

Shelby Wilson

CONTACT INFORMATION

Department of Biology
University of Maryland
4094 Campus Drive
College Park, MD 20742

Phone: 470 - 639 - 0490
E-mail: snwilson@umd.edu
Web: www.shelby-wilson.com

RESEARCH INTERESTS

Mathematical Interests : Dynamical Systems, Numerical Analysis, Network Theory.
Applications of Interest : Neuroscience, Oncology, Immunology, Evolutionary Biology.

PROFESSIONAL APPOINTMENTS

Assistant Professor Aug 2019 - Present
Department of Biology
University of Maryland, College Park, MD, USA

Associate Professor Jan 2019 - Present
Department of Mathematics
Morehouse College, Atlanta, GA, USA

Assistant Professor Jan 2014 - Jan 2019
Department of Mathematics
Morehouse College, Atlanta, GA, USA

Postdoctoral Research Associate Jun 2012 - Dec 2013
INRIA Grenoble - Rhône-Alpes, Montbonnot, France
In silico optimization of sunitinib delivery in combination with irinotecan in nude mice bearing colorectal cancer
Supervisor: Dr. Benjamin Ribba

EDUCATION AND SKILLS

Ph. D., Applied Mathematics May 2012
University of Maryland, College Park, MD, USA
Mathematical Models of Immune Regulation and Cancer Vaccines
Advisor: Prof. Doron Levy

M. S., Applied Mathematics Aug 2010
University of Maryland, College Park, MD, USA
Mathematical Models of Immune Regulation and Immunodominance
Advisor: Prof. Doron Levy

B. S., Mathematics, Summa Cum Laude May 2006
B. S., Computer Science, Summa Cum Laude May 2006
Spelman College, Atlanta, GA, USA
Advisor: Prof. Jeffrey Ehme

Proficient in Matlab, C++, Python, MLXTran

TEACHING EXPERIENCE

Morehouse College Jan 2014-May 2019

- Courses Taught : Basic Statistics, Calculus for Business, Calculus I, Calculus II, Introduction to Ordinary Differential Equations, Numerical Analysis, Precalculus, Senior Seminar

Enhancing Diversity in Graduate Education Program Jun 2014 & Jun 2016
Harvey Mudd College & Purdue University

- Course Instructor : Advanced Calculus / Real Analysis

Enhancing Diversity in Graduate Education Program Jun 2009
Spelman College

- Teaching assistant/mentor in Real Analysis and Algebra

Teaching Assistant, University of Maryland Jun 2007 - May 2012

- Teaching Assistant : Calculus II for Life Sciences, Elementary Mathematical Models, Learning Math Through Games, Numerical Analysis II, Scientific Computing.

PEER REVIEWED
PUBLICATIONS

H. Brooks, M. Hohn, C. Price, A. Radunskaya, S. Sindi, N. Williams, **S. Wilson**, N. Fefferman. *Mathematical analysis of the impact of social structure on ectoparasite load in allogrooming populations*. Understanding Complex Biological Systems with Mathematics (2018). doi: 10.1007/978-3-319-98083-6.

N. Williams, M. Hohn, C. Price, A. Radunskaya, S. Sindi, **S. Wilson**, H. Brooks, N. Fefferman. *How Disease Risks Can Impact the Evolution of Social Behaviors and Emergent Population Organization*. Understanding Complex Biological Systems with Mathematics (2018). doi: 10.1007/978-3-319-98083-6.

T. Johnson, **S. Wilson**. *Modeling Evolutionary Dynamics of Human Immunodeficiency Virus*. Proceedings of the Harriett J. Walton Symposium on Undergraduate Mathematics Research. Volume 14 (2016).

S. Wilson, M. Tod, A. Ouerdani, A. Emde, Y. Yarden, A. Adda Berkane, S. Kassour, M. Wei, G. Freyer, B. You, E. Grenier, B. Ribba. *Modeling and predicting optimal combination scheduling between antiangiogenic drug and chemotherapy in preclinical settings*. CPT : Pharmacometrics & Systems Pharmacology (2016). doi: 10.1002/psp4.12045.

