

Graduate Program Review Committee Report Response
School of Pharmacy
April 18, 2022

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The School of Pharmacy (SOP) sincerely thanks the members of the Graduate Program Review Committee for their dedication of time and effort throughout the process and for preparing the very helpful Report. We are pleased with the Review Committee's assessment of the many strengths of our graduate programs and its recommendation of continuing status with a subsequent review in 10 years. Overall, we concur with the Committee's comments regarding strengths as well as areas for improvement and opportunities. We also sincerely thank the UW Graduate School for its support throughout this review process. Herein, we provide our response to the Report's recommendations for improvements by providing updates, plans and clarifications, as appropriate.

School-Wide Recommendations Response

Lack of institutional support for graduate training, in terms of lack of tuition waivers, and dedicated first year stipend support.

We agree with the recommendation that our graduate programs would benefit from additional tuition waivers and additional institutional support to dedicate towards first year stipends. While our graduate programs already do guarantee first year stipend and benefits funding for incoming PhD students, each of our graduate programs use somewhat different mechanisms for this support. Generally, our graduate students are supported through a combination of training grants, RA positions, TA positions, ARCS awards (when available) and endowments. The Departments of Pharmaceutics and Medicinal Chemistry use a mixture of salary recapture and endowment funds to support their *first year* stipends. The CHOICE Institute also utilizes endowments to partially support Health Economics & Outcomes Research (HEOR) students' *first year* stipends. And the Rubenstein Endowment funds are available to PhD students School-wide who demonstrate financial need and scholarly merit.

In March 2022 the SOP Dean's Office provided funding in the amount of \$50,000 for each of our School's PhD programs to be used to assist with their efforts to recruit 2022-2023 *incoming* students into their PhD programs. This support is in addition to the funding from the Provost's PhD Fellowship Block Grant funds (about \$20,000 per PhD program) for supplementing *first year* funding packages. While the duration of guaranteed full support beyond year one varies by department, all students admitted to our PhD programs are provided stipends and benefits until they graduate except in rare circumstances. Collectively, these commitments further strengthen our already high quality graduate degree programs.

Need to raise stipends to compete with SOM and due to high cost of living. Concern that some students are working multiple jobs to make ends meet.

We agree with the recommendation on raising graduate students stipends with the caveat that appropriate financial planning is necessary for this to happen. Medicinal Chemistry significantly increased stipends in 2021–22, adopting a tiered system as follows: students in Years 1 and 2 received an approximately 5% increase, students in Years 3 and later received a 7.5% increase, and students who advanced to candidacy (i.e., passed the General Exam) received a 10% increase. (In fact, the final tiered structure was proposed by student representatives at a faculty meeting.) These changes have brought Medicinal Chemistry stipends closer to School of Medicine levels, although a gap still remains. Pending on approval by the faculty in Pharmaceutics and the UW Graduate School, graduate student stipends will be increased to the same levels for Pharmaceutics as the Medicinal Chemistry graduate students. While HEOR graduate students do not compete directly with SOM to the extent that the other SOP graduate programs do, the competitiveness of its graduate student stipends is closely monitored.

Uncertainty in university commitment to providing adequate research space and faculty lines for a highly successful research enterprise and associated graduate degree programs that should be expanded – faculty hiring is central to any expansion plans.

We agree that explicit commitments from the University to provide adequate research space and faculty lines to the SOP would reduce any perceived feelings of uncertainty among our faculty. The SOP has a number of newly opened faculty positions in each of its three department to address current and future research and instructional needs. With respect to research space, the Provost allocated 12,800 square feet of space in the F-wing of the Health Sciences Building to meet the SOP's priority space needs. Approximately 80% of this space is presently configured as wet labs. Much of this new space has already undergone renovation. The SOP has not allocated all of the F-wing space that, in addition to likely upcoming faculty retirements, will allow for a certain amount of additional capacity for new faculty recruitments.

Need to clearly communicate the milestones & expectations for students and identify where to go if they have problems or concerns.

