# Dean's Response to the Program Review of the Microbiology Program

**August 11, 2013**

I greatly appreciate the thought and effort that went into the report from the Program Review Team, as well as the self-study and report response by the Microbiology Department.

During this review cycle, I requested that departments select external reviewers without any ties to the department in order to ensure the most objective review possible. I felt that the Microbiology Department could have been more selective in the reviewers they chose, as many of them did, in fact, have established associations (personal or professional) with members of the Microbiology faculty. That said, the review team did constitute an outstanding cross section of professionals within the discipline (e.g., from industry/government as well as from both Microbiology and integrated Biology departments). During their visit, I provided the reviewers with a list of specific questions that I felt would help guide the evaluation, and assured each review team that honest and objective observations, responses, opinions and suggestions were expected. Teams were asked to consider the provided questions in developing a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, which would comprise the core of their report. Consequently, the corresponding report reflects solely the views and opinions of the reviewers on these issues. Although several unsupported assertions were made in their report (e.g., "weakness in the program," "silos relative to other departments"), the Microbiology Departmental review team appears to have provided a thoughtful assessment of the program at Weber State University.

In their report, the reviewers identified a number of strengths, including dedicated faculty, diverse undergraduate research opportunities, and student success in gaining employment or acceptance to professional training programs. They also noted that the Microbiology Department has a unique niche in Utah, that societal demand for individuals trained in the discipline is increasing, and that the department had "strong potential for…growth." The department and I agree on these points.

In developing their SWOT analysis, the reviewers made a number of suggestions that are discussed in the department response. I also address these, below:

1. Strategic Planning: *In their summary recommendations, the review team noted a "Lack of a strategic plan/vision for the department." Such a plan was acknowledged by the department to potentially influence new hires, the development of new courses, and the purchase of new equipment. I agree fully with this recommendation and ask the department to immediately begin developing a 3- to 5- year strategic plan that will not only address the reviewers' recommendation, but also will help the department to better define its path into the future. As the reviewers suggest, the strategic plan should be "consistent with the strategic plan of the college and university" and "based on feedback from the industry." An external advisory board may provide great assistance in this latter regard; as was recommended by the review team, the department is currently assembling an alumni/industry advisory board that should prove to be a strong resource. I request that a strategic plan be completed no later than the end of the 2014 Spring semester, at which time it should be submitted to the Dean for review. I stand ready to help the department as they develop their long-term vision for the future.*

2. Curriculum: *The review team recommended that the strategic plan/vision for the future (discussed in #1) and a "matrix…that identifies when topics and skills are mastered, as students move through the curriculum." be used to drive curricular changes. I agree that the curriculum should be cohesive such that each course provides a foundation on which subsequent coursework should be based. Within their self-study, the Microbiology Department presented what appeared to be a reasonably comprehensive concept/skills matrix tied to their assessment plan. In reviewing the matrix, I found the skills matrix to be reasonably robust, but I agreed with the reviewers that a stronger concept matrix would be beneficial. For example, three of the five conceptual learning outcomes focus on the 1) integral, 2) vital, and 3) indispensible roles that microorganisms fill in nature and industry. The others focus on 4) the ubiquitous presence of microorganisms and 5) how microorganisms can be used as model systems. Collectively, these are broadly defined and largely synonymous. Consequently, I agree with the reviewers and recommend that the department review and redefine more specifically its expected*

*student learning outcomes. In turn, as suggested by the review team, the revised matrix should guide future curricular improvements. Such a matrix might function to address student concerns regarding course content redundancies (noted by the reviewers) as well, particularly if it is developed while considering similar matrices produced by other COS departments. I recommend that weaknesses in the assessment plan be addressed not later than the end of the Fall, 2013 semester.*

*Noting "Restrictive course offerings" particularly for students early in their academic careers, the reviewers also recommended that the department consider increasing curricular flexibility. The team suggested that restrictive course offerings may contribute to "attrition and/or additional expense for students [who] choose microbiology after a semester or two." The department responded by agreeing that it will review its course sequence to ensure that students are able to complete the Microbiology degree in a reasonable amount of time. I agree that this review is necessary, and recommend that this evaluation be initiated immediately so that appropriate adjustments in course offerings, if warranted, could be made as early as Spring semester, 2014.*

*Finally, also addressing the restrictive curriculum, collaborative efforts with other departments were strongly recommended. The team suggested that two collaborative courses, including a team-taught introductory course and a common biology core course for life science majors, be developed. The reviewers remarked that concerns over merging the life science departments were repeatedly raised; this resulted in the review team's perception of resistance to collaborative work across departments. In their response, the department rebutted the perceived resistance, citing the numerous cross-disciplinary research opportunities that currently exist, and the few, albeit limited, examples of cross-listed courses that are available (e.g., Geomicrobiology, Cell Culture). Further, the department notes that their students are required to take courses from other COS departments and conversely that Microbiology offers "service courses for the other College of Science majors." The validity of the resistance notwithstanding, I do not feel that departments arguments address the spirit of 'interdisciplinary work,' and agree with the reviewers that cross-disciplinary collaboration within the college could be stronger. Therefore, I recommend that the department work with others within the college to discuss the possibility of developing additional cross-disciplinary courses, and stand ready to support such efforts as time and resources allow. Regarding the team-taught introductory course that the review team suggested, the department does express interest in exploring the potential advantages of such a course and I encourage this investigation, recommending that a committee with representatives from each of the life science departments be formed immediately. Further, I strongly support the review team's recommendation of the development of a common biology core be investigated. Indeed, the students with whom the reviewers spoke commented upon 'redundancies,' suggesting that a common course in which these 'redundant' concepts are presented may be well-received by students. The same committee of life scientists can be charged with reviewing both possibilities. I am willing to discuss ways in which the college can support these efforts and recommend that the committee report its progress on a semester-by-semester basis for inclusion in the COS annual report to the Provost.*

