Biology Teaching Assistant Project
2023 Virtual Conference
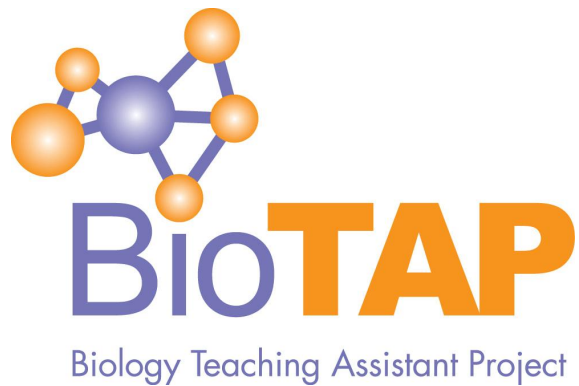
October 30-31, 2023

Zoom link:
https://ua-edu.zoom.us/j/87870643318?pwd=M1VGbDRtYzZZUllEeS9UUEJjdUlEdz09
Meeting ID: 878 7064 3318
Passcode: 195510

Conference webpage: https://biotap.org/vconference-2023/

BioTAP: https://biotap.org/

BioTAP 2023 Virtual Conference Schedule at a Glance:

TIME (EST)	Presenter(s)	Title
Monday, October 30		
1:00 PM		**Introduction and Welcome**
1:15 PM	Shortlidge, E.	**Conference Keynote**
2:20 PM	Chouinard, A. & B. Schussler	*A New Era of BioTAP: Organizational Updates and Upcoming Elections*
3:15 PM		**BREAK**
3:30 PM	Scott, K. G-E. & C. D. Debets	*Does participation in a TA Training Workshop improve TA confidence and attitudes toward active learning?*
3:45 PM	Read, G. H., S. Ampabathina, & K. L. Ingraham Dixie	*Motivation and Critical Reflection Inform Increased Absence Policy Permissiveness in Life Science Graduate Teaching Assistants*
4:10 PM	Smith, C.	*Investigating the Relationship Between Graduate Teaching Assistant Self-Efficacy and Teaching Approach*
4:30 PM		**Day 1 Conclusion**
Tuesday, October 31		
1:00 PM		**Welcome back**
1:05 PM	Chouinard, A., E. Shortlidge, M. Asgari, S. Gutzler, S. Lee, D. Shihadih, & K. Heinrich	*The TPD Catalyst: A Strategic Initiative for Sharing TA Training Resources*
1:30 PM	Roberts, T., L. Cubonova, & A. Kulesza	*Developing a Comprehensive Codebook for Analyzing Transcribed Interview Data on the Impact of Professional Development on Teaching Assistants and their Students: A Pilot Study*
1:55 PM	Bui, E. C. & A. Chen	*Grading the Grader: Validated Rubric to Evaluate Written Instructor Feedback on Biology Laboratory Reports*
2:15 PM		**BREAK**
2:30 PM	Ingraham Dixie, K. L.	*Future faculty motivations for participating in teaching-related professional development*
2:55 PM	McAnally, K., H. Barron, I. Woodruff, L. Beaster-Jones, E. Menke, & P. Kranzfelder	*Graduate teaching assistants utilize inclusive teaching practices and culturally responsive science teaching despite perceived barriers: A qualitative analysis*
3:20 PM		**Community Discussion & Social Hour**
4:00 PM		**Closing**

BioTAP Leadership:

Executive Members
President-Elect: To be elected by BioTAP members by January 2024
Acting President: **Adam Chouinard**
Past President: **Beth Schussler**
Treasurer: To be elected by BioTAP members by January 2024

Education Committee
Chair: **Erin Shortlidge**
Vice Chair: **Lori Kayes**
Kimberly Bell
Marina Crowder
Emma Goodwin
Julia Gouvea
Star Lee
Gili Marbach-Ad
Sam Skrob-Martin
Erica Szeller
FW Williamson

Networking & Communications Committee
Chair: **Dan Johnson**
Theodore Alivio
Stefanie Chen
Deborah Lichti
Stephanie Gutzler
Brent Stoffer

Conference Committee
Chair: **Kaleb Heinrich**
Ash Heim
Amy Keagy
Carrie Monje
Amy Pate

Keynote Profile:

Erin Shortlidge, Ph.D.
Associate Professor of Biology and Biology Education
Department of Biology
Portland State University

Erin is an Associate Professor in the Department of Biology at Portland State University (PSU). Her path to academia has been a non-linear one. She was a professional contemporary dancer for over a decade before returning to school, eventually earning her PhD in Biology in 2014. Her PhD work focused on the biotic and abiotic factors influencing moss reproductive success. Here she was lucky enough to do field work in Lassen Volcanic National Park and in the South Shetland Islands on the Western Antarctic Peninsula.

