UNIVERSITY OF WASHINGTON SCHOOL OF MEDICINE

March 31, 2001

Department of Pharmacology

William A. Catterall, Ph.D.
Professor and Chair
Mailbox 357280
Seattle, WA 98195-7280
Phone: (206) 543-1925
FAX: (206) 543-3882
wcatt@u.washington.edu

Dr. Marsha Landolt
Dean
Dr. John Slattery
Associate Dean for Academic Programs
The Graduate School
200 Gerberding Hall
Mailstop 351240

Dear Dean Landolt and Dean Slattery:

Thank you for sending the Department of Pharmacology Program Review, which the faculty of the department and I have read with interest and discussed at a recent faculty meeting. We thank you and the Review Committee for the time and effort invested in reviewing our program. We appreciate the overall positive review of the program and the many thoughtful suggestions for improving it in the future. In the paragraphs below, we respond to the comments in each of the sections of the report and describe our plans for implementing recommended changes. In considering implementation of the recommended changes, we have conducted a survey of our present graduate students using an anonymous response mechanism through our Graduate Program Assistant to obtain input on some of the issues raised. The results of that survey are also appended.

General

We appreciate the positive comments of the Review Committee in the General Section of the Program Review and the recommendation for continuation of the Graduate Program. The faculty members of the Department of Pharmacology regard the graduate program as one of our major contributions to the university and we will be pleased to continue it for an additional period of ten years.

This Section of the Program Review also suggests that the Department of Pharmacology should forge stronger ties with the local biotechnology industry. We agree with this recommendation. We have many one-to-one research contacts between faculty members and colleagues in local biotech companies, many graduates of our predoctoral and postdoctoral training programs work in local companies, and two of our affiliate faculty members are at Zymogenetics and Immunex. Nevertheless, we have not developed any formal programs to foster interactions with these companies and this would be a worthwhile addition to our department. While we have not yet decided on the mechanism we will use, the faculty has agreed to work on developing some more formal mechanisms of interaction with research scientists in local companies.

Career development issues

The Program Review comments that *"Although most of the faculty we interviewed stressed the fact that many of the departmental students have gone on to careers in academic pharmacology departments in various universities, many of the current students in the program do not have this ambition. Instead, they are interested in a range of potential careers, from involvement in directing clinical trials to regulatory affairs. Most of the senior students we interviewed were not planning on pursuing postdoctoral studies."* Since the committee only interviewed a small number of students, we wanted to have broader input from our graduate students on the types of careers they are considering. Therefore, we asked them to indicate up to three career directions they are considering in Question 2 of our survey, which is attached. We received responses from 29 of our 32 students, and on average they specified approximately two career choices that they have under consideration. We found that 59% of the respondents are considering a position at a research university or affiliated research institute as one of their career choices and an additional 17% are considering a position at a university or college that is more oriented toward teaching. Thus, careers in academic institutions are being considered by a large majority of our students. Careers in biotechnology companies are being considered by 62% of our students, the largest percentage in any single category in our survey, and careers in pharmaceutical companies are being considered by 48%. Almost all of our respondents selected one of these four categories as one of their career options under consideration. As noted in our Self Study document, in the past approximately 61.4% of our graduates have taken positions in universities or affiliated research institutes, 24.5 % have pursued careers in biotechnology, and 5% in pharmaceutical companies. It appears that the great majority of our current students are also considering careers in these three traditional career areas for our graduates. The fraction of current students considering careers in biotechnology and pharmaceutical companies is greater than the fraction who have chosen those career paths in the past, consistent with a trend that is common in all biomedical disciplines.

