

**Biomedical and Health Informatics Graduate Program  
UIF Review**

Review Committee

Chair: Patricia C. Kuszler, School of Law, UW  
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March 23, 2003

## **Summary**

Based on our review of the Biomedical and Health Informatics UIF, we make the following recommendations:

### Recommendations to the University

1. BHI should be made a permanent program.
2. The University should provide new faculty FTEs to BHI; these should be joint appointments to maximize interdisciplinary interactions.
3. The BHI program need additional space now and will need more in the future.
4. The University must clarify the relationship between the UIF-supported graduate program and the Division of Biomedical and Health Informatics.

### Recommendations to the BHI Program

1. BHI should continue to make efforts to strengthen ties to the basic sciences.
2. The program needs to enhance its visibility via broadly advertised symposia, workshops, and courses.
3. The BHI program should continue to channel its service role in a way that enhances its research.
4. The program should set clearly defined milestones and realistic timetables for progress toward the Ph.D. degree.

## **History and Background**

On December 7, 1999, a memorandum of understanding was signed granting a UIF award to Prof. Ira Kalet. The stated purpose of the award was the establishment of a graduate program in Biomedical and Health Informatics to “prepare students for careers in research and teaching, information management in health care, the health-care computing industry, and in public health.” The project was funded for four years at approximately \$750K per year. The memorandum of understanding mandates a review at this time to determine the status of the project. This document presents the conclusions of the review committee.

## **Stated Goals for the Program in Biomedical and Health Informatics**

The UIF proposal set forth three main objectives: (1) to establish a high-quality graduate degree program, (2) to foster and enhance interdisciplinary collaboration in biomedical and health informatics, and (3) to provide introductory opportunities for undergraduate students. To meet these objectives, the BHI program needed to:

- Build a core faculty
- Establish graduate programs at the masters and Ph.D. level
- Recruit qualified students
- Develop an integrated, multidisciplinary curriculum
- Develop a structure in which undergraduates can pursue research
- Establish outreach with other groups and departments
- Pursue and obtain external funding

The UIF memorandum of understanding spells out a timetable and milestones for achieving these objectives.

## **Procedures for Review of the Program**

During the past four years, the BHI program has documented its progress in a series of annual reports. We reviewed these documents. In addition, our committee examined the report of the BHI program’s External Advisory Board dated October 29, 2002. We reviewed the proposals for the Ph.D. program in Biomedical and Health Informatics; the reports of the review committee for the Ph.D. proposals; external letters; and other documents.

On May 15, 2003, Prof. Kot met with Profs. Mark McDermott, Thomas Daniel, and Philip Green, who had served on the internal review committee for the BHI Ph.D. proposal.

On May 22, 2003, the complete review committee, consisting of Profs. Kuszler (chair), Kot, and Musen (external reviewer), met with the major constituencies of the program (see attached agenda).

On May 23, 2003, the complete committee met and drafted this report.

## **Findings**

### Strengths and Key Successes

The BHI program has met virtually all its stated objectives in accordance with its timeline. The program has achieved remarkable success. In only four years, the program leaders have recruited and assembled a core faculty at all levels of experience. Notably, because of the UIF funding, the program has recruited several dynamic junior faculty members who are already perceived as academic leaders by the informatics community.

The program has established an M.S. program. The Ph.D. program has undergone extensive review and we expect imminent final approval. The program has done an excellent job of recruiting first-class students, most with extensive backgrounds in both computer science and the biomedical sciences.

The faculty have worked hard to establish a coherent graduate curriculum; they now offer 17 courses each year that draw students from all over campus. In addition, they have established summer and academic year outreach opportunities for undergraduate students that provide supervised research experiences in biomedical and health informatics. The program for undergraduates has worked well as a feeder to the graduate programs. To further enhance outreach to undergraduates, the program plans to add a new undergraduate course.

There is extensive interaction with other departments. We saw evidence of evidence of strong ties with the School of Nursing, the Information School, the School of Public Health and Community Medicine, and the Department of Structural Biology. BHI has implemented a certificate program to provide fluency in basic biomedical and health informatics for students in the Schools of Nursing and Public Health. This certificate is viewed with great enthusiasm by the deans of these schools, and is a wonderful example of successful outreach.

