François Ribalet

Research Associate Professor (He/Him)
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Education

Open University — *London, UK*
PhD in Biological Sciences — *Nov 2007*

Sorbonne University — *Paris, FR*
MSc in Biological Oceanography and Marine Environment — *June 2003*

Sorbonne University — *Paris, FR*
BSc in Population Biology and Ecosystems — *June 2001*

Ecole Superieure d'Angers — *Angers, FR*
Post-secondary preparatory classes for the French Grandes Ecoles — *June 1999*

Employment

University of Washington — *Seattle, USA*
Research Associate Professor — *July 2025 – present*

University of Washington — *Seattle, USA*
Principal Research Scientist — *Sept 2022 – June 2025*

University of Washington — *Seattle, USA*
Senior Research Scientist — *Sept 2015 – August 2022*

University of Washington — *Seattle, USA*
Research Assistant Professor — *Sept 2012 – August 2015*

University of Washington — *Seattle, USA*
Postdoctoral Research Associate — *Jan 2008 – August 2012*

Funding

Collaborations in Artificial Intelligence and Geosciences award ($554,004) *National Science Foundation*
Using Statistical Neural Networks to Learn Ocean Microbial Ecology from Flow Cytometry Data
Principal Investigator — *2026-2028*

Microbial Oceanography Project award ($899,867) *Simons Foundation*
Flow Cytometry Data to Unravel Phytoplankton Growth and Turnover Rates
Principal Investigator — *2024-2027*

Plankton, Aerosol, Cloud, ocean Ecosystem Mission Validation ($135,705)
National Aeronautics and Space Administration
2024-2027

Ships of Opportunity for PACE: Validation of water-leaving reflectances, IOPs, and plankton community metrics
Co-Investigator

Honorable Mention
Schmidt Futures
2023

Finalist (12/117) Ocean Biogeochemistry Virtual Institute award ($10,000,000)
Principal Investigator

Microbial Oceanography Project award ($891,769)
Simons Foundation
2021-2024

Towards Aquatic Flow Cytometry Data Repository and Reproducible Analytical Tools
Principal Investigator

Life Science Project award ($756,007)
Simons Foundation
2018-2021

Computational Flow Cytometry Analysis of Marine Phytoplankton
Principal Investigator

Interdisciplinary Research in Earth Science ($291,379)
National Aeronautics and Space Administration
2017-2021

Signatures of the Multiple Scales of Motion in Shaping Marine Phytoplankton Biogeography
Co-Investigator

Open University Graduate Student Fellowship ($82,000)
Stazione Zoologica di Napoli
2004-2008

Support for four-year graduate research project from the Joint Program Open University - Stazione Zoologica di Napoli

Honors

Leo Maddox Endowed Research Associate Professor
July 2025

Teaching

OCEAN443 - Undergraduate Thesis: Proposal
2022 - present
Work closely with faculty mentors to conceptualize and write a proposal for independent thesis research in a field, laboratory, or other guided research setting

OCEAN444 - Undergraduate Thesis: Research
2022 - present
Work closely with faculty mentors to conduct thesis research as designed in OCEAN 443

OCEAN445 - Undergraduate Thesis: Data Analysis and Writing
2022 - present
Analyze results from senior thesis experiments and present results in a series of drafts and a final paper

Mathematics
1999 – 2003
Taught Mathematics to K-12 minority students for the French Office of Family Allocations

Mentorship

Undergraduate Students

- Baker van Buren - College of the Environment — *Sept 2023 – present*
- Mia Wang - College of Computer Science & Engineering — *Nov 2024 – June 2025*
- Franklin Thai - College of Computer Science & Engineering — *Nov 2024 – January 2025*
- Aakriti Vijay - College of the Environment — *Oct 2024 – June 2025*
- Cristian Swift - College of the Environment — *June 2023 – June 2024*
- Jordan Winter - College of the Environment — *Sept 2020 – Sept 2022*
- Denise Devlyn - College of the Environment — *Sept 2019 – March 2020*
- John MacMillan - College of Engineering — *June 2016 – June 2018*
- Grace Novacek - College of Computer Science & Engineering — *March 2014 – June 2015*
- Maria Hamilton - College of the Environment — *Sept 2012 – Jan 2014*
- Alex Mitchell-Morton - College of the Environment — *Jan 2011 – June 2012*
- Jackie Schwartzstein - College of the Environment — *March 2011 – Nov 2011*
- George Roth - College of the Environment — *Sept 2010 – May 2011*
- Chris Fox - College of Computer Science & Engineering — *Sept 2009 – June 2010*

Graduate Students

- Kristof Glauninger - Dept. of Statistics (co-adviser with Pr. Z. Harchaoui) — *Nov 2019 – June 2022*
- Corinne Jones - Dept. of Statistics (co-adviser with Pr. Z. Harchaoui) — *Nov 2017 – Sept 2021*

Student Committees

- Natalie Kellogg - School of Oceanography (PhD committee member) — *Oct 2024 – present*
- Kathy Qi - School of Oceanography (PhD committee member) — *Sept 2024 – present*

Postdoctoral Scholars

- Dr. Mattias Cape — *June 2018 – July 2020*

Research Scientists

- Chris Berthiaume — *Nov 2017 – present*
- Kelsy Cain — *Nov 2019 – Oct 2024*
- Dr. Annette Hynes — *Nov 2018 – Mar 2024*

Professional Services

Committees

- Member of Diversity, Equity, Inclusion committee for UW College of the Environment — *2024 - present*
- Member of Diversity, Equity, Inclusion committee for UW Oceanography — *2023 - 2024*