Our survey of student career considerations does not support the statement in the Program Review that most of our students are "interested in a range of potential careers, from involvement in directing clinical trials to regulatory affairs. Most of the senior students ..... are not planning on pursuing postdoctoral studies." No doubt this difference arises because the students that the committee happened to interview represent the small minority of our students who are primarily considering career options in clinical trials and regulatory affairs. We believe it is very important to correct this erroneous impression of the career goals of our students, because it influences the nature of the programs that we develop to provide information on career options. If the Graduate School wishes to assess the career options under consideration by graduate students, it may be useful to develop an anonymous survey instrument to gather information from a statistically significant sampling of all students in graduate programs under review, rather than relying on the comments of a small fraction of students in interviews.

Our department has developed some effective means of introducing graduate students to career options in biotechnology and pharmaceutical companies and in nontraditional career options such as regulatory agencies and intellectual property management. We use three main approaches:

1. In our regular departmental seminar program, we include seminar speakers from pharmaceutical and biotechnology companies and we arrange for them to meet with graduate students to discuss careers in their industries. Often these speakers are former graduate students and postdoctoral fellows.

2. In conjunction with our NIH-funded training grant in Pharmacological Sciences, our department joins with the Departments of Medicinal Chemistry and Pharmaceutics of the School of Pharmacy to invite senior seminar speakers from the pharmaceutical and

biotechnology industries and to organize sessions with students to discuss career opportunities. Speakers in this program to date are:

May 22, 1998. Dr. Kenneth Seamon, Senior Vice President for Scientific Discovery, Immunex

October 22, 1999. Dr. David Robertson, Vice President for Research, Pharmacia-Upjohn

January 12, 2001. Dr. Gregory Kaczorowski, Director of Membrane Biochemistry and Biophysics, Merck.

3. Also in conjunction with our NIH-funded training grant in Pharmacological Sciences, we have developed a Career Day with active student participation. Several junior scientists in pharmaceutical and biotechnology companies are invited to spend an afternoon in small group discussions of careers with graduate students. This group has included graduates of our predoctoral and postdoctoral training programs. One program of this kind took place on May 12, 2000, and a second is planned for May, 2001. The speaker list for the May, 2000 session was:

   Dr. Manoj Bajpai, Amgen
   Dr. Sandeep Palival, Cerep
   Dr. Yvonne Lai, ICOS
   Dr. Claudia Jochheim and Dr. Lisa Storch, Immunex
   Dr. Anthony Borel, Lilly
   Dr. Tom Rushmore, Merck
   Dr. Brian Murphy, Neurocrine
   Dr. Ken Tanaka, PathoGenesis
   Dr. Robert Heinrikson and Dr. Raymond Hurst, Pharmacia
   Dr. Kevin Lustig, Tularik
   Dr. Patty Vandenburgh, Zymogenetics

As these examples indicate, we have placed some emphasis on providing information on career development options for our graduate students. Therefore, we will be pleased to follow the specific recommendations of the Review Committee on career development. We will continue to have the Career Day that we have planned for this year. We will work with individual faculty members to be sure that we communicate support for the range of careers that our students actually pursue. We will also support efforts in the School of Medicine to provide broader programs introducing career choices.

Teaching experience

Our graduate program requires three quarters of service as a Teaching Assistant. To our knowledge, this is the most extensive requirement for teaching experience of any graduate program in the biomedical sciences at UW. We regard this teaching opportunity as a strength of our graduate program. We have therefore considered the recommendations of the Review Committee to change the preparation, evaluation, duration, and format of our graduate student teaching very carefully, and we have surveyed our graduate students on their preference for the length of their TA service, the method of preparing them for TA service, and the method of evaluating TA service. The results of our survey our appended.

Evaluation. Our present approach to evaluating TA performance is to solicit student evaluations at the end of each quarter and to have a faculty member work with any TA who

receives low ratings. The Review Committee recommends evaluation of teaching assistant performance by a faculty member attending TA sessions in addition to our student evaluations. In our survey, two-thirds of respondents preferred the present system of student evaluations while one-third preferred to have a faculty member attend their sessions for evaluation. In this situation, it is our plan to ask TA's which form of evaluation they would prefer, and use that method for them. As in the past, any TA who receives low ratings from students will work with a faculty member to improve their performance.

