

Stephanie N. Smith

407 Clayton Rd., Chapel Hill, NC 27514 ◊ (919) 714-3222 ◊ stesmith@live.unc.edu

Education and Training

2020-2023 **PhD in Marine Science (in progress), University of North Carolina at Chapel Hill**
2018-2020 **MS in Marine Science, University of North Carolina at Chapel Hill**
2016-2018 **Post-baccalaureate training, University of North Carolina at Chapel Hill**
2013-2016 **BA in Biology, minor in Marine Science, University of North Carolina at Chapel Hill**

Research Experience

Jan 2015 - Present

Thesis/Dissertation Research and Research Assistant, University of North Carolina at Chapel Hill

- Optimized horizontal gene transfer assays and studied the role of horizontal gene transfer in how bacteria evolve to colonize new hosts
- Visualized protein transfer between bacterial cells, bacterial competition at single-cell level, and aggregation of bacterial cells using fluorescence microscopy techniques
- Identified and characterized regulatory pathways that control Type VI Secretion in *Vibrio fischeri*
- Characterized a new model symbiosis between Atlantic Brief squid and multiple *Vibrio* species
- Trained new graduate and graduate students in various lab techniques; managed all ordering for lab

Aug 2015 - April 2016

Undergraduate Researcher, University of North Carolina at Chapel Hill

- Optimized click-it chemistry RNA labeling and fluorescence microscopy techniques for RNA-based studies of ocean sediment microbial populations

Summers 2015 - 2016

Research Technician, Dauphin Island Sea Lab (DISL)

- Examined mechanisms of ciguatera bioaccumulation in reef fish
- Analyzed sediment samples to investigate the relationship between microbial community and PAH levels at various sites following the Deepwater Horizon oil spill

Aug 2014 – June 2015

Undergraduate Researcher, University of North Carolina – Chapel Hill

- Studied correlation between growth rate and vitamin B12 levels in marine diatoms
- Identified diatom species from environmental samples using 18S sequencing
- Measured diatom cell counts from environmental samples by microscopy

Publications

- 2021 **Smith, S.**, & Septer, A. N. (2021). Quantification of Interbacterial Competition using Single-Cell Fluorescence Imaging. *JoVE (Journal of Visualized Experiments)*, (175), e62851.
- 2021 **Smith, S.**, Salvato, F., Garikipati, A., Kleiner, M., & Septer, A. N. (2021). Activation of the type VI secretion system in the squid symbiont *Vibrio fischeri* requires the transcriptional regulator TasR and the structural proteins TssM and TssA. *Journal of Bacteriology*, JB-00399.
- 2021 Lin, Y. L., **Smith, S. N.**, Kanso, E., Septer, A. N., & Rycroft, C. H. (2021). A subcellular biochemical model for T6SS dynamics reveals winning competitive strategies. *bioRxiv*.
- 2020 Speare, L., **Smith, S.**, Salvato, F., Kleiner, M., & Septer, A. N. (2020). Environmental Viscosity Modulates Interbacterial Killing during Habitat Transition. *mBio*, 11(1).

Stephanie N. Smith

407 Clayton Rd., Chapel Hill, NC 27514 ◊ (919) 714-3222 ◊ stesmith@live.unc.edu

- 2020 Septer, A. N., Speare, L., Coleman, C. K., **Smith, S.**, Dorsey, C., Wilson, T., & Gifford, S. M. (2020). Draft Genome Sequence of a Harveyi Clade Bacterium Isolated from *Lolliguncula brevis* Squid. *Microbiology Resource Announcements*, 9(8), e00078-00020. doi:10.1128/mra.00078-20
- 2018 Speare, L., Cecere, A. G., Guckes, K. R., **Smith, S.**, Wollenberg, M. S., Mandel, M. J., ... & Septer, A. N. (2018). Bacterial symbionts use a type VI secretion system to eliminate competitors in their natural host. *Proceedings of the National Academy of Sciences*, 201808302.

