

ALLISON J. LOPATKIN, PH.D.

Curriculum Vitae

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Rochester, NY 14627

ACADEMIC APPOINTMENTS

Summer 2022 – present	University of Rochester <i>Assistant Professor</i> Dept. of Chemical Engineering University of Rochester Medical Center <i>Secondary appointment</i> Dept. of Microbiology and Immunology <i>Secondary appointment</i> Center for Musculoskeletal Research
Spring 2020 – Summer 2022	Barnard College <i>Assistant Professor</i> Computational Biology, Dept. of Biology
Fall 2020 – Summer 2022	Columbia University, Data Science Institute <i>Affiliated faculty</i>
Fall 2020 – Summer 2022	Columbia University, Ecology evolution & environmental Biology <i>Affiliated faculty</i>
Spring 2021 – Summer 2022	Columbia University, Department of Systems Biology <i>Affiliated faculty</i>
Fall 2017 – Fall 2019	Massachusetts Institute of Technology <i>Postdoctoral Fellow</i> Dept. of Biological Engineering Broad Institute of MIT and Harvard Infectious Disease and Microbiome Program Harvard University Wyss Institute for Biologically Inspired Devices
Fall 2013 – 2017	Duke University <i>Doctoral Candidate</i> Dept. of Biomedical Engineering Dissertation: “Quantifying and inhibiting horizontal gene transfer-mediated antibiotic resistance.”
Fall 2011 – Summer 2013	URMC Department of Biomedical Engineering <i>Research Assistant</i> Advisor: Eddie Schwarz, Ph.D.

EDUCATION AND TRAINING

Fall 2017 – Fall 2019	Massachusetts Institute of Technology Postdoctoral Fellow, Dept. of Biological Engineering Advisor: Jim Collins, Ph.D.
Fall 2013 – 2017	Duke University Ph.D., Biomedical Engineering Thesis advisor: Lingchong You, Ph.D.
Fall 2009 – 2013	University of Rochester B.S., Applied Mathematics <i>Cum laude</i> with High Distinction

