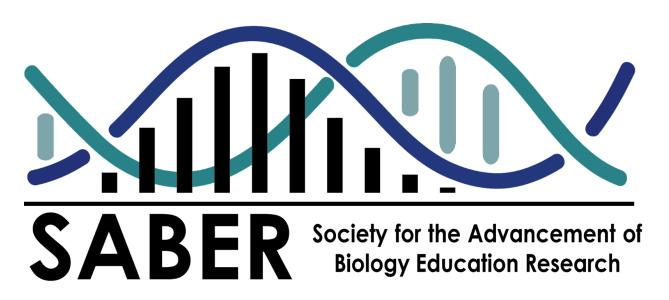
## **SABER West 2024**

January 13 & 14
University of California Irvine



Supporting Equitable Transition in STEM Education

# UCI School of Biological Sciences





# Achie / Engage Every Student

ACHIEVE is Macmillan's new online platform that includes a comprehensive set of interconnected teaching and assessment tools.

ACHIEVE was co-designed through extensive collaboration and testing by both students and faculty including two levels of Institutional Review Board approval for every study of Achieve. Extensive student testing revealed powerful gains for students.

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Pre-built assignments include a variety of activities to engage students both inside and outside of class.

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Macmillan remains dedicated to expert authorship and support of the customer experience.



## Achieve supports these titles

#### MAJORS BIOLOGY

Morris et al., Biology: How Life Works 4e

Hillis et al., Life: The Science of Biology 12e Digital Update

Hillis et al., Principles of Life 3e Digital Update

OpenStax Biology

#### NON-MAJORS BIOLOGY

Shuster, Biology for a Changing World 4e

Phelan, What Is Life? 5e

OpenStax Biology

Evert/Eichhorn, Raven Biology of Plants 8e

#### GENETICS

Pierce, Genetics Essentials 5e

New! Pierce, Genetics: A Conceptual Approach 7e Digital Update

Griffiths et al., Introduction to Genetic Analysis 12e

#### **CELL BIOLOGY**

Lodish et al., Molecular Cell Biology 9e

#### MOLECULAR BIOLOGY

Cox/Nelson, Molecular Biology 2e

#### IMMUNOLOGY

Punt et al., Kuby Immunology 8e Digital Update

#### **ECOLOGY**

Relyea, Ecology: The Economy of Nature 9e

#### EVOLUTION

Emlen/Zimmer, Evolution 3e

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For more information, visit macmillanlearning.com/SABERWest2024



## **CODON**LEARNING

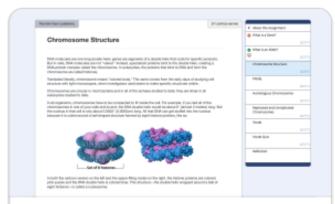
# Introducing the Life Sciences

Scott Freeman (University of Washington) and colleagues



Readiness Readings replace traditional textbooks for biology majors and help students come to class prepared for active learning.

163 NSF-funded nationally endorsed lesson-level learning objectives provide biology majors with clear expectations of what they should know and be able to do.\*

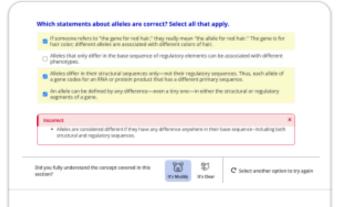


#### Streamlined and written for students

Students read only the content they need for each class session, which reduces their inclination to try to memorize everything.

#### Customizable

Instructors can customize every element of a Readiness Reading to match exactly what they want to teach.



### Active and engaging

Students answer guiding questions while they read and practice metacognition by marking sections clear or muddy.

#### Assignable

Instructors assign readings for points — making students accountable for reading — and track their progress in the instructor application.



# Optimize Lecture & Lab Time

Mastering® is a flexible digital platform that combines trusted content with customizable features so you can teach your course your way.With Mastering's digital tools and assessments, students become active participants in their learning, leading to better results.

