

Department of Biochemistry 10-year Review
May 2-3, 2022

Review Committee:

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Summary

Introduction

The Department was last reviewed in 2008-2009. The review noted, as program strengths, the Department's distinguished tradition of excellence in research and education, its successful record of funding, and its interdisciplinary and scientifically diverse faculty. The review also identified a number of challenges. These included addressing inadequate resources from the school and university for the Department's substantial commitment to undergraduate teaching, improving administrative support for graduate education, providing opportunities for student research and faculty feedback, identifying the appropriate size of the graduate program and increasing student diversity, maintaining equity among faculty with respect to teaching and adequate recognition of efforts in this area, providing guidance to faculty with respect to promotion, improving efforts to recruit and hire women and minority faculty, and developing Departmental vision and a strategic plan to improve faculty engagement and departmental morale.

The Department has undergone substantial changes in the intervening period. Notable changes include the hiring of Trisha Davis as Department Chair and Erin Kirschner as Associate Director of Graduate Programs, along with the hiring of 12 junior faculty. A major addition to the Department was the establishment of the Institute for Protein Design, headed by David Baker. The Graduate Program is on strong footing with a doubling of applications and increase in underrepresented students. Most of the challenges identified in the 2009 review have been addressed, although some remain and will be discussed below.

This review consists of several sections. We will first focus on Department strengths, as we believe overall that the Department is succeeding. Next, we will cover Departmental interaction with the Institute for Protein Design (IPD), highlighting its strengths and discussing potential future challenges. We will report on the Graduate Program, outlining its success and potential concerns, and discuss mentoring and collegiality. We will discuss efforts to increase diversity, equity and inclusion, identifying potential challenges. We will end with a discussion of institutional support, outlining where the University must address the future needs of this successful department.

Based on our conversations from the site visit and review of materials submitted by the Department, we recommend that the next review take place in ten years (2031-2032).

Departmental Strengths

Overall, the Department is highly successful in accomplishing its teaching, research and service objectives. Leadership under Trisha Davis has been outstanding. Throughout the review, her dedication and unwavering commitment to the Department was noted by faculty, staff and students. She has been successful in shepherding the establishment of the IPD, which brings in half of the Department funding. Dr. Davis has been particularly effective in hiring new junior faculty, who value her commitment to their success. In addition, she has been successful in fundraising efforts, securing an endowed professorship and two endowed chairs.

The recruitment of new faculty over the past 10 years is a particularly notable success. These new hires have increased diversity, increasing the number of women and underrepresented faculty. These new hires are successfully being promoted with tenure, reflecting their achievements in research, teaching and service. These accomplishments reflect the positive activity and guidance of Rachel Klevit, Chair of the Department Appointments and Promotions Committee.

In terms of research activity, the Department is succeeding on all metrics, including funding, publication and scholarly impact. Department funding has steadily increased over the past 7 years, with half of the funding associated with the IPD. Junior faculty have all been successful in obtaining initial external funding. The Department has also been very effective in the commercialization of scientific discovery, in large part but not exclusively through the IPD. The success of spinoff companies and licensing efforts will likely have a positive impact on Departmental funding in the future. Publications from the Department have steadily increased over the past 10 years, reflecting in part the success of the new junior faculty as well as the productivity of the IPD.

Notable throughout the review was the environment of collegiality. Faculty, students and staff value their participation in the Department. Camaraderie amongst junior faculty was particularly notable. Staff felt appreciated and were enthusiastic about their contributions to the department. Overall, the level of engagement was positive, suggesting that the Department is well situated to adapt to new challenges as they arise.

The Institute for Protein Design (IPD)

Since its founding a decade ago, the IPD has become a powerhouse with spending of more than \$25M annually. It is THE world leader in designing novel proteins for a wide variety of uses. The Chair and Director are to be commended for their efforts in making this happen. Beyond the scientific success, they have been able to attract substantial amounts of philanthropy. They negotiated space in the MoES building to initiate the program and more recently have been instrumental in getting institutional commitment to create new space on the

nascent West Campus site. They have worked, largely successfully, to keep the IPD integrated within the Department despite its separate physical location and its overwhelming success. Students, faculty and staff all felt like the IPD was part of the Department and not an isolated entity.

To ensure that this success will be sustained will undoubtedly be challenging. While the University commitment to the W27 West Campus site offers a long-term solution to the space crunch faced by the IPD, that is still three years off. Finding ways to accommodate current space demand let alone allow modest growth will be challenging, especially in a situation where IPD is currently housed in Upper Campus and any attempt at a solution, even for minor issues, ends up as a battle between the two campuses. It would be disgraceful for such power struggles to disrupt seriously the progress of the IPD.

