

School of Biological Sciences Seminar Program presents:  
The Science of Teaching:  
Evidence-Based approaches in Biology Education

**Leveraging students' and instructors' beliefs about students' abilities to improve biology undergraduates' outcomes**



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Friday, October 18, 2024

Natural Science Building, 1205 NSB Auditorium

10:00 AM – 11:00 AM

Zoom Meeting ID: 933 7628 9278

*Light refreshments will be provided*

**Abstract:** Students' beliefs about their abilities shape their motivations, engagement, responses to failure, and ultimately their academic outcomes. For example, when students believe that their abilities can improve (called a growth mindset), they are more motivated and resilient to experiencing failure. In this seminar, I will describe 3 studies focused on leveraging these effects to improve student outcomes. First, I will describe the development and validity evidence for a new measure of undergraduates' beliefs about their abilities. This new tool enables researchers to measure these beliefs more accurately and precisely than was previously possible, and my results suggest that measurement error may have obscured true relationships in prior studies. Second, I will describe a randomly-controlled field trial of interventions at two levels to improve student outcomes in introductory biology classes. While prior studies have shown that activities aimed at helping students adopt a growth mindset (student-level interventions) can improve student grades and equity, ours is the first to also explore the potential for instructor messages promoting a growth mindset (instructor-level interventions) to improve outcomes. Finally, I will present results of a qualitative study exploring the mechanisms through which instructors communicate their beliefs about students' abilities in the classroom through their words, actions, and policies. These results shed light on how instructors can shape their classroom climates to support positive beliefs and students' resilience.

Hosted by: Melinda Owens (mtowens@ucsd.edu)