

BRIAN K. HAMMER
ASSOCIATE PROFESSOR
SCHOOL OF BIOLOGICAL SCIENCES

EARNED DEGREES

2001	Ph.D.	Microbiology	Univ. of Michigan Medical School
1995	M.S.	Conservation Biology	University of Michigan
1990	B.S.	Biology	Boston College

EMPLOYMENT HISTORY

2014-pres	Associate Professor	School of Biology, Georgia Tech
2008-2014	Assistant Professor	School of Biology, Georgia Tech
2001 -2008	NIH Postdoctoral Fellow	Princeton University

HONORS AND AWARDS

2023	Inclusive STEM Teaching fellow
2022	Recognition of Teaching Excellence: Class of 1934 Honor Roll
2020-2021	Provost's Emerging Leaders Program participant
2019-2020	Center for Deliberate Innovation, Change Accelerator 2020, cohort member
2019	"Thank a Teacher" recipient, Georgia Tech
2018-2020	Distinguished Lecturer, American Society for Microbiology
2017-2018	Cullen-Peck Scholar Award recipient, Georgia Tech College of Sciences
2017	Class of 1940 Course Survey Effectiveness Award
2016	TEDx Douglasville invited Speaker
2015-2018	Scialog® Fellow
2014	Junior Faculty Teaching Excellence Award, Georgia Tech CETL/BP
2014	Emerging/Zoonotic Infectious Diseases award recipient, CDC
2014	Charles C. Shepard Science Award recipient, CDC
2013-2014	National Academies Summer Institute on Undergraduate Ed., fellow
2012-2018	National Science Foundation CAREER award recipient
2012	"Thank a Teacher" recipient, Georgia Tech
2011	Heritage Lectureship recip., Dept. of Microbiol. Univ. Mich. Med. Sch.
2011	George Griffin Undergrad Faculty of the Year Award recipient, GA Tech
2003-2006	National Institutes of Health (NRSA) postdoctoral fellowship
2000	Michigan Teaching Fellows award, University of Michigan
1999-2000	Pre-doctoral fellowship recipient, Univ. Mich. Rackham Graduate School
1996-1999	Parke-Davis Biotechnology Scholarship recip, Univ. Mich. Med. School
1993-1994	Merit Scholarship recipient, University of Michigan
1990	Scholar of the College Award recipient, Boston College

RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITIES

PUBLISHED BOOKS, BOOK CHAPTERS, AND EDITED VOLUMES

Refereed Book Chapters

1. Hammer BK & BL Bassler. 2008. Signal integration in the *Vibrio harveyi* and *Vibrio cholerae* quorum-sensing circuits, in Chemical Communication among Bacteria, ASM Press. 323-332. [link](#)
 2. Hammer BK. 2018. Michele Swanson: a rewarding career and life in balance, p 269–281. In Whitaker RJ, Barton HA (ed), Women in Microbiology. American Society for Microbiology, Washington, DC. [link](#)
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REFEREED PUBLICATIONS

Published and in press Journal Articles

(from GT *; GT students-**bold**, undergraduates-underlined)

1. Hull RW, Hammer BK & Leavey JK. 2025. Improving Understanding of the Role of Biology in Advancing the UN Sustainable Development Goals 2025. *Am Biol Teach.* 87(4-5):254-262 *. [link](#)
2. **Zhang C, Datta S**, Ratcliff, WC & Hammer BK. 2024. Constitutive expression of the Type VI secretion system carries no measurable fitness cost in *Vibrio cholerae*. *Ecol Evol.* 14:e11081. *. [link](#)
3. **Pokhrel AR**, Steinbach G, **Krueger A**, **Day TC**, **Tijani J**, **Bravo P**, **Ng SL**, Hammer BK & Yunker PJ. 2024. The biophysical basis of bacterial colony growth. *Nat Phys* 10.1038. *. [link](#)
4. **Copeland R, Zhang C**, Hammer BK & Yunker PJ. 2024. Spatial constraints subvert microbial arms race. *PLoS Comput Biol* 20(1): e1011807 *. [link](#)
5. **MacGillivray KA**, **Ng SL**, Wiesenfeld S, Guest RL, Jubery T, Silhavy TJ, Ratcliff WC & Hammer BK. 2023. Trade-offs constrain adaptive pathways to Type VI secretion survival *iScience* 26, 108332.* [link](#)
6. **Zhang C** & Hammer BK. 2023. Sociomicrobiology: Coexistence of conflict and cooperation in the squid light organ. *Curr Biol.* 33(20) R1063-R1064.* [link](#)
7. Sela R, Hammer BK & Halpern M. 2023. Can non-toxigenic *Vibrio cholerae* reduce a cholera infection? *Isr J Chem.* 2023, 63, e202300024. [link](#)
8. **Bravo P**, **Ng SL**, **MacGillivray KA**, Hammer BH & Yunker PJ. 2023. Vertical growth dynamics of biofilms. *Proc Natl Acad Sci, USA.* 120 (11) e2214211120. *. [link](#)

