LAURA ELLWEIN FIX

(formerly Laura Marie Ellwein)

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EDUCATION

North Carolina State University, Raleigh, NC
- Ph.D. Applied Mathematics, December 2008.
  – Dissertation title: "Cardiovascular and Respiratory Regulation, Modeling and Parameter Estimation." (as *Laura Marie Ellwein*)
  – Dissertation advisor: Mette S. Olufsen.
  – Interdisciplinary concentration in Physiology.
- M.S. Applied Mathematics, December 2005.
  – Concentration in Computational Mathematics.

University of Wisconsin, Madison, WI
- B.S. in Chemical Engineering, August 1999.

RESEARCH INTERESTS

Data-driven patient-specific model development and parameter estimation, regulation in cardiovascular and pulmonary systems, numerical methods and optimization, computational fluid dynamics, differential equations and dynamical systems, algorithm development for biomedical applications.

POSITIONS / APPOINTMENTS

Virginia Commonwealth University

Associate Chair and Director of Undergraduate Programs (Department)	2024 - present
Tenured Associate Professor, Dept. of Mathematics and Applied Mathematics	2019 - present
Assistant Professor, Department of Mathematics and Applied Mathematics	2012 - 2019
Sloan Pre-tenure Leave program (VCU parental leave)	Fall 2014

Vivonics, Inc.

Consultant	2020 – present

Marquette University

Postdoctoral Fellow and Guest Lecturer, Department of Biomedical Engineering	2008 – 2012

Milwaukee School of Engineering

Adjunct Instructor, Department of Mathematics	2010 – 2012

North Carolina State University

Research Assistant and Instructor, Department of Mathematics	2003 – 2008

Advisor / Mentor, Summer Research Experiences for Undergraduates   2005, 2006, 2008
Harvard Medical School / Beth Israel Deaconess Medical Center
    Summer Research Assistant, "T32: Translational Research on Aging" (Vera Novak, MD)   2004
University of Graz, Austria
    Summer Visiting Researcher, Department of Mathematics (Jerry Batzel, PhD)   2006
Statistics and Applied Mathematical Sciences Institute (SAMSI)
    Graduate Student Fellow (Mette Olufsen, Tom Banks)   2004

Merck & Company, Inc.
    Summer Intern, Applied Computer Science and Mathematics Department   2007
General Mills, Inc.
    Quality Engineer, multiple locations   1999 – 2003

REFEREED PUBLICATIONS AND PROCEEDINGS

22. Foster R and **Ellwein Fix L.** (2025) Parameter identifiability of a respiratory mechanics model in the extremely preterm infant. Accepted for publication, *Royal Society Philosophical Transactions A.* http://arxiv.org/abs/2501.08533.

21. Helen Harris, David Chan, PhD; **Laura Ellwein Fix, PhD**; Melissa Chouinard, MD; Teresa Salgado, MPharm, PhD; Le Kang, PhD; Gonzalo Bearman, MD, MPH. (2025) Incremental Benefit of Medication Reconciliation Practices on Patient Health Outcomes in a Healthcare Setting. Accepted for publication, *The Joint Commission Journal on Quality and Patient Safety..*

20. Luke R.A., Kelly G., Stoner M., O'Brien J.E., Lubkin S., **Ellwein Fix L.** (2024) Towards a Mathematical Understanding of Ventilator-Induced Lung Injury in Preterm Rat Pups. *In: Ford Versypt, A.N., Segal, R.A., Sindi, S.S. (eds) Mathematical Modeling for Women's Health. The IMA Volumes in Mathematics and its Applications,* vol 166. Springer, Cham. https://doi.org/10.1007/978-3-031-58516-6_6

19. Foster R, Smith B, **Ellwein Fix L.** (2023) Thoracoabdominal asynchrony in a virtual preterm infant: computational modeling and analysis. *Am J Physiol Lung Cell Mol Physiol,* 325(2):L190-L205. https://journals.physiology.org/doi/abs/10.1152/ajplung.00123.2022

18. **Ellwein Fix L**, Filippas A, Brucal-Hallare M, Segal R. (2022) SUMMIT-P Initiative: Improving student knowledge transfer between mathematics and engineering courses through active cross-disciplinary paradigms and terminology. *Journal of Mathematics and Science: Collaborative Explorations,* Vol. 18: No. 1, Article 4. https://scholarscompass.vcu.edu/jmsce_vamsc/vol18/iss1/4

17. Colebank MJ, Qureshi MU, Chesler N, Husmeier D, Olufsen MS, **Ellwein Fix L.** (2019) Influence of image segmentation on one-dimensional fluid dynamics predictions in the mouse pulmonary arteries. *J R Soc Interface*, 16(159):201900284. https://royalsocietypublishing.org/doi/10.1098/rsif.2019.0284

16. Qureshi MU, Colebank MJ, Paun ML, **Ellwein Fix L**, Chesler N, Haider MA, Hill NA, Husmeier D, Olufsen MS. (2019) Hemodynamic assessment of pulmonary hypertension in mice — a model-based analysis of the disease mechanism. *Biomech Model Mechanobiol*, 18(1):219-243, https://doi.org/10.1007/s10237-018-1078-8

15. **Ellwein Fix L,** Khoury J, Moores RR Jr., Linkous L, Brandes M, Rozycki H. (2018). Theoretical open-loop model of respiratory mechanics in the extremely preterm infant. *PLoS ONE*, 13(6):1-21. https://doi.org/10.1371/journal.pone.0198425

14. **Ellwein L,** Samyn M, Danduran M, Schindler-Ivens S, Liebham S, LaDisa Jr. JF. (2017) Toward translating near-infrared spectroscopy oxygen saturation data for the non-invasive prediction of spatial and temporal hemodynamics during exercise. *Biomech Model Mechanobiol*, 16(1):75-96. https://doi.org/10.1007/s10237-016-0803-4

13. **Ellwein L,** Marks DS, Migrino RQ, Foley WD, Sherman S, LaDisa JF Jr. (2015) Image-based quantification of 3-D morphology for bifurcations in the left coronary artery: application to stent design. *Cathet Cardiovasc Intervent*, 87(7):1244-1255. https://doi.org/10.1002/ccd.26247

12. Ford Versypt AN, Makrides E, Arciero J, **Ellwein L**, Layton AT. (2015) Bifurcation study of blood flow control in the kidney. *Math Biosci*, 263:169-179. https://doi.org/10.1016/j.mbs.2015.02.015

