A. Lorris Betz  
Senior Vice President for Health Sciences  
5th Floor, Clinical Neurosciences Center  
Campus

RE: Graduate Council Review  
Department of Pharmacology and Toxicology

Dear Vice President Betz:

Enclosed is the Graduate Council's 2006 review of the Department of Pharmacology and Toxicology. The Graduate School recently discovered that the approval process for this review was not completed. Included in this review packet are the report prepared by the Graduate Council, the Academic Profile, and the Memorandum of Understanding resulting from the review wrap-up meeting.

In order to finalize this review, I request that you forward it to the Academic Senate to be placed on the information calendar for the next meeting of the Senate.

Sincerely,

Charles A. Wight  
Dean, The Graduate School

Encl.

XC:  William R. Crowley, Chair, Department of Pharmacology and Toxicology  
     John W. Mauger, Dean, College of Pharmacy
The Graduate Council has completed its review of the Department of Pharmacology and Toxicology. The external reviewers were:

   James P. Kehrer, Ph.D.
   Department of Pharmacology and Toxicology
   University of Texas, Austin

   I. Glenn Sipes, Ph.D.
   Chair, Department of Pharmacology
   University of Arizona

   Nancy R. Zahniser, Ph.D.
   Department of Pharmacology
   University of Colorado Health Sciences Center

The Internal Review Committee of the University of Utah included:

   Salvatore Fidone, Ph.D.
   Professor
   Department of Physiology

   Raymond Kesner, Ph.D.
   Professor
   Department of Psychology

   John Weis, Ph.D.
   Professor
   Department of Pathology
This report of the Graduate Council's Ad Hoc Review Committee is based on the Department of Pharmacology and Toxicology's (DPT) self-study, the report of three external reviewers, the report of three internal reviewers, as well as responses to those reports jointly from the chair of the department and the Dean of the College of Pharmacy.

OVERVIEW

Pharmacology deals with the properties and effects of drugs and how they interact with living systems. Toxicology is concerned with toxicities of drugs and other chemicals and the demonstration of the safety and hazards of such substances.

The Department offers instruction in pharmacology and toxicology. Its teaching and research activities range from understanding molecular mechanisms of drug action and/or chemical toxicity to assessment of human exposures to environmental pollutants. The faculty teach pharmacy, medical, and graduate students; offer M.S., Ph.D., M.D./Ph.D. and Pharm.D./Ph.D. degrees; conduct innovative research programs that are well-funded; and provide service to the university, the nation, and the discipline. In addition to the departmental-based graduate program, faculty participate in the interdisciplinary graduate programs in Neuroscience, Molecular Biology, and Biological Chemistry, and the M.D./Ph.D. program. No undergraduate degree is offered by the Department.

Teaching and research capabilities of the department are enhanced by the facilities of the Center for Human Toxicology, and the Anticonvulsant Drug Development Program.

Faculty

The DPT consists of 16 full-time academic faculty (9 full professors, 6 associate professors, and 1 assistant professor) and 15 full-time research faculty (2 full research professors, 3 research associate professors, and 10 research assistant professors). One tenured faculty member retired in 2004-05. State support for the academic faculty totals $1.4M. The department chair, William Crowley, was hired in 1999.

The DPT addressed a number of issues related to research faculty in 2003. A reward structure (salary equity, promotion/retention) that reflected faculty contributions was established. Bridge funding in the event that external support was temporarily lost was recommended. Research faculty may now serve as chair of a graduate student's supervisory committee, and course teaching was reduced. Research faculty view themselves as integral to the department, and feel that the department is supportive and concerned about their career progress.

The department recognizes that faculty diversity among the faculty is low. Both women and minorities are underrepresented.
The faculty teach courses to medical students, pharmacy students, graduate students, and one course for undergraduate students. Student evaluations are good to excellent. Research faculty teach mainly graduate courses.

