



Biochemistry Program Review 2022-23

Closing MOU

Date: September 13, 2023

Overview

Degree/Certificate Programs Reviewed: Bachelor of Science in Biochemistry & Molecular Biology
Bachelor of Science in Biotechnology
Master of Science in Biochemistry
Master of Science in Biotechnology
Doctor of Philosophy in Biochemistry

Department Chair & Dean: Dr. Bob Ryan, Chair, Dr. William Payne, Dean

External Reviewers & Affiliation: Dr. Clint Chapple, Professor of Biochemistry, Purdue University
Dr. Enrique De La Cruz, Professor of Molecular Biophysics and Biochemistry;
Head of Branford College, Yale University

Date of External Visit: March 29-30, 2023

Review Process Summary

The Biochemistry program was scheduled for regular program review as mandated by the Board of Regents and University policy. A self-study document for the department and its programs was developed by the department faculty and completed in the Fall of 2022 for Biochemistry programs. These respective reports were provided to the reviewers before they conducted a visit on March 29-30, 2023. The external reviewers reviewed the program and met with relevant faculty, staff, students and administrators to determine the department's accomplishments, examine strengths and weaknesses, and identify opportunities as it plans for the future. A final report was issued by the review team shortly after the review visit. In accordance with institution practice, responses to the review were solicited from the department and the dean. A final meeting took place on August 29th, 2023. This document represents the final MOU of recommendations and findings from the review.

Signatures

Executive Vice President & Provost:



Date: 9/26/2023

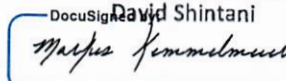
Jeffrey S. Thompson

Vice Provost, Undergraduate Education:



Date: 9/18/23

Vice Provost, Graduate Education & Dean, Graduate School



Date: 15-Sep-2023 | 3:40 PM PDT

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Markus Kimmelmeier

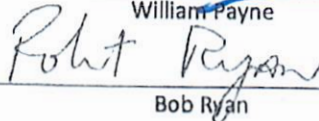
Dean, College of Agriculture, Biotechnology & Natural Resources



Date: 9/15/23

William Payne

Chair, Department of Biochemistry



Date: 9/15/23

Bob Ryan

Major Findings and Conclusions

The Department of Biochemistry & Molecular Biology integrates the molecular life sciences from the most basic biology-chemistry interface to molecular genetics and bioinformatics. The disciplines of the molecular biosciences involve the use of sophisticated analytical, biochemical, and genetic technologies to examine the activities of living systems, focusing on the structures and roles of macromolecules in complex biological systems.

Faculty members in biochemistry function as research project managers and principal investigators of their own individual programs whose success require them to be innovative and interactive with other scientists. The faculty member designs the individual research programs, and there is little to no administrative direction applied to their choices of research activities.

Each faculty member is expected to direct an active research program or be involved in other scholastic activities involving the training of doctoral and masters-level graduate students as well as undergraduate students studying in biochemistry and molecular biology. In addition, each tenure-tract faculty member provide effective formal classroom teaching, provides service to the department's research and academic functions and maintains research/teaching funding to sustain their laboratory programs.

The department has multiple missions that involve balancing teaching in biochemistry and molecular biology with the needs of high-achieving undergraduate majors in biochemistry, a growing Ph.D. program in biochemistry, and of highly competitive research programs. The department has administrative responsibility for the support and resource management for the interdepartmental graduate faculty of Biotechnology and Cell & Molecular Biology.

The review team shared the view that the culture within the Department is positive, supportive, and overall very favorable, but with room to grow. There was every indication of great merit and potential in the Department for it to flourish and stand among the crown jewels of the College and University. Importantly, the students see the merit, potential, and opportunities the Department brings to their professional careers and lives. As a result, they benefit greatly and have developed a tremendous sense of loyalty to the Department and UNR overall. This is a tremendous strength and testament to the Department's success in achieving its teaching and research mission. Here are areas the committee felt the department needed to address, both by the department and the college/university as a whole:

- Fulfillment of past promises – specifically the hiring of Biochemistry tenure-track faculty in Human Health, as communicated by the chair when recruited.
- An explicit commitment to build on faculty (non-tenure track) so the department can continue to realize its ambitions to serve and fulfill the University and College mission which is growing and serving different student populations
- Recruit more undergraduate students
- Address stipend amounts
- The Department needs to participate in a strategic plan exercise. Need help with a cohesion and vision, including department management, research and collaboration.
- Recommended that the administration of CABNR engage with the Department to find a permanent solution for the benefit of both the Department and the students enrolled in its undergraduate and graduate programs.
- Recruit 4-5 faculty in the are of biochemistry of human health.
- We strongly recommend that the administration of CABNR engage with the Department to find a permanent solution for the space issues that plague the Department for the benefit of both the faculty's research programs and the students enrolled in its undergraduate and graduate programs.
- We strongly recommend the Department also build on non-tenure track faculty so the Department can sustain anticipated retirements and continue to realize its ambitions to serve and fulfill their teaching mission, which is growing and serving different student populations.
- We recommend the University allow the Department to make multiple offers in a given search if candidates are competitive and aligned with the Department mission.
- We recommend the Department develop a second-year undergraduate course focused on teaching students how to "think like biochemists" and become more thoroughly acquainted with their major.
- We recommend the Department consider offering a course for non-majors, possibly in a dual-enrollment format to attract high school students to the discipline, UNR, and major.
- We recommend that the Department institutes regularly scheduled monthly faculty meetings the dates of which are set at least a semester in advance.
- We recommend that the Chair forms an advisory committee. This committee should include untenured faculty and could be organized in one of several ways. One option is to have representation from the different research focus areas in the Department. Alternatively, it can be staffed according to mission areas with faculty representing the undergraduate and graduate programs, research, facilities, etc.

