JUSTIN F. SHAFFER

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PROFESSIONAL EXPERIENCE

Teaching Professor — 2023 - present
Department of Chemical and Biological Engineering
Colorado School of Mines

Founder, Recombinant Education (www.recombinanteducation.com) — 2022 - present
Higher education workshops and consulting business

Teaching Associate Professor — 2018 - 2023
Department of Chemical and Biological Engineering
Colorado School of Mines

Course Director, Anatomy and Physiology — 2020 - present
Codon Learning (www.codonlearning.com)

Assistant Teaching Professor — 2013 - 2018
Department of Developmental and Cell Biology
University of California, Irvine
Earned tenure and promotion to Associate Teaching Professor in May 2018

Visiting Lecturer, Department of Biology, University of North Carolina — 2013

Adjunct Professor, Department of Biology, North Carolina A&T State University — 2012

EDUCATION and TRAINING

SPIRE Postdoctoral Fellow, University of North Carolina — 2010 - 2013
Ph.D., Bioengineering, University of Washington — 2005 - 2010
B.S., Chemical Engineering, Pennsylvania State University — 2001 - 2005

AWARDS, HONORS, AND FELLOWSHIPS

Colorado School of Mines Alfred E. Jenni Fellowship — 2022 - 2023
Colorado School of Mines Diversity, Inclusion, and Access Fellow — 2021 - 2022
UCI Ayala School Golden Apple Award for Excellence in Teaching — 2016
Honorary Membership Award, UCI National Society of Leadership and Success — 2015
New Case Fellow, Science Case Network — 2014
Postdoctoral Scholar Award for Excellence in Mentoring Undergraduates, UNC — 2011
Postdoctoral Scholar Award for Excellence in Service, UNC — 2011
SPIRE Postdoctoral Fellowship, UNC (NIGMS K12GM000678) — 2010 - 2013
Dean's Circle Mentorship Award, UC Davis College of Biological Sciences — 2009
Young Investigator Prize, European Muscle Conference, Lille, France — 2009
Biophysical Society Annual Meeting Student Travel Award, Boston, MA — 2009
Graduate Student Travel Award, University of Washington Graduate School — 2008
National Science Foundation Graduate Research Fellowship — 2007 - 2010
NSF Graduate Research Fellowship Program, Honorable Mention — 2005, 2006
First place, MindBend Symposium (Undergraduate Research), Penn State — 2005
First place, Undergraduate Research Symposium, Penn State — 2005

FUNDING

Colorado School of Mines Tech Fee Grant ($9,083) 2023
Award of funds to purchase equipment for molecular biology courses
Department of Education Upward Bound Math Science ($1,437,685) 2022
Program to support college readiness for Alameda High School students
Colorado School of Mines Alfred E Jenni Fellowship ($9656) 2022
Funded to promote high structure course design practices on campus
Colorado School of Mines Diversity, Inclusion, and Access Fellowship ($10,000) 2021
Funded to lead development of Upward Bound proposal
Colorado School of Mines Tech Fee Grant ($14,912) 2021
Award of funds to purchase equipment for biology courses
Colorado School of Mines Innovation Grant – PI ($58,642) 2020
Award to develop cohort programs to improve first year student success
Colorado School of Mines Tech Fee Grant ($14,292) 2020
Award of funds to purchase molecular biology tools for biology courses
Colorado School of Mines Tech Fee Grant ($2240) 2019
Award of funds to purchase health monitoring equipment for an A&P course
Colorado School of Mines Open Educational Resources Grant – PI ($2000) 2019
Award to develop OER materials for anatomy and physiology course
Colorado School of Mines Open Educational Resources Grant – Co-PI ($2000) 2019
Award to develop OER materials for thermodynamics course
Colorado School of Mines Innovation Grant – PI ($17,687) 2019
Award to study achievement gaps in first year courses at Mines
Colorado School of Mines Tech Fee Grant ($765) 2018
Award of funds to purchase a Catchbox throwable microphone for biology course
UCI eTech Mini Grant ($500) 2017
Award of funds to purchase a Catchbox throwable microphone for large lectures
UCI Innovative Learning & Technology Initiative Grant – PI ($35,000) 2017
Development of an Online Bio Sci 9B (Bio and Chem of Food and Cooking) Course
UCI Freshman Seminar Development Grant ($1500) 2017
Grant to develop a freshman seminar (Amazing Adventures in Anatomy)
UCI Bio Sci Faculty Research Travel Grant ($1364) 2017
Travel award to give a poster presentation at the 2017 Experimental Biology Meeting
American Association of Anatomists Education Outreach Grant – PI ($3000) 2016
Funding for high school outreach event (Amazing Anatomy with the Anteaters!)
UCI Education Innovation Mini Grant – PI ($4000) 2016
Implementation and assessment of Kahoot! in Biological Sciences Courses
UCI Bio Sci Faculty Computer Award ($1800) 2016
Award of funds to purchase a new laptop computer
UCI Bio Sci Faculty Research Travel Grant ($1023) 2016
Travel award to give an oral presentation at the 2016 HAPS Annual Meeting
UCI eTech Initiative – PI ($5024) 2016
Integration and assessment of iPads in the undergraduate A&P lab courses
UCI ADVANCE Spirit Grant – PI ($5000) 2015
Closing the Achievement Gap in Introductory Biology at UC Irvine
UCI Innovative Learning & Technology Initiative Grant – PI ($10,000) 2015
Development of an Online Bio Sci D136 (Human Anatomy) Course
UCI Assessment Grant – PI ($10,000) 2014
Assessment of general education student learning outcomes in science courses

