

CRYSTAL M. VANDER ZANDEN

ASSISTANT PROFESSOR

UNIVERSITY OF COLORADO, COLORADO SPRINGS

Colorado Springs, CO 80918

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EDUCATION

PhD – Biochemistry and Molecular Biology 2017

Colorado State University (Fort Collins, CO)

Advisor: Dr. P. Shing Ho

Dissertation Title: "5-Hydroxymethylcytosine and Endonuclease G as Regulators of Homologous Recombination"

GPA: 3.94/4.00

Bachelor of Science – Biochemistry 2011

Doane College (Crete, NE)

Undergraduate Research Advisor: Dr. Erin Wilson

Project Title: "Hydroxyapatite induces secondary structure changes in bone mineralization proteins"

HONORS AND AWARDS

Biophysical Society Post-doctoral Travel Award: 2019

Award to travel to Biophysical Society National meeting 2019

Preecha Kownin Memorial Award: 2016

Outstanding senior PhD student in CSU biochemistry department

Highest Honors Poster Award: 2016

CMB/MCIN/BMB Poster Symposium

Professor Parviz Azari Graduate Fellowship: 2015

Fellowship to enhance student research opportunities in CSU biochemistry

College of Natural Sciences Outstanding Poster Award: 2015

CSU Graduate Student Showcase

Honors Poster Award: 2015

CMB/MCIN/BMB Poster Symposium

Graduate Student Excellence in Teaching: 2014

Outstanding graduate teaching for the College of Natural Sciences at CSU

Mauricio X. Zuber Memorial Award: 2013

Recognizes outstanding first or second year PhD student in CSU biochemistry

Makosky Prize 2010

Outstanding senior chemistry or biochemistry major at Doane College

David H. Smith Memorial Research Award: 2010

Outstanding research and oral presentation at Doane College

RESEARCH EXPERIENCE

Assistant Professor: 2019-Present

University of Colorado Colorado Springs, Dept. of Chemistry & Biochemistry (Colorado Springs, CO)

- Led a team of undergraduate and masters research students, with typically 5-6 students working in the lab during each semester.
- Performed research studying the structure of protein/membrane interactions, with applications in Alzheimer's disease, cell communication, and cardiovascular disease.
- Taught 15 contact hours per academic year, undergraduate and graduate courses.

IRACDA Post-Doctoral Fellow: 2017-2019

University of New Mexico (Albuquerque, NM)

Advisor: Dr. Eva Y. Chi

- Investigated mechanism of natural plant polyphenol compounds reducing A β toxicity
- Characterized interactions between amyloid proteins (A β and Tau) and lipid membranes
- Simulated interactions between A β protein and lipid membranes
- Technical Skills: Langmuir trough, liquid surface x-ray reflectivity and grazing incidence x-ray diffraction, MD simulations, CD spectroscopy, fluorescence spectroscopy, transmission electron microscopy

Doctoral Researcher: 2011-2017

Colorado State University (Fort Collins, CO)

Advisor: Dr. P. Shing Ho

- Determined 5-hydroxymethylcytosine thermodynamically stabilizes Holliday junctions
- Crystallized Endonuclease G and discovered vertebrate-specific structural motifs
- Characterized Endonuclease G binding and affinity for Holliday junctions
- Derived molecular dynamics force field parameters for halogen atoms
- Technical Skills: crystallography, oligonucleotide purification (HPLC), DSC, ITC, QM calculations, MD simulations, Python, Unix/command line, general biochemistry, protein expression and purification, EMSA

Undergraduate Researcher: 2009-2011

Doane College (Crete, NE)

Advisor: Dr. Erin Wilson

- Characterized osteopontin and osteocalcin-derived peptides adsorption onto bone mineral
- Developed circular dichroism technique for studying proteins adsorbed to solid surfaces
- Technical Skills: CD, IR, and UV/Vis spectroscopy

Summer Research Internship: 2009

University of Nebraska, Lincoln (Lincoln, NE)