11. Quam DJ, Gundert TJ, Migrino RQ, Otake H, **Ellwein L**, Hayden P, LaDisa JF, Jr. (2015) Immersive Visualization for Enhanced Computational Fluid Dynamics Analysis. *J Biomech Eng*, 137(3):031004. https://dx.doi.org/10.1115%2F1.4029017

10. Arciero J*****, **Ellwein L***, Ford Versypt AN*****, Makrides E, Layton AT. (2015) Modeling blood flow control in the kidney. *In: Jackson T, Radunskaya A (Eds) Applications of Dynamical Systems in Biology and Medicine. The IMA Volumes in Mathematics and its Applications,* Vol 158, pp.55-73. Springer New York. https://doi.org/10.1007/978-1-4939-2782-1_3. (* equal contribution)

9. **Ellwein LM**, LaDisa JF, Jr., Leibham S, Schindler-Ivens S, Samyn M. (2013) Quantification of thoracic aorta blood flow by magnetic resonance imaging during supine cycling exercise of increasing intensity. *J Cardiov Magn Reson*, **15**(Suppl 1):P239. https://doi.org/10.1186/1532-429X-15-S1-P239

8. **Ellwein LM**, Pope S, Xie A, Batzel JJ, Kelley CT, Olufsen MS. (2013) Patient-specific modeling of cardiovascular and respiratory dynamics during hypercapnia. *Math Biosci*, 241:56-72. https://dx.doi.org/10.1016%2Fj.mbs.2012.09.003

7. Wendell DC, Samyn MM, Cava JR, **Ellwein LM**, Krolikowski MM, Gandy KL, Pelech AN, Shadden SC, LaDisa JF. (2013) Including aortic valve morphology in computational fluid dynamics simulations: initial findings and application to aortic coarctation. *Med Eng Phys*, 35(6):723-735. https://dx.doi.org/10.1016%2Fj.medengphy.2012.07.015

6. Batzel JJ, **Ellwein LM**, Olufsen MS. (2011) Modeling cardio-respiratory system response to inhaled CO_2 in patients with congestive heart failure. *Proc 33rd Ann Inter Conf IEEE/EMBC*, Boston: 2418-2421. https://doi.org/10.1109/IEMBS.2011.6090673

5. **Ellwein LM**, Otake H, Gundert TJ, Koo B-K, Shinke T, Honda Y, Shite J, Ladisa JF, Jr. (2011) Optical coherence tomography for patient-specific 3D artery reconstruction and evaluation of wall shear stress in a left circumflex coronary artery. *Cardiovasc Eng Technol*, 2(3): 212-227. https://doi.org/10.1007/s13239-011-0047-5

4. LaDisa JF, Jr., Figueroa CA, Vignon-Clementel IE, Kim HJ, Xiao N, **Ellwein LM**, Chan FP, Feinstein JA, Taylor CA. (2011) Computational simulations for aortic coarctation: representative results from a sampling of patients. *J Biomech Eng*. 133(9):091008. http://dx.doi.org/10.1115/1.4004996

3. Pope SR, **Ellwein LM**, Zapata CL, Novak V, Kelley CT, Olufsen MS. (2009) Estimation and identification of parameters in a lumped cerebrovascular model. *Math Biosci Eng*, 6(1):93-115. http://dx.doi.org/10.3934/mbe.2009.6.93

2. **Ellwein LM**, Tran H, Zapata CL, Novak V, Olufsen MS. (2008) Sensitivity analysis and model assessment: mathematical models for arterial blood flow and blood pressure. *J Cardio Eng*, 8(2):94-108. https://doi.org/10.1007/s10558-007-9047-3

1. Olufsen MS, Ottesen JT, Tran HT, **Ellwein LM**, Lipsitz LA, Novak V. (2005) Blood pressure and blood flow variation during postural change from sitting to standing - modeling and experimental validation. *J Appl Physiol*, 99(4):1523-1537. https://dx.doi.org/10.1152%2Fjapplphysiol.00177.2005

MANUSCRIPTS IN PREPARATION

Harris H, Ellwein Fix L. A closed-loop model of dependence of cerebrovascular reactivity on inhaled carbon dioxide.

Aleiou A, Otake H, Hughey JK, Arzani A, **Ellwein Fix L**, LaDisa JF, Jr. Evaluation of wall shear stress indices in stented coronary arteries reconstructed using optical coherence tomography and computed tomography.

HONORS / AWARDS

Association for Women in Mathematics Travel Award	2023
Invitation and Travel Award, IMA Special Workshop	2022
"Collaborative Workshop for Women in Mathematical Biology: Mathematical Approaches to Support Women's Health"	
Association for Women in Mathematics Travel Award	2018
Mentor, Undergraduate Research Opportunities Program Awardee (VCU)	2018
Proposal ranked highest of all proposals in the College of Humanities and Sciences	
Faculty Council Research Award, College of Humanities and Sciences (VCU)	2016
Invitation and Travel Award, ICERM Topical Workshop	2014
"From the Clinic to Partial Differential Equations and Back: Emerging Challenges for Cardiovascular Mathematics."	
Invitation and Travel Award, IMA Special Workshop	
"WhAM! A Research Collaboration Workshop for Women in Applied Mathematics, Dynamical Systems with Applications to Biology and Medicine."	2013
Postdoctoral Travel Award, SIAM / ICIAM	
7th International Congress on Industrial and Applied Mathematics, Vancouver BC	2011
Midwest Affiliate Postdoctoral Fellowship, American Heart Association	
Translating Near Infrared Spectrocopy (NIRS) O_2 Saturation Data for the Noninvasive Prediction of Spatial and Temporal Hemodynamics during Exercise	2010-2012
Student Travel Awards, SIAM	
SIAM Conference on Imaging Science, San Diego, CA	2008
SIAM Conference on Mathematics for Industry, Pittsburgh PA	2007
Best Graduate Student Presentation Award, SIAM-SEAS	2005
Graduate Student Fellowship, SAMSI	2004

GRANTS AWARDED

VCU Libraries Affordable Course Content Award	2024

Creation of Ancillary Open Access Materials for Undergraduate Numerical Methods in the Department of Mathematics and Applied Mathematics
PI: Laura Ellwein Fix, PhD. ($2000 over 1 year)

Seed Award (VCU) Apr 2024
Predictive Modeling of Cerebrovascular Reactivity
PI: Laura Ellwein Fix
Award: $5000 for student stipend and travel.

REAL Challenge Award (VCU) Nov 2022
"REAL Experience in Mathematics Clearinghouse".
PI: Laura Ellwein Fix.
Award: $2500 stipend to Laura Ellwein Fix, $1000 stipend to student (TBD).