UCI Assessment Grant – PI ($9347) 2013
Assessment of student scientific literacy skills in non-majors science courses

TEACHING EXPERIENCE

Colorado School of Mines
- Quantitative Biosciences and Engineering field session lab (40 students) 2023 - present
- Unit operations field session lab (lab, team-taught, 96) 2020 - present
- Material and Energy Balances (lecture, 85) 2019 - present
- Anatomy and Physiology (lecture, 45) 2019 - present
- Fundamentals of Biology (lecture + lab, 63) 2018 - present
- Introduction to Thermodynamics (lecture, 70) 2018 - present

University of California, Irvine
- Amazing Adventures in Anatomy (freshman seminar, 15) 2017
- Human Anatomy (lecture (online and face-to-face, >70) 2015 - 2018
- Applied Human Anatomy (lecture + lab, >130) 2014 - 2018
- Biology and Chemistry of Food and Cooking (lecture, >300) 2014 - 2018
- Introductory Biology: DNA to Organisms (lecture, >430) 2014 - 2017
- Scientific Writing (lecture, 297) Winter 2015
- From Conception to Birth (lecture, 47) Winter 2014
- Comparative Anatomy (lecture, 24) Summer 2013

University of North Carolina at Chapel Hill
- Principles of Biology (lecture, 396) Spring 2013

North Carolina A&T State University
- Designer Proteins and Society (lecture + lab, 16) Spring 2012
- Biological Sciences for non-majors (lecture, 71) Fall 2012

University of California, Davis
- Introduction to Biology (TA; 23) Spring 2010
- Major Discoveries in Muscle: Myofilament Proteins (lecture, 12) Fall 2009

University of Washington
- Bioengineering Design Principles (TA; 56) Spring 2007

RESEARCH EXPERIENCE

Current Research Summary 2013 - present

My research program focuses on investigating the efficacy of high structure pedagogical practices in college science and engineering courses. Specifically, I am interested in the extents that pre-class assignments, in-class activities, and after-class assignments contribute to student learning, retention, and attitudes. I am specifically interested in designing and assessing the impacts of cohort programs and pedagogical changes to reduce achievement gaps in first-year science and engineering courses.

SPIRE Postdoctoral Research 2010 - 2013
Department of Biology, University of North Carolina at Chapel Hill
Advisor: William Kier, PhD, Chair and Professor of Biology
Topic: Diversity of myosin gene expression in cephalopods

Ph.D. Doctoral Research 2006 - 2010
Department of Bioengineering, University of Washington
Department of Neurobiology, Physiology, and Behavior, University of California, Davis

Advisor: Samantha Harris, PhD, Asst. Professor of Neurobiology, Physiology, & Behavior
Thesis: Interactions between myosin binding protein-C and F-actin contribute to the regulation of muscle contraction

Undergraduate Honors Research 2003 - 2005
Department of Chemical Engineering, Penn State University
Advisor: Andrew Zydney, PhD, Chair and Professor of Chemical Engineering

Engineering Internship 2005
Bristol-Myers Squibb Company, Syracuse, NY

Scientist Internship 2004
Kimberly-Clark Corporation - Safeskin R&D, Roswell, GA

SERVICE

Colorado School of Mines Committee Service
- Department of Chemical and Biological Engineering DI&A Committee 2022 - present
- QBE Undergraduate Curriculum Committee, Chair 2021 - present
- Task Force for the Evaluation of Instructor Effectiveness (Co-chair) 2018 - present
- University Survey Committee 2019 - 2022
- University Assessment Committee 2018 - 2022
- Department of Chemical and Biological Engineering Research Affairs 2018 - 2022

Other Colorado School of Mines Service
- Member: QBE Teaching Faculty Search Committee 2022 - 2023
- Member: Trefny Center Director Search Committee 2021
- Speaker: Trefny Teaching Center panels 2021
- Host: Minds @ Mines recruiting events 2020 - present
- Judge: Mines Undergraduate Research Symposium 2020, 2021
- Speaker: Mines Teacher Education Alliance 2019
- Speaker: Beta Beta Beta Biology Honors Society 2018