SELECTED PUBLICATIONS

* Indicates equal contribution

1. C. Pajon, M. C. Fortou, G. Diaz-Tang, E. M. Meneses, T. Mariah, B. Toscan, M. Marcelin, **A. J. Lopatkin**, O. T. Eldakar, and R. P. Smith. "Interactions between metabolism and growth can determine the co-existence of *Staphylococcus aureus* and *Pseudomonas aeruginosa*" (Accepted, eLife)
2. M. Ahmad, H. Prenskey, J. Balestrieri, S. ElNaggar, A. Sing, B. Traxler, A. Gomez-Simmonds, A. C. Uhlemann, and **A. J. Lopatkin**. "Tradeoff between growth rate and lag time drives plasmid acquisition cost" *Nature Communications* (2023). doi: 10.1038/s41467-023-38022-6
3. I. Barraza, C. Pajon, F. Abu-Rumman, V. Castro, **A. J. Lopatkin**, and R. P. Smith. "Disturbance driven changes in cooperation and competition affect the expression of *agr* regulated virulence factors in *Staphylococcus aureus*" *AEM* (2023). doi: 10.1128/aem.01932-22
4. A. Palomino, D. Gewurz, L. DeVine, U. Zajmi, J. Morales, F. Ramm, R. P. Smith, and **A. J. Lopatkin**. "Metabolic genes on conjugative plasmids are highly prevalent in *Escherichia coli* and can protect against antibiotic treatment" *ISME* (2023). doi: 10.1038/s41396-022-01329-1
5. G. Diaz-Tang, E. M. Marin, K. Patel, S. Mirkin, V. Patel, L. García-Diéguez, H. Ghali, A. Tracey, **A. J. Lopatkin**, and R. P. Smith. "Growth productivity as a determinant of the inoculum effect" *Science Advances* (2022). doi: 10.1126/sciadv.add0924
6. C. Pajon, M. C. Fortoul, G. Diaz-Tang, E. M. Meneses, T. Mariah, B. Toscan, M. Marcelin, **A. J. Lopatkin**, O. T. Eldakar, and R. P. Smith. "Interactions between metabolism and growth can determine the co-existence of *Staphylococcus aureus* and *Pseudomonas aeruginosa*," *bioRxiv* (2022). doi: 10.1101/2022.09.14.507888
7. T. Wang, A. Weiss, A. Aqeel, F. Wu, **A. J. Lopatkin**, L. A. David, and L. You. "Horizontal gene transfer enables programmable gene stability in synthetic microbiota," *Nature Chemical Biology* (2022). doi: 10.1038/s41589-022-01114-3
8. J. Persons, L. Abhilash, **A. J. Lopatkin**, A. Roelofs, E. V. Bell, M. de la Paz Fernandez, and O. T. Shafer III. "PHASE: An open-source program for the analysis of *Drosophila* phase activity and sleep under entrainment," *Journal of Biological Rhythms* (2022). doi: 10.1177/07487304221093114
9. A. Gomez-Simmonds, M. K. Annavajhala, N. Tang, F. D. Rozenberg, M. Ahmad, H. Park, **A. J. Lopatkin**, and A. C. Uhlemann. "Population structure of blaKPC-harboring incN plasmids at a New York City medical center and evidence for multi-species horizontal transmission," *Journal of Antimicrobial Chemotherapy* (2022). doi: 10.1093/jac/dkac114
10. J. Persons, L. Abhilash, **A. J. Lopatkin**, A. Roelofs, E. V. Bell, M. de la Paz Fernandez, and O. T. Shafer III. "PHASE: A MATLAB based program for the analysis of *Drosophila* phase, activity, and sleep under entrainment," *bioRxiv* (2021). doi: 10.1101/2021.12.14.472617
11. J. Koong, C. Johnson, R. Rafei, M. Hamze, G. S. A. Myers, **A. J. Lopatkin**, and M. Hamidian. "Phylogenetic analysis of two antibiotic susceptible non-clinical *Acinetobacter baumannii* strains belonging to global clone 1 reveals close relationship with multiply-antibiotic resistant clinical strains," *Microbial Genomics* (2021). doi: 10.1099/mgen.0.000705
12. D. M. Bach, M. A. Holzman, F. Wague, J.J. Miranda, **A. J. Lopatkin**, J. H. Mansfield, and J. W. Snow. "Thermal stress induces tissue damage and broad shift in regenerative signaling pathways in the honey bee intestine," *Journal of Experimental Biology* (2021). doi: 10.1242/jeb.242262
13. S.R. Shih, D. Bach, N. Rondeau, J. Sam, N. L. Lovinger, **A. J. Lopatkin**, and J. W. Snow. "Honey bee sHSP are responsive to diverse proteostatic stresses and potentially promising biomarkers of honey bee stress," *Scientific Reports* (2021). doi: 10.1038/s41598-021-01547-1
14. M. E. Schoen, M. A. Jahne, J. Garland, L. Ramirez, **A. J. Lopatkin**, and K. Hamilton. "Quantitative microbial risk assessment of antibacterial resistant and susceptible *Staphylococcus aureus* in

reclaimed wastewaters,” *Environmental Science & Technology* (2021). doi: 10.1021/acs.est.1c04038

