

# Zhuolin Qu

## Curriculum Vitae

University of Texas at San Antonio  
Department of Mathematics  
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📄 <https://zhuolinqu.github.io>

### Research Interests

Mathematical and Computational Biology, Infectious Diseases Modeling, Population Dynamics, Numerical Methods for Nonlinear PDEs, Scientific Computing, Uncertainty Quantification

### Education

2011–2016 **Doctor of Philosophy, Applied Mathematics, Tulane University.**

Advisor: Alexander Kurganov

Thesis: Fast Operator Splitting Methods for Nonlinear PDEs

**Master of Science, Statistics, Tulane University.**

Advisor: Michelle Lacey

2007–2011 **Bachelor of Science, Mathematics and Computational Science, University of Science and Technology of China.**

Advisor: Mengping Zhang

### Academic Experience

2020–present **Assistant Professor, Department of Mathematics, University of Texas at San Antonio.**

2016–2020 **Postdoctoral Fellow, Department of Mathematics, Tulane University.**

Mentor: James (Mac) Hyman

2017–2019 **Visiting Scholar, Los Alamos National Laboratory.**

(Summer) Theoretical Biology and Biophysics (T-6), Host: Benjamin McMahon

2015 **Summer Intern, Los Alamos National Laboratory.**

Computational Earth Science (EES-16), Mentor: Carl Gable, Nataliia Makedonska

2012, 2013 **Visiting Fellow, Shanghai Jiao Tong University, China.**

(Summer) Institute of Natural Sciences

2010 **Summer Intern, Pohang University of Science and Technology, Korea.**

Combinatorial and Computational Mathematics Centre, Mentor: Kwang Ik Kim.

### Publications and Preprints

(\*denotes authors in alphabetical order, <sup>†</sup>denotes corresponding author)

- Peer-reviewed Journal
1. **Qu, Zhuolin**<sup>\*</sup>, Patterson, D.<sup>\*</sup>, Childs, L.<sup>†</sup>, Edholm, C., Ponce, J., Prosper, O., Zhao, L. Modeling Immunity to Malaria with an Age-Structured PDE Framework. *SIAM Journal on Applied Mathematics*, 2023, 83(3); 1098 - 1125. <sup>\*</sup>denotes equal contribution.
  2. Florez, D. A., Young, A. J., Bernabe, K., Hyman, J. M., and **Qu, Zhuolin**<sup>†</sup>. Modeling Sustained Transmission of *Wolbachia* among *Anopheles* Mosquitoes: Implications for Malaria Control in Haiti. *Tropical Medicine and Infectious Disease*, 2023, 8(3), 162.
  3. **Qu, Zhuolin**<sup>†</sup>, Wu, T., Hyman, J. M. Modeling Spatial Waves of *Wolbachia*

