

**Angela Reynolds  
Curriculum Vitae**

1015 Floyd Avenue  
Department of Mathematics and Applied Mathematics  
Richmond, VA 23284

Office: 804-828-6565  
E-mail: areynolds2@vcu.edu

**Education:**

**PhD in Mathematics**

2002-2008 University of Pittsburgh, Pittsburgh, PA

Advisor: Dr. G. Bard Ermentrout

Title: Mathematical Models of Acute Inflammation and a Full Lung Model of Gas Exchange with Inflammatory Stress.

**B.S in Mathematics with a minor in Asian Studies and completed pre-med requirements**

1998-2002 Loyola College of Maryland, Baltimore, MD

**Academic Experience:**

Current:

**Director of PhD Program: Systems Modeling and Analysis**

August 2018-Present, Virginia Commonwealth University (VCU)

**Associate Professor**

August 2014 –Present, VCU

Department of Mathematics and Applied Mathematics

*Maternity leave- Spring 2015, Fall 2018*

Previous

**Interim Assistant Chair and Director of Undergraduate Studies**

August-December 2017, VCU

Department of Mathematics and Applied Mathematics

**Director of Graduate Studies**

May 2015 –August 2017, VCU

Department of Mathematics and Applied Mathematics

**Assistant Professor**

August 2008 –August 2014, VCU

Department of Mathematics and Applied Mathematics

**Virginia Commonwealth University Reanimation Engineering Shock Center (VCURES), Co-Leader of Computational Medicine, 2009-2011**

**Provost Development Fund Fellow**

September 2007-April 2008 University of Pittsburgh

**Research Assistant**

Summer 2004, January 2005-August 2007, Summer 2008

University of Pittsburgh Medical School, *Department of Critical Care*, Pittsburgh, PA

**Summer school in Systems Biology Dynamics from Genes to Organism**

May 23-June 2, 2006, McGill University, Montreal, Canada.  
The Center of Nonlinear dynamics in Physiology and Medicine.  
Summer school in Systems Biology Dynamics from Genes to Organism

### Teaching Assistant

August 2002-January 2005 University of Pittsburgh, Department of Mathematics, Pittsburgh, PA

### Publications:

1. Sarah B. Minucci, Rebecca L. Heise, F. J. Kamga Gninzeke, Michael S. Valentine, **Angela M. Reynolds**, *Mathematical modeling of ventilator-induced lung inflammation*, Journal of Theoretical Biology, Volume 526, 7 October 2021, [doi.org/10.1016/j.jtbi.2021.110738](https://doi.org/10.1016/j.jtbi.2021.110738)
2. Sarah B. Minucci, Rebecca L. Heise, **Angela M. Reynolds**, *Review of Mathematical Modeling of the Inflammatory Response in Lung Infections and Injuries*, Front. Appl. Math. Stat., 26 August 2020 <https://doi.org/10.3389/fams.2020.00036>
3. Heyrim Cho, Allison L. Lewis, Kathleen M. Storey, Rachel Jennings, Blerta Shtylla, **Angela M. Reynolds**, and Helen M. Byrne, *A Framework for Performing Data-Driven Modeling of Tumor Growth with Radiotherapy Treatment*, 2021, Peer-reviewed Book Chapter in Using Mathematics to Understand Biological Complexity, Springer's WBIO series.
4. Torres M, Wang J, Yannie PJ, Ghosh S, Segal RA, Reynolds AM. *Identifying important parameters in the inflammatory process with a mathematical model of immune cell influx and macrophage polarization*. PLoS Comput Biol. 2019 Jul;15(7):e1007172. doi: 10.1371/journal.pcbi.1007172. eCollection 2019 Jul. PubMed PMID: 31365522; PubMed Central PMCID: PMC6690555.
5. Aghasafari P, Heise RL, Reynolds A, Pidaparti RM. *Aging Effects on Alveolar Sacs Under Mechanical Ventilation*. J Gerontol A Biol Sci Med Sci. 2019 Jan 16;74(2):139-146. doi: 10.1093/gerona/gly097. PubMed PMID: 29746613; PubMed Central PMCID: PMC6333941
6. M. S. Valentine, P. A. Link, J. A. Herbert, F. J. Kamga Gninzeke, M. B. Schneck, K. Shankar, J. Nkwocha, **A. M. Reynolds**, R. L. Heise, *Inflammation and Monocyte Recruitment Due to Aging and Mechanical Stretch in Alveolar Epithelium are Inhibited by the Molecular Chaperone 4-Phenylbutyrate*, Cellular and Molecular Bioengineering, available online 19 June 2018, <https://doi.org/10.1007/s12195-018-0537-8>
7. Marcella Torres, Eric T. Trexler, Abbie E. Smith-Ryan, **Angela Reynolds**, *A Mathematical Model of the Effects of Resistance Exercise-Induced Muscle Hypertrophy on Body Composition*, European Journal of Applied Physiology, December 2017, <https://doi.org/10.1007/s00421-017-3787-6>.  
*Correction to: A mathematical model of the effects of resistance exercise-induced muscle hypertrophy on body composition*, September 2018, Volume 118, Issue 9, pp 2035–2037- Minor revision that did not change the major findings of this publication. <https://doi.org/10.1007/s00421-018-3895-y>
8. JongWon Kim, Rebecca L. Heise, **Angela M. Reynolds**, Ramana M. Pidaparti, *Quantification of Age-Related Lung Tissue Mechanics under Mechanical Ventilation*, Medical Sciences, September 2017, <https://doi.org/10.3390/medsci5040021>
9. JongWon Kim, Rebecca L. Heise, **Angela M. Reynolds**, Ramana M. Pidaparti, *Aging Effects on Airflow Dynamics and Lung Function in Human Bronchioles*, PLOS ONE, August 2017, <https://doi.org/10.1371/journal.pone.0183654>
10. Joseph A. Herbert, Michael S. Valentine, Nivi Saravanan, Matthew B. Schneck, Ramana Pidaparti, Alpha A. Fowler III, **Angela M. Reynolds**, Rebecca L. Heise, *Conservative Fluid Management Prevents Age-*