Advisor: Dr. T. Jack Morris

- Studied secondary immune response in *Arabidopsis thaliana*
- Technical Skills: electrophoresis, western blot, PCR, ELISA

TEACHING EXPERIENCE

University of Colorado, Colorado Springs (Colorado Springs, CO):

Instructor:

Biochemistry (CHEM 4211)

Semesters taught: Fall 2022

- Taught non-major students foundational principles in biochemistry
- Developed pre-recorded lectures and in-class practice problems

Research Methods (CHEM 6010)

Semesters taught: Fall 2021

- Taught graduate students research ethics topics, meeting NIH standards
- Guided students in writing a literature review chapter for their thesis

Advanced Techniques in Biochemistry (CHEM 4232/5232)

Semesters taught: Fall 2020, 2021

- Molecular biology cloning lab, emphasis on writing
- Developed online pre-lab content and recitation to accommodate COVID-19 pandemic

Biochemistry of Human Health and Development (CHEM 4751/5751)

Semesters taught: Fall 2019, 2020, 2021, 2022

- Taught course focused on the biochemistry of neurodegenerative diseases
- Emphasis on facilitating small-group discussion of primary literature and student writing
- Taught Hy-Flex (offered in-person, remote synchronous, AND remote asynchronous options) in 2020 to accommodate the COVID-19 pandemic

Advanced Biochemistry (CHEM 4261/5261)

Semesters taught: Spring 2020, 2021, 2022

- Instructed biochemistry of membranes portion of the course and developed recorded lecture videos and in-class practice problems
- Taught the entire course (including biochemistry of the gene) in Spring 2022

Biophysical Chemistry Applications Online (CHEM 4741/5741)

Semesters taught: Spring 2020, 2021

- Taught crystallography, NMR, electron microscopy, molecular dynamics
- Developed fully online curriculum – lectures, check-in questions, homework, discussions
- Developed “application projects” in crystallography and molecular dynamics

Introduction to Organic and Biochemistry Lab (CHEM 1211)

Semesters taught: Spring 2020, 2021

- Delivered pre-lab lectures, graded lab reports, supervised students in lab
- Developed module on protein structure centered around SARS-CoV-2 spike protein

Central New Mexico Community College (Albuquerque, NM):

Co-Instructor:

General Chemistry I Lecture Online (CHEM 1710)

Semester taught: Spring 2019

- Designed and taught module for chemical bonding, molecular geometry, and phases
- Created online videos lectures
- Developed online “check-in” questions using CANVAS

Introductory Chemistry Lecture (CHEM 1410)

Semester taught: Fall 2018

- Designed and taught flipped learning module for stoichiometry, molar conversions, and naming compounds
- Created instructional videos for students to watch before class
- Developed in-class questions for student group work
- Wrote and graded weekly homework assignments

Southwest Indian Polytechnic Institute (Albuquerque, NM):

(100% Native American Student Population)

Co-Instructor:

General Biology Lecture (BIO 121)

Semester taught: Spring 2018

- Taught general biology topics including genetics, evolution, speciation, and diversity
- Designed in-class group learning activities, and wrote weekly quizzes and reading questions

General Biology Lab (BIO 121L)

Semester taught: Spring 2018

- Taught general biology labs including natural selection, protists and bacteria, DNA, genetics
- Designed lab experiments and prepped for labs

Biology for Health Sciences (BIO 123)

Semester taught: Spring 2018

- Taught health biology topics including inheritance, basic organ systems, cell types
- Designed in-class group learning activities, and wrote weekly quizzes and reading questions

Biology for Health Sciences Lab (BIO 123L)

Semester taught: Spring 2018

- Taught health biology labs including homeostasis, genetics, DNA extraction
- Designed lab experiments and prepped for labs

Colorado State University (Fort Collins, CO):

Co-Instructor:

Advanced Structural Biology (BC711)

Semester taught: Spring 2014

- Taught practical crystallography skills (crystal growth, data collection, and structure solving)

