

Education and Student Affairs Committee
Board of Regents, State of Iowa

Subject: Post-Audit Reports – Iowa State University

Prepared by: Anthony Girardi

Date Submitted: December 1, 2004

Recommended Action:

Refer the following two Iowa State University post-audit reports to the Interinstitutional Committee on Educational Coordination (ICEC) and the Board Office for review:

- a. Ph.D. in Health and Human Performance
- b. M.S. and Ph.D. in Bioinformatics and Computational Biology

Executive Summary:

Regent policy requires that a post-audit report be prepared for each new program five years after initial approval by the Board. Iowa State University has submitted post-audit reports for two programs. The Board Office recommends that the Committee refer the post-audit reports to the ICEC and the Board Office for review.

Background:

Regent Policy

Regent policy requires that a post-audit report be prepared for each new program five years after initial approval by the Board to assess its progress during the five-year time period and ensure that the program is meeting original expectations.

The Regent post-audit process requires institutions to respond to a series of questions outlined in the Policy Manual §6.07. Institutions must begin to collect information when the program is approved by the Board of Regents and during each succeeding year in order to make the post-audit report accurate and informative.

Program
Description – HHP

Ph.D. in Health and Human Performance

The focus of the Ph.D. program in health and human performance is on the study of the biological and behavioral bases of human physical activity, including the range of activities associated with exercise, sports, and daily life. Students select a program focus from two areas:

- 1) *biological basis of physical activity*, which emphasizes the development of cross-disciplinary expertise in exercise physiology, physical fitness, biomechanics, and applications to health promotion associated with exercise;
- 2) *behavioral basis of physical activity*, which emphasizes the development of cross-disciplinary expertise in sport and exercise psychology, motor behavior, socio-cultural aspects of performance, pedagogy and curriculum, and sports management.

Program
Description – BCB

M.S. and Ph.D. in Bioinformatics and Computational Biology

The Bioinformatics and Computational Biology Program is an interdepartmental program incorporating the diverse expertise of faculty from 14 departments in four colleges. The BCB program emphasizes interdisciplinary research in the following six related areas of focus:

- bioinformatics;
 - functional and structural genomics;
 - genome evolution;
 - macromolecular structure and function;
 - metabolic and developmental networks;
 - mathematical biology and biological statistics.
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Board Criteria
for Post-Audit
Review

The institution's responses to the Board's criteria for post-audit review are included in Attachment A (Ph.D. in Health and Human Performance) and Attachment B (M.S. and Ph.D. in Bioinformatics and Computational Biology).

**Link to Board
Strategic
Plan:**

Post-audit reporting addresses the following Priority in the Board of Regents' Strategic Plan:

- 1.0 Ensure high-quality educational opportunities for students.
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Regents Post-Audit Review Questions

Name of the degree: Ph.D.

Name of the major: Health and Human Performance

Administrative Unit: Department of Health and Human Performance

College: Education

Contact person(s): Rick Sharp (DOGE), Jerry Thomas (Department Chair)

Introduction

Indicate how the program has met the educational and curricular needs of students, other units in the university, the state, and nation. If appropriate, discuss how the program interacts with related programs/units within the university, other institutions, industry, government, and/or citizens of Iowa.

The Ph.D. program in Health and Human Performance advances the Mission of the University and its plan to become the best land grant institution. First, it adds to the emphasis the University gives to both applied and basic research. The discovery of new knowledge in the various aspects of physical activity and its application to the enhancement of human movement, particularly the health benefits, is a basic tenant of the program. Second, advanced study in physical activity builds on the University's mission in the scientific and technical fields. Third, the program enhances the overall academic quality and visibility of the University. Finally, the program is clearly within the role and scope of the Strategic Plan to develop new programs that reflect the changing needs of society, especially at the graduate level.

In addition, the programs already in place at ISU contribute to the strength of the program. The close connections that have been developed between health and human performance and nutrition in the sports and exercise nutrition area benefit this Ph.D. program (nutrition has a Ph.D. program). Interdisciplinary connections to various aspects of the biological sciences (most with Ph.D. programs) enhance the biological basis of physical activity in this Ph.D. program. And the interdisciplinary opportunities with psychology and sociology (both with Ph.D.s) strengthen the behavioral basis of physical activity specialization.

