

**Department of Biological Science
Program Performance Review Evaluation
Executive Summary
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**Dr. Martin V. Bonsangue
Dr. Bianca R. Mothe
Dr. Muriel E. Poston**

As part of the seven-year Program Performance Review (PPR) of the Department of Biological Science at California State University, Fullerton (CSUF), the review team made a one-day visit of the department on April 9, 2025. Prior to the visit, the team was provided with the PPR self-study prepared by a team of five department faculty members led by Department Chair Dr. Marcelo E. Tolmasky. The PPR followed the format and structure per university requirements. The period of review for this PPR was the seven-year period from AY 2017-18 through AY 2023-24.

As part of the visit the team conducted focus group interviews with Dean Johnson, Associate Dean Salzameda, Department Chair Tolmasky, staff, tenured and tenure-track faculty, full-time lecturers and part-time faculty, and undergraduate and graduate major students. Based on the content of the PPR report as well as our conversations with administrators, faculty, staff, and students, there was strong evidence that the Department continues to be highly effective in its primary mission of teaching and scholarship.

During the period under review, the Department had an increase of undergraduate major student enrollment from 1291.5 in 2017-18 to 1486.5 in 2023-24, an increase of 15.1%; similarly, the Department's FTES level increased from 1104 to 1305, or 18.2%. A notable increase in the number of first-time freshmen enrolling in the major occurred as well, growing from 363 to 516, an increase of 42.2%. Similarly, the number of upper-division transfer students grew from 43 to 75, or 42.6%. During the period under review, the number of undergraduate degrees awarded increased from 214 to 242 (13.1%), with four-year graduation rates for full-time freshmen increasing from 16.9% to 27.1%, a notable increase of 60.3%. The graduate program also showed growth during this time, with graduate student enrollment increasing from 50.5 to 59.0 (16.8%) and FTES from 26.4 to 30.5 (15.5%). The number of graduate degrees awarded hit a high-water mark of 23 in 2017-18 and varied between 12 and 20 in each of the remaining years.

During this same seven-year time period, FTEF levels had zero growth: the FTEF level was 33.0 in F2017, fluctuated between 31.0 and 29.0 from F2018 through F2022, and again was 33.0 in F2023.

The increase in both student enrollment and undergraduate graduation rates (especially four-year rates) despite no accompanying increase in faculty or staff workforce is both remarkable and concerning. While the particular time period (2017-2023) was unique due to the pandemic, this production level of enrollment and degrees is not sustainable without accompanying support levels in faculty and staff. Although available resources

levels are always limited and often unclear, perhaps especially so at the present time, it is important that the Department, College, and University continue to work together towards the common goal of sustainable academic excellence. Based on the data summarized here together with information gleaned from our visit, we offer the following recommendations.

1. We encourage the Department to conduct a needs assessment for the next five-year period, taking into account anticipated retirements of both faculty and staff based on realistic expectations for enrollment levels, graduate and undergraduate student support, and sustainability.
2. We encourage the Department to continue to make its advising process as student-friendly and effective as possible. This may include moving towards on-line sessions, in-person group sessions, and flexibility in waiving advising for students who cannot get an appointment prior to their scheduled registration date and time.
3. We encourage the Department to continue to develop its curriculum revision and updates informed by best practices of instruction and indicators of student success while maintaining integrity in content level and assessment.
4. We encourage the Department to continue to develop its efforts towards alumni engagement, including contact information, career paths, and fiscal development.
5. We encourage the Department, College, and University to do a timely cost-benefit analysis to see if the Tuition Waiver Program is an effective and sustainable way to both increase graduate enrollment and staff GE courses.

Given the importance of staff contributions for any department, and especially to those whose work involves significant levels of laboratory classes, we respectfully offer one additional recommendation for the CSUF-wide PPR structure.

6. We encourage the University to incorporate an additional section in the Table of Contents of the all-university PPR document focusing on the role of and input from staff members.

I. Department Mission, Goals, and Environment

The PPR with which the review committee was provided prior to the visit described in detail both the mission and goals of the Department as well as a description of how those have evolved over time to be consonant with the mission and goals for the university. The committee's interviews with faculty, staff, and students throughout the day provided information regarding the overall environment as well as identifying areas of concern.