Through a postdoc at Arizona State University she transitioned to Biology Education Research (BER), and this is where she happily remains. Work in the Shortlidge BER Group at PSU focuses on understanding best practices in teaching and learning science. Erin is the PI of NSF-funded Scholarships in STEM program (S-STEM) and Evolving the Culture of Biology (ECB), and is involved with a number of groups including the PSU STEM Education and Equity Institute, CUREnet, the Student Experience Project, U-FERN, PNW LSAMP, and others.

Biology Teaching Assistant Project
2023 Virtual Conference

Monday, October 30, 1:00 PM - 4:45 PM EST
Tuesday, October 31, 1:00 PM - 4:15 PM EST

Open to all interested in
Graduate/Undergraduate Teaching Assistant
Teaching Professional Development (TA-TPD)!
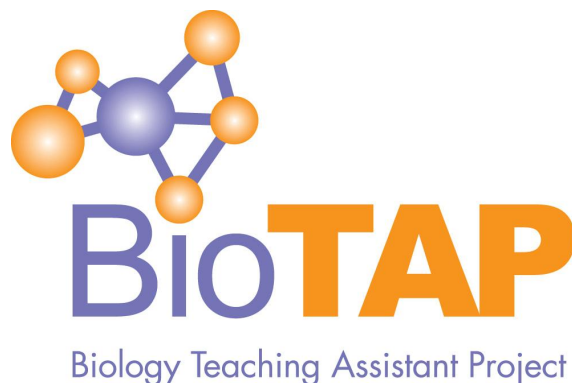
Schedule and Abstracts

Monday, October 30

1:00 - 1:15 PM EST   **Introduction to the Conference and BioTAP**

1:15 - 2:15 PM EST   **Conference Keynote**
        The Elephant in the CURE Conversation: Impacts of Graduate Teaching Assistants on Experiences and Outcomes, **Erin Shortlidge** (Portland State University)

Abstract: Attrition from undergraduate STEM fields remains a problem despite numerous efforts for mitigation. One path towards improving the academic ecosystem is through increased use of evidence-based teaching practices. Much of introductory STEM education involves instruction by graduate teaching assistants (GTAs), and this is particularly true in biology. In this talk I will present data on a study involving biology GTAs and their experiences and perceptions teaching using an evidence-based approach: CUREs (Course-based Undergraduate Research Experiences). CUREs are designed to provide an authentic research experience for undergraduates in the classroom setting, thereby minimizing inequities in who gets to participate in research. Using a mixed-methods, case study approach, we explored the outcomes for both GTAs and undergraduates when GTAs teach a CURE. Findings highlight variation in: 1) GTA perceptions of their role(s) in the CURE classroom, 2) how individual TAs impact undergraduate experiences and motivation, and 3) how GTAs and undergraduates conceptualize the value of CUREs. This work implies that we may want to use caution when assuming improved outcomes for students simply by employing evidence-based approaches. Lastly, suggestions for a path forward through intentional professional development for CURE TAs will be provided.

2:20 - 3:15 PM EST   **President's Address**
        A New Era of BioTAP: Organizational Updates and Upcoming Elections,
Adam Chouinard (Current President, Oregon State University) and **Beth Schussler** (Past President, University of Tennessee)

3:15 - 3:30 PM EST   **BREAK** (get a snack, walk around, come back!)

3:30 - 3:40 PM EST

Does participation in a TA Training Workshop improve TA confidence and attitudes toward active learning? **Kevin G-E. Scott** and **Cassandra D. Debets** (University of Manitoba)

Abstract: Historically at the University of Manitoba, new TAs were expected to teach their labs with no formal training like many faculty. For the first time, a formal training workshop was held for incoming Biology TAs, both graduate and undergraduate students, for the fall 2023 semester. The workshop spanned two half days with homework for the second day. Training was provided in the following areas: addressing TA concerns; preparation, execution, and reflection for lab instruction; engaging students; active teaching strategies; EDI; and classroom management. Workshop participants were also tasked with preparing a 6-minute TAing tidbit using active strategies and presenting it in small groups on day two. To gauge TA's perceptions on teaching and learning and assess any effects the workshop may have had, we surveyed the workshop participants before and after using Likert-scale questions and their responses were compared. Preliminary results show that after the workshop, overall, participant TAs felt significantly more confident that they would be: 1) an effective TA; 2) better able to engage students in their labs; and 3) respond to questions they didn't know the answer to. Additionally, they felt significantly more prepared and confident using active strategies in their teaching labs. To continue this study, participant and non-participant TAs will be observed in their teaching lab for one hour using COPUS-TA (Barker, 2023). Additionally, TAs will be surveyed again at the end of term to evaluate any impact that their teaching experiences had.