Program Organizer

- Workshop (lead) "Towards a Repository and Reproducible Tools for Aquatic Flow Cytometry", Simons Foundation, Seattle (USA) — *March 2023*
- Workshop "Transect and Ecological provinces", Simons Foundation, Boston (USA) — *January 2023*
- Workshop "Diel Processes in Marine Ecosystems", Simons Foundation, Boston (USA) — *December 2022*
- Session "New Flow Technologies for Analyzing Picocyanos", 2020 ProSynFest, Cordoba (Spain) — *February 2022*
- Session "Phytoplankton from single molecules to global ecosystems", ASLO, Portland (USA) — *February 2010*

Editor

- Editorial Board Member at Scientific Data — *2024 - present*
- Review Editor at Frontiers in Microbiology — *2022 - 2024*

Referee for research agencies National Science Foundation (10), Spanish National Agency for Scientific Evaluation (5), French National Research Agency (2), Natural Environment Research Council (1).

Referee for scientific journals Advances in Oceanography & Limnology (1), Advances in Statistical Climatology, Meteorology and Oceanography (1), Applied Sciences (1), Aquatic Botany (4), Aquaculture International (1), Aquatic Toxicology (1), Biological Letters (1), Bioinformatics (1), BMC Bioinformatics (2), Biogeosciences (1), Continental Shelf Research (1), Environmental Microbiome (1), Frontiers in Ecology and Evolution (1), Frontiers in Marine Science (9); Frontiers in Microbiology (8), Geophysical Research Letters (2), Global Biogeochemical Cycles (4), Harmful Algae (3), ISME Journal (3), Journal of Experimental Marine Biology and Ecology (1), Journal of Geophysical Research (2),

Journal of Marine Biology & Oceanography (2), Journal of Marine Systems (2), Journal of Phycology (2), Journal of Sea Research (2), Journal of Theoretical Biology (1), Limnology & Oceanography (16), Limnology & Oceanography Methods (9), Marine Biology (2), Marine Ecology Progress Series (1), Marine Drugs (3), Mathematical Biosciences and Engineering (1), Marine Environmental Research (3), Methods in Ecology and Evolution (1), Microbial Ecology (5), Microbiology spectrum (1), mSystems (1), Philosophical Transactions of the Royal Society B (1); Proceedings of the National Academy of Sciences USA (2), Oceanography (1), Oceanological and Hydrological Studies (1), Peer Journal (1), PLoS One (7), Progress in Oceanography (5), Scientific Reports (2).

Total of **124** reviewed articles

Open-Source Software

- `popcycle` - An R package for reproducible processing, calibration and curation of SeaFlow flow cytometry data. DOI: 10.1038/s41597-019-0292-2
- `flowrate` - A size-structured matrix population model to estimate cell division, carbon fixation, and carbon loss rates in phytoplankton. DOI: 10.1371/JOURNAL.PCBI.1009733
- `flowmix` - Modeling flow cytometry cell populations with covariates using sparse mixture of regressions. DOI: 10.1214/22-AOAS1631
- `cytosegmenter` - A Kernel-based change detection method to identify shifts in phytoplankton communities form flow cytometry data. DOI: 10.1111/2041-210X.13647
- `flowphyto` - An R package that uses semi-supervised computational methods to cluster phytoplankton populations. DOI: 10.1093/bioinformatics/btr003

Fieldwork

- **Western Pacific**: 2024 UW Senior thesis cruise (13 d), 2023 UW Senior thesis cruise (21 d).
- **North Pacific**: 2016 SF-Gradient cruise (14 d), 2015 SF-SCOPE Diel cruise (12 d), 2015 HOT cruise (4 d), 2015 SF-SCOPE transit cruise (8 d), 2013 CMOP survey (2 d) and pilot project (7d), 2013 UW transit cruise (8 d), 2013 UW Senior thesis cruise (8 d), 2012 UW transit cruise (9d), 2012 GeoMICS cruise (6 d), 2011 UW transit cruise (9 d), 2011 PRISM cruise (2 d), 2010 UW transit cruise (9 d), 2010 MBARI-CANON cruise (12 d), 2010 CMOP cruise (5 d), 2009 PRISM cruise (3 d), 2008 PRISM cruise (3d).
- **Mediterranean Sea**: 2006 INTERREG spring cruise (7 d), 2005 INTERREG summer cruise (7d), 2004 INTERREG summer cruise (7 d), 2004 INTERREG spring cruise (7 d).

Total of **183** fieldwork days

Publications

[1] Winter, J., Hynes, A., Berthiaume, C., Cain, K., Armbrust, E. V., **Ribalet, F.,** "Shifts in phytoplankton community structure across oceanic boundaries," *PLOS ONE*, vol. 20, no. 6, e0324466, 2025. DOI: 10.1371/journal.pone.0324466.

[2] Beckett, S. J., Demory, D., Coenen, A. R., Casey, J. R., Dugenne, M., Follett, C. L., Connell, P., Carlson, M. C. G., Hu, S. K., Wilson, S. T., Muratore, D., Rodriguez-Gonzalez, R. A., Peng, S., Becker, K. W., Mende, D. R., Armbrust, E. V., Caron, D. A., Lindell, D., White, A. E., **Ribalet, F.**, Weitz, J. S., "Disentangling top-down drivers of mortality underlying diel population dynamics of prochlorococcus in the north pacific subtropical gyre," *Nature Communications*, vol. 15, no. 2105, 2024. DOI: 10.1038/s41467-024-46165-3.