9. **Ng SL, Kammann S**, Steinbach G, **Hoffmann T**, Yunker PJ & Hammer BK. 2022. Evolution of a cis-acting SNP that controls Type VI Secretion in *Vibrio cholerae*. *mBio*, e00422-22.* [link](#)
10. **Crisan CV, Chandrashekar H, Everly C**, Steinbach G, Hill Se, Yunker PJ, Lieberman RR & Hammer BK. 2021. A new contact killing toxin permeabilizes cells and belongs to a broadly distributed protein family. *mSphere*. 6:e00318-21.* [link](#)
11. **Crisan CV, Nichols HL, Wiesenfeld S**, Steinbach G, Yunker PY & Hammer BK. 2021. Glucose confers protection to *Escherichia coli* against contact killing by *Vibrio cholerae*. *Sci Rep*. 11:2935.* [link](#)
12. Steinbach G, **Crisan CV, Ng SL**, Hammer BK, & Yunker PJ. 2020. Accumulation of dead cells from contact killing facilitates coexistence in bacterial biofilms. *J R Soc Interface*. (17) 173.* [link](#)
13. Sela R, Hammer BK & Halpern M. 2020. Quorum sensing signaling by chironomid egg masses microbiota affects Haemagglutinin/Protease (HAP) production by *Vibrio cholerae*. *Mol Ecol*. 00:1-11. [link](#)
14. **Crisan C** & Hammer BK. 2020. The *Vibrio cholerae* Type VI Secretion System: Toxins, Regulators and Consequences. *Environ Microbiol* 22(10):4112-22.* [link](#)
15. **Crisan, C, Chande A, Williams K, Raghuram V, Rishishwar L**, Steinbach G Watve SS, Yunker PJ, Jordon IK & Hammer BK. 2019. Analysis of *Vibrio cholerae* genomes identifies new Type VI Secretion System gene clusters. *Genome Biol*. 20:163.* [link](#)
16. **Logan SL**, Thomas J, Yan J, **Baker RP, Shields DS**, Xavier JB, Hammer BK & Parthasarathy R. 2018. The *Vibrio cholerae* Type VI Secretion System Can Modulate Host Intestinal Mechanics to Displace Gut Bacterial Symbionts. *Proc Natl Acad Sci, USA* 115: E3779-E3787. [link](#)
17. Brown SP, Blackwell HP & Hammer BK. 2018. The State of the Union is Strong: A review of ASM's 6th conference on Cell-cell Communication in Bacteria. *J Bacteriol* 200(14): e00291-18. * [link](#)
18. **Kalziqi A**, Thomas J, **Yanni D**, Hammer BK & Yunker P. 2018. Immobile Active Matter: Activity from Death and Reproduction *Phys Rev Lett* 120:1-6.* [link](#)
19. **Krishnaswamy B, Jian Y, Austin CM, Perdomo JE, Patel SC**, Hammer BK, Forest CR & Sivakumar R. 2017. ADMA: Amplitude-Division Multiple Access for Bacterial Communication Networks. *IEEE Transactions in Molecular, Biological, and Multi-Scale Communications*. 3(3):134-149.* [link](#)
20. **Austin CM, Caro DM, Sankar S, Penniman WF, Perdomo JE, Hu J, Patel S, Gu X, Watve S**, Hammer BK & Forest CR. 2017. Porous monolith microfluidics for bacterial cell-to-cell communication assays. *Biomicrofluidics* 11:044110.* [link](#)

21. Thomas J, **Watve SS**, Ratcliff WC & Hammer BK. 2017. Horizontal gene transfer of functional Type VI killing genes by natural transformation. *mBio* 8:e00654-17.* [link](#)
22. McNally L, **Bernardy E**, Thomas J, **Kalziqi A**, **Pentz J**, Brown S, Hammer BK, Yunker P & Ratcliff W. 2017. Killing by Type VI secretion drives genetic phase separation and correlates with increased cooperation. *Nat Commun* 8:14371.* [link](#)
23. **Watve SS**, **Chande A**, **Rishishwar L**, Mariño-Ramírez L, Jordan IK & Hammer BK. 2016. Whole Genome Sequences of 26 *Vibrio cholerae* isolates. *Genome Announc* (4) e01396-16.* [link](#)
24. **Bernardy EE**, Turnsek MA, **Wilson SK**, Tarr CL & Hammer BK. 2016. Diversity of Clinical and Environmental Isolates of *Vibrio cholerae* in Natural Transformation and Contact-Dependent Bacterial Killing Indicative of Type VI Secretion System Activity. *Appl Environ Microbiol.* 82(9):2833-2842.* [link](#)
25. **Watve S**, Thomas J & Hammer BK. 2015. CytR Is a Global Positive Regulator of Competence, Type VI Secretion, and Chitinases in *Vibrio cholerae*. *PLoS ONE* 10(9): e0138834.* [link](#)
26. **Antonova E**, Hammer BK. 2015. Genetics of Natural Competence in *Vibrio cholerae* and other Vibrios. *Microbiol Spectrum* 3(3):VE-0010-2014.* [link](#)
27. **Watve S**, **Bernardy EE** & Hammer BK. 2014. *Vibrio cholerae*: Measuring natural transformation frequency. *Curr Protoc Microbiol.* 35:6A.4.1-6A.4.12.* [link](#)
28. **Austin CM**, **Stoy W**, **Su P**, **Harber MC**, Bardill JP, Hammer BK, Forest CR. 2014. Modeling and validation of autoinducer-mediated bacterial gene expression in microfluidic environments. *Biomicrofluidics* 8: 034116.* [link](#)
29. Krishnaswamy B, **Henegar CM**, Bardill JP, **Russakow D**, **Holst GL**, Hammer BK, Forest CR, Sivakumar R. 2013. Time-elapse communication: bacterial communication on a microfluidic chip. *IEEE Transactions on Communications.* 61(12):5139-5151.* [link](#)
30. **Zhao X**, Koestler BJ, Waters CW & Hammer BK. 2013. Post-transcriptional activation of a diguanylate cyclase by quorum sensing small RNAs promotes biofilm formation in *Vibrio cholerae*. *Mol Microbiol* 89:989–1002.* [link](#)
31. **Li K**, **Zhao X**, Hammer BK, Du S & Chen Y. 2013. Nanoparticles Inhibit DNA Replication by Binding to DNA: Modeling and Experimental Validation. *ACS Nano* 7(11):9664-9674.* [link](#)
32. Katz LS, Petkau A, Beaulaurier J, Tyler S, **Antonova ES**, Turnsek M, Guo Y, Wang S, Paxinos E, Orata F, Gladney L, Stroika S, Folster J, Rowe L, Freeman M, Knox N, Frace M, Boncy J, Hammer BK, Boucher Y, Bashir A, Hanage WP, Van Domselaar G, Tarr CL. 2013. Evolutionary dynamics of *Vibrio cholerae* following a single source introduction to Haiti. *mBio.* 4:1-10.* [link](#)

