

REBECCA J. STEVICK, PHD

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PROFESSIONAL APPOINTMENTS

- 2020-2023 **Institut Pasteur**, Genetics of Biofilms Laboratory
Postdoctoral Research Fellow
Advisor: Dr. Jean-Marc Ghigo
- 2021 **University at Albany SUNY**, RNA Institute, Valm Laboratory
Visiting Researcher

EDUCATION

- 2015-2019 **University of Rhode Island**, Graduate School of Oceanography
Ph.D. Biological Oceanography
Dissertation: “*Oyster-Associated Microbial Community Dynamics*”
Co-Major Advisors: Dr. Anton Post, Dr. Marta Gomez-Chiarri
- 2011-2015 **University of Maryland**, A. James Clark School of Engineering
B.S. Bioengineering, Minor in International Engineering
Honors Thesis: “*Measuring Cell Traction Forces in Simulated Microgravity*”

GRANTS AND FELLOWSHIPS

- 2020-2022 Phillippe Foundation Research Grant (\$8,000 total)
“*Understanding host-microbiome interactions leading to colonization resistance*”
- 2017-2019 TNC/URI Global Marine Initiative Student Research Award (\$24,000 total)
“*Effects of estuarine acidification on adult Eastern oyster (Crassostrea virginica) microbiomes and health in Narragansett Bay, Rhode Island*”
- 2015-2019 NSF Graduate Research Fellowship, awarded in Bioengineering (\$138,000 total)
“*Molecular Mechanisms in pH-Induced Demineralization of Bones and Coral*”

PEER-REVIEWED PUBLICATIONS

- 2023 Takyi, E., LaPorte, J., Sohn, S., **Stevick, R.J.**, Witkop, E.M., Gregg, L., Chesler-Poole, A., Small, J.M., White, M.M., Giray, C., Rowley, D.C., Nelson, D.R., and Gomez-Chiarri, M. Development and evaluation of a formulation of probiont *Phaeobacter inhibens* S4 for the management of vibriosis in bivalve hatcheries. *Aquaculture Fish and Fisheries*
- 2023 Chekli, Y., **Stevick, R.J.**, Kornobis, E., Briolat, V., Ghigo, J.M., and Beloin, C. *Escherichia coli* aggregates mediated by native or synthetic adhesins exhibit both core and adhesin-specific transcriptional responses. *Microbiology Spectrum*, e00690-23. doi:[10.1128/spectrum.00690-23](https://doi.org/10.1128/spectrum.00690-23).
- 2023 Thunes, N.C., Mohammed, H.H., Evenhuis, J.P., Lipscomb, R.S., Pérez-Pascual, D., **Stevick, R.J.**, Birkett, C., Conrad, R.A., Ghigo, J.M. and McBride, M.J. Secreted peptidases contribute to virulence of fish pathogen *Flavobacterium columnare*. *Frontiers in Cellular and Infection Microbiology*, 13.79. doi:[10.3389/fcimb.2023.1093393](https://doi.org/10.3389/fcimb.2023.1093393).

- 2022 Conrad, R.A., Evenhuis, J.P., Lipscomb, R.S., Pérez-Pascual, D., **Stevick, R.J.**, Birkett, C., Ghigo, J.M. and McBride, M.J. *Flavobacterium columnare* ferric iron uptake systems are required for virulence. *Frontiers in Cellular and Infection Microbiology*, 12.1559. doi:[10.3389/fcimb.2022.1029833](https://doi.org/10.3389/fcimb.2022.1029833).
- 2021 Ray, N.E., Hancock, B., Brush, M.J., Colden, A., Cornwell, J., Labrie, M.S., Maguire, T.J., Maxwell, T., Rogers, D., **Stevick, R.J.**, Unruh, A., Kellogg, M.J., Smyth, A.R., Fulweiler, R.W. A review of how we assess denitrification in oyster habitats and proposed guidelines for future studies. *Limnology and Oceanography: Methods*, 19.10. doi:[10.1002/lom3.10456](https://doi.org/10.1002/lom3.10456).
- 2021 **Stevick, R.J.**, Post, A.F., Gómez-Chiarri, M. Functional plasticity in oyster gut microbiomes along a eutrophication gradient in an urbanized estuary. *Animal Microbiome*, 3.5. doi:[10.1186/s42523-020-00066-0](https://doi.org/10.1186/s42523-020-00066-0).
- 2019 **Stevick, R.J.**, Sohn, S., Nelson, D.R., Rowley, D.C., Tammi, K., Smolowitz, R., Lundgren, K.M., Post, A.F. and Gomez-Chiarri, M. Bacterial Community Dynamics in an Oyster Hatchery in Response to Probiotic Treatment. *Frontiers in Microbiology*, 10.1060. doi:[10.3389/fmicb.2019.01060](https://doi.org/10.3389/fmicb.2019.01060).
- 2018 Robledo, J.A.F., Yadavalli, R., Allam, B., Pales-Espinosa, E., Gerdol, M., Greco, S., **Stevick, R.J.**, Gómez-Chiarri, M., Zhang, Y., Heil, C.A. and Tracy, A.N. From the raw bar to the bench: Bivalves as models for human health. *Developmental & Comparative Immunology*, 92.260-282. doi:[10.1016/j.dci.2018.11.020](https://doi.org/10.1016/j.dci.2018.11.020).