Undergraduate Research Opportunities Program Fellowship (VCU) May 2021
"Modeling Cerebrovascular Reactivity in a Computer Model of Cardiorespiratory Dynamics"
PI: Mariana Fernandes Gragnani (student).
Award: $1500 stipend to Fernandes Gragnani; $500 stipend to Laura Ellwein Fix, PhD.

Undergraduate Research Opportunities Program Fellowship (VCU) May 2020
Modeling Breathing Asynchrony in a Computer Model of Respiratory Mechanics.
PI: Richard Foster (student).
Award: $1500 stipend to Foster; $500 stipend to Laura Ellwein Fix, PhD.

Undergraduate Research Opportunities Program Fellowship (VCU) May 2018
Modeling Mechanoreflexes in a Computer Model of Breathing Mechanics. PI: Jeffrey Evans (student).
Award: $1500 stipend to Evans; $500 stipend to Laura Ellwein Fix, PhD.

Faculty Council Research Award, College of Humanities and Sciences (VCU) May 2016
Computational Modeling of Chest wall Rigidity. PI: Laura Ellwein Fix, PhD.
Award: $600, funded summer student (Lauren Linkous).

Atlantic Pediatric Device Consortium, 5th Annual Innovation Competition Award. Oct 2015
Improving Chest Wall Rigidity in Very Preterm Infants. Co-PIs: Ku and Boyan.
FDA #5P50FD004193-07, subaward GIT-RE159 to Henry Rozycki
Consultant: $3000.

Marquette University / Kobe University, Sub-Award PT109392 Apr 2013
Optical Coherence and Computed Tomography for Evaluation of Wall Shear Stress and Thrombus Potential in Coronary Arteries After Stenting. PI: John LaDisa Jr., PhD.
Subaward: $9,168.

American Heart Association, #10POST4210030 July 2010
Midwest Affiliate Postdoctoral Fellowship
Translating Near Infrared Spectrocopy (NIRS) O_2 Saturation Data for the Noninvasive Prediction of Spatial and Temporal Hemodynamics during Exercise. PI: Laura M. Ellwein, PhD.
Award: $90,772.

ADDITIONAL FUNDED RESEARCH

American Diabetes Association – #7-08-JF-25. 2008
PI: John LaDisa, PhD. Funded two years of postdoctoral research.
National Science Foundation – DMS, #DMS0616597. 2007
Co-PIs: Mette Olufsen, PhD and Pierre Gremaud, PhD. Funded dissertation writing.
National Science Foundation – OISE, #0437037. 2006
PI: Mette Olufsen, PhD. Funded research travel to Europe.

National Institutes of Health -- NIA, #T32 AG-023480   2004
PI: Vera Novak, MD. Funded summer research.
Statistical and Applied Mathematical Sciences Institute   2004
Funded one year of graduate research.

GRANTS SUBMITTED or PENDING

Simons Foundation Travel Support for Mathematicians   2024
Predictive modeling in human systems physiology
PI: Laura Ellwein Fix, PhD. ($42,000 over 5 years, not funded)

VCU CCTR Translational Science Pilot Grant   2024
Translational modeling of the catecholamine hormones response to stress
PI: David Chan, PhD. ($49,385 over 12 months, not funded)

VIVA Open Course Grant   2024
Ancillary Open Access Materials for Undergraduate Numerical Methods
PI: Laura Ellwein Fix, PhD. ($5004 over 1 year, not funded)

VCU CCTR Endowment Fund   2024
Functional modeling of the catecholamine hormones response to stress
PI: Laura Ellwein Fix, PhD. ($49,385 over 18 months, not funded)

NSF Improving Undergraduate STEM Education (IUSE)   2023
Collaborative Research: Researching institutional transformation in the context of interdisciplinary STEM partnerships to support student transfer of mathematical knowledge. Multi-institutional grant.
Co-PI, VCU. ($100,000 over 4 years, not funded)

VCU Quest Fund   2023
Novel Complex Adrenal Hormone Modeling in Healthy Subjects
PI: Benjamin Nicolson. Role: Co-PI. ($50,000 over 18 months, not funded)

DoD Peer Reviewed Medical, Discovery Award   2023
Modeling Adrenal Hormone Response to Acute Hemorrhagic Shock and Resuscitation in a Swine Model.
PI: Benjamin Nicolson, MD. Role: Co-I. ($242,818 over 1 year, not funded)

Simons Foundation Travel Support for Mathematicians   2023
Modeling dynamics underlying cardiopulmonary disease
PI: Laura Ellwein Fix, PhD. ($35,000 over 5 years, not funded)

NSF Improving Undergraduate STEM Education (IUSE)   2022
Collaborative Research: Researching institutional transformation in the context of interdisciplinary STEM partnerships to support student transfer of mathematical knowledge. Multi-institutional grant.
Co-PI, VCU. ($140,000 over 4 years, not funded)

VCU Breakthroughs Fund   2022
Designing a Novel Hypothalamic-Pituitary-Adrenal Axis Sensor System and Mathematical Modeling for Clinical Applications.
PI: Benjamin Nicholson, MD. Role: Co-PI. ($200,000 over 18 months, not funded)

Simons Foundation Collaborative Grants for Mathematicians   2022
Modeling dynamics underlying cardiopulmonary disease
PI: Laura Ellwein Fix, PhD. ($35,000 over 5 years, not funded)

Simons Foundation Collaborative Grants for Mathematicians   2020
Modeling dynamic responses in cardiorespiratory physiology: a collaborative approach
PI: Laura Ellwein Fix, PhD. ($35,000 over 5 years, not funded)

Jeffress Trust Fund (limited submission preproposal)   2018
Computational investigation of biomarkers impacting risk of lung volume loss in premature infants
PI: Laura Ellwein Fix, PhD. ($100,000 over 12 months, not invited to submit)

National Institutes of Health – NICHD, R03   2018
Assessment of chest wall compliance in extremely preterm infants: integrated modeling and clinical approach. PI: Laura Ellwein Fix, PhD. ($100,000 over 2 years, not funded).