33. Sun YU, **Bernardy EE**, Hammer BK, Miyashiro TI. 2013. Natural Competence in *Vibrios*. *Mol Microbiol*. 89:583-95.* [link](#)
34. Akyildiz IF, Fekri F, Sivakumar R, Forest CR & Hammer BK. 2012. MONACO: Fundamentals of Molecular Nano-Communication Networks. *IEEE Wireless Commun*. 19(5): 12-18.* [link](#)
35. **Antonova E**, **Bernardy EE** & Hammer BK. 2012. Natural competence in *Vibrio cholerae* is controlled by a nucleoside scavenging response that requires CytR-dependent anti-activation. *Mol Microbiol*. 86: 1215-1231.* [link](#)
36. Bardill JP & Hammer BK. 2012. Non-coding sRNAs regulate virulence in the bacterial pathogen *Vibrio cholerae*. *RNA Biology*. 9(4): 392-401.* [link](#)
37. **Antonova E** & Hammer BK. 2011. Quorum-sensing autoinducer molecules produced by members of a multispecies biofilm promote horizontal gene transfer to *Vibrio cholerae*. *FEMS Micro Lett*. 322: 68-76. * [link](#)
38. Bardill JP, **Zhao X** & Hammer BK. 2011. The *Vibrio cholerae* quorum sensing response is mediated by Hfq-dependent sRNA/mRNA base pairing interactions. *Mol Microbiol*. 80:1381-1394.* [link](#)
39. Hammer BK & Svenningsen SL. 2011. Small RNA target genes and regulatory connections in the *Vibrio cholerae* quorum sensing system. *Methods Mol Biol*. 692:189-206. * [link](#)
40. Hammer BK & Bassler BL. 2009. Distinct sensory pathways in *Vibrio cholerae* El Tor and Classical biotypes modulate c-di-GMP levels to control biofilm formation. *J Bacteriol*. 191:169-177. [link](#)
41. Hammer BK & Bassler BL. 2007. Regulatory small RNAs circumvent the conventional quorum sensing pathway in pandemic *Vibrio cholerae*. *Proc Natl Acad Sci USA*. 104:11145-11149. [link](#)
42. Hammer BK & Bassler BL. 2003. Quorum sensing controls biofilm formation in *Vibrio cholerae*. *Mol Microbiol*. 50:101-114. [link](#)
43. Hammer BK, Tateda ES & Swanson MS. 2002. A two-component regulator induces the transmission phenotype of stationary phase *Legionella pneumophila*. *Mol Microbiol*. 44:107-118. [link](#)
44. Swanson MS & Hammer BK. 2000. *Legionella pneumophila* pathogenesis: A fateful journey from amoebae to macrophages. *Ann Rev Microbiol*. 54:567-613. [link](#)
45. Hammer BK & Swanson MS. 1999. Coordination of *Legionella pneumophila* virulence with entry into stationary phase by ppGpp. *Mol Microbiol*. 33:721-731. [link](#)
46. Hammer B & Stoermer EF. 1997. Diatom-based interpretation of sediment banding in an urbanized lake. *J. Paleolimnol*. 17:437-449. [link](#)

47. Nelson D, Kuppermann N, Fleisher GR, Hammer BK, Thompson CM, Garcia CT, Novitsky TJ, Parsonnet J, Onderdonk A, Siber GR & Saladino RA. 1995. Recombinant endotoxin neutralizing protein improves survival from *Escherichia coli* sepsis in rats. *Crit Care Med.* 23: 92-98. [link](#)
48. Garcia C, Saladino R, Thompson C, Hammer B, Parsonnet J, Wainwright N, Novitsky T, Fleisher GR & Siber G. 1994 Effect of a recombinant endotoxin-neutralizing protein on endotoxin-shock in rabbits. *Crit. Care Med.* 22:1211-1218. [link](#)
49. Saladino R, Garcia C, Thompson C, Hammer B, Parsonnet J, Novitsky T, Siber G & Fleisher G. 1994. Efficacy of a recombinant endotoxin neutralizing protein in rabbits with *Escherichia coli* sepsis. *Circ Shock* 42: 104-110. [link](#)
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Conference Presentation with Proceedings (Refereed)

1. **Krishnaswamy B, Henegar CM, Bardill JP, Russakow D, Holst GL**, Hammer BK, Forest CR & Sivakumar R. 2013. When Bacteria Talk: Time Elapse Communication for Super-Slow Networks, Proceedings of the Institute of Electrical and Electronics Engineers (IEEE) International Conference on Communications (ICC) 2013 - Wireless Networking Symposium (ICC'13 WN), Budapest, Hungary.
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Submitted Journal Articles (and in preparation, review, or revision)

1. Pokhrel AR, **Copeland R, Hejri M, Belpaire TER**, Steinbach G, **Ng SL**, Hammer BK & Yunker PJ. 2025. Cell-substrate friction controls biofilm development. *Physical Review Letters*. (in revision)
2. **Zhang C, Hassler H**, Williams L, Ratcliff WC, Speare, L & Hammer BK. 2025. 40% of Gram-Negative Bacteria contain the T6SS. *Nat Commun*. (in preparation)
3. **Zhang C.** & Hammer B.K. 2025. Microbial Primer: T6SS, a deadly bacterial harpoon. *Microbiology*. (in preparation)
4. **Copeland R**, Wetherington M, **Zhang C**, Hammer BK & Yunker PJ. 2025. Higher levels of antibiotic resistance are less competitive: the hidden cost of no-metabolic cost resistance. *Nat Ecol Evol*. (in preparation)
5. **Zhang C**, Petro C, Ratcliff WC, Speare L & Hammer BK. 2026. Frequency and Distribution of the T6SS across the world. *ISME J*. (in preparation)
-

