Casey Andrews, Ph.D.
Texas A&M San Antonio

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Education:

University of Iowa	Iowa City, IA	*Aug 2010-Dec 2014*

Ph.D. in Biochemistry, "Coarse Grained Potential Functions for Proteins Derived from All-Atom Explicit-Solvent Molecular Dynamics Simulations."
Advisor: Dr. Adrian Elcock

Grand Valley State University	Allendale, MI	*Aug 2006-Jun 2010*

B.S. in Chemistry

Teaching Experience:

Texas A&M-San Antonio	San Antonio, TX	Sept 2017-Current

CHEM 1111	General Chemistry Lab I
CHEM 1112	General Chemistry Lab II
CHEM 1305	Introductory Chemistry I
CHEM 1311	General Chemistry I
CHEM 1312	General Chemistry II
CHEM 4141	Biochemistry Lab -Developed course in Fall 2017
CHEM 4341	Biochemistry I -Developed course in Fall 2017
CHEM 4342	Biochemistry II -Developed course in Spring 2018
UNIV 3101	Jaguar Tracks III
UNIV 4101	Jaguar Tracks IV

Coastal Carolina University	Conway, SC	*Aug 2016-May 2017*

CHEM 111L	General Chemistry Lab I
CHEM 351	Biochemistry I
CHEM 353	Physical Biochemistry
CHEM 353L	Physical Biochemistry Lab

University of Iowa	Iowa City, IA	*Jan-May 2016*

BMB 3140	Experimental Biochemistry

Loras College	Dubuque, IA	*Jan-May 2015*

L.CHE 112L	General Chemistry II Lab

Professional Development:

Biosafety Level 2 (BSL2/ABSL2) Training   May 2023
    Training needed to be able to work in a BSL2/ABSL2 environment. Completed to be able to serve on the Institutional Biosafety Committee.

Bloodborne Pathogen Training   May 2023
    Training needed to be able to work with Bloodborne Pathogens. Completed to be able to serve on the Institutional Biosafety Committee.

QPR Suicide Prevention Training   May 2023
    Workshop designed to recognize if a student is contemplating suicide and methods on how to effectively help the student.

Safe Space Training   October 2022
    Workshop to help prepare university community members to support and advocate for those who identify as LGBTQ+.

Instructional Design Workshops   Aug 2021-May 2022
    Once a month, two semester long series of workshops offered at TAMUSA that is designed to help educators better design their courses, both offline and online, and to better connect with their students.

The Association of College and University Educators (ACUE)
Effective Teaching Practices Course   Aug 2021-May 2022
    Two semester course on teaching at the university level. Modules include: Creating an Inclusive and Supportive Learning Environment, Promoting Active Learning, Inspiring Inquiry and Preparing Lifelong Learners, and Designing Student-Centered Courses

Unconscious Bias in the Workplace Workshop   May 2021
    A workshop designed to understand what unconscious bias is and its effect on the workplace environment.

Biennial Conference on Chemical Education   *Aug 2018*
    Conference designed to help chemical educators teach chemistry more effectively. Learned how to create an active learning environment for chemistry courses.

"Helping students read critically and effectively"   *Jan 2015*
    Workshop discussing how to help students read their assignments more critically.

"How learning works"   *Jan 2015*
        Workshop examining how a novice learner and an advanced learner approach and
        incorporate new information differently. Included ways in which an advanced learner
        can help facilitate the understanding of the novice learner.

"Flipping your classroom"   *Jan 2015*
        Workshop for teaching your classroom in an active learning environment. Topics
        included ideas for active learning, and how to effectively manage classroom time.

"Assessing student learning better"   *Jan 2015*
        Workshop covering effective ways in which to assess students in a classroom.

"Culturally Responsive Research"   *Aug 2014*
        Workshop discussing how to conduct research and work with a culturally diverse group.

Service:

Hiring Committee Chair   Dec 2023-Feb 2024
        Served as the chair for a committee to hire an Assistant Professor of Chemistry

Institutional Biosafety Committee Member   Jan 2022 - Current
        This committee reviews research protocols that involved, but not limited to, recombinant
        DNA, RNAi, pathogens, human materials, and other potentially infectious material to
        determine if they are following university, local, state, and federal safety guidelines.

