

## **Introduction**

On January 19, 2010 the South Carolina EPSCoR held its inaugural External Advisory and Review Board (EARB) meeting in Charleston. Given the timing of the first meeting, most of the 20-minute administrative and institutional presentations did not vary substantially from the proposal descriptions. Not surprisingly, few activities were in the implementation phase. Nevertheless, the Board found the presentations to be impressive, and perceived the preconditions are in place for success toward the goals of the project.

Rather than summarizing and responding to each presentation, the Board finds it instructive, especially in these early stages, to provide critical recommendations for the leadership to consider as it moves forward in the formative implementation stage. The Board believes that the *transformative potential* of the project will best be realized through extraordinary leadership and cooperation across the ten participating institutions.

### **I. Project Components**

#### **A. Organization**

The Board encourages Markwald, Odom and Little to immediately implement a *requirement* for each participating institution to identify annual milestones while at the same time establishing the platform to coordinate them. One mechanism is to identify a senior professor to coordinate the project. If an internal team member is selected, a reduction of his/her university responsibilities must be considered. A second mechanism is for each institution to identify a project leader, with the explicit responsibility to establish annual measurable goals and milestones. Ideally, these leadership teams should meet at least twice a year to reach consensus on goals and milestones, gauge progress toward the established milestones and redirect individual component efforts as necessary. The external evaluator should play an integral role in documenting this process in the formative evaluation stage.

While the proposal identifies five thrust areas, the Board heard no definitive sub-strategies, milestones and timelines. While this is understandable at the outset of such a large project, we strongly recommend (through the mechanisms above) the formulation of an outline with plainly specified goals within each sub-, with institutional specificity so each partner understands their roles, and with appropriate metrics to gauge outcomes. Future scientific updates should report progress as applied to these specific research

objectives. Through bi-annual meetings of the Leadership Team, these goals and milestones will benefit from a temporal framework.

## **B. Research**

Regarding Thrust II, the focus of resources on fat-derived MSCs should be carefully justified. While there are definite advantages to developing a capacity to culture and work with these stem cells, the use of the less pure stromal vascular fraction may be more applicable to the long-term goals of the project and, indeed, may be more clinically applicable. Biomechanical studies that focus exclusively on cells should be carefully justified. Given the long timeline for the project, it is imperative to explore ways to accelerate achieving the key scientific objectives. Shifting this Biomechanics work to cell/tissue/ECM constructs might provide more applied data and as a result shorten the overall developmental timelines.

The GEAR resources should be used to facilitate research collaborations of various kinds between the three flagships and the seven partner institutions, including: short courses by faculty from the flagships; variable term visits and mini-sabbaticals by faculty from the seven partner institutions in focused research labs and groups at the flagships. Training sessions and workshops, if not already in place, could be implemented at the three research institutions, with access from all participating institutions. This project component provides opportunity to collaborate with regional universities in North Carolina and Georgia that have been working on issues for quite some time.

Project funds should be used stimulate and maintain research opportunities for faculty and students from the smaller institutions, which is critical to their professional development, to import curricula into their home institution, and to establish relationships with researchers who can help in faculty recruitment. Specific elements need to be worked out with the leaders at the smaller institutions to craft appropriate career development “packages”.

## **C. *Cyberinfrastructure***

Although the project already targets the infrastructure for web access across the participating institutions, the South Carolina Light Rail (SCLR) should be better integrated. The SCLR and other cyberinfrastructure can potentially implement teleconferencing of selected seminars and courses from the Medical University of South Carolina (MUSC), Clemson University (CU) and University of South Carolina (USC) to the participating institutions. The presentation on cyberinfrastructure did not explicitly

discuss the impact on the different types of participating institutions. Consequently, this part of the project needs to be more concrete and explicit, especially with perspectives from the HBCUs, 4-year colleges, and technical schools.

#### ***D. Curricula***

A Curriculum Working Group should be formed across the participating institutions: with at least one liaison to the Job Training Partnership Working Group. This group should include institutional liaisons in the core areas of mathematics, computer science and computer engineering, biology, chemistry, and physics, and in concentrations in chemical, bio, biomedical and tissue engineering. One priority should involve sharing curricula with a focus on web-based and web accessible content. Relevant resources are available on the Internet, and through working groups that have been supported by NSF and other federal agencies. This mechanism allows the establishment of an active community resource across the partner institutions, and should reinforce the research-focused goals and milestones.

#### **E. Industry Advisory Board**

The project management would be well served by forming and actively engaging an Industry Advisory Board (IAB) for advisement and counsel of curricula that will maximize job placement upon graduation from the technical and community colleges, four-year institutions, and research-intensive institutions. In particular, South Carolina State University (SCSU) could benefit from such counsel because of proposed Master's degree program. Because it was not addressed in the SCSU's presentation, the Board recommends that institution clearly identify timelines and milestones for degree approval by its Board of Trustees and the South Carolina Commission on Higher Education. Given the Board's collective experience, it cautions against creating degrees for a niche job market.

