

CONTACT  
INFORMATION

Assistant Professor  
Department of Mathematics  
University of Kentucky  
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RESEARCH  
INTERESTS

**Machine learning:** Multiscale manifold regularization, convolution neural network (CNN), graph convolution neural network (GNN), multitask learning, transfer learning, autoencoder, generative adversarial network (GAN), reinforcement learning  
**Data analysis:** low-dimensional mathematical representations, knowledge based driven data analysis  
**Mathematical models for bioscience:** Differential geometry representations, multiscale weighted colored algebraic graphs, topological learning  
**Quantitative systems pharmacology:** Develop mechanistic system biology model, investigate potential therapeutic drug targets  
**Scientific computing:** Computational electrodynamics, electrostatic solvation and binding analysis, computational fluid dynamics

## RESEARCH GRANT AWARDS

- NSF DMS-215180** (awarded) (\$306,750.00), 09/01/2022 – 08/31/2025
- Role: PI (Co-PI: Sally R. Ellingson)
  - Topic: Robust and reliable mathematical models for biomolecular data via differential geometry and graph theory
  - Aim: The goal of this study is to develop new spectral graph theory and differential geometry based approaches for biomolecular data analysis
- NSF DMS-2053284** (awarded) (\$150,000.00), 09/01/2021 – 08/31/2024
- Role: PI
  - Topic: Collaborative Research: Integrating Algebraic Topology, Graph Theory, and Multiscale Analysis for Learning Complex and Diverse Datasets
  - Aim: This project will develop novel topology and graph theory-based approaches to revolutionize the current practice in data analysis and to deal with the challenge of structurally complex data and diverse data
- Michigan Economic Development Corp** (awarded) (\$75,000.00), 02/01/2020 – 01/31/2021
- Role: Co-PI (PI: Guo-Wei Wei)
  - Topic: MAID2: Mathematical Artificial Intelligence for Drug Discovery
  - Aim: The goal of this study is to develop a commercializable MAID2 software package
- Pfizer** (awarded) (\$221,128.00), 10/01/2018 – 09/31/2020
- Role: Co-PI (PI: Guo-Wei Wei)
  - Topic: Topology and manifold based machine learning for de novo hit identification
  - Aim: The goal of this study is to develop a mathematical models for drug virtual screening
- Bristol Myers Squibb** (awarded) (\$119,000.00), 01/05/2019 – 12/31/2019
- Role: PI
  - Topic: Quantitative systems pharmacological modeling of drug impact to heart failure - Patient study
  - Aim: The goal of this study is to develop mathematical models for drug pharmacodynamics and efficacy
- Bristol Myers Squibb** (awarded) (112,000.00) 02/27/2018-12/26/2019
- Role: Co-PI (PI: Guo-Wei Wei)
  - Topic: Quantitative systems pharmacological modeling of drug impact to heart failure— Modeling and simulation of sodium and potassium based water regulation.

- Aim: The goal of this study is to develop mathematical models for drug pharmacodynamics and efficacy

**Bristol Myers Squibb** (awarded) (150,000.00) 12/20/2017-12/19/2018

- Role: Co-PI (PI: Guo-Wei Wei)
- Topic: Quantitative systems pharmacological modeling of drug impact to heart failure.
- Aim: The goal of this study is to develop mathematical models for drug pharmacodynamics and efficacy

**NSF** (pending) (\$802,614.00), 09/01/2023 – 08/31/2028

- Role: PI
- Topic: CAREER: A Unified Mathematical Representation and Learning for Biomolecules
- Aim: This project proposes a unified mathematical representations featuring molecular geometry-oriented persistent discrete Hodge Laplacian and auto-parameterized weighted element-specific graph neural network with mathematical attention to learn biomolecular data

**NSF-NIH** (pending) (\$600,000.00), 08/2024 – 07/2027

- Role: PI (Co-PI: Chang-Guo Zhan)
- Topic: DMS/NIGMS 1: Data-driven Ricci curvatures and spectral graph for machine learning and adaptive virtual screening
- Aim: This project proposes a data-driven Ricci curvature and associated spectral graph information for the virtual screening. Furthermore, this project will develop the adaptive training data selection integrated with deep learning algorithms to rank the drug candidates