PUBLICATIONS

1. **Vander Zanden, C.M.**, Majewski, J., Weissbarth, Y., Browne, D.F., Watkins, E.B., Gabius, H.-J. Structure of Galectin-3 Bound to a Model Membrane Containing Ganglioside GM1, (2023) *Biophysical Journal*, 122, 1-12.
2. Sallaberry, C.A., Voss, B.J., Majewski, J., Beirnat, J., Mandelkow, E., Chi, E.Y., **Vander Zanden, C.M.**, Tau and Membranes: Interactions that Promote Folding and Condensation, (2021) *Frontiers in Cell and Developmental Biology*, 9, 725241.
3. Majewski, J., Jones, E.M., **Vander Zanden, C.M.**, Biernat, J., Mandelkow, E., Chi, E.Y., Lipid membrane templated misfolding and self-assembly of intrinsically disordered tau protein, (2020) *Scientific Reports*, 10, 13324
4. **Vander Zanden, C.M.**⁺, Czarny, R.S.⁺, Ho, E.N.⁺, Robertson, A.B., Ho, P.S., Structural Adaptation of Vertebrate Endonuclease G for 5-Hydroxymethylcytosine Recognition and Function, (2020) *Nucleic Acids Research*, 48 (7) 3962-3974. **+Shared first authorship.**
5. **Vander Zanden, C.M.**, Chi, E.Y., Passive immunotherapies targeting A β and tau oligomers in Alzheimer's disease, (2019) *Journal of Pharmaceutical Science*, 109 (1) 68-73.
6. **Vander Zanden, C.M.**, Wampler, L., Bowers, I., Watkins, E.B., Majewski, J., Chi, E.Y., Fibrillar and non-fibrillar amyloid beta structures drive two modes of membrane-mediated toxicity, (2019) *Lanmguir*, 35 (48) 16204-16036.

- Fanni, A.M.,+ **Vander Zanden, C.M.**,+ Majewska, P.V., Majewski, J., Chi, E.Y., Membrane-mediated fibrillation and toxicity of the tau hexapeptide PHF6, (2019) *Journal of Biological Chemistry*, **294** (42) 15304-15317. ***Shared first authorship.**
- Vander Zanden, C.M.**, Rowe, R.K., Broad, A.J., Robertson, A.B., Ho, P.S., Effect of Hydroxymethylcytosine on the Structure and Stability of Holliday Junctions, (2016) *Biochemistry*, **55** (41) 5781-9.
- Scholfield, M.R., Ford, M.C., **Vander Zanden, C.M.**, Billman, M.M., Ho, P.S., Rappé, A.K., Force Field Model of Periodic Trends in Biomolecular Halogen Bonds, (2015) *J. Phys. Chem. B*, **119** (29) 9140-9.
- Vander Zanden, C.M.**, Carter, M., Ho, P.S., Determining thermodynamic properties of molecular interactions from single crystal studies, (2013) *Methods*, **64**: 12-18.
- Scholfield, M.R.,+ **Vander Zanden, C.M.**,+ Carter, M., Ho, P.S. (2013) Halogen bonding (X-bonding): A biological perspective, *Protein Science*, **22**: 139-152 (In this issue feature, cover article). ***Shared first authorship.**