15. J. Morales, K. Szenkiel, K. Hamilton, A. Pruden, and **A. J. Lopatkin**. “Quantitative analysis of horizontal gene transfer in complex systems,” *Current Opinions in Microbiology* (2021). doi: 10.1016/j.mib.2021.05.001
16. S. C. Williams, A. P. Forsberg, J. Lee, C. Vizcarra, **A. J. Lopatkin**, and R. N. Austin “Investigation of the prevalence and catalytic activity of fused-rubredoxin alkane monooxygenases (AlkB_s),” *Journal of Inorganic Biochemistry* (2021). doi: 10.1016/j.jinorgbio.2021.111409
17. H. Prensky, A. Gomez-Simmonds, A. C. Uhlemann, and **A. J. Lopatkin**. “Conjugation dynamics depend on both the plasmid acquisition cost and the fitness cost,” *Molecular Systems Biology* (2021). doi: 10.1525/msb.20209913
18. **A. J. Lopatkin**, S. C. Bening, A. L. Manson, J. M. Stokes, M. A. Kohanski, A. H. Badram, A. M. Earl, N. J. Cheney, J. H. Yang, and J. J. Collins. “Clinically relevant mutations in core metabolic genes confer antibiotic resistance,” *Science* (2021). doi: 10.1126/science.aba0862
19. **A. J. Lopatkin** and Jason H. Yang. “Nucleotide metabolism and antibiotic treatment failure,” *Frontiers in Microbiology* (2021). doi: 10.3389/fdgth.2021.583468
20. **A. J. Lopatkin** and J. J. Collins. “Predictive biology: modeling, understanding, and harnessing microbial complexity,” *Nature Microbiology Reviews* (2020). doi: 10.1038/s41579-020-0372-5
21. J. Bethke, A. Davidovich, L. Cheng, **A.J. Lopatkin**, J. T. Thaden, V. G. Fowler Jr., M. Xiao, and L. You. “Environmental and genetic determinants of plasmid mobility in pathogenic *Escherichia Coli*,” *Science Advances* (2020). doi: 10.1126/sciadv.aax3173
22. T. Sysoeva, Y. L. Kim, J. Rodriguez, **A. J. Lopatkin**, and L. You. “Growth-stage dependent regulation of conjugation,” *AIChE Journal* (2019). doi: 10.1002/aic.16848.
23. **A. J. Lopatkin**, J. Stokes, E. Zheng, J. H. Yang, M. Takahashi, L. You, and J. Collins. “Bacterial metabolic state more accurately predicts antibiotic lethality than growth rate,” *Nature Microbiology* (2019). doi: 10.1038/s41564-019-0536-0
24. J. M. Stokes, **A. J. Lopatkin**, M. A. Lobritz, J. J. Collins. “Bacterial Metabolism and Antibiotic Efficacy,” *Cell Metabolism* (2019). doi: <https://doi.org/10.1016/j.cmet.2019.06.009>
25. J. H. Yang, S. N. Wright*, M. Hamblin*, D. McCloskey, M. A. Alcantar, L. Schrubbers, **A. J. Lopatkin**, S. Satish, A. Nili, J. J. Collins. “A white-box machine learning approach for revealing antibiotic mechanisms of action,” *Cell* (2019). doi: <https://doi.org/10.1016/j.cell.2019.04.016>
26. J. Stokes*, A. Gutierrez*, **A. J. Lopatkin**, I. Andersson, and J. Collins. “A multiplexable assay for screening antibiotic lethality against drug-tolerant bacteria,” *Nature Methods* (2019). doi: 10.1038/s41592-019-0333-y
27. F. Wu, **A. J. Lopatkin**, D. Needs, C. Lee, S. Mukherjee, and L. You. “A unifying framework for interpreting and predicting mutualistic systems,” *Nature Communications* (2019). doi: 10.1038/s41467-018-08188-5
28. H. R. Meredith, V. Andreani, A. J. Lee, **A. J. Lopatkin**, G. Batt, and L. You. “Applying ecological resistance and resilience to dissect bacterial antibiotic responses.” *Science Advances* (2018). doi: 10.1126/sciadv.aau1873
29. J. K. Srimani, S. Huang, **A. J. Lopatkin**, and L. You. “Drug detoxification dynamics explain the postantibiotic effect.” *Molecular System Biology*, vol. 13, p. 948 (2017). doi: 10.15252/msb.20177723
30. **A. J. Lopatkin**, H. R. Meredith, J. K. Srimani, C. Pfeiffer, R. Durrett, and L. You, “Persistence and reversal of plasmid-mediated antibiotic resistance.” *Nature Communications*, vol. 8, p. 1689 (2017). doi: 10.1038/s41467-017-01532-1
31. C. E. Wilson, **A. J. Lopatkin**, T. J. A. Craddock, W. Driscoll, Omar T. Eldakar, Jose V. Lopez and R. P. Smith. “Cooperation and competition shape ecological resistance during periodic spatial