## Give your biology students a head start with....

- GapFinder's Diagnostic Modules assess students' prerequisite knowledge in key math and science areas. Then it assigns personalized review modules allowing students to study what they don't know not what they've already mastered.
- Study Skill Modules help students who struggle with course content when a lack of study skills may be hindering their success. Allow your students to become better learners through these modules:
  - ✓ Strengthen Your Test Taking
  - Studying vs. Learning
  - ✓ Time Management
  - Using the Resources
  - ✔ Accountability
  - ✔ Reading and Taking Notes



"Mastering provides extra practice for the material needed on exams. There are so many helpful resources in order to get the job done in the most successful and effective way."

-Student

99

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**NEW** <u>Pearson Interactive Labs</u> engage students in an online comprehensive lab experience!

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- Meiosis
- Mitosis
- Acids & Bases
- Macromolecules
- Enzymes
- Natural Selection

Want to learn more? Click Here!



## Prepare Students, Streamline Course Management, and Empower Grading Consistency

## Catalyst Education now supports biology!

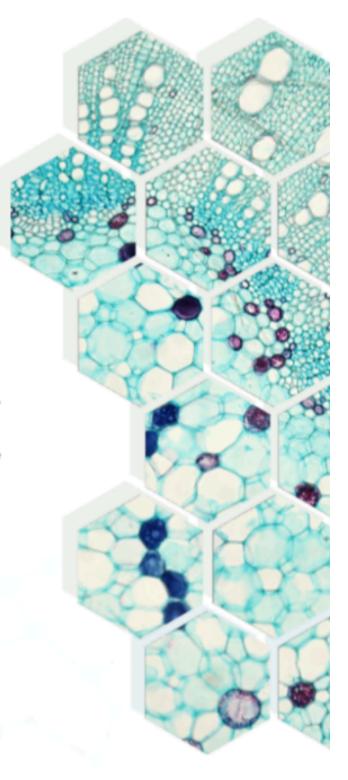
We believe positive lab experiences promote curiosity, inspire future scientists, and foster science literacy.

Our platform enhances traditional lab courses to drive student success, deliver key insights to lab coordinators and teaching faculty, and improve TA teaching ability.



Learn More About Labflow









What's in your teaching DNA?

# HIGHER EDUCATION STEM WORKSHOPS AND CONSULTING



Combining your strengths with evidence-based practices to achieve positive outcomes in the following areas:

- · Curriculum and course development
- Modern and engaging teaching strategies
- · Discipline-based education research
- Future faculty training and support



"Please invite Dr. Shaffer to consult with you or your faculty! He's invested in continuous improvement and evidence-based methods, skilled at translating research to practice, and will renew your excitement for classroom teaching. He's a rare-find and a gem!"

Sarah Bodbyl, Associate Dean, Van Andel Institute Graduate School



Justin Shaffer, PhD

# Postsecondary Education Research & Implementation Institute

The Postsecondary Education Research & Implementation Institute (PERI2) brings together an interdisciplinary team from across UC Irvine, including the Office of the Vice Provost for Teaching and Learning and the School of Education, with the aim of supporting and conducting research that fosters equitable student success.

PERI<sup>2</sup> has the expertise to serve as external evaluator for education-focused projects, contracts, and research grants with staff that can:

- Generate & implement qualitative & quantitative data collection instruments
- Coordinate cross-campus & cross-unit data collection
- Tie program outcomes to institutional data
- Analyze data & disseminate results

Currently serving as external evaluator for projects funded by: of Health



For more information, visit UCI PERI<sup>2</sup> www.educationresearch.uci.edu or contact ssolanki@uci.edu

## **General Information**

Travel and Hotel Information (website)
Summary schedule (link)
Attendee list (Google Sheets link)
Wifi at UCI (link)
All talk abstracts are listed here.
All poster abstracts can be found here.

Quiet room during the conference: ALP 2700

Collaboration space during the conference: ALP Lobby

UCI Contacts: Brian Sato (<u>bsato@uci.edu</u>), Adrienne Williams (<u>adriw@uci.edu</u>), and Alex Paine (<u>painea@uci.edu</u>)

All conference activities take place in the Anteater Learning Pavillion (ALP), building 605 on campus map (<u>link</u>).