*Associated Ventilator Induced Mortality*, Experimental Gerontology. August 2016,  
<https://doi.org/10.1016/j.exger.2016.05.005>

11. Angela Reynolds and Rebecca Segal, **Basic Biology and Clinical Aspects of Inflammation**, Frontiers in Inflammation Volume 1 Chapter 15: *Mathematical Modeling of Inflammation*, pages 427-450, 2016.  
<https://doi.org/10.2174/97816810822711160101>
12. Racheal L. Cooper, Robert F. Diegelmann, Rebecca A. Segal, **Angela Reynolds**, *Modeling the Effects of Systemic Mediators on the Inflammatory Phase of Wound Healing*, Journal of Theoretical Biology, Nov. 2014. <https://doi.org/10.1016/j.jtbi.2014.11.008>
13. Ramana M. Pidaparti, Matthew Burnette, Rebecca L. Heise, **Angela Reynolds**, *Analysis for Stress Environment in the Alveolar Sac Model*, J. Biomedical Science and Engineering, 2013, 6, 901-907,  
<http://dx.doi.org/10.4236/jbise.2013.69110>
14. **Reynolds, A.**, Koombua, K., Ward, K., Pidaparti, R., *Cellular Automata Modeling of Pulmonary Inflammation*, MCB, vol 9, no 2, pp 141-156, 2012, [doi:10.3970/mcb.2012.009.141](https://doi.org/10.3970/mcb.2012.009.141)
15. Segal, R., Diegelmann, R., Ward, K., **Reynolds A.**, *A Differential Equation Model of Collagen Accumulation in a Healing Wound*, 2012, Bulletin of Mathematical Biology, [DOI 10.1007/s11538-012-9751-z](https://doi.org/10.1007/s11538-012-9751-z).
16. John W. Cain & **Angela M. Reynolds**, *Ordinary and Partial Differential Equations*, an Introduction to Dynamical Systems, VCU Mathematics Textbook Series, 2010
17. **Reynolds, A.**, Ermentrout, G. B., Clermont, G., [A Mathematical Model of Gas Exchange Under Inflammatory Stress](https://doi.org/10.1016/j.jtbi.2010.01.011), 2010, J. Theor. Biol. 264 (2), 161-173. doi: 10.1016/j.jtbi.2010.01.011
18. N.B. Menke, J.W. Cain, **A.M. Reynolds**, D.M. Chan, R.A. Segal, T.M. Witten, D.G. Bonchev, R.F. Diegelmann, and K.R. Ward, 2009, *An In Silico Approach to the Analysis of Acute Wound Healing*, Wound Repair and Regeneration. Vol 18, Issue 1, 105-113. <https://doi.org/10.1111/j.1524-475X.2009.00549.x>
19. Day, J., Rubin, J., Vodovotz, Y., Chow, C.C., **Reynolds, A.**, Clermont, G., 2006. *A reduced mathematical model of the acute inflammatory response: II. Capturing scenarios of repeated endotoxin administration*. J. Theor. Biol. 242, 237-256. [doi:10.1016/j.jtbi.2006.02.015](https://doi.org/10.1016/j.jtbi.2006.02.015).
20. **Reynolds, A.**, Rubin, J., Clermont, G., Day, J., Yodovotz, Y., Ermentrout, G. B., 2006. *A reduced mathematical model of the acute inflammatory response: I. Derivation of the model and analysis of anti-inflammation*. J. Theor. Biol. 242, 220-236. [doi:10.1016/j.jtbi.2006.02.016](https://doi.org/10.1016/j.jtbi.2006.02.016).

