Derrick L. Kamp

567.454.7824 • derrick.l.kamp@gmail.com • derrickkamp.com

"Seeing is believing, as long as you have the proper controls."

Research scientist and imaging specialist illuminating the dynamic interactions between hosts and microbes. Driven to answer big questions about small things and passionate about communicating science in ways that inspire inquiry, inclusivity, and excitement.

Education

PhD in Molecular and Cell Biology – University of Connecticut, Expected graduation 2025
B.S in Biology – Calvin College, May 2018

Technical Skills

Confocal Microscopy:

- Spinning disk and laser-scanning confocal microscopy
- Filter-based imaging and spectral imaging/linear unmixing
- *In situ* imaging techniques: lectin staining, bacterial fluorescence *in situ* hybridization (FISH), hybridization chain reaction FISH (HCR-FISH)
- Image analysis in Fiji/ImageJ

Light sheet microscopy:

- Optimization of tissue clearing and staining techniques in whole-mount tissues of non-model systems
- Analysis of computationally intensive datasets in Zeiss arivis Pro
- Application of machine learning and AI image analysis pipelines

Animal husbandry:

- Raising non-model marine organisms under experimental conditions
- Preparation of IACUC review materials and compliance
- Training and managing teams to maintain animal wellbeing

Genetic tools and molecular cloning techniques

- Gibson assembly
- Triparental mating

Glycoprotein extraction and glycomic analysis
Maintaining and assaying bacterial cell cultures
Proficiency in R and microbial community analysis

Research Experience

Graduate Research Assistant, University of Connecticut, August 2018 – Present

"Localizing Host Organ Features with Symbiotic Bacterial Microbiogeography Lends Functional Insights into the Defensive Symbiosis in the Reproductive Organ of the Hawaiian Bobtail Squid
Mentor: Dr. Spencer V. Nyholm, Ph.D.
Driving question: How does the squid host spatially structure and maintain a complex community of bacteria inside an organ?
Used advanced microscopy techniques to show that symbiotic bacterial populations are partitioned into distinct tubules of an organ at different stages of bobtail squid development. Further demonstrated that different bacterial taxa localize with different host-associated glycans, suggesting a mechanism by which the host selects for specific bacterial taxa. Raised hatchling squid under experimental conditions to determine effects of symbiont presence during development. Side project imaged the structure of the structure of the bacterial community of the light organ in the related squid, *Euprymna berryi*.

Science Division Research Assistant, Calvin College, January 2017 – June 2018

"Microbial Cross-feeding and Symbiotic Relationships in *Cephalotes* Ant Gut Bacteria"
Mentor: Dr. John T. Wertz, Ph.D.
Driving Question: How do microbes associated with *Cephalotes* gut contribute to nutrient recycling?
Performed metabolic assays on a novel *Xanthomonadales* bacterium isolated from *Cephalotes* ants, using analytical methods to quantify organic acid uptake and expulsion. Worked to culture novel bacteria from *Cephalotes* ants by designing experiments using various types of media and cocultured bacteria, as well as 16S sequencing.

Science Division Research Assistant, Calvin College, June 2016 – August 2016

"Investigating the roles of endothelial cells in HIV infection and latency in resting CD4+ T cells."
Mentor: Dr. Anding Shen, Ph.D.
Driving question: How do soluble factors secreted by human endothelial cells permit HIV-1 infection in resting CD4+ T cells?
Maintained human endothelial cell culture lines and isolated resting CD4+ T cells from human blood samples via magnetic bead depletion. Performed ELISA experiments to identify cytokines present in cell culture media. Used flow cytometry and respective software to collect and statistically analyze HIV infection and T cell activation rate data.

Publications

In Preparation:

- **Kamp D**, Suria A, Nyholm S. "Bacterial taxa differentially localize with host-associated glycans in a complex symbiosis."
- **Kamp D**, Nyholm S. "Sweet and Sandy: The Hawaiian bobtail squid utilizes glycans and environmental sediment to recruit a symbiotic bacterial community."