The closest parking is Lot 7 (Google maps link and self-parking link \$15/day)

## Friday, January 12

## **Welcome Happy Hour (sponsored by Macmillan Learning)**

5:00 – 7:00 PM at <u>Hanger 24 Brewery and Restaurant</u> - 1 complimentary drink per registered attendee

## Friday Workshops (optional, pre-registration required)

Enrollees will be contacted by the presenter. More about each of these workshops can be found <a href="here">here</a>.

Time/Location	Description	
12:00pm-4:00pm	R for Teachers and Education Researchers	
	Presenter: Kameryn Denaro (UC Irvine)	
Location: AIRB 1030		
	R is a free and powerful statistical computing language. Most courses that teach R	
Lunch and afternoon	start with an esoteric computer science lecture and sample data about cars. This	
coffee provided	course will provide busy faculty and graduate students with tools to analyze actual	
	classroom data to start you on the path to using quantitative methodologies to	
	conduct education research. Part 1 is an introduction to R through the lens of classroom teaching, Part 2 introduces R for analysis of classroom data for education	
	researchers. Attendees are expected to be novices to R.	
12:00pm-4:00pm	CourseSource Writing Studio Workshop: Developing your innovative classroom	
	activities for publication in CourseSource	
Location: McGaugh	Presenters: Sharleen Flowers (CourseSource) and Jenny Knight (CU Boulder)	
<u>4248</u>		
	In this workshop, we will help prospective CourseSource authors learn about the	
Lunch and afternoon	journal and submission guidelines. We will guide participants through each section of	
coffee provided	a CourseSource manuscript and provide helpful hints. Prospective authors will have	
	time to work in small groups on manuscript ideas, receive feedback from peers, and	
	ask questions of the editorial staff. Participants will work through a manuscript planning worksheet including all the components of a CourseSource Lesson article:	
	learning goals, introduction, scientific teaching themes, lesson plan, supporting	
	materials, and teaching discussion	
1:00pm-4:00pm	Finding Belonging in STEM Education: A Contemplative Approach	
	Presenters: Madhvi Venkatesh (Vanderbilt) & Yevgeniya Zastavker (Olin College)	
Location: ALP 3700		
	This workshop will provide a theoretical and experiential understanding of	
Afternoon coffee	contemplative pedagogies and how they can be used to create learning spaces that	
provided	foster belonging. This workshop will invite participants to engage with contemplative	
	pedagogies while also gaining the knowledge and skills necessary to apply them in their own local contexts. Specifically, through both interactive lecture and experiential	
	practice, participants will be introduced to a set of contemplative pedagogies that are	
	transferable to diverse learning environments. This session is intended for all	
	audiences who support students' learning so that they can engage these practices in	
	fostering a personal and collective sense of belonging for their respective student	
	populations.	

## Saturday, January 13

## **Shuttle Pick-up Times**

From the hotel (Irvine Marriott) to the conference – 8:15 am, 8:45 am, 9:15 am

If you miss the shuttle and need a ride to campus, the destination is "Parking Lot 7 at UCI" (Uber and Lyft can pick you up and should be  $\sim$ \$10 one-way).

Google maps information can be found <a href="here">here</a>. Self-parking information can be found <a href="here">here</a> (\$15/day).

## 8:30 - 9:50 AM Registration and Breakfast

ALP Lobby. Registration & Breakfast, Poster setup (even numbers)

## 9:00 – 9:50 AM Special Interest Groups and Informal Meetups

Location	SIG/Meetup	Description	
ALP 1600	New to SABER	Join us at the new attendee breakfast, where we warmly welcome all SABER and/or SABER West newcomers to enjoy a delicious breakfast while learning about the organization and connecting with current members.	
ALP 2100	K-12 Education	The K-12 SABER SIG is for those interested in how K-12 education informs biology education research at the postsecondary level	
ALP 2200	Biology through Art	Biology through Art is a collaborative network of biologists and artists that explores ways to integrate artwork and creative expression into biology courses.	
ALP 2500	Physiology	Physiology instructors! Come find your colleagues at our Phys SIG. I will share some valuable resources for your teaching and we can exchange ideas on challenging topics. Looking forward to meeting each of you.	
ALP 2600	Methodology	Methodology in BER SIG to brainstorm ideas for programming and activities that will advance our community's the epistemological underpinnings of research design and methodology.	