[3] Dutkiewicz, S., Follett, C. L., Follows, M. J., Henderikx-Freitas, F., **Ribalet, F.**, Gradoville, M. R., Coesel, S. N., Farnelid, H., Finkel, Z. V., Irwin, A. J., Jahn, O., Karl, D. M., Mattern, J. P., White, A. E., Zehr, J., Armbrsut, V. E., "Role of biotic interactions in setting phytoplankton community structure in the north east pacific transition zone," *Limnology and Oceanography*, vol. 69, pp. 1086–1100, 2024. DOI: 10.1002/lno.12555.

[4] Hynes, A. M., Winter, J., Berthiaume, C. T., Shimabukuro, E., Cain, K., White, A., Armbrust, E. V., **Ribalet, F.,** "High-frequency sampling captures variability in phytoplankton population-specific periodicity, growth, and productivity," *Limnology and Oceanography*, vol. 69, no. 11, pp. 2516–2531, 2024. DOI: 10.1002/lno.12683.

[5] Jones-Kellett, A. E., McNichol, J. C., Raut, Y., Cain, K. R., **Ribalet, F.**, Armbrust, E. V., Follows, M. J., Fuhrman, J. A., "Amplicon sequencing with internal standards yields accurate picocyanobacteria cell abundances as validated with flow cytometry," *ISME Communications*, vol. 4, no. 1, ycae115, 2024. DOI: 10.1093/ismeco/ycae115.

[6] Liefer, J. D., White, A. E., Finkel, Z. V., Irwin, A. J., Dugenne, M., Inomura, K., **Ribalet, F.**, Armbrust, E. V., Karl, D. M., Fyfe, M. H., Brown, C., Follows, M. J., "Latitudinal patterns in ocean c:n:p reflect phytoplankton acclimation and macromolecular composition," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 121, no. 46, e2404460121, 2024. DOI: 10.1073/pnas.2404460121.

[7] Dugenne, M., Gradoville, M. R., Church, M. J., Wilson, S. T., Sheyn, U., Harke, M. J., Björkman, K. M., Hawco, N. J., Hynes, A. M., **Ribalet, F.**, Karl, D. M., DeLong, E. F., Dyhrman, S. T., Armbrust, E. V., John, S., Eppley, J. M., Harding, K., Stewart, B., Cabello, A. M., Turk-Kubo, K. A., Caffin, M., White, A. E., Zehr, J. P., "Nitrogen Fixation in Mesoscale Eddies of the North Pacific Subtropical Gyre: Patterns and Mechanisms," *Global Biogeochemical Cycles*, vol. 37, no. 4, e2022GB007386, 2023. DOI: 10.1029/2022GB007386.

[8] Hyun, S., Cape, M. R., **Ribalet, F.**, Bien, J., "Modeling cell populations measured by flow cytometry with covariates using sparse mixture of regressions," *Annals of Applied Statistics*, vol. 17, no. 1, pp. 357–377, 2023. DOI: 10.1214/22-AOAS1631.

[9] Park, J., Durham, B. P., Key, R. S., Groussman, R. D., Pinedo-Gonzalez, P., Hawco, N. J., John, S. G., Carlson, M. C. G., Lindell, D., Juranek, L., Ferrón, S., **Ribalet, F.**, Armbrust, E. V., Ingalls, A. E., Bundy, R. M., "Siderophore production and utilization by microbes in the North Pacific Ocean," *Limnology and Oceanography*, pp. 1636–1653, 2023. DOI: 10.1101/2022.02.26.482025.

[10] Smyth, T., Moffat, D., Tarran, G., Sathyendranath, S., **Ribalet, F.**, Casey, J., "Determining drivers of phytoplankton carbon to chlorophyll ratio at Atlantic Basin scale," *Frontiers in Marine Science*, vol. 10, 2023. DOI: 10.3389/fmars.2023.1191216.

[11] Carlson, M. C. G., **Ribalet, F.**, Maidanik, I., Durham, B. P., Hulata, Y., Ferrón, S., Weissenbach, J., Shamir, N., Goldin, S., Baran, N., Cael, B. B., Karl, D. M., White, A. E., Armbrust, E. V., Lindell, D., "Viruses affect picocyanobacterial abundance and biogeography in the North Pacific Ocean," *Nature Microbiology*, vol. 7, no. 4, pp. 570–580, 2022. DOI: 10.1038/s41564-022-01088-x.

[12] Follett, C. L., Dutkiewicz, S., **Ribalet, F.**, Zakem, E., Caron, D., Virginia Armbrust, E., Follows, M. J., "Trophic interactions with heterotrophic bacteria limit the range of Prochlorococcus," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 119, no. 2, e2110993118, 2022. DOI: 10.1073/pnas.2110993118.

[13] Mattern, J. P., Glauninger, K., Britten, G. L., Casey, J. R., Hyun, S., Wu, Z., Armbrust, E. V., Harchaoui, Z., **Ribalet, F.,** "A Bayesian approach to modeling phytoplankton population dynamics from size distribution time series," *PLOS Computational Biology*, vol. 18, no. 1, e1009733, 2022. DOI: 10.1371/JOURNAL.PCBI.1009733.

[14] Thyssen, M., Grégori, G., Créach, V., Lahbib, S., Dugenne, M., Aardema, H. M., Artigas, L. F., Huang, B., Barani, A., Beaugeard, L., Bellaaj-Zouari, A., Beran, A., Casotti, R., Del Amo, Y., Denis, M., Dubelaar, G. B., Endres, S., Haraguchi, L., Karlson, B., Lambert, C., Louchart, A., Marie, D., Moncoiffé, G., Pecqueur, D., **Ribalet, F.**, Rijke-

boer, M., Silovic, T., Silva, R., Marro, S., Sosik, H. M., Sourisseau, M., Tarran, G., Van Oostende, N., Zhao, L., Zheng, S., "Interoperable vocabulary for marine microbial flow cytometry," *Frontiers in Marine Science*, vol. 9, p. 2367, 2022. DOI: 10.3389/FMARS.2022.975877/BIBTEX.

