



Kimberly D. Tanner

## Tanner to Receive Bruce Alberts Award for Excellence in Science Education

Kimberly D. Tanner, a professor in the Biology Department at San Francisco State University, will receive the Bruce Alberts Award for Excellence in Science Education, for her tireless work to build local and national capacity for evidence-based teaching and biology education research.

A major thrust of Tanner's research aims to understand the development of expertise in biology. As Erin Dolan, one of her nominators, noted, Tanner is breaking new ground with this work—drawing from diverse, relevant knowledge bases such as physics education research and cognitive science to understand how individuals at various stages of their biology training think about fundamental ideas in the discipline.

Tanner observes, "We train scientists to be outstanding researchers and then we parachute them into college and university classrooms with no training in how to effectively communicate their expertise to others." As one consequence, the majority of students who are initially enthusiastic about science leave the field, "with disproportionate losses for women, students of color, and first-generation college-going students. Yet, we have extensive research literature from science education, psychology, and more recently discipline-based education research that if science faculty used more interactive teaching methods, we could both improve learning and prevent this loss of talent."

At her talk in Philadelphia Tanner will discuss a new technological innovation—the Decibel Analysis for Research in Teaching tool (DART). "It's like a Fitbit tool for faculty," says Tanner. "If I lectured 95% of last class session, can I innovate such that I get that number down to 90% next class session?" To positively change the experience of science students, "we need large numbers of science faculty to make

small changes in their teaching, reducing the amount of lecture and increasing the amount of time that students have to talk, think, and write in class with their colleagues about the science they are learning... Through our DART tool, we hope to support faculty in monitoring and iteratively shifting how they spend time in class with students."

Tanner is influenced professionally by being a neuroscientist and a first-generation college student. She sees everything about evidence-based teaching and learning through the lens of neuroscience. She notes that teaching and learning are fundamentally about driving physical changes in the brain that encode long-term memories, which are then able to be retrieved in relevant situations. "If anyone should understand why we need to teach differently and move beyond only lecture approaches—and not just in classrooms, but also at conferences and in seminars—it should be scientists, especially biologists!" Tanner adds. She also sees higher education through the lens of an outsider, noting that for too long, success in school and science has depended on factors deeply rooted in aspects of culture that are tied to class, gender, and home community.

In describing her goals, Tanner states, "Through evidence-based teaching, I strive to make all science classrooms more equitable, fair, and inclusive of students from diverse backgrounds and perspectives. If we as scientists want to solve the complex problems that are facing us in the natural world...we must make our learning environments purposefully inclusive so as to retain the incredible talent from diverse communities that we are currently losing from our scientific disciplines at an alarming rate."

Tanner will accept the award on December 4 at the ASCB|EMBO Meeting in Philadelphia. ■

—Thea Clarke