Regents Questions

1. Is this program now available in other colleges and universities in Iowa? Where? Describe need for program.

There is no other program in Iowa that prepares Ph.D. students in the study of physical activity from this broader, more cross-disciplinary model. The two programs at the University of Iowa use a sub-disciplinary model focused on narrow specialized preparation as previously described in the 1999 program proposal. The ISU program provides a cross-disciplinary model in line with national trends in both theory (e.g., National Science Foundation, Preparing Future Faculty) and job opportunities (Wood & Karp, 1997) for Iowa students (and others) who choose this field of study. Job opportunities available in Iowa at private colleges and community colleges clearly fall in the 62% (comprehensive/regional and liberal arts) of colleges who are seeking more broadly prepared teacher/scholars. These individuals are asked to provide leadership for planning, knowledge development, and instruction at institutions. In addition acquiring doctoral students in this program allows the Department to provide additional service to the State of Iowa. For example, we currently provide a valuable service to the State Highway Patrol with a contract for health and exercise screening. The integration of doctoral students into this service activity extends opportunities so we could offer contract services to many local law enforcement officials as well as fire departments. As a second example, the Department of Health and Human Performance operates an exercise clinic for ISU faculty/staff and Department of Transportation staff. Ph.D. students allows this outstanding program to expand to include a consulting service to Iowa employee health promotion programs that operate within business/industry or private health and fitness clubs. Another unique aspect of our doctoral program is that all doctoral students are mentored by their major professors in the area of teaching. This entails observation and laboratory teaching in upper division classes (early in Ph.D. program), teaching in the service program (first aid, CPR, personal health classes), guest lectures in upper division classes (mid-program), and progressing to independent teaching of a section of an upper division course in their sub-discipline area. In addition the students are required to have some teaching experience in a second area within Health and Human Performance. The purpose of these efforts is to produce Ph.D. graduates who are not only well-trained in research, but also are trained in teaching and student learning across at least two sub-disciplines with our field. We feel that this approach is both responsive to the documented societal needs and enhances the marketability of our Ph.D. graduates in today's academic job market.

2. Date program was approved by Board of Regents and date program was implemented.

Approved July, 1999

Implemented September, 1999

3. Projected Enrollments

a. List actual headcount enrollments and credit hours generated by majors and nonmajors in this program for the last five years and estimate these items for the next three years.

	<u>Year</u>	<u>Year</u>	<u>Year</u>	<u>Year</u>	<u>Crnt</u>	<u>Next</u>	<u>Sec</u>	<u>Third</u>
	<u>One</u>	<u>Two</u>	<u>Three</u>	<u>Four</u>	<u>Year</u>	<u>Year</u>	<u>Year</u>	<u>Year</u>
Undergraduate								
Majors	_____	_____	_____	_____	_____	_____	_____	_____
Nonmajors	_____	_____	_____	_____	_____	_____	_____	_____
Graduate								
Majors	<u> 1 </u>	<u> 4 </u>	<u> 7 </u>	<u>10 </u>	<u>11 </u>	<u>13 </u>	<u>13 </u>	<u>13 </u>
Nonmajors	_____	_____	_____	_____	_____	_____	_____	_____

b. How many dropouts of this program can be identified over the last five years? What reasons were given for leaving the program?

No dropouts

4. What have been the employment (placement) experiences of any graduates of this program?

a. List the number of graduates (completions) by year.

Gregory Brown; May, 2002
Omar Hindawi; December, 2002

b. What has been the success rate for graduates with respect to certification and/or licensure, if applicable?

N/A

c. How many undergraduate completers of the program have been accepted into graduate study programs?

N/A

d. What has been the success rate for obtaining jobs for graduates of the program:

- 1) **in the field or a related field?**
- 2) **in nonrelated fields?**
- 3) **unemployed?**

Both of the graduated students have obtained positions as Assistant Professor in universities. Greg Brown is Assistant Professor in the Department of Public Health at Georgia Southern University. Omar Hindawi is Assistant Professor in the Department of Physical Education and Sport Science at Hashemite University in Jordan.

- e. **What has been the success rate for obtaining the preferred first job in the field by graduates of the program?**

Both graduates are employed in their chosen field.