[15] Boysen, A. K., Carlson, L. T., Durham, B. P., Groussman, R. D., Aylward, F. O., **Ribalet, F.**, Heal, K. R., White, A. E., Delong, E. F., Armbrust, E. V., Ingalls, A. E., "Particulate Metabolites and Transcripts Reflect Diel Oscillations of Microbial Activity in the Surface Ocean," *MSystems*, vol. 6, no. 3, e00896–20, 2021. DOI: 10.1128/mSystems.00896-20.

[16] Coesel, S. N., Durham, B. P., Groussman, R. D., Hu, S. K., Caron, D. A., Morales, R. L., **Ribalet, F.**, Armbrust, E. V., "Diel transcriptional oscillations of light-sensitive regulatory elements in open-ocean eukaryotic plankton communities," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 118, no. 6, e2011038118, 2021. DOI: 10.1073/pnas.2011038118.

[17] Heal, K. R., Durham, B. P., Boysen, A. K., Carlson, L. T., Qin, W., **Ribalet, F.**, White, A. E., Bundy, R. M., Armbrust, E. V., Ingalls, A. E., "Marine Community Metabolomes Carry Fingerprints of Phytoplankton Community Composition," *MSystems*, vol. 6, no. 3, 2021. DOI: 10.1128/msystems.01334-20.

[18] Jones, C., Clayton, S., **Ribalet, F.**, Armbrust, E. V., Harchaoui, Z., "A kernel-based change detection method to map shifts in phytoplankton communities measured by flow cytometry," *Methods in Ecology and Evolution*, vol. 12, no. 9, pp. 1687–1698, 2021. DOI: 10.1111/2041-210X.13647.

[19] Mruwat, N., Carlson, M. C., Goldin, S., **Ribalet, F.**, Kirzner, S., Hulata, Y., Beckett, S. J., Shitrit, D., Weitz, J. S., Armbrust, E. V., Lindell, D., "A single-cell polony method reveals low levels of infected Prochlorococcus in oligotrophic waters despite high cyanophage abundances," *ISME Journal*, vol. 15, no. 1, pp. 41–54, 2021. DOI: 10.1038/s41396-020-00752-6.

[20] Connell, P. E., **Ribalet, F.**, Armbrust, E. V., White, A., Caron, D. A., "Diel oscillations in the feeding activity of heterotrophic and mixotrophic nanoplankton in the North Pacific Subtropical Gyre," *Aquatic Microbial Ecology*, vol. 85, pp. 167–181, 2020. DOI: 10.3354/AME01950.

[21] Gradoville, M. R., Farnelid, H., White, A. E., Turk-Kubo, K. A., Stewart, B., **Ribalet, F.**, Ferrón, S., Pinedo-Gonzalez, P., Armbrust, E. V., Karl, D. M., John, S., Zehr, J. P., "Latitudinal constraints on the abundance and activity of the cyanobacterium UCYN-A and other marine diazotrophs in the North Pacific," *Limnology and Oceanography*, vol. 65, no. 8, pp. 1858–1875, 2020. DOI: 10.1002/lno.11423.

[22] Henderikx Freitas, F., Dugenne, M., **Ribalet, F.**, Hynes, A., Barone, B., Karl, D. M., White, A. E., "Diel variability of bulk optical properties associated with the growth and division of small phytoplankton in the North Pacific Subtropical Gyre," *Applied Optics*, vol. 59, no. 22, p. 6702, 2020. DOI: 10.1364/ao.394123.

[23] Juranek, L. W., White, A. E., Dugenne, M., Henderikx Freitas, F., Dutkiewicz, S., **Ribalet, F.**, Ferrón, S., Armbrust, E. V., Karl, D. M., "The Importance of the Phytoplankton "Middle Class" to Ocean Net Community Production," *Global Biogeochemical Cycles*, vol. 34, no. 12, e2020GB006702, 2020. DOI: 10.1029/2020gb006702.

[24] **Ribalet, F.**, Berthiaume, C., Hynes, A., Swalwell, J., Carlson, M., Clayton, S., Hennon, G., Poirier, C., Shimabukuro, E., White, A., Armbrust, E. V., "SeaFlow data v1, high-resolution abundance, size and biomass of small phytoplankton in the North Pacific," *Scientific Data*, vol. 6, no. 1, p. 277, 2019. DOI: 10.1038/s41597-019-0292-2.

[25] Wilson, S. T., Hawco, N. J., Armbrust, E. V., Barone, B., Björkman, K. M., Boysen, A. K., Burgos, M., Burrell, T. J., Casey, J. R., DeLong, E. F., Dugenne, M., Dutkiewicz, S., Dyhrman, S. T., Ferrón, S., Follows, M. J., Foreman, R. K., Funkey, C. P., Harke, M. J., Henke, B. A., Hill, C. N., Hynes, A. M., Ingalls, A. E., Jahn, O., Kelly, R. L., Knapp, A. N., Letelier, R. M., **Ribalet, F.**, Shimabukuro, E. M., Tabata, R. K., Turk-Kubo, K. A., White, A. E., Zehr, J. P., John, S., Karl, D. M., "Kīlauea lava fuels phytoplankton bloom in the North Pacific Ocean," *Science*, vol. 365, no. 6457, pp. 1040–1044, 2019. DOI: 10.1126/science.aax4767.

