



REQUEST AND RECOMMENDATION

CASE WESTERN RESERVE UNIVERSITY Ph.D. and M.S. in Systems Biology and Bioinformatics

Request:

The Case Western Reserve University School of Medicine requests approval for a new Doctor of Philosophy and a Master of Science in Systems Biology and Bioinformatics.

Background:

The proposed Systems Biology and Bioinformatics (SYBB) graduate program is designed for students with an undergraduate or master's degree in biology, computer science or computational science. The SYBB program will train researchers to integrate molecular systems biology with bioinformatics to solve complex medical problems. Systems Biology represents a new scientific concept of increasing importance to biology and medicine. Systems Biology is key to understanding the function of complex biological systems, their normal development, their transition to abnormal or disease states, and to discovering innovative modalities for treating and preventing disease. Students who complete the proposed SYBB program will have the skills necessary to generate and analyze experimental data for biomedical research and to develop physical or computational models of the molecular components that drive the behavior of the biological system. The proposed SYBB is distinguished from other graduate programs where the course of study and research are wholly experimental or wholly computational.

The need for scientists trained in the field of SYBB is evident by current National Science Foundation funding opportunities. The National Institutes of Health Roadmap initiative and a report of the World Technology Evaluation Center, titled "Assessment of International Research and Development in Systems Biology," underscores the current and future growth expected for this field and the need for specialized training initiatives. In Ohio, Bioinformatics and Systems Biology programs at the undergraduate level are growing rapidly, but no other university in the state offers a PhD in Systems Biology. There is an equivalent need to launch and expand graduate offerings to attract out of state students in Ohio.

Curriculum and Enrollment:

The proposed curriculum will be individualized for each student and approved by a steering committee. Students will take a core curriculum in Systems Biology and a set of electives designed to assure that students receive training in the program's three core competencies: genes and proteins; bioinformatics and computational biology; and quantitative analysis. For the Ph.D. program, a minimum of 54 total credits are required (including at least 24 credits in grade graduate courses, 12 pre-dissertation research credits and at least 18 dissertation research credits). Students must also complete a dissertation and oral defense consistent with CWRU requirements. For the Master's Degree "Plan A," 21 semester hours of coursework plus a thesis equivalent to 9 semester hours of registration for


30 hours total, is required. For the Master's Degree "Plan B," 30 semester hours of coursework and a written comprehensive examination or major project with report is required.

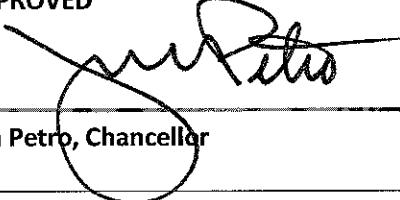
Upon approval of the SYBB program, 2 students will be admitted into the program for Fall of 2011, with plans to enroll 3 additional students from the Biomedical Sciences Training Program (BSTP) and the Medical Sciences Training Program (MSTP). Each year, the SYBB program will seek to admit 5 new students, with a total of 25-30 students enrolled during any given year.

Faculty and Resources:

The System Biology and Bioinformatics program will reside in the School of Medicine and be administered by the Center for Proteomics and Bioinformatics. Adequate faculty, facilities and resources are in place to accommodate the program.

End of Comment Period: April 21, 2011
No Comments Received, Recommend Approval

Recommendation:	
The Doctor of Philosophy and Master of Science in Systems Biology and Bioinformatics degrees meet the Chancellor's standards for graduate degree programs, and the Regents' Advisory Committee on Graduate Study (RACGS) recommends approval.	
	4/22/11
Stephanie Davidson, Vice Chancellor Academic Affairs	Date

APPROVED	
	4-26-11
Jim Petro, Chancellor	Date

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