Collage of Arts and Science Honors and Awards Committee Member   Sept 2021 – Aug 2023
        Member of committee that rated proposals for summer research grant money and gave
        recommendations to the dean on who should receive end of the year awards in research,
        service, and teaching for the college of Arts and Science

Faculty Advisor for Pre-Optometry Society   Mar 2020 – Current
        Helped to start the POPS branch at TAMUSA as the faculty advisor. Duties include
        advising students and helping prepare events.

Faculty Mentor   *Aug 2019 – Apr 2021*
        A program at TAMUSA in which a faculty member is given four freshman to mentor
        throughout the year. This includes weekly conversations and meetings to help first time
        college students become acclimated to the college environment.

Science Modeling Contest Judge   Oct 2018-Dec 2018
        Contest held at TAMUSA that tested high school students' ability to mathematically
        model different hypothetical scenarios. Responsibilities included creating problems,
        proctoring the exams, and scoring the exams.

Science and Math Department Curriculum Committee   Aug 2018-Aug 2019
    This committee reviewed and voted on any curriculum changes for the science and math department.

Chair for Jaguar Tracks III and IV   *Aug 2018 – July 2020*
    This committee decides what will be taught in the junior and senior level seminar courses for science majors at TAMUSA. I also assist all faculty who teach this class by answering any questions they might have.

Science Olympiad Event Organizer   *Mar 2018-Current*
    Created, setup, proctored, and scored the chemistry events for the regional Science Olympiad.

Hiring Committee Member   Jan 2018 – Current
    Served on numerous committees to hire positions for biology, geology, chemistry, and physics. These candidates were hired with the rank of adjunct, lecturer, or assistant professor.

Harlandale Science Tutor Mentor   Aug 2018 – Aug 2020
    Trained students who were STEM majors to be tutors. These tutors would then go to Harlandale high school and tutor their students. Additional meetings with the tutors were held throughout the year to provide feedback and mentorship.

Co-Faculty Advisor for Chemistry Club   Aug 2017 – Current
    Attended chemistry club meetings, helped with any questions from the officers, and suggested activities for the chemistry club in order to raise funds for the club, help the members of the club grow as scientists, and to serve the South side of San Antonio.

Research:

Post-Doctoral Fellow   University of Iowa
Dr. Adrian Elcock   Iowa City, IA   *Jan 2015–July 2016*

    Development of multi-dimensional amino acid and salt coarse grain potential functions for use in Brownian dynamic implicit solvent simulations of proteins.

| Graduate Research Assistant | University of Iowa | *Aug 2010–Dec 2014* |
| Dr. Adrian Elcock | Iowa City, IA | |

Development of a coarse grained protein force field for use in Brownian dynamic implicit solvent simulations derived from all-atom explicit solvent molecular dynamic simulations of proteins. Investigated the strength of electrostatic and hydrophobic interactions with increasing protein concentration using all-atom explicit solvent molecular dynamic simulations.

| Undergraduate Research Fellow | Colorado State University | *June-Aug 2009* |
| Dr. Matt Shores | Fort Collins, Colorado | |

Synthesized Fe^{2+} cyanide spin crossover metal-organic frameworks.

Publications:

Andrews, C. T.; Campbell, B.; Elcock, A. H. Direct measurement of amino acid and salt interactions with double-stranded and single-stranded DNA from explicit-solvent molecular dynamics simulations. *J. Chem. Theory Comput.* **2017**, *13*, 1794-1811.

Schrodt, M. V.; **Andrews, C. T.**; Elcock, A. H. Large-scale analysis of 58 DNA and 48 RNA tetranucleotides studied by 1 μs explicit-solvent molecular dynamics simulations. *J. Chem. Theory Comput.* **2015**, *11*, 5906-5917.

Frembgen-Kesner, T.; **Andrews, C. T.**; Shuxiang, L.; Ngo, N. A.; Shubert, S. A.; Jain, A.; Olayiwola, O. J.; Weishaar, M. R.; Elcock, A. H. Parameterization of backbone flexibility in a coarse-grained force field for proteins (COFFDROP) derived from all-atom explicit-solvent molecular dynamics simulations of all possible two-residue peptides. *J. Chem. Theory Comput.* **2015**, *11*, 2341-2354.