OTHER PUBLICATIONS AND CREATIVE PRODUCTS

1. The Mold That Changed the World. 2022. [link](#)
2. Science Riot. 2019. [link](#)
3. Story Collider. 2018. [link](#)
4. TEDx Douglasville. "Cooperation and Conflict in the Microbial World". 2016. [link](#)

PRESENTATIONS (bold – invited talks)

2022: ASM Conference on Biofilms, Charlotte NC
2022: Spelman College, Department of Biology, Atlanta GA
2022: Tel Aviv University, Dept of Clinical Microbiol & Immunol, Tel Aviv Israel
2022: Haifa University - Oranim, Department of Biology, Haifa Israel
2021: Georgia State University, Department of Biology, Atlanta GA
2020: Truett McConnell University, Cleveland, GA
2020: University of Tennessee – Knoxville, Knoxville TN
2019: Florida Branch of the American Society for Microbiology, Clearwater FL
2019: KY-TN Branch of the American Society for Microbiology, Nashville TN
2019: Rio Grande Branch of the American Society for Microbiology, Socorro NM
2019: University of Maryland - Baltimore County, Baltimore MD
2018: Emory Univ., Microbiology & Molecular Genetics Grad Program Atlanta GA
2018: Univ. of Texas – San Antonio, Center for Emerging Infectious Diseases, San Antonio TX
2018: Molecular Genetics of Bacteria and Phages Meeting. Madison, WI
2018: University of Florida, Emerging Pathogens Institute, Gainesville FL
2018: Boston College, Biology Department, Chestnut Hill, MA
2018: Georgia State Univ., Department of Life and Earth Sciences, Dunwoody, GA
2017: Vibrios 2017 ASM Conference, Chicago IL
2017: University of Oregon, Host-Microbe Center, Eugene OR
2017: University of Georgia, Department of Microbiology, Athens GA
2017: University of Haifa Oranim, Department of Biology, Haifa Israel
2017: American Society for Microbiology Microbe 2017 meeting, New Orleans, LA
2017: Scialog® Molecules Come to Life conference 3, Tucson AZ
2016: Boston University, Systems Biology, Boston MA
2016: Kennesaw State Univ., Molecular Biosciences Interest Group, Kennesaw GA
2016: South China Ag. Univ, Sociobiology Basic Science Group, Guangzhou, China
2016: 2nd ASM Conference on Experimental Microbial Evolution, Washington DC
2016: Georgia Tech School of Biology biannual retreat (keynote), Helen, GA
2016: 2016 American Society for Microbiology Microbe meeting, Boston, MA
2016: Scialog® Molecules Come to Life conference 2, Tucson AZ
2016: Armstrong State University, Department of Biology, Savannah GA
2015: 101st Annual Meeting of the Southeastern Branch of the ASM, Kennesaw, GA
2015: 2015 Molecular Genetics of Bacteria and Phages Meeting. Madison, WI
2015: Scialog® Molecules Come to Life conference 1, Tucson AZ
2015: U.S.-Japan Conf. on Cholera and Other Enteric Bacterial Infections, Gainesville FL
2014: National Academies Keck Futures Initiatives Conference, Collective Behavior, Irvine CA
2014: Emory University, Department of Biochemistry, Atlanta GA
2014: Instituto Gulbenkian de Ciência, Lisbon, Portugal
2014: 114th General Meeting of the American Society for Microbiol, Boston, MA
2013: Univ. of North Carolina Sch of Med, Micro & Immunology Dept, Chapel Hill, NC
2013: 2013 Molecular Genetics of Bacteria and Phages Meeting. Madison, WI

