TO: Program Review Committee  
FROM: Department of Biological Sciences  
DATE: 4 June, 2004  
RE: Response to Program Review Committee Report

We thank the program Review Committee for the effort, time, diligence, and care that were evident in the report to our department. Overall the report was accurate and complete. The summary and recommendations were straightforward, succinct, and clear. They will help us to focus on goals to improve the department. The committee has a difficult job to perform, and we appreciate very much all parts of the report. Overall, we feel that if we are able to accomplish all of the recommendations of the Committee, the Department will be much improved over its present state. The Department has already made progress towards accomplishing some of the recommended goals since the completion of our Self-study document. In our response, we provide information on some of our recent progress, as well as plans on how to accomplish each of the recommended goals. Again, we thank the committee for their work.

Before addressing the specific points, it is necessary to explain one of the recent actions in the department. It affects several of the points that were discussed in the Program Review Committee’s report (and which are addressed below). The action is that we have defined three categories for faculty workloads. These categories will help to focus the faculty, and it is hoped that they will help to increase faculty productivity. They also should lead to increased clarity for what is expected of faculty in terms of teaching and research. The categories are:

a. Teaching-intensive (Category 1). Faculty members in this category are expected to perform the majority of teaching in the Department and be involved in significant curricular development both at the individual course and Departmental curriculum level. This would involve participation in teaching workshops, curricular revision, and participation in national teaching organizations and conferences.

b. Research-active (Category 2). Faculty members in this category are expected to publish near the departmental mean, train graduate and undergraduate students in research (including student publication and presentations at scientific meetings), submit external grants to support most of their research, and support the Department’s teaching mission.

c. Research-productive (Category 3). Faculty members in this category are expected to publish significantly above the departmental mean, support their entire research endeavor from external grants, and train graduate and undergraduate in research (including student publication and presentations at scientific meetings).

In category 1, the target teaching load is 6 or more courses per year (18+ credit hours). In category 2, the target teaching load is 4 or 5 courses per year (12 or 15 credit). In category 3, the target teaching load is 3 courses per year (9 credit hours). Faculty are hired with an expectation of 45% teaching (10.8 credit hours per year - 3.6 three credit hour courses), 45% research, and 10% service. During their probationary period, tenure-track faculty are considered to be in category 3. Instructors and Lecturers are considered to be in category 1 whether or not they participate in research activities.
Responses to Findings Requiring Action

1. External Grant Funding - We agree fully that this needs to increase and to do so, we will implement the following changes. For those faculty members engaged in research (Category 3), they must support their entire research endeavors through external funds. The Department will use its research budget and overhead return to invest in those researchers that are producing external grant dollars. The Department recognizes the need to support a limited number of researchers that are in between grant funds or are in the beginning phase of their research. Any Departmental money invested in faculty members will require the submission of an external grant to a major funding organization. After a limited time frame in which faculty members are unable to procure external grant dollars, their workload category will be reassigned. An increase in funding has occurred this year, but it is too early to determine whether this trend will continue. At least two R01’s were submitted this year. One has been declined, while the other is pending. Our faculty will be strongly encouraged to submit substantial proposals to the National Institutes of Health (NIH), the National Science foundation (NSF), U.S. Department of Agriculture (USDA), Department of Defense (DOD), Department of Energy (DOE), Environmental Protection Agency (EPA), and others.

2. Faculty Research Productivity - By categorizing faculty as to how they fit within the various aspects of the Departmental mission, we will be able to help promote those faculty members that engaged in research to increase their productivity by reinvesting limited space, resources, and graduate students. In the Spring, a formal policy was voted upon and implemented within the Department. The policy states explicitly the expectations for teaching and research, and describes the number of publications, grant proposals, and grants needed each year for each faculty member, in order to qualify for Categories 2 and 3 (see above). The newest faculty have begun to publish, and their students have begun to publish. Additionally, many of the mid-career and senior faculty are publishing on regular bases. With the addition of the new Neuroscientist, the proportion of publishing faculty will rise even higher. Of the tenure-track faculty added in the past four years, all are publishing at rates significantly higher than the Departmental average.

3. Areas of focus - We are in agreement with both parts of this item. However, it will take much discussion with the faculty (as an entire body, as well as in focus groups) to sort out defined foci. Departmental and research group retreats will be useful in this respect. Regarding science education, we need to do more in the arena of science education. This summer, we were one of the sponsors and participants of the ABLE conference. Also, we are developing courses that will be geared for K-12 Biology teachers, as education towards their Master’s degrees.