MANUSCRIPTS IN REVIEW

Stevick, R.J., Ghigo, J.M., Pérez-Pascual, D. Anti-diarrheal drug loperamide induces dysbiosis in zebrafish microbiota via targeted bacterial inhibition.

BioRxiv doi: [10.1101/2023.04.18.537295](https://doi.org/10.1101/2023.04.18.537295)

Adade, E.A.*, **Stevick, R.J.***, Pérez-Pascual, D., Ghigo, J.M., Valm, A.M. Gnotobiotic zebrafish microbiota display inter-individual variability affecting host physiology.

BioRxiv doi:[10.1101/2023.02.01.526612](https://doi.org/10.1101/2023.02.01.526612). *co-first authors

Takyi, E., **Stevick, R.J.**, Witkop, E.M., Gregg, L., Chesler-Poole, A., Small, J.M., White, M.M., Hudson, R., Giray, C., Rowley, D.C., Nelson, D.R, and Gomez-Chiarri, M. Probiotic treatment with a commercial formulation shifts the bacterial microbiome of larval eastern oysters, *Crassostrea virginica*, in multiple hatcheries.

RESEARCH EXPERIENCE

2020-present **Postdoctoral Research Fellow**, Genetics of Biofilms Laboratory
Institut Pasteur, Paris, France

Researching microbial ecology within gnotobiotic zebrafish and rainbow trout models to determine mechanisms of colonization resistance to *Flavobacterium columnare* and other pathogenic bacteria. Performing zebrafish husbandry and care for germ-free animals. Developing bioinformatic tools to study host-microbiome interactions.

- 2021 **Visiting Researcher**, Valm Laboratory
University at Albany SUNY, Albany, NY
Visualized interactions between zebrafish host and associated bacteria using Fluorescent In Situ Hybridization (FISH), imaged with confocal fluorescent microscopy. Analyzed images using Imaris and FIJI softwares. Taught R and RNAseq workshops and mentored PhD students.
- 2015-2019 **Graduate Research Assistant**, Marine Diseases Laboratory
University of Rhode Island, Kingston, RI
Conducted experiments and analysis on the effects of probiotics or environmental conditions on the health, disease status, microbiomes, and ecosystem services of larval or adult oysters. Developed protocols for DNA and RNA co-elution from various tissue and sample types, microbial analysis, and pathogen detection. Performed bacterial cell culture, sequencing library prep, nucleic acid quality control, and bioinformatic analysis to determine the microbial and host response to perturbations.
- 2015 **Program Coordinator**, Space Biosciences Division
NASA Ames Research Center, Mountain View, CA
Supported the Space Life Sciences Training Program (SLSTP) in the Space Biosciences Division. Managed and organized activities for 10 student interns, while continuing research on the effects of microgravity and exercise on DNA methylation during bone remodeling.
- 2014-2015 **Undergraduate Research Assistant**, Orthopaedic Mechanobiology Laboratory
University of Maryland, College Park, MD
Investigated the effects of microgravity on human mesenchymal stem cell growth and traction forces. Designed and manufactured a microfluidic device to determine forces from stem cells on PDMS substrate. Cultured stem cells and performed mechanical analysis based on microscope images.
- 2014 **Research Associate**, Bone and Signaling Laboratory, Space Biosciences Division
NASA Ames Research Center, Mountain View, CA
Participant in the Space and Life Sciences Training Program, where I researched the effects of microgravity and exercise on DNA methylation during bone remodeling. We also developed a NASA Project Plan to investigate the effects of deep space radiation on DNA in *C. elegans*.
- 2013 **Exchange Research Intern**, Marine Molecular Biotechnology Lab
Pohang University of Science and Technology, Pohang, South Korea
Conducted bioadhesive mussel protein research to increase knowledge of fp-151 protein expression and its applications. Optimized electrospray techniques to create more effective polymer shapes for tissue engineering.