PATENTS

System and Methods for Machine Learning for Drug Design and Discovery

(Publication Number:US 2021/0027862 A1)

Authors: Guo-Wei Wei, Duc Nguyen, and Zixuan Cang

HIGHLIGHTS

**D3R Grand Challenges**, a world-wide competition in drug design

- In D3R Grand Challenge 4 (2018-2019), I was the top performer with the most top three submissions
- In D3R Grand Challenge 3 (2017-2018), my submissions were ranked 1<sup>st</sup> in 6 of a total of 26 contests
- In D3R Grand Challenge 2 (2016-2017), my submission were ranked 1<sup>st</sup> for the binding affinity ranking of Set 1 in Stage 2

**Teaching**

- Developed machine learning course for Actuarial Science Program and Capstone course at Michigan State University

**Software packages development**

- **FRI**: Online server for the flexibility analysis of biomolecules based on flexibility and rigidity index
- **RI-Score**: Online server for geometric graph theory or rigidity index (RI) based scoring function for protein ligand binding affinity prediction
- **DG-GL**: Online server for differential geometry based geometric data analysis (DG-GDA) of molecular datasets
- **AGL-Score**: Online server for algebraic graph theory based protein-ligand binding scoring, ranking, docking and screening.

EDUCATION

**The University of Alabama**, Tuscaloosa, AL

Ph.D., Mathematics Jan. 2011 – Aug. 2015

- Thesis Topic: *High order FDTD methods for electromagnetic systems in dispersive inhomogeneous media*
- Adviser: Shan Zhao

**Université d’Orléans**, Orléans, France

M.S., Applied Mathematics Aug. 2009 – Aug. 2010

- Thesis Topic: *Preservation of the Discrete Geostrophic Equilibrium in Shallow Water Flows*
- Adviser: Emmanuel Audusse

**University of Science**, Ho Chi Minh City, Vietnam

B.S., Mathematics and Computer Science Aug. 2005 – May 2009

- Thesis Topic: *Multiple positive fixed points of nonlinear operators on ordered Banach spaces*
- Adviser: Duc M. Duong

APPOINTMENTS

**Assistant Professor (Tenure Track)** Aug. 2020 – Present

Department of Mathematics, University of Kentucky

**Assistant Professor (Fixed Term)** Jan. 2019 – Jul. 2020

Department of Mathematics, Michigan State University

**Research Associate** Aug. 2015 – Dec. 2018

Department of Mathematics, Michigan State University

Mentor: Guowei Wei

**Graduate Research Assistantship** Aug. 2013 – Aug. 2015

Department of Mathematics, The University of Alabama

**Graduate Teaching Assistantship** Jan. 2011 – May 2013

Department of Mathematics, The University of Alabama

**Lecturer** Aug. 2009 – Aug. 2010

Department of Mathematics and Computer Science, University of Science, Vietnam

MENTOR

**Postdocs**

- Masud Rana (UK, July. 2021 – Present)

**Graduate Students**

- Farjana Tasnim Mukta (UK, Aug. 2021 – Present)
- David Storey (MSU, Sept. 2018 – Jul. 2020)
- Christopher Matthew Grow (MSU, Sept. 2018 – Jul. 2020)
- Rui Wang (MSU, Aug. 2018 – Jul. 2020)
- Timothy Andrew Szocinski (MSU, May 2018 – Jul. 2020)

**Undergraduate Students**

- Benjamin Philpot (UK, May 2022 – Present)
- Avery Meyer (UK, May 2022 – Present)
- Cecilia Mikat (Professorial Assistantship (PA) Program, MSU Aug. 2018 – May 2019)
- Jason Charles Kenny (Professorial Assistantship (PA) Program, MSU Aug. 2018 – May 2019)
- Kyle Thomas Cole (Professorial Assistantship (PA) Program, MSU Aug. 2018 – May 2020)
- Jianbin Chen (MSU, Aug. 2018 – May 2020)
- Jonathon Fleck (Professorial Assistantship (PA) Program, MSU Aug. 2016 – May 2020)
- Nick Smentowski (Professorial Assistantship (PA) Program, MSU Aug. 2016 – May 2018)
- Tian Xiao (With Prof. Guowei Wei, Summer Research Opportunities Program at MSU, 2016)

