Department of Biomedical and Pharmaceutical Sciences
Skaggs School of Pharmacy
Graduate Programs*
2020 Assessment Report

All areas shaded in gray are to be completed by the department/program.
This document will be posted online and must be accessible electronically (including appendices).

Unless otherwise stated, the following information applies to all of the graduate programs within the BMED department.
*The following information applies to all of the BMED Graduate Degree Programs:
  - Ph.D. and M.S. in Pharmaceutical Sciences and Drug Design
  - Ph.D. and M.S. in Toxicology
  - Ph.D. and M.S. in Medicinal Chemistry

MISSION STATEMENT

The mission of the Department of Biomedical & Pharmaceutical Sciences is to offer a dynamic curriculum in the biomedical and pharmaceutical sciences in support of the School’s professional pharmacy degree and strong graduate programs. The Department places high priority on the development of nationally recognized programs of research, NIH supported programs, and Ph.D. level graduate education. The Department provides service to the University and to local, regional, and national scientific and professional organizations. The Department is committed to development of minority training programs and recruitment of minority and female faculty and students.

DEPARTMENT ALIGNMENT WITH PRIORITIES FOR ACTION

After listing each departmental objective, indicate which of the five Priorities for Action the objective supports. In this section, you may also briefly describe any innovative or noteworthy programs/initiatives that support the Priorities for Action.

1. Create learning experiences that promote the graduate students’ development of their foundational and advanced knowledge of the biomedical and pharmaceutical sciences and research skills.

PLACE STUDENT SUCCESS AT THE CENTER OF ALL WE DO: Students admitted to the graduate programs are matched with a faculty advisor who is familiar with the curriculum and works in the area of interest of the student. Progress towards graduation is monitored by the advisor and program faculty through the use of the department’s Graduate Student Progress Checklist. Students also have access to courses offered in other science majors to promote cross-disciplinary learning experiences.

DRIVE EXCELLENCE AND INNOVATION IN TEACHING, LEARNING, AND RESEARCH: The Department hosts or is affiliated with four research centers where students gain experience working with researchers. These arrangements and centers ensure graduate students have opportunities to also meet and work in projects with researchers outside the department. The Department provides faculty with some
monetary support for their professional development activities. The Department continues to have low turnover rates for both faculty and staff. Faculty, staff and graduate students are all supported to take advantage of opportunities in leadership roles (Graduate and Professional Student Association leadership roles in the current assessment period, faculty leadership in national professional societies). Individual instructors regularly receive evaluations of their courses and teaching from the graduate students. The Department also has three advisory committees that are charged with regular review and revision of the various graduate programs. The graduate programs use a number of interactive, seminar courses and practical laboratory experiences to augment lecture-style courses. Courses are taught by faculty researchers who bring their work and experiences into to classroom and lab.

PARTNER WITH PLACE: Faculty and their graduate students continue to study a variety of issues that are directly related to populations in Montana or will impact Montana residents. This work often involves partnerships with organizations or agencies outside of the MUS. The department is currently working to create more community-based experiences to help the graduate students become engaged citizens. The Department continues to partner with local K-12 schools to provide early experiences in the sciences.

2. Provide opportunities to apply didactic knowledge and lab skills in research projects conducted by local and partner institution faculty.

PLACE STUDENT SUCCESS AT THE CENTER OF ALL WE DO: Graduate students have the opportunity to work in labs with research teams to further develop their knowledge and skills in their area of focus. Faculty mentors and advisory committees for each graduate student ensure requirements are met and the student progresses satisfactorily. Students share credit with the lab team for their work through authorship on posters and manuscripts. Research experiences may include work with external collaborators.

DRIVE EXCELLENCE AND INNOVATION IN TEACHING, LEARNING, AND RESEARCH: Faculty in the department maintain professional relationships with researchers in other campus departments, institutions, and research facilities. These arrangements and centers ensure graduate students have opportunities to also meet and work in projects with researchers outside the department. In addition to hands-on laboratory work, seminar discussion classes, and lectures by guest speakers, the graduate students are exposed to other researchers through additional research seminars on campus and by attending regional or national meetings even though these are virtual because of the pandemic. The graduate programs actively work to ensure research experiences are available and appropriate for the various areas of focus of the graduate students and to ensure student-to- faculty ratios are kept low to optimize individual experiences.

PARTNER WITH PLACE: Faculty and their graduate students continue to study a variety of issues that are directly related to populations in Montana or will impact Montana residents. This work often involves collaborative partnerships with researchers at other organizations or agencies.