TALKS

- Vander Zanden, C.M.**, Detweiler, N., George, O., Duncan, T., Weise Cross, L., Woods, C. (2022) Strategies for Teaching and Research at Primarily Undergraduate Institutions, IRACDA 2022 Conference, Albuquerque NM. **Invited Panelist.**
- Vander Zanden, C.M.**, Edwards, M., Selwyn, V., Tauchman, E. (2022) Careers in the Life Sciences Workshop, Colorado State University, Fort Collins CO. **Invited Panelist.**
- Vander Zanden, C.M.**, Majewski, J., Watkins, E.B., Wampler, L., Bowers, I., Chi, E.Y., Sallaberry, C., Soto, J.D., Browne, D.F., Weissbarth, Y., Gabius, H.-J. (2022) Assessing Membrane Protein Structure Using Liquid Surface X-ray Scattering. University of Northern Colorado Dept. of Chemistry and Biochemistry Seminar Series, **Invited Talk.**
- Vander Zanden, C.M.**, Majewski, J., Watkins, E.B., Wampler, L., Bowers, I., Chi, E.Y., Sallaberry, C., Soto, J.D., Browne, D.F., Weissbarth, Y., Gabius, H.-J. (2022) Assessing Membrane Protein Structure Using Liquid Surface X-ray Scattering. University of Colorado Denver Dept. of Chemistry Seminar Series, **Invited Talk.**
- Vander Zanden, C.M.** (2021) Treatment and Drug Development in Alzheimer's Disease. Colorado Spring Science on Tap, Invited Talk.
- Vander Zanden, C.M.** (2021) Cooking With Starches. Colorado Spring Science on Tap, Invited Talk.
- Vander Zanden, C.M.**, Wampler, L., Bowers, I., Majewski, J., Watkins, E.B., Chi, E.Y., Gilbert, N., Newcomer, M. (2020) X-ray Reflectivity and Grazing Incidence X-ray Diffraction Studies of Amyloidogenic and Peripheral Membrane-Binding Proteins. Argonne National Labs Soft Matter Interest Group, Invited Talk.
- Vander Zanden, C.M.**, Crockett, I.P. (2019) Incorporating Pre-Class Videos and In-Class Group Activities for Introductory-Level Courses. IRACDA National Conference, Ann Arbor, MI.
- Vander Zanden, C.M.**, Majewski, J., Watkins, E.B., Chi, E.Y. (2019) Synchrotron X-ray Scattering Studies to Determine Structure of Amyloid Beta Interactions with Lipid Membranes. Biophysical Society National Meeting, Baltimore, MD.
- Vander Zanden, C.M.**, Crockett, I.P. (2018) Incorporating Pre-Class Videos and In-Class Group Activities for an Introductory Chemistry Class at Central New Mexico Community College. UNM Valencia Two-Year College Chemistry Consortium, Albuquerque, NM.
- Vander Zanden, C.M.**, Chi, E.Y. (2018) "Curing" Alzheimer's. Central New Mexico Community College STEMinar, Albuquerque, NM, Invited Talk.
- Vander Zanden, C.M.**, Robertson, A. B., Ho, P.S. (2014) Hydroxymethylcytosine Stabilizes

Holliday Junctions and Promotes Recombination via Interaction with Endonuclease G. Oslo University Hospital, Oslo, Norway, Invited Talk.

13. **Vander Zanden, C.M.**; Wilson, M. V.; Kraye, H; Wilson, E. (2010) Study of Bone Mineralization through Analysis of Designed Peptides. Nebraska Academy of Science, Lincoln, NE.
14. **Vander Zanden, C.M.**; Wilson, M. V.; Kraye, H; Wilson, E. (2010) Study of Bone Mineralization through Analysis of Designed Peptides., Doane College Mind Expo, Crete, NE.
15. **Vander Zanden, C.M.**; Donze, T.; Ronhovde, K.; Morris, T.J. (2009) Confirming the Role of TIP in Resistance Against Turnip Crinkle Virus. Nebraska INBRE Conference, Grand Island, NE.