American Thoracic Society Foundation Research Program (letter of intent)   2018
Computational assessment of chest wall compliance and respiratory mechanics in preterm infants
PI: Laura Ellwein Fix, PhD. ($40,000 over 1 year, not invited to submit)

Jeffress Trust Fund (limited submission preproposal)   2017
Improving chest wall rigidity in very preterm infants: integrated modeling and device development.
PI: Laura Ellwein Fix, PhD. ($100,000 over 12 months, not invited to submit)

Undergraduate Research Opportunities Program Fellowship (VCU)   2017
Modeling lung volume recruitment in a computer model of breathing dynamics.
PI: Lauren Linkous (student). ($2,000 to LEF and student, not funded)

Presidential Research Quest Fund (VCU)   2017
Theoretical process modeling of blood flow regulation in the microcirculation.
PI: Laura Ellwein Fix, PhD. ($36,167 over 18 months, not funded)

Jeffress Trust Fund (limited submission preproposal)   2016
Modeling the contribution of chest wall stiffness to lung function in very preterm infants.
PI: Laura Ellwein, PhD. ($100,000 over 12 months, not invited to submit)

Presidential Research Quest Fund (VCU)   2016
Theoretical process modeling of blood flow regulation in the microcirculation.
PI: Laura Ellwein, PhD. ($43,000 over 18 months, not funded)

American Heart Association Collaborative Sciences Award (letter of intent)   2016
Microvascular oxygen transport and its regulation
PI: Roland Pittman, PhD. ($750,000 over 3 years, not invited to submit)

Simons Foundation Investigators in the Mathematical Modeling of Living Systems   2015
A new paradigm for local blood flow regulation: an integrated experimental and computational modeling approach. PI: Laura Ellwein, PhD. ($500,000 over 5 years, not funded)

Jeffress Trust Fund (limited submission preproposal)   2015
Computational modeling of a new (NO/O2-)-based paradigm for local blood flow regulation.
PI: Laura Ellwein, PhD. ($100,000 over 12 months, not invited to submit)

W.M. Keck Foundation (limited submission concept paper)   2014
A new paradigm for regulation of blood flow in health and disease.
PI: Roland Pittman, PhD. (not invited to submit)

American Heart Association Collaborative Sciences Award (letter of intent)   2013
A new paradigm for local control of blood flow: experimental and theoretical studies
PI: Roland Pittman, PhD. ($750,000 over 3 years, not invited to submit)

Jeffress Trust Fund (limited submission preproposal)   2013
Local regulation of blood flow: an integrated experimental and computational modeling approach.
PI: Laura Ellwein, PhD. ($100,000 over 12 months, not invited to submit)

PROFESSIONAL MEETING AND CONFERENCE PRESENTATIONS

SIAM Life Sciences Annual Meeting, *Parameter Identifiability of a Respiratory Mechanics Model in a Preterm Infant.* Portland, OR – June 2024.

Symposium on Biology and Ecology Education and Research (Presented by Helen Harris*), *Modeling physiological response to stress via hormone and catecholamine production.* Richmond, VA – November 2023.

Symposium on Biology and Ecology Education and Research, *Modeling-Forward Initiatives in Differential Equations.* Richmond, VA – November 2023.

AWM Research Symposium, *Computational Models of pulmonary mechanics in the preterm infant.* Atlanta, GA – October 2023.

Society for Mathematical Biology (Poster presented by Richard Foster*)**,** *Thoracoabdominal asynchrony in a virtual preterm infant: computational modeling and analysis.* Columbus, OH – July 2023.

BAMM! 2023 (Presented by Richard Foster*)**,** *Thoracoabdominal asynchrony in a virtual preterm infant: Computational modeling and analysis.* Richmond, VA – May 2023.

MAA MathFest, *An Interdisciplinary Initiative towards Modeling-First Differential Equations.* Philadelphia, PA – August 2022.

Biology and Medicine through Mathematics (Poster presented by Richard Foster), *Thoracoabdominal asynchrony in a virtual preterm infant: computational modeling and analysis.* Richmond, VA – May 2022.

VCU Poster Symposium for Undergraduate Research and Creativity (Poster presented by Mariana Fernandes Gragnani). *Modeling cerebrovascular reactivity in a computer model of cardiovascular dynamics.* Richmond, VA – April 2022.

Society for Mathematical Biology (Presentation by Richard Foster), *Modeling breathing asynchrony in the preterm infant.* Virtual – June 2021.

Shenandoah Undergraduate Mathematics Conference at JMU (Presentation by Richard Foster), *Mathematical model of asynchronous respiratory mechanics.* Virtual -- December 2020.

SIAM Life Sciences Annual Meeting (Mini-symposium presentation, organizer), *Towards patient-specific modeling of pulmonary ventilation dynamics in the preterm infant.* Virtual – June 2020.

AMS Southeastern Sectional Meeting (Invited special session presentation), *Dynamics of spontaneous breathing in the extremely preterm infant.* Charlottesville, VA – 2020 (cancelled).

Biology and Medicine through Mathematics (Presentation), *Parameter identifiability of a dynamical system model of breathing in a preterm infant.* Richmond, VA – May 2019.

VCU Poster Symposium for Undergraduate Research and Creativity (Poster presented by Jeffrey Evans). *Modeling breathing mechanism in a computer model of respiratory mechanics in preterm infants.* Richmond, VA – April 2019.

Joint Mathematics Meetings (Invited Mini-symposium presentation), *Parameter identifiability of a respiratory mechanics model in an idealized preterm infant.* Baltimore, MD – January 2019.

Society of Industrial and Applied Mathematics (SIAM) Annual Meeting (Invited Mini-symposium presentation), *Mathematical models of autoregulation in the renal and cerebral circulations.* Portland, OR – July 2018.

SIAM Southeastern Atlantic Sectional Conference (Invited Mini-symposium presentation), *Modeling and parameter estimation of pulmonary dynamics in the premature infant.* Chapel Hill, NC – March 2018.

Society for Mathematical Biology (SMB) Annual Meeting (Mini-symposium presentation, co-organizer), *Impact of chest wall compliance on respiratory dynamics.* Salt Lake City, UT – July 2017.

Pediatric Academic Societies Meeting (Poster, presented by Rozycki HJ), *Variable chest wall compliance in ELBW babies: a computational model.* San Francisco, CA – May 2017.

Biology and Medicine through Mathematics (Presentation, co-organizer), *A computational model of variable chest wall compliance in extremely preterm infants.* Richmond, VA – May 2017.

Lloyd Roeling UL Lafayette Mathematics Conference: Applied Mathematics (Invited presentation) *Modeling the effect of increased chest wall compliance on respiratory dynamics.* Lafayette, LA – November 2016.

38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (Poster), *Modeling increased chest wall rigidity in the premature infant.* Orlando, FL – August 2016.

SIAM – Life Sciences Annual Meeting (Invited Mini-symposium presentation), *Computational modeling of a new paradigm for local blood flow regulation.* Boston, MA – July 2016.