Beyond the space issue, there will be ongoing challenges to maintaining the IPD as an integral part of the Department. For example, the IPD attracts graduate school applicants who on paper at least are more highly ranked than those who express interest in other labs in the Department. The admissions committee will need to find ways to value diversity of interests of the applicant pool as well as their individual merit. Students, post-docs and faculty are also in danger of forming two different cultures, with one feeling slighted compared to the other, especially with fancy new quarters coming on line for the IPD and the attention of philanthropy. Students are already sensitive to issues like a lack of card access to the MoIES building for residents of the J wing, the frequency of Happy Hours, etc. And some even expressed a sense that there was a growing split between members of the IPD in J wing versus those in MoIES. None of these seemed serious and some could be readily remedied (making card access to MoIES for all Biochem personnel standard, being sensitive to who is invited to which events and why, etc.) but will require ongoing attention.

Finally, funds flow from equity and royalties and indirect costs, although not currently a concern, could become an issue should the IPD become less flush with funds. Quite apart from the larger issue of how the University distributes such funds, the Department is the beneficiary of equity and royalty funds and the IPD sees none of that directly. Periodic discussions between the chair and the Director about the amounts involved and their usage should take place to avoid this becoming a divisive issue. We gather that the Department share of indirect costs from the IPD is used to support services there, but full transparency on the amount of those funds and how they are used could avoid misunderstandings.

Graduate program

Overall, the mission of this graduate program is going exceptionally well, and the students are remarkably successful. The overall morale of students is excellent and their obvious cohesiveness as a group is a core strength of the program. The words “warm” and “welcoming” were used repeatedly in our interviews. An example is the relatively new “buddy program” instituted by the students themselves. This program pairs each incoming new student with a

more-senior student “buddy,” thus providing a lightly formalized peer-mentoring conduit for new students. The committee was so impressed with this program that we feel it deserves formal support from the Department in the form of a modest budget and potentially administrative help or a Faculty consultant to assist with organization and big picture issues.

Another key element of student cohesiveness and high morale is the student seminar series. The series is getting back to normal now after the disruption from Covid, and every effort must be made to continue supporting this cherished and effective series. Some thoughts on making this already strong element of graduate training even better will be discussed below.

It is very clear that the excellent work of the graduated coordinator Erin Kirschner is another key strength of the program, and every effort must be exerted to keep Erin in her position. That said, some students felt that while Erin was an exceptional resource, that their access to her was limited. For her part, Erin admitted that her workload was “a bit much.” The Committee felt this was putting the issue far too mildly. The Department’s recent decision to provide Erin with additional staff help is an excellent idea and must be carried out.

This brings us to one of several minor weaknesses identified by the committee. Like students nationwide, students in the Department mentioned a desire for more opportunities to explore non-academic careers. We encourage the Program to consider the simple solution of using the student seminar series to bring in more non-academic scientists. An additional thought is that by asking local alumni in non-academic positions to present, the series would help not only to introduce students to the types of non-academic opportunities available but also provide a networking opportunity in that space.

Students also complained that certain training opportunities were delivered unevenly, in particular both the TA Clerkship and the Literature Course were sources of frustration. Several students felt their TA clerkship experience felt more like “being a grader” and at least as many complained of professors teaching their own papers in the Lit course (students are naturally reticent to really dig into criticism with a faculty author in the room). The grant-writing course was more popular, though there were concerns that it was -for many students- disconnected in time from the relevant submission deadlines. All this to say simply that a bit more organization in what are fundamentally sound training opportunities might go a long way.

Finally, the Committee identified one issue that we felt was quite significant, and this relates to the formal faculty oversight of the graduate program. As we understand it, there are only two faculty members formally tasked with overseeing the entire program, and we feel that this number should be higher. Adding faculty members as formal members will immediately increase the bandwidth of any single faculty member for the advisory mission, and also allows the program to increase the diversity of the faculty members formally available for advising. Finally, this simple change will also help temper the problem arising by the broad geographical distribution of the graduate program across the very large UW campus.

Diversity, Equity and Inclusion Committee:

The Program's DEI committee, like most, is a relatively new entity. Recent successes include progress on policy related to graduate student parental leave, as well as voicing concerns for support for family and access to childcare. The increased recent activity is encouraging, but we believe the Department can make some simple changes that will allow this committee to meet its potential.

First and foremost, committee members did not feel that the work of the committee was valued at the level of other committee work. Put another way, many felt their work on DEI was "tacked on" to other work they are already expected to do. We recommend that DEI committee members be relieved of some other service duties to allow them the bandwidth to think and work creatively on this difficult problem.

In addition, we feel that the Committee and its work should be formalized. For example, the mechanisms for appointment to the committee, appointment of the committee Chair, turnover of members (i.e., a fixed length of committee member terms), etc. should be clearly specified. Moreover, the Committee should have its own annual budget as well as a formal, annual budgeting process.

We also recommend that the Department involve trainees in their DEI work, either by bringing trainee members onto the existing DEI committee or by helping the trainees assemble their own independent committee that will work together with the faculty DEI committee.

Finally, we note that while the Department's DEI recruitment efforts are substantial, more focus on efforts to recruit from underserved institutions could be improved (e.g., with more faculty presence at SACNAS, etc.). We note as well that with more support, this is exactly the kind of issue the DEI committee could make real progress on.