J. Best, P. Fuller, S. Garcia-Torres, G. Huguet, A. Prieto-Langarcia, and **S. Wilson**. *Effects of thermoregulation on human sleep patterns: A mathematical model of sleep/wake cycles with REM/NREM sub-circuit*. Applications of Dynamical Systems in Biology and Medicine (2015). doi: 10.1007/978-1-4939-2782-1_6.

S. Wilson and D. Levy. *Functional switching and stability of the regulatory T cell population*. Bulletin of Mathematical Biology (2013). doi: 10.1007/s11538-013-9875-9.

F. Lignet, S. Benzekry, **S. Wilson**, F. Billy, O. Saut, M. Tod, B. You, A. Adda Berkane, S. Kassour, M. X. Wei, E. Grenier, and B. Ribba. *Theoretical investigation of the efficacy of antiangiogenic drugs combined to chemotherapy in xenografted mice*. Journal of Theoretical Biology (2012). doi: 10.1016/j.jtbi.2012.12.013.

S. Wilson and D. Levy. *A Mathematical Model of the Enhancement of Tumor Vaccine Efficacy by Immunotherapy*. Bulletin of Mathematical Biology (2012). doi:10.1007/s11538-012-9722-4.

S. N. Wilson, P. Lee, and D. Levy. *A Mathematical Model of the Primary T Cell Response with Contraction Governed by Adaptive Regulatory T Cells*. IFMBE Proceedings, College Park, MD, 32: 209-212 (2010).

SCIENTIFIC
VULGARIZATION

E. Graham, R. Higgins, C. Price, and **S. Wilson**. *AMS Poster : Historical Black Mathematicians*. Available at <http://www.ams.org/publicoutreach/posters> (2018).

E. Graham, R. Higgins, C. Price, and **S. Wilson**. *AMS Poster : Mathematically Gifted and Black*. Available at <http://www.ams.org/publicoutreach/posters> (2018).

E. Graham, R. Higgins, C. Price, and **S. Wilson**. *The Mathematically Gifted and Black Website*. Notices of the AMS Volume 65, Number 2 (2018).

R. Higgins, E. Graham, and **S. Wilson**. *SIAM Celebrates Diversity in Mathematics*. SIAM News. Volume 49, Number 10 (2016).