Each of our School's graduate programs have multiple mechanisms to help ensure that students are well-informed on milestones and expectations. At a high-level, milestones and expectations are explicitly outlined in our student handbooks and through multiple communication channels, including listserv messages and graduate program web sites. Each PhD program requires the completion of an annual Individual Development Plan (IDP). Explicitly included in the IDPs is student progress towards achieving milestones, including: a) coursework, b) preliminary exams, c) dissertation proposal defense, and d) dissertation defense. Problems or concerns can be raised by graduate students at anytime with their advisors and/or mentors, graduate program coordinators (typically referred to as directors within the unit), and department chairs. The availability of students' access to these individuals will be routinely emphasized during annual meetings of the chairs with their respective trainees. Graduate students' feedback on the graduate programs is also provided by elected or appointed student representatives, who participate in faculty meetings, School-wide Senior Leadership Committee and the School-wide Diversity, Equity and Inclusion Council. Also, the HEOR graduate program recently developed two new mechanisms to address this recommendation: a formal mentorship agreement between students and faculty mentors and a confidential form for communicating issues. Similarly, Medicinal Chemistry has introduced a confidential channel for students to communicate issues as they arise, as well as structured annual feedback that students are encourage (but not required) to provide on their mentors.

While there are student services in place to address mental health issues, students don't really know know to access those or what they are.

We agree that further outreach and advising is necessary in order to increase awareness of available mental and behavioral health and wellness resources to students in need. The SOP recently engaged a part-time mental and behavioral health counselor to provide support for graduate and professional degree students. Since this Fall, we have been working on coordinated communication regarding her services and availability. Continued efforts are underway to assure graduate program advisors, students, and faculty understand this service, other UW supports in place for students for mental and behavioral health, and how to access them. At a School-wide level, a new Bias Resources web page has been developed and a new SOP Confidential Advocates program to help students navigate resources.

Although students feel connected to their immediate peers and faculty, more cross-departmental and cross-center interactions are desired.

We will seek ways to expand our students' cross-departmental and cross-center interactions. With the exception of the past two years (during the pandemic), the SOP holds an annual back-to-school event for the graduate programs, attended by graduate students, postdocs and our graduate faculty. Pre-pandemic, the SOP also held annual in-person meetings with the School's Corporate Advisory Board, where graduate students and post-docs from all three programs present on their research at a combined poster session, providing an opportunity for trainee interaction and sharing of the educational experience. We will look towards reinstating these cross-center and cross-departmental interactions mechanism, as feasible. Notably, there are already extensive cross-departmental interactions between the Medicinal Chemistry and Pharmaceuticals graduate programs, including joint seminars. We are looking into developing some inter-departmental activities for SOP international graduate students.

While scientific skills are taught well, the hidden curriculum (e.g. communication, networking, preparing for the job market) could be improved.

While we have made progress in supporting our graduate students success with so-called 'soft skills' (e.g., communication, networking and preparing for the job market), we recognize that more can be done. To further our efforts, we will explore how an existing program implemented with our PharmD degree program, the Student Professional Development Program, might also be adapted to support graduate student development. Our PharmD Student Professional Development Program supports career planning, networking, and readiness for application and interviews for employment or post-graduate training. As noted in our self-study report, we currently and will continue to leverage required weekly seminars to include these 'soft-skills' topics. In Pharmaceuticals, for example, graduate students present in Journal Club (PCEUT 583) on diverse topics of current interests, including negotiation and conflict resolution, time management and managing multiple projects and responsibilities. Students are encouraged to attend national and international meetings to present their research findings (poster or oral presentation) and to improve their communication/networking skills. Furthermore, every senior graduate student in Pharmaceuticals is assigned an industry mentor to advise them on career development. Students in the Pharmacological Sciences Training Program (T32) benefit from matching with industry mentors for ongoing 1:1 discussions on these topics, as well as invited speakers at an annual 'career day'. All students in Medicinal Chemistry, Pharmaceuticals, and HEOR also have opportunities to interact with invited speakers from industry who participate in the seminars. The CHOICE UW ISPOR student chapter now holds regular events with our industry alumni to discuss job skills and professional development.

Space needs to be well utilized and a long-term plan in place for renovations.

Space allocation and reallocation is guided by the SOP policy & procedure on space allocation (approved by the SOP Executive Committee, March 4, 2020). This policy & procedure provides guidance for making space allocations, the circumstances that may result in space reallocations, and the steps that will be taken when office and laboratory space reallocations become necessary. The goals of our space reallocation review procedures are to develop a shared understanding of the appropriateness of space utilization, identify department needs, and identify space that might revert to the SOP for reallocation if the need arises. Notably, the SOP recently made a \$2 million commitment for facility improvements, including those renovations associated with expansion of our academic activities into the F-wing space.

Further, in March 2022, the SOP has committed an additional \$500,000 towards upgrading instrumentation for the Mass Spectrometry Center.

