

ERIN BERTRAND

Associate Professor and Tier II Canada Research Chair
for Marine Microbial Proteomics

Department of Biology, Dalhousie University

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[Lab Website](#)  [@MicrobialOcean](#)

EDUCATION

Massachusetts Institute of Technology

Woods Hole Oceanographic Institution Joint Program, Massachusetts USA

PhD in Chemical Oceanography

2012

Dissertation: “Insights into vitamin B12 production, use and acquisition in marine microbes”

Bates College, Lewiston Maine USA

B.Sc. In Chemistry and Environmental Studies Magna Cum Laude

2005

Honours Thesis: “Substrate-based mechanistic inquiries into alkane hydroxylation by AlkB in *Pseudomonas putida* GPo1 and uncharacterized alkane hydroxylases from bacteria from deep sea hydrothermal vents”

RESEARCH AND PROFESSIONAL EXPERIENCE

Department of Biology Dalhousie University, Halifax NS Canada

Associate Professor with Tenure, Tier II Canada Research Chair

July 2020- Current

Department of Biology Dalhousie University, Halifax NS Canada

Assistant Professor, Tier II Canada Research Chair

July 2015 – Jun 2020

Institute for Comparative Genomics, formerly the Centre for Comparative Genomics and Evolutionary Bioinformatics (CGEB), Dalhousie University, Halifax NS Canada

Member

2015 – current

J. Craig Venter Institute and Scripps Institution of Oceanography

Postdoctoral Fellow

2012 – 2015

Marine Chemistry and Geochemistry Dept.

Woods Hole Oceanographic Institution

Graduate Student Research Assistant

2006 – 2011

Marine Chemistry and Geochemistry Dept.

Woods Hole Oceanographic Institution

Research Assistant II

2005 – 2006

Department of Chemistry, Bates College and Dept. of
Environmental Engineering, Cornell University

Research Assistant

2003 – 2005

LEAVES

Maternity and Parental Leave

July 2021- June 2022

FELLOWSHIPS AND AWARDS SINCE 2006

Killam Prize, Dalhousie University Faculty of Science	2020
Nova Scotia Discovery Awards, Emerging Professional	2018
Simons Foundation Early Career Investigator Award	2017
NSERC Tier II Canada Research Chair, Marine Microbial Proteomics	2015 – 2025
US National Science Foundation Polar Programs Postdoctoral Fellowship	2012 – 2015
Ruth and Paul Fye Award for Excellence in Oceanographic Research	2010 – 2015
US National Science Foundation Graduate Research Fellowship	2009 – 2012
US Environmental Protection Agency STAR Graduate Research Fellowship	2006 – 2009

RESEARCH SUPPORT (SINCE 2015; GIVEN IN \$CAD)

US NSF Biological Oceanography

Collaborative Proposal: Vitamin B1 Limitation and Advantageous
use of B1-related compounds by marine bacterioplankton.

Co-investigators, R. Paerl, S. Gifford \$786,000 2021-2024

NSERC Discovery Ship Time Program

Glacier-ocean interactions and sea ice retreat and in the
Canadian Arctic Archipelago - Past, present and future

With five co-investigators; PI M. Bhatia \$118,000 2022-2023

POLAR Knowledge Canada

Glacier2Ocean Watch: Community-led environmental
monitoring in Ajuittuq (Grise Fiord)

12 co-applicants; L. Copeland as Principal Applicant \$450,000 2020-2023

NSERC Discovery Ship Time Program

Glacier-ocean interactions and sea ice retreat and in the
Canadian Arctic Archipelago - Past, present and future

With four co-investigators \$85,000 2021-2022

OFI (Ocean Frontier Institute)- Phase 2 consortium

The North Atlantic as a Climate Ocean: Projecting Future
Changes in Productivity and the Biological Carbon Pump