PROUDLY TELL THE UM STORY: The goal to teach graduate students to pursue research efforts to create new knowledge and to disseminate findings to professional and lay groups clearly enhance the reputation of UM as a center of excellent scientific research.

3. Provide opportunities for students to actively participate in professional meetings and community presentations.

PLACE STUDENT SUCCESS AT THE CENTER OF ALL WE DO: The pandemic has created both challenges and opportunities for our students. We have all become more adept at working virtually, and many meetings and presentations on Zoom have now become our normal way of communicating. Working with faculty mentors to prepare a manuscript, grant proposal, or abstract for submission to a peer-review process is an invaluable experience. Helping the Department or School host a professional meeting (even though virtually) is another experience that helps prepare the student for future work. Having faculty facilitate meeting an author of a landmark paper is another way the Department helps facilitate future success for graduate students. Students are encouraged to participate in the Graduate Student Research
Symposium at UM and can apply to receive partial department support for registration for national conferences.

**PARTNER WITH PLACE:** The graduate programs enjoy long-term relationships with local, state, and national professional associations and meeting planners. Renewed invitations to attend or host meetings indicates prior events and participation were positively received.

**PROUDLY TELL THE UM STORY:** Through presentations and manuscripts, the graduate students learn important communication skills for working with both other researchers and the general public, enabling them to expand the excellent reputation of UM scientific research. Research conducted within these programs is generally applicable to human health in Montana and the world.

### STUDENT LEARNING GOALS and MEASUREMENT TOOLS

<table>
<thead>
<tr>
<th>Student Learning Goals</th>
<th>Classroom Performance</th>
<th>Lab Performance</th>
<th>Faculty advisor evaluations</th>
<th>Capstone measures (oral/written)</th>
<th>Presentations, posters, proposals, and publications</th>
<th>Alumni Feedback on preparation and careers</th>
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</thead>
<tbody>
<tr>
<td>1. Develop fundamental biomedical concepts and knowledge</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>2. Develop fundamental biomedical concepts and knowledge</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>3. Perform laboratory tests and procedures</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>4. Prepare a feasible and defensible research plan proposal for a research question</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>5. Collect and analyze data for research projects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>6. Interpret findings and suggest implications</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>7. Prepare a competitive research grant proposal, abstract, or manuscript for peer review</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>8. Effectively present or disseminate work</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</table>
RESULTS and MODIFICATIONS

<table>
<thead>
<tr>
<th>Learning Goal results</th>
<th>Modifications made to enhance learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student completion and success with competitive peer-reviewed processes</td>
<td>The department will continue to maintain information on both faculty and student success in peer-reviewed competitive processes through the Chair’s office.</td>
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<td>Faculty advisors, research centers, and graduate students indicate that in 2019-2020 graduate students were authors or co-authors on 14 manuscript publications.</td>
<td>The goal will be to increase the number of peer-review experiences available to students.</td>
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<tr>
<td>2. Review of graduate programs offered and enrollment</td>
<td>Based on the input from faculty, graduate students, and the College, the BMED graduate programs are being reviewed to ensure that they meet the needs of our faculty, students, and future directions of our students.</td>
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<tr>
<td>Review of graduate programs is completed on a regular basis by the three program advisory committees.</td>
<td>In addition, the Department faculty have proposed a new undergraduate major in Pharmaceutical Sciences to increase interest and preparation for future potential graduate students.</td>
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</tbody>
</table>

FUTURE PLANS FOR CONTINUED ASSESSMENT

The department faculty and three advisory committees will continue to monitor the various biomedical and pharmaceutical sciences fields to ensure the students are exposed to experiences that will develop appropriate knowledge, skills, and attitudes to be successful during and after their time in the program.

Feedback from graduates has been informal, so the Department is looking at a more formal alumni survey/feedback process. To this end, we have hired a new Program Coordinator whose duties include support of the graduate programs to provide more accurate data in the future.

APPENDICIES

1. The Handbook describing various courses and course requirements used to evaluate students as they progress through the program may be found at: [http://health.umt.edu/biomed/graduate/forms-for-students/default.php](http://health.umt.edu/biomed/graduate/forms-for-students/default.php).

2. Annual Graduate Student Progress Report (BMED form for PhD) – all forms may be found at: [http://health.umt.edu/biomed/graduate/forms-for-students/default.php](http://health.umt.edu/biomed/graduate/forms-for-students/default.php).

3. Graduate Student Progress Checklist (BMED form for MS and PhD) - – all forms may be found at: [http://health.umt.edu/biomed/graduate/forms-for-students/default.php](http://health.umt.edu/biomed/graduate/forms-for-students/default.php).