3:45 - 4:05 PM EST

Motivation and Critical Reflection Inform Increased Absence Policy Permissiveness in Life Science Graduate Teaching Assistants, **Graham H. Read**, **Swetha Ampabathina**, and **Kaitlin L. Ingraham Dixie** (University of California Los Angeles)

Abstract: Despite the frequency of student absences and the impact they have on both students and instructors, little study of evidence-based policies covering unexpected absences exists. To understand how to enable students to take absences they need while maintaining progress towards learning objectives, we investigated how instructors handle and perceive unexpected absences, focusing on the need for students to justify their absences and the causes seen as justifiable. We surveyed first-time TAs before and after taking an introductory pedagogy course concomitant with their first TAship for their perceptions of justifiable reasons for personal absences, alongside in-class scenarios simulating student absences to prompt instructor reflection on leave policies in their own and in ideal classroom. We found that TAs reporting that their TAship is a priority to them are less likely to ask students to justify their absences, and see more reasons for absence as justifiable. Interestingly, the degree to which TAs perceive that their TAship takes away from other duties as a graduate student did not similarly predict attitudes regarding absence policies, although our data does not describe the effort required to implement different absence policies. We also found that TAs significantly adopted more permissive absence policies after the course. Altogether, we find that TA motivation decreases the likelihood that TAs will expect their students to explain why they are missing class, and that TAs broadly adopted more permissive absence policies after either experience or participation in a teacher training course including reflection on absence policies. Future research detailing the perceived utility of absence policies, expected effort required by instructors to implement those policies, and effects of those policies on learning objectives could describe an absence policy that maintains student learning and places minimal burdens on students to present reasons for absences or on instructors to analyze validity of absence requests.

4:10 - 4:30 PM EST

Investigating the Relationship Between Graduate Teaching Assistant Self-Efficacy and Teaching Approach, **Cody Smith** (Missouri State University)

Abstract: Graduate teaching assistants (TAs) are often assigned to teach undergraduate courses with little to no teaching experience or teacher training. In the absence of experience and preparation, one's self-efficacy is indicative of the quality of their performance at a given task. Higher reported levels of self-efficacy may result in having more student-centered versus teacher-centered teaching approaches, which would positively impact student-learning. This study sought to understand the relationship between TAs' self-efficacy and teaching approach. Correlation analyses of the relationships between the Graduate Teaching Assistant Teacher Self-Efficacy Scale and the Approaches to Teaching Inventory, used to measure self-efficacy and teaching approach, respectively were conducted. Results indicated that TAs with more teaching experience who are higher in self-efficacy also have more student-centered teaching approaches, while less experienced TAs showed positive relationships among self-efficacy and both teacher- and student-centered approaches. Based on these findings, it is suggested that experience may be a key variable in determining whether self-efficacy impacts TAs' approaches to teaching. Finding that less experienced TAs had positive relationships between their self-efficacy and both approaches to teaching does not make it clearer how self-efficacy may impact their teaching approach. However, it also suggests that novice TAs may be less certain of what may positively impact student learning. Therefore, the two variables of self-efficacy and teaching approach may be subject to a threshold of experience needed before making determinations of how to utilize either variable in the development of novice TAs.