16 co-investigators; Z. Finkel as Principal Applicant \$4,000,000 2020-2024

New Frontiers in Research Fund- Exploration

Principle Investigator-

Glaciers and marine productivity in the Canadian Arctic

\$250,000 2019-2023

OFI (Ocean Frontier Institute) Opportunities Fund

Principal Investigator-

Enabling Leadership in Canadian BioGeoSCAPES	\$50,000	2019-2022
OFI (Ocean Frontier Institute)		
North West Atlantic Microbial Observatory co-investigator with 3 others	\$1,262,499	2017-2022
Simons Foundation- Early Career Investigator in		
Quantitative Marine Microbial Ecology	\$720,000	2017-2021
Netherlands Organization for Scientific Research (NWO)		
Collaborative project:		
Temperature and iron interactions in the Southern Ocean Research expedition support	2 cruises, in full	2017-2019
CFI/NSRIT Canada Foundation for Innovation		
John Evans Leadership Fund	\$312,000	2015-2016
NSERC (Canadian National Science and Engineering Research Council)		
Principal Investigator- Discovery Grant	\$192,000	2015-2021
Dalhousie Biology Dept. Startup funds	\$140,000	2015

PENDING RESEARCH SUPPORT (GIVEN IN \$CAD)

Simons Foundation CBIOMES collaboration	\$1,200,000	2022-2027
Netherlands Organization for Scientific Research (NWO)		
Collaborative project:		
Temperature, nitrogen and iron interactions in the Irminger Sea Research expedition support	2 cruises, in full	2022-2024

CITATION METRICS

[Google Scholar](#): 2265 citations; h-index 22 24 May 2022

PUBLICATIONS (N = 44) (*STUDENT AND POST-DOC CO-AUTHORS)

In Revision. M. A. Soto*, D. Desai, J. LaRoche, **E. M. Bertrand**. Cobalamin producers and prokaryotic consumers in the Northwest Atlantic. **Environmental Microbiology**

In Press. C. Bannon*, I. Rapp*, **E. M. Bertrand**. Community Interaction Co-Limitation: Nutrient Limitation in a Marine Microbial Community Context. **Frontiers in Microbiology** 10.3389/fmicb.2022.846890

2022 M. Moran, E. B. Kujawinski, W. F. Schroer, S. A. Amin, N.R. Bates, **E.M. Bertrand**, R. Braakman, C. T. Brown, M. W Covert, S. C Doney, S. T Dyhrman, A. S Edison, A.M. Eren, N. M. Levine, L. Li, A. C. Ross, M. A. Saito, A. E. Santoro, D. Segrè, A. Shade, M. B Sullivan, A. Vardi. Microbial metabolites in the marine carbon cycle. **Nature Microbiology** 7, 508-523

2022 B. Robicheau, J. Tolman, **E.M. Bertrand**, J. LaRoche. Highly resolved interannual phytoplankton community dynamics of the coastal Northwest Atlantic **ISME Communications** 2, 38

2022 H.L. Joy-Warren, A.C. Alderkamp, G.L. van Dijken, L.J. Jabre*, **E.M. Bertrand**, E.N. Baldonado, M.W. Glickman, K.M. Lewis, R. Middag, K. Seyitmuhammedov, K.E. Lowry, W. van de Poll, K.R.

Arrigo. Springtime phytoplankton responses to light and iron availability along the western Antarctic Peninsula. **Limnology and Oceanography** [Feb 2022](#)

2022 J.S.P. McCain*, A.E. Allen, **E.M. Bertrand**. Proteomic traits vary across taxa in a coastal Antarctic phytoplankton bloom. **ISME Journal** 16, 569–579.

2021 J.S.P. McCain* and **E.M. Bertrand**. Phytoplankton antioxidant systems and their contributions to cellular elemental stoichiometry. **Limnology and Oceanography Letters**. [23 Dec 2021](#)

2021 J.S.P. McCain*, A. Tagliabue, E. Susko, E.P. Achterberg, A.E. Allen, **E.M. Bertrand**. Cellular costs underpin micronutrient limitation in phytoplankton **Science Advances** 7 (32), [eabg6501](#)

2021. **L. Jabre**, A. E. Allen, **J. S. P. McCain**, J. P. McCrow, N. Tenenbaum, J. L. Spackeen, R. E. Sipler, B. R. Green, D. A. Bronk, D. A. Hutchins, E. M. Bertrand. Molecular underpinnings and biogeochemical consequences of enhanced diatom growth in a warming Southern Ocean. **PNAS** 118 (30) [e2107238118](#)

