Department of Physiology & Biophysics Program Review
Department's Response

We welcome the opportunity to respond to the report of the Review Committee and to outline our plans for further improvement of the PBIO graduate program. We wish to thank the committee for their effort and time. While we were aware of most of the issues raised, the suggestions and ideas put forth by the committee will be helpful in continuing to improve graduate training in the Department of Physiology & Biophysics.

The report of the committee was disseminated widely in the department. All faculty, students, postdoctoral fellows and staff were sent a copy of the committee's report. To prepare the response, the chair (Stan Froehner) and the co-directors of the PBIO graduate program (Fred Rieke and Linda Wordeman) produced a draft. The draft was sent to all faculty members for comment. In addition, the chair and co-directors met with the PBIO graduate students over lunch to receive their feedback on the report and our response. After revision, the final version was submitted to the Graduate School.

This response addresses each of the points raised by the committee (**section III. Findings and Recommendations**) in three sections: A. General Departmental Issues, B. Educational Issues, and C. Faculty & Staff Issues.

A. General Department Issues

1. **Department's rank and status among peers**. We appreciate the laudatory comments regarding our national reputation and the contributions of the department in the field of physiology & biophysics. That our department is considered one of the premier physiology departments in the country is a source of great pride and satisfaction.
2. **Research space**. We agree that our sub-optimal space, some of which has not been renovated since construction in 1950, has been a serious problem. Dr. Froehner has been successful in obtaining an NIH NCRR grant totaling $3.65 million, that will be combined with $0.5 million from the Department's RCR funding and approximately $13.5 million from the State for renovation of research laboratory, teaching and administrative space. Plans are well underway, with actual work to begin as early as fall, 2006. While the renovation process will be disruptive, we are making every effort to minimize the negative impact on research laboratories. The project will provide modern space designed specifically for the research needs of the faculty, greatly increase the amount of common space and core facilities, and bring some faculty currently located at some distance away back into the center of the department. Important structural and infrastructure upgrades will also be made. For the first time in its history, the Department will occupy three contiguous floors, thus facilitating scientific interaction and strengthening the intellectual atmosphere even more.

3. **Offices for Research Faculty**. The renovation plans include provision of adequate office space for research faculty, either within laboratories or as separate rooms, depending on the wishes of the principal investigator.
4. **Informal gathering space**. We agree that such space is essential for both scientific interaction and informal gatherings. The renovation plans include a departmental lunchroom on the third floor of the G-wing, complete with tables, chairs and a small kitchen area. In response to the comments by the committee, we have decided to increase the size of this common space by about 50%.
5. **Relationship with the Primate Center**. We concur that our relationship with the Primate Center is essential and should be strengthened. Toward that end, the Department and the Primate Center have just concluded a successful faculty search that culminated in the recruitment of Dr. Greg Horwitz from the Salk Institute. We anticipate that Dr. Horwitz will arrive in the summer of 2006. We also agree that the intellectual and fiscal health of the Primate Center depends on the recruitment of a first-rate scientist and leader as Director of the Primate Center. Several PBIO faculty members serve on the search committee. We join the committee in encouraging the University to make available the resources required for this important recruitment.
6. Attendance at seminars and thesis defenses. Faculty attendance at the graduate students' public presentations of their thesis research is essential and will be strongly encouraged by the department chair. PBIO is justifiably proud of its reputation for being highly collegial and interactive. We are committed to maintaining this atmosphere of intellectual excitement and mutual respect through the departmental retreat, monthly happy hours and seminars. Our weekly seminar program is an essential element of this feature. The renovation project described above includes a new seminar room on the third floor of the G-wing, directly across the corridor from the lunchroom. The new PBIO conference room is almost twice the size of our current facility and should easily accommodate all attendees. Until the new conference room is available, we will attempt to hold seminars judged likely to attract high attendance in more suitable rooms. After the completion of the renovation, the current H-wing conference room will be retained (although possibly reduced in size, depending on other space needs) for lab meetings and other events.
7. **Keck Imaging Facility**. We agree that the Keck Center is an important resource for the department and the larger research community. With regard to new equipment acquisition, there appears to have been miscommunication. At the time of the review (April, 2005), we had already been awarded an NIH Shared Instrumentation Grant of approximately $450,000 for the purchase of a new Zeiss META confocal microscope. The microscope has been delivered and installed and is now available for use. In addition we will be submitting an NCRR proposal in March, 2006, to upgrade our existing DeltaVision deconvolution microscope with newer sensitive cameras and lasers for live imaging and dynamic fluorescence measurements. We are aware that future needs will require continual upgrades and acquisition of the latest technology. The department is committed to continuing its joint effort with the Department of Pharmacology in maintaining this key facility. We are fortunate to have an

outstanding and highly qualified director, Greg Martin, whose expertise is an essential part of the success of the Keck Facility.