University of California, Irvine Committee Service
- School of Biological Sciences Undergraduate Cabinet 2017 - 2018
- School of Biological Sciences Undergraduate Curriculum Committee 2014 - 2018
- Department of Developmental and Cell Biology Teaching Committee 2014 - 2018
- Served on review and hiring committees 2014 - 2018
- UC Irvine Senate Assessment Committee (Chair 2016 - 2017) 2014 - 2017

Other University of California, Irvine Service
- Speaker: UCI Biological Sciences International Student Orientation 2017
- Speaker: UCI New Student Parent Orientation Program 2016, 2017
- Panelist: Biological Sciences Student Council Path to Professorhood panel 2016
- Panelist: UCI Graduate Student Career Conference 2016
- Guest lecture: UCI I-STEPS International student freshman seminar 2015, 2016
- Panelist: UCI New Faculty Orientation Panel 2015
- Speaker: UCI New Biological Sciences Student Orientation 2015
- Panelist: Teaching career panel, Developmental and Cell Biology retreat 2015
- Guest lecture: Biological sciences peer tutors weekly meeting 2015, 2018
- Guest lecture: Biological sciences 2A freshman seminar 2014, 2015, 2016, 2017
- Guest lecture: UCI I-STEPS International student freshman seminar 2014
- Panelist: GAANN Graduate Student Professional Development Day 2014
- Director: Becoming an Effective Mentor Workshop 2013 - present

Judge: Developmental and Cell Biology scientific photo contest 2013

Professional Service

Center for Physiology Education, Education Research working group 2022 - 2023
Guest Editor for *Journal of Microbiology and Biology Education* 2022 - 2023
Assistant editor for the *Chemical Engineering Education* journal 2020 - 2023
Editor for anatomy and physiology for the *CourseSource* journal 2019 - present
Editorial board member for the *HAPS Educator* journal 2018 - 2022

Member of the Committee for Early-Career Anatomists 2017 - 2018
Committee of the American Association of Anatomists

Reviewer for journals and conferences 2014 - present
Chemical Engineering Education, American Society for Engineering Education annual conference, CBE Life Sciences Education, Anatomical Sciences Education, Advances in Physiology Education, HAPS Educator, National Center for Case Study Teaching in the Sciences, CourseSource, Society for the Advancement of Biology Education Research (SABER) annual conference

Consultant/reviewer/testbank author for textbook publishers 2012 - present

Professional Meetings Organized

ASEE Rocky Mountain Section Regional Conference 2023
Society for the Advancement of Biology Education Research (SABER) West
Co-creator and co-host for 2017, 2018, 2019, and 2020 meetings in Irvine, CA
SoCal Project Kaleidoscope Regional Meeting (AACU STEM) 2016
Regional Association for Biology Laboratory Education Conference 2015

Community Outreach

Judge: Front Range Community College engineering design expo 2023
Mentored Mines QBE student community outreach program 2023 - present
Judged elementary school science fair, Golden, CO 2020
Taught human anatomy with elementary students, Golden, CO 2019, 2022
Faculty mentor for Reach Out, Teach Out outreach program 2017 - 2018
UCI Nursing Camp in Summer (NCIS), Irvine, CA 2017
Taught human anatomy with elementary students, Irvine, CA 2017, 2018
Amazing Anatomy with the Anteaters (high school students), Irvine, CA 2017
Future Health Champions Program (6th grade), Irvine, CA 2016, 2017
Taught human anatomy with Montessori School (pre-K to 5), Newport Beach, CA 2016
UNC Office of Graduate Education, Science Outreach Program 2010 - 2013

PROFESSIONAL ACTIVITIES

Training workshops and seminars

CREATE/STS Workshop Series, Colorado School of Mines 2022 - 2023
Engineering and Facilitating Online Learning course, Colorado School of Mines 2020
Certificate in Engaged Learning, UC Irvine 2017
Data Science courses (x7, Johns Hopkins University via Coursera) 2017
Identifying Medical Education Funding, American Association of Anatomists 2017
Linear Regression Statistics Short Course, UC Irvine 2015
New Faculty Teaching Academy, UC Irvine 2013
Becoming an Effective Mentor Workshop (Facilitator), UNC Pembroke 2013
Becoming an Effective Mentor Workshop (Facilitator), UNC 2012
SPIRE Seminar on College Teaching, UNC 2011

College Science Teaching, UNC Biology	2011
Advanced Communication Skills, UNC	2011
Effective College Teaching, UNC	2010, 2012
Scientific Teaching, UC Davis	2009
Thinking Before you Teach, UC Davis	2009
Entering Mentoring Program, UC Davis	2008 - 2009