4. Faculty Workload - As indicated above, we have explicitly outlined teaching load expectations within the department. This is intimately tied to research productivity, since entering tenure-track faculty are expected to be active in research. In a recent (March 2004) analysis, we analyzed the workloads of all faculty in our Department. This was done in two ways, one included informal classes (including 700 series courses), and one excluded these. When only formal courses are considered, and course releases (for advising, Graduate Coordinator, Chair, etc.) are included, the faculty teach an average of one course above the number outlined by their contractual agreement. If course releases are excluded from the calculation, they teach an average of 1.06 credit hours above the
contractual number. To calculate the contractual (or target) number of credit hours, each faculty member is placed into one of three categories (described above). From this recent analysis, with few exceptions, it appears that the workloads in the Department are consistent with the contractual agreements and governance documents. We will continue to examine workloads within the department and seek to maintain an equitable and efficient system for determining and adjusting workloads.

5. Curriculum Reform -
   (i) Undergraduate - We are in the process of developing learning outcomes for the introductory non-majors Biology classes (101 and 104) and a separate set of learning outcomes for the Biology core classes (204, 205, and 350). These learning outcomes will be tied to the University’s academic plan that involves the development of critical thinking skills, reading and writing skills within the discipline, and the ability to apply disciplinary concepts outside of the discipline. Major initiatives in this curricular reform includes:
   a. **Revision of the introductory labs to emphasize conceptual knowledge, inquiry-based learning, and the common learning outcomes.** This is under the guidance of the new Laboratory Coordinator. This position will be more closely involved in those campus committees concerned with General Education requirements on campus and involved in teaching organizations across the country. This is an area that has needed serious attention for over a decade. While attempts have been made to make small changes to the curriculum, little action was taken by the department, as a whole. Recently, we have taken steps to improve this situation. The first was to hire a Lab Coordinator for our large laboratory courses (BIOL 101, 104, and 204) who is in charge of organizing the labs and training the Teaching Assistants. One of his major tasks has been to evaluate all of the laboratory exercises and rewrite the laboratory manuals in light of the new learning outcomes, inquiry-based teaching/learning, and emphasis on conceptual knowledge.
   b. **Development of hands-on engaged laboratory exercises.** Laboratory exercises are being rewritten in order to promote the learning and understanding of science as a process and Biology as a conceptual field. This will include labs that engage students in creative thinking and problem solving within the bounds of science. In addition, investigative labs (as opposed to cookbook lab exercises) will be employed.
   c. **Development of learning outcomes for the Biology majors.** This will be accomplished by the reconstituted Curriculum Committee (which now consists of the undergraduate academic advisors) and will involve modifying pedagogy in our introductory courses to move toward more of a conceptual and inquiry-based model.
   d. **Elimination of courses that do not fit within the curricular outcomes for our majors.** Recently, we deleted many courses that had not been offered for several years, and we are reviewing others that may be eliminated as well.
   e. **Development of assessment tools in order to measure progress toward the learning outcomes for the non-major courses and learning outcomes for the majors** (also described in item 6, below). We are in the process of developing an exam that will be administered on the first day of class, and on the last day of class. The exact nature of the assessment tool will depend upon the development of learning outcomes. For example, some parts of the exam will be designed to measure knowledge of terminology, while other parts will be designed to measure problem-solving and understanding of biological concepts. We also plan to embed questions into the exams of other courses as well. We will be developing an instrument for BIOL 101 and 104 in the near future. On June 7th we will meet with Dr. Milt Hakel to discuss our plans, and will ask his advice on assessment and redesign of our curriculum.
(ii) Graduate - We will develop learning outcomes and goals for our training of graduate students. This will include basic knowledge skills for our students in order to achieve employment in their chosen areas. This will include knowledge on grant writing, writing research publications, teaching skills, presentation skills at national meetings, and basic conceptual knowledge of the process of Biology and its ideas.

6. Assessment of Learning Outcomes - We agree that we must address this immediately. We now have a plan to obtain measures of learning in our BIOL 204 and 205 courses. We have an exam that will be administered on the first day of class, and on the last day of class. We also plan to embed questions into the exams of other courses as well. We will be developing an instrument for BIOL 101 and 104 in the near future. Questions will be designed to measure problem-solving, understanding of concepts, and knowledge of terminology. On June 7th we will meet with Dr. Milt Hakel to discuss our plans, and will ask his advice on assessment and redesign of our curriculum.