HONORS AND AWARDS

- 2019 URI Graduate School of Oceanography Alumni Award
- 2019 First Place in Graduate Oral Presentations at Benthic Ecology Meeting
- 2018 URI Graduate School of Oceanography Ann Durbin Memorial Award
- 2017, 2018 URI College of the Environment and Life Sciences Travel Award
- 2017 Gordon Gunter Outstanding Poster Award at NSA 109th Annual Meeting
- 2015 UMD Engineering Honors Program Citation
- 2015 UMD Fischell Department of Bioengineering Outstanding Research Award

CONFERENCE PRESENTATIONS

Stevick, R.J., Pérez-Pascual, D., Audrain, B., Adade, E.E., Lenson, A., Valm, A.J., Ghigo, J.M. *Microbiota-mediated protection against Flavobacterium infection in gnotobiotic zebrafish*. Applied Hologenomics Conference, Bilbao, Spain, September 13-15, 2022. *Oral presentation*.

Pérez-Pascual, D., **Stevick, R.J.**, Audrain, B., Adade, E.E., Lenson, A., Valm, A.J., Ghigo, J.M. *Molecular mechanisms of microbiota-mediated protection against Flavobacterium infection in gnotobiotic zebrafish*. Applied Hologenomics Conference, Bilbao, Spain, September 13-15, 2022. *Poster*.

Stevick, R.J., Pérez-Pascual, D., Ghigo, J.M. *Loperamide induces targeted dysbiosis in conventional and gnotobiotic larval zebrafish via direct bacterial inhibition*. International Symposium on Microbial Ecology, Lausanne, Switzerland, August 14-19, 2022. *Poster*.

Pérez-Pascual, D., **Stevick, R.J.**, Vendrell-Fernandez, S., Audrain, B., Ghigo, J.M. *A new gnotobiotic rainbow trout (Oncorhynchus mykiss) model to investigate microbiota-based resistance to infection*. Fish Microbiome Workshop, Online, September 22-25, 2021. *Oral presentation*. *Presented by Jean-Marc Ghigo.

Stevick, R.J., Post, A.F., Gómez-Chiarri, M. *Linking Environmental Variability to Oyster Microbiomes in Narragansett Bay*. Rhode Island Microbiome Symposium, Kingston, RI, January 16-17, 2020. *Invited oral presentation*.

Stevick, R.J., Hamilton, A.P., Moseman-Valtierra, S., Post, A.F., Gómez-Chiarri, M. *Metabolic Activity of Oyster-Associated Microbiomes in Response to Nutrient Enrichment*. American Society for Microbiology Microbe, June 20-24, 2019. *Poster*. Awarded student travel grant from department (\$1000).

Gómez-Chiarri, M., Modak, T.H., Roberts, E., **Stevick, R.J.**, Nelson, D., Rowley, D. *Immune Responses of American Oysters to Bacterial and Parasitic Challenge*. International Conference on Fish & Shellfish Immunology, Las Palmas de Gran Canaria, Spain, June 16-20, 2019. *Oral presentation*. *Presented by Marta Gómez-Chiarri.

Stevick, R.J., Spada, S., Rojas, D., Post, A.F., Gomez-Chiarri, M. *Oysters and Microbes and Narragansett Bay, oh my!* RI NSF EPSCoR Annual Research Symposium, Kingston, RI, April 10, 2019. *Poster*.

Stevick, R.J., Post, A.F., Gómez-Chiarri, M. *Trends in Oyster-Associated Microbial Transcriptomes*. Eastern Fish Health Workshop, Lake Placid, NY, April 2-5, 2019. *Oral presentation*. *Presented by Marta Gómez-Chiarri.

Stevick, R.J., Spada, S., Post, A.F., Gómez-Chiarri, M. *Effects of Estuarine Conditions on Eastern Oyster (Crassostrea virginica) Microbiomes and Health*. Benthic Ecology Meeting, St. John's, Newfoundland and Labrador, Canada, April 3-6, 2019. *Oral presentation*. Awarded 1st Place in Graduate Oral Presentation contest.

Stevick, R.J., Post, A.F., Gomez-Chiarri, M. *It Takes all Kinds: Microbiomes and Oysters in Narragansett Bay, RI*. RI NSF EPSCoR Annual Research Symposium, Kingston, RI, April 9, 2018. *Poster*.