The faculty are engaged in innovative, productive research activities in six core areas. External support has more than doubled over the past 6 years. NIH funds exceeded $6M per year in direct costs. This represents about a five-fold return on the state support to the department. Based on external funding and peer-reviewed publications, the research activities are highly successful.

**Students**

The DPT has a strong focus on graduate student training. Postdoctoral fellows, however, are an increasing component of the department. The Ph.D. program in Pharmacology and Toxicology has 20 students enrolled. In addition, 6 students from the Neuroscience Graduate Program, and 1 student from Biological Chemistry Program are pursuing their Ph.D. research with department faculty. Two more students are enrolled in the new Pharm.D./Ph.D. program.

Because of two years of low enrollment in the graduate program, the faculty created a Recruitment Committee in 2002. This committee implemented several new efforts that resulted in 5 new students in 2003 and 7 in 2004. The efforts included revising the department's web page, participating in the Summer Undergraduate Research Program, and early identification and recruitment of the best applicants.

The DPT is very pro-active in mentoring, advising, reviewing, and teaching its graduate students. This reflects a coordinated effort between the Graduate Training Committee (a standing committee of four faculty who follow the progress of all students and meet with each of them at the end of each semester), the dissertation advisor, and the dissertation supervisory committee. As a result, the DPT graduates high-quality Ph.D. students in a timely fashion. The students were highly enthusiastic and complimentary of the nurturing environment that the faculty create.

First-year students are currently supported with a stipend ($22K for 2004-05). Students also receive tuition, dental, and medical insurance. Students are strongly encouraged to gain external funding via fellowships. The DPT no longer has a NIH training grant to support graduate students.

**Curriculum**

The DPT focus is on training students for the Ph.D. degree, with the M.S. awarded primarily to those who fail their qualifying exams but have completed some significant research. The curriculum offered by the DPT is fairly standard for programs of this type, and covers all necessary topics. The faculty recently reviewed the overall program, and as a result have made numerous changes designed to improve it.
In addition to required coursework, Ph.D. requirements include completion of research rotations, participation in journal clubs and seminars, passing qualifying exams, fulfillment of teaching requirements, and successful defense of the dissertation. The research rotations consist of three 15-week sessions in three different laboratories during their first year. The students appreciate the broad exposure the rotations provide.

The written qualifying exam has been replaced with a required course. The oral qualifying exam has been changed from that described in the Self Study. The new format aims to encourage greater knowledge of the disciplines of pharmacology and toxicology.

There were concerns that there are not enough choices available for the required coursework in biochemistry, molecular biology, and cell biology, and likewise for DPT courses required of students from those departments.

**Facilities and Resources**

The DPT is currently housed in three separate buildings, two on the Health Sciences Center (HSC) campus and one in Research Park. On the HSC campus, faculty are located in Skaggs Hall and in the nearby Biomedical Polymers Building. The total space occupied is 34K square feet, which is minimal and is limiting the ability of the faculty to expand their research and training programs. Several faculty members have been forced to turn away both graduate students and postdocs due to lack of space. In addition to the issue of space, both faculty and students feel that the current dispersal across three buildings is detrimental to the DPT's teaching and research programs.

A major goal of the College of Pharmacy is to construct a new building for the college that would provide greater and contiguous space.

The library has cancelled subscriptions to journals in pharmacology and toxicology due to increased prices and lack of funds. Journal access is essential to the DPT's research and training program.

**Previous Review**

The last review of the DPT was conducted in 1997. Many of the issues raised by reviewers at that time have been addressed. These include changes in the research rotations and the qualifying exams required of students that now provide a broader exposure to research techniques and knowledge of pharmacology and toxicology. In addition, the roles and expectations of the Research Faculty were clarified and enhanced. Also, efforts are being made to increase research and training in the areas of molecular biology, pharmacogenomics and toxicogenomics, and proteomics to extend and complement current research programs.
COMMENDATIONS

1. The DPT faculty were very responsive to the previous review and have instituted the recommended program changes. These include several curriculum changes, as well as clarifying the roles of the Research Faculty, who contribute significantly to the department's research and teaching, and feel that the department is supportive and concerned about their career progress. The DPT has been willing to focus on weaknesses of the department and make significant changes.