[26] Hamilton, M., Hennon, G., Morales, R., Needoba, J., Peterson, T., Schatz, M., Swalwell, J., Armbrust, E., **Ribalet, F.,** "Dynamics of Teleaulax -like cryptophytes during the decline of a red water bloom in the Columbia River Estuary," *Journal of Plankton Research*, vol. 39, no. 4, 2017. DOI: 10.1093/plankt/fbx029.

[27] Heal, K., Qin, W., **Ribalet, F.**, Bertagnolli, A., Coyote-Maestas, W., Hmelo, L., Moffett, J., Devol, A., Armbrust, E., Stahl, D., Ingalls, A., "Two distinct pools of B12 analogs reveal community interdependencies in the ocean," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 114, no. 2, 2017. DOI: 10.1073/pnas.1608462114.

[28] Howard, E. M., Durkin, C. A., Hennon, G. M., **Ribalet, F.**, Stanley, R. H., "Biological production, export efficiency, and phytoplankton communities across 8000 km of the South Atlantic," *Global Biogeochemical Cycles*, vol. 31, no. 7, pp. 1066–1088, 2017. DOI: 10.1002/2016GB005488.

[29] Wilson, S. T., Aylward, F. O., **Ribalet, F.**, Barone, B., Casey, J. R., Connell, P. E., Eppley, J. M., Ferrón, S., Fitzsimmons, J. N., Hayes, C. T., Romano, A. E., Turk-Kubo, K. A., Vislova, A., Armbrust, E. V., Caron, D. A., Church, M. J., Zehr, J. P., Karl, D. M., DeLong, E. F., "Coordinated regulation of growth, activity and transcription in natural populations of the unicellular nitrogen-fixing cyanobacterium Crocosphaera," *Nature Microbiology*, vol. 2, no. 9, p. 17 118, 2017. DOI: 10/gbqk9p.

[30] Hyrkas, J., Clayton, S., **Ribalet, F.**, Halperin, D., Armbrust, E. V., Howe, B., "Scalable clustering algorithms for continuous environmental flow cytometry," *Bioinformatics*, vol. 32, no. 3, pp. 417–423, 2016. DOI: 10.1093/bioinformatics/btv594.

[31] **Ribalet, F.**, Swalwell, J., Clayton, S., Jiménez, V., Sudek, S., Lin, Y., Johnson, Z. I., Worden, A. Z., Armbrust, E. V., "Light-driven synchrony of Prochlorococcus growth and mortality in the subtropical Pacific gyre," *Proceedings of the National Academy of Sciences*, vol. 112, no. 26, pp. 8008–8012, 2015. DOI: 10.1073/pnas.1424279112.

[32] **Ribalet, F.**, Bastianini, M., Vidoudez, C., Acri, F., Berges, J., Ianora, A., Miralto, A., Pohnert, G., Romano, G., Wichard, T., Casotti, R., "Phytoplankton cell lysis associated with polyunsaturated aldehyde release in the northern Adriatic Sea," *PLoS ONE*, vol. 9, no. 1, 2014. DOI: 10.1371/journal.pone.0085947.

[33] Halperin, D., Weitz, K., Howe, B., **Ribalet, F.**, Saito, M., Virginia Armbrust, E., "Real-time collaborative analysis with (almost) pure SQL: A case study in biogeochemical oceanography," in *ACM International Conference Proceeding Series*, 2013. DOI: 10.1145/2484838.2484880.

[34] Howe, B., Halperin, D., **Ribalet, F.**, Chitnis, S., Armbrust, E., "Collaborative science workflows in SQL," *Computing in Science and Engineering*, vol. 15, no. 3, 2013. DOI: 10.1109/MCSE.2013.42.

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[38] **Ribalet, F.**, Marchetti, A., Hubbard, K. A., Brown, K., Durkin, C. ., Morales, R., Robert, M., Swalwell, J. E., Tortell, P. D., Armbrust, E. V., "Unveiling a phytoplankton hotspot at a narrow boundary between coastal and offshore

waters," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 107, no. 38, 2010. DOI: 10.1073/pnas.1005638107.

[39] Marchetti, A., Parker, M. S., Moccia, L. P., Lin, E. O., Arrieta, A. L., **Ribalet, F.**, Murphy, M. E., Maldonado, M. T., Armbrust, E. V., "Ferritin is used for iron storage in bloom-forming marine pennate diatoms," *Nature*, vol. 457, no. 7228, pp. 467–470, 2009. DOI: 10.1038/nature07539.

[40] **Ribalet, F.**, Vidoudez, C., Cassin, D., Pohnert, G., Ianora, A., Miralto, A., Casotti, R., "High Plasticity in the Production of Diatom-derived Polyunsaturated Aldehydes under Nutrient Limitation: Physiological and Ecological Implications," *Protist*, vol. 160, no. 3, 2009. DOI: 10/chrc9r.

[41] **Ribalet, F.**, Intertaglia, L., Lebaron, P., Casotti, R., "Differential effect of three polyunsaturated aldehydes on marine bacterial isolates," *Aquatic Toxicology*, vol. 86, no. 2, 2008. DOI: 10.1016/j.aquatox.2007.11.005.

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[44] Vardi, A., Formiggini, F., Casotti, R., De Martino, A., **Ribalet, F.**, Miralto, A., Bowler, C., "A stress surveillance system based on calcium and nitric oxide in marine diatoms," *PLoS Biology*, vol. 4, no. 3, pp. 0411–0419, 2006. DOI: 10.1371/journal.pbio.0040060.