3. New Faculty: *The Review Team supported the department's goal of hiring additional faculty to meet increasing student demand, though noted that this hiring decisions should be "pursued in the context of a well-articulated strategic plan" (discussed in #1). The Department acknowledged that additional faculty are required to meet student demand, particularly for upper-level courses, and to decrease the "very large SCH/faculty FTE." I agree that the current workload in Microbiology appears to be high. However, I also note that many existing microbiology faculty voluntarily choose to take on relatively high levels of overload teaching, which to some extent, detracts from the argument of needing additional faculty members. Nonetheless, given a strong rationale from the department for a new faculty member with expertise in an area necessary to support the department's strategic plan, I am willing to discuss the acquisition of additional resources with the Provost.*

4. Workload: *The review team noted that the current workload model fails to recognize class size, or research and service expectations. Though not addressed in the departmental response, I acknowledge that a better workload model needs to be developed and receive consensus acceptance. The workload issue is one faced by the majority of departments within the COS and will be a priority for discussion within the college in the coming year*

5. Advising. *In addition to the lack of curricular flexibility noted in #2, it was suggested by the review team that a lack of centralized, structured/required advising may contribute to decreased retention. I concur with the departmental response regarding the necessity of individualized advisement and the requisite involvement of more faculty members in the advising process such that this individualized advising can occur. Thus, I*

*recommend the development of an advising rubric that can be used by <u>all</u> TT Microbiology faculty (so that consistency in advising can be maintained) in mandatory annual advising for all declared majors. Implementing such an advising schedule for all majors would likely help keep students "on track" toward successful completion of degree requirements in a more timely manner and, thus, should be a priority. I also recommend that the college advisor should be engaged to assist in developing both an advising rubric and stronger advising skills among the faculty.*

6. Resources: *A limitation of resources—or in some cases failure to fully utilize available resources—was suggested to constrain course offerings and/or research opportunities. The review team noted several limitations, including the physical facilities, lack of state-of-the art equipment, a paucity of institutional funding, and a lack of institutional commitment to research (as evidenced by a "lack of incentives for grant writing") that were suggested to impede student opportunities. Further, it was suggested by the reviewers that several other resources were underutilized, including student assistantships to support the preparation of course-related laboratories and student participation in external training and internship programs. The departmental response did not address the review team's recommendation regarding underutilized resources, but I support the use of supervised student workers to facilitate preparation of course-associated laboratory exercises. Further, I will support any departmental efforts to encourage student participation in external programs. Speaking to the limited resources, many of the limitations placed upon the department by the physical facilities will be addressed through construction of a new science building, as indicated in the department's response. I acknowledge that modern instruments within the department would enhance student research experiences, yet these are quite often expensive to purchase, maintain, operate, and replace. I strongly urge faculty members to seek external funding for new instruments to support undergraduate research, and am willing to discuss ways in which this can be supported by the college. While I will continue to seek sources for additional funding, I acknowledge that there is limited funding for research available through the institution. Regarding the cited "lack of incentives for grant writing," I reiterate my longstanding offer to provide support, in the form of course buyouts (or, as warranted, stipends in support of professional growth activities), to faculty who engage in external grant writing. At the same time, it seems necessary to point out that the reward of obtaining an external grant to help improve student learning and/or student faculty research should in itself be an incentive for submitting an appropriate external proposal. Here it may also be worth pointing out that letters to all new tenure-track faculty hires in COS contain an expectation that they will write and submit competitive proposals for external funding. Of course, I am willing to discuss with faculty additional ways in which grant writing can be better supported by the college.*

7. Graduate Studies. *Investigation of the feasibility of a Master's level Microbiology program was recommended. It was suggested that such a program might "improve research and teaching opportunities" for both students and faculty, as well as to provide an avenue for growth. The department acknowledged that "there is industry need for students with this level of training," and that such a program might facilitate expanded research and instructional opportunities. Yet, no plans for investigating this possibility were detailed in the departmental response. While both the University of Utah and Utah State University might offer sufficient access to Master's level Microbiology training, if the department is inclined to investigate this possibility further, I will support (as time and resources allow) the department's investigation of the feasibility of such a program at Weber State. If the department is interested in doing so, I recommend they begin by performing a 'market analysis' to investigate the local/regional need for master's level microbiologists, and otherwise adhere to the Regents Policies discussed in R401 (specifically: R401-Appendix B).*

8. Safety*: Compliance with safety regulations was strongly recommended. The department and I agree that the safety of our students and faculty is paramount, and the department has committed to improving safety by adding signage and purchasing and installing safety equipment prior to Fall semester, 2013. Within the constraints of the college budget, I stand ready to facilitate these efforts in any way possible, as student safety is of utmost importance.*

Finally, I recommend that the Microbiology Department undergo a full program review again during the 2016-2017 Academic year. Beyond that, a return to the five-year cycle is anticipated.

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