## **II. Broadening Participation**

***Underrepresented Racial/Ethnic Minorities.*** With the exception of Furman, the Board noted that federally defined underrepresented groups (especially racial and ethnic minorities) appear to be noticeably absent among new hires. The Board unanimously recommended that the project managers enhance efforts to recruit, hire and retain underrepresented racial/ethnic minorities. To this end, the Board recommends that the leadership monitor all application processes tracking the demographic profile at each

stage—interviewing, job offerings and hiring. The recruitment process should be more proactive, and include the utilization of personal networks and not simply advertising and evaluating applications.

Although the E. E. Just symposium is highlighted in the proposal as a major component of MUSC's outreach, little attention was given to the symposium in the presentation. The report of the Diversity Committee was insufficient. The Board looks forward to a comprehensive report at the next meeting.

***Non-research intensive colleges and universities.*** More can and should be done for the smaller institutions in the form of assistance in the generation of quality faculty applicants, evaluation of applicants, recruitment in a limited resource environment, and faculty retention.

The Board was made aware of some faculty recruitment and retention challenges at some of the smaller institutions. In this regard, the Board recommends flexibility in for some of the job searches. For example, USC-Beaufort's hiring in Computer Science and Computational Biology may require opening the search to Applied and Computational Mathematics, Biomedical Engineering, Computational Physics or Chemistry.

We underscore a critical Broader Impact of the Project in regard to explicit mentorship programs for faculty at all participating institutions, including but not limited to placement of faculty in research groups led by successful researchers from the flagship institutions. The faculty members at the participating institutions need to see that they are an integral part of a larger community that helps enrich their professional life and provides opportunities for further growth. Furman, in particular, should prioritize integration of their faculty with the flagships, so that their research efforts can have the maximum impact in vascular tree regeneration. Semester leaves at the flagship institutions may be a major mechanism for faculty development, engagement in research projects, and developing new curricula as well as enhancing extant courses at all levels.

Faculty at the three flagships should be given incentives to visit and possibly spend a semester or summer term at the smaller institutions, engaged in leading research experiences, curriculum development, and establishing research projects with faculty and students. Experiences at a personal level of what works and does not work could then be shared across the participating institutions.

A well designed mentoring program should be implemented so that students in the smaller universities can have meaningful exposure to high level research at MUSC, USC and CU. While the Board encourages hiring and integrating faculty from the smaller institutions, we recognize the difficulty for these professors in making a meaningful impact on the overall research objectives of the cooperative agreement. Specific goals and milestones for these faculty should be formulated in an effort to maximize the likelihood of both a meaningful contribution to the research goals, and a lasting experience that can be brought back to the smaller institutions. Focusing on integrating students from the smaller institutions may result in a higher impact both in terms of opportunity and actual work on the key milestones. Student exchanges into the research laboratories at the flagship facilities may be easier to facilitate from an administrative perspective, and may ultimately create a more enriching experience than having faculty exchanges. This strategic use of resources may be more productive in achieving NSF goals in promoting diversity and opportunity for underrepresented minorities than putting pressure on already overworked professors at the smaller universities. It is unclear from the presentations whether these professors will be granted the release time and resources necessary to contribute in a meaningful way to many of the key research objectives stated in the proposal. For the career development of the students and professors, a seamless interchange among the participating universities must be achieved.

## **II. Next Steps**

**Future Meeting, Agenda and Logistics.** Because few institutions were in the implementation stage by the first meeting, the Board strongly recommends a summer meeting. This would allow the Board to provide more timely and substantive guidance. For the next meeting, the Board should have an opportunity to contribute to the development of the agenda. Similarly, the Board needs to have more on-site interaction with the institutional representatives. Because they are unfamiliar with the physical facilities and research infrastructure at the non-research partner institutions, the Board strongly encourages management to consider holding the next meeting at one of the smaller institutions or in a locality where members could have an opportunity to visit one of the campuses.

Respectfully submitted,  
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Chair, External Advisory and Review Board

**EARB Members**

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## Appendix

**Below is a list of the themes covered in the Chair's Exit Report (January 19, 2010).**

*Realistic outcomes for students.* Concern is expressed about the lack of sufficient attention paid to milestones/metric, to ensure that ALL students have positive outcomes from both classroom and research experiences.

*Thrusts and strategies.* It is recommended that in future EARB meetings, all institutional representatives' presentations address how their institution contributes to the overall project thrusts and strategies.

*Tracking research productivity.* It is recommended that each institution: (1) track the number of its EPSCoR research-related manuscripts and patents and (2) explain how the new hire will contribute to publications and seeking external funding.

*Cyber connectivity.* It is emphasized that all partners need to be appropriately connected.

*Faculty exchanges.* Concern is expressed that faculty exchanges did not appear to be bi-directional (faculty from non-research universities, bringing their expertise to research universities).

*Focus on job creation.* It is emphasized that the leadership should be mindful that spin-off creation does not necessarily result in expanded jobs creation.

*Curriculum materials.* Institutions planning new course offerings should review online courses from universities in other states to determine possible relevance.

*Ethics and values.* Concern is expressed that insufficient attention is paid to the social implications of the research. The leaders are encouraged to partner with colleagues in the social sciences and philosophy to strengthen this component of the project.

*Underrepresented Groups.* Concern is expressed that presentations did not mention efforts to engage persons with disabilities.