Awards, Honors, and Certifications

- National Defense Science and Engineering Graduate fellow (NDSEG), 2020-2023
- University of North Carolina at Chapel Hill, Graduate Student Opportunity Fund, 2019
- Completed the Analytical and Quantitative Light Microscopy course (AQLM) at the Marine Biological Laboratory (MBL), May 2019
- Morrow Award for Excellence in Teaching, November 2020
- Thoyd Melton Award for best oral presentation, North Carolina branch of the American Society for Microbiology, October 2020
- Mills Brown Memorial Fellowship Award for “Designing a protocol for *in vitro* fertilization of *Lolliguncula brevis* squid to characterize a new squid – *Vibrio sp.* symbiosis”, UNC Marine Sciences, June 2021
- Completed the ASCB Virtual Biotech Course, June 2021

Posters and Presentations

- June 2021 **Horizontal gene transfer allows *V. fischeri* to evolve extensively in coculture**, Vibrio-squid conference, Zoom (oral presentation)
- Oct 2020 ***Vibrio fischeri* exchanges chromosomal DNA in coculture**, NCASM annual meeting, Zoom (oral presentation)
- June 2020 ***Vibrio fischeri* exchanges chromosomal DNA in coculture**, Vibrio-squid conference, Zoom (oral presentation)
- June 2018 **Single-cell imaging of type VI secretion system**, Vibrio-squid conference, La Jolla, CA (oral presentation)
- Oct 2017 **Strain-specific differences control lethal interactions among symbiotic *Vibrio fischeri***, NC-ASM Annual Meeting, Raleigh, NC (poster)
- Oct 2017 **Strain-specific differences control lethal interactions among symbiotic *Vibrio fischeri***, ASM Cell-Cell Communications, Athens, GA (poster)
- May 2017 **Regulation of the type VI secretion system controls lethal interactions in the squid symbiont *V. fischeri***, Vibrio-squid conference, Los Angeles, CA (oral presentation)
- Nov 2016 **Regulation of the type VI secretion system controls lethal interactions in the squid symbiont *V. fischeri* ES401**, UNC-CH Research Symposium (poster)
- April 2015 **Regulation of the type VI secretion system controls lethal interactions in the squid symbiont *V. fischeri* ES401**, UNC-CH Research Symposium (poster)

Stephanie N. Smith

407 Clayton Rd., Chapel Hill, NC 27514 ◊ (919) 714-3222 ◊ stesmith@live.unc.edu

Teaching and Mentoring Experience

- 2021 **High School Student Research Mentor:** Trained 3 high school students from Robeson County, NC in culturing and molecular techniques to isolate and characterize bacteria from multiple hosts.
- 2018-2019 **Teaching Assistant, Marine Sciences 442 and 055: Marine Biology and Changes in Coastal Oceans, UNC-CH:** Assisted in weekly discussions on primary literature and assessed student progress throughout the semester. Led multiple class discussions on microscopy and microbial competitive interactions.
- 2017-2018 **Increasing Diversity and Enhancing Academia (IDEA) Mentor, UNC-CH:** Mentored undergraduate students for two summers on independent research projects in bacterial molecular genetics, animal work, and field work through a program designed to increase diversity in STEM fields.
- 2017 **Guest Lecturer, Marine Sciences 442: Marine Biology, UNC-CH:** Lectured to a group of ~50 students about squid ecology and bacterial symbioses.
- 2016-present **Student Research Mentor, UNC-CH:** Trained 8 undergraduate students in molecular techniques and mentored students on individual projects. These students have gone on to obtain their own funding and be published as coauthors on multiple projects.

Outreach and Service

- 2021 **Green Zone training completed:** training for mentoring and collaborating with US veterans
- 2020-present **Diversity, equity, and inclusion (DEI) student chair:** Led monthly department-wide meetings where we addressed issues related to DEI within the Marine Sciences department. Also served as Pod Leader for Unlearning Racism in Geosciences (URGE) and was responsible for leading discussions and organizing deliverables throughout the course of the curriculum
- 2020-present **Graduate Action Group (GAG) president:** served as liaison between graduate students and faculty by attending faculty meetings, leading town hall meetings, and helping to organize events including graduate student recruitment
- 2020 **SafeZone training completed** (both general training and non-binary training): training for working with and serving as an ally for LGBTQIA+ individuals
- 2018 **Science Expo, UNC-CH:** Designed and prepared children's activities to learn about bacterial symbioses and presented them at a booth during UNC's Science Expo
- 2017 **Entering Mentoring training completed**
- 2015-2016 **SciREN – Scientific Research and Education Network, Raleigh, NC:** Designed and presented lesson plans on bacterial processes for K-12 educators to use in their classrooms