

Allison M. Klein
PhD. Integrative Biology Candidate
Florida Atlantic University
5600 US-1 Fort Pierce FL 34946
Laboratory 2 Office: 125
Kleina2020@fau.edu



EDUCATION

- Ph.D., Integrative Biology** GPA 4.0
Florida Atlantic University- Harbor Branch Oceanographic Institute, Fort Pierce FL
Dissertation: *Enhancing Rapid Reef Resilience Through Transplantation of Thermally Tolerant Corals in O'ahu, Hawai'i*
Research Advisor: Dr. Joshua Voss
August 2022- Present
Advanced to Candidacy June 5th 2024
- M.Sc., Biological Sciences** GPA 3.9
Florida Atlantic University- Harbor Branch Oceanographic Institute, Fort Pierce FL
Thesis: *Stony Coral Tissue Loss Disease Susceptibility and Resistance: Genomic and Microbiome factors among Orbicella faveolata in South Florida*
Research Advisor: Dr. Joshua Voss
2020 - 2022
- B.S., Marine Biology and Environmental Chemistry, Minor: Sustainability,** GPA 3.8
Roger Williams University, Feinstein School of Social and Natural Sciences, Bristol RI
Thesis: *Localizing key bacterial members of Astrangia poculata's microbiome using florescent in situ hybridization (FISH)*
Research Advisor: Dr. Koty Sharp
2016-2020

RESEARCH EXPERIENCE

Graduate Research Assistant *August 2020-present*
Coral Reef Health and Molecular Ecology Lab, Dr. Joshua Voss
Harbor Branch Oceanographic Institute- Florida Atlantic University, Fort Pierce, FL

- Assist with shallow and mesophotic coral collections for population genetics
- Support *in situ* SCTL D intervention monitoring and implementation across Caribbean sites
- Optimize library prep for microbial samples from SCTL D-affected corals
- Analyze intraspecific variation in *O. faveolata* SCTL D response using RAD-seq
- Prepare libraries for microsatellite and SNP marker analysis of coral population connectivity
- Conduct temperature ramp experiments and assess coral thermal tolerance via PAM fluorometry
- Optimize RNA extraction protocols and perform gene expression analysis using DESeq2 to identify stress-responsive transcripts
- Conduct Symbiodiniaceae community profiling using ITS2 amplicon sequencing
- Use 3D photogrammetry to assess coral growth and morphology over time
- Contribute to coral transplantation research with Florida Fish & Wildlife Research Institute
- Support NOAA-led technical diving projects on deep reef restoration
- Mentor undergraduate interns and incoming graduate students

Technical Dive Support

July 5 – July 17 2025

NOAA No Activity Zone (NAZ) Expedition led by Dr. Joshua Voss, RV Manta

Flower Garden Banks National Marine Sanctuary

- Completed 10 advanced technical dives to depths up to 200 ft to access mesophotic reef zones
- Collected mesophotic coral specimens for genetic and ecological analysis
- Conducted benthic surveys to assess reef structure and identify coral recruits on newly characterized deep reef sites

Technical Dive Support

May 5 – May 15 2024

NOAA Mesophotic Deep Benthic Community Cruise led by Christopher Gardner, RV Nancy Foster

Desoto Channel, Gulf of Mexico

- Planned and facilitated decompression dive profiles for FAU technical dive team
- Aided in sample collection and on-deck sample processing of mesophotic corals
- Aided in deployment of Autonomous Reef Monitoring System (ARMS)

Safety and Scientific Diver

May 13-May 20, 2023

CYCLE Cruise led by Dr. Joshua Voss, RV Manta

Flower Garden Banks National Marine Sanctuary

- Aided as safety support for mesophotic CCR divers
- Collected coral samples for downstream genomic analysis
- Conducted all dives on CCR

Coral Disease Biologist and Lead Scientific Diver for FAU

June 2022

DRTO Research Cruise led by Dr. Karen Neely, MV Makai

SCTLD Follow up Intervention on the Dry Tortugas National Park reefs

- Lead diver and cruise coordinator for FAU team
- Follow up on previously treated corals and retreated corals impacted by SCTLD
- Aided in post treatment processing such as data entry, photo organization, and created maps off GPS data

Coral Disease Biologist and Scientific Diver

August 31-September 10, 2021

DRTO Research Cruise led by Dr. Karen Neely, MV Makai

SCTLD Intervention on the Dry Tortugas National Park reefs

- Treated and reported over 6,000 coral colonies impacted by SCTLD by applying amoxicillin and base 2B to disease lesions, 30+ scientific dives
- Aided in post treatment processing such as data entry, Arc GIS map creation using GPS data
- Expedition funded by National Fish and Wildlife Foundation

Undergraduate Research Assistant

January 2018-May 2020

Microbial Ecology of Marine Invertebrates Lab, Dr. Koty Sharp

Roger Williams University, Bristol, RI

- Examined the dynamics and distributions of microorganisms associated with the coral host, *Astrangia poculata* by isolating and identifying bacterial taxa known to produce antimicrobial compounds from *A. poculata*'s surface mucus layer
- Localized these bacterial members within *A. poculata*'s tissue using fluorescent *in situ* hybridization (FISH)
- Engineered a flow through system that was used for feeding microplastics to *A. poculata*
- Developed protocols for spawning and reproduction of *A. poculata* and gained coral husbandry skills