- Invasion for Controlling Mosquito-borne Diseases. *SIAM Journal on Applied Mathematics*, 2022, 82(6); 1903-1929.
4. Kurganov, A.<sup>†</sup>, **Qu, Zhuolin\***, and Wu, T. Well-Balanced Positivity Preserving Adaptive Moving Mesh Central-Upwind Schemes for the Saint-Venant System. *ESAIM: Mathematical Modelling and Numerical Analysis*, 2022, 56(4); 1327-1360.
  5. Gulbudak, H.<sup>†</sup>, **Qu, Zhuolin**, Milner, F., and Tuncer, N., Sensitivity Analysis in an Immuno-Epidemiological Vector-Host Model. *Bulletin of Mathematical Biology*, 2022, 84; 27.
  6. Stoecker, C.<sup>†</sup>, Monette, A., **Qu, Zhuolin**, Schmidt, N., Craig-Kuh, M. C., and Kissinger, P. Cost Effectiveness of Check It: A Novel Community-based Chlamydia Screening and Expedited Treatment Program for Young Black Men. *Clinical Infectious Diseases*, 2021; ciab818.
  7. Azizi, A.<sup>†</sup>, Dewar, J., **Qu, Zhuolin**, and Hyman, J. M. Using an Agent-based Sexual-network Model to Analyze the Impact of Mitigation Efforts for Controlling Chlamydia. *Epidemics*, 2021, 35; 100456.
  8. **Qu, Zhuolin**, Azizi, A., Schmidt, N., Craig-Kuh, M. C., Stoecker, C., Hyman, J. M., and Kissinger, P.<sup>†</sup> Effect of Screening Young Men for Chlamydia Trachomatis on the Rates among Women: A Network Modelling Study for High-prevalence Communities. *BMJ Open*, 2021, 11; e040789.
  9. **Qu, Zhuolin**<sup>†</sup>, McMahon, B. H., Perkins, D. J., and Hyman, J. M. Staged progression epidemic models for the transmission of invasive nontyphoidal Salmonella (iNTS) with treatment. *Mathematical Biosciences and Engineering*, 2021, 18(2): 1529-1549.
  10. Azizi, A.<sup>†</sup>, **Qu, Zhuolin**, Lewis, B., and Hyman, J. M. Generating a Heterosexual Bipartite Network Embedded in Social Network. *Applied Network Science*, 2021, 6, 30.
  11. Kurganov, A.<sup>†</sup>, **Qu, Zhuolin\***, Rozanova, O. S., and Wu, T. Adaptive Moving Mesh Central-Upwind Schemes for Hyperbolic System of PDEs: Applications to Compressible Euler Equations and Granular Hydrodynamics, *Communications on Applied Mathematics and Computation*, 2021, 3, 445–479.
  12. Thongsripong, P.<sup>†</sup>, **Qu, Zhuolin**, Yukich, J., Hyman J. M., and Wesson, D. An Investigation of Human-Mosquito Contact Using Surveys and its Application in Assessing Dengue Viral Transmission Risk. *Journal of Medical Entomology*, 2020, 57(6), 1942–1954.
  13. **Qu, Zhuolin**<sup>†</sup> and Hyman, J. M. Generating a Hierarchy of Reduced Models for a System of Differential Equations Modeling the Spread of *Wolbachia* in Mosquitoes. *SIAM Journal on Applied Mathematics*, 2019, 79(5):1675-1699.
  14. **Qu, Zhuolin**<sup>†</sup>, Xue, L., and Hyman, J. M. Modeling the Transmission of *Wolbachia* in Mosquitoes for Controlling Mosquito-Borne Diseases. *SIAM Journal on Applied Mathematics*, 2018, 78(2):826–852.
  15. Cheng, Y. Z., Kurganov, A.<sup>†</sup>, **Qu, Zhuolin\***, and Tang, T. Fast and Stable Explicit Operator Splitting Methods for Phase-field Models. *Journal of Computational Physics*, 2015, 303:45-65.
  16. Kao, C. Y., Kurganov, A.<sup>†</sup>, **Qu, Zhuolin\***, and Wang, Y. A Fast Explicit Operator Splitting Method for Modified Buckley-Leverett Equations. *Journal of Scientific Computing*, 2015, 64(3):837-857.
  17. Chertock, A., Kurganov, A.<sup>†</sup>, **Qu, Zhuolin\***, and Wu, T. Three-Layer Approximation of Two-Layer Shallow Water Equations. *Mathematical Modelling and*

*Analysis*, 2013, 18(5):675-693.

- Conference Proceeding 18. Young, A. J., Stager, B., Bernabe, K., Florez, D. A., **Qu, Zhuolin**, and Hyman, J. M., Mathematical Modeling Transmission of *Wolbachia* among *Anopheles Albimanus* Mosquito Populations in Haiti. In *The American Journal of Tropical Medicine and Hygiene*, 2022, 105(5)
19. Thongsripong, P., **Qu, Zhuolin**, Hyman, J. M., and Wesson, D. Quantification of Mosquito Biting Rates Using Surveys and their Implication in Determining Dengue Viral Transmission Risk in the Greater New Orleans Region. In *The American Journal of Tropical Medicine and Hygiene*, 2018, 99(4)

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## Honors and Awards

- 2023-2025 **NSF Research Grant DMS-2316242**, “LEAPS-MPS: Development of Novel Multistage Models for *Wolbachia*-Based Strategies to Control Mosquito-Borne diseases”, Role: PI, \$246,620.
- 2023-2024 **AWM-NSF Mathematics Mentoring Travel Grants**, Role: PI.
- 2023 **AMS-Simons Research Enhancement Grant for Primarily Undergraduate Institution (PUI) Faculty**, Role: PI, *declined*.
- 2023 **American Institute of Mathematics (AIM), SQuaREs**, *converted to workshop*. Role: Primary Contact
- 2022-2023 **VPREDKE Faculty Travel Support**, *University of Texas at San Antonio*.
- 2022 **Convergence Accelerator Team (CAT) Award**, “Developing Methodologies for Spatial and Demographic Heterogeneity in Malaria Immune Dynamics”, NSF-Simons Center for Multiscale Cell Fate Research, \$10,310. Role: Primary Contact
- 2020 **MIDAS COVID-19 Urgent Grant - Supplemental Funding**, “Optimizing COVID-19 Awareness and Testing Strategy”, MIDASUGP2020-2, \$9,999. Role: Co-Investigator
- 2017-2019 **Postdoctoral Fellow Travel Fund**, *Tulane University*.
- 2017 **Health Sciences Research Days Award for Excellence in Research and Presentation by a Postdoctoral Fellow**, *Tulane University*.  
Evaluated by a panel of judges in health science among nearly 200 presentations
- 2015-2019 **Travel Awards**, *Awarded 15 grants for travel to conferences and workshops*.
- 2012-2015 **Summer Research Fellowship**, *Tulane University*.