Mentoring and Collegiality

The self-study describes mentoring programs for both junior faculty and graduate students, such as the 3-member committee that meets annually with assistant professors, the interactions of students with the Associate Director of Graduate Programs, Erin Kirschner, and the "buddy" system implemented by the graduate students in 2020. However, our interviews suggested that implementation was uneven and there was room for improvement.

While some junior faculty found meeting with their committee very helpful, others indicated that they had never set up a committee. The junior faculty more uniformly praised their meetings with Rachael Klevit and the chair as helpful in defining expectations. But what they felt was missing was more help in the day-to-day functioning of an assistant (and to a lesser extent an associate) professor. In this regard they found peer mentoring quite valuable, that is mentoring that happened more spontaneously when a cohort of young faculty came up through the ranks together. While Ms. Kirschner was uniformly praised for her help in dealing with crises, she was less available for more minor consultation. The Graduate Program Advisor, Dr. Jim Hurley,

seemed underutilized and several students were not aware of his role. Students felt that the buddy system was a success but several expressed disappointment that they had not received greater recognition and support for their efforts from the Department. Given the success of the faculty and students generally, these concerns about mentoring must be viewed as areas where the department can make itself an even more welcoming and thriving environment, rather than a cause for serious concern. Below are suggestions for improvement.

Faculty: Given that the needs and desires for mentoring will vary widely, e.g., several faculty had no regret about never forming a mentoring committee, demanding stricter adherence to existing policies does not seem attractive. But regularizing some of the informal interactions that they found most useful could be helpful, especially in times where these interactions are still less than optimal. Creating a pool of names of faculty at all stages who would be suitable advisors and allowing incoming faculty to pick from among them in their first couple months would be one suggestion. Recognizing the mentors would help motivate them to join the pool. Also, while Dr. Klevit has been effective at letting Assistant Professors know of expectations and how they are progressing toward meeting them, several expressed a desire for her to extend her activities to include Associate Professors.

Graduate students: While Ms. Kirshner has been very effective in guiding students through their first few years, she is very pressed for time. We were delighted to learn of plans to provide her with some support in the form of a new hire, whose time will at least in part be devoted to helping Ms. Kirschner. In addition, a revitalization of the Graduate Education committee could help with providing students with the guidance they desire. The students need to be aware of the members of this committee and the committee members will need to be proactive in reaching out to students to ensure that they recognize them as a resource. Expanding the role of the Faculty Allies group might be another approach to making the faculty more accessible to students. The Department should also consider expanding the buddy system implemented by the students to include a faculty member assigned to meet with the student upon arrival and then at critical junctures through the first and second years (in later years the PI and thesis committee are serving these roles well).

The students are to be commended for starting and organizing their buddy system. To ensure its success and its longevity, however, the Department should consider ways in which it can take some of the burden from the students as well as ways to appoint successors as the current organizers move on.

Postdoctoral fellows: Although postdoctoral fellows were not a part of this review, they are a critical component for the Department's success. The Department could help them feel part of the larger group by extending to them the possibility of having faculty other than their PI serve as mentors. They could also be a valuable source of counsel for senior graduate students as they consider their options.

Finally, several faculty commented on the value of the weekly faculty lunches in the past in promoting collegiality. Although those have necessarily been suspended due to the pandemic,

the Department should resume them as soon as possible. To overcome the change in habits during the past two years, it should actively promote them to ensure the broadest possible participation.

Institutional Commitment

Departmental success has stemmed in part from the successful recruiting of new faculty and the establishment and growth of the IPD. These accomplishments were made possible by substantial institutional commitment.

There are three areas where institutional commitment needs to be addressed. Foremost is the lack of support for undergraduate teaching efforts. The Department teaches 10 undergraduate classes per year, instructing 800 students per quarter, as core components of the undergraduate Biochemistry major. However, as the major is housed in the Department of Chemistry, no Activity-Based Budgeting (ABB) funds are directed toward the Department of Biochemistry. The Department of Biochemistry supports these efforts out of their own funds. One solution might be to cut back on this voluntary teaching. However, the Department and Chair have made it clear that this is not a path they will take, as they believe this teaching is fundamental to the core identity of the Department.

Parts of the undergraduate teaching burden are the efforts of graduate students as teaching assistants. These positions are unpaid. As a consequence, students are supported by other sources, through grant funding awarded to their dissertation lab mentor or through competitive training grant positions. This contrasts greatly with TAs who are in graduate programs on upper campus including those in Chemistry or Biology who TA similar undergraduate courses.

Given the extensive commitment of Department faculty and graduate students to undergraduate teaching, it is unconscionable that funds must be redirected from other sources in the Department to facilitate these efforts.

A second area of concern is adequate laboratory space for expansion of highly successful research programs. Assignment of space within the School of Medicine should be flexible to accommodate outstanding research.

A final area of concern is the commitment of resources towards the sustained growth and recruitment of faculty. While the Department has clearly been successful in hiring in the recent past, there are additional faculty retirements looming with no clear source of funding for recruitment packages needed to attract the best candidates. Often new funds are only committed to the Chair as part of their recruitment. Given the outstanding job that Trisha Davis is performing, it would be a mistake to limit future recruitment funding unless a new Chair is hired.