Undergraduate Research Assistant

August 2018-December 2018

Microbial Ecology Laboratory, Dr. Rachel Parsons

Bermuda Institute of Oceanographic Sciences (BIOS) St. Georges, Bermuda

- Conducted an independent research project investigating the changes in *Sargassum*'s microbiome composition in the presence of Methyl Phosphonate and anti-biotics
- Utilized FISH, CARD-FISH, and DAPI staining techniques as well as confocal microscopy to monitor shifts in microbial communities pre and post treatment
- Established independent research project titled: "*Changes in the Bacterial Community of Sargassum when Presented with Methyl Phosphonate and Antibiotics*"

TEACHING AND MENTORING EXPERIENCE

Graduate Assistant Mentor, Junior Scientist Program at HBOI, Fort Pierce, FL September 2023- present

- Lead and cultivate student research projects centered around the Indian River Lagoon watershed
- Developed field guide for native Florida marsh plants for transect identification

Highschool STEAM Mentor, Westwood Academy, Fort Pierce, FL August 2021-August 2023

- Give classroom education sessions on the local marine ecosystems
- Help students explore various avenues of art by creating landscapes of the Indian River Lagoon

Undergraduate Academic Tutor, Roger Williams University, Bristol, RI August 2016- May 2020

- Tutored and mentored over 400 students in biology, chemistry and physics
- Created lesson plans and conducted in person review sessions for chemistry and physics students

GUEST LECTURES

Klein AM, Eckert RJ, Voss JD, "Coral Reef Connectivity and Conservation in a Changing Climate". FAU Harbor Branch Ocean Science Lecture Series. March 5th, 2025

Klein AM, Coral Microbial Interactions. Coral Reef Ecosystems Graduate Level. Instructors Dr. Joshua Voss. January 30th, 2025

Klein AM, Coral Reef Ecosystems. Biological Oceanography Graduate Level. Instructors Dr. Timothy Moore and Dr. Malcom McFarland. October 7th, 2024

Klein AM, Coral Reef Dynamics. Biological Oceanography Graduate Level. Instructors Dr. Timothy Moore and Dr. Malcom McFarland. November 11th, 2023

PUBLICATIONS

Klein AM, Sturm AB, Eckert RJ, Neely KN, Walker BK, Voss JD (2024) "Algal symbiont genera but not coral host genotypes influence *Orbicella faveolata* susceptibility to stony coral tissue loss disease in Florida". *Frontiers in Marine Science*

Eckert RJ, Sturm AB, Carreiro AM, **Klein AM**, Voss JD (2024) "*Stephanocoenia intersepta* corals in Florida Keys National Marine Sanctuary exhibit depth-dependent genetic structure". *Heredity*

Sturm AB, Eckert RJ, Carreiro AM, **Klein AM**, Studivan MS, Dodge-Farelli D, Simões N, González-Díaz P, González-Méndez, J, Voss JD (2023) "Does depth divide? Variable genetic connectivity patterns among shallow and mesophotic *Montastraea cavernosa* coral populations across the Gulf of Mexico and western Caribbean". *Ecology and Evolution*.

Klein AM, Voss JD (2023) “Investigation of intraspecific factors driving resistance and/or resilience to SCTLD on Florida’s Coral Reef”. *Technical Report*, Florida Department of Environmental Protections

CONFERENCE/ SYMPOSIUM PRESENTATIONS

Klein AM, Drury C, Hughes K, Toonen R, Voss JD (2024) “Enhancing Rapid Reef Resilience Through Transplantation of Thermally Tolerant Corals in O‘ahu, Hawai‘i” **Poster Presentation** at the 52nd Annual Benthic Ecology Meeting. Charleston, South Carolina

Klein AM, Voss JD (2024) “Using scientific diving methods for coral reef exploration and restoration” **Oral Presentation** at the American Academy of Underwater Sciences (AAUS) Symposium. Ft. Pierce, Florida. Invited Talk

Klein AM, Sturm AB, Eckert RJ, Neely KN, Walker BK, Voss JD (2023) “Investigating potential microbial drivers behind *Orbicella faveolata* corals’ variable susceptibility to stony coral tissue loss disease in South Florida” **Poster Presentation** at the 51st Annual Benthic Ecology Meeting. Miami, Florida

Klein AM, Sturm AB, Eckert RJ, Neely KN, Walker BK, Voss JD (2022) “Stony coral tissue loss disease susceptibility and resistance: Genomic and Microbiome factors in *Orbicella faveolata*” **Oral Presentation** at the 15th International Coral Reef Symposium. Bremen, Germany.

Klein AM, Sturm AB, Eckert RJ, Neely KN, Walker BK, Voss JD (2022) “Stony coral tissue loss disease susceptibility and resistance: Genomic and Microbiome factors in *Orbicella faveolata*” **Oral Presentation** at the 50th annual Benthic Ecology Meeting. Portsmouth, NH.