INVITED TALKS	Albert Turner Bharucha-Reid Lecture. “ <i>Modeling the Dynamics of the Human Sleep/Wake Cycle</i> ”. NAM Regional Faculty Conference on Research and Teaching Excellence 2017. Atlanta, GA	Mar 2017
	Plenary Speaker. “ <i>Effects of Themoregulation on Human Sleep Patterns</i> ”. Georgia Scientific Computing Symposium 2017. Athens, GA	Feb 2017
	Invited Lecture. “ <i>A Quest to Cure Cancer With Math</i> ”. United States Military Academy. West Point, NY	Feb 2017
	Seminar. “ <i>Mathematical Model of Temperature effects on Human Sleep Regulation</i> ”. University of Georgia Applied Mathematics Seminar. Athens, GA	Dec 2016
	Seminar. “ <i>Optimizing the Combined Treatment of Tumor Growth using Mixed-Effect ODE Modeling</i> ”. Georgia State University Mathematics Department Colloquium. Atlanta, GA	April 2015
	Seminar. “ <i>Optimizing the Combined Treatment of Tumor Growth using Mixed-Effect ODE Modeling</i> ”. Georgia Institute of Technology Mathematical Biology Seminar. Atlanta, GA	Feb 2015
	Seminar. “ <i>Optimizing the Combined Treatment of Tumor Growth Using Mixed-Effect ODE Modeling</i> ”. Moffitt Cancer Center Integrated Mathematical Oncology Seminar. Tampa, FL.	Aug 2014
	Seminar. “ <i>Modeling the synergism between anti-angiogenic treatment and chemotherapy In mice</i> ”. F. Hoffmann-La Roche Pharmaceuticals. Basel, Switzerland.	Oct 2013
	Seminar. “ <i>An ODE Mixed-Effect Model of Vascular Tumor Growth with Anti-Angiogenic Treatment</i> ”. University of Franche-Comté Partial Differential Equations Seminar. Besançon, France	Dec 2012
	Invited Lecture. “ <i>Nonlinear Models in Cancer and Immunology</i> ”. Summer School on Nonlinear Dynamics. Peyresq, France.	Aug 2012
PROFESSIONAL PRESENTATIONS (ABBREVIATED)	Outreach Related Panel Discussions	
	• SIAM Annual Meeting 2018. Portland, OR	Jul 2018
	• NSF Workshop, University of Illinois at Chicago. Chicago, IL	Jul 2017
	• SIAM Annual Meeting 2017. Pittsburgh, PA	Jul 2017
	• SIAM Annual Meeting 2017. Pittsburgh, PA	Jul 2017
	• 5 th Annual Sonia Kovalevsky Day, University of Wisconsin - Eau Claire	Mar 2017
	Related to Modeling Cancer Dynamics and Treatment	
	• MAA MathFEST 2017. Chicago, IL	Jul 2017
	• Joint Mathematics Meetings. Atlanta, GA	Jan 2017
	• SIAM Annual Meeting. Boston, MA	Jul 2016

- Micro and Macro Systems in Life Sciences. Bedlewo, Poland Jun 2015
- Joint Mathematics Meetings. Baltimore, MD. Jan 2014
- Population Approach Group in Europe Annual Meeting. May 2013
Glasgow, United Kingdom.
- Mathematical Oncology: New Challenges For Systems Biomedicine. Sep 2011
Erice, Italy.
- Cancer Immunology and Immunotherapy: Building on Success. Sep 2011
Bethesda, MD

Related to Modeling Human Sleep Dynamics

- Joint Mathematics Meetings. Atlanta, GA Jan 2017
- SIAM Conference on the Life Sciences. Charlotte, NC. Aug 2014

Related to Modeling Immune Regulation

- Joint Mathematics Meetings. Baltimore, MD. Jan 2014
- Summer School on Nonlinear Dynamics. Peyresq, France. Aug 2013
- 7th International Congress on Industrial and Applied Mathematics. Jul 2011
Vancouver, BC.
- 2010 Southern Biomedical Engineering Conference. College Park, MD. May 2010

Related to Modeling Neural Synchrony

- SIAM Annual Meeting. Boston, MA Jul 2016
- SACNAS National Conference. Washington, DC Oct 2015

Related to Undergraduate Education and Outreach

- SIAM Annual Meeting. Portland, OR Jul 2018
- SIAM Applied Mathematics Education Conference. Philadelphia, PA Oct 2016

PROFESSIONAL
AND ACADEMIC
EXPERIENCE**Referee for Peer Reviewed International Journals**

- Bulletin of Mathematical Biology
- Cancer Immunology Immunotherapy
- Fundamental & Clinical Pharmacology
- Involve, A Journal of Mathematics
- Journal of Mathematical Biology
- Journal of Theoretical Biology
- Physics in Medicine and Biology
- PLOS ONE

Workshop Celebrating Diversity Working Group

Jul 2016 - Present

- Organize and manage funding for 6 technical sessions as well as luncheon at the 2017 and 2018 SIAM Annual Meeting.

Summer Research for Women in Mathematics Program at the Mathematical Sciences Research Institute

Jun 2018

- Supported two-week in-residence research stay for myself and four collaborators.