2013: FASEB – Mechanisms and Regulation of Prokaryotic Transcription, Saxtons River, VT
 2013: 113th General Meeting of the American Society for Microbiol, Denver, CO
 2012: Tufts Univ. School of Medicine, Molecular Biology and Microbiol, Boston, MA
 2012: BioCom²:NSF Workshop, Biological Comp & Communications, Boston, MA
 2012: National Science Teachers Association 2012 Area Conference, Atlanta, GA
 2012: 98th Annual Meeting of the Southeastern Branch of the ASM, Athens, GA
 2012: Gordon Research Conference on Microbial Stress Response, South Hadley, MA
2012: 112th General Meeting of American Society for Microbiol, San Francisco, CA
2012: 26th Annual Meeting of the AOAC International, Atlanta, GA
2011: University of Michigan Med Sch, Dept. of Micro & Immunol, Ann Arbor MI
2011: Michigan State Univ., Microbiol & Molecular Genetics Dept., East Lansing MI
2011: National Institutes of Health, Laboratory of Molecular Biology, Bethesda, MD
 2011: 4th ASM Conference on Cell-Cell Communication in Bacteria, Miami FL
2011: 97th Annual Meeting of the Southeastern Branch of the ASM, Gainesville, FL
 2011: 111th General Meeting of American Society for Microbiol, New Orleans, LA
2011: University of Delaware, Dept. of Biological Sciences, Newark, DE
2011: North Georgia College and State Univ, Biology Department, Dahlonega GA
 2011: ASM Conference on Regulating with RNA in Bacteria, San Juan, Puerto Rico
2011: Emory Univ, Population Biology, Evolution & Ecology program, Atlanta GA
2011: Bacterial Waterborne & Emerging Infect Diseases in MENA, Nicosia, Cyprus
2010: University of Georgia, Dept. of Microbiology, Athens GA
2010: Vibrios in the Environment 2010, Biloxi MS
2010: Clemson University, Department of Biological Sciences, Clemson SC
2009: FASEB Meeting on Microbial Pathogenesis, Snowmass CO
2009: 13th International Conf. on Emerging Dis in the Pacific Rim, Kolkata, India
2009: “Microbes to Metazoans” conference, Georgia Tech, Atlanta GA
2009: Georgia State University, Department of Biology, Atlanta GA
2009: University of Georgia, Dept. of Microbiology, Athens GA
2008: Emory University, Dept. of Microbiology & Immunology, Atlanta GA
2008: University of Chicago, Department of Microbiology, Chicago IL
2008: University of Vermont, Microbiol and Molecular Genetics Dept, Burlington VT
2008: Clark University, Department of Biology, Worcester MA
2008: Providence College, Dept. of Biology, Providence RI
2008: Georgia Institute of Technology, School of Biology, Atlanta GA
2008: Michigan State Univ., Microbiol & Molecular Genetics Dept., East Lansing MI
2008: University of Michigan Med Sch, Dept. of Micro & Immunol, Ann Arbor MI
2008: Wayne State Univ. School of Med, Immunology & Microbiol Dept., Detroit MI
2008: New Approaches to Infectious Agents Symposium, Utrecht, The Netherlands
2007: Institut Pasteur, Vibrios 2007 Meeting, Paris France
2007: Beloit College, Biology Department, Beloit WI
2007: UC San Diego, Division of Biological Sciences, La Jolla CA
2007: Scripps Institution of Oceanography, La Jolla CA
2007: Virginia Institute of Technology, Dept. of Biological Sci, Blacksburg VA
 2007: ASM Conference on Cell-Cell Communication in Bacteria (3rd), Austin TX

2006: 14th International Microbial Genomics Conference, Lake Arrowhead CA
2005: CSHL Meeting: Microbial Pathogenesis & Host Response, Cold Spring Harbor NY
2004: ASM Conference on Cell-Cell Communication in Bacteria (2nd), Banff Alberta
2003: 103rd General Meeting: American Society for Microbiology, Washington DC
2000: Gordon Research Conf: Microbial Toxins & Pathogenicity, Andover NH
1999: Gordon Research Conf: Molecular Mechanisms of Microbial Adhesion, Newport RI

GRANTS AND CONTRACTS (08/2008 - 2025)

As Principal Investigator

(total: \$2,459,404)

Title: Renewal: REU Site: Aquatic Chemical Ecology at Georgia Tech

Agency: National Science Foundation

Total: \$389,075

Role: PI

Period of Contract: 04/01/16 - 03/31/20

Title: The Role of Quorum-Sensing Signals in the Production of a Secreted Protease by *Vibrio cholerae* in Environmental Mixed Species Consortia on Chironomid Egg Masses

Agency: US Israel Binational Science Foundation

Total: \$229,926 (Hammer \$114,963)

Role: PI

Period of Contract: 09/01/2016 - 08/31/2021

Title: A tunable microfluidic platform for observing long-term microbial community dynamics

Agency: Gordon and Betty Moore Foundation

Total: \$168,750 (Hammer \$56,250)

Role: PI

Period of Contract: 10/01/17 - 10/01/19

Title: REU Site: Aquatic Chemical Ecology at Georgia Tech

Agency: National Science Foundation

Total: \$375,160

Role: PI

Period of Contract: 04/01/16 - 03/31/20

Title: Rebooting the Gut Microbial Ecosystem Using Bacterial Dueling

Agency: Simons Foundation

Total: \$168,750 (Hammer \$56,250)

Role: PI

Period of Contract: 10/01/16 – 09/30/19

Title: Rebooting the Gut Microbial Ecosystem Using Bacterial Dueling

Agency: Gordon and Betty Moore Foundation
Total: \$168,750 (Hammer \$56,250)
Role: PI
Period of Contract: 07/01/15 - 06/30/17

Title: CAREER: The regulation of natural transformation in *Vibrio cholerae*
Agency: National Science Foundation
Total: \$900,000
Role: PI
Period of Contract: 07/01/12 - 09/30/18

Title: Molecular Mechanisms of Non-coding Bacterial Small RNAs in a Model Quorum Sensing System
Agency: NSF
Total: \$511,456
Role: PI
Period of Contract: 07/01/09 - 06/30/13

As Co-Principal Investigator
(total: \$6,135,646; Hammer: \$1,519,304)

Title: URoL:ASC:Synthetic Protocell Communities to Address Critical Sensing
Agency: National Science Foundation
Total: \$ 2,225,964 (Hammer \$537,827)
Role: co- PI (M Styczynski PI)
Period of Contract: 08/01/23 - 07/31/27

Title: In vitro proof-of-concept use of engineered probiotic bacteria as a vaccine adjuvant
Agency: Air Force Research Laboratories
Total: \$299,620 (Hammer \$178,123)
Role: co- PI (M Farrell PI)
Period of Contract: 07/01/23 - 09/28/26

Title: Material Consequences of Distinct Interbacterial Modes of Aggression in Bacterial Biofilm
Agency: National Science Foundation
Total: \$610,062 (Hammer \$203,354)
Role: co- PI (P Yunker PI)
Period of Contract: 08/01/19 - 07/31/25

Title: NetSE:Large: MONACO: Fundamentals of Molecular Nano-Communication Networks
Agency: National Science Foundation
Total: \$3,000,000 (\$600,000 Hammer)
Role: co-PI (I Akyildiz PI)

Period of Contract: 08/15/11 - 08/14/16

TEACHING (2008-2025)