#### **Funded Grants:**

##### Research:

1. **Commonwealth Cyber Initiative**, \$249,445.00, 1/21-12/21  
Title: Smart Lung Sensor, Role: Co-Pi
2. **PeRQ (VCU)**, \$39,148, 7/17 – 12/18  
Title: The contribution of macrophages to disease progression, Role: Lead Co-PI
3. **R-01, National Institute of Aging (NIA)**, \$1,186,983, 08/12-05/17  
Title: Age Dependent Mechanical Ventilator-Induced Inflammation: Modeling & Experiments, Role: Lead Co-PI

**Administrative Supplement to R-01**, \$75,000, 4/2014-03/2016,

Title: Informationist Team Support of a Multi-scale, interdisciplinary Project, co-PI

4. **Jeffress Memorial Trust Fund Grant**, \$31,250, 05/2011-06/2013  
Title: Mathematical Modeling of the Effects of Systemic Cortisol and Estrogen on Wound Healing Treatments, Role: Lead Co-PI

Other:

1. **AWM Funding for WIMB workshop**: Funding for a follow up meeting for my WIMB group, 6/10/2021-6/11/2021, \$2100
2. **NSF- Conference Funding**, Funding for a BAMB! conference May 2019 at VCU, \$11,863  
*Conference Title*: BAMB!: Biology and Medicine Through Mathematics, Role: Lead Co-PI
3. **NSF- Conference Funding**, Funding for a BAMB! conference May 2018 at VCU, \$12,139.  
*Conference Title*: BAMB!: Biology and Medicine Through Mathematics, Role: Co-PI
4. **NSF- Conference Funding**, Funding for a BAMB! conference May 2019 at VCU, \$10,000.  
*Conference Title*: BAMB!: Biology and Medicine Through Mathematics, Role: Co-PI
5. **NSF- Conference Funding**, \$32,528 2/2013-7/2013: Funding for a conference that I co-organized held in March 2014 in Pittsburgh, PA, \$31,800.  
*Conference Title*: Nonlinear dynamics and stochastic methods: from neuroscience to other biological applications, Role: Co-PI

**Grants Under Review:**

1. **NIH R-21**, \$235,339  
Title: Predicting Pediatric Sickle Cell Disease Pain Episodes Using Mathematical Models Informed by Sleep, Role: Co-I
2. **NSF**, \$1,499,242  
Title: HRD Institute: ORCHARDS: Open Reef Collaborative Habitat Advancing Reproducible Data Science, Role: Co-I
3. **NSF S-STEM**, \$1,499,800  
Title: Educating STEM Undergraduates using Curricular and Co-curricular Activities, Role: Co-PI

**Abstracts and Presentations (Post-Tenure):**

1. **Society of Mathematical Biology, Virtual June 2021**  
Title: Mathematical modeling of lung inflammation from insult to recovery (Invited Mini-symposium, Oral Presentation).
2. **CAMBAM Seminar, McGill University, August 2020**  
Title: Modeling the Innate Immune- Invited talk virtual seminar talk.
3. **AMS Sectional Meeting at UVA Special session entitled “Celebrating Diversity in Mathematics” Charlottesville, VA March 2020–Cancelled due to COVID-**  
Title: Modeling the Innate Immune (Invited Mini-symposium, Oral Presentation).
4. **AMS sectional, Gainesville, Florida, November 2019**

Title: Mathematical modeling of an innate immune response model with macrophage polarization during mechanical ventilation and the early stages of atherosclerosis. (Invited Mini-symposium, Oral Presentation).