disturbance of engineered bacteria.” *Scientific Reports*, vol. 7, p. 440 **(2017)**. doi:10.1038/s41598-017-00588-9

32. Y. Cao*, **A. J. Lopatkin*** and L. You. “Elements of biological oscillations in time and space,” *Nature Structural & Molecular Biology*, vol. 23, p. 1030-1034 **(2016)**. doi:10.1038/nsmb.3320.
33. **A. J. Lopatkin**, T. A. Sysoeva, and L. You, “Dissecting the effects of antibiotics on horizontal gene transfer: Analysis suggests a critical role of selection dynamics,” *Bioessays*, vol. 38, p. 1283-1292 **(2016)**. doi: 10.1002/bies.201600133.
34. **A. J. Lopatkin**, S. Huang, R. P. Smith, J. K. Srimani, T. A. Sysoeva, S. Bewick, D. K. Karig, and L. You, “Antibiotics as a selective driver for conjugation dynamics,” *Nature Microbiology*, p. 16044 **(2016)**. doi: 10.1038/nmicrobiol.2016.44.
35. S. Huang, J. K. Srimani, A. J. Lee, Y. Zhang, **A. J. Lopatkin**, K. W. Leong, and L. You, “Dynamic control and quantification of bacterial population dynamics in droplets,” *Biomaterials*, vol. 61, pp. 239–45 **(2015)**. doi: 10.1016/j.biomaterials.2015.05.038.
36. T. J. Lee, J. Wong, S. Bae, A. J. Lee, **A. Lopatkin**, F. Yuan, and L. You, “A power-law dependence of bacterial invasion on Mammalian host receptors,” *PLoS Comput. Biol.*, vol. 11, no. 4, p. e1004203 **(2015)**. doi: 10.1016/j.micinf.2008.07.004.
37. H. R. Meredith, **A. J. Lopatkin**, D. J. Anderson, and L. You, “Bacterial Temporal Dynamics Enable Optimal Design of Antibiotic Treatment,” *PLoS Comput Biol*, vol. 11, no. 4, p. e1004201 **(2015)**. doi: 10.1371/journal.pcbi.1004201.
38. H. R. Meredith, J. K. Srimani, A. J. Lee, **A. J. Lopatkin**, and L. You, “Collective antibiotic tolerance: mechanisms, dynamics and intervention,” *Nature Chemical Biology*, vol. 11, no. 3, pp. 182–188 **(2015)**. doi: 10.1038/nchembio.1754.
39. **A. J. Lopatkin** and L. You, “Synthetic biology looks good on paper,” *Cell*, vol. 159, no. 4, pp. 718–720 **(2014)**. doi: <http://dx.doi.org/10.1016/j.cell.2014.10.003>.

PUBLICATIONS IN REVIEW OR UNDER REVISIONS

40. C. J. Calarco, I. Keenum, Q. Zhang, B. Epstein, E. Garner, C. Johnson, M. J. Sadowsky, **A. J. Lopatkin**, A. Pruden, and V. J. Harwood. “Antimicrobial resistance and virulence genes in multi-drug-resistant Enterobacteriaceae and *Enterococcus* spp. Isolated from recycled water treatment facilities” (*Under review*, AEM)