Stevick, R.J., Sohn, S., Modak, T., Nelson, D., Rowley, D., Smolowitz, R., Post, A.F., Gómez-Chiarri, M. *Bacterial Community Dynamics in an Oyster Hatchery in Response to Probiotic Treatment*. National Shellfisheries Association Annual Meeting, Seattle, WA, March 18-22, 2018. *Oral presentation*. Awarded student travel grant from department (\$250).

Stevick, R.J., Post, A.F., Gómez-Chiarri, M. *Trends in Oyster-Associated Microbial Transcriptomes*. National Shellfisheries Association, Annual Meeting, Seattle, WA, March 18-22, 2018. *Oral presentation*. Awarded student travel grant from association (\$275).

Yuan, L., **Stevick, R.J.**, Ahern, O.M., Daniels, N.M. *Analysis of 16S Genomic Data using Graphical Databases*. Proceedings of ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB17), Boston, MA, August 21, 2017. *Poster*. doi:[10.1145/3107411.3108208](https://doi.org/10.1145/3107411.3108208).

Stevick, R.J., Modak, T., Post, A.F., Gómez-Chiarri, M. *Probiotic-Driven Changes in Rearing Water Microbial Communities in an Oyster Hatchery*. Gordon Research Conference, Marine Molecular Ecology, Hong Kong University of Science and Technology, Hong Kong, China, July 23-28, 2017. *Poster*.

Stevick, R.J., Pimentel, Z., Post, A.F., Gómez-Chiarri, M., Zhang, Y. *Probiotic-Driven Changes in Rearing Water Microbial Community Structure and Function in an Oyster Hatchery*. Gordon Research Conference, Animal-Microbe Symbiosis, West Dover, VT, June 11-16, 2017. *Poster*.

Stevick, R.J., Modak, T., Pimentel, Z., Zhang, Y., Post, A.F., Gomez-Chiarri, M. *Probiotic-Driven Changes in Rearing Water Microbial Community Structure and Function in an Oyster Hatchery*. RI NSF EPSCoR Annual Research Symposium, Brown University, Providence, RI, April 12, 2017. *Poster*.

Stevick, R.J., Pimentel, Z., Zhang, Y., Post, A.F., Gomez-Chiarri, M. *A Metagenomic Approach to Analyze Changes in Rearing Water Microbial Communities in an Oyster Hatchery*. National Shellfisheries Association Annual Meeting, Knoxville, TN, March 26-30, 2017. *Oral presentation*. Awarded student travel grant from association (\$275).

Stevick, R.J., Modak, T., Pimentel, Z., Zhang, Y., Post, A.F., Gomez-Chiarri, M. *Probiotic-Driven Changes in Rearing Water Microbial Community Structure and Function in an Oyster Hatchery*. National Shellfisheries Association Annual Meeting, Knoxville, TN, March 26-30, 2017. *Poster*. Awarded student travel grant from department (\$250). Awarded Gordon Gunter Outstanding Poster Award.

Stevick, R.J., Luna, C., Hsieh, AH. *Measuring Cell Traction Forces in Simulated Microgravity*. UMD-JHU BMES Undergraduate Research Festival, Baltimore MD, March 27, 2015. *Invited oral presentation*. Third place overall.

Luna, C., **Stevick, R.J.**, Yew, A., Hsieh, AH. *Forces Behind Cell Adhesion and Migration in Microgravity*. The Biophysical Society Annual Meeting, Baltimore MD, February 7-11, 2015. *Poster*.

Stevick, R.J., Tran, L., Nalavadi, M., Alwood, J.S. *Does Simulated Weightlessness Alter the Methylation Status of Gene Promoters During Bone Remodeling?* American Society for Gravitational and Space Research Annual Meeting, Pasadena CA, October 22-26, 2014. *Poster*.

TEACHING EXPERIENCE

- 2018-2019 **Teaching Assistant**, AFS 105G Food from the Sea
University of Rhode Island, Kingston, RI
Assisted with grading exams and assignments: 125 students total (2 semesters)
- 2017-2018 **Curriculum Development**, BIO 104 Introduction to Biology Lab II
University of Rhode Island, Kingston, RI
Implemented 4 teaching modules with RStudio and wrote supplementary material (PowerPoints, troubleshooting guides, informational posters, and lab manuals) for this core curriculum course. **All course materials available:** github.com/rjstevick/BIO103R
- 2018 **Teaching Assistant**, OCG 106G You, Me, and Life in the Sea
University of Rhode Island, Kingston, RI
General education class with emphasis on human impacts on the ocean: 80 students
Guest lecturer, “Sustainable Aquaculture”
- 2017 **Laboratory Instructor**, BIO 104 Introduction to Biology Lab II
University of Rhode Island, Kingston, RI
General lab practices and data analysis using R: 75 students in 3 2-hour lab sections.
Prepared weekly quizzes, administered labs, and grading