5. **Society of Mathematical Biology, Montreal, August 2019**  
Title: Analysis of an innate immune response model and the role of inflammation in atherosclerosis. (Invited Mini-symposium, Oral Presentation).
6. **Joint Mathematics Meeting, Baltimore, Maryland, January 2019**  
Title: The modeling of Ventilator-Induced Lung Injury focusing on age-dependent stretched-induced inflammation at the cellular level: an Agent Based Model and ODE model-my presentation (Invited Mini-symposium)
7. **AMS- Fall Eastern Sectional, Newark, Delaware, September 2018**  
Title: Parameter estimation and sensitivity analysis for a model of peritonitis focusing on the sequential immune cell response (contributed, Oral Presentation).
8. **SIAM-LS, Minneapolis, Minnesota, August 2018**  
Title: The Contribution of Macrophages to Disease Progression (Invited Mini-symposium, Oral Presentation).
9. **SIAM-SEAS, Charlotte, North Carolina, March 2018**  
Title: Multi-scale model of Ventilator-induced lung injury focusing on stretched-induced inflammation at the cellular level. (Invited Mini-symposium, Oral Presentation)
10. **Society of Industrial Mathematics-Life Sciences Conference, Boston, Massachusetts, 2016**  
Title: Computational Model of Ventilator-Induced Lung
11. **Christopher Newport University, Virginia Colloquium, October, 2015**  
Title: "The Effect of Systemic Estrogen and Cortisol on the Inflammatory Phase of Wound Healing."
12. **SIAM- Life Sciences, Charlotte, North Carolina, August 2014**  
Title: The Effect of Systemic Estrogen and Cortisol on the Inflammatory Phase of Wound Healing (Contributed talk)
13. **The 10th American Institute of Mathematical Society (AIMS) Conference on Dynamical Systems, Differential Equations and Applications, Spain, July 2014**  
Title: The Effect of Systemic Estrogen and Cortisol on the Inflammatory Phase of Wound Healing (Mini-symposium talk, invited)
14. **Mathematical Biology Workshop, Norfolk State University, April 2014**  
Title: An Introduction to Modeling Inflammation and computational tools for dynamical systems, (Workshop Presentation)
15. **SIAM: South Eastern Atlantic Sectional Conference, March 2014**  
Title: Agent Modeling of Stretch-Induced Immune Cell Recruitment (Contributed talk)
16. **Biomathematics Ecology: Education and Research Conference, October 2013**  
Title: Multi-Scale Modeling of Lung Inflammation (Mini-symposium talk)
17. **Gordon Research Conference, Lung Development, Injury & Repair, August 18-23, 2013**  
Title: Multi-Scale Modeling Framework for Lung Tissue Inflammation (Poster)

Presented by Students or Collaborators:

1. **Society of Mathematical Biology, Virtual June 2021**

- Title: Mathematical modeling of ventilator-induced lung inflammation (Invited Mini-symposium, Oral Presentation). *Presented by Sarah Minucci*
2. **SIAM-LS, Virtual June 2020**  
Title: The Effects of Mechanical Ventilation on Macrophage Activation: Mathematical Model and Parameter Estimation- (Invited Mini-symposium, Oral Presentation). *Presented by Sarah Minucci*
  3. **SIAM-LS, Virtual June 2020**  
Title: An Ode Model for the Role of Inflammatory Cells in Atherosclerosis- (Invited Mini-symposium, Oral Presentation). *Presented Rebecca Segal*
  4. **SIAM-LS, Virtual June 2020**  
Title: Parameter Estimation and Exploration in a Model of Immune Cell Interactions During Inflammation- (Invited Mini-symposium, Oral Presentation). *Presented by Marcella Torres.*
  5. **BAMM!, Richmond, VA, May 2019**  
Title: Development of a mathematical model for the role of inflammation in atherosclerosis- *Presented by Marcella Torres* (Poster Presentation).
  6. **Joint Mathematics Meeting, Baltimore, Maryland, January 2019- Collaborator, student and I presented multiple oral presentations**
    - a. Development of a mathematical model for the role of inflammation in atherosclerosis- presented by Rebecca Segal (Invited Mini-symposium)
    - b. Parameter estimation and predictive modeling in a model of peritonitis focusing on the sequential immune cell response.-presented by Marcella Torres (contributed talk)
    - c. Understanding the Role of Macrophages in Lung Inflammation Through Mathematical Modeling.- Sarah Minucci (contributed talk)
  7. **BAMM!, Richmond, VA, May 2018**  
Title: Parameter estimation for a model of peritonitis focusing on the sequential immune cell response (Oral Presentation). *Presented by Marcella Torres*
  8. **BAMM!, Richmond, VA, May 2018**  
Title: Investigating Smoke Exposure and Chronic Obstructive Pulmonary Disease (COPD) with a Calibrated Agent Based Model (ABM) of In Vitro Fibroblast Wound Healing (Oral Presentation). *Presented by J. Alex Ratti*
  9. **SIAM-SEAS, Charlotte North Carolina, March 2018**  
Title: Investigating Smoke Exposure and Chronic Obstructive Pulmonary Disease (COPD) with a Validated Agent Based Model (ABM) of In Vitro Fibroblast Wound Healing (Oral Presentation) *Presented by J. Alex Ratti*
  10. **SIAM-SEAS, Charlotte, North Carolina, March 2018**  
Title: Understanding the role of macrophages in lung inflammation through mathematical modeling (Poster Presentation). *Presented by Sarah Minucci- won poster award*
  11. **Vascular Discovery: From Genes to Medicine, Dec 2017**  
Title: Development and Validation of a Mathematical Model Representing Complex Cellular Interactions Within the Artery Wall: in Silico Approach to Test Targeted Interventions (Poster Presentation). *Presented by Marcella Torres*
  12. **BAMM! Richmond, Virginia, May 2017**  
Title: A Mathematical Model of the effect of Resistance Training on Body Composition (Oral Presentation). *Presented by Marcella Torres*
  13. **BAMM! Richmond, VA, May 2017**