7. Unit Planning - The Department does have a comprehensive plan. However, there is the need to have continual and regular reviews of this plan given recent hires, retirements, and changes in state budgetary commitments. The plan was developed by previous Chairs (Bullerjahn and Clark), and has been followed and adjusted as needed. The most recent adjustments occurred in a Departmental Retreat that was held in February of this year. We agree that it is desirable to draft a new comprehensive document.

Response to PRC Recommendations

1. External Grant Funding - We will further develop the plan outlined above to increase external grant funding by reinvesting departmental funds by January 2005.

2. Faculty Research Productivity - We will implement the ideas of different categories for faculty starting the fall of 2004.

3. Areas of focus - This is arguably the most difficult issue to implement. This has the potential to create rifts and marginalize some faculty members. We have initiated some of those discussions at the recent Department retreat and these need to continue. First and foremost, we need to define what is meant by an area of excellence and move forward from that point to talk about enough productive faculty members to have a single area of excellence within the department.

4. Faculty workload - We have both formal and informal policies on workload, and have discussed these in faculty meetings. We will fully formalize this policy and submit it for approval to the Dean of Arts & Sciences by January 2005.

5. Curriculum Reform
   (i) Undergraduate - We have redefined the membership and charge of the curriculum committee and will begin implementing reform starting the fall of 2005. In addition, we will develop a plan of pedagogical development for those faculty members in Category 1. We will report on our progress by June 2006, with an interim report by June 2005.
(i) Graduate - We will develop the learning outcomes and goals for our graduate training of graduate students by spring of 2005 and implement this starting fall of 2005. During that same process, we will review our requirements for graduation and the periodic timelines for our graduate students.

6. Assessment of Learning Outcomes - We have made progress in this goal, and will redouble our efforts to assure that our major undergraduate courses have valid assessments of learning outcomes in place during the coming year.

7. Unit Planning - We will refine and detail our comprehensive plan and submit it to the Dean of Arts & Sciences and the Vice Provost for Research by January 2006.

Response to Summary of Self-Study

Overall the summary was accurate and complete. The following are a few additions that were lacking in the self-study:

The salaries described on page 2, paragraph 5 of the PRC's summary are from a 2002 survey reported by the American Institute of Biological Sciences (AIBS). The report is available from AIBS (contact mbrown@aibs.org, phone: 202-628-1500, ext. 202). Some of the information is reported on their web site (http://www.aibs.org/aibs-news/aibs_news_2002_12.html).

An additional note about the success of our undergraduate students: according to the National Science Foundation, BGSU is ranked in the top 25 doctoral institutions in the nation for sending students on to complete their PhD's (http://www.nsf.gov/sbe/srs/nsf96334/append.htm#tables, Table B-6).

Page 3, paragraph 2, additional data are now available. In a recent complete evaluation of workloads, all informal courses (including 700 series) were removed prior to the analyses. The outcome was that most in the department were teaching at or above their target number of credit hours (based on contractual amounts, and adjusted for research productivity, and heavy service commitments - Appendix 1).

Response to Summary of External Reviewers

Page 8, paragraphs 2 and 3, the members the Department that are also members of the Center for Biomolecular Sciences currently have more funding than do members of the Department who are also members of the Center for Neuroscience and Behavior.

Page 8, paragraph 5, we have begun to compile a list of the publications, grants, presentations, and awards that students have authored and co-authored. Also, we have begun to discuss initiating a course in grantsmanship, where students would write and submit grant proposals to external funding agencies. A faculty member has tentatively agreed to teach the course.
Response to Review Committee Findings

Again, we thank the Program Review Committee for commenting that the Department contributes in a major way to undergraduate education. We agree that the Department needs much improvement, and believe that we have made some progress over the past several years. Much of the improvement has occurred over the past few years. We apologize for the shortcomings of the self-study. Part of the problem was that our Departmental Program Review Committee was using the instructions from the previous year because we started our work in the Spring of 2003. We were unaware that a revised set of instructions was issued in the Fall of 2003. A draft of the self-study was distributed to each member of the faculty, including each member of the Departmental Program Review Committee, and no one noted the omissions. We take full responsibility for this oversight and hope that the external reviewers and the BGSU PRC were not inconvenienced in a major way by this problem.