

**Florida State University Ph.D. in Biomedical Sciences Proposal  
Division of Colleges and Universities Staff Analysis**

**Recommended Action:** Approve implementation

**Proposed Implementation Date:** Fall 2004

**Estimated Costs:**

	Total	% & \$ Current	% & \$ New	% & \$ C&G	Cost per FTE
Year 1	\$564,502	86% \$484,088	0	14% \$80,414	\$69,155
Year 5	\$2,193,926	49% \$1,079,888	8% \$180,000	43% \$934,038	\$22,907

**Projected FTE and headcount are:**

	Projected Headcount	Student FTE
<b>First Year</b>	7	7
<b>Second Year</b>	19	19
<b>Third Year</b>	31	31
<b>Fourth Year</b>	43	43
<b>Fifth Year</b>	55	55

## Abstract

The program is a key requirement in the University's effort to achieve full accreditation from the Liaison Committee on Medical Education for its new medical school, which was approved by the Florida Legislature in 2000. The proposed program does not directly duplicate any existing SUS programs. Other universities in Florida have similar programs in various biomedical specializations that support the research and scholarly activity of their medical schools. This program is expected to be the first of several medical science related degrees to be offered under a newly developed Interdisciplinary Health Science program within the College of Medicine.

At the national level there exists a shortage of physician-scientists (MD/Ph.D.), and academic job opportunities are expected to grow in direct relationship to increasing research and development funding over the next decade. Job growth for Ph.D. level researchers in the biotechnology industry has followed the expansion of biotech companies into research and development. The pharmaceutical and biotechnology industries employ close to 300,000 persons in the US and generate \$105 billion in sales. Forty-one states have undertaken initiatives to stimulate the development of their biotechnology industry, and Florida has targeted the sector as a vital part of its economic development.

The proposed program will require a minimum of 70 semester hours to complete, but most students are expected to graduate with 120 credit hours. The anticipated time frame for completion of the degree is four to seven years. Faculty and students will be able to participate in collaborative research with a number of existing strong programs at FSU. These include Biological Science, Structural Biology, Neuroscience, Chemistry and Biochemistry (which holds the patent on Taxol). They will also be able to collaborate with and draw upon the expertise of the Computational Science programs and the High Magnetic Laboratory. There are sufficient faculty in place to implement the program. In addition, the University plans to add nine new faculty through the year 2008. Library and laboratory facilities are also adequate to initiate the program. The Florida Legislature has provided funding to build a new College of Medicine Complex by 2005 that will house the proposed program as well as the medical school. For this reason there will be no direct impact on the funding for other university programs.

The proposal provides a complete and budget that identifies the costs associated with adding new faculty and providing student scholarship support. The first year cost per FTE is high at \$69,155, but this is primarily due to a projected initial enrollment of only seven students. Enrollment is expected to be 55 students by year five, which results in a favorable cost per FTE of \$22,907. The average SUS cost per FTE in the Life Sciences for 2001-2002 was approximately \$22,520, as calculated from the annual expenditure analysis.

Dr. William F. Marzluff, the Director of the Program in Molecular Biology and Biotechnology at the University of North Carolina Medical School, Chapel Hill, was retained to review the proposal. Dr. Marzluff recommends implementation of the program and offered some suggestions for enhancing the curriculum. If approved, the University plans to implement the program in Fall 2004.

**1. The proposed program is listed in the current State University System Master Plan, and the goals of the proposed program relate to the institutional mission statement as contained in the Master Plan.**

Although the proposed program is not listed in the 1998-2003 State University System Strategic Plan, it is consistent with the University Mission and College of Medicine Mission as adopted under the new governance structure. In addition, the program is a key component in the University's effort to achieve full accreditation from the Liaison Committee on Medical Education (LCME) for its new medical school, which was approved and funded by the Florida Legislature in 2000. Standards for the Academic Environment, revised by the LCME in March of 2003, state in part that "Medical students should learn in clinical environments where graduate and continuing education programs are present....Students should have the opportunity to participate in research and other scholarly activities of the faculty."

**2. The proposed program does not duplicate other SUS offerings or, otherwise, provides an adequate rationale for doing so.**

The proposed program does not directly duplicate any existing SUS programs. Both USF and UF have similar programs in various biomedical specializations that support the research and scholarly activity of their medical schools. Nova Southeastern University offers a Masters in Biomedical Science, and the University of Miami offers a Ph.D. in Interdisciplinary Biomedical Studies. There is no evidence that any discussion with regard to collaboration took place with other institutions in Florida to offer this program. However, as noted in the previous paragraph, it is expected by the national accrediting body that FSU will develop doctoral-level biomedical research programs in support of its medical school. This program is expected to be the first of several medical science related degrees to be offered under a newly developed Interdisciplinary Health Science program within the College of Medicine.

