UC San Diego
Biological Sciences

Division of Biological Sciences Seminar Program presents:

The Science of Teaching:
Evidence-Based approaches in Biology Education

Diversifying Both Ends of the STEM Pipeline Requires Institutional Change

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Zoom: https://ucsd.zoom.us/j/98416048774
Meeting ID: 984 1604 8774
Password: 899955

Abstract: UC Riverside has one of the most diverse student bodies of any Research 1 University with the majority first-generation to college. As such, most entering students have no idea that “upstairs” from the often-drab “downstairs” undergraduate classrooms are well equipped research labs where the scientific method is employed to solve some of the planets most important problems. Now in its tenth year at UC Riverside, the Dynamic Genome (DG) program bridges the upstairs and downstairs of an RO1 University by serving as a pipeline for those early in their undergraduate career to participate in the scientific method with practicing scientists. The centerpiece of the DG program is Bio20, a research experience for first-year life science students that is an alternative to the traditional Intro Bio lab. In the first half of Bio20 all sections are introduced to both wet and dry lab techniques focused on genome analysis. In the second half, students use the concepts and skills they have mastered to complete a guided research project that originates in the lab of a UCR professor. Faculty ownership of Bio20 sections is the key innovation of the DG program that serves to bridge the upstairs and downstairs as students experience both the scientific method and the passion of active researchers. Examples of Bio20 projects will be presented. The good news is that UCR has proven to be fertile ground for the rapid expansion of Bio20 to 24 sections per year with a total of 600 students. Quantitative assessment of student grades reveals that all students who take Bio20, regardless of gender or first-gen status, earn higher grades in the corresponding lecture course than a control group that did not take the course. The not-so-good news is that success does not extend to other science courses. To affect sustained impact will likely require broader curricular and institutional change. Plans will be discussed. Increasing the diversity of those entering the STEM pipeline also requires diversifying leadership in STEM. In 2011, Dr. Wessler was elected the first woman home secretary of the National Academy of Sciences. In this position she spearheaded a variety of initiatives that have significantly diversified those elected to membership with regard to gender, ethnicity, and geography. It is hoped that these new leaders will use their stature to serve as role models for both students and faculty and to promote institutional change.

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