TEACHING  
EXPERIENCE

**University of Kentucky**, Lexington, KY

Instructor

- (MA 721) Topics in Numerical Analysis: Deep Learning Fall 2022
- (CS/EGR/MA 537) Numerical Analysis Spring 2022
- (MA/BIO 337) Mathematical Modeling in the Life Sciences Spring 2022
- (MA 138) Calculus II with Life Science Fall 2020, Fall 2021
- (MA 421G) Mathematics Introduction to Deep Learning Spring 2021
- (MA 777) Mathematical Seminar Spring 2021

**Michigan State University**, East Lansing, MI

Instructor

- (MTH 496 (Capstone Course)) Machine learning Spring 2018, Spring 2019, Fall 2019
- (MTH 132) Calculus I Fall 2018
- (MTH 490) Predictive Analysis Spring 2018
- (MTH 309) Linear Algebra Spring 2016, Fall 2016, Spring 2017

**The University of Alabama**, Tuscaloosa, AL

Grader

- (MATH 126) Calculus II Fall 2011, Spring 2012

Tutor

- Mathematics Technology Learning Center Spring & Fall 2011, 2012
- Math tutor in Paty Hall Fall 2011

Training

- Attained conditional pass for GTA training on teaching methods Fall 2013
- Attended GTA Workshop Fall 2011

## Other experience

- Member of the test development committee for Alabama Statewide High School Mathematics Contest Fall 2011, Spring & Fall 2012
- Proctored Alabama Statewide High School Mathematics Contest Spring 2011, 2012

**University of Sciences**, Ho Chi Minh City, Vietnam

## Teaching Assistant

- Real Analysis I Fall 2009

DEPARTMENTAL SERVICE Member, Numerical Analysis Prelim committee 2022-2023  
Member, Postdoc Recruiting Committee 2021-2022

DISSERTATION COMMITTEES Edison Mucllari, PhD in Mathematics In Progress  
Cole Pospisil, PhD in Mathematics In Progress  
Susanna Lange, PhD in Mathematics 2022

EXTERNAL SERVICE **Editorial Board**, PeerJ Physical Chemistry 2021 – Present  
**Review Editor**, Computational Physiology and Medicine 2022 – Present  
**Assistant Editor**, Computational and Mathematical Biophysics 2015 – Present  
**Program Committee**, PASC23 Conference 2022 – 2023

**Lead Guest & Guest Editors**

- CMB Special Issue: Artificial Intelligence for Drug Design 2022
- PeerJ Special Issue: AI-driven chemistry for drug design 2021
- CMB Special Issue: Drug design and discovery for COVID-19 2021
- CMB Special Issue: Mathematical Molecular Bioscience and Biophysics 2019
- CMB Special Issue: Computational and Mathematical Drug Design and Discovery 2018

**Journal Reviewer**

- Scientific Report
- Bioinformatics
- Journal of Computer-Aided Molecular Design
- International Journal of Numerical Methods in Biomedical (x3)
- Communications in Information & Systems (x5)
- Journal of Computation Chemistry
- Bioinformatics and Biology Insights
- PLOS Computational Biology
- Foundations of Data Science
- Inverse Problems and Imaging
- Computational and Mathematical Biophysics (x4)
- Briefings in Bioinformatics (x2)
- Journal of Chemical Information and Modeling (x19)
- Mathematical Biosciences and Engineering (x3)
- Journal of the Royal Society Interface (x3)
- ACS Omega (x3)
- Computers in Biology and Medicine
- PeerJ Computer Science
- Computers and Mathematics with Applications
- Current Research in Structural Biology
- Cogent Engineering

**Book Reviewer**, Review of new book proposal, publisher: Wiley-VCH 2022

**Grant Reviewer**, NSF-SCALE MoDL 2021

**Conference Organizer**

- Organizer (with David Murrugarra), Minisymposium on Molecular Biosciences: Advances in molecular property and structure predictions, SIAM Conference on the Life Sciences July 11-14, 2022