## 10:00 - 10:30 AM - WELCOME/ANNOUNCEMENTS

ALP 1300

## 10:30 - 11:30 AM Plenary Speaker Dr. Andrew Estrada Phuong

**Title:** Adaptive Equity-Oriented Pedagogy: An Empirically Tested Framework for Increasing Student and Instructor Success - **ALP 1300** 

## 11:45 AM - 12:30 PM Concurrent Talks 1

15 minutes to talk, 5 minutes for questions. Please keep time for each other.

	11:45 AM – 12:05 PM	12:10 PM – 12:30 PM
ALP 1600	Desiree Forsythe*(Chapman University); Jeremy Hsu (Chapman University) Impact of non-STEM minor on STEM students' STEM identity.	Shelby Chandar (Sacramento State)*; Ethan X Roberts (California State University, Sacramento); Abdullah Al-Janabi (California State University, Sacramento); Joya Mukerji (California State University, Sacramento); Catherine Ishikawa (California State University, Sacramento); Kelly McDonald (California State University, Sacramento) Identifying perceived barriers faced by students with disabilities in STEM research courses.
ALP 1700	Baylee A Edwards (Arizona State University)*; Sara Brownell (Arizona State University) Secular biology graduate teaching assistant perceptions of the relationship between religion and evolution	Juliana M Fox (UCSD)*; James Cooke (UC San Diego) Consistency of Sustaining and Extinguishing Epistemic Beliefs across STEM Classrooms
ALP 2200	Saya S. Shahoy (UC San Diego); Michelle Du (UC San Diego)*; Ola Mostafa (UC Berkeley); Aliyah Parker (Stanford); Dylan Martirano (CSU Northridge); Melinda T Owens (UC San Diego)* College level biology students' understanding of COVID-19 mRNA-based vaccines and their ability to apply their knowledge of the central dogma	Bailey M. Von der Mehden (University of Tennessee, Knoxville)*; Beth Schussler ("University of Tennessee, Knoxville") Navigating Success and Failure: Student Perspectives in Biology and Chemistry Lectures
ALP 2500	Gabriella Dauber (Chapman University)*; Jeremy Hsu (Chapman University) Examining Student Affect and Experiences in STEM Course Office Hours	Eduardo J Gonzalez (UCSB)*; Vanessa Woods (UCSB); Jesse Lewis (University of Minnesota); Daniel Wetzel (University of Pittsburgh); Lekeah Durden (Central Michigan University); Susan Cheng (University of Michigan) Exploring STEM Student Experiences: Analyzing Motivators and Barriers Impacting Office Hour Engagement

All talk abstracts are listed here.

## 12:45 PM Lunch for all

## 12:45 PM Community College Lunch and Meetup

Community college colleagues, potential collaborators and friends are invited for networking and lunch – **ALP 1600** 

## 1:45 - 3:15 PM Workshops

See your badge for your workshop selection. All workshop abstracts can be found <a href="here">here</a>.

