

## Program-Level Assessment: Annual Report

Program Name (no acronyms): Biochemistry and Mol. Biol.	Department: Biochemistry and Mol. Biol.
Degree or Certificate Level: PhD	College/School: School of Medicine
Date (Month/Year): 07/21	Assessment Contact: Tomasz Heyduk
In what year was the data upon which this report is based collected? 2020-21	
In what year was the program's assessment plan most recently reviewed/updated? 2016	

### 1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

Successful students will possess:

- Appropriate level of knowledge on current biomedical science as related to biochemistry and molecular biology
- Ability to evaluate and critique publications
- Ability to identify and select meaningful problems to be addressed in bioscience research, to frame testable/falsifiable hypotheses concerning an important research question
- Ability to create and implement experimental protocols with suitable controls to test a scientific hypothesis, and to interpret the results of experiments in light of the hypothesis driving them.

### 2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe and identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

The grades and overall performance of the students in the written Preliminary Examination and Oral Comprehensive Examination which are administered as a part of Preparation and Evaluation of Scientific Research Proposals (BCHM-6250). This course was not offered online, at the Madrid campus, or at any other off-campus location.

### 3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (do not just refer to the assessment plan).

Students develop hypothesis-driven research proposals using an NIH Pre-doctoral proposal format under the supervision of two course-masters and two advisors who work individually with a student. To evaluate student performance at mid-term, students present their project orally in front of all faculty and students involved in the course and submit the mid-term written proposal for evaluation to a committee of five faculty. The students receive written critiques that cover the following evaluation criteria: Idea and Critical Thinking, Presentation, NIH Style Critique (Overall Impact, Significance, Approach During). Students respond to these critiques by submitting a revised proposal which is graded by a five-person committee. Receiving a passing grade is equivalent to passing the written preliminary exam and allows the student to progress to the oral examination. For the oral exam, a five-member committee assesses the student's ability to master the research subject of his/her Ph.D. thesis, including the ability to think critically and creatively about this area, and to communicate their ideas. Students must also demonstrate a firm grasp of

biochemistry and related areas of molecular biology, especially as it relates to lecture and seminar courses taken, independent studies and rotations completed.

#### 4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

This year we had a larger class (five students) which allowed better assessment of learning outcome. While all five students passed the written examination, two had considerable difficulties to achieve this outcome and required remedial action. One out of 5 students failed the oral examination.

#### 5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

A relatively large fraction of the students experiencing difficulties in achieving this learning objective suggested to us a need to tweak the teaching techniques used in the course.

#### 6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

These results were discussed at the meeting of BMB Training Committee. The specific changes to the BCHM-6250 course will be developed by this committee and will be presented to the faculty at our regular faculty meeting.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies

- Course content
- Teaching techniques
- Improvements in technology
- Prerequisites

- Course sequence
- New courses
- Deletion of courses
- Changes in frequency or scheduling of course offerings

Changes to the Assessment Plan

- Student learning outcomes
- Artifacts of student learning
- Evaluation process

- Evaluation tools (e.g., rubrics)
- Data collection methods
- Frequency of data collection

Please describe the actions you are taking as a result of these findings.

We will change the teaching techniques. Specifically, we will modify the course to allow a stronger participation of student thesis advisor in achieving the teaching objectives of the course. In the past, we purposely limited participation of student advisors in this course to challenge students to develop their ideas, hypotheses and research methods independently. However, we believe that we could have greater involvement of the advisors in the course (as they are the best experts on the areas of the students' research proposals) without compromising the goal of assuring student independent thinking.

If no changes are being made, please explain why.

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**7. Closing the Loop: Review of Previous Assessment Findings and Changes**

**A.** What is at least one change your program has implemented in recent years as a result of assessment data?

n/a

**B.** How has this change/have these changes been assessed?

n/a

**C.** What were the findings of the assessment?

n/a

**D.** How do you plan to (continue to) use this information moving forward?

Na/a

**IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.**