

**New Program Proposal  
Center for Biological Interfaces of Engineering (CBIOE)  
Clemson University**

**Summary**

Clemson University requests center designation from the Commission on Higher Education for the Center for Biological Interfaces of Engineering (CBIOE), to be implemented immediately upon approval.

The proposal was approved by the Clemson University's Board of Trustees on October 22, 2004. A purpose of CHE approval of Centers is to permit sponsoring institutions to seek funding from the General Assembly. The proposal was submitted to the Commission on November 14, 2006. It was reviewed by the Advisory Committee on Academic Programs without substantive comment and voted upon favorably on January 17, 2007.

The Center for Biological Interfaces of Engineering (CBIOE) has been in existence for one year. It has a four-fold mission, as follows:

1. to disseminate cutting-edge, engineered-tissue technologies internationally;
2. to develop an internationally recognized, engineered tissue technology toolbox, available through CBIOE online seminars, short courses, industrial workshops, and databases;
3. to maximize economic development for South Carolina through the establishment of an internationally recognized Engineering Research Center; and
4. to establish a model recruitment and professional development program that facilitates access of economically disadvantaged South Carolina students to higher education.

The proposed Center will contribute to the research mission of Clemson University. According to the proposal, the Center will continue to be administered by the College of Engineering and Science. The proposed Center will work in collaboration with Clemson's *Center for Advanced Engineering Fibers and Films*, the *Spiro Center for Entrepreneurial Leadership* and the *Programs for Educational Enrichment & Retention*. The Center will be the only program of its type in South

Carolina. According to the proposal, investigators in the Center will develop collaborative arrangements with major research hospitals in the United States, Europe and China (AO Foundation (Switzerland), the Greenville Hospital System, MUSC, UNC-C, UNC-CH, Harvard University, Walter Reed, Tufts, Nanyang Technical University, and Singapore University).

The proposed Center will not serve as a degree-granting academic unit. Students conducting research on sponsored programs that support CBIOE will be enrolled in degree-granting academic units at Clemson University.

The Center for Biological Interfaces of Engineering (CBIOE) at Clemson University currently has one administrator, seven faculty members, and no staff. Additional faculty, staff, and administration will be hired in years 1-5. According to the proposal, new hires will include one administrator (.75 FTE), nine faculty (0 FTE), and 6 staff (4 FTE) serving the new Center. In the first five years, a total of 16 new staff members (4.75 FTE) will be hired.

The headquarters for the Center is, and will be, located on the Clemson Campus. Space for personnel and infrastructure allocated to the individual faculty members by their respective academic departments, either in multi-investigator office areas, or in the Greenville Memorial Hospital main campus. Major equipment such as tissue culture, and histological and rapid prototyping equipment will be required for the Center.

New costs for the program are estimated to begin at \$1,575,300 in year one and include program administration, graduate assistants, clerical support personnel, supplies and materials, equipment, and facilities. Estimated new costs decrease to \$1,166,500 in the second year and \$1,059,000 in the third year and increase to \$1,172,454 in the fourth year and \$1,226,354 in the fifth year. The total estimated new cost is \$6,199,608 for the program's first five years. Revenues will be generated through research grants, contract research services and indirect funds generated on sponsored programs. Clemson University will request \$1,000,000 recurring, "below-the-line" State funding in FY07 to develop synergistic programs to complement pending National Science Foundation Partnerships for Innovation, NSF PIRE, and pending Department of Defense and Keck Foundation proposals.

<b>Estimated Costs by Year</b>						
<i>Category</i>	<i>1<sup>st</sup> 2004-2005</i>	<i>2<sup>nd</sup> 2005-2006</i>	<i>3<sup>rd</sup> 2006-2007</i>	<i>4<sup>th</sup> 2007-2008</i>	<i>5<sup>th</sup> 2008- 2009</i>	<i>TOTALS</i>
Program Administration	76,200	76,200	114,300	114,300	114,300	495,300
Faculty Salaries*	0	0	127,000	200,054	213,554	540,608
Graduate Assistants	181,800	202,000	242,400	282,800	323,200	1,232,200
Clerical/Support	117,300	178,300	255,300	255,300	255,300	1,061,500
Supplies and Materials	50,000	60,000	70,000	70,000	70,000	320,000
Library Resources	0	0	0	0	0	0
Equipment	1,000,000	500,000	100,000	100,000	100,000	1,800,000
Facilities	150,000	150,000	150,000	150,000	150,000	750,000
Other	0	0	0	0	0	0
<b>TOTALS</b>	<b>1,575,300</b>	<b>1,166,500</b>	<b>1,059,000</b>	<b>1,172,454</b>	<b>1,226,354</b>	<b>6,199,608</b>

\*Listed amounts for salaries and stipends include fringe.

<b>Sources of Financing by Year</b>						
<i>Category</i>	<i>1<sup>st</sup> 2004- 2005</i>	<i>2<sup>nd</sup> 2005- 2006</i>	<i>3<sup>rd</sup> 2006- 2007</i>	<i>4<sup>th</sup> 2007- 2008</i>	<i>5<sup>th</sup> 2008- 2009</i>	<i>TOTALS</i>
Estimated FTE Revenue Generated from the State	0	0	0	0	0	0
Tuition Funding (New Students Only)	0	0	0	0	0	0
Other State Funding (Legislative Appropriations)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
Reallocation of Existing Funds	0	0	0	0	0	0
Federal Funding	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	15,000,000
Other Funding*	5,000,000	0	0	250,000	250,000	5,500,000
<b>TOTALS</b>	<b>9,000,000</b>	<b>4,000,000</b>	<b>4,000,000</b>	<b>4,250,000</b>	<b>4,250,000</b>	<b>25,500,000</b>

\*The establishment of an endowment for CBIOE's Call Me Doctor scholarship program is a present priority of Clemson University's Office of Advancement.

In summary, Clemson University has proposed that the existing Center for Biological Interfaces of Engineering (CBIOE) be granted approval by the Commission on Higher Education. The Center aspires to provide a model structure for scientific innovation that will promote cutting-edge, engineered-tissue research and biomaterials technologies to contribute to the containment and reduction of health care costs. The proposal states that the Center will contribute to cost effectiveness, quality, and

accessibility in the health care system. Sources of current funding for the Center are research grants, contract research services and indirect funds generated on sponsored programs. Commission approval of the Center would provide preferred status for the Center for Biological Interfaces of Engineering (CBIOE) in seeking grants and contracts and permit the Center to seek state funding below-the-line.

### **Recommendation**

The Committee on Academic Affairs and Licensing recommends that the Commission approve Clemson University's Center for Biological Interfaces of Engineering (CBIOE), to be implemented immediately, upon Commission approval.