ACADEMIC  
INVITED VISIT

**Mathematical Biosciences Institute** Aug. 2015 – Dec. 2015  
Ohio State University, Columbus, OH

**Laboratoire Analyse, Géométrie et Applications** May 2010 – Aug. 2010  
Universite Paris 13, Paris, France

HONORS AND  
AWARDS

SCMLLS Travel Support Fund 2019  
*(For presenting a poster at Scientific Computing meets Machine Learning and Life Sciences conference at Texas Tech University)*

NSF-CBMS Travel Support Fund 2019  
*(For giving a talk at NSF-CBM conference at University of Alabama)*

Field Institute Travel Support Fund 2018  
*(For giving a talk at Workshop on the Mathematics of Drug Design/Discovery in Field Institute at University of Toronto)*

MBI Travel Support Fund 2013, 2016  
*(For attending conferences in Mathematical Biosciences Institute at Ohio State University)*

College of Arts & Sciences Outstanding Dissertation Award,  
University of Alabama 2016  
*(Awarded to a Doctoral Candidate who has the best dissertation in College of Arts & Sciences division)*

Outstanding Research Award, University of Alabama 2015  
*(Awarded to a Doctoral Candidate who has the best research performance in Department of Mathematics)*

- IMA Travel Support Fund 2015  
(For attending conferences in Institute for Mathematics and its Applications at University of Minnesota)
- Best Poster Prize, SIAM-SEAS 2015  
(Awarded to the graduate student who has the best poster in SIAM-SEAS 2015 conference)
- AMS Travel Support Fund 2015  
(For attending 2015 Joint Math Meetings)
- Ainsworth Fellowship, University of Alabama 2014 – 2015  
(Awarded to the top three students in the Mathematics Department, University of Alabama with outstanding research performance)
- Travel Support Fund, University of Alabama 2013, 2014  
(For attending meetings and conferences )
- NSF funded Graduate Research Assistantship (DMS-1016579) 2013 – 2015
- Henry Miller Fellowship, University of Alabama 2011 – 2013  
(Awarded to students in the Mathematics Department, University of Alabama with excellent performance on qualifying exam and teaching)
- Travel Award for Dissertation Research Enhancement, PUF 2010  
(Awarded to top ranking students in PUF-Master Program)
- Honors Program Scholarship, University of Sciences, Vietnam 2005 – 2009  
(Awarded to students with exceptional performance on national entrance exams)

REFEREED  
JOURNAL  
PUBLICATIONS

- [27] Ekaterina Merkurjev, **Duc Nguyen**, and Guo-wei Wei, Multiscale Laplacian Learning, to appear in *Applied Intelligence*, (2022)
- [26] Md Masud Rana, **Duc Duy Nguyen**, EISA-Score: Element Interactive Surface Area Score for Protein–Ligand Binding Affinity Prediction, *Journal of Chemical Information and Modeling*, doi: 10.1021/acs.jcim.2c00697, (2022)
- [25] Timothy Szocinskia, **Duc Duy Nguyen**, and Guo-Wei Wei, AweGNN: Auto-parametrized weighted element-specific graph neural networks for molecules *Computers in Biology and Medicine*, doi: 10.1016/j.compbiomed.2021.104460, (2021)
- [24] Dong Chen, Kaifu Gao, **Duc Duy Nguyen**, Xin Chen, Yi Jiang, Guo-Wei Wei, and Feng Pan, Algebraic graph-assisted bidirectional transformers for molecular property prediction, *Nature Communications*, doi: 10.1038/s41467-021-23720-w, (2021)
- [23] **Duc Nguyen**, Kaifu Gao, Jiahui Chen, Rui Wang, and Guo-Wei Wei, Unveiling the molecular mechanism of SARS-CoV-2 main protease inhibition from 137 crystal structures using algebraic topology and deep learning, *Chemical Science*, doi: 10.1039/D0SC04641H, (2020)
- [22] Jiahui Chen, Kaifu Gao, Rui Wang, **Duc Nguyen**, and Guo-Wei Wei, Review of COVID-19 antibody therapies, *Annual Review of Biophysics*, **50(1)**, (2020)
- [21] Kaifu Gao, **Duc Nguyen**, Meihua Tu, and Guowei Wei, Generative network complex for the automated generation of druglike molecules, *Journal of Chemical Information and Modeling*, doi: 10.1021/acs.jcim.0c00599 (2020)
- [20] Kaifu Gao, **Duc Duy Nguyen**, Jiahui Chen, Rui Wang, and Guo-Wei Wei, Repositioning of 8565 Existing Drugs for COVID-19, *The Journal of Physical Chemistry Letters*, doi: 10.1021/acs.jpcllett.0c01579 (2020)