Title: Modeling macrophage polarization during the inflammatory phase of wound healing (Poster Presentation). *Presented by Marcella Torres*

14. **BAMM! Richmond, VA, May 2016**

Title: A Comparison of Obesity Interventions Using Energy Balance Models (Poster Presentation). *Presented by Marcella Torres*

15. **BAMM! Richmond, VA, May 2016**

Title: A Computational Model Of Lung Fibroblast Migration With In Vitro Validation. (Poster Presentation). *Presented by James Ratti*

16. **American Society of Hematology, December of 2015**

Title: A Mathematical Model of Hematopoietic Stem Cell Transplantation and Analysis of the Effect of Drug Treatments on Transplantation in Patients with Lymphoma (poster presentation). *Presented by Racheal Cooper*

17. **15<sup>th</sup> Annual Early Career Technical Conference, The University of Alabama, Birmingham, ECTC 2015, Nov. 7-8, 2015.**

Title: "Airflow Characteristics in Adult Upper 9 Generations of Lung Model and Airway Changing (aging) effects under Ventilation Breathing," (Presentation and Proceedings). *Presented by JongWon Kim*

18. **ICCES 15, Reno, NV, July 20-24, 2015**

Title: Aging Effects on Tracheobronchial Whole Lung and Idealized Airways" (Keynote Presentation). *Presented by Ramana Pidaparti*

19. **Biomedical Engineering Society Conference, October 2014**

Title: Multiscale Model of Lung Inflammation (Podium Presentation). *Presented by Rebecca Heise*

20. **Biomedical Engineering Society Conference, October 2014**

Title: Age Related Changes in Pulmonary Mechanics and Inflammatory Response to Experimental Ventilator Induced Lung Injury (Podium Presentation). *Presented by Joseph Herbert*

21. **WCB: World Congress of Biomechanics Conference, July 6-11, 2014, Boston, MA**

Title: Agent Based Modeling of Strain-Induced Lung Inflammation (Podium Presentation). *Presented by Racheal Cooper*

22. **Biomathematics Ecology: Education and Research Conference, October 2013**

Title: A Mathematical Model for the Role of Macrophages and Neutrophils in Wound healing (Poster) *Presented by Racheal Cooper*

23. **Biomedical Engineering Society (BMES) Annual Meeting, September 25-28, 2013 in Seattle, Washington**

Title: Agent Based Modeling of Stretched Induced Lung Inflammation (Poster), *Presented by Joseph Herbert*

### **Workshops/Working Groups**

WIMB (Women in Mathematical Biology) Workshop at Institute for Pure and Applied Mathematics, Los Angeles, CA, June 2019

Member of the Low Dose Anthrax Working group at NIMBios: 2014-2020

### **Grants Unfunded (Post-Tenure):**

**NIH R-01**, \$2,164,191.00, submitted June 2020

Title: Targeting Age-Related Lung Injury Through Computationally Guided Senolytic Therapy, Role: co-PI

**NIH R-01**, \$1,707,752.00, submitted June 2020

Title: Diet-Dependent Development of Atherosclerosis: Experiments and Mathematical Modeling, Role: Lead Co-PI

**NSF** \$11,863, submitted: 9/2020 *Withdrawn due to Covid-19*

Title: Conference proposal: BAMM! Biology and Medicine through Mathematics!