POSTER PRESENTATIONS

1. **Vander Zanden, C.M.**, Estrada, F., Soto, J.D., Sallaberry, C., Voss, B.J., Browne, D.B., Weissbarth, Y., Talley, K., Morales, C., Majewski, J., Gabius, H.-J., Gilbert, N. (2022) Undergraduate-Driven Research in Protein/Membrane Interactions Using NSF's ChemMatCARS. Poster prepared for display at Sector 15 NSF's ChemMatCARS Advanced Photon Source.
2. Voss, B.J., **Vander Zanden, C.M.** (2022) Molecular dynamics simulations to investigate the role of curcumin in Alzheimer's disease. Chemical Biology and Physiology 21|22 National Meeting, Portland, OR.
3. **Vander Zanden, C.M.**, Gilbert, N., Majewski, J., Newcomer, M. (2021) Liquid surface X-ray scattering analysis of lipoxygenase (15-LOX-2) binding to DSPC/SAPC lipid monolayers. Spring American Chemical Society National Conference, Remote due to COVID-19 pandemic.
4. Sallaberry, C.A., **Vander Zanden, C.M.** (2021) XR and GIXD measurements to determine curcumin impacts on amyloid beta interactions with membranes. Spring American Chemical Society National Conference, Remote due to COVID-19 pandemic.
5. **Vander Zanden, C.M.**, Majewski, J., Watkins, E.B., Chi, E.Y. (2019) Fibrillar and non-fibrillar amyloid beta structures drive two distinct modes of membrane-mediated toxicity. IRADCA National Meeting, Ann Arbor, MI.
6. **Vander Zanden, C.M.**, Majewski, J., Watkins, E.B., Chi, E.Y. (2018) Impact of Toxic Amyloid- β Oligomers on Model Lipid Membranes. IRACDA National Conference, Atlanta, GA.
7. **Vander Zanden, C.M.**, Broad, A.J., Rowe, R.K., Robertson, A. B., Ho, P.S. (2018) Vertebrate Endonuclease G Preferentially Cleaves Holliday Junctions and Specifically Recognizes 5-Hydroxymethylcytosine. Biophysical Society National Meeting, San Francisco, CA.
8. **Vander Zanden, C.M.**, Broad, A.J., Rowe, R.K., Robertson, A. B., Ho, P.S. (2017) 5-Hydroxymethylcytosine Impacts Holliday Junction Structure to Promote Recombination via Recognition by Endonuclease G. Spring American Chemical Society Conference, San Francisco, CA.
9. **Vander Zanden, C.M.**, Broad, A.J., Rowe, R.K., Robertson, A. B., Ho, P.S. (2017) 5-Hydroxymethylcytosine Impacts Holliday Junction Structure to Promote Recombination via Recognition by Endonuclease G. CMB/MCIN/BMB Poster Symposium, Fort Collins, CO.
10. **Vander Zanden, C.M.**, Broad, A.J., Rowe, R.K., Robertson, A. B., Ho, P.S. (2016) 5-Hydroxymethylcytosine Impacts Holliday Junction Structure to Promote Recombination via Recognition by Endonuclease G. CMB/MCIN/BMB Poster Symposium, Fort Collins, CO. **(Highest honors)**
11. **Vander Zanden, C.M.**, Broad, A.J., Rowe, R.K., Robertson, A. B., Ho, P.S. (2015) Hydroxymethylcytosine Impacts Holliday Junction Structure and Stability. CSU Graduate Student Showcase, Fort Collins, CO. **(Outstanding Poster College Natural Sciences)**
12. **Vander Zanden, C.M.**, Broad, A.J., Rowe, R.K., Robertson, A. B., Ho, P.S. (2015) Hydroxymethylcytosine impacts Holliday junction structure to promote recombination via recognition by Endonuclease G. CMB/MCIN/BMB Poster Symposium, Fort Collins, CO. **(Honors)**