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## Conference and Talks

- Invited Talks
- 2023
  - **SMB Annual Meeting 2023**, Mini-symposium talk, Ohio State University, 07/2023
- 2022
  - **Southern University of Science and Technology**, PDE Seminar, 11/2022
  - **SIAM Texas-Louisiana Sectional Meeting**, Mini-symposium talk, University of Houston, 11/2022
  - **SIAM Conference on Life Sciences**, Mini-symposium, Pittsburgh, PA, 07/2022
  - **AWM Research Symposium**, Mini-symposium, Univ. of Minnesota, 06/2022

- **The Fields Institute** for Research in Mathematical Sciences, Colloquium on Mathematics for Public Health, virtual, 04/2022
- **Joint Mathematics Meetings 2022**, AWM special session, virtual, 04/2022
- **Joint Mathematics Meetings 2022**, Mini-symposium talk, virtual, 04/2022
- **Oregon State University**, Mathematical Biology Seminar, virtual, 03/2022
- **Virginia Tech**, Mathematical Biology Seminar, virtual, 02/2022
- 2021 ○ **Middle Tennessee State University**, Mathematical Biology Seminar, 11/2021
- **SIAM Texas-Louisiana Sectional Meeting**, Mini-symposium talk, University of Texas Rio Grande Valley, South Padre Island, 11/2021
- **Kennesaw State University**, Mathematical Biology Seminar, virtual, 10/2021
- **Tulane University**, Applied Math Seminar, virtual, 10/2021
- **SMB Annual Meeting 2021**, Mini-symposium talk, virtual, 06/2021
- **Utah State University**, Applied Math Seminar, virtual, 04/2021
- **Texas Tech University**, Biomathematics Seminar, virtual, 03/2021
- **Tulane University**, Guest lecture on “Epidemic Modeling Case Studies”, virtual, 02/2021
- **Joint Mathematics Meetings 2021**, Mini-symposium talk, virtual, 01/2021
- 2020 ○ **Tulane University**, Guest lecture on “Modeling the Spread of Infectious Diseases”, virtual, 10/2020
- **SIAM Texas-Louisiana Sectional Meeting**, Mini-symposium talk, virtual, 10/2020
- 2019 ○ **SIAM Texas-Louisiana Sectional Meeting**, Mini-symposium talk, Southern Methodist University, 11/2019
- **Georgia State University**, Mathematics and Statistics Colloquium, 10/2019
- **Georgia State University**, School of Public Health, Population Health Science Seminar, 10/2019
- **Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (ICMA VII)**, Mini-symposium talk, Arizona State University, 10/2019
- **Louisiana State University Health Sciences Center**, Biostatistics Colloquium, New Orleans, 10/2019
- **Epidemiology Seminar**, School of Public Health and Tropical Medicine, Tulane University, 09/2019
- **Fifth International Conference on Computational and Mathematical Population Dynamics (CMPD5)**, Mini-symposium talk, Fort Lauderdale, 05/2019
- 2018 ○ **University of Louisiana at Lafayette**, Mathematics Colloquium, 10/2018
- **Los Alamos National Laboratory**, Brown bag meeting on disease transmission modeling and surveillance, Seminar talk, 07/2018
- **42nd SIAM SEAS Sectional Conference**, Mini-symposium talk, UNC-Chapel Hill, 03/2018
- 2017 ○ **Guangzhou University**, Mathematical Biology Center, Seminar talk, 11/2017