**NSF S-STEM**, \$999,484, submitted 4/22/2020

Title: Collaborative Research: Educating STEM Undergraduates using Curricular and Co-curricular activities in Inclusion, Inquiry and Innovation, Role: Co-PI

**NSF** \$11,863, submitted: 10/2019 *Withdrawn due to Covid-19*

Title: Conference proposal: BAMM! Biology and Medicine through Mathematics!

**NSF S-STEM**, \$999,484, submitted 3/27/2019

Title: Educating STEM Undergraduates using Curricular and Co-curricular activities in Inclusion, Inquiry, and Innovation, Role: Co-PI

**NSF**, \$390,000, Submitted 12/2018

Title: Modeling inflammaging in lung injury, Role: Co-PI

**NIH R-21**, \$216,116.00, 9/2018-8/2020

Title: Modeling the Interplay Between Aging, COPD, and Mechanical Ventilation Using Inflammatory Cytokine Levels, Role: Co-PI

**NIH R-01**, \$3,582,779.00, 5/2018-4/2023

Title: Interplay of aging and mechanical ventilation in inflammatory cell activation: modeling and experiments, Role: Lead Co-PI

**NSF**, \$86,730, 6/2017-10/2019

Title: Conference proposal: BAMM! Biology and Medicine through Mathematics!

**NIH R-01**, \$2,040,787.00, 9/2015-8/2020

Title: Multi-Scale Modeling and Implementation of a Cell Therapy Approach for Emphysema, Role: Co-PI

**VCU CCTR Multi-School Grant**, \$129,400, 9/14-3/16

Title: Quantifying the Severity and Healing of Diabetic Foot Ulcers using Mathematics and Engineering Approaches, Role: Lead Co-PI

**NIH P-50**, \$8,100,000, 10/14-9/19

Title: CCaLM: Critical Care and Lipid Mediators, under review, Role: co-PI of the computational core.

**NIH R-01**, \$1,858,377.00, 9/2014-8/2019

Title: A multi-scale model of the emphysematous lung with experimental validation, Role: Co-PI

**NSF**, \$390,434, 9/2013-8/2016

Title: Propagation of lung fibrosis through multi-scale mechanotransduction, Role: Co-PI

**Jeffress Memorial Trust Fund**, \$99,819, 6/2013-2014

Title: Wound Healing in Trauma Patients: Modeling and Validation, Role: Lead Co-PI

**NSF/NIGMS**, \$1,979,127, 5/2013-4/2018

Title: Patient-Specific Treatment Protocol for Chronic Ulcers: Modeling and Validation, Role: Co-PI



## Courses Taught

*The teaching load for faculty in VCU's Department of Mathematics and Applied Mathematics is two courses in the Fall and two courses in the spring. Post-tenure I had a course reduction during the first year I was Graduate Director and each spring since I became PhD director. I had one additional course reduction due to other teaching related activities. I was also on two maternity leaves post-tenure, so I did not teach in Spring 2015 or Fall 2018.*

- Introduction to Contemporary Mathematics (MATH 131, Summer 2011)
- Pre-Calculus (MATH 151, Fall 2008, Summer 2012, Fall 2013)
- Calculus I (MATH 200, Spring 2009, Summer 2009, Summer 2017, Summer 2019, Summer 2020)
- Multivariate Calculus (MATH 307, Fall 2009, Spring 2010- half of the term, Fall 2012, Spring 2018)
- Differential Equations (MATH 301, Fall 2008, Spring 2009, Fall 2009, Spring, 2010, Summer 2012, Fall 2016, Fall 2020)
- Ordinary Differential Equations (MATH 532, Upper-Level Undergraduate/graduate, **wrote a low-cost textbook for this course with John. W. Cain**, Spring 2010, Fall 2011)
- Biomathematics Seminar (MATH 591 (now MATH 585), **Developed course materials** (STEM grant funded the development of this course), Spring 2010, Fall 2013, Fall 2016, Fall 2019).
- Computational Mathematical Biology (MATH 582, Spring 2012)
- Mathematical Biology I (MATH 640, Graduate Level- **developed course materials**, Fall 2010, Fall 2011, Fall 2013, Fall 2014, Spring 2019)
- Numerical Analysis I-II (MATH 515-516, First semester, Fall 2010, Fall 2012, Second semester, Spring 2011, Spring 2014 **developed projects for both courses**)
- Linear Algebra (MATH 310, Fall 2014)
- Introduction to Mathematical Biology (MATH 380, Fall 2015)
- Method in Applied Mathematics: Life Sciences MATH 581 (renumbered to MATH 481, Spring 2016- **Developed this course**, Spring 2017, Spring 2018)
- Introduction to Dynamical Systems (MATH 535, Fall 2016- **Developed this course**)
- Numerical Methods (MATH 415, Fall 2017)
- Systems Seminars (SYSM 681-683, Spring 2018, Fall 2019)
- Ordinary differential Equations (MATH 432, Fall 2019, Spring 2021)
- Numerical Analysis MATH 515- (Fall 2010, Spring 2020-redesigned)