**3. There is evidence that planning for the proposed program has been a collaborative process involving academic units and offices of planning and budgeting at the institutional level, as well as external consultants, representatives of the community, etc.**

Although planning for the program was initiated in March of 2003, it has included faculty of the College of Medicine, the Curriculum Committee of the College of Medicine, the University Research Office, and other pertinent academic and administrative units of the University. There is no evidence that external consultants were used in the development of the curriculum. The proposal provides some evidence of private industry input and support.

**4. The proposal provides a reasonable timetable of events leading to the implementation of the proposed program.**

The proposal provides a reasonable timetable for recruiting students, course planning and admission activities.

**5. The proposal provides evidence that there is a need for more people to be educated in this program at this level.**

The proposal provides a convincing argument for the need for more people educated in the biomedical sciences by citing national, state and local data. At the national level there exists a shortage of physician-scientists (MD/Ph.D.) and academic job opportunities are expected to grow in direct relationship to increasing research and development funding over the next decade.

Job growth for Ph.D. level researchers in the biotechnology industry has followed the expansion of biotech companies into research and development. According to the U.S. Bureau of Labor Statistics, 57% of biomedical Ph.D. holders are employed in the private sector and opposed to the public sector. The pharmaceutical and biotechnology industries employ close to 300,000 persons in the U.S. and generate \$105 billion in sales. Forty-one states have undertaken initiatives to stimulate the development of their biotechnology industry, and Florida has targeted the sector as a vital part of its economic development.

**6. The proposal contains reasonable estimates of headcount and FTE students who will major in the proposed program. The proposal also provides a signed EEO statement that indicates steps to be taken to achieve a diverse student body.**

The proposal explains that all students will be enrolled full time; therefore the headcount and FTE are the same. The program will begin with only seven students, but is expected to grow to 55 by year five. The proposal includes a statement on how the university plans to ensure demographic diversity in its enrollments which signed by the Equal Opportunity Officer.

Dr. William F. Marzluff, the Director of the Program in Molecular Biology and Biotechnology at the University of North Carolina Medical School, Chapel Hill, was retained to review the proposal. In his report he considers the projected enrollment growth unrealistic for the number of faculty who are in place, and recommends limiting student enrollment to 5 per year until sufficient faculty have been recruited. However, the university is aggressively recruiting faculty for this program at the present time.

**7. The proposal provides an appropriate, sequenced, and described course of study.**

The proposed program will require a minimum of 70 semester hours to complete, but most students are expected to graduate with 120 credit hours. The actual number of hours fluctuates because students will continue to enroll in the Advanced Topics in Biomedical Sciences Seminars as they research and write their dissertation. The anticipated timeframe for completion of the degree is four to seven years. Student learning outcomes are provided, a suggested course sequence is outlined, and descriptions are provided for each course. The consultant, Dr. Marzluff, points out in his report what he considers to be strengths in the proposed curriculum, and also makes some recommendations for further enhancement. Overall, he believes that “the faculty have put together an excellent curriculum for initiating the Biomedical Sciences Ph.D. degree.”

**8. The proposed program relates to specific institutional strengths such as programs of emphasis, other academic programs and/or institutes and centers.**

Faculty and students will be able to participate in collaborative research with a number of existing strong biological programs at FSU. These include Biological Science, Structural Biology, Neuroscience, Chemistry and Biochemistry (which holds the patent on Taxol). They will also be able to collaborate with and draw upon the expertise of the Computational Science programs and the High Magnetic Laboratory. Other opportunities exist with the departments and research centers related to the Medical Humanities and Social Science. The consultant noted this capacity for interdisciplinary study and research in his report.

**9. If there have been program reviews or accreditation activities in the discipline pertinent**

**to the proposed program, or in related disciplines, the proposal provides evidence that progress has been made in implementing the recommendations from those reviews.**

The College of Medicine and Biomedical Sciences department are newly created entities, and as such have not been engaged in any institutional program reviews. However, the College of Medicine has recently been granted provisional accreditation by the AMA, and underwent three site visits from an accreditation team during that process. The implementation of doctoral-level biomedical research programs is considered essential to obtaining full accreditation.

**10. The proposal provides evidence that the institution has analyzed the feasibility of providing all or a portion of the proposed program through distance learning technologies via its own technological capabilities as well as through collaboration with other universities.**

The proposal states that the program will be delivered on the main campus using a combination of classroom and laboratory instruction. The program is intended to lead quickly into bench research in a laboratory, and is not conducive to the use of distance education.