Areas of Strength

The Department's Mission and Goals are closely aligned with those of the University. As stated and supported PPR, the "...Department has been a leader in many elements of the University's Strategic Plan, including (a) engagement of students in high-impact experiential learning, (b) implementation of evidence-based programs that support student success and narrow achievement gaps for under-resourced students, such as mandatory advising and Supplemental Instruction (SI), (c) recruitment and retention of high-quality, student-centered and research-active faculty, and (d) securement of external grants and contracts to support our mission and goals." The Department has been active in university-wide conversations as its missions and goals have evolved over time, which is reflected in the thoughtful approach the Department takes towards advising, curricular design, and providing academic support networks for students such as a robust Supplemental Instruction program.

Areas for Growth

As a laboratory-based discipline, the Department relies heavily on its staff for a number of critical tasks, such as setting up labs for classes and keeping the Greenhouse operational and accessible to students. As noted in the Executive Summary, during the period under review both undergraduate and graduate majors enrollment has increased substantially, reflected in a proportional increase in FTES. With the need to offer more classes but with limited lab space, the Department has had to offer more lab classes outside of traditional time slots, including evenings and Saturdays. Thus, staff members are expected to work during these times to ensure that the labs are set up. Conversations with staff members showed that they understand this need and are committed to providing service as needed. However, this time occurs outside of the traditional eight to five M-F schedule and is not compensated. Staff reported that while faculty are generally aware of this additional demand of staff time and work, the College and University may not be since they are not involved with the daily operations of the Department. We would respectfully suggest that the College remain in direct communication with the Chair and staff members on a regular basis to ensure that staff needs are being met and to help elevate staff recognition in the College (**Recommendation 6**).

II. Department/Program Description and Analysis

During the period of the PRR, the undergraduate curriculum has undergone significant revisions not only related to the scientific and technological advances within the biological sciences but also to address more effective teaching and learning given the substantial increase in the number of students over the seven-year review period. Based on information in the PPR and our conversations with the Department Chair, faculty, and students, we discuss these in detail here.

Areas of Strength: Undergraduate Program

The merger of Cell and Molecular biology areas into a single concentration and the development of a General Biology concentration within the major are timely and prudent approaches to the field and to the increasing student interest in the biological sciences. The separation of the lecture and laboratory components in the lower division core courses, BIOL 151 and BIOL 152, has been effective and the application of this curricular structure to General Microbiology (BIOL 302) will allow students to access upper division lab units in a more efficient and effective manner. Further, the reduction of the upper division laboratory units from 6 to 5 will allow a more efficient pathway to major completion. The introduction of an upper division asynchronous course in science communication (BIOL 398), that also fulfills CSUF upper division writing requirement, would also appear to streamline the path to graduation while benefiting the major. There were additional modifications made with respect to the curricular content for Evolution and Physiology that were implemented prior to this PRR. Evolution, although a fundamental principle to the biological sciences, is now proposed to be integrated into the core concentrations as appropriate but is otherwise no longer required as a core course in all concentrations. Additionally, Physiology, which was developed as an upper division core course following the last PRR, is now addressed as overlay content in various courses within the respective concentrations.

The challenge of access to research experiences in the curriculum has been addressed by the implementation of CURES (Course-based Undergraduate Research Experiences) in courses and laboratories where possible. The research and internship experiences provided by the various external funding opportunities secured by the faculty are a critical and significant contribution to the departmental program.

Areas for Growth: Undergraduate Program

Given the increasing student interest in the biology program, it will be important to continue to evaluate the efficacy of the recently implemented curricular changes. For example, it was not clear from the PRR that the student learning outcomes for the new concentrations have been developed or that some of the “overlay” curricular content, i.e. evolution or physiology, will be implemented with a set of common expectations. The faculty support for these curricular changes appeared evident during the faculty interviews; however, there is a level of concern regarding adequate faculty and staff

personnel and infrastructure resources to deliver the curriculum that would allow students to matriculate successfully and in a timely manner (**Recommendation 1**).

Areas of Strength: Graduate Program

The core academic program for the graduate program (MS) appears to remain fairly stable with respect to core courses and curriculum with the exception of the discontinuance of the Masters in Biotechnology. Despite recruitment challenges, the graduate student population has averaged ~50 students and the students are generally satisfied with the curricular foci. The addition of a faculty member as the Graduate Program Advisor to work with the Academic Administrator Coordinator would seem to be helpful.