B. Educational Issues

1. **Graduate-level course offerings**. Although many of our faculty members are very active in the Neurobiology & Behavior PhD Program and many students from that program join PBIO laboratories for thesis research, we agree wholeheartedly that the PBIO PhD program is not redundant. The PBIO program serves a group of students with quite different backgrounds, scientific interests and goals. As the review committee points out, the challenge for PBIO is to offer a curriculum that serves the "non-neuro" PBIO students. It is worth noting that this is a challenge faced by many physiology departments across the country with a research focus in a particular area of modern physiology. The two models recommended by the committee (a comprehensive physiology course vs. a broad series of mini-courses) will be discussed at length with the students and the faculty. If the mini-course system is continued, we will require the participation of a broad range of faculty, including joint appointees. We agree that all faculty engaged in graduate student training should participate in course offerings.
2. **Opportunities for oral presentation**. We agree with the recommendation that graduate students in PBIO need more opportunity for public presentation. Several models are under discussion, including a student organized series (with a senior postdoctoral fellow serving as advisor) and an annual one-day symposium at which all students present their latest results. Additional opportunities could include oral presentations by students at the annual retreat and a rejuvenated "lab night" series.
3. **Selection of laboratory rotations**. We recognize the problems experienced by some students in finding laboratories for research rotations. We were not fully prepared for a larger than normal class size in 2004. This year, with a similar size class, we assisted students in identifying their first rotation by asking them to list 3-5 preferred options and then obtaining commitments from faculty members in advance. We included in this match system first-year students in the Neurobiology & Behavior program who were interested in rotating in laboratories within the department. First-year advisors assigned to each entering student will help coordinate later rotations as needed. Thus far, this system has worked smoothly, and we intend to implement a similar plan in the future.
4. **Preparing students for teaching.** At the beginning of their second year all PBIO graduate students serve as TAs in a comprehensive, two quarter Physiology course (PBIO 405/6) for Dental and Nursing students. Teaching PBIO405/6 is part of the PBIO Ph.D. degree requirement. The students who take this Physiology course are widely, though unofficially, known to be some of the most demanding students at the University of Washington, making this a particularly rigorous teaching assignment. The TAs present course material and practice problem sets in sections using lecture materials that they research and prepare themselves. The students also troubleshoot, write exam questions, and hold preparatory exam review sessions. When necessary, the TAs participate closely in

the selection of the textbook for the course by reviewing Physiology textbooks from different publishers and offering suggestions. The TAs are also integral in suggesting modifications to the running of the course. They are evaluated by the faculty Course Coordinator for each quarter (Dr. Linda Wordeman - Fall, Dr. Donna Koerker -Winter) and are also provided with student evaluations from the Office of Educational Assessment. After they have finished their official teaching requirement, some students are motivated to work as tutors for students needing extra help in the course in subsequent years. As recommended by the committee, we will institute this year a Head TA system, in which a more senior student with a strong interest in and commitment to teaching will serve as an advisor and mentor to the second year students during the course of their TA experience. If successful, this system will become an integral part of our program to prepare our students to be effective teachers.

5. **Student progress assessment.** A pro-active Student Progress Committee has been rejuvenated, under the leadership of Dr. Robert Steiner, with guidelines, expectations, and requirements clearly delineated. These requirements are now clearly spelled out on the department website. In addition, Dr. Jane Sullivan has taken responsibility for pairing each first year student with a personal faculty advisor (who is unlikely to also serve as a rotation advisor). This mechanism will provide additional one-on-one mentorship and permit each student to become acquainted with a faculty member with whom they might not otherwise interact. Students and advisors will meet a minimum of once per quarter, providing regular updates on progress and identifying any problems that arise.

6. **Career options.** We will continue to support the seminar series on career options sponsored by the School of Medicine and will consider other mechanisms for exposing our graduate students to opportunities available to them.

7. **Diversity of student population.** Increasing the diversity of our student population is a high priority. Dr. Fernando Santana's connection with the University of Puerto Rico is very important, both for recruiting graduate students and postdoctoral fellows and for identifying and encouraging students to consider biomedical research at an earlier stage in their careers. The department also participated extensively in the summer Bioscience Experience program designed to expose underrepresented minorities to career options in biomedical sciences. Our department's Summer Undergraduate Research Program is an excellent outreach program. However, the cost cannot be borne entirely by the department. Funding from outside agencies or from central university sources will be necessary.

8. **Scientific integrity and ethics training.** As recommended by the committee, we will require that all of our graduate students attend the SOM's Scientific Integrity & Ethics course.

C. Faculty and Staff Issues

1. **Faculty recruitment**. We are very proud of our success in recruiting outstanding junior faculty. The PBIO department takes great pride in providing a collegial and supportive atmosphere in which these individuals can prosper.

2. **Future faculty hires**. We agree that future faculty appointments will needed to build on our current strength, particularly in the area of cardiovascular research. The cardiovascular field is particularly well suited to strengthening our involvement in disease-related research. Because we are about to embark on a major laboratory renovation project, we do not plan to hire additional faculty in the next year or two. Also, the poor funding climate at NIH requires that we be prudent in our financial commitments, while seeking other sources of research support. Future faculty hires will require financial assistance from the SOM for start-up packages.

3. **Involvement in the NeuBeh graduate program**. We agree that our symbiotic relationship with the NeuBeh graduate program is very important. PBIO faculty take responsibility for a large fraction of the NeuBeh teaching and administrative activities. Dr. Froehner is careful to consider the role of PBIO faculty in this important program when making teaching and committee assignments. While we will certainly continue to play a major role, we must maintain a balance between faculty effort in our own graduate program and the NeuBeh program. As we consider how best to meet the needs of the PBIO students (section B.1 above), it may be necessary to make adjustments that require larger contributions from NeuBeh faculty from other participating departments.

4. **Mentoring of junior faculty**. Career development for junior faculty members is a major responsibility we accept when hiring them. We are pleased to know that our mentoring process is effective. The chair and other senior members of the department take pride in our department's reputation for supporting our junior colleagues and will continue to do all we can to guarantee their success.

September 27, 2005