13. **Vander Zanden, C.M.**, Robertson, A. B., Ho, P.S. (2014) Hydroxymethylcytosine Stabilizes Holliday Junctions and Promotes Recombination via Interactions with Endonuclease G. CMB/MCIN/BMB Poster Symposium, Fort Collins, CO.
14. **Vander Zanden, C.M.**, Carter, M., Voth, A.R., Scholfield, M.R., Ho, P.S. (2013) The Structure-Energy Relationships of Halogen Bonds in Engineered DNA Junctions. Gordon Conference on Nucleic Acids, Biddeford, ME.
15. **Vander Zanden, C.M.**, Robertson, A. B., Ho, P.S. (2013) Hydroxymethylcytosine Stabilizes Holliday Junctions and Promotes Recombination via Interaction with Endonuclease G. CMB/MCIN/BMB Poster Symposium, Fort Collins, CO.
16. **Vander Zanden, C.M.**, Wilson, M. V., Wilson, E. (2011) Novel Circular Dichroism Spectroscopy Technique for the Study of Secondary Structure of Proteins Adsorbed to Solid Surfaces. Spring American Chemical Society Conference, Anaheim, CA
17. **Vander Zanden, C.M.**, Wilson, M. V., Kraye, H, Wilson, E. (2010) Study of Bone Mineralization through Analysis of Mineral-Binding Peptides. NISBRE Conference, Washington, DC.
18. **Vander Zanden, C.M.**, Wilson, M. V., Wilson, E. (2010) Infrared Spectroscopy and Novel Circular Dichroism Spectroscopy Techniques for the Study of Secondary Structure of Proteins Adsorbed to Solid Surfaces. Nebraska INBRE Conference, Grand Island, NE.

GRANTS AND PROPOSALS

Current:

1R15GM143724-01- NIH/NIGMS Research Enhancement Award 9/30/21 – 8/31/24

PI: Nathan Gilbert

Role: Co-principle investigator

Total Award: \$ 444,015

Amount Awarded to UCCS: \$ 42,635

Project title: Conformational flexibility of lipoxygenases and its role in regulation and substrate acquisition

UCCS Dept. of Chemistry and Biochemistry Start-Up Funds 8/19/19 – 8/19/23

Role: PI

Total Award: \$120,000

Project title: Structural biology of protein/membrane interactions

#308505 – NSLS II General User Proposal (data collection) 12/9/21 – ongoing

Role: PI

Beamline sector 12-ID

Project title: Small molecule modulation of membrane structure and amyloid beta interactions

GUP-61674 – APS General User Proposal (data collection) 2/21/20 – ongoing

Role: PI

Beamline sector 15-ID-B,C,D

Project title: Interactions of adhesion/growth-regulatory human galectins with a model lipid membrane

Previous:

Undergraduate Research Award, UCCS (internal) 5/31/22 – 8/19/22

Role: PI Student trainee: Advita Bhatia

Total Award: \$3,500

Project title: Simulations to determine the neuroprotective mechanism of curcumin in Alzheimer's disease

Undergraduate Research Award, UCCS

8/24/20 – 12/19/20

Role: PI Student trainee: Danielle Browne

Total Award: \$3,500

Project title: Understanding mechanisms of cell communication

Undergraduate Research Award, UCCS

8/24/20 – 12/19/20

Role: PI Student trainee: William Stone

Total Award: \$3,500

Project title: Simulations to determine the neuroprotective mechanisms of curcumin

MBC180100 – NSF XSEDE Research Request

10/01/18 – 3/30/20

Role: PI

Estimated Value: \$1,284.73

Pittsburgh Super Computer "Bridges GPU" 3964 SUs, "Pylon Storage" 500GB

Project title: MD investigation of polyphenol and amyloid-beta interactions with lipid membranes

5K12GM088021-10 - NIH/NIGMS Research Career Development Award

9/1/18 – 8/31/19

PI: Angela Wandinger-Ness

Role: Trainee

Total Award: \$ 809,129

Project title: Academic Science Education and Research Training

GUP-62786, 60985, 58347 – APS General User Proposals (data collection)

Data collections 2/9/19, 10/26/18, 6/20/18

Project title: Small molecule modulation of membrane structure and amyloid beta fibrillation

Project title: Effects of tau mutations on protein interaction with model lipid

Project title: Small molecule modulation of amyloid beta interactions with model lipid membranes