Location	Description		
Workshop A	Claire Meaders (UC San Diego) & Petra Kranzfelder (UC Santa Barbara)		
ALP 1120	Using Classroom Observational Protocol Data to Document Professional Growth		
	in your Teaching		
Workshop C	Sabrina Solanki, Alex Paine, & Anna Kye (UC Irvine)		
ALP 1600	Currently in STEM Education Research		
Workshop D	Adam Chouinard (Oregon State), Star Lee (UC Irvine), Diyala Shihadih (Portland		
ALP 1700	State), & Erin Shortlidge (Portland State)		
	Tools for Evaluating and Improving Teaching Assistant Professional Development		
Workshop E	Parvaneh Mohammadian & Stephen Brown (Los Angeles Mission College)		
ALP 2100	Navigating the Path to Becoming a Community College Educator: A Workshop on		
	Applying for Teaching Positions		
Workshop F	Ira Clark (UCLA), Shelly Thai (Glendale Community College), Alija Mujic (Fresno		
ALP 2200	State), Alexander Tower (Santa Monica College), Marc Levis-Fitzgerald (UCLA),		
	Casey Shapiro (UCLA), & Brit Toven-Lindsey (UCLA)		
	Scaffolding research for undergraduates: How to integrate a Research		
	Deconstruction module in your introductory biology courses		
Workshop G	Jenny Knight (CU Boulder) & Sharleen Flowers (CourseSource)		
ALP 2500	An interactive session using the Scientific Teaching Course: an online,		
	open-access course on evidence-based teaching for undergraduate science		
	educators		
Workshop H	Diane Ebert-May (Michigan State) & Nate Emery (UC Santa Barbara)		
ALP 2600	Assess what's important: Creating assessments that demonstrate students'		
	knowledge and abilities to use knowledge		

## 3:30 - 4:15 PM Concurrent Talks 2

15 minutes to talk, 5 minutes for questions. Please keep time for each other.

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	3:30 – 3:50 PM	3:55 – 4:15 PM
		0.00

ALP 1600	Gregory J Crowther (Everett Community College)*; Usha Sankar (Fordham University); Leena Knight (Whitman College); Deborah Myers (Everett Community College); Kevin Patton (St. Charles Community College); Lekelia Jenkins (Arizona State University); Thomas Knight (Whitman College) Chatbot Responses Suggest that Hypothetical Biology Questions are Harder than Realistic Ones	Briana M Craig (Chapman University)*; Jeremy Hsu (Chapman University) A multi-year longitudinal study exploring the impact of the COVID-19 pandemic on students' familiarity and perceptions of active learning
ALP 1700	Mike Wilton (UCSB)*; Stanley M Lo (University of California San Diego); Kameryn Denaro (UCI); Brian Sato (UC Irvine); Hannah Kam (UC San Diego) Moving beyond the Ivory Tower: Analyzing University of California faculty hiring to promote diversification of the professoriate	Erik Arevalo (University of California, San Diego)*; Eva Fuentes-Lopez (UCSD); Mike Wilton (UCSB); Stanley M Lo (University of California San Diego) Hiring for Equity: Examining how Faculty Search Committees Conceptualize Inclusive Hiring Practices
ALP 2200	Joseph L Henry (University of California Irvine)*; Natascha Buswell (University of California Irvine) Elucidating the Transition Process of Latin and Hispanic PhDs into Teaching-Focused Faculty Positions Using a Community Cultural Wealth Framework	Alex R Paine (UCI)*; Brian Sato (UC Irvine); Sabrina Solanki (University of California, Irvine) Teaching-Focused Faculty in Research-Intensive Universities: Examining how Increased Engagement in Scholarship could Bridge Gaps between Research and Teaching Initiatives
ALP 2500	Alfonso Godinez Aguilar (Harvard University); Lilyan Mendez (UC San Diego); Clara Meaders (UC San Diego)*; Melinda T Owens (UC San Diego) Will it still work? Fidelity of a chemistry learning intervention for introductory biology when adopted by other instructors	Merri L Casem (CSU Fullerton)*; Julia Chan (CSU Fullerton); Sachel Villafane-Garcia (CSU Fullerton); Ariana Vasquez (Arroyo Research Services) Listening to Student Voices: A College-based Summer Bridge Program

All talk abstracts are listed <u>here</u>.

## 4:30 – 5:30 PM Poster Session and Appetizers

Poster Session (**Even numbers**)
All poster abstracts can be found <u>here</u>.
Poster authors and titles are at the end of the program.

## 6:00 PM Dinner on your own

Want a dinner buddy? Sign up here.