PUBLICATIONS IN PREPARATION

41. S. C. Bening, I. W. Andrews, M. Hamblin, **A. J. Lopatkin**, and J. J. Collins. “Sensitizing tolerant bacteria to β -lactam antibiotics”
42. A. Heida, J. Gambino, K. Sanderson, M. E. Schoen, M. A. Jahne, J. Garland, L. Ramirez, **A. J. Lopatkin**, and K. A. Hamilton. “Quantitative model for horizontal gene transfer of ESBL *E. coli* and subsequent risk in recreational waters containing wastewater effluent”
43. K. Szenkiel, A. Rahman, M. Ahmad, R. P. Smith, and **A. J. Lopatkin**. “Sub-inhibitory antibiotics select for enhanced metabolic efficiency”

PATENTS AND APPLICATIONS

1. S. Bening, M. Hamblin, I. A. Andrews, **A. J. Lopatkin**, and J. J. Collins. “Combining metabolic stimulation and amino acids to sensitize tolerant bacteria to antibiotics.” US Patent App. 17425438 **(2022)**

SELECTED CONFERENCES & SEMINAR PRESENTATIONS

January 2023	Duke Microbiome Center Seminar Series Invited talk “Determinants of plasmid acquisition and selection”
December 2022	Kiel University Invited talk “Determinants of plasmid acquisition and selection”
September 2022	Lake Arrowhead Microbial Genomics Invited talk “Determinants of plasmid acquisition and selection”
August 2022	NSF MODULUS Conference Invited attendee
June 2022	SynBYSS (virtual) Invited seminar speaker “Understanding and engineering horizontal gene transfer”
February 2022	University of Wisconsin-Madison, Dept. of Pathobiological Sciences Seminar Invited seminar speaker “The metabolic determinants of how antibiotic resistance spreads”
October 2021	Columbia University, E3B Department Invited seminar speaker “ The metabolic determinants of how antibiotic resistance spreads”
September 2021	Infectious Disease Week 2021 (virtual) Invited seminar speaker “ The metabolic determinants of antibiotic resistance”
March 2021	Arizona State University, Environmental Engineering Seminar (virtual) Invited seminar speaker “Cellular metabolism and the evolution of antibiotic resistance”
March 2021	Cornell, Antimicrobial Resistance Center Seminar (virtual) Invited seminar speaker “Understanding and reversing the evolution of antibiotic resistance”
February 2021	Yale, Department of Ecology and Evolution Seminar(virtual) Invited seminar speaker “Predictive biology: understanding and reversing the evolution of antibiotic resistance”
January 2021	Phytobiomes Alliance (virtual) Invited webinar speaker “Predictive biology: understanding and reversing the evolution of antibiotic resistance”
Fall 2020	FEMS Conference on Microbiology (virtual) Invited talk

	<p>“Predicting and inhibiting the spread of plasmid-mediated antibiotic resistance”</p>
Fall 2019	<p>Soil Science Society of America’s Annual Meeting Invited talk “Antibiotic lethality is better correlated with metabolic state than growth rate”</p>
July 2019	<p>MIT Faculty Forum Online Invited webinar “Machine learning insights into Antibiotic Lethality”</p>
Summer 2019	<p>Summer qBio Contributing talk “Antibiotic lethality is better correlated with metabolic state than growth rate”</p>
Winter 2018	<p>Broad Institute Annual Retreat Invited talk “Antibiotic lethality directly depends on bacterial metabolic state”</p>
Winter 2017	<p>Winter qBio Contributing talk “Reversing plasmid-mediated antibiotic resistance”</p>
Winter 2017	<p>Winter qBio Poster “A novel β-lactam mechanism promotes selection for resistant mutants,” by Allison J. Lopatkin, Joseph Kreitz, and Lingchong You</p>
Spring 2016	<p>Academy of Managed Care Pharmacy Poster “Patterns of antibiotic treatment failure in pediatric community-acquired bacterial pneumonia in the USA,” by Allison J. Lopatkin, Peter Classi, Pamela Landsman-Blumberg, Cathy Carroll, Sharanya Murty, Samantha Slaff, and Glenn Tillotson</p>
Spring 2016	<p>Host-pathogen Interaction supergroup Invited talk “Antibiotic influence on horizontal gene transfer”</p>
Winter 2016	<p>Winter qBio Poster “Optimal dosing of beta-lactam antibiotics for ESBL-producing pathogens is guided by recovery growth rates,” by Hannah R. Meredith, Allison J. Lopatkin, and Lingchong You</p>
Summer 2015	<p>Summer qBio Contributing talk “Microbial growth dynamics govern conjugation efficiency in the presence of antibiotics”</p>
Winter 2015	<p>Winter qBio Poster “A novel β-lactam mechanism induces collective cell death,” by Allison J. Lopatkin and Lingchong You</p>
Summer 2014	<p>Cold Spring Harbor Labs Summer Course – Synthetic Biology Accepted to attend two week intensive workshop on the newest techniques in synthetic biology</p>