- **Mathematics and Science College**, Shanghai Normal University, Seminar talk, 11/2017
- **Tropical Medicine Seminar**, School of Public Health and Tropical Medicine, Tulane, 09/2017
- **Los Alamos National Laboratory**, Center for Nonlinear Studies, Seminar talk, 08/2017
- 2015 ○ **Georgia State University**, Guest lecture, “How Mathematical Models are helping Guide Mitigation Efforts to Control Epidemics”, 05/2015
- **Graduate Student Colloquium**, Tulane Mathematics Department, 09/2015
- **Los Alamos National Laboratory**, SFT Brown Bag Seminar, 08/2015
- **The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena**, Mini-symposium talk, 04/2015
- 2014 ○ **Tulane University**, Applied Mathematics Seminar, 04/2014
- Contributed Talks ○ **International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (ICMA VIII)**, University of Louisiana at Lafayette, 10/2022
- **SIAM Annual Meeting 2021**, virtual, 07/2021
- **Mathematics Research Communities**, virtual, 06/2021
- **Biomathematics and Ecology: Education and Research (BEER)**, virtual, 11/2020
- **CDC STD Conference 2020**, Atlanta, GA, virtual, 09/2020
- **Biology and Medicine through Mathematics (BAMM!)**, Virginia Commonwealth University, 05/2020 (abstract accepted, canceled due to COVID-19)
- **Scientific Computing around Louisiana**, Tulane University, 02/2019
- **Biomathematics and Ecology: Education and Research**, Arizona State University, 10/2018
- **SIAM Annual Meeting 2018**, Portland, OR, 07/2018
- **Scientific Computing around Louisiana**, Louisiana State University, 02/2018
- **SIAM Annual Meeting 2017**, Pittsburgh, PA, 07/2017
- **Scientific Computing around Louisiana**, Tulane University, 03/2017
- Posters ○ **SAMSI workshop on Model Uncertainty: Mathematical and Statistical**, Duke University, 08/2018
- **MBI Emphasis Workshop on Multiscale Dynamics of Infections**, Ohio State University, 04/2018
- **NIH-MIDAS Network Meeting**, 04/2018
- **29th Annual Health Sciences Research Days**, Tulane University, 02/2018
- **SMB Annual Meeting 2017**, 07/2017
- **NIH-MIDAS Network Meeting**, 05/2017
- **SIAM Conference on Computational Science and Engineering**, 03/2017
- **28th Annual Health Sciences Research Days**, Tulane University, 02/2017
- **KI-Net: Collective Dynamics in Biological and Social Systems**, 11/2015

- **Los Alamos National Laboratory**, Student Symposium: “Championing Scientific Careers”, 08/2015
- **Scientific Computing Around Louisiana**, Tulane University, 03/2015
- Workshops
- Conferences
- **AIM Workshop**, “Multi-scale modeling of malaria”, American Institute of Mathematics, San Jose, 04/2023
- **XVIII Red Raider Minisymposium**, “Modeling in a Heterogeneous World”, Texas Tech University, 08/2021
- **AMS - Mathematics Research Communities**, “Dynamics of Infectious Diseases: Ecological Models Across Multiple Scales”, virtual, 06/2020 - 06/2021
- **MIDAS Network Annual Meeting**, virtual, 05/2021
- **Joint Mathematical Epidemiology and Math Education SMB Subgroup Meeting**, virtual, 02/2021
- **Emory TMLS COVID-19 modeling symposium**, “SARS-CoV-2 modeling: What have we learned from this pandemic about how (not) to model disease spread?”, virtual, 01/2021
- **Joint Mathematics Meetings 2021**, Short course on “Mathematical and Computational Methods for Complex Social Systems”, virtual, 01/2021
- **SMB Annual Meeting 2020**, virtual, 08/2020
- **Workshop on Modeling the Spread of Infectious Diseases**, Tulane University, 02/2019 & 02/2020
- **NIMBioS Tutorial: Network Modeling**, University of Tennessee, 02/2019
- **Joint Research Conference on Statistics in Quality, Industry, and Technology**, Santa Fe, 06/2018
- **9th Annual Summer Institute in Statistics and Modeling in Infectious Diseases**, University of Washington, 07/2017
- **NIMBioS Tutorial: Uncertainty Quantification for Biological Models**, 06/2017
- **SAMSI Summer School on Optimization**, 08/2016
- **KI-Net Conference** on Modern Perspectives in Applied Mathematics: Theory and Numerics of PDEs, 04/2014