2. The DPT's new chair, William Crowley, has shown exemplary leadership. He has been supportive of faculty development, has obtained more student support, made new connections outside the department, and helped to develop a standardized curriculum.

3. The DPT's faculty are engaged in innovative, productive research activities. External support for research is about five times the state support for the department.

4. The DPT houses several outstanding centers and programs, including the Center for Human Toxicology, the affiliated Sports Medicine Research and Testing Laboratory, the Anticonvulsant Drug Development Program, and the Preclinical Drug Development Program. These facilities and their faculty are a tremendous resource for the graduate program.

5. Student enthusiasm for the program is remarkably high. Student mentoring is a major strength of the program, and the atmosphere is friendly and collegial. Students are well-supervised by the active Graduate Training Committee and the students' supervisory committees. The DPT has made excellent efforts to recruit well-qualified and diverse students. A significant number of students in the DPT have applied for and obtained external funding for their research.

RECOMMENDATIONS

1. The major weakness of the DPT is inadequate space, particularly contiguous space. Without additional space, the DPT will be unable to increase their research productivity and their training program. Inadequate space is arguably the most significant obstacle to current and future faculty reaching their full potentials. A partial solution is to post notices of seminars and grand rounds in the DPT's Research Park locations.

2. It would be advantageous for the DPT to obtain university funds to help support first-year graduate students. The DPT currently uses indirect cost returns for this purpose, but this limits the use of these funds for other initiatives. The DPT is encouraged to submit applications for one or more training grants to support graduate students and postdocs.
3. There should be more choices available for the required coursework in biochemistry, molecular biology, and cell biology. In addition, the DPT's elective courses should be offered on a more regular basis, and the various options available to students should be more effectively communicated to DPT students.

4. Recruit new faculty at the assistant professor level, particularly in the areas of pharmacogenomics and toxicogenomics. Increase gender and ethnic diversity among the faculty.

5. An effort should be made to ensure continued subscriptions, particularly electronic, by the library to those journals needed for the DPT's teaching and research activities.

**ACTIONS TAKEN SINCE INITIATION OF THE REVIEW**

1. The Dean of the College of Pharmacy has approved DPT's request to convert a classroom in the Skaggs Building to a shared laboratory and office space for graduate students, postdoctoral fellows, and research track faculty. The College of Pharmacy is aiming to secure funding for a new College of Pharmacy building as part of the upcoming University Capital Campaign. The department is now posting notices of seminars and grand rounds in the DPT's Research Park locations.

2. The DPT will propose to Senior Vice President Betz that two first-year stipends each year be provided to the DPT from University of Utah central administration sources. The department has already submitted a training grant application.

3. Two new courses in biochemistry and molecular biology will be evaluated to assess their suitability as elective courses for DPT students. The issues of offering elective courses on a more regular basis, and more effectively communicating to students the various elective options available, will be priorities for the Graduate Training Committee.

4. The DPT will be conducting a recruitment in the recommended areas during the 2005-06 academic year. The chair states that the DPT is unaware of specific strategies that would increase applications by women and underrepresented minorities, other than by conducting national searches.

Submitted by the Ad Hoc Review Committee of the Graduate Council

Steven Krueger (Chair), Department of Meteorology
Lisa Cannon-Albright, Department of Medical Informatics
Patricia Murphy, College of Nursing
Memorandum of Understanding
Department of Pharmacology and Toxicology
Graduate Council Review 2004-05

This memorandum of understanding is a summary of decisions reached at a wrap-up meeting on June 1, 2006, concluding the Graduate Council Review of the Department of Pharmacology and Toxicology (DPT). A. Lorris Betz, Senior Vice President for Health Sciences; John W. Mauger, Dean of the College of Pharmacy; William R. Crowley, Chair, Department of Pharmacology and Toxicology; David S. Chapman, Dean of the Graduate School; and Frederick Rhodewalt, Associate Dean of the Graduate School were present.