5. **Has this program been unconditionally accredited? By whom? If not, why, and when is such accreditation anticipated?**

N/A

6. **Outline the current FTE staffing of the program and estimate future staffing needs for the next three years.**

There are currently 16 full time graduate faculty who can supervise Ph.D. students.

7. **Provide operating budget for proposed program or the unit that houses the program if an individual program budget is not available. (See categories below.)**
8. **Outline the increases in expenditures that resulted in the adoption of this program, as well as estimate the increases that will occur over the next three years.**

The following table shows the estimated costs we have incurred in implementing and growing our Ph.D. program. It is important to note that these costs were mainly covered by reallocation of existing funds and by increased external funds as detailed in the footnotes.

Year	<i>Actual Expense</i>				<i>Estimated Expense</i>			
	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07
Faculty ^a	*							
Graduate Assistants ^b	10,000	40,000	77,000	120,000	122,000	130,000	135,000	140,000
General Expense ^c	1000	1500	2000	2500	3000	3500	4000	4500
Equipment ^d	3750	4500	18,000	2300	2500	2500	2800	2800
Library Resources	0	0	0	0	0	0	0	0
Space Needs ^{e,f}	0	0	0	17,100	1800	0	0	0
Computer Use	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Total	14,750	46,000	97,000	141,900	129,300	136,000	141,800	147,300

If these expenditures were covered by reallocations, please describe the reallocations.

Expenditures were covered by a combination of reallocation, increased grant funding, and new support from the College of Education:

^a At the time of the proposal, our department had 12 graduate faculty to supervise Ph.D. students. We currently have 17 graduate faculty to supervise Ph.D. students

(16 within department, one courtesy appointment). The increase was accomplished by filling vacant lines and securing new faculty lines.

^b Roughly half of the graduate assistantships were converted from assistantships for masters students to assistantships for Ph.D. students. Faculty have increased grant funding and have used this increased funding to support additional doctoral students (cost of Graduate Assistants covered by external grant funds shown in parentheses). College of Education instituted a Ph.D Fellowship program in 2002 which has supported two of our Ph.D. students each of the last two years.

^c General expense is estimated from approximate costs of maintaining software licenses and office expenses for doctoral students.

^d Equipment costs include mainly cost of providing desktop computers for each doctoral student.

^e Space needs costs were based on a remodeling project in which one of our laboratories was remodeled so that half of the space could provide desk-space for all of our doctoral students. Additional carrels were added in 03-04.

^f As a result of filling vacant faculty positions and adding additional faculty lines, the department has added considerable laboratory facilities. Our motor control laboratory was completely remodeled to add two Opti-Track systems for precisely analyzing fine motor movements, we added an exercise psychology laboratory equipped with treadmill and metabolic measurement systems for linking psychological function with physiological load, added a health promotion through physical activity laboratory, and are in the process of remodeling space to add a pediatric exercise physiology laboratory for studying the effects of exercise on health-related physiological responses to exercise in children. The addition of these labs and associated faculty have added increased opportunities for doctoral research. Costs of these remodeling projects are not shown because the costs were covered in the hiring arrangements with the new faculty.

If the expenditures reported above represent an increase for expenses estimated at the time the new program was proposed, please explain.

* At the time of the proposal, our department had 12 graduate faculty to supervise Ph.D. students. We currently have 17 graduate faculty to supervise Ph.D. students (16 within department, one courtesy appointment). The increase was accomplished by filling vacant lines and securing new faculty lines.

9. Supporting Materials

The responses to the various subsections of this portion of the questionnaire are intended to provide documentation concerning the quality of the program undergoing review. For graduate programs, documentation related to both the quality and quantity of research associated with the program should be included.

- a. **A copy of the final version of the proposal for the program as approved for submission to the Board of Regents (from five years ago).**

Attached – Appendix A

- b. **Materials from current students and graduates that document the student learning outcomes, the quality of the program, interest in the program, and need for the program.**

Attached – Appendix B

- c. **Materials from employers or potential employers of program graduates documenting their support for this program.**

Attached – Appendix C

- d. **Materials from other units within ISU and from other institutions documenting their support for this program.**

Attached – Appendix D

- e. **Information concerning revenue generated (grants, gifts, etc.) in connection with this program.**

Attached – Appendix E

May 2003

Regents Questions

1. **Is this program now available in other colleges and universities in Iowa? Where? Describe need for program.**

University of Iowa offers a “Bioinformatics and Computational Genetics, Biology and Genomics Curriculum,” which includes coursework in the interdisciplinary field, but does not offer graduate degrees.