<u>Semester, year</u>	<u>Course #</u>	<u>Course title</u>	<u># of Students</u>
Fall, 2025	BIOS 3381A1	Microbiology lab	23
Fall, 2025	BIOS 3381A2	Microbiology lab	22
Fall, 2025	BIOS 4460	Communicating Biological Research	12
Summer, 2025	BIOS 3450RBT	Cell & Molecular Biology	25
Fall, 2024	BIOS3381 A1	Microbiology lab	24
Fall, 2024	BIOS3381 A2	Microbiology lab	24
Fall, 2023	BIOS3381 A1	Microbiology lab	16
Fall, 2023	BIOS 3381 A2	Microbiology lab	12
Summer, 2023	BIOS 3450RBT	Cell & Molecular Biology	27
Spring, 2023	BIOS 4607	Molecular Microbiology	6
Spring, 2023	BIOS 4607	Molecular Microbiology	29
Fall, 2022	BIOS 3381A1	Microbiology lab	23
Fall, 2022	BIOS 3381A2	Microbiology lab	19
Fall, 2022	BIOS 4460	Communicating Biological Research	16
Summer, 2022	BIOS 3450RBT	Cell & Molecular Biology	21
Fall, 2021	BIOS 1220	The Biology of Sex and Death	59
Fall, 2021	BIOS 3381A1	Microbiology lab	22
Fall, 2021	BIOS 3381A2	Microbiology lab	24
Spring, 2021	BIOS 4607	Molecular Microbiology	6
Spring, 2021	BIOL 6607	Molecular Microbiology	14
Fall, 2020	BIOS 1220	The Biology of Sex and Death	68
Fall, 2020	BIOS 3381A1	Microbiology lab	18
Fall, 2020	BIOS 3381A2	Microbiology lab	12
Summer, 2020	BIOS 3450RBT	Cell & Molecular Biology	54
Spring, 2020	BIOS 4607	Molecular Microbiology	6
Spring, 2020	BIOL 6607	Molecular Microbiology	13
Summer, 2019	BIOL 3450	Cell & Molecular Biology	19
Spring, 2019	BIOL 4607	Molecular Microbiology	11
Spring 2019	BIOL 6607	Molecular Microbiology	8
Fall, 2018	BIOL 1220	The Biology of Sex and Death	54
Summer, 2018	BIOL 3450	Cell & Molecular Biology	13
Spring, 2018	BIOL 4607	Molecular Microbiology	8
Spring, 2018	BIOL 6607	Molecular Microbiology	14
Spring, 2018	BIOL 4460	Communicating Biological Research	15
Spring, 2017	BIOL 1220	The Biology of Sex and Death	20
Fall, 2016	BIOL 4607	Molecular Microbiology	9
Fall, 2016	BIOL 6607	Molecular Microbiology	7
Fall, 2015	BIOL 4607	Molecular Microbiology	7

Fall, 2015	BIOL 6608	Prokaryotic Molecular Genetics	9
Fall, 2015	BIOL 3381A	Intro Microbiology Lab	15
Fall, 2015	BIOL 3381B	Intro Microbiology Lab	8
Fall, 2014	BIOL 4608	Prokaryotic Molecular Genetics	6
Fall, 2014	BIOL 6608	Prokaryotic Molecular Genetics	11
Fall, 2014	BIOL 3381A	Intro Microbiology Lab	15
Fall, 2014	BIOL 3381B	Intro Microbiology Lab	18
Spring, 2014	BIOL 4801B	Quorum Sensing; Bact. Chem. Ecol.	3
Spring, 2014	BIOL 8801C	Quorum Sensing; Bact. Chem. Ecol.	8
Fall, 2013	BIOL 4608	Prokaryotic Molecular Genetics	3
Fall, 2013	BIOL 6608	Prokaryotic Molecular Genetics	9
Fall, 2012	BIOL 4608	Prokaryotic Molecular Genetics	11
Fall, 2012	BIOL 6608	Prokaryotic Molecular Genetics	13
Fall, 2012	BIOL 3381A	Intro Microbiology Lab	12
Fall, 2012	BIOL 3381B	Intro Microbiology Lab	15
Spring, 2012	BIOL 4801B	Quorum Sensing	1
Spring, 2012	BIOL 8801C	Quorum Sensing	8
Fall, 2011	BIOL 4608	Prokaryotic Molecular Genetics	8
Fall, 2011	BIOL 6608	Prokaryotic Molecular Genetics	9
Spring, 2011	BIOL4802F	Regulatory RNAs	10
Spring, 2011	BIOL8802K	Regulatory RNAs	7
Fall, 2010	BIOL 4608	Prokaryotic Molecular Genetics	10
Fall, 2010	BIOL 6608	Prokaryotic Molecular Genetics	11
Spring, 2010	BIOL 1510	Biological Principles	304
Fall, 2009	BIOL 4608	Prokaryotic Molecular Genetics	5
Fall, 2009	BIOL 6608	Prokaryotic Molecular Genetics	28

INDIVIDUAL STUDENT GUIDANCE

Ph.D. Students (9)

Joseph Vath

PhD predoctoral student (passed qualifying exam November 8, 2024)

Tentative title “Modular Detection and Communication in Synthetic Protocells”

Current position: Graduate Student mentored by me

Chris Zhang

PhD predoctoral student (passed qualifying exam Sept 11, 2023)

“Costs and benefits of bacterial antagonism”

Current position: Graduate Student co-mentored by Will Ratcliff and me

Katie MacGillivray

PhD Biological Sciences, 2024

“Experimental evolution of resistance to contact killing”

Current position: Postdoc at University of California Davis [link](#)

Siu Lung Ng

PhD, Biological Sciences, 2022

“Evolution of Bacterial Type VI Secretion Regulation and Defense”

Current position: Bioassay Scientist at CareDx Inc [link](#)