The discussion centered on but was not limited to the recommendations contained in the Graduate Council review completed on February 27, 2006. At the wrap-up meeting, the working group agreed to endorse the following actions:

Recommendation 1: The major weakness of the DPT is inadequate space, particularly contiguous space. Without additional space, the DPT will be unable to increase their research productivity and their training program. Inadequate space is arguably the most significant obstacle to current and future faculty reaching their full potentials. A partial solution is to post notices of seminars and grand rounds in the DPT's Research Park locations.

The College Dean has approved a DPT request to convert a classroom in the Skaggs Building to shared laboratory and office space for graduate students, postdoctoral fellows, and research track faculty. In the longer term, the College of Pharmacy is working to secure funding for a new College of Pharmacy building as part of the University’s capital funding campaign. CF&R funds were not allocated this year; however, the Senior Vice President for Health Sciences will be an alternative source of funding for this purpose. The Department now posts notices of seminars and grand rounds at their Research Park locations. The Department also rotates faculty meetings between the Skaggs Building and its Research Park locations.

Recommendation 2: It would be advantageous for the DPT to obtain university funds to help support first-year graduate students. The DPT currently uses indirect cost returns for this purpose, but this limits the use of these funds for other initiatives. The DPT is encouraged to submit applications for one or more training grants to support graduate students and postdocs.

The Department has submitted a training grant application to support graduate students and postdoctoral trainees. The Willard Eccles Charitable Trust now funds three graduate stipends as a result of donor development initiatives. The College continues actively to seek donor endowments for entering students.
Memorandum of Understanding
Department of Pharmacology and Toxicology
Page 2

Recommendation 3: There should be more choices available for the required coursework in biochemistry, molecular biology, and cell biology. In addition, the DPT's elective courses should be offered on a more regular basis, and the various options available to students should be more effectively communicated to DPT students.

The Department has accepted two new courses in biochemistry and molecular biology as electives for DPT students. The DPT Graduate Training Committee has made elective course scheduling and communication with graduate students priorities.

Recommendation 4: Recruit new faculty at the assistant professor level, particularly in the areas of pharmacogenomics and toxicogenomics. Increase gender and ethnic diversity among the faculty.

Recruitment is under way for a faculty person whose specialty is in recommended areas. The three finalists are all women. The Department will continue its commitment to increasing faculty diversity.

Recommendation 5: An effort should be made to ensure continued subscriptions, particularly electronic, by the library to those journals needed for the DPT's teaching and research activities.

This is a campuswide issue. The Senior Vice President for Health Sciences is working to maintain access to essential journals to support teaching and research.

This memorandum of understanding is be followed by annual letters of progress from the Department Chair to the Dean of the Graduate School. Letters will be submitted each year until all of the actions described in the preceding paragraphs have been completed.

A. Lorris Betz
David S. Chapman
William R. Crowley
John W. Mauger
Frederick Rhodewalt

_____________________________________________________________________________________
David S. Chapman
Assoc. V.P. for Graduate Studies
Dean, The Graduate School
August 2, 2006
### Department Review by Academic Year

**College of Pharmacy: Department of Pharmacology and Toxicology**

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#### Budgeted Faculty Salary

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<td>Full Professors (1)</td>
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#### Research Expenditures

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<td>Research Expenditures (Department)</td>
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#### Student Credit Hours (Budget Model)

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<td>Lower Division</td>
<td>1,119</td>
<td>1,128</td>
<td>1,140</td>
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#### Course / Instructor Evaluations

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#### Enrolled Majors

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#### Degrees Awarded

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1. Faculty salaries reflect 9/12 contract amounts only and do not include compensation for administrative duties.