4:30 - 4:45 PM EST   **Day 1 Conclusion**

Return tomorrow at 1:00 PM EST for Day 2

Tuesday, October 31
1:00 - 1:05 PM EST   **Welcome back**

1:05 - 1:25 PM EST

The TPD Catalyst: A Strategic Initiative for Sharing TA Training Resources,
Adam Chouinard (Oregon State University), **Erin Shortlidge** (Portland State University), **Mitra Asgari** (University of Missouri), **Stephanie Gutzler** (Georgia State University), **Star Lee** (University of California Irvine), **Diyala Shihadih** (Portland State University), and **Kaleb Heinrich** (University of Alabama)

Abstract: A growing body of scholarship paints a compelling picture that Teaching Professional Development (TPD) for Teaching Assistants (TAs) should be an important priority for higher education institutions. Despite this, TAs are not always provided with adequate TPD, in part because faculty and staff are not adequately supported to do so. As a part of the Evolving the Culture of Biology (ECB) program, we present our vision for an online resource to help TPD practitioners provide excellent TA-TPD in a way that is as efficient as possible. The "TPD Catalyst" will be a living repository of information, topics, outcomes, aligned curricula and assessments, and other instructional resources for individuals and institutions to use in their TA-TPD. Enzymes are catalysts that lower the "activation energy" necessary for a chemical reaction to go forward. In that same spirit, the TPD Catalyst is meant to help lower the energy investment required of individuals seeking to support TAs in their teaching and professional development, to make it more likely that a disciplinary transformation and widespread adoption of TA-TPD can take place. The repository will be created in the coming years through the work of the ECB leadership team, ECB Scholars, the BioTAP network, and other invested parties who wish to contribute their materials and have it recognized as the vital form of scholarship that it is. In this talk, we will outline the purpose, structure, and contents of the proposed TPD Catalyst, convey important information for prospective authors, and solicit input from the community to make this resource as helpful as possible.

1:30 - 1:50 PM EST

Developing a Comprehensive Codebook for Analyzing Transcribed Interview Data on the Impact of Professional Development on Teaching Assistants and their Students: A Pilot Study,
Toacca Roberts, **Lubomira Cubonova**, and **Amy Kulesza** (The Ohio State University)

Abstract: As teacher professional development (TPD) continues to be a pivotal component of educational improvement efforts in higher education, it becomes imperative to explore its direct and indirect effects on students' academic growth. We interviewed 29 Teaching Assistants (TAs) to investigate how instructors' approaches to teaching change over time while participating in TPD, and how instructors perceive those changes relate to student learning. We wanted to pursue a method to analyze transcribed interviews to better understand the relationship between completing a professional development course and improvements in teaching assistants' personal growth and student learning outcomes. Utilizing a codebook to investigate transcribed interviews has shown to be fruitful as a qualitative tool for uncovering common themes present in the data. A pilot coding phase was conducted with a subset of interview data to develop and refine our codebook. We will present our methods and initial themes during the creation of a codebook to identify our TPD program's impact on TAs through analysis of semi-structured interviews. The development of this codebook represents a vital step in enhancing the validity and reliability of qualitative research in the field of education, with the potential to drive positive changes in professional development practices and student outcomes.

1:55 - 2:15 PM EST

Grading the Grader: Validated Rubric to Evaluate Written Instructor Feedback on Biology Laboratory Reports, **Elise C. Bui** and **Audrey Chen** (University of California Irvine)

Abstract: A substantive part of teaching is providing written feedback to students. This is a form of student-centered, asynchronous teaching that plays a critical role in guiding and correcting students. The demands for effective instructor feedback will likely increase as online learning becomes more prevalent. A teaching professional development program needs to train novice instructors to provide effective feedback in addition to the typical training on best in-classroom teaching practices (Gibbs & Simpson, 2004). However, education researchers currently do not have an instrument to evaluate the quality of instructor written feedback. The aim of this project was to develop and validate a rubric to evaluate written instructor feedback on biology laboratory reports. In order to establish content validity, we interviewed faculty who were experts in rubric construction, teaching assistant teaching professional development, scientific writing, or feedback pedagogy. Data from think-aloud interviews was triangulated with a semi-structured interview immediately following the think-aloud interview. In order to establish face validity, we interviewed biology graduate students as they used the revised rubric to evaluate a teaching artifact. The result is an evidence-based rubric that proposes three distinct dimensions to be examined: Feedback culture, Feedback content, and Feedback usability, which are further subdivided into subcategories. A validated rubric will enable future studies to examine teaching artifacts for feedback quality. Use of a rubric also allows teaching professional development instructors to provide transparent expectations for high performance and a method to monitor and support novice instructors' understanding of how to achieve higher performance (Allen & Tanner, 2017). In order to better understand psychosocial factors that affect student perception and effectiveness of instructor feedback, future studies will examine how students from individualistic and collectivist cultures respond differently to instructor feedback on biology laboratory reports.

2:15 - 2:30 PM EST   **BREAK** (get a snack, walk around, come back!)