**11. The proposal provides evidence that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

Given that the University is expecting to begin the program with only seven students, there is sufficient faculty in place to implement the program. There are currently four full professors and five junior faculty on staff. In addition, the University is aggressively recruiting additional faculty, some of who may be on board by the proposed Fall 2004 implementation date. Nine faculty members will be added through the year 2008. Dr. Marzluff, the consultant retained to review the proposal, indicated that there was sufficient faculty to implement the program, and that they had the requisite skills and knowledge to do so.

**12. The proposal provides evidence that the faculty in aggregate have the necessary experience and research activity to sustain the program.**

The proposal provides a CVA for each existing faculty member that details their teaching experience, research, publications, and the number of graduate thesis/dissertations they have supervised. Most of the senior faculty members have also held faculty administrator or other leadership positions as well.

**13. The proposal provides evidence that, if appropriate, there is a commitment to hire additional faculty in later years, based on estimated enrollments.**

The College of Medicine is currently recruiting nine additional faculty members who will be hired over the next few years.

**14. The proposal provides evidence that library volumes and serials are sufficient to initiate the program.**

The University has a number of libraries in addition to the main Strozier Library. These include a separate College of Medicine library and the Paul Dirac Science Library. Interuniversity resource sharing is also supported through the Florida Center for Library Automation. The collection includes 5,916 Medical titles and 97,687 and in the medical/biomedical/behavioral science related disciplines. In addition, the College of Medicine has 1,603 electronic book titles, 13 educational software titles and access to 47 databases. This collection will continue to expand

as part of planned acquisitions. The College also subscribes to a large number of medical and science related serials, but there was no list appended as noted in the text of the proposal.

**15. The proposal provides evidence that classroom, teaching laboratory, research laboratory, office, and any other type of space that is necessary for the proposed program is sufficient to initiate the program.**

The proposal identifies 62,779 square foot of space that has been renovated to provide classroom, office, and research laboratory space in support of the College of Medicine. The Florida Legislature has provided funding to build a new College of Medicine Complex by 2005 that will house the proposed program as well as the medical school. The new complex will be 270,000 gsf of space that includes two separate buildings; one for education and administration, the other for research.

**16. The proposal provides evidence that necessary and sufficient equipment to initiate the program is available.**

The proposal includes a list of existing equipment for conducting biomedical related research, and the College expects to expand its research resources once the new medical complex is completed.

**17. The proposal provides evidence that, if appropriate, fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

The proposal states that students initially admitted will be supported through a combination of departmental funds and external contracts and grants. Money will also be sought through NIH Training Grants and legislative appropriations to expand financial support for students. The department already brings in \$2.1 million in contracts and grants, and all new faculty will be expected to obtain external funding. The budget table is projecting over \$934 thousand dollars in OPS support through contracts and grants by year five, which should be more than sufficient to support the projected enrollment.

**18. The proposal provides evidence that, if appropriate, clinical and internship sites have been arranged.**

Clinical and internship sites are not required for this program.

**19. The proposal provides evidence that, in the event that resources within the institution are redirected to support the new program, such a redirection will not have a negative impact on undergraduate education.**

The College of Medicine, which will house the program, is being developed using a special Legislative appropriation. There will be no diversion of resources from existing undergraduate programs at the University. There will be some support courses provided by other graduate level programs in the sciences.

**20. The proposal provides a complete budget for the program that reflects the text of the proposal. Costs for the program reflect costs associated with similar programs at other SUS institutions.**

The proposal provides a complete budget that identifies the costs associated with adding new faculty and providing student scholarship support. The first year cost per FTE is high at

\$69,155, but this is primarily due to a projected initial enrollment of only seven students. Enrollment is expected to be 55 students by year five, which results in a favorable cost per FTE of \$22,907. The average SUS cost per FTE in the Life Sciences for 2001-2002 was approximately \$22,520, as calculated from the annual expenditure analysis. Faculty effort as identified in Table 2 has been used to calculate costs in Table 3.

**21. The proposal contains evidence that, if appropriate, the institution anticipates seeking accreditation for the proposed program.**

Accreditation is not available for this program at the doctoral level, and the University does not offer an undergraduate program. The proposal explains the process for achieving LMCE accreditation for the medical program in the College of Medicine, which includes the addition of doctoral-level research programs in the biological and biomedical sciences. This program is being implemented to help the University achieve accreditation for its medical program.

**22. The proposal provides evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service.**

The proposal provides evidence that the academic units and faculty associated with the proposed program have been productive in teaching, research and service. A great deal of this activity has taken place within other units of the University prior to the faculty being moved into the College of Medicine.