Klein AM, Sharp K (2020) “Localizing key bacterial members of *Astrangia poculata*’s microbiome and monitoring the changes in microbiome diversity in response to holobiont disturbance”. **Live virtual Presentation** at Roger Williams Senior Thesis Symposium 2020.

Klein AM, Sharp K (2020) “Localizing key bacterial members of *Astrangia poculata*’s microbiome and monitoring the changes in microbiome diversity in response to holobiont disturbance” **Poster Presentation** at Rhode Island Microbiome Symposium 2020, RI-INBRE SURF Conference 2019.

Klein AM, Sharp K (2019) “Localizing key bacterial members of the *Astrangia poculata* microbiome and monitoring changes in taxonomic diversity in response to thermal stress” **Lighting Talk** at Temperate Coral Research Conference 2019

Klein AM, Parsons R (2018) “Changes in the Bacterial Community of *Sargassum* when Presented with Methyl Phosphonate and Antibiotics” **Oral Presentation** at BIOS Fall Student Research Symposium

Klein AM, Zaccardi Z, Sharp K (2018) “Antimicrobial activity of bacteria isolated from the coral, *Astrangia poculata*” **Poster Presentation** at RI-INBRE SURF Conference 2019

Klein AM, Howard R, Hintz L, Schickle A, Rotjan R, Sharp K (2018) “Investigating the Plasticsphere: The Role of Plastic Associated Microbes on Microbead Ingestion by the coral *Astrangia poculata*” **Poster Presentation** at RI-INBRE SURF Conference 2018 and INBRE Grant Renewal Celebration 2019 attended by Senator Jack Reed

FELLOWSHIPS AND SCHOLARSHIPS

2025 Bruce Weir Summer Institute of Statistical Genetics (SISG) Scholarship, \$2,000
2023 Divers Alert Network (DAN) Doctoral Scholarship, \$5,000
2023 Zale Parry Award through Academy of Underwater Arts and Sciences, \$6,000
2023 Academy of Underwater Women Divers Award, \$500
2023 American Academy of Underwater Sciences (AAUS), Doctoral Scholarship, \$1,500
2023 Women Divers Hall of Fame Technical Dive Training Grant, \$1,000
2023 FAU Graduate Research Grant, \$1,200
2022-2023 FAU GPSA Grant, \$800
2021-2022 FAU GPSA Grant, \$800
2022 FAU Graduate Research Grant, \$1,200
2021 ARPA COVID Grant, \$1,400
2020 CRSSA COVID Grant, \$1,129
2019 RI-INBRE SURF Undergraduate Fellow, \$4,000
2018 RI-INBRE SURF Undergraduate Fellow, \$4,000
2018 Roger Williams University Spiegel Center Study Abroad Scholarship, \$5,000
2016-2020 Roger Williams University Presidential Scholarship, \$78,000

AWARDS AND HONORS

May 2020 Roger Williams University Presidential Core Values Medallion Recipient
2018 Beta Beta Beta Biology Honors Society Member
2018 Roger Williams University Presidential Ambassador
2016-2020 Roger Williams University Class Officer
2016-2020 Roger Williams University Dean's List
2016-2020 Roger Williams University Honors College Student
2016-2020 *Magna cum laude*, General and Departmental Honors, Presidential Core Medallion Recipient

CERTIFICATIONS

AAUS Scientific Diver, open circuit and CCR, 200+ scientific dives, 200fsw
TDI Extended Range & Trimix Close Circuit Rebreather (CCR)
TDI Decompression Procedures
TDI Advanced Nitrox
PADI Nitrox
DAN Oxygen Delivery, First Aid, and CPR for scuba diving injuries
PADI Advanced Open Water Diver
Department of Interior Motorboat Operator Certification Course

SKILLS

Laboratory: FISH, CARD-FISH, molecular benchwork, PCR, qPCR DNA and RNA extraction and purification, 2bRAD-library preparation, NGS library preparation, Nanodrop and Qubit DNA quantification, gel electrophoresis, coral husbandry and aquaria maintenance, water quality analysis

Field: Coral sampling (shallow and mesophotic), quadrat sampling, roving diver surveys, tropical coral, fish, and algal species identification, belt transect surveying, underwater photo transects, scleractinian coral disease identification and intervention techniques, seine net sampling, plankton tows

Computing: ArcGIS Pro, R studio, Microsoft Office Suite, Adobe Acrobat, Geneious, ImageJ, Metashape

REFERENCES

Dr. Joshua Voss
PhD Supervisor

Associate Research Professor
Harbor Branch Oceanographic Institute, Florida Atlantic University
Email: Jvoss2@fau.edu

Dr. Karen Neely
Collaborator

Associate Research Professor
Nova Southeastern University
Email: kneely0@nova.edu

Dr. Koty Sharp
Undergraduate Research Advisor

Associate Research Professor
Roger Williams University
Email: kotysharp@gmail.com