SIAM Annual Meeting -- Association for Women in Mathematics Workshop (Invited Mini-symposium Presentation)**,** *Modeling respiratory dynamics in the premature infant.* Boston, MA – July 2016.

SMB Annual Meeting (Invited Mini-symposium presentation) *Translating Near Infrared Spectrocopy (NIRS) O_2 Saturation Data for the Noninvasive Prediction of Spatial and Temporal Hemodynamics during Exercise.* Atlanta, GA – July 2015.

Mathematical Biosciences Institute (MBI) Workshop: "From Molecular to Systems Physiology" (Presentation, co-organizer), *Image-based 3D quantification and reconstruction of coronary artery morphology in the context of stenting as treatment of cardiovascular disease.* Columbus, OH – May 2014.

Institute for Computational and Experimental Research in Mathematics (ICERM) Workshop: "From the Clinic to Partial Differential Equations and Back: Emerging challenges for Cardiovascular Mathematics" (Poster), *Image-based quantification of left coronary artery bifurcation morphology and implications for stent design.* Providence, RI – January 2014. (Received ICERM Travel Award).

The 6th International Symposium on Biomathematics and Ecology: Education and Research (Invited Mini-symposium Presentation), *Coronary morphology quantification for bifurcating stent design.* Arlington,VA – October 2013.

The 16th Annual Society for Cardiac Magnetic Resonance Scientific Sessions (Poster), *Quantification of Thoracic Aorta Blood Flow by Magnetic Resonance Imaging during Supine Cycling Exercise of Increasing Intensity.* San Francisco, CA – February 2013.

The 3rd International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease (Poster and Presentation), *Translating near-infrared spectroscopy O_2 saturation data for the non-invasive prediction of spatial and temporal hemodynamics during exercise.* Palo Alto, CA – May 2012.

Biomedical Engineering Society (BMES) Annual Meeting (Poster, presented by Quam DJ), *Mobile virtual reality system for cardiovascular CFD analysis*. Hartford, CT – October 2011.

International Congress on Industrial and Applied Mathematics (ICIAM) (Presentation), *Optical coherence tomography for patient-specific stented coronary artery reconstruction and shear stress analysis*. Vancouver, BC – July 2011. (Received ICIAM Postdoc Travel Award)

BMES Annual Meeting (Presentation), *Spatial characterization of coronary artery pathologies using optical coherence tomography*. Austin, TX – October 2010.

BMES Annual Meeting (Poster, presented by Wang H), *Vascular changes in type 2 diabetes mellitus: application to restenosis after stenting*. Austin, TX – October 2010.

SIAM Life Sciences Annual Meeting (Presentation), *Spatial Characterization of Coronary Artery Pathologies using Optical Coherence Tomography*. Pittsburgh, PA – July 2010.

BMES Annual Meeting (Poster), *Influence of aortic valve morphology on arch hemodynamics after successful aortic coarctation repair*. Pittsburgh, PA – October 2009.

SIAM Conference on Imaging Sciences (Presentation), *Sensitivity analysis applied to cardiovascular models*. San Diego, CA – July 2008. (Received SIAM Student Travel Award)

SIAM Mathematics in Industry Conference (Presentation), *Blood pressure and blood flow variation during hyperventilation*. Philadelphia, PA – October 2007. (Received SIAM Student Travel Award)

MBI Workshop: "Blood Flow in the Microcirculation: Function, Regulation, and Adaptation" (Poster), *Blood pressure and blood flow variation during postural change from sitting to standing: model reduction and improvement*. Columbus, OH – January, 2007.

Applications of Analysis to Mathematical Biology Conference (Poster), *Blood pressure and blood flow variation during hyperventilation*. Durham, NC – May 2007.

SIAM - Southeast Atlantic Section Conference (Presentation), *Modeling autonomic and autoregulation of blood flow during postural change from sitting to standing*. Charleston, SC – 2005. (Best Graduate Student Presentation – Applications)

INVITED SEMINARS AND COLLOQUIA

RIT, Mathematical Modeling Seminar, *Modeling and Parameterization of Respiratory Dynamics in the Preterm Infant*. Rochester, NY – October 2024.

VCU, Department of Mathematics and Applied Mathematics Biomath Seminar, *Patient-specific modeling and parameter estimation of cardiovascular and respiratory dynamics*. Richmond, VA – October 2023.

VCU, Department of Mechanical and Nuclear Engineering Research Seminar, *Patient-specific modeling and parameter estimation of cardiovascular and respiratory dynamics*. Richmond, VA – March 2023.

Children's Hospital of Richmond EPIC@CHRI Section Meeting, *Computer Models of Infant Breathing*. Richmond VA – February 2022.

Longwood University, Mathematics and Computer Science Colloquium Series, *Patient-specific modeling of cardiovascular and respiratory dynamics*. Farmville, VA – April 2020 (cancelled, COVID).

VCU, Department of Chemical and Life Science Engineering Graduate Research Seminar, *Toward patient-specific modeling of respiratory mechanics in the preterm infant*. Richmond, VA – September 2019.

University of Richmond, Department of Mathematics and Statistics Colloquium, *Parameter identifiability of a respiratory mechanics model in an idealized preterm infant.* Richmond, VA – January 2019.

The College of New Jersey, Department of Mathematics and Computer Scienc Colloquium, *Patient-specific modeling and parameter estimation of cardiovascular and respiratory dynamics.* Trenton, NJ – November 2017.

James Madison University, Department of Mathematics and Statistics Colloquium, *Patient-specific modeling of cardiovascular and respiratory dynamics.* Harrisonburg, VA – February 2016.

North Carolina State University, Biomathematics Seminar, *Translating near-infrared spectroscopy O_2 saturation data for the noninvasive prediction of spatial and temporary hemodynamics during exercise.*, Raleigh, NC – November 2015.

VCU, Department of Physiology and Biophysics Seminar, *Patient-specific modeling of cardiovascular and respiratory dynamics during hypercapnia.* Richmond, VA – May 2015.

William and Mary, Biomathematics Seminar, *Image-based quantification of left coronary artery bifurcation morphology and implications for stent design.* Williamsburg, VA – March 2014.

Christopher Newport University, Mathematics Colloquium, *Patient-specific 3D Reconstruction of a Stented Coronary Artery for Analysis of Cardiovascular Disease.*, Newport News, VA – March 2013.

University of Delaware, Applied Mathematics Seminar, *Patient-specific 3D Reconstruction of a Stented Coronary Artery for Analysis of Cardiovascular Disease.* Newark, DE – October 2012.