TA training. Our present approach to TA training has three components. Our graduate students all take the TA Training Sessions provided by the Graduate School. Our graduate students all attend TA session in our classes for pharmacy students in their first year of study. Finally, our graduate students all meet with a faculty member (currently Dr. Edith Wang) for approximately one hour at the beginning of the Autumn Quarter in which they will begin to serve as a TA for specific orientation to the teaching methods for our classes. Our survey of graduate students indicated that 31% of respondents preferred the present method of preparation for service as TA's, 31% requested formal sessions with former TA's, and 17% requested more formal preparation sessions led by a faculty member. Given this split opinion, we have decided to organize a formal session of the prospective TA's with the most highly rated TA's from the previous year at the beginning of the Autumn Quarter and to expand the preparatory session with a faculty member as well.

Duration of TA service. Our survey indicated that none of the respondents wished to increase the length of TA service required in our graduate program, and 24% of respondents would prefer less service as a TA.

Teaching in lecture classes. The Review Committee recommended that we provide an opportunity for students to teach lecture classes to pharmacy students. In our survey, 24% of respondents indicated that they would volunteer to teach in lecture classes if that opportunity was available. However, in our faculty discussions we have decided that this option would not work well. We have repeatedly been asked by our faculty colleagues in the School of Pharmacy not to have faculty members give single lectures because of the disruption of the continuity of the class. Clearly, having novice graduate students teach single lectures or short series of lectures would similarly disrupt the continuity of the experience for the pharmacy students. Since our pharmacology course is one of the most important and most difficult courses for the pharmacy students, we believe it would not be fair to them to insert graduate students into the lecture series to give them teaching experience.

The faculty has decided on an alternative approach to providing teaching experience for our graduate students. Graduate students already have two opportunities to give lectures in our graduate program—in our departmental journal club and in our advanced graduate seminar courses. In each case, we have traditionally approached these student lectures as opportunities to learn critical research thinking and methods of presentation of research, but it is clear in retrospect that these presentations can also be used as tools to improve teaching. Therefore, we now plan to use a required journal club presentation by third year students as an opportunity to learn teaching methods. Their faculty advisor will work with them on preparation of their presentation in the form of a well-organized lecture rather than in the looser format common for journal club. Faculty in attendance will provide feedback on the lecture and teaching methods used by the student. This will allow us to give students an experience in preparing a lecture for a broad group without jeopardizing the educational experience of the pharmacy students. Similarly, we will use our advanced seminar classes to accomplish the same end by asking graduate students to prepare more formal lectures and providing feedback to them on their performance.

The Review Committee has also recommended that we give postdoctoral fellows an opportunity to present their research to the department in our seminar series. The faculty members think this is an excellent idea. We plan to include these presentations as part of our regular seminar series during the academic year rather than in the summer so that attendance will be maximized.

Departmental governance

The Review Committee recommends that the department should enhance graduate student involvement in departmental governance. We agree. In the past year, since Dr. Edith Wang (Assistant Professor of Pharmacology) became head of the Curriculum Committee for the Graduate Program, we have instituted several changes under Dr. Wang's leadership. First, based on student input, we have substantially revised the graduate curriculum, as outlined for the Review Committee in my memo of October 10, 2000, preceding the Site Visit. Second, we have started a Graduate Student Organization and the students have elected two representatives, one pre-Ph. D. candidate and one Ph. D. candidate. The Review Committee met with these two student representatives among the student groups they interviewed as part of our Site Visit. Third, we have added two student representatives on the Curriculum Committee to continue to review and revise the curriculum as necessary. They will be included in departmental faculty meetings on graduate curriculum. In response to the recommendations of the Review Committee, we will organize the procedures for student input into faculty hiring decisions more formally and we wil encourage the Graduate Student Organization to meet more frequently and to provide input into departmental decisions on faculty hiring, seminar speakers, and other aspects of departmental life.