RESEARCH CRUISE AND FIELD WORK EXPERIENCE

- 2017 **Narragansett Bay Oyster and Environmental Sampling**
August – September 2017
- 2016 **R/V Endeavor: Export Processes on NE Shelf (EN581)**
June 13, 2016 – June 18, 2016 (6 days)
Narragansett, RI – Narragansett, RI; PI: Dr. Susanne Menden-Deuer
- 2016 **R/V Endeavor: Z-Inventories of Primary Production (EN575)**
Mar 3, 2016 – Mar 11, 2016 (9 days)
Fort Lauderdale, FL – Narragansett, RI; PI: Dr. Brice Loose

TECHNICAL SKILLS

Biological. Cell Culture, Nucleic Acid Isolation (RNA, DNA), RT-qPCR, Methylation Assays, Protein Expression, Sequencing library prep, Vector Cloning, Gel Electrophoresis, Confocal microscopy, Histology, Fluorescent In Situ Hybridization

Animal models. Zebrafish, Rainbow trout, Oysters, Mice. Gnotobiotic and germ-free husbandry.

Bioinformatics. RNAseq pipelines, metagenomics, QIIME2, DADA2, DESeq2, other various

Programming. R, RShiny, Bash, Python, Snakemake, git, gitlab

Environmental. Flow cytometry, Lachat nutrient analysis, Chlorophyll-a measurements

Other. Adobe Photoshop, Illustrator, PADI Open Water Diver, AAUS Scientific Diver

ADDITIONAL TRAINING AND WORKSHOPS

- 2021 **Data Science Instructor Training**, Online
The Carpentries Organization
- 2020 **Certification for Animal Experimentation**, Paris, France
Level I project designer regulatory course
Administered at Institut Pasteur, approved by the Ministry of Agriculture
- 2018-2019 **Science Communication and Career Development Program**, Kingston, RI
Hosted by RI NSF EPSCoR and Metcalf Institute for Environmental Reporting
- 2018 **Mental Health First Aid Certification**, Kingston, RI
National Council for Behavioral Health training workshop
- 2016 **Strategies and Techniques for Analyzing Microbial Population Structure Woods Hole, MA**. Marine Biological Laboratory summer program
- 2016 **ECOGEO Workshop: Introduction to Environmental ‘Omics, Honolulu, HI**
Unix for bioinformatics, analysis of 16S rRNA surveys & metagenomic libraries
- 2016 **Scientific Diving: Coral Reef Ecology, Kralendijk, Bonaire**
Field work and diving as part of AAUS certification course through URI

MENTORING EXPERIENCE

- 2019 **Keegan Hart, URI** Undergraduate Coastal Fellow student
- 2018 **Stephanie Spada, URI** Undergraduate Coastal Fellow student
- 2018 **Dana Rojas, URI** Undergraduate NSF SURF student

OUTREACH AND LEADERSHIP ACTIVITIES

- 2021 Presenter, Innovator Speaker Series, St. Peter’s School, Philadelphia, PA
- 2019 R ShinyApp of Oysters in Narragansett Bay
https://rjstevick.shinyapps.io/nbay_shinyapp/
- 2019 Exhibitor, High School Agriculture Day at URI
- 2018-2020 Pen pal, Letters to a Pre-Scientist
- 2018 Panelist, “Preparing for Graduate School” at URI
- 2018 Exhibitor, Women in Science Day at Mystic Aquarium, Mystic, CT
- 2018 Exhibitor, Volvo Ocean Race Ocean Exploration Zone, Newport, RI
- 2018 Facilitator, Society for Women in Marine Science Symposium
- 2017-2019 Outreach Scientist, URI Office of Marine Programs
- 2017-2019 Organizer and Webmaster, Bay Informed Discussion Series at URI
Presenter, “The Microbial Ocean” (February 2018)
- 2016-2018 Exhibitor and Tour Guide, URI-GSO Open House
- 2016-2019 Volunteer TCQ Grader, National Ocean Sciences Bowl CT/RI Regional Competition
- 2016-2018 Communications Chair, URI-GSO Chowder & Marching Student Society
- 2015 Exhibitor, Newport International Boat Show