Professional Society Memberships

POD Network	2023 - present
American Institute for Chemical Engineers	2020 - 2022
American Association for Engineering Education	2018 - present
Human Anatomy and Physiology Society	2016 - present
Society for the Advancement of Biology Education Research	2012 - present
American Association for the Advancement of Science	2017 - 2019
American Association of Anatomists	2016 - 2019
Association for Biology Laboratory Education	2012 - 2015
Society for Integrative and Comparative Biology	2010 - 2013
European Society for Muscle Research	2008 - 2010
Biophysical Society	2006 - 2010
UC Davis Biomedical Engineering Student Association (BESA)	2009 - 2010
UW chapter of the Biomedical Engineering Society (BMES)	2005 - 2010

PUBLICATIONS

38. Roemmich AJ, Mauzy-Melitz D, Shaffer JF. Show and tell: Using graduate teaching assistant research to engage undergraduates. CourseSource, *in review.*

37. Ringsby A, Shaffer JF. Student advice for success in high structure science and engineering courses. Journal of College Science Teaching, *in press*.

36. Lopez J, Shaffer JF. 2022. How chemical engineering students feel about biology. Chemical Engineering Education. 57: 7-13.

35. Umarjii O, McPartlan P, Moeller J, Li Q, Shaffer JF, Eccles J. 2021. The Motivational System of Task Values and Anticipated Emotions in Daily Academic Behavior. Motivation and Emotion. Motivation and Emotion. https://doi.org/10.1007/s11031-021-09898-y.

34. Adkins S, Shaffer JF, Morris J, England B, Raut S. 2021. The influence of Kahoot!, a gamified student response system, on student anxiety in large enrollment biology classrooms. CBE Life Sciences Education 20: ar19, DOI:10.1187/cbe.20-08-0187.

33. McPartlan P, Rutherford T, Rodriguez F, Shaffer JF, Holton A. 2021. Modality Motivation: Selection Effects and Motivational Differences in Students Who Choose to Take Courses Online. The Internet and Higher Education. 49: 100793. https://doi.org/10.1016/j.iheduc.2021.100793.

32. Tarapore E, Shaffer JF, Atwood SX. 2021. Online engagement in an undergraduate cell biology course. Journal of College Science Teaching. 54: 27-34.

31. Lopez J and Shaffer JF. 2021. To pre-req or co-req: An assessment of why chemical

engineering students elect to take a course as a prerequisite or as a corequisite. Chemical Engineering Education. 55: 86-94.

30. Shaffer JF. 2021. Teaching tip: What is the Re in a whale's aorta? Chemical Engineering Education, 55: 63.

29. Shaffer JF. 2020. Student performance in and perceptions of collaborative two-stage exams in a materials and energy balances course. Chemical Engineering Education, 54: 52-58.

28. Shaffer JF, Ferguson J, Denaro, K. 2019. Use of the Test of Scientific Literacy Skills Reveals that Fundamental Literacy is an Important Contributor to Scientific Literacy. 18:ar31; doi:10.1187/cbe.18-12-0238.

27. Yabuno K, Luong E, Shaffer JF. 2019. Comparison of traditional and gamified student response systems in an undergraduate human anatomy course. HAPS Educator, 23: 302-309.

26. Shaffer JF, Schriner SE, Loudon C, Decanay S, Alam U, Dang J, Aguilar-Roca N, Kadandale P, Sato BK. 2018. Impacts of physiology prerequisites on future anatomy and physiology courses. HAPS Educator, 22: 199-207.

25. Shaffer JF. Scorpion versus mouse: A tale of venom and action potentials. 2018. National Center for Case Study Teaching in Science. http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=1000&id=1000.

24. Lieu RM, Gutierrez A, Shaffer JF. 2018. Student perceived difficulties in learning organ systems in an undergraduate human anatomy course. HAPS Educator, 22: 84-92.

23. Lieu RM, Wong A, Asefirad A, Shaffer JF. 2017. Improving exam performance in introductory biology through the use of pre-class reading guides. CBE-Life Sciences Education, 16:ar46; doi:10.1187/cbe.16-11-0320.

22. Shaffer JF. 2017. Boning up on active learning exercises for teaching skeletal system anatomy: Pre-class accountability is key. HAPS Educator 21: 44-47.

21. Shaffer JF, Sun S. 2017. Anencephaly in Yakima: Lots of questions, no answers. National Center for Case Study Teaching in Science. http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=896&id=896.

20. Shaffer JF. 2016. Student performance in and perceptions of a high structure undergraduate human anatomy course. Anat Sci Ed 9: 516-528. doi: 10.1002/ase.1608

19. Shaffer JF, Dang JV, Lee AK, Dacanay SJ, Alam U, Wong HY, Richards GJ, Kadandale P, Sato BK. 2016. A familiar(ity) problem: Assessing the impact of prerequisites and content familiarity on student learning. PLOS One 11: e0148051.