The University of Northern Iowa has developed a proposed Bachelor of Science program in Bioinformatics, but “Due to the present budget crisis, implementation of this program is not expected in the near term.”

2. **Date program was approved by Board of Regents and date program was implemented.**

Approved by the Board of Regents July 1999; program implemented Spring Semester 2000

3. **Projected Enrollments**

- a. List actual headcount enrollments and credit hours generated by majors and nonmajors in this program for the last five years and estimate these items for the next three years.

	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Current</i>	<i>Year 6</i>	<i>Year 7</i>	<i>Year 8</i>
<i>Undergraduate</i>								
<i>Major</i>	Not Applicable							
<i>Nonmajors</i>								
<i>Graduate</i>								
<i>Majors</i>	10	27	42	48	52	60	60	60
<i>Nonmajors</i>								

- b. **How many dropouts of this program can be identified over the last five years? What reasons were given for leaving the program?**

One international student dropped out of the program after one semester to move to New York to be closer to her fiancé. One or two students per year change their degree objective from Ph.D. to M.S. for a variety of reasons (e.g., failure to pass the Ph.D. preliminary examination).

4. **What have been the employment (placement) experiences of any graduates of this program?**

Very good - See data below and Supporting Materials.

a. **List the number of graduates (completions) by year.**

1999-2000: 0

2000-2001: 2 (1 PhD, 1 MS)

2001-2002: 5 (1 PhD, 4 MS)

2002-2003: 8 (4 PhD, 4 MS)

2003-2004: 4 (2 PhD, 2 MS) for F03 only; anticipated S04:3

b. **What has been the success rate for graduates with respect to certification and/or licensure, if applicable?**

Not applicable

c. **How many undergraduate completers of the program have been accepted into graduate study programs?**

Not Applicable

d. **What has been the success rate for obtaining jobs for graduates of the program:**

1) **in the field or a related field?**

Employed in industrial field or related field: 7

Employed in academic field or related field: 7 postdocs

Enrolled in graduate program in field or related field: 5

2) **in nonrelated fields? 0**

3) **unemployed? 0**

e. **What has been the success rate for obtaining the preferred first job in the field by graduates of the program?**

100%

5. **Has this program been unconditionally accredited? By whom? If not, why, and when is such accreditation anticipated?**

There is no accreditation body for this discipline at present.

6. Outline the current FTE staffing of the program and estimate future staffing needs for the next three years.

All of the BCB interdepartmental program faculty are drawn from participating departments. The program does not have any faculty lines. The BCB program does have a ½ time program assistant, a ½ time graduate assistant, and a work study student who help run the program. The list of participating faculty and their respective departments is included below. There are no future staffing needs beyond maintaining the support staff for the program at the current level or equivalent (e.g., a full time program assistant instead of a half time program assistant plus a ½ time graduate assistant).

BCB Program Faculty

Name	Department
Ralph A. Ackerman	Ecology, Evolution & Organismal Biology
Dean Adams	Statistics and Ecology, Evolution & Organismal Biology
Srinivas Aluru	Electrical & Computer Engineering
Amy Andreotti	Biochemistry, Biophysics & Molecular Biology
Dan Ashlock	Mathematics
Daniel Berleant	Electrical & Computer Engineering
Madan Bhattacharyya	Agronomy
Adam Bogdanove	Plant Pathology
Volker Brendel	Genetics, Development & Cell Biology
Susan Carpenter	Veterinary Microbiology & Preventive Medicine
Alicia Carriquiry	Statistics
Hui-Hsien Chou	Genetics, Development & Cell Biology and Computer Science
Dianne Cook	Statistics
Gloria M. Culver	Biochemistry, Biophysics & Molecular Biology
Jennifer Davidson	Electrical & Computer Engineering
Jack Dekker	Agronomy
Jack Dekkers	Animal Science
Julie Dickerson	Electrical & Computer Engineering
Philip Dixon	Statistics
Drena Dobbs	Genetics, Development & Cell Biology
Karin Dorman	Statistics and Genetics, Development & Cell Biology
Oliver Eulenstein	Computer Science