Talks

[1] Ethan, P., **Ribalet, F.**, Parker, P., Hyun, S., "Mixtures of neural network experts with an application to phytoplankton flow cytometry data," presented at the Joint Statistical Meeting, 2025.

[2] Qi, K., **Ribalet, F.**, Hyun, S., Armbrust, E. V., "Picophytoplankton growth rate and productivity estimated via continuous flow cytometry," presented at the Ocean Sciences Meeting, 2025.

[3] **Ribalet, F.**, Dutkiewicz, S., Monier, E., Armbrust, E. V., "Future ocean warming threatens key photosynthetic microbes," presented at the Ocean Sciences Meeting, 2025.

[4] **Ribalet, F.**, Swalwell, J., Berthiaume, C., "New observational technologies and computational tools to decode phytoplankton responses to a changing ocean," presented at the UW Karl Banse Semniar Series, Seattle, USA, 2025.

[5] Hynes, A. M., Cain, K. R., Qi, K., Berthiaume, C., Armbrust, E. V., **Ribalet, F.,** "Gradients 4 and 5 cruises: Flow cytometry overview," presented at the SCOPE-Gradients Workshop, 2023.

[6] **Ribalet, F.**, Cain, K., Hynes, A., Armbrust, E. V., "Distribution of small phytoplankton and heterotrophic bacteria in the subtropical gyre," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2023.

[7] **Ribalet, F.**, Dutkiewicz, S., Armbrust, E. V., "Ocean warming threatens the survial of key microbes," presented at the UW Biological Oceanography Lunch Seminar Series, 2023.

[8] ——, "Ocean warming threatens the survial of key microbes," presented at the UW eScience Seminar, 2023.

[9] **Ribalet, F.**, Dutkiewicz, S., Berthiaume, C. T., Follows, M., Armbrust, E. V., "Revisiting the fate of prochlorococcus populations in future oceans," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2022.

[10] **Ribalet, F.**, Dutkiewicz, S., Glauninger, K., Follett, C. L., Follows, M., Armbrust, E. V., "Thermal acclimation and nutrient availability control prochlorococcus growth in surface waters," presented at the ProSynFest, 2022.

[11] **Ribalet, F.**, Hynes, A. M., Berthiaume, C., Cain, K. R., "Picophytoplankton distribution in surface waters and beyond," presented at the SCOPE-Gradients Workshop, 2022.

[12] Coesel, S., Graff van Creveld, S., Durham, B. P., Groussman, R. D., Morales, R., **Ribalet, F.**, Armbrust, E. V., "Diel transcriptional oscillations of light-sensitive regulatory elements in open ocean eukaryotic plankton communities," presented at the Molecular Life of Diatoms Meeting, 2021.

[13] Dutkiewicz, S., Follows, M. J., Ward, B. A., **Ribalet, F.,** "Modeling the coupling of ecology and biogeochemistry in the global ocean," presented at the Goldschmidt2021 Virtual Conference, 2021.

[14] **Ribalet, F.**, "Productivity and taxonomy overview in the equatorial pacific," presented at the SCOPE-Gradients Workshop, 2021.

[15] **Ribalet, F.**, Dutkiewicz, S., "The role of temperature in prochlorococcus biogeography," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2021.

[16] **Ribalet, F.**, "Balance of life and deatch at station ALOHA," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2020.

[17] **Ribalet, F.**, Juranek, L. W., White, A. E., "Biological transition zone and community productivitiy," presented at the SCOPE-Gradients Workshop, 2020.

[18] Swalwell, J., **Ribalet, F.**, Hynes, A. M., Armbrust, E. V., "Pipecyte: A miniature immersed-optic flow cytometer for autonomous platforms," presented at the Ocean Sciences Meeting, 2019.

[19] Dutkiewicz, S., **Ribalet, F.**, Armbrust, E. V., "Using observations, models, and theory to understand the large scale patterns and biogeochemical consequences of prochlorococcus growth rates," presented at the Ocean Sciences Meeting, 2018.

[20] Ferron, S., White, A. E., Armbrust, E. V., Juranek, L. W., **Ribalet, F.**, Watkins-Brandt, K., Karl, D. M., "Metabolic rates along a meridional transect in the NE pacific ocean," presented at the Ocean Sciences Meeting, 2018.

[21] **Ribalet, F.**, "Phytoplankton size distributiuon, taxonomy and productivity across the north pacific transition zone," presented at the SCOPE-Gradients Workshop, 2017.

[22] Clayton, S., Halperin, D., **Ribalet, F.**, Swalwell, J., Howe, B., Armbrust, E. V., "Uncovering regional variations in the balance of physical and biological controls on phytoplankton ecology with underway flow cytometry," presented at the American Geophysical Union, Ocean Sciences Meeting, 2016.

[23] Hamilton, M., Hennon, G., Morales, R., Needoba, J. A., Peterson, T. D., Schatz, M. J., Swalwell, J. E., Zuber, P., Armbrust, E. V., **Ribalet, F.,** "Insight into the interactions between the ciliate mesodinium major and cryptophyte algae in the columbia river estuary," 2015.

[24] Hennon, G. M. M., Howard, E., **Ribalet, F.**, Armbrust, E. V., "Continuous flow cytometry and gas flux measurements across nutrient and temperature gradients in the atlantic ocean," presented at the Ocean Sciences Meeting, 2015.

[25] **Ribalet, F.**, Berthiaume, C., Armbrust, E. V., "Coupling of growth and loss dynamics of prochlorococcus in the northeast pacific ocean," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2015.