## **Shuttle Return Times**

For return to the hotel - 5:30 pm, 6:00 pm, 6:30 pm at Parking Lot 7 outside of ALP

## Sunday, January 14

## **Shuttle Pick-up Times**

From the hotel (Irvine Marriott) to the conference – 7:45 am, 8:15 am, 8:45 am.

If you miss the shuttle and need a ride service to campus, the destination is "Parking Lot 7 at UCI" (Uber and Lyft can pick you up and should be ~\$10 one-way).

Google maps information can be found <a href="here">here</a>. Self-parking information can be found <a href="here">here</a> (\$15/day).

#### 8:00-9:20 AM Breakfast

## 9:30 - 9:45 AM Announcements

## 9:45 - 10:45 AM Plenary Short Talks

	9:45 – 10:05 AM	10:05- 10:25 AM	10:25 – 10:45 AM
ALP 1300	Nkechinyere Iroanusi (UC San	Emoni Cook (UCLA)*;	Austin Zuckerman (University
	Diego)*	Lauryn Famble (UCLA);	of California, San Diego)*; Lily
	Comparative Analysis of	Noelle Fuller (UCLA);	Vo (University of California San
	Instructional Courses Focusing	Naomi Hammonds (UCLA);	Diego); Ashley Juavinett
	on Race and Genetics	Maciel Duverge (UCLA);	(University of California San
		Siobhan Braybrook (UCLA);	Diego)
		Jeffrey Maloy (UCLA)	When Coding Meets Biology:
		Evaluating the Impact of	Student Attitudes, Motivations,
		Justice Pedagogical	and Expectations in a
		Partnerships on Student	Contextualized Coding Class
		and Faculty Partners in Life	
		Sciences	

### 11:00 AM - 12:10 PM Concurrent Talks 3

15 minutes to talk, 5 minutes for questions. Please keep time for each other.

11:00 – 11:20 AM	l1:25 – 11:45 AM	11:50 – 12:10 PM
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ALP 1600	Delaney Worthington* (Colorado State University); Barb Graham (Colorado State University); Hannah Gilliard (Colorado State University); Nicole Kelp (Colorado State University) Development and validation of a multifactorial scale to evaluate students' planned behavior in inclusive approaches to science communication.	Nicole Kelp (Colorado State University)*; Sydney Alderfer (Colorado State University); Katlyn M Murphy (Colorado State University); Delaney Worthington (Colorado State University) Helping students consider inclusivity and socio-scientific implications of the primary scientific literature	Madhvi J. Venkatesh (Vanderbilt University);* Abigail M. Brown (Vanderbilt University); Janani Varadarajan (Vanderbilt University); Barbara Fingleton (Vanderbilt University); Kathleen L. Gould (Vanderbilt University Development of a scale to measure bioscience doctoral students' self-efficacy in science process and professional skills.
ALP 1700	Nichole A Lewis (UC Berkeley)*; Diyala Shihadih (Portland State University); Dax Ovid (University of Georgia); Tamara L Mau (Dept. of Integrative Biology); Julianne M Winters ("University of California, Berkeley"); Tyrone Hayes (UC Berkeley); Eileen Lacey (UC Berkeley); Robert Full (UC Berkeley) Faculty interviews provide key insights to successful discovery-based undergraduate course transformations	J. Gwen Shlichta (Edmonds College)* and Mary Whitfield (Edmonds College) Beyond the Classroom: Fostering Inclusivity in STEM through External Validation Experiences in Community College CURE Programs.	Eric Pennino (California State University, Sacramento)*; Kelly McDonald (California State University, Sacramento); Andrea Palacio (California State University, Sacramento) Opening the Hidden Rule Book: Increasing Introductory Biology Students' Knowledge of Undergraduate Research Experiences through In-class Workshops
ALP 2200	Jiae Lee (California State University Long Beach)*; Madison Meuler (University of Washington); Elli J Theobald (University of Washington) Biology in a Social Context: A comprehensive analysis on humanization in introductory biology textbooks	Mallory M Rice (California State University San Marcos)*; Marcella Baiz (University at Buffalo, SUNY); Susan Cheng (University of Michigan); Kathy Darragh (University of California, Davis); Cesar Estien (University of California, Berkeley); Kaitlyn Gaynor (University of British Columbia); J. W. Hammond (Michigan Technological University); Lily Khadempour (Rutgers University); Danielle Ignace (University of British Columbia); Christopher Lawrence (Princeton	Marina Ellefson (UC Davis)*; Shannon Behrman (Science Communication Lab); Amanda Molder (University of Wisconsin, Madision); Emily Howell (Science Communication Lab); Brittany Anderton (Science Communication Lab) What to watch? Impact of Educational Video Style Impact on Student Engagement, Speaker Credibility, and Scientific Identity