Rohan Fernando	Animal Science
Shashi Gadia	Computer Science
Xun Gu	Agronomy and Genetics, Development & Cell Biology
Mark Hargrove	Biochemistry, Biophysics & Molecular Biology
Kai-Ming Ho	Astronomy & Physics and Ames Laboratory
Vasant Honavar	Computer Science
Mei Hong	Chemistry
Richard Honzatko	Biochemistry, Biophysics & Molecular Biology
Xiaoqiu Huang	Computer Science
Fred Janzen	Ecology, Evolution & Organismal Biology
Robert Jernigan	Plant Sciences Institute and BBMB
Suresh Kothari	Electrical & Computer Engineering
Susan Lamont	Animal Science
Howard Levine	Mathematics
Charles Link, Jr.	Genetics, Development & Cell Biology
Roger Maddux	Mathematics
John Mayfield	Genetics, Development & Cell Biology
Leslie Miller	Computer Science
W. Allen Miller	Plant Pathology
Chris Minion	Veterinary Microbiology & Preventive Medicine
Kirk Moloney	Ecology, Evolution & Organismal Biology
Alan Myers	Biochemistry, Biophysics & Molecular Biology
Gavin Naylor	Ecology, Evolution & Organismal Biology
Dan Nettleton	Statistics
Marit Nilsen-Hamilton	Biochemistry, Biophysics & Molecular Biology
Jean Peccoud	Genetics, Development & Cell Biology
Reuben Peters	Biochemistry, Biophysics & Molecular Biology
Thomas Peterson	Genetics, Development & Cell Biology and Agronomy
Edward Pollak	Statistics
Abir Qamhiyah	Mechanical Engineering
James Reecy	Animal Science
Peter Reilly	Chemical Engineering

Steve Rodermel	Genetics, Development & Cell Biology
Max Rothschild	Animal Science
Adrian Sannier	Industrial & Manufacturing Systems Engineering
Patrick Schnable	Agronomy and Genetics, Development & Cell Biology
Randy Shoemaker	USDA/Agronomy
Michael Smiley	Mathematics
Jonathan Smith	Mathematics
Xueyu Song	Chemistry
Alex Travesset	Physics
Christopher Tuggle	Animal Science
Nicole Valenzuela	Ecology, Evolution and Organismal Biology
Daniel Voytas	Genetics, Development & Cell Biology
Jonathan F. Wendel	Ecology, Evolution & Organismal Biology
Steven Willson	Mathematics
Roger Wise	Plant Pathology
Zhijun Wu	Mathematics
Eve Wurtele	Genetics, Development & Cell Biology

7. Provide operating budget for proposed program or the unit that houses the program if an individual program budget is not available. (See categories below.)

	Actual				Estimated			
	Year 1	Year 2	Year 3	Year 4	Current	Year 6	Year 7	Year 8
<i>Faculty</i>	0	0	0	0	0	0	0	0
<i>5 Grad RA</i>	100,000	105,000	110,000	115,000	120,000	125,000	130,000	135,000
<i>Prog Asst*</i>	8,750	8,875	9,000	9,125	17,000	35,000	36,000	37,000
<i>Work Study</i>	373.75	546.65	1078.09	1418.14	1489.05	1563.50	1641.68	1723.76
<i>General Expense</i>	3714.23	3873.19	8365.84	2047.12	2149.47	2256.94	2369.78	2488.27
<i>Equipment</i>	744.9	0	0	0	0	0	0	0
<i>Library</i>	0	0	0	0	0	0	0	0
<i>Space</i>	0	0	0	0	0	0	0	0
<i>Computer</i>	334.00	608.00	748.00	634.00	666.00	700.00	735.00	772.00
<i>Seminars</i>	636.63	3171.29	2171.54	3077.57	3231.45	3393.02	3562.67	3740.80
<i>Recruiting</i>	5129.40	7771.70	10752.04	10180.75	5143.82	10689.79	11227.27	11788.48
<i>Total</i>	119,683	129,721	142,116	131483	149,680	178,603	185,536	192,513
Funds from Other Sources (Primarily Training Grants)								
<i>Grad Asst. #</i>	20,000	20,500	21,000	21,500	22,000	0	0	0
<i>Prog Asst *</i>	26,250	26,625	27,000	27,375	0	0	0	0

Notes

* During years 1-4, $\frac{3}{4}$ of the salary for the BCB program assistant (Kathy Wiederin) was provided by the IGERT grant and the remaining $\frac{1}{4}$ of was provided by ISU.