18. Shaffer JF, Kier WM. 2016. Tuning of shortening speed in coleoid cephalopod muscle: no evidence for tissue-specific muscle myosin heavy chain isoforms. Invert Biol 135: 3-12.

17. Sato BK, Alam U, Dacanay SJ, Lee AK, Shaffer JF. 2015. Brewing for students: An inquiry-based microbiology lab. J Microbiol Biol Educ 16: 223–229.

16. Shaffer JF. 2014. Plotting cranial and spinal nerve pathways in a human anatomy lab. Course Source. http://coursesource.org/courses/plotting-cranial-and-spinal-nerve-pathways-in-a-human-anatomy-lab.
15. Chow ML, Shaffer JF, Harris SP, Dawson JF. 2014. Altered interactions between cardiac myosin binding protein-C and alpha-actin variants associated with cardiomyopathies. Arch Biochem Biophys. 550-551: 28-32.

14. Shaffer JF. 2014. The sad but true case of Earl Washington. National Center for Case Study Teaching in Science. http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=725&id=725.

13. Shaffer JF. 2013. “Recombinant protein of the day”: using daily student presentations to add real-world aspects to a biotechnology course. Biochem Mol Biol Educ. 41: 269-272. doi: 10.1002/bmb.20697.

12. Shaffer JF. 2013. From cow juice to a billion dollar drug, with some breakthroughs in between. National Center for Case Study Teaching in Science. http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=684&id=684.

11. Bezold KL, Shaffer JF, Khosa JK, Hoye ER, Harris SP. 2013. A gain of function mutation in the M-domain of cardiac myosin binding protein-C increases binding to actin. J Biol Chem. 288: 21496-21505.

10. Shaffer JF, Kier WM. 2012. Muscular tissues of the squid Doryteuthis pealeii express identical myosin heavy chain isoforms: An alternative mechanism for tuning contractile speed. J Exp Biol. 215: 239-246.

9. Kensler RW, Shaffer JF, Harris SP. 2011. Binding of the N-terminal fragment C0-C2 of cardiac MyBP-C to cardiac F-actin. J Struct Biol. 174: 44-51.

8. Shaffer JF, Gillis TE. 2010. Evolution of the regulatory control in vertebrate muscle: The roles of troponin I and myosin binding protein-C. Physiol Genomics. 42: 406-419.

7. Jia W, Shaffer JF, Leary JA, Harris SP. 2010. Identification of novel PKA phosphorylation sites in the M-domain of murine and human myosin binding protein-C. J Proteome Res. 9: 1843-1853.

6. Shaffer JF, Wong P, Bezold KL, Harris SP. 2010. Functional differences between the N-terminal domains of mouse and human cardiac myosin binding protein-C. J Biotechnology and Biomedicine. 2010: Article ID 789798.

5. Shaffer JF, Harris SP. 2009. Species-specific differences in the Pro-Ala rich region of cardiac myosin binding protein-C. J Mus Res Cell Motil, 30: 303-306.

4. Shaffer JF, Kensler RW, Harris SP. 2009. The Myosin binding protein-C motif binds actin in a phosphorylation sensitive manner, J Biol Chem. 284: 12318-12327.

3. Shaffer JF, Razumova MV, Tu AY, Regnier M, Harris SP. 2007. Myosin S2 is not required for effects of MyBP-C on motility, FEBS Letters. 581: 1501-1504.

2. Razumova MV, Shaffer JF, Tu A, Flint GV, Regnier M, Harris SP. 2006. Effects of the N-terminal domains of myosin binding protein-C in an in vitro motility assay: Evidence for long-lived crossbridges. J Biol Chem. 281: 35846-35854.

1. Shaffer JF, Zydney AL. 2005. Phosphate clearance for bleach reprocessed polysulfone hemodialyzers: Effects of electrostatic interactions, ASAIO J. 51: 748-753.

INVITED PRESENTATIONS

Codon Learning Convo, Virtual — April 2023
Talk: Student advice for success in high structure courses

American Physiology Society Summit, Long Beach, CA — April 2023
Talk: Advantages of using high structure course design
Mentor: Publishing your work session for the Center for Physiology Education

University of California, Irvine Graduate Education course — April 2022
Talk: Finding and starting an academic teaching position

University of Wyoming Department of Chemical Engineering — Nov 2021
Talk: Efficacy of components of high structure chemical engineering and biology courses

SPIRE Postdoctoral Program Panel Discussion — May 2021
Panel: How to succeed as an academic faculty member

University of California, Irvine Graduate Education course — April 2021
Talk: Finding and starting an academic teaching position

