**2009 Doctoral Program Review**

**Department of Biology**

**Case Western Reserve University**

**Committee for Graduate Affairs:**

Michael Benard

Emmitt Jolly

Claudia Mizutani

Robin Snyder

Roy Ritzmann

Mark Willis, Chair***I. DOCTORAL PROGRAM GOALS AND OBJECTIVES***

 ***A. Web Page Statements on Doctoral Programs***

***1.*** *In addition to the regular cycles of doctoral program review expected, each university shall promulgate via its web page a statement of goals and objectives for each program, which builds upon the quality standards outlined below and defines the unique qualities and strengths (the niche) of the program. These statements shall include at minimum the following, totaling no more than two pages for items (a) through (d):*

***a)*** *A mission statement defining the unique aspects of the program including the special characteristics of the curriculum and the types of research conducted by program faculty and students.*

**PhD Program Mission Statement:**

The goal of our PhD program is to educate and provide rigorous intellectual support to graduate students as they pursue their research interests in biology. We aim to provide each with the skills and knowledge necessary for successful careers in academia, industry, or the public sector. Like any degree-granting academic department we can most easily provide the tools and experiences in research, teaching and service necessary for our graduates to succeed in academic science. However, we appreciate that our students have diverse goals, and members of our faculty have experience with, and contacts in, industry, the public sector and privately-funded research conducted in the university setting. Thus, our program can assist students to become individuals whose unique biological expertise will contribute to our understanding of the processes of the living world and the application of that knowledge for human welfare.

There are three specific areas within biology in which our faculty has depth and strength: (1) Neuromechanical systems (i.e., neurobiology and the neural bases of behavior), (2) Cell and developmental biology and (3) Ecological consequences of environmental change. The nature of these focal groups provides a breadth of courses, techniques and skills supporting the development of graduate students working in these three areas. Furthermore, the administration of CWRU encourages collaborations across the university (e.g., engineering and biology) and across public and private institutions in the Cleveland area. In particular, we maintain close ties to the Cleveland Metropark Zoo, the Cleveland Museum of Natural History and the Holden Arboretum. Adjunct professors in the Biology Department hold primary appointments in these three institutions as well as the Departments of Anatomy, Otolaryngology, and the Center for Global Health and Diseases in the Case Western Reserve University Medical School. Moreover several graduate students currently work directly in those institutions while advised by personnel from them along with an advisor from our primary faculty.

A detailed description of the areas of focus and faculty research found on our Department website (<http://www.case.edu/artsci/biol/>) can be found in Appendix 1.

 ***b)*** *Admission standards - the expected preparation and qualifications of students admitted to the program.*

The holder of a bachelor's degree from any accredited college or university is eligible for consideration for admission to our Graduate Program. In reviewing applicants for doctoral study, the Department of Biology gives priority to students with demonstrated academic capability and motivation, and with substantive interests that fit well with the strengths of the Department. We do not apply fixed criteria, but review each application in its entirety. The student’s statement of interest is weighted heavily together with substantive comments in letters of recommendation, as well as grades and GRE scores. Thus, we place strong emphasis on academic interest and program fit as well as academic potential. Foreign students for whom English is not the native language and who have not completed a baccalaureate or master's degree program from an English-speaking university must submit TOEFL scores. The University requires a TOEFL written exam score to be above 550 or a computer based exam score above 213 and a minimum iBT score of 79. Finally, we will not accept a student into our PhD program without their being accepted by one of our tenure-track or adjunct faculty into their laboratory, and having a demonstrable source of financial support either from that faculty member, the university or an external source.

***c)*** *The manner in which the program addresses the needs of the state or region*.

In addition to learning how to identify important research questions in biology and develop approaches to solving those problems scientifically, the PhD program in Biology at CWRU requires our graduate students to teach undergraduate students in laboratory classrooms, and supports appropriate participation in service at the department, college and university level. Thus, our graduates are well prepared to become teachers in one of the many universities and colleges in Ohio. Graduates who work on ecological projects will be experts in local Ohio environments and man-made threats to them. For example, Biology Department graduate student research projects have included studies to aid the Nature Conservancy in using controlled burns to manage their protected lands in Ohio, and studies to identify the source of a hemmoragic disease in economically important fish stocks in Lake Erie. Students who generated results in the fields of neuromechnicanics and cell and developmental biology have contributed to the founding of local businesses (Biorobotics, LLC) in addition to providing foundations for advances in the broader national and international fields.

***d)*** *Placement objectives for graduates.*

Our aim is to place our PhD graduates in postdoctoral positions in prestigious laboratories, commercial and governmental positions, and as faculty in the best universities and colleges. Over the years our PhD graduates have become successful tenure-track faculty, research scientists and M.D.s. Three of the students admitted at the start of the dramatic increase in size of our PhD program (since 2001) have completed their degrees, and all have taken postdoctoral positions in prestigious research laboratories in the U.S.

***2.*** *The web based report must be updated every two years covering items (a) through (d) and must also include:*

***a)*** *The date of the last program review.*

Prior to this time, no web-based report has been required. Current information will be posted after OBR review. The last program review was in 2010.

***b)*** *The date of the next scheduled program review.*

Next scheduled complete review: August 2016

***c)*** *The date these program goals and objectives were revised.*

Not applicable.