## Advisees

- Masters- Courtney Henry, Racheal Cooper (2013), Michael Risley (2013), Mathew Rajotte (2014), Marcella Torres, James Ratti (BME) and Sarah Minucci (2017)- Curriculum changes in Fall 2017 has led to less masters theses.
- PhD Program- Racheal Cooper (2016), Marcella Torres (2019) Sarah Minucci (2021), Quintessa Hays (current), and Eric Scott (current).

## Other Teaching Activities:

- **Leaders in Inclusive learning program:** May 2021-August 2022
- **HHMI Inclusive Teaching Institute:** May 19, 2021-May 21, 2021
- **Creating Equitable Learning Opportunities Through Transparent Assignment Design," led by Dr. Mary-Ann Winkelmes:** April 2021 online workshop
- **Masters Committee Member (Post-Tenure):** Trenicka Rolle (Mechanical Engineering), Susan Kirk (Mathematics), Navpreet Saini (Biomedical Engineering)
- **PhD Committee Member (Post-Tenure):** Joseph Herbert (Biomedical Engineering), Lewis Scott (Biomedical Engineering), Michael Valentine (Biomedical Engineering), Franck Kamga Gninzeko (Biomedical Engineering), Tianchi Zhang (Systems Modeling and Analysis), Isabella Sanders (Systems Modeling and Analysis)

- **Faculty mentor for MATH 690 (research seminar) for numerous students**
- **Reading course-** Optimal control in Spring 2017
- **Independent studies/Directed Study**, I oversaw multiple independent study credits for a mathematics undergraduate and several graduate students.
- **Mentored research:** Patrick Gaskill (Fall 2021/Spring 2013), Shasta Truett (Summer 2012/Fall 2021)
- **Workshops offered by VCU's Center for Teaching Excellence,**
  1. "CTE Mentorship Orientation"- Sept. 23, 2008
  2. <sup>SEP</sup>"Creating a teaching portfolio and philosophy"- Sept. 29, 2008
  3. "Promotion and Tenure at VCU"- Oct. 10, 2008
  4. <sup>SEP</sup>"Obtaining External Funding"- Nov. 12, 2008
  5. Disruptive Student Brown Bag Lunch- Feb. 6, 2009
  6. Demonstrating Excellence in Teaching: Faculty Perspectives, Oct. 6, 2010.
  7. Workshop on Improving Lectures, Feb. 1, 2011.
- **TabletPC Program**, I applied for and was accepted to participate in this program. As a participant I was given a TabletPC to use for teaching and attended monthly CTE workshops and discussion on using a TabletPC (2009-2010 school year).

### Service at VCU

#### *Department Level:*

- PhD Steering committee- Spring 2011-present, expect for Fall 2017 & Spring 2018
- Academic Program Review committee- Spring 2020-present
- Chair PhD Steering committee -Fall 2018-present
- Search committee Life Sciences- Spring 2017
- Chair Tenure-track Search committee Mathematics- Spring 2020
- Graduate Affairs Committee: Fall 2012- Spring 2017, Spring 2019
- Chair Biomathematics and Applied mathematics-Fall 2014- Spring 2020
- Promotion and Tenure Committees Mathematics- Fall 2017, Fall 2018
- WINRS conference- organized student participation and travel- 2018
- Chair Visiting Professor Search committee- 2017
- Chair Post-doctoral Search Committee- 2017
- Search committee- Philosophy Spring 2017
- Promotion and Tenure Committee- Philosophy Fall 2017
- Departmental Faculty Mentor- Fall 2016-Spring 2017
- Executive Committee Fall 2014-Spring 2017
- Undergraduate Affairs Committee: Fall 2012-Spring 2014
- Applied to the Math Alliance to start a GPG at VCU- Fall 2015
- Colloquium Committee: Fall 2012-Spring 2013
- Applied and was accepted as to have a Pi Mu Epsilon Chapter at VCU and was the faculty advisor- Fall 2010- Spring 2016
- Developed Biomath webpage in Fall 2009/Spring 2010
- Started Mathematical Sciences Club at VCU and was the faculty advisor- Fall 2009-Spring 2016
- Student Activity Committee: Fall 2009-Spring 2015 (Chair 2013-2015)
- Chair MATH 407/507 Analysis committee- Fall 2009-Spring 2011
- Math capstone committee Fall 2008- Spring 2012
- Math Credentials Committee Fall 2008-Spring 2012
- Biomathematics and Applied mathematics- Fall 2008-present