Cal State University Long Beach Tech Tuesday — December 2020
Talk: Active Learning with Polling Software

American Association for Anatomy Virtual Webinar — August 2020
Panelist: Teaching undergraduate human anatomy for the first time

CINVESTAV, Mexico City, Mexico — December 2019
Colloquium: Teaching with high structure in science and engineering courses: what, why, and how
Workshop: Getting started with discipline-based education research (DBER) in your classroom

University of Alabama Birmingham ROSE Seminar Series — March 2019
Talk: Insights from using high structure course design in biology and engineering courses

UCI Division of Teaching Excellence and Innovation Faculty Discussion Group — April 2018
Talk: Engaging Students in Large Classes

UCI Division of Teaching Excellence and Innovation — November 2017
Talk: Engaged Learning Institute: Course Design

UCI Department of Developmental and Cell Biology Seminar, Irvine, CA October 2017
Talk: Assessment of high structure teaching practices: Using research to inform instruction (and vice versa)

Pearson Education This is Digital Learning Webinar Series (Online) October 2017
Talk: Design and assessment of an online human anatomy course

UC Irvine Center for Instructional Design Faculty Showcase, Irvine, CA July 2017
Talk: Designing courses with high structure

University of California, Riverside Instructional Design Center, Riverside, CA May 2017
Talk: Comparison of traditional and gamified student response systems: Does more fun come at a cost?

UC Irvine Biological Sciences Dean's Leadership Council, Irvine, CA May 2017
Talk: Active learning at UCI Bio Sci: Engaging students in and out of the classroom

University of California Los Angeles Life Sciences Core, Los Angeles, CA May 2017
Talk: Teaching with high structure: what, why, and why not?

UC Irvine Assessment Forum, Irvine, CA February 2016
Talk: What are UCI students learning about science? Assessment of general education student learning outcomes in science courses

UC Irvine Foundations of Teaching Program, Graduate School, Irvine, CA May 2015
Workshop: Active learning and student centered instruction

Academy for Innovation in Medical Education, UC Irvine Medical School April 2015
Workshop: Transformational teaching – strategies to get your students involved in classroom sessions

UCI Department of Developmental and Cell Biology Retreat, Dana Point, CA April 2015
Talk: High structure in introductory biology: what, how, why… and why not?

Western Regional Society for Developmental Biology Meeting, Yosemite, CA March 2015
Talk: Assessment of student scientific literacy skills in high structure majors and non-majors biology courses

UC Irvine Assessment Forum, Irvine, CA November 2014
Talk: Assessment of student scientific literacy skills in non-majors science courses

The Society for Developmental Biology Annual Meeting, Seattle, WA July 2014
Workshop: Active learning in undergraduate biology classrooms

Graduate Professional Development Seminar Series UC Irvine, Irvine, CA May 2014
Becoming an effective mentor: A crash course

University of California, Davis, Davis, CA November 2013
Talk: The Lecturer PSOE series at UC Irvine

University of California, Davis, Davis, CA November 2013
Talk: From chemical engineering to teaching human anatomy

Fayetteville State University, Fayetteville, NC March 2011
Talk: Diversity of muscle myosin motors in cephalopods

North Carolina Central University, Durham, NC February 2011
Talk: Diversity of muscle myosin motors in cephalopods

University of North Carolina – Pembroke, Pembroke, NC February 2011
Talk: Diversity of muscle myosin motors in cephalopods

Johnson C. Smith University, Charlotte, NC February 2011
Talk: Diversity of muscle myosin motors in cephalopods

North Carolina A&T State University, Greensboro, NC February 2011
Talk: Diversity of muscle myosin motors in cephalopods

University of North Carolina, Chapel Hill, NC April 2010
Talk: Interactions between cardiac myosin binding protein-C and actin contribute to the regulation of muscle contraction

University of Guelph, Guelph, Ontario, Canada December 2009
Talk: Interactions between cardiac myosin binding protein-C and actin contribute to the regulation of muscle contraction

University of Arizona, Tucson, AZ November 2009
Talk: Interactions between cardiac myosin binding protein-C and actin contribute to the regulation of muscle contraction

University of Muenster, Muenster, Germany September 2009
Talk: Interactions between cardiac myosin binding protein-C and actin contribute to the regulation of muscle contraction

PRESENTATIONS

Society for the Advancement of Biology Education Research, Minneapolis, MN July 2023
Long talk: The impact of high structure course design across courses, disciplines, and universities

Human Anatomy and Physiology Society Annual Meeting, Albuquerque, NM May 2023
Talk: Developing effective study habits for A&P students
Talk: Maximizing student engagement with modern clicker questions and peer instruction

ASEE Rocky Mountain Section Regional Conference, Golden CO May 2023
Workshop: Getting started with engineering education research