Next Steps for this Program/Department (topics will vary)

- BMB will hold faculty meetings on a monthly basis from August until May. These meetings will take place on a regular schedule that is announced well in advance.
- BMB will organize an Advisory Board comprised of faculty members representing all ranks that will meet with the Chair one week prior to faculty meetings to discuss departmental affairs.
- With regard to concurrent enrollment courses, the department will take a close look at the pros and cons of this opportunity at the first faculty meeting of the academic year and decide on the most appropriate path forward.
- BMB faculty, or a subcommittee, will develop a Strategic Plan, describing a shared vision for research, teaching, and hiring priorities developed with reference to Institutional and college-level priorities. The Strategic Plan will address research directions, and teaching missions (undergraduate and graduate education). The final plan will be approved by a majority vote of faculty members and uploaded to a prominent place on the departmental web page.
- BMB commits to developing a new course for non-majors designed to highlight the revolutionary changes in biochemistry, molecular biology and biotechnology that impact all of our lives. This course will allow both BMB majors and non-majors to become better acquainted with the mission and teaching goals of BMB during the 2nd year of their undergraduate experience and will focus on describing the excitement of scientific discovery and breakthroughs, without belaboring complex chemical concepts.
- The Chair commits to renewing accreditation of the undergraduate program with the American Society of Biochemistry and Molecular Biology. To encourage this the Dean's office commits to providing one semester of teaching release for one full-time instructor (or equivalent) so that some faculty effort can focus on curricular review, course development and accreditation steps.
- BMB will work with the CABNR office of media and communications to revise and update our website and expand our social media presence in an effort to improve visibility and communication
- BMB will work with the UNR Foundation to create an account that permits the department to add a "donate here" button to our website.
- Work with UNR administration to find suitable solutions to departmental space constraints. We note as well that improved infrastructure (e.g. a BSL-3 capable insectary) will help the department contribute even more effectively to UNR's research prowess. We do know that a new Life Sciences building is a priority of UNR's president, and he advocated for it strongly during the Nevada legislature session.

Vital Statistics on NSHE Reports

Number of students with declared major in the program area:

2022-2023	BS Biochemistry	308
	BS Biotechnology	131
	MS Biochemistry	19

MS Biotechnology	30
BS/MS Biotechnology	18
PhD Biochemistry	16

Number of graduates from the program for the following years:

2020-2021	BS Biochemistry	58
	BS Biotechnology	12
	MS Biochemistry	0
	MS Biotechnology	9
	BS/MS Biotechnology	3
	PhD Biochemistry	3
2021-2022	BS Biochemistry	39
	BS Biotechnology	16
	MS Biochemistry	1
	MS Biotechnology	7
	BS/MS Biotechnology	8
	PhD Biochemistry	8
2022-2023	BS Biochemistry	36
	BS Biotechnology	12
	MS Biochemistry	19
	MS Biotechnology	14
	BS/MS Biotechnology	0
	PhD Biochemistry	1

Program-level graduation rate using first-time, full-time, degree-seeking cohort at 150 percent completion time:

2020-2021	BS Biochemistry	34%,	n = 92
	BS Biotechnology	n/a	n = 0
	MS Biochemistry	100%,	n = 1
	MS Biotechnology	n/a	n = 0
	BS/MS Biotechnology	100%	n = 2
	PhD Biochemistry	n/a	

2021-2022	BS Biochemistry	37%	n = 90
	BS Biotechnology	n/a	n = 0
	MS Biochemistry	n/a	n = n/a
	MS Biotechnology	100%	n = 3
	BS/MS Biotechnology	0%	n = 2
	PhD Biochemistry	0%	n = 2

2022-2023	BS Biochemistry	35%	n=79
	BS Biotechnology	n/a	n = 0
	MS Biochemistry	0%,	n=n/a
	MS Biotechnology	88%	n = 8
	BS/MS Biotechnology	39%	n = 18
	PhD Biochemistry	100%,	n=3

Headcount of students enrolled in any course related to the program (duplicated):

2022-2023	BS Biochemistry	1,497
	BS Biotechnology	105
	MS Biochemistry	192
	MS Biotechnology	55
	BS/MS Biotechnology	160
	PhD Biochemistry	192