

## Summarized Assessment of Student Learning (ASL) in Ph. D. Program in Pathobiology

### 1. What were the students expected to learn in the degree program?

The students in the Ph. D. program in Pathobiology obtain a broad based graduate education in the areas of bacterial and viral pathogenesis, clinical and diagnostic pathology, epidemiology, food safety, security, and policy, immunology and immuno-modulation, parasitology, toxicology (clinical and environmental), and production animal medicine and management. The Pathobiology Graduate faculty has adopted the following four student learning outcomes (SLO) for Ph. D students in the program:

1. Abilities to formulate and design a hypothesis-driven research project (s), independently carry out the research methodology, critically analyze the data, and disseminate the research findings in the form of presentations at scientific meetings and peer-reviewed publications.
2. Professional and technical expertise in their chosen areas of study or disciplines.
3. Abilities to apply knowledge through critical thinking, to interpret or analyze and integrate information, to respond and adapt to changing situations, to make decisions, to solve problems, and to evaluate actions.
4. Effective oral and written communication skills.

### 2. What forms of evidence were gathered to assess the extent to which students learned?

The following three documents have been developed as assessment tools:

- a. **Document 1:** This document is designed to gather information about student activities. Each student is required to complete this document and submit to the Chair of the Graduate Committee at the end of the academic year.
- b. **Document 2:** This document is designed to evaluate various assessment criteria, within each SLO, on a scale of 1 to 4 (1 is fails to meet expectations to 4 being exemplary). The major professor of each graduate student is required to complete this document and submit to the Chair of the Graduate Committee at the end of the academic year.
- c. **Document 3:** This document is designed to evaluate graduate student's performance at the time of preliminary examination and the final dissertation defense examination. The evaluation of various assessment criteria, within each SLO, will be on a scale of 1 to 4 (1 is fails to meet expectations to and 4 being exemplary). The supervisory committee members of each graduate student are required to complete this document and submit to the Chair of the Graduate Committee after completion of the preliminary or final oral examination. A copy of the document is enclosed.

The data collected from the three documents will be reviewed, summarized and compared to set targets by the Graduate Program Committee. The summary and data analysis will be presented to the faculty in the spring semester for discussion and development of recommendation and action plans.

### **3. What were the results of the assessment?**

The assessment was initiated in 2006. Each year data collected are summarized and results presented in a graduate faculty meeting in the spring semester. In the first year (2006), the scoring system was changed from 0 to 4, with 0 being failed to meet expectations, to 1 to 4 with 1 being failed to meet expectations. The discussion of the assessment data brought into the surface the following points:

- a. The diversity of disciplines offered by the program is viewed as an asset; the fact that some of these areas are supported by only one or two faculty is a notable weakness.
- b. The program has the necessary breadth to be successful but in some areas lack sufficient depth. The loss of key faculty would place some aspects of the program at considerable risk and could compromise the completion of graduate programs by current students.
- c. Because the program represents a wide number of disciplines and has members from several departments, interactions and relationships between the Pathobiology Graduate Program and department heads/deans are variable and inconsistent.
- d. Insufficient courses for graduate students working in the area of infectious diseases.
- e. Inadequate funding for the purchase of advanced biomedical research equipment and the maintenance of existing equipment is a significant limitation in the training of graduate students as well in the ability of faculty to compete for extramural funding.
- f. Because a significant portion of the faculty in the program conducts research in the area of infectious diseases, the absence of adequate physical facilities to conduct infectious disease experiments in large animals is a serious weakness.
- g. Stipends for graduate students in the program are insufficient to attract motivated high quality graduate students.

### **4. How has the evidence or information gathered been used for improvement?**

One of the outcomes of the discussion was development of two graduate level courses. A course that teaches communication (oral and writing) and critical thinking skills is now offered (DMP 815. Multidisciplinary thoughts and Presentations). Also, another course on pathogenic mechanisms of animal viruses has been approved and will be taught in the fall of 2009.

### **5. To what extent have the improvements worked (or are working)?**

The process of graduate student's evaluation by the major professor once a year provides an opportunity to faculty to monitor the progress and make adjustment. More importantly, the assessment tools in place, collection of data concerning graduate education and a meeting of the faculty at the end of each academic year to assess and discuss the state of graduate program have been extremely positive.