Areas for Growth: Graduate Program

The proposal to increase the graduate student enrollment to 70-75 students would seem to be a challenge given the current level of graduate student support. Although teaching assistantships are available, many graduate students choose to seek work outside the department given the low level of compensation. The inclusion of a limited number of tuition waivers (4) is an important step but needs to scale up in order to effectively recruit a strong cohort of graduate students (**Recommendation 5**).

Clearer communication with graduate students regarding advising and progress toward degree completion were cited in the PRR and were identified as areas of concern by both faculty and students. (**Recommendation 2**).

III. Documentation of Student Academic Achievement and Assessment of Student Learning Outcomes

The PPR provides substantial documentation of student academic achievement based on increased graduation rates for basically every subgroup of students majoring in or taking a course in Biological Science. The document also details how Student Learning Outcomes (SLOs) are assessed and how this process continues to evolve to reflect curricular and instructional changes over time.

Areas of Strength

The Department has designed and instituted an assessment program chaired by a faculty member and coordinated closely with university assessment protocols. During the period under review, the Department has been committed to ongoing program assessment despite several challenges, including the pandemic and department chair changes. Beginning in 2023 the Department has been able to more effectively focus on assessment using the committee members rather than relying primarily on the committee chair. The PPR lists specific undergraduate 2024 Student Learning Outcomes (SLOs) and graduate 2023 SLOs. Results show evidence of student engagement, mastery of content, and student satisfaction.

Areas for Growth

As discussed in the PPR, one outcome of the pandemic has been the shift towards remote/virtual learning. The Department is keenly aware of this and identifies both pros and cons of delivering content in this modality. Assessment of the academic effectiveness and student (and faculty) experience of online courses is an ongoing national discussion. We see the Department as having an important voice in this conversation both at the university and beyond. We would encourage the Department to continue to develop its assessment program and approaches to help identify, develop, and implement best practices of teaching and learning for the future. Given the size and scope of the Department, there may be an excellent opportunity for some students and faculty in and perhaps outside of the Department to do scholarly research of best practices in assessment as instructional programs and models continue to evolve (**Recommendation 3**).

IV. Faculty

The tenured and tenure-track faculty, as well as the critically important full-time and part-time lecturers, are important in the delivery of the departmental program; and all faculty are committed to the mission of teaching and research within the concentrations of the major. The capacity of the full-time faculty to secure external funding for research and training is admirable and has benefited the opportunities for students within the departmental program.

Areas of Strength

The current demographic distribution of the faculty by rank includes only two assistant professors and two full-time lecturers while the rest of the faculty are tenured. The number of tenured faculty at the rank of full professor is at least 20, with a significant number on FERP, which would indicate that the faculty will have an opportunity to rebalance over the next five to seven years. Given the newly implemented curricular restructuring, it will be important to be strategic in the recruitment of new hires and their disciplinary breadth and focus.

The faculty thought that the information and guidance with respect to the criteria for advancement is clearly articulated which is useful.

Areas for Growth

Although the recruitment of an additional tenure-line faculty during this academic year was lauded, there was a concern within all faculty groups, that given the rising enrollments, there is a need for additional faculty who are able to contribute to all faculty responsibilities, teaching, advising, and research. The level of faculty engagement is important to maintaining an excellent level of quality experience for students. In particular, senior faculty felt that the importance of faculty research needs additional emphasis and support from the administration in order to maintain the quality of the academic program at both the undergraduate and graduate level.

The recruitment of new faculty needs to be strategic and emphasize greater interdisciplinarity instead of reactive to faculty disciplinary replacement (**Recommendation 1**).

V. Student Support and Advising

The review committee was informed of the student advising model through initial meeting with the Dean as well as with the details provided in the PPR. The committee asked the faculty at every level - assistant, associate and full - about student advising. The committee also inquired with students that attended the student session.

Areas of Strength

The Department engages in a comprehensive advising model from freshman/transfer to senior year. Freshmen receive advising support by NSM student success team, followed by advising supported by a departmental team of faculty, and finally individual faculty advising into the junior and senior years. Students receive multiple opportunities to receive support and also have more opportunities to engage in high impact practices like research and study abroad. There are many programs that are externally-funded that help students engage in research.