Spring 2014

Duke University CSB Symposium

Poster

“A novel β -lactam mechanism induces collective cell death,” by
Allison J. Lopatkin and Lingchong You

Summer 2012

Mount Sinai Systems Biology Summer Symposium

Poster

“Understanding Parameters of Ventricular Myocyte Models Utilizing
Markov Pathways,” by **Allison J. Lopatkin** and Eric Sobie

COMPETITIVE FUNDING

1. URMH HSCCI Award, *University of Rochester* **(2023-2024)**
Developing a “White Box” Machine Learning Framework to Predict Osteomyelitis Outcomes from Genomic and Host Immunity Data.
P.I. Allison Lopatkin
Amount: \$16,150
2. NIH NIGMS R15, *Nova Southeastern University* **(2022-2025)**
Does growth efficiency determine the inoculum effect?
Award number: 1R15AI159902-01A1
P.I. Robert Smith
Role: Co-P.I.
Amount: \$462,459
3. NIH NIGMS R15, *Barnard College* **(2021-2024)**
Establishing a mechanistic basis for the plasmid acquisition cost
Award number: 1R15GM143694-01
P.I. Allison Lopatkin
Amount: \$400,892
4. NSF RUI Supplemental Funding – Research Experience for Post-Baccalaureate students in the Biological Sciences, *Barnard College* **(2021-2024)**
Collaborative Research: RUI: A multi-scale quantification of the plasmid acquisition in *Escherichia coli* pathogens
Award number: 2040697
P.I. Allison Lopatkin
Amount: \$55,433
5. NSF RUI, *Barnard College* **(2021-2024)**
Collaborative Research: RUI: A multi-scale quantification of the plasmid acquisition in *Escherichia coli* pathogens
Award number: 2040697
P.I. Allison Lopatkin
Amount: \$387,732
6. President’s Faculty Research and Development Grant, *Nova Southeastern University* **(2020-2023)**
Determining how metabolic efficiency determines the inoculum effect
P. I. Robert P. Smith
Amount: \$20,000
Role: Collaborator
7. President’s Faculty Research and Development Grant, *Nova Southeastern University* **(2017-2019)**
Using Periodic Spatial Disturbance to manipulate Cooperation in Bacteria. P.I., Robert Smith
P. I. Robert P. Smith

Amount: \$20,000
Role: Collaborator

UNDERGRADUATE THESIS ADVISING

Senior thesis advisees (Barnard College):

Karolina Szenkiel (2021-2022):	Investigating the role of metabolism in antibiotic resistance
Alana Palomino (2021-2022):	Metabolic genes on conjugative plasmids are prevalent and confer antibiotic resistance
Jenifer Morales (2021-2022):	The role of plasmids in mediating conjugation rates
Jessica Wang (2021-2022):	Establishing a phylogeny of <i>Klebsiella pneumoniae</i> clinical recipients
Danya Gewurz (2022-2023):	Determining the prevalence of plasmids in primarily drug-susceptible <i>E. coli</i> isolates
Jaqueline Balestrieri (2022-2023):	Establishing the role of the recipient in conjugation
Jana Casals-Puy (2022-2023):	A bioinformatic pipeline for automated plasmid annotation and visualization
Lorenza Bartu (2022-2023):	Determining plasmid-specific genetics predictive of plasmid acquisition costs