During years 1-4, the salary for a $\frac{1}{2}$ time Graduate Administrative Assistant (Bellinda Hegelheimer) was provided by IGERT and MGET grants.

Current Support Staff

Athena Cox	BCB Program-Undergraduate Work Study
Victoria Frjelic	BCB Program Assistant
Bellinda Hegelheimer	BCB Program-Graduate Administrative Assistant

8. Outline the increases in expenditures that resulted in the adoption of this program, as well as estimate the increases that will occur over the next three years.

Note: Grad RA support was provided by the Graduate assistantship funds from the Graduate College. These funds are typically used to support first year graduate students until they identify a major professor.

During the first 4 years of the program, most of the funds needed for the salary of the support staff was funded by externally funded training grants (IGERT award from NSF and MGET award from USDA). This included salary for a graduate assistant (Bellinda

Hegelheimer) and $\frac{3}{4}$ of the salary for a program assistant (Kathy Wiederin). The IGERT award has spent most of the allocated funds and is due to expire in 2005. MGET award is due to expire in 2005.

We plan to apply for renewal of the IGERT training grant for an additional period of 5 years. The MGET training grant is not renewable. We are also pursuing other sources of funding the BCB training program (e.g., training grants from the National Institutes of Health).

Commitment to institutionalize the graduate training supported by IGERT and MGET grants was critical to our success in obtaining the grants. BCB program is central to fulfilling this commitment. Funds allocated for administrative support of the BCB program (1/2 the salary of a program assistant in the current year, and the full salary of a program assistant in subsequent years) reflect this fact. Administrative support for the BCB graduate program is currently provided by a Program Assistant (Victoria Frjelic) who works $\frac{1}{2}$ time for the BCB program and $\frac{1}{2}$ time for the Laurence H. Baker Center for Bioinformatics and Biological Statistics and a $\frac{1}{2}$ time graduate administrative assistant (Bellinda Hegelheimer) (funded by MGET). After this year, the all of the funds needed to cover the salary of the BCB program support staff (the equivalent of a full time program assistant or a combination of a $\frac{1}{2}$ time program assistant and a $\frac{1}{2}$ time graduate administrative assistant) will have to come from ISU.

If these expenditures were covered by reallocations, please describe the reallocations.

Not applicable

If the expenditures reported above represent an increase for expenses estimated at the time the new program was proposed, please explain.

The increase in expenditure reflects the rapid growth of the program over a 5 year period and the institutional commitments that were made to secure external funding in the form of IGERT and MGET training grants.

9. Supporting Materials

The responses to the various subsections of this portion of the questionnaire are intended to provide documentation concerning the quality of the program undergoing review. For graduate programs, documentation related to both the quality and quantity of research associated with the program should be included.

- a. *A copy of the final version of the proposal for the program as approved for submission to the Board of Regents (from five years ago).*

See Appendix I

- b. *Materials from current students and graduates that document the student learning outcomes, the quality of the program, interest in the program, and need for the program.*

See Appendix II

- c. *Materials from employers or potential employers of program graduates documenting their support for this program.*

See Appendix III

- d. *Materials from other units within ISU and from other institutions documenting their support for this program.*

See Appendix IV

- e. *Information concerning revenue generated (grants, gifts, etc.) in connection with this program.*

See Appendix V

- f. *Other supporting materials.*

Pertinent portions of the external reviews of the BCB Program (one conducted as part of review of all interdepartmental graduate programs at ISU and one organized by the National Science Foundation as part of its review of all IGERT funded training programs) are included in **Appendix VI**

A copy of the BCB graduate student handbook (which includes listings of courses, description of BCB program requirements etc.) is included in Appendix VII.

Supporting materials are included in the pages that follow.