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- [19] Rui Wang, **Duc Duy Nguyen**, and Guo-Wei Wei, Persistent spectral graph, *International journal for numerical methods in biomedical engineering*, doi: 10.1002/cnm.3376 (2020)
- [18] Kaifu Gao, **Duc D. Nguyen**, Vishnu Sresht, Alan M. Mathiowetz, Meihua Tu and Guo-Wei Wei, Are 2D fingerprints still valuable for drug discovery?, *Physical Chemistry Chemical Physics*, doi: 10.1039/D0CP00305K (2020)
- [17] Jian Jiang, Rui Wang, Menglun Wang, Kaifu Gao, **Duc D. Nguyen**, and Guo-Wei Wei, Boosting tree-assisted multitask deep learning for small scientific datasets, *Journal of Chemical Information and Modeling*, doi: 10.1021/acs.jcim.9b01184 (2020)
- [16] **Duc D. Nguyen**, Zixuan Cang, and Guo-Wei Wei, A review of mathematical representations of biomolecular data, *Physical Chemistry Chemical Physics*, doi: 10.1039/C9CP06554G (2020)
- [15] **Duc D. Nguyen**, Kaifu Gao, Menglun Wang, and Guo-Wei Wei, MathDL: Mathematical deep learning for D3R Grand Challenge 4, *Journal of Computer Aided Molecular Design*, doi:10.1007/s10822-019-00237-5 (2019)
- [14] Christopher Grow, Kaifu Gao, **Duc D. Nguyen**, and Guo-Wei Wei, Generative network complex (GNC) for drug discovery, *Communications in Information and Systems*, **19(3)**, 241–277 (2019)
- [13] **Duc D. Nguyen** and Guo-Wei Wei, AGL-Score: Algebraic Graph Learning Score for Protein-Ligand Binding Scoring, Ranking, Docking, and Screening, *Journal of Chemical Information and Modeling*, (2019)
- [12] **Duc D. Nguyen** and Guo-Wei Wei, DG-GL: Differential geometry based geometric learning of molecular datasets, *International Journal for Numerical Methods in Biomedical Engineering*, **35(3)**, e3179 (2019)
- [11] **Duc Duy Nguyen**, Zixuan Cang, Kedi Wu, Menglun Wang, Yin Cao and Guo-Wei Wei, Mathematical deep learning for pose and binding affinity prediction and ranking in D3R Grand Challenges, *Journal of Computer-Aided Molecular Design*, **33**, 71–82 (2018)
- [10] **Duc D Nguyen**, Tian Xiao, Menglun Wang and Guo-Wei Wei, Rigidity strengthening: A mechanism for protein-ligand binding, *Journal of Chemical Information and Modeling*, **57**, 1715–1721 (2017)
- [9] Bao Wang, Zhixiong Zhao, **Duc Nguyen** and Guo-Wei Wei, Feature functional theory - binding predictor (FFT-BP) for the blind prediction of binding free energy, *Theoretical Chemistry Account*, **136**, 55 (2017)
- [8] **Duc D Nguyen**, Bao Wang and Guo-Wei Wei, Accurate, robust and reliable calculations of Poisson-Boltzmann binding energies, *Journal of Computational Chemistry*, **38**, 941–948 (2017)
- [7] **Duc D Nguyen** and Guo-Wei Wei, The impact of surface area, volume, curvature and Lennard-Jones potential to solvation modeling, *Journal of Computational Chemistry*, **38**, 24–36 (2017)
- [6] **Duc D Nguyen**, Kelin Xia and Guo-Wei Wei, Generalized flexibility-rigidity index, *Journal of Chemical Physics*, **144**, 234106 (2016)
- [5] **Duc D. Nguyen** and S. Zhao, A second order dispersive FDTD algorithm for transverse electric Maxwell's equations with complex interface, *Computers and Mathematics with Applications*, **71**, 1010–1035 (2016)



