



Date: February 15, 2020

To: Jennifer Summit, Provost and Vice President for Academic Affairs

From: Carmen Domingo, Interim Dean
College of Science & Engineering

A handwritten signature in blue ink, appearing to read "Carmen Domingo".

CC: Laura Burrus, Chair of the Department of Biology

RE: Department of Biology 7th Cycle Review Dean's Response

The 7th Cycle review process included a very extensive and thorough self-study by the Department of Biology as well as a comprehensive review by two external experts - Dr. Shannon Datwyler from Sacramento State University and Dr. Phyllis Robinson from University of Maryland Baltimore County. In reviewing both the self-study as well as the external review report, I was impressed by the strong academic quality of both the undergraduate and graduate programs. Below I highlight particular strengths that were articulated in the external review report as well as my thoughts on their recommendations.

With regards to the undergraduate program, the Department of Biology serves the largest number of students across the campus each academic year in their major and non-major courses. Over 85% of the faculty have invested significant time in pedagogy workshops and trainings which have led to significant curricular changes to improve student outcomes in their classes. The external report highlighted several times how impressed they were with the quality of classroom instruction along with all of the efforts to reduce the equity gap and improve student retention. In addition, they applauded the efforts of the department to use the American Association for the Advancement of Sciences recommendations in "Vision and Change in Undergraduate Life Science Education" to guide their curricular changes as this situates them at the forefront of Biology education.

The Biology graduate programs are also very strong. They have made some important changes to the curriculum to bring their programs into compliance with EO1071. The key to the department's graduate program success is the strong active research programs that faculty have built and sustained with both internal and external funds. This is quite challenging given the competitiveness of most external awards (typical grant applications must rank in the top 10% or higher to be funded). The graduate students play a major role in the department as they teach many of the lab sections as well as help execute faculty research agendas. The higher the caliber of graduate student, the better the undergraduate lab instruction and the more productive the research groups. The challenges of sustaining this high quality program are growing given the low campus student wages and the escalating living costs in the city.

The Biology faculty have invested extraordinary time and effort to obtain external funding to support a large and varied portfolio of student training efforts that are highly successful and recognized nationally as model programs of excellence. Importantly, these grants are providing a significant number of students, most of whom are underrepresented in the sciences, with financial assistance and opportunities to conduct research. This is a very high impact practice that correlates with high retention and graduation rates in the sciences. Overall, the faculty in Biology bring the largest number of grants to our college and the vast majority of those grants provide funding to our students. Thus, the impact is felt throughout the undergraduate and graduate programs.

I applaud the department for their efforts in recruiting and hiring diverse faculty that reflect the diversity of the student population they serve. This will help students with their self-efficacy in regards to pursuing a career path in the biological sciences as it is a key factor in retention of students in the major.

To continue to grow and improve their educational and research environment, the reviewers made several important recommendations, that I wish to highlight below.

- Provide the department with clear, predictable, and stable funding allocation that aligns with course type (lecture, lab, activity), staffing needs (including GA/SA allocations) and supply costs.
- Improve financial support for graduate teaching instructors (GTAs), which are instrumental to undergraduate retention and graduation success. High caliber GTAs provide a better learning environment for our undergraduate students. I am in strong support of the fee waiver program, or something similar, that can assist graduate students in balancing the cost of attendance at SF State.
- Stabilize pre-nursing admissions so that it aligns with the funding allocation and infrastructure limits in the Biology Department.
- To gain a better understanding of the impact of changes to their curriculum and pedagogy, the external reviewers recommended developing a strategy for capturing student learning outcomes with embedded assessments across the entire degree programs. This type of information could be highly informative. This is not currently being done in any department given the time and effort of such an analysis. However, with the proper resources and expertise, this type of analysis could be highly impactful.
- The College Student Success Center (CSSC) has not been fully staffed since its opening in 2018. Thus, it is not currently meeting the needs of the college. I am in agreement with the external reviewers that further effort need to be invested to ensure that the CSSC is working in synergy with the Biology Department to meet the advising needs of our diverse student population. I applaud the efforts by the Biology Department to provide special outreach sessions for their students at key time points in the academic year such as for filing for graduation, addressing probation, registering for classes, and welcoming them during the first week of classes. Moreover, they have also recently designed new courses in both the undergraduate and graduate levels that address advising needs as well as professional development in preparation for entering the workforce or graduate programs. One area that needs more attention is advising pre-health students, which is a large proportion of the biology students that is currently underserved.

- Improving administrative transactions for students is very important. The external reviewers highlighted the need to reduce redundancies and unnecessary duplication of paperwork. It is important to streamline the course equivalency substitutions, application for graduation, and petition process.
- The infrastructure needs in Hensill Hall are significant and costly. This building was constructed in the 70s and many of the labs and teaching spaces are outdated and require infrastructure improvements. Student study spaces are not present in HH. Given significant enrollment growth in other departments such as Computer Science and Engineering, student study spaces across all of CoSE are non-existent. Thus, the college is unable to provide study spaces for students in Biology in any of the CoSE buildings. The new science replacement building will begin to open up some public areas for students to congregate and study, but it will not meet the needs of over 7000 majors.
- With Biology coming off of impaction, we will need to develop a strategy for increased capacity and improved teaching and research environments. The lack of a large classroom (+300) that can allow for the interactive, student-centered teaching approach used in BIOL 230/240 and other large classes such as BIOL 100 is a significant obstacle. The replacement science building given its size constraint does not currently program a large lecture hall of this scale. Such a project will need to be addressed by the University in order to support high quality, large classroom teaching.
- Staffing needs across the college have not expanded with enrollments. This is a challenge. The reviewers mentioned staff needs in Biology. The process of refilling staff positions is more challenging than necessary as HR policies and procedures are more taxing than normal. An additional challenge is the inability to address the local cost of living as most of the salaries associated with staff position are not high enough for the skillset that we are searching for. This is a particular challenge for departments needing specific technical skill sets. We have recently hired a fulltime greenhouse manager and are currently searching for a part-time seawater technician and a full-time Biology administrator. Biology Department has not experienced a reduction in staff positions, however, they have experienced delays in replacement hires. The dean's office is working with AA and HR to improve this process.

In summary, the Department of Biology, has made significant improvements in the pedagogy and curriculum, with a strong focus on improving student retention, closing the equity gap, and improving graduation rates. The faculty are intellectually engaged in their areas of expertise and are providing students with rich and meaningful research experiences that percolate throughout the curriculum. The department has been successful in increasing the diversity of their faculty so that it begins to mirror their student population with regards to cultural background, ethnicity, and sexual orientation. With a clear strategic plan that includes budget clarity, the department is poised to continue to produce an excellent learning environment for our students and to grow and expand into areas that reflect current and future workforce needs.