Cristian Crisan

PhD, Biological Sciences, 2021

“Antimicrobial dynamics of the *Vibrio cholerae* Type VI Secretion System”

Current position: Postdoc at Emory University [link](#)

Samit Watve

PhD, Biological Sciences, 2017

“Genetics of natural competence and type VI secretion in *Vibrio cholerae*”

Current position: Principal Scientist at Roche [link](#)

Eryn Bernardy

PhD, Biological Sciences, 2016

“Natural competence and type VI secretion in *Vibrio cholerae*”

Current position: Assistant Professor at Elon University [link](#)

Elena Antonova

PhD, Biology, 2013

“The regulatory network controlling natural competence for DNA uptake in *Vibrio cholerae*”

Most recent position: Imaging Specialist, Northwestern University Chicago IL

Xiaonan Zhao

PhD, Biology, 2013

“Non-coding small RNAs regulate multiple mRNA targets to control the *Vibrio cholerae* quorum sensing response”

Current position: Assistant Professor at Baylor College of Medicine [link](#)

M.S. Students (15)

2025 – Katrina Lancaster

2023 – Harini Narasimhan (Adivo, Senior Consultant) [link](#)

2023 – Rakin Choudhury (Georgia Tech, PhD student) [link](#)

2020 – Jessica Mulligan (Corteva, Data Analyst) [link](#)

2020 – Mansi Gupta (Emory University, Bioinformatics Analyst) [link](#)

2018 – Vishnu Raghuram (Umea University, Postdoc) [link](#)

2018 – Harshini Chandrashekar (Benaroya Res Inst, Bioinformatics Scientist) [link](#)

2017 – Tobias Hoffmann (Emory University, Research Specialist)

2016 – Aroon Chande (Color, Senior Bioinformatics Engineer) [link](#)

2015 – Taylor Griswold (CDC, Bioinformatics Analyst) [link](#)

2014 – Adero Francis (Medical Univ of South Carolina, Infectious Disease Fellow) [link](#)
2012 – Erika Sigman (Emory University, Physician) [link](#)
2011 – Vani Rajan (Veracyte Inc, Principal Bioinformatics Scientist) [link](#)
2010 – Chandni Desai (ICON plc, Senior Clinical Scientist) [link](#)
2009 – Charlotte Wiest (Janelia Farms HHMI, Software Engineer) [link](#)

Undergraduate Students (41)

Undergraduate Georgia Tech researchers (29)

current Zachary Beddingfield
current Isabel Calimlim
current Grayson Geuss
current Dohyun Lee
current Prajna Dhinakaran
2024 Erica Drummond (SENTA, ENT medical assistant) [link](#)
2024 Tahrima Jubery (Karchem Consulting, Lab Informatics Consultant) [link](#)
2022 Michael Nguyen (Rush University Medical School, medical student) [link](#)
2022 Emma Cooper [link](#)
2021 Daniel Kim (CDC in Atlanta GA, technician)
2021 Kate Everly (University of North Carolina, PhD student) [link](#)
2021 Ashley Wilson (Revvity life sciences company, Boulder CO, scientist) [link](#)
2021 Jeremy Heit (Georgia Tech, BME student)
2020 Simran Pandit (Parthenon, consultant) [link](#)
2019 Holly Nichols (University of Wisconsin-Madison, PhD student) [link](#)
2019 Kenneth Williams (Emory University Medical School, medical student)
2018 Tong Yu (Bristol Myers Squibb, Scientist) [link](#)
2017 Hanna Assefa (Wellstar Medical Group, physician) [link](#)
2016 Dina Menesha (Peace Corps, health volunteer)
2015 Siu Lung Ng (CareDx Inc, Bioassay Scientist) [link](#)
2015 Ioana Pencea (Graficy Trauma Project, Research Assistant) [link](#)
2015 Taylor Willoughby (Epic, Madison WI)
2014 Sarah Wilson (Bristol Myers Squibb, Senior Principal Scientist) [link](#)
2013 Joseph Elsherbini (Massachusetts General Hospital, Data Scientist) [link](#)
2012 Maria Nellesen McCrackin (UC Davis Medical Center, Clinical Assistant Professor) [link](#)
2012 Brian Duke (Mirai Bio, Principal Scientist) [link](#)
2011 Eryn Bernardy (Elon University, Assistant Professor) [link](#)
2011 Mary Courtney Griffin (LifeLine Animal Project, Veterinarian) [link](#)
2010 Sophia Fisher (Samaritan Behavioral Health, Inc, Social Worker) [link](#)

Undergraduate Pre-Teaching SURE students (3):

2013 Susie Lee
2012 Andrea Crews
2011 Kajal Patel

Undergraduate Research Experience for Undergraduates (REU) students (9):

2022	Anne Wood (University of Wisconsin > LaCrosse; USGS, Researcher) link
2021	Kameron Smith (Furman University > Emory University MPH candidate) link
2019	Megan Dillon (Randolph-Macon College > NC State University, postdoc) link
2018	Brandy Njai (University of Georgia > Emory Univ Medical School, medical student) link
2017	Roland Seim (University of Georgia > UNC Chapel Hill, PhD student) link
2015	Jessica Morgan (Smith College > Univ of Chicago, Educational Outreach Coord) link
2014	Clinton Knap (University of Indianapolis > Schneck Family Care, Physician) link
2011	David Oh (Swarthmore College)
2010	Eryn Bernardy (Georgia Tech > Elon University, Assistant Professor) link