Role: PI, Beamline sector 15-ID-B,C,D

MBC170121 – NSF XSEDE Startup Allocation

9/24/17 – 9/24/18

Role: PI

Estimated Value: \$2,147.13

Pittsburgh Super Computer "Bridges GPU" 6250 SUs, "Pylon Storage" 500GB

Project title: Alzheimer's A β peptide interaction with lipid membranes

F31GM113580 - NIH/NIGMS Pre-Doctoral Fellowship

1/1/14 – 12/31/16

Role: PI

Total Award: \$66,216

Project title: Hydroxymethylcytosine stabilizes Holliday junctions and promotes recombination

MENTORING

Current

Julia Baroth – Master's Student

2022-

Kyle Talley – Master's Student

2022-

Ian Wisniewski – Master's Student

2022-

Fabiola Estrada – Undergraduate Researcher

2022-

Advita Bhatia – Undergraduate Researcher

2022-

Barbie Voss – Master’s Student	2020-
Cosme Morales – Undergraduate Researcher	2020-

Previous

Wendt Griffin – Undergraduate Researcher	2021-2022
Daniel (Jose) Soto – Undergraduate Researcher	2021-2022
Yvonne Weissbarth – Undergraduate Researcher	2020-2021
BobbyJoe Esquibel – Undergraduate Researcher	2020-2021
Chad Sallaberry – Master’s Student	2019-2021
Danielle Browne – Undergraduate Researcher	2019-2020
Billy (William) Stone – Undergraduate Researcher	2019-2020
Jessica Lien – Summer undergraduate student	2019
Lois Wampler – Undergraduate Pipeline Network	2018
Isabella Bowers – REU student	2018
Ethan Ho – Post-baccalaureate student	2017
Colleen Watkins – PhD rotation student	2015/16
Rhea Kay Rowe – PhD rotation student	2015
Alex Ho – Summer undergraduate student	2015
Amanda Broad – PhD rotation student	2014/15

SERVICE

Curriculum and Requirements Sub-Committee for General Education	2021-Present
Department of Chemistry and Biochemistry DEI Committee (Chair)	2021-Present
Cool Science Board Member	2021
Curriculum and Requirements Committee	2020-Present
NSF Ad Hoc Reviewer	2020,21
Reviewer for Journal of Alzheimer’s Disease	2022
Reviewer for MDPI Life	2020,21
Reviewer for ACS Biomaterials	2019/20
Reviewer for <i>Biochimica et Biophysica Acta</i> Biomembranes	2019
Undergraduate Pipeline Network Poster Judging	2018
CSU Biochemistry Department Chair Search Committee	2016
CSU Biochemistry Department Grade Appeals Committee	2015
CSU College of Natural Sciences Scholarship Committee	2015
CSU Undergraduate Poster Competition Judging	2013-15

OUTREACH AND VOLUNTEERING

Inventa Academy STEAM Summer Camp	Summer 2021
<ul style="list-style-type: none"> Designed hands-on activities about enzymes and rockets 	
Cool Science Carnival	Fall 2019-22
<ul style="list-style-type: none"> Designed hands-on activity about enzymes (~100 participants) Recorded video demonstration for COVID-19 redesigned carnival 	

- Big Brothers Big Sisters – Mentor 2.0** 2018-19
- Mentoring high school student via weekly email exchange and monthly meetings
- Discovering DNA Structure – Middle and high school outreach events** 2014-16
- Taught middle and high school students about DNA and crystallography
 - Facilitated hands-on experiments about DNA and crystallography
- Colorado State Science and Engineering Fair Judging** 2015-16
- Poudre School District Science Fair Volunteer** 2015-16
- Biochemistry is Elementary – Elementary School Outreach Program** 2014-15
- Multi-week program visiting a local elementary school to engage students in simple hands-on biochemistry experiments
- Cell-Bikeology – Summer CSU biochemistry bike-to-work challenge** 2013-14
- Organized departmental activities and contacted local businesses for prize donations
- Las Chicas de Mathematics – Invited speaker** 2013
- Spoke at high school girl’s math summer camp about education and careers in mathematics

PROFESSIONAL AFFILIATIONS

Biophysical Society

American Chemical Society