2021 MP Bhatia, S Waterman, DO Burgess, PL Williams, RM Bundy, T Mellett, **M Roberts**, EM Bertrand. Glaciers and Nutrients in the Canadian Arctic Archipelago Marine System **Global Biogeochemical Cycles**, [e2021GB006976](#)

2021 PL Williams, D Burgess, SN Waterman, M Roberts, EM Bertrand, M Bhatia Nutrient and Carbon Export from a Tidewater Glacier to the Coastal Ocean in the Canadian Arctic Archipelago **Journal of Geophysical Research-Biogeosciences** [10.1029/2021JG006289](#)

2020. L. Jabre* and E. M. Bertrand. Interactive effects of iron and temperature on the growth of *Fragilariopsis cylindrus*. **Limnology and Oceanography Letters**. [LOL2-19-0069](#).

2020 J. Zhao, M. B. Azad, E. M. Bertrand and many others. Canadian Science Meets Parliament: Building relationships between scientists and policymakers. *Science and Public Policy*. [10.1093/scipol/scz062](#)

2019 J. S. McCain*, E. M. Bertrand. *Prediction and consequences of cofragmentation in metaproteomics*. **Journal of Proteome Research**. doi/10.1021/acs.jproteome.9b00144

2019 M. Wu*, J. S. McCain*, E. Rowland*, R. Middag, M. Sandgren, A.E. Allen, **E.M. Bertrand**. Manganese and iron deficiency in Southern Ocean Phaeocystis antarctica populations revealed through taxon-specific protein indicators. **Nature Communications**. [10:3582](#)

2019 M. A. Saito, E. M. Bertrand and many others. *Progress and Challenges in Ocean Metaproteomics and Proposed Best Practices for Data Sharing*. **Journal of Proteome Research** <https://doi.org/10.1021/acs.jproteome.8b00761>

2018 G. Lax, Y. Eglit, L. Eme, **E.M. Bertrand**, A. J. Roger, A.G. B. Simpson. *Hemimastigophora is a ‘novel’ supra-kingdom-level lineage of Eukaryotes*. **Nature**. [564, pages410–414 \(2018\)](#)

2018 J. K. Brunson, S. M. K. McKinnie, J. R. Chekan, J. P. McCrow, Z. D. Miles, **E. M. Bertrand**, V. A. Bielinski, H. Luhavaya, M.Obornik, G. Smith, D. A. Hutchins, A. E. Allen, B. S. Moore. *Biosynthesis of*

the amnesic shellfish poison domoic acid in a bloom forming diatom. **Science**. 361: 1356-1358.

<https://doi.org/10.1126/science.aau0382>

2018 J. Spackeen, **E. M. Bertrand**, R. Sipler, D. A. Hutchins, A. E. Allen, D. Bronk. *Impact of temperature, CO₂, and iron on nutrient uptake by a late-season microbial community from the Ross Sea, Antarctica*. **Aquatic Microbial Ecology** 82:145-159 DOI: <https://doi.org/10.3354/ame01886>

2018 J. Spackeen, D. Bronk, R. Sipler, **E. M. Bertrand**, D. A. Hutchins, A. E. Allen. Stoichiometric N:P ratios, temperature, and iron impact carbon and nitrogen uptake by Ross Sea microbial communities. **J. Geophysical Research: Biogeosciences** <https://doi.org/10.1029/2017JG004316>

2018 **E. M. Bertrand**. *Quantification of vitamin B12-related proteins in marine microbial systems using selected reaction monitoring mass spectrometry*. MiMB Microbime Analysis: Methods and Protocols (**Springer, Book Chapter**).

2018 R. Paerl, **E. M. Bertrand**, E. Rowland*, P. Chatt, M. Mehiri, T. D. Niehaus, L. Riemman, A.D. Hanson, F. Yves-Bouget. *Carboxythiazole is a key microbial nutrient currency and critical component of thiamin biosynthesis*. **Scientific Reports**. [8\(1\) 5940](https://doi.org/10.1038/s41598-018-25940-4).