## Service

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|------------------|--|
| Journal Reviewer | Journal of Biological Systems, Journal of Biological Dynamics, PLoS ONE, Journal of Theoretical Biology, Mathematical Biosciences, Letters in Biomathematics, SIAM Journal on Applied Mathematics  |
| Review Editor    | Frontiers in Tropical Diseases   |
| Guest Editor     | Mathematical Biosciences and Engineering, Special Issue: “Machine Learning, Mathematical and Statistical Modeling for Systems Biology”<br><br>Tropical Medicine and Infectious Diseases, Special Issue: “Advancing mathematical models of mosquito-borne diseases” |
| Organizer        | ◦ SMB Annual 2023, mini-symposium, “Climate and vector-borne disease: insights from mathematical modeling”, 07/2023  |



- Joint Mathematics Meetings 2023, Special Session, “Advances in Modeling Mosquito-borne Disease Dynamics and Control Methods”, 01/2023
- SIAM Texas-Louisiana Meeting, mini-symposium, “Mathematical Modeling for Biological Dynamics”, 11/2022
- AWM Research Symposium, “Recent Developments in Ecological and Epidemiological Modeling”, University of Minnesota, 06/2022
- Joint Mathematics Meetings 2022, Special Session, “Dynamics of Infectious Diseases Across Multiple Scales”, 04/2022
- SIAM Texas-Louisiana Meeting, mini-symposium, “Mathematical and computational models for understanding emerging epidemics and evaluating intervention strategies”, 10/2020
- New Orleans workshop on Modeling the Spread of Infectious Diseases, Tulane University, Spring 2019 & Spring 2020
- Clifford Lectures, Co-organizer, Tulane University, 2017
- Reviewer ◦ NSF Panel reviewer, 06/2022
- SMB Annual Meeting, Reviewer for conference, 03/2023
- Department ◦ Search Committee: Mathematical Biology & Bioinformatics, UTSA, 2022 - 2023
- Committee ◦ Admission Committee for Applied and Industrial Math Master (AIM) Program, University of Texas at San Antonio, Fall 2020 - 2023
- Committee for Department Website, University of Texas at San Antonio
- External ◦ PhD Committee, Daniela Florez, Mathematics, Tulane University, Spring 2022 - present
- Committee ◦ PhD Dissertation Committee, Christian Geneus, Biostatistics, Tulane University, Spring 2020
- Master Dissertation Committee, Harley Hanes, Center for Computational Science, Tulane University, Spring 2020
- PhD Dissertation Committee, Li Guan, Mathematics, Tulane University, Fall 2019
- Undergraduate Honors Thesis Prospectus, Rhea Kataria, Mathematics, Tulane University, Fall 2019
- PhD Qualifying Exam Committee, Scientific Computing, Tulane University, Fall 2018
- Media ◦ **Math Horizons**, Evelyn J. Lamb, “Fighting an Epidemic with an Epidemic”, *Math Horizons*, 2019, 26:4, 22-23, DOI: 10.1080/10724117.2019.1574148
- Coverage ◦ **Forbes Magazine**, Innovation-Science, “Math-Based Mosquito Control To Prevent Human Diseases”, January 14th, 2019
- **Los Alamos Monitor**, “Solving epidemics with math”, October 10th, 2018
- **The Times-Picayune**, “Tulane researchers use math to contain the spread of mosquito-borne illnesses”, August 30th, 2018
- **SIAM News**, Research Nugget on “Sustained bacterial outbreak in mosquitoes limits spread of life-threatening diseases”, March 20th, 2018
- Poster Judge ◦ School of Science and Engineering Research Day, Tulane University, 2018, 2019
- SIAM Texas-Louisiana Sectional Meeting, 2019
- Others ◦ **MARC Mentor**, Maximizing Access to Research Careers (MARC) program, 2022

- **AWM and Math for America**, Student Essay Contest, Interviewee, 2022
- **Newcomb Fellow**, Newcomb College Institute, 2016–2020, voluntary association of faculty from all undergraduate colleges to support women’s leadership/gender equity and foster faculty-student interaction and research