Opportunity for more emphasis on F31 awards and diversity supplements.

While we have had past success in applying for diversity supplements for existing NIH grants, we plan to put more emphasis on efforts to obtain such supplements going forward. We also plan to strengthen efforts to assist eligible students to apply for F31 and diversity-focused fellowships, including via the American Foundation for Pharmaceutical Education Pre-Doctoral Fellowship in Health Outcome Disparities.

Consider exploring undergrad teaching as a way to raise revenue and profile.

The SOP presently offers several undergraduate courses that not only strengthen our profile within the University but also return revenue to the SOP through the ABB model. The courses are PHARM 301: Medications and Health: It's Not All about Drugs; PCEUT 201: Drug Discovery, Development and Beyond: Careers and Controversies; PCEUT/MEDCH 327: The Science of Drugs; and the 499 Undergraduate Research courses offered by each of our SOP departments. The SOP is presently developing a proposal to develop an undergraduate minor in Pharmaceutical Sciences to further strengthen our profile and potentially raise revenue.

The turnover for program support staff has made it more challenging for students to be fully informed regarding all aspects of completing the program; however, this has not impacted graduation rates or time to completion of degrees.

We recognize that some turn-over of support staff has occurred, although this is a University-wide challenge. Our graduate program advisors are adept at assisting one another across the School, as needed.

Pharmaceutics MS & PhD Programs Response

Considering the breadth of pharmaceutics, the shift towards translational research and projected future needs of the discipline, it may be appropriate for the department to focus mainly on areas of current strength (mechanisms of drug metabolism, transporters, and drug-drug interactions) as these basic core curriculum topics were seen by hiring managers on the advisory board as core strengths and principles of its PhD graduates. This approach builds on current success and offers significant synergy with the program in Medicinal Chemistry. In terms of expanding the scope of research and training, this must be balanced with concerns about diluting current research strengths. Exploring partnerships with other UW programs, such as biochemistry, toxicology, and bioengineering, may leverage the department resources and grow new opportunities. Hiring new faculty and developing new research aligned with the highly regarded training programs will remain a challenge without new resources to support them.

We concur with the reviewers' comments. The Department of Pharmaceutics currently has an open search for a full-time, 12-month appointment, tenure-track position at the Assistant Professor level. We are certainly looking for candidates with strong research programs in the core strength areas of the Department, including drug transport, drug metabolism, pharmacokinetics, systems pharmacology, and pharmacometrics. We also welcome outstanding candidates to augment our presence in drug vaccine

delivery, nanomedicine and to exploring partnerships with other UW programs, including biochemistry, toxicology, and bioengineering. The successful candidate will be expected to teach in the professional PharmD program in the area of pharmaceutical sciences, to train and mentor graduate and professional PharmD students and to provide service to the Department, School, and the University. Additional faculty turnover and hiring in the next 5-years is expected and will be used as an opportunity to bolster areas of traditional strength and new innovations.

Medicinal Chemistry PhD Program Response

While traditional departmental scholarship has focused on drug metabolism and toxicology, more recent efforts have focused on emerging areas. First, a systems biology approach to drugs and therapeutics has revealed a deeper mechanistic understanding of targets, genetics, and modes of action. Second, some new therapeutics, including biologics, macromolecules, and vaccines, that require a deep understanding of viral and other immunization delivery approaches, have become topics for exploration. These emerging therapeutics and vaccines present substantially different production and delivery challenges than do traditional small molecule therapeutics, and require a different range of approaches to develop, deliver, and assess targets and mechanisms of action. While these new directions are being incorporated into the research efforts by the faculty and student training, the committee recognizes the need to retain the core strengths of the program. While the degree program continues to integrate these new efforts and research, maintaining traditional research and training strengths will help to prepare the best students for academic, industrial or government regulatory careers.

We are grateful for the positive feedback on Medicinal Chemistry's research and the quality of our training. We are keenly aware of the value in maintaining our traditional strengths while expanding into emerging areas. The need to thread that needle looms large in our ongoing faculty search and plans for the future.

Health Economics & Outcomes Research (HEOR) MS & PhD Programs Response

Additional datasets to support HEOR should be explored and targeted funding to support such datasets should be obtained. An urgent need for researchers and students is access to large real-world evidence data sets, not just from publicly sources such as SEER-Medicare but also to include private sector administrative claims, EHR, and data generated from social media platforms, that can support the HEOR research efforts and continue to thrive and retain its prominence.