*College level:*

- Chair of Graduate Affair Committee- Fall 2016-Spring 2017, Fall 2018-present
- Graduate Affair Committee Member- Fall 2015-present, expect for Fall 2017 & Spring 2018
- Endowed Chair Review Committee- Fall 2017-present
- Faculty Council- Fall 2013-Spring 2014

*University Level:*

- Chair General Education Curriculum Committee Fall 2021-Spring 2022
  - Subcommittee for Race Literacy
  - Subcommittee for Transfers
- University Graduate Council- Fall 2020-present
- General Education Curriculum Committee- Fall 2018-present
- General Education Task Force- Fall 2017
- Faculty Mentor organized by provost office- served as a mentor a faculty member in the School of the Arts- Fall 2019-Spring 2020

**Community Service**

- Treasurer for Parent Advisory Council, VCU Child Development Center, 2017
- Baker Elementary Tutoring program (working with math club students and the principal we started a tutoring program for Fall 2013-Spring 2014)
- Organized a group of VCU researchers to present at Baker Elementary School for STEM days (Fall 2014)
- Presentations at the MathScience Innovation Center, Let's Innovate High School Conference, Richmond, VA, 2014
- Cox High School, Virginia Beach, VA, December 12, 2013. Title: Mathematical Model of Acute Inflammation (Seminar talk at their mathematical honors society meeting)
- Summer research mentor for high School students- 2012

**Professional Service**

**Organized Minisymposium (post-tenure):** Biomathematics, Ecology: Education and Research Conference 2014, Society of Mathematical Biology 2016-2021, SEAS mini-symposium 2018, SIAM LS 2020

**Organized Conference:** Nonlinear Dynamics and Stochastic Methods, 2013, BAMM!, 2016-2020, SIAM LS-2020

**Referred for peer-reviewed journals:** Journal Critical Care Medicine, Journal of Theoretical Biology, Letters in Biomathematics, PloS Computational Biology, PloS One, Mathematical Medicine and Biology, Interface, Mathematical Biosciences

**Grant Reviews:** Ad hoc reviewer for an NIH Study Sections, Reviewer The Kentucky Science and Engineering Foundation R&D Excellence awards, Internet-assisted reviewer on an NIH panel, Harvard Catalyst Data Ideation Challenge, Internal Review of Jeffress Memorial Trust, Internal Review of UROP grants, Internal Review of Ralph Powe, NSF-DMS Math Bio

**Faculty Facilitator for VCU's team in the SCMB Modeling Accelerator-** Summer 2021

**Co-Chair of SIAM-LS 2022 Conference Organizing Committee-**6/2021-present

**Past Chairperson, advisor committee member for Society of Mathematical Biology's Inflammation and Infection subgroup-** December 2020-Present

**Chairperson of Society of Mathematical Biology's Inflammation and Infection subgroup-**8/2019-12/2020

**Panelist for the University of Reno's AWM student chapter Graduate school Panel-** November 2020

**Co-Chair of SIAM-LS 2020 Conference Organizing Committee:** 6/2019-8/2021

**Program Director for SIAM Life Sciences:** February 2019-December 2020

**Math Alliance's F-GAP program Mentor-** 2017, 2018

**Guest editor for an article in PLOS Computational Biology-** 2017

**Co-leader of the Society of Mathematical Biology's Inflammation and Infection subgroup-** October 2016-August 2019

**Editorial Board for Mathematical Biosciences and engineering-** 2020-present

**Review Editor for Frontiers Systems Biology-** 2014-2021

#### **Professional Memberships**

- Pi Mu Epsilon- National Mathematics Honors society (PME)
- Society of Mathematical Biology (SMB)
- Society of Industrial and Applied Mathematics (SIAM)
- Association for Women in Mathematics (AWM)