Review of effectiveness of a core assessment of the dissertation

Learning goals for the dissertation include the following: students must demonstrate the ability to use oral and written communication skills for analysis and synthesis of knowledge in core areas of biochemistry and in an area of current interest to the scientific community.

The internal assessment of PhD student performance by the program’s doctoral faculty at typical annual thesis committee meetings with the student, and at the final thesis defense, do not provide for a higher level of evaluation of the success of their performance that is provided by peer review by science journal reviewers and editors. The mechanisms of peer review for publication in science journals ensures that student products are meeting broad standards of quality assessed against the most recent body of current research publications in the students’ field of study. We use the papers submitted in the annual award competition (the Horst Schulz Award) and the Doctoral Student Research Grant competition as examples that student products are meeting broad standards of quality in the scientific community at large.

The award competition is run each year and solicits peer-reviewed publications from doctoral students who appear as first authors, for submission to the PhD Program’s Awards Committee for selection of the winning paper. (The generous cash award is named in honor of Prof. Horst Schulz who served as program EO for many years.) The criteria for selecting a winner include the quality of the scientific hypotheses and experimental approaches for testing them, the impact of the results on the field of research, and the impact on the community the paper can have according to the reputation of the journal in which it is published. First-authorship on papers in science journals is generally accepted as evidence that the majority of the paper’s content, both scientific and the actual text, represents that author’s creative product.

Each year, several high-quality papers are submitted for the competition. The fact that doctoral students in the program are able to have their thesis research published in scientific journals after peer-review testifies to the quality of their work assessed by experts called upon for critical evaluation. Journal reviewers will have judged the paper against their own specific knowledge and expertise, against the quality of papers historically published by the journal, and the state of the field of study into which the paper falls. The research in the publications serves as all or part of their thesis. Through these processes, the program accumulates evidence that the scientific research product of our students meets standards for quality and value both within and outside the doctoral program setting, to demonstrate that students have achieved the higher order learning goals set forth above. The winning paper (and all the submissions) serves as an example of how thesis advisers and CUNY faculty (so, the Program) are successful in ensuring that doctoral students meet the learning goals of the dissertation.

In addition to the submissions for the Award competition, 30-odd papers were submitted, reviewed and accepted for publication during the past year by Biochemistry doctoral students. These papers, on which they may not necessarily be first author and thus did not qualify for the Award competition, are based upon thesis research work that will ultimately appear in the dissertation and thereby are additional examples of successfully meeting learning goals for the dissertation assessed within the program and by experts in the field.

The second competition, for Doctoral Student Research Grants, is one organized by the Graduate Center in which students generally request funds for travel to present their research at a scientific conference.
Awards are only given to students submitting an application in which they propose the presentation of their work either in a talk or a poster session at an upcoming conference. Most often, these are national or international conferences that include the prestigious American Chemical Society Annual National Meeting, the annual national meeting of the American Society of Biochemistry and Molecular Biology or a Graduate Research Seminar associated with a Gordon Conference. The submission by students is accompanied by a recommendation from the thesis advisor who evaluates the quality of the work and its suitability for presentation to the community. The opportunity to present is further reviewed by conference directors or scientific session chairs and therefore, the students' work is further assessed by external evaluation. Students get feedback from conference attendees that serves as an assessment of their product and leads to improvement of their oral and written skills in pursuit of learning goals of the program.