[26] **Ribalet, F.**, Berthiaume, C., Clayton, S., Halperin, D., Howe, B., Swalwell, J. E., Armbrust, E. V., "Probing the structure of complex ocean microbe communities," presented at the Ocean Sciences Meeting, 2015.

[27] **Ribalet, F.**, Clayton, S., Jimenez, V., Sudek, S., Yajuan, L., Johnson, Z. I., Worden, A. Z., Armbrust, E. V., "Coupling of growth and loss dynamics of prochlorococcus in the northeast pacific ocean," presented at the Joint Aquatic Sciences Meeting, 2014.

[28] **Ribalet, F.**, Schruth, D. M., "Estimating division rates of phytoplankton populations using flow cytometry," presented at the UW Biological Oceanography Lunch Seminar Series, 2012.

[29] **Ribalet, F.**, "Importance of marine ecotones in biogeochemical cycles," presented at the UW Chemical Oceanography Lunch Seminar Series, 2011.

[30] **Ribalet, F.**, Swalwell, J., Armbrust, E. V., "Differential division rates of Prochlorococcus, Synechococcus and picoeukaryotes across subarctic and subtropical waters," presented at the 5th International Conference on Analysis of Microbial Cells at the Single Cell Level, 2011.

[31] **Ribalet, F.**, Berthiaume, C., Swalwell, J., Armbrust, E. V., "Mapping phytoplankton communities in real-time," presented at the Seminar Series of National Oceanic and Atmospheric Administration's West Coast Center for Oceans and Human Health, 2010.

[32] **Ribalet, F.**, Swalwell, J. E., Armbrust, E. V., "Structure of phytoplankton communities in the oceans: From a few meters to thousands of kilometers," presented at the XXV Congress of the International Society for Advancement of Cytometry, 2010.

[33] **Ribalet, F.**, Morales, R., Marchetti, A., Armbrust, E. V., "High resolution of phytoplankton distribution along line p using flow-through cytometry.," presented at the Annual Line P workshop, Institute of Ocean Sciences, 2009.

[34] **Ribalet, F.**, Morales, R., Swalwell, J. E., Marchetti, A., Durkin, C. A., Schruth, D., Armbrust, E. V., "Patchiness and diel variability of phytoplankton communities in the NE subarctic pacific ocean revealed by continuous-monitoring flow cytometry," presented at the Ocean Sciences Meeting, 2009.

[35] **Ribalet, F.**, Morales, R., Swalwell, J., Armbrust, E. V., "Distribution and dynamics of phytoplankton communities in the NE subarctic pacific ocean using flow-through cytometry," presented at the UW Biological Oceanography Lunch Seminar Series, 2009.

[36] **Ribalet, F.**, Wichard, T., Brunet, C., Bastianini, M., Ianora, A., Casotti, R., "Lysis rates in the northern adriatic sea during the late-winter diatom bloom," presented at the XVII Congress of the Italian Association of Oceanology and Limnology, 2006.

[37] **Ribalet, F.**, Casotti, R., "Effects of three diatom-derived aldehydes on the fitness of six phytoplankton species," presented at the Proceedings of the XXII national conference of the Italian Society of Cytometry, 2005.

Posters

[1] Novobilsky, E., Montreal, P., Cain, K., **Ribalet, F.**, Mellett, T., Bundy, R. M., "Assessing changes in iron bioavailability across a natural biogeochemical gradient in the northern equatorial pacific," presented at the Ocean Science Meeting, 2025.

[2] Hyun, S., Bien, J., **Ribalet, F.,** "Uncertainty quantification in ocean flow cytometry datasets," presented at the Ocean Sciences Meeting, 2024.

[3] Qi, K., **Ribalet, F.**, Armbrust, E. V., Hyun, S., "Decomposing picophytoplankton rates by observational flow cytometry and time series analysis," presented at the Ocean Sciences Meeting, 2024.

[4] Turk-Kubo, K. A., Harding, K., Gradoville, M. R., Mak, E. W. K., Barone, B., Dugenne, M., Hynes, A. M., Tabata, R. K., Armbrust, E. V., Karl, D. M., **Ribalet, F.**, White, A. E., Zehr, J. P., "Variation in microbial assemblages and n2 fixation across longitudinal and latitudinal gradients in the north pacific," presented at the Ocean Sciences Meeting, 2021.

[5] Boysen, A. K., Heal, K. R., Gradoville, M. R., Hawco, N. J., Durham, B. P., Groussman, R. D., Carlson, L. T., Pinedo-Gonzalez, P., **Ribalet, F.**, Zehr, J. P., Bundy, R. M., John, S., Armbrust, E. V., Ingalls, A. E., "Assessing community metabolism and flexibility: Metabolomics and microbial diversity across the north pacific transition zone and in response to nutrient amendments," presented at the Ocean Sciences Meeting, 2020.

[6] Cape, M. R., Bien, J., Hyun, S., Armbrust, E. V., **Ribalet, F.,** "Determining ecological provinces from optical cytometric data in the north pacific ocean," presented at the Ocean Sciences Meeting, 2020.

[7] Carlson, M. C. G., **Ribalet, F.**, Hulata, Y., Durham, B. P., Baran, N., Beckett, S., Shamir, N., Ferron, S., Sosa, O., Cael, B. B., Goldin, S., White, A. E., Karl, D. M., Weitz, J. S., Armbrust, E. V., Lindell, D., "Cyanophage abundance and infection of picocyanobacteria are defined by environmental gradients in the north pacific ocean," presented at the Ocean Sciences Meeting, 2020.