		University); Matthew McCary (Rice University); Kirby Mills (University of Michigan); Alex Moore (University of British Columbia); Justine Smith (University of California, Davis); Shersingh Joseph Tumber-Dávila (Dartmouth College) Terminology in Ecology and Evolutionary Biology Disproportionately Harms Individuals from Marginalized Groups	
ALP 2500	Cynthia Brame (Vanderbilt University)*; Lilian Baker (Vanderbilt University); Zoe Abel (Vanderbilt University) From 'helping peers succeed' to 'struggling to develop research questions': Factors that contribute to and detract from science identity in undergraduate learning assistants	Tolulope R Owolabi (Sacramento State University); Arik Davidyan (California State University Sacramento)* I Am an Expert; or Am I? Evaluating the Effects of Student Background on Students' Science Identity and Science Communication Efficacy	Celestial J Pigart-Coleman (Arizona State University)* Social comparison disproportionately mediates fear of negative evaluation in science classrooms for underserved science identities

All talk abstracts are listed **here**.

## 12:10 - 1:25 PM Poster Session

Poster Session (**Odd numbers**)
All poster abstracts can be found <a href="here">here</a>.
Poster authors and titles are at the end of the program.

## 1:30 - 2:30 PM Lunch

## **Shuttle Return Times**

For return to the hotel – 1:00pm, 2:00pm at Parking Lot 7 outside of ALP

#### **Posters**

1

Abdullah Al-Janabi (California State University, Sacramento)\*, Shelby Chandar, Ethan Roberts, Kelly McDonald, Cathy Ishikawa, and Joya Mukerji

Identifying general and course-specific barriers faced by students with disabilities in STEM research courses.

2

Sailaja Arungundram (Saint Martin's University)\* and Uma Swamy

Implementing ASBMB core concepts to facilitate student centered learning in an upper-level undergraduate biochemistry course.

3

Melissa D. Almeida (University of California, Merced)\*, Bianca E. Salazar, Zenaida Aguirre-Munoz

Exploring Gesture-Based Learning in Biology Education: A Study on Cell Division Instruction.

4

Mehri Azizi (Florida International University)\*, Dr. Remy Dou, Dr. Bryan Dewsbury,

Self-Regulated Learning Theory for First Year of College.

5

Michelle L. Badura (Santa Clara University)\*, Christelle Sabatier

Mastery grading improves student perceptions and outcomes in Human Anatomy

6

Megan K Barker (Simon Fraser University)\*, Joss Ives, Analise Hoffman, Patrick Dubois

Who has influence? Gendered decision-making in two-phase collaborative group tests.

7

Megan K Barker\*

The COPUS-TA observation protocol for supporting TA peer observation of teaching: Building skills and forming a community of practice.

ጸ

Valerie La, Nicholas Seto, VyVy Au, Shashwat Bhargava, Yanying Liu, Rachael Barry (University of California - Irvine)\*

Development of the STEM Office Hours Observation Protocol: An Instrument to Characterize Student and Instructor Behaviors in Biology Office Hours.

9

Ana T. Perez, Anmolpreet K. Sangha, Sarah A. Bissonnette (California State University, Stanislaus)\*

Protein shake or p53: How well do non-biology majors and advanced biology majors understand the underlying process of cancer?