Summer, hourly, and independent student advisees (Barnard College):

Karolina Szenkiel (2020-2022) | Current: Studying for the MCAT
Alana Palomino (2019-2022) | Current: Strategy Analyst at Marwood Group
Jenifer Morales (2019-2021) | Current: Cornell Medicine Careers in Medicine Enhancement Program
Ujana Zajmi (2019-2021) | Current: Senior at Barnard College
Deniz Ertem (2021-2022) | Current: Senior at Barnard College
Emily Hunstman (2020-2021) | Current: Bioinformatic Analyst at Weil Cornell
Jessica Wang (2021-2022) | Current: Studying for the MCAT
Hannah Prensky (2019-2022) | Current: Analyst at ClearView Health Partners
Emily Lo (2021-2022) | Current: Analyst at Microsoft
Danya Gewurz (2020-present)
Jaqueline Balestrieri (2019-present)
Jana Casals-Puy (2020-present)
Lorenza Bartu (2020-present)
Maya Fabozzi (2020-present)
Shahd ElNaggar (2021-present)
Larissa Flores (2021-present)
Anika Rahman (2021-present)
Shahana Abdin (2021-present)

Research Technicians (Barnard College):

Mehrose Ahmad (2021-present)

TEACHING EXPERIENCE

BIOL BC3300, Introduction to Microbial Genomics
BIOL BC2500, MATLAB for Scientists
BIOL BC3397, Senior Seminar: Bacteria by Design

PROFESSIONAL EXPERIENCE

Spring 2023 – Present	ISME Journal <i>Editorial Board Member</i>
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	Oversees special issues; contributes regularly to peer review for relevant subject expertise
Summer 2022 – Present	Frontiers in Bioengineering and Biotechnology <i>Editorial board for Synthetic Biology: Review editor</i> Oversees special issues; evaluates submitted reviews; participates in discussions of Journal development strategies
Summer 2020 – Present	Pathogens <i>Topics editor</i> Oversees special topics issues; evaluates applicants for awards; participates in discussions of Journal development strategies
Spring 2020 – Present	BIOL BC3300, Microbial Genomics Developed open-source course to teach students various bioinformatic technologies and programs, culminating in end-to-end pipelines to annotate and analyze lab-generated genomic data
Spring 2020 – Present	BIOL BC2500, MATLAB For Scientists Developed open-source, computationally-based course for Biology students to learn programming fundamentals, data/image analysis, and practical hands-on skills in MATLAB
September 2018 – Present	Infectious Disease Hub <i>Early Career Panel Ambassador</i> Provides expert advice to direct the content of the site and contributes writing pieces on relevant topics
January 2019	Boston University Medical School <i>Systems Pharmacology and Therapeutics II lecturer</i> Section lead for combined lecture and discussion-based format; antibiotics module in pharmacology class
September 2018	LabRoots <i>Invited educational seminar speaker, P.A.C.E. CE</i> Microbiology and Immunology series, “A Mathematical Perspective of Antibiotic Resistance: Understanding and inhibiting horizontal gene transfer”
June – December 2016	Cempra Pharmaceuticals <i>Consultant, Medical Science Liaison</i> Novel research using mathematical modeling to predict resistance trends of novel macrolide antibiotic, Solithromycin

HONORS, AWARDS, AND MEMBERSHIPS

Member, American Society of Microbiology **(2019 – present)**

Keewaunee Student Achievement Award, *Duke University* **(2017)**

PhD Plus – Executive committee networking co-chair **(2015 – 2017)**

Sigma Xi Biology Honors Society – Vice President, *Duke University* **(2014 – 2017)**