Areas for Growth

Some departmental programs are in danger of being eliminated due to federal funding changes (indeed, at least one program, Undergraduate Research Training Initiative for Student Enhancement (U-RISE), has already been cut). The committee encourages the department to find the means of support for these students and faculty that were engaged in high impact practices as part of these programs, such as research. This is a discussion that is beyond the Department and should involve partners in the NSM and the University. The Chancellor's office should also be involved in discussions involving the disruption in federal funding.

The committee was informed that some students have holds on their accounts until they go through an advising appointment; however, if they have issues setting up an appointment, they can't enroll in the courses they need before the courses are full. Possible options may include moving towards on-line sessions, in-person group sessions beyond those that are already conducted by the faculty in the department, and flexibility in waiving advising for students who cannot get an appointment prior to their scheduled registration date and time (**Recommendation 2**).

VI. Resources and Facilities

The Biological Sciences department at CSUF is primarily housed in Dan Black Hall and McCarthy Hall, as well as in some additional facilities such as the greenhouse. The committee engaged in a tour and spent most of their time in McCarthy Hall as well as the greenhouse. This tour served to showcase the renovated spaces as well as highlight areas that are in need of attention.

Areas of Strength

While the departmental facilities are aging, the second floor of McCarthy Hall has been renovated in the last few years, including instructional labs, conference rooms, faculty offices and the department office. The committee commends the College and the Department for engaging in these renovations that have served to upgrade the teaching and support activities for the department.

Areas for Growth

Several spaces in the department have not yet been renovated. The committee would like to highlight the greenhouse in particular which provides resources internally and externally both from a teaching as well as from a research perspective. Faculty, staff and students use this facility.

The committee would also like to highlight the need for maintenance and upkeep of equipment used in teaching and research activities. The cost of maintenance contracts makes it prohibitively expensive to provide this for aging equipment. While the department provides a budget for lab (\$100,000 per year), there should be consideration for replacing old and aging equipment that are top priority for instruction and research (**Recommendation 1**).

VII. Long-Term Plans

As mentioned earlier, higher education has been forced to be in a reactive mode at present, making it challenging to move ahead with clear plans. In this section we have tried not only to document the Department's efforts in developing plans, but identify possible pathways that may help facilitate this process.

Areas of Strength

Based on the PPR as well as information gathered during the committee's visit, it is clear that the Department has thought deeply about issues related to growth and sustainability. All of the participants in our conversations throughout the day – administrators, faculty, staff, and students – voiced very real concerns about future directions. We view this thoughtful reflection as a strength of the collective culture of the Department and College. In this light, we present here three suggestions that may be interpreted not so much as growth areas but as possible actions.

Areas for Growth

Given the effects of the pandemic and the uncertainty of the present, the Department, College, and University has been in a reactive mode, trying to keep academic programs running and essential services intact. Indeed, in conversations with faculty and staff the word “reacting” came up repeatedly. Given the weight of factors outside institutional control, it may be helpful to identify elements that the institution can control. For example, the Department would like to grow its graduate program from approximately 50-60 to 75 students, with the hope that many of these students would serve as TAs. Ironically, conversations with students clearly indicated that they could make more money working minimum wage jobs and so opted not to take a TA position, even though they said they knew it would be good for their professional goals. The Tuition Waiver Program (TWP), which the University has already begun, may be a cost-effective way to support graduate student growth and staffing GE courses. We conjecture that the cost of the TWP is less than the cost of hiring PTL to staff these classes. This is consistent with the Mission and Goals of the University apropos student support and just makes sense all around. We would encourage the university to do a cost-benefit analysis to see what the effects of expanding the TWP would be (**Recommendation 5**).

The Department has made efforts towards gathering information on students post-graduation, including employment and post-graduate education choices. Given the number of students that graduate in Biological Sciences, this task is both important and daunting. Building and sustaining an informed and active alumni base is important, both educationally and fiscally, for the Department, College, and University, especially in large urban public institutions that have limited private resources. Perhaps conversations with the CNSM Director of Development would be useful in charting this course (**Recommendation 4**).

Lastly, while the future remains uncertain, we believe that a written five-year plan for hiring faculty and staff would be extremely useful for the Department, College, and University. This is perhaps the most timely of the review committee's recommendations (**Recommendation 1**).