- [4] Y. Zhang, **D.D. Nguyen**, K. Du, J. Xu, and S. Zhao, Time-domain numerical solutions of Maxwell interface problems with discontinuous electromagnetic waves, *Advances in Applied Mathematics and Mechanics*, **8**, 353–385 (2016)
- [3] **Duc D. Nguyen** and S. Zhao, A new high order dispersive FDTD method for Drude material with complex interfaces, *Journal of Computational and Applied Mathematics*, **285**, 1–14 (2015)
- [2] **Duc D. Nguyen** and S. Zhao, Time-domain matched interface and boundary (MIB) modeling of Debye dispersive media with curved interfaces, *Journal of Computational Physics*, **278**, 298–325, (2014)
- [1] **Duc D. Nguyen** and S. Zhao, High order FDTD methods for transverse magnetic modes with dispersive interfaces, *Applied Mathematics and Computation*, **226**, 699–707, (2014)
- CONFERENCE PUBLICATIONS
- [1] E. Audusse, R. Klein, **D. D. Nguyen**, S. Vater, Preservation of the Discrete Geostrophic Equilibrium in Shallow Water Flows, *Finite Volumes for Complex Applications VI Problems & Perspectives Springer Proceedings in Mathematics*, **04**, pp. 59–67, (2011)
- SUBMITTED
- [1] Vasily Zadorozhnyy, Edison Muclari, Cole Pospisil, **Duc Nguyen**, and Qiang Ye, Orthogonal Gated Recurrent Unit with Neumann-Cayley Transformation, *AISTAT*, (2022)
- [2] Md Masud Rana, **Duc Duy Nguyen**, Geometric Graph Learning with Extended Atom-Types for Protein-Ligand Binding Affinity Prediction, *Briefings in Bioinformatics*, (2022)
- IN PROGRESS
- [1] Sally R. Ellingson, **Duc Nguyen**, and Masud Rana, Robust and reliable training data for machine learning based models in drug design, (2022)
- [2] Edison Muclari, Vasily Zadorozhnyy, Qiang Ye, and **Duc Nguyen**, Orthogonal Gated Recurrent Unit with Neumann-Cayley Transformation for Molecular Property Prediction, (2022)
- [3] Masud Rana and **Duc Nguyen**, Graph Learning Score for the Prediction of Protein-Protein Binding Affinity Changes upon Mutation, (2022)
- CONFERENCES
- University of Cincinnati Applied Mathematics Seminar, Nov. 18, 2022
- Minisymposium on Molecular Biosciences: Advances in molecular property and structure predictions, SIAM Conference on the Life Sciences, Jul. 11-14, 2022, Virtual Format (invited talk)
- Topology-based Learning, Biomolecular Topology and Related Topics, Institute for Mathematical Sciences, Singapore, Jul. 11–15, 2022, Virtual Format (invited talk)
- Joint Mathematics Meetings, Seattle, WA, Apr. 8, 2022, Virtual Format (invited talk)
- The Fourth TSIMF Conference on Computational and Mathematical Bioinformatics and Biophysics, Dec. 12–15, 2021, Virtual Format (invited talk)
- University of Georgia Applied Mathematics Seminar, Mar. 10, 2021
- Georgia Southern University General Mathematics Sciences Colloquium, Feb. 26, 2021