ACS Synthetic biology second place poster prize, *Winter qBio* **(2015)**

NSF GRFP Honorable Mention **(2014, 2015)**

Howard G. Clark Graduate Research Grant, *Duke University* **(2014 – 2015)**

CSB Summer Travel Grant, *Duke University* **(Summer 2015)**

Jonathon Wilder Scholarship, *University of Rochester* (2009 – 2013)

Dean's Scholarship for Academic Excellence, *University of Rochester* (2009-2013)

OUTREACH AND DEI ACTIVITIES

Computational Biology [YouTube](#) Series – Lab-facilitated forum to answer anonymous questions to explain what it means to do undergraduate research and how to get involved *Barnard College* (2022)

Computational Biology Lunch&Learn – Developed and leads meetings to provide overview of computational biology, related career opportunities, and facilitated q&a panel for incoming STEM students, specifically targeted towards URM groups on campus *Barnard College* (2022)

SP² Computational Biology Workshop – introductory workshop and hands on experience in building and interpreting mathematical models for incoming STEM students from underrepresented backgrounds, *Barnard College* (2020-2021)

Computational Biology Major Lead – Designed curriculum, coordinated cross-department collaboration, and implemented the new Computational Biology major for women at Barnard; revamped website to increase accessibility for prospective and current majors, *Barnard College* (2020-2022)

Anti-Racism Working Group, Department of Biology – Active member in biweekly meetings of faculty, staff, and students to discuss and implement equity initiatives in the department, such as senior-freshman mentor assignments and incorporating social justice perspectives as it relates to Biology in introductory courses, *Barnard College* (2020-2022)

Women And Math – Mentor to young women in STEM, *Duke University* (2013 – 2017)

COMMITTEE SERVICE

PhD Thesis Committee, Eliya Tashib – University of Rochester, ChE

PhD Advisory Committee, Laura Dudley-Plimpton – Columbia University, E3B

Radiation Safety Committee – Columbia University and Barnard College

Tracks Committee, Department of Biology – Barnard College

PhD Thesis Committee, Elliott Gordon Rodriguez – Columbia University, Department of Statistics

JOURNAL AND GRANT REVIEWER

- NSF MCB Panelist (2022)
- NSF MCB Panelist (2021)
- Science
- Cell Metabolism
- PNAS
- Nature Communications
- Nature Ecology and Evolution
- Molecular Systems Biology
- Science Advances
- PLoS Computational Biology
- Environmental Science and Technology
- COMMS Bio
- iScience
- mSphere

- mLife
- Rolex foundation
- ISME
- Biology
- Plasmid
- Cell reports
- Pathogens
- Antibiotics
- eLife
- ISME
- Dutch Research Council
- NSF
- International Review of Cell and Molecular Biology

REFERENCES

- | | |
|-------------------------------|--|
| Jim Collins, Ph.D. | Termeer Professor of Medical Engineering and Science
MIT
jimjc@mit.edu, (617) 324-6607 |
| Lingchong You, Ph.D. | Paul Ruffin Scarborough Associate Professor of Engineering
Duke University
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| Edward Schwarz, Ph.D. | Burton Professor of Orthopaedics and Director of the Center for
Musculoskeletal Research
University of Rochester Medical Center
Edward_Schwarz@urmc.rochester.edu, (585) 275-3063 |
| Jason Yang, Ph.D. | Assistant Professor and Chancellor Scholar
Rutgers University
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| Jaydeep Srimani, Ph.D. | Scientist I
BioMarin Pharmaceutical
jaydeep.srimani@gmail.com, (864) 650-7669 |
| Glenn Tillotson, Ph.D. | Consultant
GST Micro
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| Joseph Kreitz | Undergraduate/prospective MIT graduate student
Duke University
joseph.kreitz@duke.edu, (612) 840-7229 |