2:30 - 2:50 PM EST

Future faculty motivations for participating in teaching-related professional development, **Kaitlin L. Ingraham Dixie** (University of California Los Angeles)

Abstract: Teaching-related Professional Development (PD) opportunities for future faculty (FF) vary widely in the level of commitment required by participants and can range from one-time workshops or seminars to multi-year certification or intensive internship programs. The reasons why FF may participate in one form of PD over another, however, are not well documented. In this study we explore what factors motivate graduate students and postdocs to participate in teaching PD opportunities that require different levels of time commitment, or 'engagement'. We surveyed FF that participated in different forms of PD including (in order from low to high engagement opportunities): 1. required 2-credit courses for first-time TAs, 2. intensive summer institutes or elective courses, 3. teaching certificate programs, and 4. a teaching-intensive internship program. Participants were asked about motivations on existing course and event assessment surveys and history of prior PD program engagement. FF who participated in the study were from different disciplines and were at different stages of their career development. Preliminary data has shown that students in a required course for first-time Life Science TAs (i.e. a lower engagement program) frequently reported reasons for participating that were based on either improving their skills as a

teacher, learning new teaching strategies, or because it was required. FF that participated in a three-course series associated with a nationally-recognized certification program open to any discipline (i.e. a higher engagement program) and community college internship program frequently cited similar reasons, but were more likely to also cite reasons that were motivated by career goals and exploration, desire for community, enjoyment of teaching, and exposure to education research. In the future, we plan to conduct follow-up interviews to further delineate and obtain more detailed descriptions of why they chose, or did not choose, to participate in different types of FF PD.

2:55 - 3:15 PM EST

Graduate teaching assistants utilize inclusive teaching practices and culturally responsive science teaching despite perceived barriers: A qualitative analysis,
Kaylyn McAnally (University of California Merced), **Hillary Barron** (Bemidji State University), **Isabella Woodruff** (UC Merced), **Laura Beaster-Jones** (UC Merced), **Erik Menke** (UC Merced and Colorado School of Mines), and **Petra Kranzfelder** (UC Merced and University of California Santa Barbara)

Abstract: One way to mitigate the effect of sociostructural disparity and systemic oppression of marginalized students in science classrooms is through active participation in dismantling established structures of oppression. One pedagogical framework with this aim is culturally responsive science teaching (CRST; Barron et al., 2021), which is based on student empowerment, cultural competence, and sociopolitical consciousness (Ladson-Billings, 1995). Although CRST and other culturally-centered pedagogies have been linked with improved student empowerment, self-efficacy, and ethnic and academic identity (Aronson & Laughter, 2016), more research is needed to assess whether graduate teaching assistants (TAs) in college science are familiar with and prepared to engage in CRST. During the COVID-19 pandemic, we conducted two training sessions for inclusive teaching practices and CRST adapted from Barron and colleagues (2021) during a graduate TA teaching professional development course at UC Merced, a large, research-intensive Minority-Serving Institution (MSI). Before and after the training, we collected surveys, written reflections, and session artifacts from five graduate teaching assistants who participated in the training sessions. We used inductive, open-coding (Saldaña, 2015) to generate a preliminary picture of how graduate TAs described their experiences with inclusive teaching and CRST. We then used deductive thematic analysis to identify similarities across the participants' teaching reflections and session artifacts. Results indicate that prior to the intervention, graduate TAs felt they lacked training in inclusive practices and CRST, but still were intentional in providing their students with individualized attention and tried to make sociopolitical connections in their teaching. After the intervention, graduate TAs reported using inclusive practices and CRST by encouraging shared student experiences and promoting growth mindsets. A lack of time and training remained a barrier to implementation. These findings can inform future graduate TA trainings, which aims to bolster graduate TAs' inclusive and culturally responsive science teaching practices; especially at MSIs.

3:20 - 4:00 PM EST   Community Discussion and Social Hour

This session will serve as a general membership meeting but will also allow for participants to connect and have informal discussions. We will kick off with some BioTAP and TPD trivia!

4:00 - 4:15 PM EST   Closing

The Biology Teaching Assistant Project (BioTAP) was a research coordination network funded by the National Science Foundation (DBI: 1539903) to empower universities to use research to improve the quality of graduate student teaching.

The Evolving the Culture of Biology (ECB) program is a federally-funded grant (NSF-IUSE: 2142742) designed to support the transformation of institutional Teaching Professional Development for Teaching Assistants (TA-TPD) in the biological sciences.