculty from both campuses as mentors in graduate programs is easy to envision among existing graduate programs in the humanities, social sciences, engineering, physics, mathematics, computer science, statistics, along with the biomedical sciences, including neurosciences, structural and computational biology, bioinformatics, developmental biology, biochemistry, genetics, physiology.

There are few significant barriers to establishing new programs and enhancing existing ones; however, mechanisms need to be established to enhance communication and knowledge among the faculty, establish cost sharing procedure that are equitably distributed between the campuses, and develop faculty appointment policies that will allow cross-campus faculty to participate as student thesis advisors.

Joint Ph.D. Programs not associated with large joint initiatives

New graduate programs with BCM and Rice mentors where students are admitted to the program by both Rice and BCM or directly through a single program and may include a joint degree.

Mechanisms to Establish and Review Joint Initiatives

see section on Major Integrated Initiatives

Potential Areas (in addition to those mentioned under Integrated Joint Initiatives

- History of Medicine
- Psychology of Religions including end-of-life issues
- Religious Studies, Psychiatry Internal Medicine/Palliative Care
- Neurosciences
- Chemical Biology
- Bioinformatics
- Epidemiology/Health Outcomes
- Health and Hospital Management

Synergy Realized

- New programs and disciplines can be formed by utilizing faculty expertise from both campuses
- Could link graduate programs to both undergraduate and postdoctoral interests
- A larger number of thesis mentors would be available to students at all levels

Barriers/Problems to Solve/Mechanisms Needed

- see section on Major Integrated Initiatives under Graduate Programs

Inter/Campus, Inter-institutional Ph.D./M.S. Programs

Programs that exist and are largely funded and administered by one campus with faculty participation by both Rice and BCM faculty. Admissions, curriculum approval, and other administrative policies would be determined by one campus but the faculty would be drawn from both campuses and students could choose mentors at either campus. This could apply to BCM/Rice Ph.D. programs and Rice MS. programs.

Mechanisms to Enhance Inter/Campus Graduate Initiatives

- Develop mechanisms to share information about existing faculty expertise and interest and use it to strengthen or broaden existing programs and develop new ones

- Coordinate the creation of new graduate programs between campuses so that any new program at one campus might draw on faculty from the other campus.
- Inform both campuses on new hires at either campus
- Develop a mechanism to target hires that would enhance existing collaborative programs

Existing Programs where joint interactions could be expanded

- Bioengineering (Rice)
- Ecology and Evolutionary Biology (Rice)
- Neurosciences (BCM)
- Biochemistry (both campuses)
- Biostatistics (Rice-BCM)
- Developmental Biology (BCM)
- Structural and Computational Biology (Rice-BCM)
- Computer Science and Engineering (Rice-BCM)
- History (Rice)
- Psychology (Rice)
- Philosophy/Ethics (Rice-BCM)

Potential other Areas

- Religious Studies (Rice)
- Kinesiology (Rice)
- Physics (Rice)
- Chemistry (Rice)
- Pharmacology (BCM)
- Nanotechnology
- Applied Physics

Synergy Realized

- The inclusion of participating cross-campus faculty into existing graduate programs would broaden the base of expertise and give students more options for specific research topics
- Participation in cross-institutional graduate programs would help develop new research collaborations among the faculty on both campuses

Barriers/Problems to Solve

- Funding/cost sharing mechanisms need to be developed for students in inter-campus programs that will not limit the student's choice of mentors or lead to "quotas" that restrict the student's choice. t
- Depending on the program, first-year student research rotations and the mechanisms for choosing a thesis advisor are different
- Stipends at Rice differ among departments, but at BCM they are constant across all programs.

- Student support or stipend level should not depend on which campus the mentor resides
- Rice has defined expectations for graduate student work week and teaching requirements while BCM programs do not
- For Rice M.S. programs where internships/practical training was done with a BCM faculty a mechanism of stipend support needs to be developed

Dual Degree Programs

Programs where each campus awards one of the degrees in a dual degree program

Executive Summary.

Dual degree programs are already an established entity between the two campuses including Bachelor/M.D., M.D./Ph.D., and M.D./M.B.A., and Ph.D./M.B.A. Increased collaboration in these dual degree programs could lead to better integration of the two curricula to enhance the student's learning from both degrees, expand the scope of the M.D./Ph.D. programs to include areas such as economics, history, ethics, psychology, and others, or any of the joint/cross-campus Ph.D. programs. Funding requirements must be considered in expanding the scope of the M.D./Ph.D. program.

Summary

Dual degree programs are an established collaborative mechanism between Rice and BCM, including M.D./Ph.D., M.D./M.B.A., Ph.D./M.B.A., and Bachelors/M.D., programs. The opportunity exists to develop M.D./M.S. programs in all disciplines at Rice where they are offered and to expand the academic areas available for the M.D./Ph.D. program. In addition, increase collaboration through the Bachelor/M.D. program provides an opportunity to integrate the undergraduate and medical curricula to enhance both degrees and provide students to medical school with a broad liberal arts background along with the necessary science knowledge to succeed in medical school.

