

Annual Biomedical Sciences Program Assessment Report for the Academic Year 2009-2010

I. Assessment Activities

A. *Program Goals:* The primary goal of the Biomedical Sciences (BMS) M.S./Ph.D. program continues to focus on producing graduates who have broad didactic knowledge in the biomedical sciences, but also specialized research training in one of our five interdisciplinary research clusters: Cancer Biology; Neuroscience and Developmental Biology; Cardiovascular Disease, Diabetes and Obesity; Toxicology and Environmental Health Sciences; and Infectious and Immunological Diseases.

Another BMS program goal is to provide an opportunity for students to enhance their competitiveness for admission to medical school by offering a non-thesis M.S. degree in the Medical Sciences area of emphasis. Through the efforts of our full-time Graduate Recruitment Coordinator, Ms. Diana Maue, we have gradually increased the size and qualifications of students in this area of emphasis. In 2009-2010 we capped the size of the entering class at 15 students, but could have accepted additional qualified students. Our goal is to have 80% of these students gain admission into an allopathic or osteopathic school of medicine. The current success rate of medical school admission for Medical Sciences students who entered our program in the 2008-2009 academic year is 60%.

B and C. *Learning outcomes/data collection and Results:* We have identified six student outcomes important to the Biomedical Sciences Program. These learning outcomes, assessment activities associated with them, and results are summarized in the following paragraphs and the accompanying chart.

1. Mastery of basic knowledge about cellular and molecular biology. This outcome is assessed through the examinations given in BMS 600, Foundations of Biomedical Science, which is a required course for all BMS students. Assessments were organized by the course director, Dr. Todd Green. The benchmark is an average of 80% or better on the examinations, which corresponds to a letter grade of B or better. In 2009-2010, 21 of 24 students successfully met this standard. For the next academic year, this course will be improved by updating several of the lectures. Dr. Todd Green will again be the course director for the 2010-2011 academic year.
2. Ability to make oral presentations of scientific material. This outcome is assessed by evaluation of student seminars and other oral presentations in BMS 680, Seminar. The course director, Dr. Richard Egleton, organized these assessments. Student presentations were

evaluated by peers according to a point system. The benchmark was a rating of “satisfactory” by a faculty evaluation committee. In 2009-2010, 40 of 40 students met this benchmark. Faculty who teach in the BMS Communications course (BMS 660 + 661) provide constructive criticism to help students improve their presentations. Dr. Egleton will again be the course director for the 2010-2011 academic year.

3. Basic aptitude for laboratory research. This outcome is assessed during a series of laboratory rotations that is overseen by the BMS Mentoring Committee. The assessment is accomplished through a laboratory rotation evaluation form completed by each faculty member supervising the student’s research rotation. The benchmark is a satisfactory evaluation in each of three lab rotations. In 2009-10, 8 of 9 students met the benchmark. One student has yet to finish all the required research rotations.

4. Mastery of comprehensive knowledge of biomedical sciences (Medical Sciences MS students only). This outcome is assessed by means of the Medical Sciences Comprehensive Exam. The Director of Graduate Studies coordinates and administers this examination. The benchmark is a 70% or higher score on the exam. In 2009-2010, 9 of 9 students met this benchmark. Prior to the date of the next Medical Sciences Comprehensive exam, the questions will be updated to ensure assessment of the most relevant material.

5. Mastery of comprehensive knowledge of biomedical sciences (Research MS and Ph.D. students only). This outcome is assessed by each student’s advisory committee after most or all coursework has been completed. Both written and oral comprehensive exams are used as assessment tools. Each student is required to write a research proposal as part of this examination. Benchmarks are determined by each advisory committee and are evaluated subjectively by each committee. In 2009-2010, 3 of 3 students successfully met the benchmark.

6. Ability to design and conduct original biomedical research. This outcome is assessed by the defense of a written Ph.D. dissertation. The assessment is performed by each student’s advisory committee, which sets the benchmarks for each individual Ph.D. student. At least four of the five committee members must rate the written dissertation and defense as satisfactory. In 2009-2010, 2 of 2 students met the benchmark.

III. Plans for the 2010-2011 academic year

1. Increase the diversity of the BMS program by increasing the number of students attending the Summer Research Internship for Minority Students program.
2. Increase the funding available for stipends by increasing the number of graduate fellowship grant proposals submitted by students.
3. Launch a BMS alumni magazine. We will use this magazine to connect with our alumni base and to publicize the accomplishments of the BMS program. Goals for this annual publication are to increase the number of applicants to our BMS graduate programs and to stimulate alumni and community members to donate funds that will help grow and strengthen the BMS program.

IV. Assistance Needed: We will contact the UAC for information and/or assistance as needed.

V. What is the one most important thing the program has learned through this process?

This annual assessment report has given us metrics to examine how our graduate program has progressed over the last several years. As a result, several areas were identified as in need of improvement and they have been included as program goals for the next academic year.

Marshall University
Assessment of Student Outcomes: Component/Course/Program Level

Component Area/Program/Discipline: Biomedical Sciences YEAR: 2009-2010

Component / Course / Program Level					
Student Outcome	Person or Office Responsible	Assessment Tool or Approach	Standards/Benchmark	Results/Analysis	Action Taken
Mastery of basic knowledge about cellular and molecular biology	BMS 600 Course Director, Dr. Todd Green	Examinations in BMS 600 (Foundations of Biomedical Sciences)	80% average on examinations; letter grade of B or better	21 of 24 students successfully met the benchmark	Lectures were updated.
Ability to make oral presentations of scientific material	BMS 680 Course Director, Dr. Richard Egleton	Seminar evaluation form	Satisfactory rating by the faculty evaluation committee	40 of 40 students successfully met the benchmark	Continuation of mini-symposium for Medical Science Students
Basic aptitude for laboratory research	Mentoring committee	Laboratory rotation evaluation form	Satisfactory evaluation in 3 lab rotations	8 of 9 students successfully met the benchmark	Each student will be assigned a faculty mentor
Mastery of comprehensive knowledge of biomedical sciences (Medical Sciences MS only)	Director of Graduate Studies, Dr. Vernon Reichenbecher	Medical Sciences comprehensive objective exam	70% score on exam	9 of 9 student successfully met the benchmark	Exam will be updated to reflect new material and changes in courses

Component / Course / Program Level

Student Outcome	Person or Office Responsible	Assessment Tool or Approach	Standards/Benchmark	Results/Analysis	Action Taken
Mastery of comprehensive knowledge of biomedical sciences (Research MS and Ph.D. students)	Student advisory committees	Written and oral comprehensive exams (subjective evaluation by committee)	Benchmarks determined by each committee	3 of 3 students successfully met the benchmark	Continuation of unified style of exam for all students.
Ability to design and conduct original biomedical research	Student advisory committees	Defense of written dissertation (subjective evaluation by committee members)	Benchmarks determined by each committee	2 of 2 students successfully met the benchmark	Continuation of areas of emphasis reflecting research areas, rather than discipline-based areas