The BHI program has successfully leveraged their UIF support. They have received a prestigious 5-year training grant from the National Library of Medicine that supports 12 predoctoral students and 8 postdoctoral trainees. The group also has obtained a \$3-million planning grant to develop an interdisciplinary center of excellence in structural

informatics under the NIH Biomedical Information Science Technology Initiative (BISTI). The BISTI grant was developed jointly by faculty from BHI and the Department of Biological Structure and is another example of successful interdisciplinary collaboration. In addition, the core faculty themselves have large numbers of investigator-initiated grants that provide opportunities for BHI trainees.

### Areas of Difficulty

BHI has done a remarkable job at reaching out to the professional schools at the University and has initiated substantial interchange of faculty, students, and ideas. In contrast, their ties to departments in the basic sciences are weak. The BHI program has made overtures to faculty in science departments, but has not always achieved meaningful collaborations. A ripple effect of this situation is that BHI students are more prone to address clinical application of informatics than they are to consider questions in the basic sciences. There would be clear and substantial benefits to both the BHI program and the University's basic-science departments from enhanced linkages.

BHI students and faculty suffer from inadequate space. Our committee observed the cramped office of one junior faculty member that included workstations for *four* graduate students who shared the same quarters. The students reported that their considerable geographic dispersion makes it very difficult for them to interact with other students in this inherently interdisciplinary program. There is an urgent need for some shared conference space to build community and to foster discussions among trainees.

The BHI faculty are spread remarkably thin. Both senior and junior faculty members plainly have too many responsibilities. All the faculty members seemed to be developing new courses, sitting on an excessive number of committees, advising multiple students, and struggling to bring in finances for the program. These problems are exacerbated by the fact that most faculty members have joint appointments and responsibilities to other schools and departments. The program does not have sufficient numbers of faculty to take care of its needs—particularly once the Ph.D. program ramps up. We also see this workload as an impediment to faculty recruitment, development, and retention.

The BHI's external advisory committee has noted: "The distinction between the DBHI [Division of Biomedical and Health Informatics] and the GP [graduate program] is becoming increasingly artificial and may lead to confusion and fragmentation of the division chief's oversight function. We are impressed that Drs. Kalet, Wolff, and Tarczy-Hornoch appear to be working together extremely well, but over time the merging of the GP as an element of the DBHI may require some rethinking of how best to consolidate funds for overview and management purposes." We concur.

## **Recommendations**

### Recommendations to the University

1. BHI should be made a permanent program

The progress and success of this program in the past four year have been exemplary. As universities throughout the country create graduate programs in informatics, the work performed with UIF support positions the U.W. to assume leadership in this field.

2. The University should provide new faculty FTEs to BHI; these should be joint appointments to maximize interdisciplinary interactions

Faculty recruitment, development, and retention hinges on the University's ability to provide more faculty resources to meet the needs of this growing program. The faculty are highly efficient, but the loss of even a single faculty member could imperil the program.

3. The BHI program need additional space now and will need more in the future

The University must provide not only adequate, contiguous space for faculty offices and teaching programs, but also must ensure that students have a common area for exchange of ideas.

4. The University must clarify the relationship between the UIF-supported graduate program and the Division of Biomedical and Health Informatics

This UIF was awarded as a grant, with the PI serving as leader and manager. As the funding for BHI becomes permanent, a traditional model of management and governance needs to be implemented.

### Recommendations to the BHI Program

5. BHI should continue to make efforts to strengthen ties to the basic sciences

Some faculty in the basic sciences know too little about what this program has to offer. We were quite heartened, therefore, to hear of ongoing discussions with faculty and heads of science departments. We encourage continued work at bridge-building with hope that it will bring returns. Better relationships with departments in the basic sciences and increased offerings at the undergraduate level will advance the program's aims.

6. The program needs to increase efforts to enhance its visibility via broadly advertised symposia, workshops, and courses

The BHI program should continue and expand its outreach through well publicized educational opportunities.

7. The BHI program should continue to channel its service role in accordance with its research aims

The original proposal for UIF funding included the goals of taking a leadership role to develop databases to support clinical research and of providing opportunities for students to work with the Medical Centers Information Systems group. As the BHI student body has evolved, however, the original service goals became less pivotal. Indeed, there is now considerable student and faculty interest in other areas of informatics, such as public-health surveillance and bioterrorism preparedness. The program faculty should continue to maintain their flexibility in their choice of application areas.

8. The program should set clearly defined milestones and realistic timetables for progress toward the Ph.D. degree

The graduate programs are quite new. Students, understandably, need more information about the requirements of the Ph.D. program as they are developed.