[8] Coesel, S. N., Groussman, R. D., Durham, B. P., Morales, R., **Ribalet, F.**, Armbrust, E. V., "Light sensing in open ocean eukaryotic plankton," presented at the Ocean Sciences Meeting, 2020.

[9] Hynes, A. M., Berthiaume, C., Swalwell, J., Armbrust, E. V., **Ribalet, F.,** "Size distributions and carbon biomass of surface picophytoplankton at station ALOHA using the SeaFlow underway flow cytometer," presented at the Ocean Sciences Meeting, 2020.

[10] Mak, W., Gradoville, M. R., Farnelid, H., White, A. E., Turk-Kubo, K. A., Stewart, B., **Ribalet, F.**, Ferron, S., Pinedo-Gonzalez, P., Armbrust, E. V., Karl, D. M., John, S., Zehr, J. P., "Three years of observations show a sharp boundary for diazotrophs and n2 fixation rates near the northern subtropical front of the north pacific ocean," presented at the Ocean Science Meeting, 2020.

[11] Park, J. W., Hawco, N. J., Pinedo-Gonzalez, P., John, S., **Ribalet, F.**, Armbrust, E. V., "Spatial variations of siderophores in the north pacific ocean," presented at the Ocean Sciences Meeting, 2020.

[12] Beckett, S. J., Demory, D., Coenen, A. R., Casey, J. R., Follett, C. L., Dugenne, M., Connell, P. E., Carlson, M. C., Hu, S. K., Wilson, S. T., Muratore, D., Boysen, A. K., Harke, M. J., Luo, E., Rodriguez-Gonzalez, R. A., Peng, S., Armbrust, E. V., Lindell, D., Van Mooy, B. A. S., Zehr, J. P., Follows, M. J., White, A. E., **Ribalet, F.**, Weitz, J. S., "A day in the life of prochloroccocus: Diel ecological oscillations of cyanobacteria, viruses and grazers in the north pacific subtropical gyre," presented at the Ecological Society of America Annual Meeting, 2019.

[13] Pinedo-Gonzalez, P., Hawco, N. J., John, S., Armbrust, E. V., **Ribalet, F.**, Ferron, S., "Distribution of trace metals in surface north pacific ocean using a new ultra-high resolution sampling robot," presented at the Ocean Sciences Meeting, 2018.

[14] **Ribalet, F.**, Berthiaume, C., Hynes, A., Swalwell, J., Armbrust, E. V., "High-resolution size distribution, biomass and abundance of picophytoplankton in surface in surface ocean," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2018.

[15] Carlson, M., Hulata, Y., **Ribalet, F.**, Armbrust, E. V., Lindell, D., "Oceanic regime shifts provide different niches for cyanobacterial virus families," presented at the Ocean Sciences Meeting, 2017.

[16] Clayton, S., **Ribalet, F.**, Swalwell, J., Levy, M., Armbrust, E. V., "Submesoscale fronts structure phytoplankton communities and enhance biodiversity," presented at the Ocean Sciences Meeting, 2017.

[17] **Ribalet, F.**, "What determines prochlorococcus populatuions dynamics in surface waters at station ALOHA?," presented at the Simons Collaboration on Ocean Processes and Ecology Annual Meeting, 2016.

[18] Swalwell, J., **Ribalet, F.**, Armbrust, E. V., "SeaFlow: A census for the veery small," presented at the Joint Aquatic Sciences Meeting, 2014.

[19] **Ribalet, F.**, Swalwell, J., Schruth, D., Fox, C. D., Armbrust, E. V., "Development of an underway flow-cytometer for continuous observations of phytoplankton distributions in the ocean," presented at the Ocean Sciences Meeting, 2010.

[20] Swalwell, J., **Ribalet, F.**, Armbrust, E. V., "A new flow cytometer for continuous observations of phytoplankton distributions in the ocean," presented at the Ocean Sciences Meeting, 2010.

[21] Casotti, R., Balestra, C., **Ribalet, F.**, Mazza, S., "The ecological role of marine diatom polyunsaturated aldehydes: Evidence and hypothesis," presented at the Proceedings of the XXVII National Conference of the Italian Society of Cytometry, 2009.

[22] Casotti, R., Mazza, S., **Ribalet, F.**, Vardi, A., Ianora, A., Miralto, A., "Viability assessment in phytoplankton by flow cytometry: Ecotoxicological applications," presented at the Proceedings of the XXVII National Conference of the Italian Society of Cytometry, 2009.

[23] Balestra, C., **Ribalet, F.**, Intertaglia, L., Alonso-Saez, L., Gasol, J. M., Casotti, R., "Diatom-derived polyunsaturated aldehydes have a differential effect on marine bacteria," presented at the Proceedings of the V European Conference on Marine Natural Products, 2007.

[24] **Ribalet, F.**, Casotti, R., "Comparison of three methods to estimate phytoplankton lysis rates," presented at the XXIII National Conference of the Italian Society of Cytometry, 2007.

[25] **Ribalet, F.**, Wichard, T., Pohnert, G., Ianora, A., Miralto, A., Casotti, R., "Age and nutrient limitations enhance aldehyde production in marine diatoms," presented at the V European Conference on Marine Natural Products, 2007.

[26] **Ribalet, F.**, Intertaglia, L., Lebaron, P., Casotti, R., "Effects of algal aldehydes on several strains of marine bacteria," presented at the General Assembly MARBEF, 2006.

[27] **Ribalet, F.**, Casotti, R., "Effects of two diatom-derived aldehydes on the growth of six phytoplankton species," presented at the Advanced course on "the role of flow cytometry in marine biodiversity and Ecosystem functioning, 2004.

Languages

- French (native)
- English (fluent)
- Italian (conversant)