X-DBER Conference, Virtual April 2023
Poster: High Structure Design for STEM Courses

Society for Integrative and Comparative Biology Conference, Austin, TX January 2023
Workshop: High Structure Design for STEM Courses

AIChE Chemical Engineering Summer School, Golden CO July 2022
Workshop: High structure course design: what, why, and how

Human Anatomy and Physiology Society Annual Meeting, Fort Lauderdale, FL May 2022
Talk: Getting started with discipline-based education research in your A&P classroom
Talk: Teaching with high structure in your A&P course: what, why, and how

Society for the Advancement of Biology Education Research, Virtual July 2021
Roundtable: Student advice for success in high structure biological sciences courses

American Society for Engineering Education Annual Conference, Virtual July 2021
Talk: Work-in-progress: What kinds of advice do chemical engineering students' give to future students for success in high structure courses?

ASEE Rocky Mountain Section Unconference, Virtual June 2021
Talk: What advice do students give for high structure course success?

Human Anatomy and Physiology Society Annual Meeting, Virtual May 2021
Talk: Student advice for succeeding in high structure A&P courses

X-DBER Conference, Virtual March 2021
Talk: What advice do students give for high structure course success?

Society for the Advancement of Biology Education Research West, Virtual January 2021
Roundtable: Person-thing orientation alignment with student emotions towards biology

American Institute for Chemical Engineers Annual Conference, Virtual November 2020
Talk: To Pre-Req or Not? Students' Explanations for Why They Choose to Enroll (or not) in Chemical Engineering Courses

Society for the Advancement of Biology Education Research, Virtual July 2020
Poster: Chemical engineering students' emotions towards biology

American Society for Engineering Education Annual Conference, Virtual June 2020
Talk: Work-in-progress: Chemical engineering students' emotions towards biology

CO School of Mines Teaching Faculty Luncheon, Golden, CO February 2020
Talk: Using two-stage collaborative exams in engineering and biology courses

CO School of Mines Open Education Research Conference, Golden, CO February 2020
Talk: Developing OER reading guides for anatomy and physiology

CO School of Mines Quantitative Biology Seminar, Golden, CO January 2020
Talk: Insights from using high structure course design in biology & engineering courses

CO School of Mines Engineering Learning Conference, Golden, CO August 2019
Talk: Investigating achievements gaps in first year courses at Mines
Workshop: Active learning with clickers
Workshop: Faculty Senate taskforce on evaluation of instructor effectiveness

Human Anatomy and Physiology Society Annual Meeting, Portland, OR May 2019
Talk: Getting started with discipline-based education research in your A&P classroom

Society for the Advancement of Biology Education Research West, Irvine, CA January 2019
Talk: Engineering students attitudes and emotions towards biology and math
Workshop: Designing educational research studies for college science classrooms

American Association of Anatomists Annual Meeting, San Diego, CA April 2018
Poster: Comparison of traditional and gamified student response systems: does more fun come at a cost?

Society for the Advancement of Biology Education Research West, Irvine, CA January 2018
Talk: Student success in an online human anatomy course: does motivation matter?
Poster: Coloring Books as Supplemental Learning Tools in Undergraduate Anatomy Courses

Society for the Advancement of Biology Education Research, Minneapolis, MN July 2017
Talk: Comparison of traditional and gamified student response systems: does more fun come at a cost?
Poster: Student perceived difficulties in learning organ systems in an undergraduate human anatomy course

UC Irvine Center for Engaged Instruction, Irvine, CA June 2017
Talk: The Power of the Story: Teaching STEM Courses with Case Studies

Human Anatomy and Physiology Society Annual Meeting, Salt Lake City, UT May 2017
Talk: Student performance in an online human anatomy course: does motivation matter?

American Association of Anatomists Annual Meeting, Chicago, IL April 2017
Poster: Student perceived difficulties in learning organ systems in an undergraduate human anatomy course

HHMI – UC Faculty Learning Community Program Meeting, Riverside, CA Sept 2016
Poster: Assessment of student content knowledge and scientific literacy skills in majors and non-majors science courses

Society for the Advancement of Biology Education Research, Minneapolis, MN July 2016
Keynote talk: A familiar(ity) problem: A novel system for assessing the impact of prerequisite courses
Talk: Using pre-class reading guides to improve student performance in introductory biology
Poster: Differential student motivation on low stakes, online pre- and post-assessment tests

Human Anatomy and Physiology Society Annual Meeting, Atlanta, GA May 2016
Talk: Design, implementation, and assessment of a high structure undergraduate human anatomy course

SoCal Project Kaleidoscope Meeting, Irvine, CA February 2016
Workshop: Hands-on design of an education research study in your classroom: From start to finish
Poster: Assessment of student content knowledge and scientific literacy skills in majors and non-majors science courses