Brown, R. F.; **Andrews, C. T.**; Elcock, A. H. Stacking free energies of all DNA and RNA nucleoside pairs and dinucleoside-monophosphates computed using recently revised AMBER parameters and compared with experiment. *J. Chem. Theory Comput.* **2015**, *11*, 2315-2328.

Shuxiang, L.; **Andrews, C. T.**; Frembgen-Kesner, T.; Miller, M. S.; Siemonsma, S. L.; Collingsworth, T. D.; Rockafellow, I. T.; Ngo, N. A.; Campbell, B. A.; Brown, R. F.; Guo, C.; Schrodt, M.; Liu, Y.-T.; Elcock, A. H. Molecular dynamics simulations of 441 two-residue peptides in aqueous solutions: conformational preferences and neighboring residue

effects with the Amber ff99SB-ildn-NMR force field. *J. Chem. Theory Comput.* **2015**, *11*, 1315-1329.

Andrews, C. T.; Elcock, A. H. COFFDROP: a coarse-grained nonbonded force field for proteins derived from all-atom explicit-solvent molecular dynamics simulations of amino acids. *J. Chem. Theory Comput.* **2014**, *10*, 5178-5194.

Andrews, C. T.; Elcock, A. H. Molecular dynamics simulations of highly crowded amino acid solutions: comparisons of eight different force field combinations with experiment and with each other. *J. Chem. Theory Comput.* **2013**, *9*, 4585-4602.

Stark, A. C.; **Andrews, C. T.**; Elcock, A. H. Toward optimized potential functions for protein-protein interactions in aqueous solutions: osmotic second virial coefficient calculations using the MARTINI coarse-grained force field. *J. Chem. Theory Comput.* **2013**, *9*, 4176-4185.

Presentations:

"Parameterization of backbone flexibility in a coarse-grained force field for proteins (COFFDROP) derived from all-atom explicit-solvent molecular dynamics simulations of all possible two-residue peptides." <u>Poster</u>. Presented at Biochemistry Department Retreat (University of Iowa, Iowa City, IA, USA), 2015.

"COFFDROP: A coarse-grained nonbonded force field for proteins derived from all-atom explicit-solvent molecular dynamics simulations of amino acids." *<u>Presentation</u>*. Presented at Biochemistry Department Retreat (University of Iowa, Iowa City, IA, USA), 2014.

"Developing coarse-grained for field models for proteins." *<u>Presentation</u>*. Presented at Biochemistry Department Workshop (University of Iowa, Iowa City, IA, USA), 2013.

"A coarse-grained force field for proteins derived from all-all explicit-solvent molecular dynamics simulations of amino acids." <u>Poster</u>. Presented at Biochemistry Department Retreat (University of Iowa, Iowa City, IA, USA), 2013.

"Molecular dynamics simulations of electrostatic and hydrophobic interactions." *<u>Presentation</u>*. Presented at Biochemistry Department Workshop (University of Iowa, Iowa City, IA, USA), 2012.

"Molecular dynamics simulations of electrostatic and hydrophobic interactions: significant differences between non-polarizable force fields." *<u>Presentation</u>*. Presented at the Twenty-Sixth Annual Gibbs Conference on Biothermodynamics (Carbondale, IL, USA), 2012.

"Molecular dynamics simulations of electrostatic and hydrophobic interactions in concentrated solutions: significant differences between non-polarizable force fields." Poster. Presented at Biochemistry Department Retreat (University of Iowa, Iowa City, IA, USA), 2012.

"Synthesis and characterization of Fe^{2+} cyanide materials: toward spin crossover metal-organic frameworks." *Presentation*. Presented at Grand Valley State University Department Seminar (Grand Valley State University, Allendale, MI, USA), 2010.

Awards:

1st Place Poster at the University of Iowa Biochemistry Department Retreat.

National Science Foundation Research Experience for Undergraduates Award. Colorado State University (Fort Collins, CO, USA), 2010.