North Carolina State University, Biomathematics Seminar, *Optical coherence tomography for patient-specific 3D artery reconstruction and evaluation of wall shear stress in a left circumflex artery.* Raleigh, NC – September 2011.

Marquette University, Mathematics, Statistics and Computer Science Colloquium, *Patient-specific 3D artery reconstruction and evaluation of wall shear stress in a coronary artery using medical imaging and graph theory.*, Milwaukee, WI – April 2011.

Froedtert Hospital, Cardiology Grand Rounds, *Recent progress towards advanced quantification of spatial and temporal thoracic aorta hemodynamics.* Milwaukee, WI – December 2009.

Children's Hospital of Wisconsin, Cardiovascular Research Focus Meeting, *Recent progress towards advanced quantification of spatial and temporal thoracic aorta hemodynamics.* Milwaukee, WI – August 2009.

Marquette University, Biomedical Engineering Brotz Seminar, *Cardiorespiratory regulation modeling and parameter identification.* Milwaukee, WI – February 2008.

Medical College of Wisconsin, Biotechnology and Bioengineering Center, *Cardiorespiratory regulation modeling and parameter identification.* Milwaukee, WI – December 2007.

OTHER MEETINGS

Society of Mathematical Biology Annual Meeting, (Virtual attendee, June 2021)

RTG Workshop at North Carolina State University: "Parameter Estimation for Mechanistic Biological Models" (Attendee, 2019).

MBI Workshop: "Control of Disease: Personalized Medicine across Heterogeneous Populations" (Attendee)

VCU Biomathematics Seminar, *Modeling infant respiratory dynamics.* Richmond, VA – October 2016.

VCU Biomathematics Seminar, *Translating near-infrared spectroscopy O2 saturation data for the noninvasive prediction of spatial and temporary hemodynamics during exercise.* Richmond, VA – November 2015.

VCU Biomathematics Seminar, *Patient-specific 3D reconstruction of a stented coronary artery for analysis of cardiovascular disease.* Richmond, VA – September 2012.

American Institute of Mathematics Workshop: "Short-Term Cardiovascular-Respiratory Control Mechanisms" (Invited attendee). Palo Alto, CA – October 2006.

North Carolina State University, Graduate Student Seminars (Presenter and attendee), Biomathematics, Numerical Analysis, and Applied Mathematics. 2003-2007.

Research Group on Heart-Brain Control Systems Meetings (Invited attendee). Copenhagen, Denmark – October 2005 and Raleigh, NC – August 2006.

SAMSI Workshops (Participant), "Multiscale Model Development and Control Design," Spring 2004 and "Computational Biology and Infectious Disease," Fall 2004.

TEACHING EXPERIENCE and ACTIVITIES

Virginia Commonwealth University
Asst /Assoc Professor, Department of Mathematics and Applied Mathematics   2012 - present
Sloan Pre-tenure Leave   F14

   MATH 255: Introduction to Computational Mathematics – S16, F16, S18, S19, F20
   MATH 301: Differential Equations – F12 (x2), F13, F15, F17, F19, F21, F23, F24
   MATH 380: Introduction to Mathematical Biology – F17, S18, S21
   MATH 533 (now 433): Partial Differential Equations I – S13, S14 (x2), S15, S16, S17
   MATH 435 (prev 391): Mathematical and Computational Modeling – S19, S20, S23
   MATH 415: Numerical Methods – F18, F19, F21, S24
   MATH 490: Mathematical Expositions – S20
   MATH 515: Numerical Analysis I – F13, S23, S24
   MATH 585: Biomathematics Seminar: Physiological Modeling – S15, S17, S19, F23
   MATH 615: Iterative Numerical Methods (graduate)* -- F15, F16, F18, F20, F22, exp. F24
   MATH 690: Research Seminar (graduate) – S21
   MATH 769: Topics in Parameter Estimation* – F22
   Guest lecture for MATH 490: Mathematical Expositions – S14, F15, F16, S18, S19
   Guest lecture for SYSM 681: Research Exploration – S21, S23, S24
   Guest lecture for MATH 691: Special Topics in Mathematics – S19, S20

   * New course: MATH 615, Numerical Analysis
       Course description: Theoretical development of solutions to large linear and nonlinear systems by iterative methods with consideration given to optimal implementation. Linear methods included stationary iterative methods (Jacobi, Gauss-Seidel, fixed point/Picard), Krylov methods (CG, CGNR/CGNE, GMRES, Preconditioners), and linear least squares. Nonlinear methods included the general fixed point iteration, Newton's Method, chord, secant, inexact Newton, and quasi-Newton methods. Convergence, accuracy, and stability were covered in depth. Applications including parameter estimation were considered.

Novelty: MATH 615 has been in the course bulletin for several years but was taught for the first time at VCU by me in Fall 2015, then repeated in Fall 2016 and every other year. It is a combination of extensive theory and implementation of algorithms used in much of the current research in mathematical modeling. I developed lesson plans and assessments from scratch which including both analytical and computational assignments, projects, and tests.

* New course: MATH 769, Topics in Parameter Estimation

Course description: *Parameter estimation* is the process of computing a model's parameter values from measured data. This course focused on identifiability, sensitivity analysis, uncertainty quantification, numerical methods, and use in applications. Topics included local derivative-based sensitivity analysis, variance-based global sensitivity analysis, and gradient- and direct methods for optimization.

Novelty: This was a joint effort with Angela Reynolds to support the content needs of several SYSM PhD and applied math MS students. We each incorporated complimentary expertise from our own research programs and asked the students to analyze published models from the literature.

Curriculum Development

NSF Collaborative Research, DUE-1625557   2020 -- 2023

National Consortium for Synergistic Undergraduate Mathematics via Multi-institutional Interdisciplinary Teaching Partnerships (SUMMIT-P). Co-PI: Rebecca Segal.

MATH 301 curriculum development. Senior Personnel: $10,000 over three summers.