2018 A. O. Tatters, A. Schnetzer, K. Xu, N. G. Walworth, F. Fu, J. L. Spackeen, R. E. Sipler, **E. M. Bertrand**, J. B. McQuaid, A. E. Allen, D. A. Bronk, K. Gao, J. Sun, D. A. Caron, D. A. Hutchins. *Interactive effects of temperature, CO₂ and nitrogen source on a coastal California diatom assemblage*. **J. Plankton Research** 40(2) <https://doi.org/10.1093/plankt/fbx074>

2017 J. L. Spackeen, R. E. Sipler, K. Xu, A. O. Tatters, N. G. Walworth, **E. M. Bertrand**, J. B. McQuaid, D. A. Hutchins, A. E. Allen, D. A. Bronk. *Interactive effects of elevated temperature and CO₂ on nitrate, urea, and dissolved inorganic carbon uptake by a coastal California, USA, microbial community*. **Marine Ecol. Progress Series** 577(49-65) doi.org/10.3354/meps12243

2017 T. J. Browning, E. P. Achterberg, I. Rapp, A. Engel, **E. M. Bertrand**, A. Tagliabue, C. M. Moore. *Nutrient co-limitation at the boundary of an oceanic gyre*. **Nature**. 551, 242–246. [doi:10.1038/nature24063](https://doi.org/10.1038/nature24063)

2017 Spackeen, R. Sipler, K. Xu, A. Tatters, N. Walworth, **E. M. Bertrand**, J. McQuaid, D. A. Hutchins, A. E. Allen, D. Bronk. *Interactive effects of elevated temperature and CO₂ on nitrate, urea, and DIC uptake by a coastal California microbial community*. **Marine Ecology Progress Series**. doi.org/10.3354/meps12243.

2016 P.A. Lee, **E. M. Bertrand**, M.A. Saito, G. R. DiTullio. *Influence of vitamin B12 availability on oceanic dimethylsulfide and dimethylsulfoniopropionate*. **Environmental Chemistry** 13(2) 293-301 [doi: 10.1071/EN15043](https://doi.org/10.1071/EN15043)

2015 **E. M. Bertrand**, J. P. McCrow, A. Moustafa, H. Zheng, Jeff. McQuaid, T. O. Delmont, A. F. Post, R. Sipler, J. Spackeen, K. Xu, D. A. Bronk, D. A. Hutchins, A. E. Allen. *Phytoplankton-bacterial interactions mediate micronutrient colimitation at the coastal Antarctic sea ice edge* **Proceedings of the National Academy of Sciences, USA**. 112 (32).9938–9943, [doi: 10.1073/pnas.1501615112](https://doi.org/10.1073/pnas.1501615112)

2015 R. W. Paerl, **E. M. Bertrand**, A. E. Allen, B. Palenik, F. Azam. Vitamin B1 ecophysiology of marine picoeukaryotic algae: Strain-specific differences and a new role for bacteria in vitamin cycling. **Limnology and Oceanography**. 60, 215-228. doi: [10.1002/lno.10009](https://doi.org/10.1002/lno.10009)

2013 **E.M. Bertrand**, D.M. Moran, M.R. McIlvin, J.M. Hoffman, A.E. Allen, M. A. Saito. Methionine synthase interreplacement in diatom cultures and communities: Implications for the persistence of B12 use by marine eukaryotic phytoplankton. **Limnology and Oceanography**. 4: 1431-1450 doi: [10.4319/lno.2013.58.4.1431](https://doi.org/10.4319/lno.2013.58.4.1431)

2013 **E.M. Bertrand**, R. Keddiss, J.T. Groves, C. Vetriani, R.N. Austin. Identity and mechanisms of alkane-oxidizing metalloenzymes from deep-sea hydrothermal vents. **Frontiers in Microbiology**. 4:109. doi: [10.3389/fmicb.2013.00109](https://doi.org/10.3389/fmicb.2013.00109)

