

MICROBIOLOGY PROGRAM ACADEMIC PLAN 2009-2014

Mission and aspirations

The interdepartmental Microbiology Program at the University of Wyoming aspires to excellence in the education of undergraduate students interested in the basic and applied microbiological sciences. In the pursuit of our primary mission to teach and educate students, the program continues to provide a comprehensive core curriculum in the basic sciences, in General Microbiology, and in the appropriate specialty areas of bacteriology, virology, parasitology, mycology, epidemiology and immunology. The curriculum also includes numerous microbiology elective courses. Finally, all participating students are encouraged to participate in faculty-mentored laboratory-based or field-based independent research projects. During the past 4 years the Microbiology Coordinating Faculty and Program Director have continued our efforts in program assessment and completion of major action items in our 2004-2009 Academic Plan.

Previous Planning accomplishments

- Although the previous plan identified the possibility of a change in the administrative structure of the Microbiology Program it remains an interdepartmental program with a director who chairs a 7 member Coordinating Faculty
- Consolidation of faculty strength in Medical Microbiology has taken place through new positions. Additionally strengthening in other areas of Microbiology has taken place with new hires in the College of Agriculture.
- A reorganization of the Microbiology curriculum so that it closely aligns with recommendation of the American Society for Microbiology was done approximately 4 years ago but there are still minor differences that should be addressed.
- Efforts to form a centralized laboratory teaching facility and associated support staff that would serve multiple departmental needs in Microbiology instruction have been delayed because the current administrative structure focuses personnel and resources on the General Microbiology laboratory to the exclusion of other course laboratories.
- Integration of the General Microbiology course into the biology core is a work in progress.
- Fluctuations in the number of Microbiology majors have occurred but the trend has been up with a current enrollment of 61.

Relevant institutional issues

The Microbiology Program is closely aligned and able to contribute to 3 of the 6 areas of distinction emphasized for U.W. in Creation of the Future 1, including life science education programs, critical areas of science and technology, and professions/issues critical to the state and region. First, Microbiology is important at some level in a significant number of life science degree programs at U.W. The Program includes service courses required in numerous degree programs, including the B.S. in Health Science, Nursing, Pharmacy, Molecular Biology, Animal Science, Food Science, Nutrition,

various pre-professional programs; participating faculty also contribute to the WWAMI medical education program. Because Microbiology bridges the gap and unites molecular, cellular, organismal, population, ecology, and evolutionary approaches to the study of life sciences, it should have an expanded role in freshman biology at U.W.

Second, Microbiology combined with the tools of genetic engineering and bioinformatics has unlimited potential in critical areas of science and technology important in a wide variety of biomedical, agricultural, industrial, and environmental settings. Microbiologists are uniquely trained to apply the tools of molecular biology to create genetically engineered microbes useful in medicine, agriculture, the environment, and numerous industrial applications, including the development of biomaterials.

Third, Microbiology is the principal laboratory-based science that provides significant employment opportunities for graduating Wyoming students within the state and surrounding region. Microbiologists are employed at all levels in clinical laboratories, government agencies, universities, industry, and various other settings such as water treatment, food production/inspection facilities, and public health related areas. These are all important for continued economic development within Wyoming communities, the region, and the nation.

Action items-

1. Clarify interdisciplinary Microbiology program administrative structure to solve the issue of program responsibility but lack of authority. The coordinating faculty feel that the current system is preferable to movement of the program into one department.
2. Increase enrollment and retention of top undergraduates in the microbiology program through additional attention paid to web based information and contacts. Prospective students almost exclusively seek information via the web and are easily turned off by non functional or bland web pages. The program proposes to make the upgrading and maintenance of a top quality web page a priority and will seek funds and assistance to attain that goal. For the most part current Microbiology offerings have not reached maximum capacity so increased enrollments will not require additional faculty.
3. Work toward organized assignment of graduate students from participating departments to serve as TAs in microbiology classes. Because the Microbiology Program is inter-departmental/undergraduate there are no graduate assistantships allocated which ultimately means no graduate students are assigned to assist in laboratory teaching.
4. Increase the participation of more microbiology oriented faculty in undergraduate advising. Previously, most advising of undergraduate students has fallen on two advisors which has caused an overload on them. We see advising as a way to get more active participation of faculty members from varied department in the microbiology program which will increase interaction with students and eventually student success.
5. As a continuation of an action item from the last plan we would like to see the establishment of a centralized laboratory teaching facility and associated support staff

that would serve as a learning environment for all participating department-based faculty instructing microbiology laboratory classes. This centralized teaching area would act as the focal point for the Microbiology Program. Additional personnel as well as financial support would need to be identified.

6. Create a unique identity for microbiology majors through organizational efforts that include revitalizing the microbiology club. In the past this has been a vehicle for creating more interaction between faculty and students as well as between students. Microbiology clubs can obtain travel funds to participate in both regional and national meetings which stimulate interest and develop leadership in the discipline. Additionally we would envision development of an invited speaker microbiology seminar series. Other identity builders could include social gatherings and welcome back lunches for students and faculty.

7. Integrate General Microbiology as much as possible into the Biology core to solidify the foundations of a basic science education. In the past concern has been expressed about instruction of General Microbiology by a non PhD instructor. This will need to be addressed if there is to be movement toward inclusion in the Biology core.

8. Separate the General Microbiology Laboratory from the Medical Microbiology Laboratory. Currently, students taking Medical Microbiology sign up for one of the sections of the General Microbiology Laboratory. This overloads the instruction of the General Microbiology and does not provide a laboratory designed specifically for the Medical Microbiology class.

9. Student Assessment in the Microbiology Program needs to be developed further. Since other programs within the College are further along in the process we hope to be able to call on their experience to put together a useful assessment program.

IMPLEMENTATION

Item 1 1 year

Item 2 Initial 1 year but then keep the web pages current and fresh

Item 3 3 years

Item 4 Continuing effort

Item 5 2 years

Item 6 Continuing effort

Item 7 2 years

Item 8 2 years

Item 9 2 years