10

Cameron Pormir and Suzanne S. Bohlson (University of California Irvine)\*

Assessment of Student Preparedness for Independent Research in a Research-Based Teaching Lab.

11

Carly Busch, Katelyn Cooper, Sara Brownell (Arizona State University)\*

Undergraduates have few science instructor role models with concealable stigmatized identities.

12

Jim Burnette (University of California Riverside)\*

Interactive tutorials in written in HTML and JavaScript to help students learn basic biological and laboratory concepts.

12

Ella Tour, Kolya Isterabadi, Maia Chareonsuphiphat (University of California San Diego)\*, Jenny Reiswig Analysis of Student's Counterclaims and Rebuttals in Biology Argumentative Writing through Argument Mapping

Yoojin J. Choi (Point Loma Nazarene University)\* and Gregory J. Crowther (Everett Community College)

#### PROF FOR A DAY: STUDENTS WRITING PRACTICE QUESTIONS FOR TESTS

15

Anastasia Chouvalova (Texas Tech Institution)\*, Isabel Billings, Kim Ga-Yeon, Abby Caraway, Aastha Mehta, Nathan Hoggatt, David Vizcaino, Lisa Limeri

How instructor behaviors and classroom factors shape undergraduate STEM students' meta-lay theories

16

Serena Salas, Ashely Futch, Heidy L. Contreras (California State University, San Bernardino)\*

Bring Whole Self to Biology: Culturally Responsive Pedagogy Interventions in a First Year Biology Course

**17** 

Katelyn Cooper (Arizona State University)\*, Sara Brownell, Elisabeth Schussler, Randy Nesse, AJ Auerbach, Faith Consiglio, Virginia Downing, Ben England, Logan Gin, LaToya Grigler, Sam Maas, Kelly McDonald, Marco Molinaro, Michale Mullarkey, Nicole Nieset, Amy Pate, Jed Rasmussen, Jessica Schleider, Amina Simmons, Shawn Spurgeon, Cynthia Stonnington, Michael Trobiano

Anxiety in active learning: First findings from an RCN UBE Incubator meeting

18

Poorvi Datta (California State University, San Marcos)\*, Mallory M. Rice

Investigating the captioning preferences of students with disabilities majoring in STEM

19

Saya Shahoy, Michelle Du (University of California San Diego)\*, Ola Mostafa, Aliyah Parker, Dylan Martirano, Melinda T. Owens

Undergraduate biology students' understanding of COVID mRNA vaccines and their ability to apply knowledge of the central dogma.

20

Alexander Eden (Florida International University)\* & Bryan Dewsbury

Validating an Instrument for Measuring Community Cultural Wealth with Introductory Biology Students at a Large Hispanic-Serving Institution.

21

John D. Espinosa (University of California Merced)\*, Marcos E. García-Ojeda

Active Learning Classrooms Better Support Student Motivation and Psychological Needs Compared to Passive Lecture Halls.

22

Hope N. Ferguson (University of Tennessee, Knoxville)\*, Elisabeth Schussler

Through Different Lenses: The Impact of Chance Events on Life Science Graduate Students' Career Trajectories.

23

Fiona Freeland (East Carolina University)\*, Heather Vance-Chalcraft

Incorporating Team Science into CUREs: Measurement of Team Competencies and Social Networks.

24

Ana E. Garcia Vedrenne (University of California Irvine)\*

Intro biology labs - Why make them dry?

25

Christine Gehrig-Downie (University of California Berkeley)\*

Warming, Forming, Storming, Norming, Performing, and Adjourning: An activity guide for transforming group work

26

MacKenzie J. Gray (Portland State University)\*, Cecilia A. Sahnow, Erin E. Shortlidge

Developing a STEM Identity: Transfer Student Engagement in a CURE Impacts How They Perceive Their Current and Future Possible Selves.

27

Max Gruber (University of California San Diego)\*, Rachel Weinstein, Stanley Lo

**Application of Learning Theories to STEM Mentorship** 

Carmen Harjoe (Oregon State University)\*, Lori Kayes, Nathan Kirk

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