Service on thesis and dissertation committees

PhD dissertations committees (38):

current	Lan Yang (Physics) Gumbart lab
current	Emily Deyerle (Biological Sciences) DiChristina lab
current	Rowan Thomas (Biological Sciences) Speare lab
current	Yeunsoo Lee (Biological Sciences) Storici lab
current	Yifan Tang (Chemistry and Biochemistry) Agarwal lab
current	Alexis Ramses (Biological Sciences) Whiteley lab
current	Shreya Kothari (Biological Sciences) Kubanek lab
current	Lixinhao Yang (Chemistry) Gumbart lab
current	Davina Campbell (Biological Sciences) Diggle lab
current	Yongjoon Yu (Chem & Biomolecular Engineering) Wilson lab
current	Sumin Lee (Chem & Biomolecular Engineering) Wilson lab
2025	Valerie Kay (Chem & Biomolecular Engineering) Wilson lab
2024	Aawaz Pokhrel (Physics) Yunker lab
2024	Pablo Bravo (Physics) Yunker lab
2024	Holden Wang (Civil and Environmental Engineering) Huang lab
2024	Dowan Kim (Chem & Biomolecular Engineering) Wilson lab
2024	Chris Johnson (Biological Sciences, 2024) Stolifi lab
2023	Fernanda Piorino (Chem & Biomolecular Engineering) Styczynski lab
2023	Yael Toporek (Biological Sciences) DiChristina lab
2022	Ashley Hersey (Chem & Biomolecular Engineering) Styczynski lab
2021	Juan Pablo Barraza (Biological Sciences) Whiteley lab
2021	Zahra Nassiri (Biological Sciences) Storici lab
2019	Jordon Gulli (Ph D, Biological Sciences) Rosenzweig lab
2019	Monica McNerney (Chem & Biomolecular Engineering) Styczynski lab
2019	Arben Kalziqi (Physics) Yunker lab
2018	Juliana Soto-Giron (Civil & Environmental Engineering) Konstantinidis lab
2018	Shilpa Choudhury (Biological Sciences) Torres lab
2017	Daniel Watstein (Chem & Biomolecular Engineering) Styczynski lab
2016	Gena Tang (Biology) Borodovsky lab
2016	Caitlin Austin (Mechanical Engineering) Forrest lab

2016	Ramanan Sekar (Biology) DiChristina lab
2015	Rebecca Cooper (Biology) DiChristina lab
2015	Kyung Duk Koh (Biology) Storici lab
2013	Gabriel Mitchell (Biology) Weitz lab
2013	Seng Kew Wee (Biology) DiChristina lab
2013	Yu Zhang (Chemistry) Younan Xia lab
2012	Ivan Antonov (Computational Science & Engineering) Borodovsky lab
2011	Taylor Updegrave (Biology) Wartell lab

MS thesis committee member (3):

2011	Ercan Cacan (Biology) Gaucher lab
2012	Ryan Randall (Biology) Gaucher lab
2014	Patrick Chanton (Biology) Kostka lab

Mentorship of postdoctoral fellows or visiting scholars (2)

2009-13	J. Patrick Bardill (2009-2013)
2012-18	Jacob Thomas (2012-2018)

LEADERSHIP AND SERVICE

Professional Contributions

2022	Member, NSF RaMP review panel
2021	Member, NSF OCE REU review panel
2020-pres	Member, editorial board of <i>Applied and Environmental Microbiology</i>
2018-20	Distinguished Lecturer, American Society for Microbiology
2018-19	Organizing committee, Int. Society of Chem Ecology meeting, Atlanta GA
2018	Organizing committee, Southeastern regional ASM meeting, Atlanta GA
2017-18	Session convener, Microbe 2018 Amer Society for Microbiol, Atlanta GA
2015-17	Organizing comm ASM 6th "Cell-Cell Communication" mtg, Athens GA
2015	Member, NIH NIAID "Non-traditional therapeutics" review panel
2014-23	Member, editorial board of the <i>Journal of Bacteriology</i>
2013-14	Member, ACM NanoCom 2014 Technical Program Comm, Atlanta GA
2013	Member, NSF "Cellular Functions" proposal review panel, virtual panel
2012-13	Session convener, 113 th Mtg. of Amer Society for Microbiol, Denver CO
2010	Member, NSF "Genes/Genome Systems" review panel, Wash. DC
2009	Co-organizer "Microbes to Metazoans" symposium, Atlanta GA

Public and Community Service

2022	The Mold That Changed the World, performer
2019	Science Riot, presenter
2018	Atlanta Story Collider, presenter
2016	TEDx Douglasville, invited speaker

Institutional Contributions

2021-23 Member, new Environmental Science Degree Program Committee
2020-21 Chair, Institute Undergraduate Curriculum Committee
2018-19 Chair, School of Biological Sciences Lecturer Review Committee
2018 Member, Institutional Biosafety Committee
2017-23 Member, Institute Undergraduate Curriculum Committee
2016-19 Member SoBS Academic Initiatives Committee
2016-pres Member, SoBS Advisory Committee
2016 Member, School of Biology Academic Professional Search Committee
2016 Member, Office of the EVPR Interdisciplinary Research Inst (IRI) review
2015-pres Member, SoBS Teaching Awards Committee
2015-16 Member, School of Biology Chair Search Committee
2015-16 Member, Ecology Faculty Search Committee
2015-16 Member, Georgia Tech Advisory Technology Fee Committee
2014-pres Chair, School of Biological Sciences Undergraduate Committee
2012-13 Member, Molecular Ecology Faculty Search Committee
2012-14 Member, School of Biological Sciences Undergraduate Committee
2011-14 Advisor, Georgia Tech undergraduate iGEM team
2011-13 Co-chair, Research Retreat Committee
2010-pres Advisor, Georgia Tech American Society for Microbiol student chapter
2009-pres Chair, School of Biological Sciences Safety Committee
2009-11 Chair, School of Biology Seminar Committee
2009-10 Member, Microbiology Faculty Search Committee
2009-10 Member, New Biology Building Committee