Marquette University

Guest Lecturer (GL) and Lab Coordinator (LC), Dept of Biomedical Engineering   2008 – 2014

BIEN 4400/5400: Transport Phenomena (GL and LC)
BIEN 4720/5720: Cardiopulmonary Mechanics (GL)
BIEN 5320: Biomedical Instrumentation Design (GL)

University of Detroit Mercy

Guest Lecturer, College of Engineering and Science   2019

ENGR 1400: Introduction to Biomedical Engineering

Milwaukee School of Engineering

Adjunct Instructor, Department of Mathematics   2010 – 2012

MA125: Algebra I
MA127: Algebra II

North Carolina State University

Instructor (I) and Guest Lecturer (GL), Department of Mathematics   2003 – 2008

MA 111: Precalculus Algebra and Trigonometry (I)
MA 121: Elements of Calculus (I)
MA 231: Calculus for Life and Management Sciences B (I)
MA 241: Calculus II (I)
MA 432: Mathematical Models in Life and Social Sciences (GL)

STUDENT ADVISING AND MENTORING

Virginia Commonwealth University

<u>PhD Advisees</u>
Richard Foster, SYSM (co-advise with Cheng Ly)   exp. 2026
  Modeling and Parameter Estimation of Neurorespiratory Dynamics

Helen Harris, SYSM (co-advise with David Chan)   exp. 2026
  Modeling and Parameter Estimation in Health Systems

<u>MS Advisees</u>
Kylee Hartman-Cabellero, Applied Mathematics   May 2024

<u>Graduate Committees</u>
Jordana O'Brien, PhD in Mathematical Modeling (Rochester Institute of Technology**)**   Fall 2024
  Hybrid Design Approaches for Reconfigurable EM Structures.
Jonathan Lundquist, PhD in Electrical and Computer Engineering   Spring 2024
  A Novel Approach to Predicting Particle Deposition in a Human Lung Using a Lumped, Oscillatory Respiratory Model
Kelly Reagan, PhD in Systems Modeling and Analysis   Spring 2022
  Mathematical Models of Infection Prevention Programs in Hospital Settings.
Molly Laird, PhD in Mechanical Engineering (University of Detroit – Mercy)   Spring 2022
  Assessment of Pediatric Pressure Distribution to Advance the Design of Pressure Redistribution Surfaces.
Sarah Minucci, PhD in Systems Modeling and Analysis   Spring 2021
  Mathematical Modeling of Lung Inflammation: Macrophage Polarization and Ventilator-Induced Lung Injury with Methods for Predicting Outcome.
Elora Frye, MS in Applied Mathematics   **S**pring 2018
  Material Thermal Property Estimation of Fibrous Insulation: Heat Transfer Modeling and the Continuous Genetic Algorithm.
Jeremy Myers, MS in Applied Mathematics   Summer 2017
  Fluid Dynamics in a Terminal Alveolar Airway: Validation and Proof-of-Concept in OpenFOAM.
Marcella Torres, MS in Applied Mathematics   Summer 2015
  A Comparison of Obesity Interventions Using Energy Balance Models.

<u>Undergraduate Students</u>
Mariana Fernandes Gragnani, BS in Applied Mathematics and Biomedical Engineering   2021 – 2023
    Summer research (UROP)
Richard Foster, BS in Applied Mathematics, MS in Mathematics (MS S23)   2020
    Summer and continued research (UROP)
Jeffrey Evans, BS in Biomathematics, MS in Mathematics   2018
    Summer and continued research (UROP)
Lauren Linkous, BS in Electrical Engineering, current PhD candidate in EE   2016 - 2017
    Summer and continued research (funded by Faculty Council award)

<u>Reference letters</u>
Jeremy Myers (PhD, computer science)
Caroline Springer (PhD, applied mathematics)
Hanqiu Tan (PhD, applied mathematics)

Lauren Linkous (PhD, biomedical engineering)
John Grant (MS, mathematics)
Noor Kuwaifi (MS, statistics)
Brian Byun (VCU Honors College continuing scholarship)
Prerna Yadav (VCU School of Medicine / Honors College preferred applicant track)
Tatenda Ndambakuwa (VCU merit scholarships, Tisdale Fellowship)
Vicky Patel (Dental school)
Scott Cohen (REU at North Carolina State University)
Hieu Hoang (VCU Engineering tutoring services)
Hannah Browning (MS, computational applied mathematics)
Mackenzie Sleigh (MS, data science)
Jeffrey Evans (MS and PhD, mathematics)
Sahib Singh (Medical school)
Patrick Gorman (MS, data science)
Madeline Boyes (VCU math undergraduate TA)
Richard Foster (MS, mathematics)
Diditta Rizk (multiple graduate programs)
Mariana Fernandes Gragnani (VCU merit scholarships, medical school)
Kate Javanillo (PhD, systems modeling and analysis
Cody Cline (CURE summer program 2023)
Roberto Estrada (PhD, systems modeling and analysis)
Kylee Hartman-Cabellero (PhD, computational mathematics)
Anna Zittle (GSMMC summer program 2024)

<u>Senior Capstone Design, School of Engineering</u>
Ariana DeCastro, Chelsee Sales, Hanna Teshome, Sarah Robertson   2017-2018
    Mentor, *Increasing chest expansion volume for extremely low birthweight babies.*
    Team project chosen as finalist in BMES Senior Design Competition, 2018.

Marquette University

<u>Graduate Committees</u>
Ali Aleiou, MS in Biomedical Engineering   Aug 2017
    Evaluation of Multiple Wall Shear Stress Indices to Uncover the Stimuli for Restenosis and Malapposition
    in Patient-Specific Stented Coronary Arteries Reconstructed Using Optical Coherence and Computed
    Tomography
Joshua Hughey, MS in Biomedical Engineering   May 2014
    Computational Evaluation of Shear Stress and Restenosis in Stented Coronary Arteries using Optical
    Coherence Tomography.
Sung Kwon, MS in Biomedical Engineering   Dec 2013
    Quantification of Local Hemodynamic Alterations Caused by Virtual Implantation of Three
    Commercially-Available Stents for the Treatment of Aortic Coarctation.
David 'DJ' Quam, MS in Biomedical Engineering   May 2012
    Advanced Visualization and Intuitive Interface Systems for Biomedical Applications.
Timothy Gundert, MS in Biomedical Engineering   Dec 2011
    Improving Cardiovascular Stent Design Using Patient-specific Models and Shape Optimization.
Sara (Nomeland) Sherman, MS in Biomedical Engineering   Aug 2010
    Image-based Quantification Workflow for Coronary Morphology: A Tool for Use in Next-Generation
    Bifurcation Stent Design.

Ronak Dholakia, MS in Biomedical Engineering   Dec 2009
Numerical Modeling of Hemodynamics in the Thoracic Aorta and Alterations by Dacron Patch Treatment of Aortic Coarctation.