## Teaching Experience

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|----------------------|---|
| Instructor of Record | University of Texas at San Antonio  |
|                      | ◦ MAT 5973: Directed Research (graduate): Summer 2023   |
|                      | ◦ MAT 5603: Numerical Analysis (graduate): Spring 2023  |
|                      | ◦ MAT 3633: Numerical Analysis, Fall 2021, Spring 2023  |
|                      | ◦ MAT 3613: Differential Equations I: Fall 2022, Summer 2023  |
|                      | ◦ MAT 2233: Linear Algebra, Spring 2022, Fall 2022, online  |
|                      | ◦ MAT 1193: Calculus for Biosciences, Fall 2020, Spring 2021, online  |
|                      | Tulane University   |
|                      | ◦ MATH 758: Scientific Computation III (graduate), Spring 2018, Spring 2019                                   |
|                      | ◦ MATH 731: Applied Mathematics (graduate), Spring 2020   |
|                      | ◦ MATH 221: Calculus III, Fall 2016   |
|                      | ◦ MATH 122: Calculus II, Fall 2013  |
|                      | ◦ MATH 116: Long Calculus II, Spring 2014   |
| Teaching Assistant   | ◦ MATH 309/609: Linear Algebra, Fall 2012, Spring 2013  |
|                      | ◦ MATH 224: Introduction to Applied Mathematics, Spring – Fall 2012, Spring 2015                              |
|                      | ◦ MATH 131: Consolidated Calculus, Fall 2014  |
|                      | ◦ MATH 221: Calculus III, Spring 2012   |
|                      | ◦ MATH 122: Calculus II, Spring 2016  |
|                      | ◦ MATH 121: Calculus I, Fall 2011, Fall 2015  |
| Guest Lectures       | ◦ MATH 732: Applied Mathematics II (graduate), Spring 2017  |
|                      | ◦ MATH 635: Optimization (graduate), Fall 2018  |
|                      | ◦ MATH 424/624: Ordinary Differential Equation, Fall 2016   |
| Workshop on Teaching | ◦ Becoming a Mentor, MARC, UTSA, 2022   |
|                      | ◦ Blackboard Assessment Best Practices, Academic Innovation, UTSA, 2022                                       |
|                      | ◦ Innovation Academy by Academic Innovation, UTSA, Summer 2021  |
|                      | ◦ Academic Integrity & Proctoring, UTSA, 2021   |
|                      | ◦ “Ready, Prep, Teach!”, The Center for Engaged Learning and Teaching (CELTE), Tulane University, Spring 2019 |

## Mentoring Experience

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|-----------------------|---|
| Doctoral Dissertation | ◦ Assist in mentoring doctoral dissertation, Mathematics student, on modeling Wolbachia in mosquitoes with fractional diffusion (Tulane, 2023-present)                              |
|                       | ◦ Assist in mentoring doctoral dissertation, Mathematics student, on modeling epidemics with distribution parameters, committee member for Dissertation defense (Tulane, 2017-2019) |



- Assist in mentoring doctoral dissertation, Biostatistics student, on characterizing the spread of epidemics over networks (Tulane, 2018-2020)
  - Assist in mentoring doctoral dissertation, Public Health student, on quantifying human-mosquito contact rate, paper published (Tulane, 2017-2018)
- Master Thesis
  - David Cantu, Applied Mathematics (UTSA, 2023-present)
  - Josh Lopez, Applied Mathematics (UTSA, 2023-present)
  - Assist in mentoring master thesis project, Computational Science student, on modeling chikungunya disease and quantifying uncertainty (Tulane, 2018-2019)
  - Assist in mentoring master project, Computational Science student, on modeling the Chagas disease in the New Orleans area and estimating human risk. (Tulane, 2018-2020)
- Honor Thesis
  - Assist in mentoring undergraduate honor thesis, Neuroscience student, on modeling Tuberculosis progression with treatment, Senior Scholar Award for undergraduate (Tulane, 2018-2019)
  - Assist in mentoring undergraduate honor thesis, Mathematics student, on characterizing the stochastic spread of epidemics on networks (Tulane, 2018-2020)
- Directed Research
  - Introduction to mathematics epidemiology, two master students in Applied Mathematics (UTSA, 2023 Spring)
- Course project
  - Assist in mentoring topic course project, on modeling Wolbachia transmission in Anopheles mosquitoes for Malaria control (Tulane, 2021 Spring - 2023 Spring)
  - Assist in mentoring topic course project, on modeling Gonorrhea dynamics and interventions on networks (Tulane, 2021 Spring)
- Conference Mentor
  - Society of Mathematical Biology annual meeting 2017 and 2020
  - SIAM TX-LA Meeting 2022

## Computer Skills

Script MATLAB, Octave, Fortran, Mathematica, C, R, Python, Maple, MySQL, NetLogo  
 Software LaTeX, Git, Vim, Inkscape, Gephi, ParaView, Adobe Illustrator, Origin  
 Other MPI, PETSc, LaGriT, PFLOTRAN