- TSIMF Conference on Computational and Mathematical Bioinformatics and Biophysics, Dec. 19–23, 2020, Virtual Format (invited talk)
- Commonwealth Computational Summit 2020 , Oct. 12–16, 2020, Virtual Format (invited lightning talk)
- Fall Eastern Sectional Meeting , Oct. 03–04, 2020, Virtual Format (invited talk)
- SIAM Conference on Mathematics of Data Science 2020 , May 04–June 30, 2020, Virtual Format (invited talk)
- Scientific Computing meets Machine Learning and Life Sciences, Oct. 07–09, 2019, Texas Tech University, Lubbock, TX (contributed poster)
- D3R 2019 Workshop, Aug. 22–23, 2019, Hotel La Jolla, La Jolla, CA (participant)
- NSF-CBMS Conference: Mathematical Molecular Bioscience and Biophysics, May 13–17, 2019, University of Alabama (invited talk)
- Workshop on the Mathematics of Drug Design/Discovery, Jun. 4–7, 2018, The Fields Institute, University of Toronto, Canada (invited talk)
- D3R Workshop, Feb. 22–23, 2018, Scripps Institution of Oceanography, UC San Diego, CA (participant)
- The 3rd Annual Meeting of SIAM Central States Section, Sep. 30–Oct. 1, 2017, Colorado State University, Fort Collins, CO (invited talk)
- Workshop 1: Topological, Geometric, and Statistical Techniques in Biological Data Analysis, Sep. 12–16, 2016, Mathematical Biosciences Institute, Ohio State University, OH (contributed poster)
- SIAM Conference on the Life Sciences (LS16), Jul. 11–14, 2016 The Westin Boston Waterfront, Boston, Massachusetts (invited speaker)
- Workshop 4: Mathematical Challenges in Drug and Protein Design, Dec. 7–11, 2015, Mathematical Biosciences Institute, Ohio State University , OH (contributed poster)
- Workshop 3: Modeling and Computation of Transmembrane Transport, Nov. 16–20, 2015, Mathematical Biosciences Institute, Ohio State University , OH (participant)
- Workshop 2: Multiple Faces of Biomolecular Electrostatics, Oct. 12–16, 2015, Mathematical Biosciences Institute, Ohio State University , OH (participant)
- Workshop 1: Geometric and Topological Modeling of Biomolecule, Sep. 28–Oct. 2, 2015, Mathematical Biosciences Institute, Ohio State University , OH (participant)
- Mathematics of Biological Charge Transport: Molecular and Beyond, Jul. 20–24, 2015, IMA, University of Minnesota, Minneapolis, MN (contributed poster)
- SIAM Southeastern Atlantic Section Conference (SIAM-SEAS 2015), Mar. 20–22, 2015, University of Alabama at Birmingham, Birmingham, AL (contributed poster)
- Graduate Recruiting Expo 2015, Feb. 27, 2015, University of Alabama, Tuscaloosa, AL (contributed talk)
- 2015 Joint Mathematics Meetings, Jan. 10–13, 2015, San Antonio, TX (contributed talk)
- 3MT - Three Minute Thesis Competition: Semi-Final Competition: Department Winners compete, Nov. 05, 2014, University of Alabama, Tuscaloosa, AL (contributed talk)

- Joint Applied Mathematics Meeting, University of Alabama at Birmingham, Birmingham, Nov. 8, 2014 (contributed talk)
- South Central Conference on Advanced Numerical Methods and Applications, Apr. 5–7, 2013, University of Arkansas at Little Rock (contributed poster)
- Mathematical Challenges in Biomolecular/Biomedical Imaging and Visualization, Feb. 18–22, 2013, MBI, Ohio State University (contributed poster)
- 25th Annual University of Alabama System Applied Mathematics Meeting, Nov. 3, 2012, University of Alabama in Huntsville (participant)
- Ninth Mississippi State – UAB conference on Differential Equations & Computational Simulations, Oct. 4–6, 2012, Mississippi State University (participant)
- 36th Annual SIAM Southeastern Atlantic Section Conference (SEAS 2012), Mar. 24–25, 2012, University of Alabama in Huntsville (participant)
- Joint Applied Mathematics Meeting, University of Alabama at Birmingham, Birmingham, Nov. 5, 2011 (participant)
- 2nd Midwest Conference on Mathematical Methods for Images and Surfaces, Michigan State University, East Lansing, Aug. 27–28, 2011 (participant)