North Carolina State University

Graduate Students

Mitchel Colebank, PhD in Biomathematics   2018 – 2021
Mentor, senior author for *Influence of image segmentation on one-dimensional fluid dynamics predictions in the mouse pulmonary arteries.*

Undergraduate Students

Cheryl Zapata-Allegro, BS in Biomedical Engineering and Applied Mathematics   2007 - 2008
Summer and continued research. Received PhD at U. Utah in 2016.

NC State Research Experience for Undergraduates in Modeling and Industrial Mathematics
Supported by NSF grant #DMS0552571.   2005, 2006, and 2008

SERVICE AND OUTREACH

Professional Activities

Organizing Committee, Biology and Medicine through Mathematics Conference   2016-2024
Screened applicants, assisted plenary speaker, and facilitated on-site daily events. (VCU)

Grant Review Panelist, Department of Defense   2018, 2020, 2022-23
Congressionally Directed Medical Research Programs

Team Co-Leader, Collaborative Workshop for Women in Mathematical Biology   June 2022
"Modeling Neonatal Respiratory Mechanics related to Ventilator-induced Lung Injury"

Minisymposium Organizer, SIAM – Life Sciences Meeting   June 2020
"Computational Modeling in Respiratory System Pathophysiology"

Appointed Member, AWM Meetings Committee   Feb 2018 – Jan 2021

Appointed Member, AWM SIAM Committee   Feb 2015 – Jan 2021
Co-organizer, AWM Workshop at SIAM Annual Meeting, 2016-2018

Minisymposium Co-organizer, Society of Mathematical Biology Meeting   July 2017
"Modeling Transport and Control Processes in Systems Physiology"

Workshop Co-organizer, Mathematical Biosciences Institute   May 2014
"From Molecular to Systems Physiology". Recruited participants, facilitated daily events.

Professional Memberships   Various
Society for Industrial and Applied Mathematics, Society for Mathematical Biology, Society for Cardiovascular Magnetic Resonance, Biomedical Engineering Society

Ad-hoc journal reviewer   Ongoing
Computer Methods and Programs in Biomedicine, Journal of Applied Mathematics, Journal of Biomechanical Engineering, International Journal of Computer Assisted Radiology and Surgery, International Journal for Numerical Methods in Biomedical Engineering, Magnetic Resonance Imaging, Mathematical Biosciences and Engineering, Medical Image Analysis, SIAM Undergraduate Research Online, Journal of the Royal Society Interface, Mathematical Biosciences, American Journal of Physiology – Heart and Circulatory Physiology, Frontiers, Journal of Applied Physiology, Cardiovascular Engineering and Technology, Annals of Biomedical Engineering, Spora: A Journal of Biomathematics, PLOS Computational Biology

ADVANCE-IT Grant Steering Committee   F19 – present

    Assess progress of grant objective, identify barriers to success, promote initiatives, encourage participation

General Education Assessment Committee   F19 – F21

    Create long-term university-wide plan for assessment of new GenEd 30 curriculum
    Spring 2021: Assessment Plan subcommittee
    Fall 2021: Quantitative Literacy subcommittee

Faculte Senate – Alternate   F23 – S24

Department Service

Executive Committee   F20 – F22, F24 – present

Biomath/Applied Math Committee   F12 – present

    Designed and approved biomath and applied mathematics curriculum changes, planned BAMM! conferences, hosted colloquium speakers

SYSM PhD Program Steering Committee   F22 – S24

Coordinator for MATH 301 Differential Equations   F20 – S24

Organizer, VCU Biomathematics Seminar   F16 – S19, F23 – S24

    Recruited and hosted guest speakers from regional institutions

Promotion and Tenure review Peer Committee   F21 – F22

Promotion review Peer Committee (chair)   F20

Search / Hiring Committee for Tenure-track Faculty   F19 – S20

    Search for 2 positions at the assistant professor level in mathematical biology. Screened applicants, attended Skype interviews, facilitated and participated in on-site candidate interviews.

Tenure review Peer Committee   F19

Awards Committee (chair)   F18 – S19

    Chose department and college student awards, faciliated faculty nominations for college and university awards

Visitation Committee   F17 – S19

    Observed adjunct, instructor, and peer tenure-eligible faculty teaching and provided written evaluations

Undergraduate Curriculum Committee   F15 – S17

    Discussed and approved curriculum changes proposed by departmet subfields.

Search / Hiring Committee for Tenure-track Faculty   F15 – S16

    Search for 3 positions at the assistant professor level. Screened applicants, attended Skype interviews, facilitated and participated in 6 on-site candidate interviews.

Assessment Committee   F12 – S15, F16 – S18

    Activities to ensure alignment with accreditation expectations. Discussed wording of objectives, which courses delivered on objectives and at what level of proficiency, what materials were collected, and the design of rubrics for assessment.

Co-advisor, Women in Math Club   F13 – S16

    Applied for and received official VCU Student Organization status. Students organized receptions for graduating female majors, arranged career panel of females in the workplace, and hosted an end-of-year celebration banquet. Assisted with planning Sonya Kovalevsky Days including submission of a grant to Dominion Foundation.

Undergraduate Credentials Committee   F12 – S15

    Addressed graduation application issues, chose senior award winners

Colloquium Committee   F12 – S15
  Invited and hosted general audience colloquium speakers

Outreach
Career Day Presenter (W.W. Gordon Elementary School)   F21, F22
Room Assistant, Math Night (W.W. Gordon Elementary School)   S20
Organizing Committee, Sonya Kovalevsky Day   S13, F16, F17
  Coordinated logistics, recruited student volunteers and panelists, moderated Q&A panel, created
  biographical presentation, hosted mini-sessions, facilitated daily events

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PROFESSIONAL DEVELOPMENT

VCU – CTLE "Full Circle" Faculty Learning Community   Spring 2022
VCU ADVANCE-IT Pod Coaching Program   2021 -- 2024

Teaching
Center for Teaching and Learning Excellence 1-on-1 Consultation   Feb 2019
Center for Teaching Excellence Blackboard Workshops   2015
Center for Teaching Excellence Junior Faculty Mentorship Program   2013 – 2014
  Met several times with mentor Jennifer Stewart (Biology).
  Attended workshops: "Scholarly Teaching: In Pursuit of Excellence in your Teaching," "Developing
  a Teaching Portfolio," "Preparing for Promotion and Tenure", "Scholarly Teaching," and mid-year
  luncheon.

Research
Navigating the National Science Foundation Grant Process (VCU – CCTR)   May 2019
Building Skills for Grant Writing (VCU – CHS)   Apr 2019
Guided grant funding search meeting using PIVOT (VCU)   Feb 2013
NSF Day at the College of William and Mary   May 2013