UC STEM-LEC Conference, Paso Robles, CA September 2015
Talk: Whaddya mean I need to read the book? Using reading guides to improve student performance in college biology classes

Society for the Advancement of Biology Education Research, Minneapolis, MN July 2015
Poster: Pre-post test administration and performance in DBER assessments
Poster: Assessment of student content knowledge and scientific literacy skills in majors and non-majors science courses

SoCal Project Kaleidoscope Meeting, Fullerton, CA February 2015
Workshop: Designing educational research studies for college science classrooms

Regional Association for Biology Education Meeting. Irvine, CA February 2015
Workshop: Insights and activities from a human anatomy lab without cadavers

Society for the Advancement of Biology Education Research, Minneapolis, MN July 2014
Poster: Assessment of student scientific literacy skills in non-majors science courses

Association for Biology Laboratory Education, Eugene, OR June 2014
Poster: Assessment of course design, student learning outcomes, and student attitudes in a combined human anatomy lecture and lab course

UC STEM-LEC Conference, Irvine, CA June 2014
Talk: Assessment of student scientific literacy skills in non-majors science courses

Annual IRACDA Conference, Atlanta, GA June 2013
Poster: The First Recombinant Drug – Development and Assessment of a Novel Biotechnology Case Study

Bridging the Gap NC, Raleigh, NC October 2012
Poster: The First Recombinant Drug – Development and Assessment of a Novel Biotechnology Case Study

Society of Integrative and Comparative Biology Meeting, Charleston, SC January 2012
Talk: Muscular tissues of the squid Doryteuthis pealei express identical myosin heavy chain isoforms

Annual IRACDA Conference, Houston, TX June 2011
Poster: Muscular tissues of the squid Doryteuthis pealei express identical myosin heavy chain isoforms

Biophysical Society 54th Annual Meeting, San Francisco, CA February 2010
Talk: Identification of amino acid residues in the myosin binding protein-C motif important for actin binding
Poster: Comparative effects of the Pro-Ala rich regions of human and murine myosin binding protein-C

European Muscle Conference, Lille, France September 2009
Talk: Comparative effects of the N-terminal domains of human and murine cardiac myosin binding protein-C

Biophysical Society 53rd Annual Meeting, Boston, MA March 2009
Talk: The N-terminus of cardiac myosin binding protein-C contains multiple binding sites for F-actin
Poster: PKA phosphorylates serine 307 of murine cardiac myosin binding protein-C in vitro

European Muscle Conference, Oxford, England September 2008
Poster: Interactions of the N-terminus of cardiac myosin binding protein-C with F-actin

Biophysical Society 52nd Annual Meeting, Long Beach, CA February 2008
Poster: The cardiac myosin binding protein-C motif and C1 domain activate actomyosin motility independent of Ca^{2+}

Biophysical Society 51st Annual Meeting, Baltimore, MD March 2007
Poster: The C1C2 domains of myosin binding protein C inhibit acto-S1 movement in an in vitro motility assay

UNDERGRADUATE RESEARCH STUDENTS

Colorado School of Mines

Coleman Dusavage, Chemical Engineering	2022 - present
Sidney Wilson, Quantitative Biosciences and Engineering	2022 - present
Alex Montoya, Chemistry	2022 - present
Roberto Valenzuela, Biochemistry	2022
Abdullah Al-Salmi, Chemical Engineering	2021
Sonny Nguyen, Chemical Engineering	2021 - 2022
Kevin Huang, Chemical Engineering	2020 - 2022
Arik Ringsby, Chemical Engineering	2020 - 2021
Jordan Lopez, Mechanical Engineering	2019 - 2020
Alex Ellis, Chemical Engineering	2019

University of California, Irvine

Kristen Yabuno, Biological Sciences	2015 - 2018
Jimmy To, Biological Sciences	2016
Rebekah Lieu, Nursing Science	2015 - 2017
Ethan Luong, Exercise Science	2015 - 2017
Andrew Gutierrez, Human Biology	2016
Anahita Asefirad, Biological Sciences	2015 - 2016
Ashley Wong, Human Biology	2015 - 2016
Koreena Yu, Public Health	2015

George Richards, Biological Sciences	2014 - 2015
Hollie Wong, Biological Sciences	2014 - 2015
University of North Carolina at Chapel Hill	
Dylan Catlett, Biology	2013
Carlos de Castro, Biology	2011 - 2012
Alli Sarfati, Biology Senior, HHMI-Future Teachers Program	2011 - 2012
Alex Holland, Biology	2011
University of California, Davis	
Camelia Dumitras, Neurobiology, Physiology, and Behavior	2008 - 2010
Peony Wong, Biochemistry	2008 - 2009
University of Washington	
Jordan Kuester, Bioengineering	2006 - 2007