The Review Committee also recommends that junior faculty be encouraged to voice their opinions. We agree with this recommendation. Junior faculty are already taking major responsibilities in the department. Dr. Sandra Bajjalieh was an influential member of the Search Committee that selected Dr. Edith Wang as a faculty member in 1997. Dr. Bajjalieh has also served as seminar co-chair, as organizer of our departmental retreat, and as a member of our Graduate Admissions Committee and our Pharmacological Sciences Training Grant Committee. As noted above, Dr. Wang has led the re-organization of our curriculum in the past year and is a leader of the departmental graduate program. Dr. Wang is also a member of our current Search Committee for assistant professor candidates and has been influential in selection of the top two candidates that we are trying to recruit. Our third assistant professor, Dr. Nephi Stella, has only been on the faculty for one year. He has joined the Graduate Admissions Committee but has not been involved with other aspects of departmental governance yet. We will continue to encourage and rely on the involvement of our outstanding junior faculty in departmental governance, as recommended by the Review Committee.

Impact of interdisciplinary programs

We agree with the assessment of the Review Committee that our departmental Graduate Program in Pharmacology primarily serves a distinct set of students from the interdisciplinary Molecular and Cellular Biology Program and Graduate Program in Neurobiology & Behavior. We believe our students have more focussed research and training interests when they apply to graduate school and therefore select a more focussed program of research training. The University of Washington is fortunate (and somewhat unique) in having a balance of excellent broad interdisciplinary and focussed departmental graduate programs in the biomedical sciences.

The Program Review suggests again in this Section that the graduate students in Pharmacology are less likely to choose an academic career path. As noted above, we think this

conclusion is incorrect based on our survey of all of the students and likely reflects the views of the small number of students the committee was able to directly interview. No comparable data are available for the interdisciplinary program students at UW, but Professor Randy Moon (Director of the Molecular and Cellular Biology Program) and Professor Neil Nathanson (Director of the Graduate Program in Neurobiology & Behavior) think that the results of our survey showing 59% of students interested in an academic position in a research university or affiliated research institute and 62% interested in a position in a biotechnology company would not be substantially different for their students. On the other hand, there is no doubt that the pharmacology graduate students are more interested in careers in pharmaceutical companies, regulatory agencies, and clinical pharmacology since their graduate program provides preparation for these careers not available in the interdisciplinary programs.

The Review Committee also notes here that the number of graduate students in the Graduate Program in Pharmacology is reduced compared with previous years. The number of students leaving the program with Master's degrees in order to pursue opportunities in industry has increased in recent years, although we think that this trend is related to the over-heated high tech economy in the Seattle area and will likely reverse now. However, the most important factor in the downward trend of the number of students in the Graduate Program in Pharmacology is an artifact of student assignment in the records of the Graduate School. In the early years of the interdisciplinary programs, students in the Molecular and Cellular Biology Program and in the Graduate Program in Neurobiology & Behavior received departmental Ph. D. degrees and were assigned to departmental Ph. D. programs. In the past five years, interdisciplinary program students have received interdisciplinary Ph. D. degrees and are no longer assigned to departmental programs. Thus, most of the apparent decrease in student number reflects that fact that the interdisciplinary students in our department are not counted as Pharmacology students anymore.

School wide issues

Questions of assignment of duties in the Office of the Associate Dean for Graduate Research and Education are beyond the scope of our departmental responsibilities. However, the faculty members of the department agree that this office is under-staffed relative to its immense responsibilities and that a more substantial research administrative infrastructure is needed in the School of Medicine.

Thank you for the opportunity to respond to the issues raised by the Review Committee. The faculty of the Department of Pharmacology and I hope that you will agree with our plans to implement changes in the Graduate Program in Pharmacology in response to the Department of Pharmacology Program Review.

Sincerely,

Bill Catterall

William A. Catterall
Professor and Chair