Preprints:

- Imes A, Pavelsky M, Badal K, **Kamp D**, Briseno J, Sakmar T, Vogt M, Nyholm S, Heath-Heckman E, Grasse B, Septer S, Mandel M. "*Euprymna berryi* as a comparative model host for *Vibrio fischeri* light organ symbiosis." *bioRxiv*. Under review at *Applied and Environmental Microbiology*. 2025

In Print:

- **Kamp D**, Kerwin A, McAnulty S, Nyholm S. "Organ structure and bacteria microbiogeography in a reproductive organ of the Hawaiian bobtail squid reveal dimensions of a defensive symbiosis." *Applied and Environmental Microbiology*. 2025
- Morris JH, Nguyen T, Nwadike A, Geels M, **Kamp D**, Kim BR, Boyer JD, Shen A. "Soluble Factors Secreted by Endothelial Cells Allow for Productive and Latent HIV-1 Infection in Resting CD4+ T cells." *AIDS Research and Human Retroviruses*. 2016
- Schilthuis M, Verkaik S, Walhof M, Philipose A, Harlow O, **Kamp D**, Kim, BR, Shen A. "Lymphatic endothelial cells promote productive and latent HIV infection in resting CD4+ T cells." *Virology Journal*. 2018

Selected Presentations

Invited Presentations:

- "Structure of Bacterial Community and Host Organ within the Reproductive System of the Hawaiian Bobtail Squid." UConn Marine Science Department. Fall, 2023
- "Structure of Bacterial Community and Host Organ within the Reproductive System of the Hawaiian Bobtail Squid." UConn MCB graduate recruitment. Winter, 2023

Oral Presentations:

- "Sweet Structuring: Glycan and bacterial taxa association in the accessory nidamental gland of Euprymna scolopes." Squid-Vibrio Symposium. Summer, 2023

- "Micron-scale Biogeography of Bacteria and Host within a Reproductive Organ of the Hawaiian Bobtail Squid." 8th Conference on Beneficial Microbes. Summer, 2022
- "Micron-scale Biogeography of Bacteria and Host within a Reproductive Organ of the Hawaiian Bobtail Squid." Pioneer Valley Microbiology Symposium. Spring, 2022
- "FISHing for symbionts within the accessory nidamental gland of *Euprymna scolopes*." Squid-*Vibrio* Symposium. Summer, 2021

Poster Presentations:

- "Sweet Structuring: Glycan and bacterial taxa association in the accessory nidamental gland of Euprymna scolopes." 9th Conference on Beneficial Microbes. Summer, 2024
- "Physical structure of the accessory nidamental gland facilitates symbiotic function." Squid-Vibrio Symposium. Summer, 2024
- "Exploring potential cross feeding and symbiosis factors necessary for growth of a novel *Rhizobiales* from *Cephalotes* ants." Calvin College Science Division Poster Fair. Fall 2017
- "IL6 secreted by endothelial cells increases HIV infection in resting CD4+ T cells without activation." Van Andel Institute WMRUGS Research Conference. Fall 2016

Related Teaching Experience

Laboratory Teaching Assistant: Marine Biological Laboratory, Summers 2023 & 2024

- **Molecular Mechanisms of Symbiosis:** Designed and assisted teaching graduate-level laboratory course on studying host-microbe interactions in the bobtail squid. Trained students on experimental design, tissue prep and confocal imaging in the squid-bacteria system.

Laboratory Teaching Assistant: University of Connecticut, 2018 – Present

- **MCB 3633: Pathogenic Microbiology:** Designed and taught course for upper-level lab course focused on identifying and characterizing pathogenic bacteria using classical and modern microbiological techniques.
- **MCB 4642: Experiments in Bacterial Genetics:** Assisted in teaching graduate and undergraduate students advanced lab techniques focused on genetic experiments in different bacterial strains.
- **MCB 5427: Introduction to Molecular Techniques:** Assisted in teaching Master's-level lab course designed to familiarize students with experimental methods common in industry settings.

Service Work

- Undergraduate Mentor – Trained and mentored McNair Scholars in developing projects examining how bacterial isolates from the squid the respond to different glycans. 2020-2024
- Senator – UConn Graduate Student Senate, 2018-2021
- Social Media Volunteer – Skype a Scientist, 2018-2019
- Volunteer Intern – Grand Rapids Red Project, 2016-2018

Related Awards and Fellowships

- Antonio and Marjorie Romano Graduate Education Fellowship, 2025
- 1st Place – Picturing MCB Imaging Competition, 2024
- Most Outstanding Poster Presentation – Squid-*Vibrio* Symposium, 2024
- 1st Place – Bioimaging North America Image Contest 2023
- Jean Lucas-Lenard Special Summer Fellowship in Molecular Cell Biology, 2023
- 2021-2022 Outstanding TA Award – UConn Molecular & Cell Biology Department, 2022
- Most Outstanding Presentation – Squid-*Vibrio* Symposium, 2021
- Microbiome Research Fellowship – University of Connecticut, 2018

References

Available upon request.