The academic areas that could become involved with expanded effort in dual degree programs include the possibility of offering combined M.S./M.D. and M.S./Ph.D. programs potentially involving all Rice M.S. programs. Additional option for the M.D./Ph.D. program also exist and include options such as an M.D./Ph.D. in economics, psychology and other disciplines in the humanities, social sciences, engineering, statistics and bioinformatics, and the various other joint or cross-institution programs that will be established in the future.

Barriers to implementing these expanded programs are few; however, each of the new initiatives should consider timing and synchronization issues consistent with completing both degrees. Expansion of the M.D./Ph.D. program to more disciplines at Rice will necessitate a detailed consideration of funding issues, particularly during the M.D. portion of the program and additional needs for program directors and support staff.

Mechanisms to Establish and Review Joint Initiatives

- A determination must be made as to the time sequence for the two degree programs, i.e. concurrent, sequential, or leave from one degree program to complete the other program
- Funding requirements, tuition remission (if any), procedures for admissions and the effects of concurrent enrollment on the ability of the student to complete both degree programs should be considered.

- Since each campus would confer one degree, the academic requirements for that degree must be developed, approved, and administered by the institution awarding the degree

Current Joint/Cooperative Programs

- M.D./M.B.A. Program (BCM/Jones School)
- M.D./Ph.D. Program (bioengineering, statistics)
- Bachelor/M.D. program (Rice undergrad/BCM medical school)
- Ph.D./M.B.A. Program (BCM/Jones School)

Potential Areas for other Dual Degree Programs

- M.S./M.D. programs within any of the current Rice M.S. degree programs.
- M.D./Ph.D. programs could be expanded to include other disciplines that are strong at Rice, including the humanities, social sciences, engineering, computer science.
- The Bachelor/M.D. program could be integrated to follow the suggestions of the AAMC/HHMI report which calls for a focus on integrated learning objectives where the B.S. includes a broad, liberal arts base that then adds specific knowledge required for medical school.

Synergy Realized

- Integrated dual degree programs provides the opportunity to re-define the link between undergraduate, graduate and medical education
- Cooperation of faculty involved in both degree programs could lead to a better integration of the disciplines and degrees.

Barriers/Problems to Solve

- Mechanisms should be developed to encourage more integration, where possible, between the two degrees to enhance the educational experience and effectiveness
- With M.D./Ph.D. programs, expansion must consider the funding of students not only during their Ph.D. years but also during the years in medical school.
- Expansion of the M.D./Ph.D. program may require additional faculty involvement as program directors, particularly with non-biomedical Ph.D. components

Research Experiences Related to Education

These are research experiences designed to enhance a degree program by offering limited exposure to research and scholarly activities.

Summary.

Research and scholarly experiences of Rice undergraduates and BCM Allied Health Sciences and Medical School programs can significantly enhance the student experience. Current opportunities exist for Rice undergraduates to participate in a research experience mentored by a BCM faculty currently exist and similar programs could be established that involve Rice faculty in mentoring the research or scholarly activity of BCM Medical and Allied Health Sciences Students could provide these students with a very broad range of scholarly activities outside the normal biomedical and clinical disciplines.

Mechanisms to Establish and Review Joint Initiatives

- Cooperative programs to allow an undergraduate student at Rice to do mentored research in a BCM lab already exist and agreements are in place that would accommodate Rice undergraduate or M.S. students access to BCM mentors on a paid or unpaid basis.
- Mechanisms need to be developed that would permit BCM Allied Health students or medical students to do research projects with Rice faculty mentors
- A way for students and faculty on both campuses to identify potential research mentors would facilitate these interactions

Current Joint/Cooperative Programs

- Rice Research Courses for Undergraduates (BCM/Rice) - course credit or paid as research assistant

Potential Areas for other Dual Degree Programs

- Allied Health Sciences - Research Related/Thesis Projects (BCM)
- Undergraduate Medical Education - Scholarly Projects (BCM)

Synergy Realized

- The scale and breadth of research and scholarly experiences that can be offered to Rice undergraduates and BCM medical and allied health students could be increased considerably by enhanced collaboration

Barriers/Problems to Solve

- No significant barriers to providing limited research experiences in a cross-campus manner are apparent

Other Opportunities for Collaboration in Education

Executive Summary

There are several other educational venues that the committee did not have time to explore in depth, but in going forward, there should be considerable opportunities for collaboration and joint programs involving postdoctorals, residents and clinical fellows, community outreach including continuing education, continuing medical education, K-12 educational outreach and community-wide education.

- Postdoctoral Programs other than those associated Large Integrated Initiatives
- Graduate Medical Education - medical resident and clinical fellows
- Continuing Medical Education - practicing physicians
- K-12 Outreach (Rice and BCM)
- Rice School of Continuing Studies
- International Education Initiatives