We agree that we should maintain access to a core group of datasets and look to add additional data and explore opportunities for funding and access, leveraging grants and support from the Corporate Advisory Board. The CHOICE Institute hosts a variety of healthcare datasets, which are available to the UW community under varying permission structures. A description of available datasets (TriNetX, The IBM MarketScan® Commercial Claims and Encounters Research Databases, and the SEER-Medicare linked database) and access details are described here, [Data Repository - School of Pharmacy](#). Our faculty and graduate students also access databases held by external organizations, such as the Kaiser Research Institute, Fred Hutchinson Cancer Center, and the Puget Sound VA. Finally, earlier this month,

the CHOICE Institute purchased pharmacy license data from the National Council of Prescription Drug Programs (NCPDP) for student research purposes.

The CHOICE has 14 tenured or tenure-track core faculty, of whom 1 are assistant rank and 7 are associate rank (active recruitment is underway for another assistant professor position).

We have recruited two new Assistant Professors, who are beginning in August 2022: Kyu Eun Lee (PhD Stanford Health Policy, Decision Science track) for the CHOICE Institute Endowed Assistant Professor of Health Decision Science and Jing Li (PhD UC-Berkeley Health Policy, Economics Track) as Assistant Professor of Health Economics, tenure track.

DEI Contributions Response

The focus on DEI is “light” and does not address the realities of where we are as a nation; DEI is not well integrated into training and research.... However, the current approach on DEI is somewhat light in that it relies heavily on central UW resources. The school's DEI efforts could go further to address the needs and realities of where we are as a nation, by building toward future opportunities. One area of opportunity is to better integrate DEI into the robust research activities of the school by encouraging diversity supplements, offering to extend support packages for underrepresented students with school or department matching funds and assisting with F31 and other fellowship options. Coordinating activities through the DEIC will enhance the focus on priorities identified in the School's Diversity Plan.

We agree that there are clear opportunities to better integrate DEI with research activities, in particular moving beyond the T32 programs where we have had historical success, to other funding mechanisms that aim to support trainees from underrepresentative minority (URM) populations. We also wholeheartedly agree that thoughtful, coordinated efforts by the School and UW will be essential in improving recruitment and retention of faculty to address gender balance and demographic issues. We continue our efforts to improve the presentation of DEI topics in didactic training, seminar topics, and student discussions. To a large extent, the School's DEI efforts are guided by the unique strengths and opportunities presented by our location in the Pacific Northwest. We are committed to building a training environment more inclusive to all, and better representative of society at large, and will continue to incorporate more training experiences within our curriculum. Will explore different trainings available to students, e.g., with seminar topics and through external workshops.

However, we respectfully disagree that the School's current focus and resources on DEI are “light”, particularly given historical norms and the size of the School. The School has increased its support of DEI efforts several-fold since 2020. Key financial commitments include support for: 1) a more than two-fold increase in School representation at ABRCMS and SACNAS meeting, 2) dedicated staff FTE for DEI activities, student-invited speakers of DEI-related topics, and 3) \$150,000 committed to the three graduate programs in 2022 to bolster recruitment for incoming first-year PhD students. Two of the three students admitted to Medicinal Chemistry's incoming class of PhD students are from underrepresented minority (URM) backgrounds; a direct result of these and other investments and an illustration of our success with recruiting. For the incoming class of five students into Pharmaceutics' PhD program, two are from URM backgrounds with one receiving an ARCS Diversity Fellowship and the other receiving GSEE Excellence award. These expenditures complement substantial investments by individual departments in recruiting and providing research experiences for undergraduates/post-bacs

from URM populations. This increased spending has been mirrored by the increased effort invested by students, staff, and faculty in improving School climate and inclusion. Students serve important roles in the School's DEI Council and Workgroups, and have sought out opportunities to contribute to governance at the departmental and student organization levels. School leadership (including the entire Executive Committee) chose to participate in 4 hours of DEI training in Summer 2021. Numerous faculty and staff have participated in in-depth DEI training offered by national organizations, in order to improve the mentorship and support of students from underrepresented populations. Graduate students, postdocs, and faculty play a large role in research experience programs for undergraduates and baccalaureates from underserved populations. Thanks to these and other commitments of effort and financial support, the SOP has built substantial momentum in this area, and we anticipate that investments in recruitment and retention will continue to pay off over the next few years.