Data Science eXtension (DSX) Workshop

Jun 2017 - May 2018

- Two week workshop geared towards faculty development and undergraduate instruction in data understanding

MBI Women Advancing Mathematical Biology Workshop

Mar 2017

- Group co-lead on project *Ectoparasites and Allogrooming: Evolutionary Trade-offs in Animal Community Health*.

	Future Leaders in interdisciplinary Cancer Research (FLiiCR) Program	Summer 2016
	<ul style="list-style-type: none"> • Co-organizer for a summer research experience for undergraduates within the Integrated Mathematical Oncology Lab at Moffitt Cancer Center, Tampa, FL. 	
	University of Maryland MAPS REU Project Co-Leader	Summer 2016
	<ul style="list-style-type: none"> • Directed three undergraduate research projects on <i>Within Host Models of Schistosomiasis</i>. 	
	Denice Denton Emerging Leaders Workshop	Jun 2016
	<ul style="list-style-type: none"> • Workshop focused on the development of knowledge, skills, strategies, and critical networks for mid-career faculty in the fields of engineering, computing, mathematical and physical sciences. 	
	Project NExT (New Experiences in Teaching) Fellow	Aug 2015 - Aug 2016
	Howard University GEAR UP Project	2012 - 2017
	<ul style="list-style-type: none"> • External Advisory Committee Member for a five year project that sends Howard University students on undergraduate research experiences at universities in a number of developing countries. 	
	Hands-On Research in Complex Systems School	Jul 2014 & Aug 2010
	ICTP, Trieste, Italy (2014)	
	University of Buea, Cameroon (2010)	
	<ul style="list-style-type: none"> • Assistant. Mathematical modeling session: Introduction to Matlab and dynamical systems. 	
FUNDING AND SUPPORT	Student Success Through Enhanced Mentoring	July 2018
	James King, Jr. Institute for Student and Faculty Engagement	
	HBCU-UP Supplemental Support for UMD MAPS-REU	Summer 2016
	National Science Foundation	
	Establishing Interdisciplinary Undergraduate Research Interactions in Mathematical Biology	Dec 2015
	Procter & Gamble Higher Education Grant	
	Future Leaders in interdisciplinary Cancer Research Program	Summer 2016
	Integrated Mathematical Oncology Lab, Moffitt Cancer Center	
HONORS AND AWARDS	James King, Jr. Institute for Student and Faculty Engagement, Faculty Fellow	Jul 2018 - Present
	Mathematical Biosciences Institute Conference Award	Jan 2014
	LSAMP Bridge to the Doctorate Fellowship	Aug 2006 - May 2008
	National Science Foundation	
	NASA Women in Science and Engineering Scholar	Aug 2002 - May 2006
	Spelman College	
	Phi Beta Kappa Society	

PROFESSIONAL	Co-founder, Mathematically Gifted and Black (website)	
ACTIVITIES &	Co-founder, Network for Minorities in Mathematical Sciences	
COMMITTEES	SIAM Annual Meeting 2018 Organizing Committee	
	Morehouse College SACS Quality Enhancement Plan Committee	Jan 2017 - Present
	SIAM Workshop Celebrating Diversity Working Group	Aug 2016 - Present
	SIAM Diversity Advisory Committee	July 2016 - Present
	Morehouse College Institutional Review Board	Mar 2016 - Present
	Morehouse College Mathematics Colloquium Co-organizer	Aug 2014 - Present
	Health Sciences Affiliate, Morehouse College	Aug 2016 - Aug 2017
	National Association of Mathematicians Membership Committee	Aug 2016 - May 2017
	UMD Mathematics Graduation Conference Co-organizer	Spring 2011
	UMD Applied Mathematics (AMSC) Student Seminar Organizer	2010 - 2012
PROFESSIONAL	American Mathematical Society	
ORGANIZATIONS	Association for Women in Mathematics	
	Mathematical Association of America	
	Society for Industrial and Applied Mathematics	
	Society for Mathematical Biology	