2012 **E.M. Bertrand** and A.E. Allen. Influence of vitamin B auxotrophy on nitrogen metabolism in eukaryotic phytoplankton. **Frontiers in Microbiology**. 3(375). doi: [10.3389/fmicb.2012.00375](https://doi.org/10.3389/fmicb.2012.00375)

2012 **E.M. Bertrand**, A. E. Allen., C.L. Dupont, T. Norden-Kirchmar, J. Bai, R. E. Valas, M.A. Saito. Influence of cobalamin starvation on diatom molecular physiology and the identification of a novel cobalamin acquisition protein. **Proceedings of the National Academy of Sciences, USA**. 109(26) E1762-E1771 doi: [10.1073/pnas.1201731109](https://doi.org/10.1073/pnas.1201731109) (* Faculty of 1000 Biology "Recommended" article)

2012 S. Dyhrman, B. Jenkins, T. Rynearson, M. Saito, M. Mercier, H. Alexander, L. Whitney, A. Drzewianowski, V. Bulygin, **E. Bertrand**, Z. Wu, C. Benitez-Nelson, and A. Heithoff. The Transcriptome and Proteome of the Diatom *Thalassiosira pseudonana* Reveal a Diverse Phosphorus Stress Response. **PLoS ONE**. 7(3) e33768. doi: [10.1371/journal.pone.0033768](https://doi.org/10.1371/journal.pone.0033768)

2012 L.L. Wurch, **E.M. Bertrand**, M.A. Saito, B. Van Mooy, S. Dyhrman. Proteome changes driven by phosphorus deficiency and recovery in the brown tide forming alga *Aureococcus anophagefferens*. **PLoS ONE**. 6(12) e28949. doi: [10.1371/journal.pone.0028949](https://doi.org/10.1371/journal.pone.0028949)

2011 **E.M. Bertrand**, M.A. Saito, P.A. Lee, P.N. Sedwick, R.B. Dunbar, G. R. DiTullio. Iron limitation of a springtime bacterial and phytoplankton community in the Ross Sea: implications for vitamin B12 nutrition. **Frontiers in Microbiology** 2(160).doi: [10.3389/fmicb.2011.00160](https://doi.org/10.3389/fmicb.2011.00160)

2011 M. A. Saito, **E. M. Bertrand**, S. Dutkiewicz , V. V. Bulygin, D. M. Moran, F. M. Monteiro, M. J. Follows, F. W. Valois, J. B. Waterbury. Iron conservation by reduction of metalloenzyme inventories in the marine diazotroph *Crocospaera watsonii*. **Proceedings of the National Academy of Sciences, USA**. 108 (6) 2184-2189. doi: [10.1073/pnas.1006943108](https://doi.org/10.1073/pnas.1006943108) (*Featured in the podcasts: "This Week in Microbiology" and "Nature Microbiology")

2011 **E.M Bertrand**, M.A. Saito, Y.J. Jeon, B.A. Neilan. Profiling vitamin B12 biosynthesis gene diversity in the Ross Sea: the identification of a new group of putative polar B12- biosynthesizers. **Environmental Microbiology**. 13(5) 1285–1298. doi:[10.1111/j.1462-2920.2011.02428.x](https://doi.org/10.1111/j.1462-2920.2011.02428.x)

2011 C. J. Gobler, many others, **E. M. Bertrand**, M. A. Saito, I.V. Grigoriev. Niche of harmful alga *Aureococcus anophagefferens* revealed through ecogenomics. **Proceedings of the National Academy of Sciences, USA**. 108(11) 4352-7. doi: [10.1073/pnas.1016106108](https://doi.org/10.1073/pnas.1016106108)

2010 M.A. Saito, T.J. Goepfert, A.E. Noble, **E.M. Bertrand**, P.N. Sedwick, and G.R. DiTullio. A Seasonal study of dissolved cobalt in the Ross Sea, Antarctica: micronutrient behavior, absence of scavenging, and relationships with Zn, Cd, and P. **Biogeosciences**. 7, 4059-4082. doi: [10.5194/bg-7-4059-2010](https://doi.org/10.5194/bg-7-4059-2010)

2008 R.N. Austin, K. Luddy, K. Erikson, M. Pender-Cudlip, **E. M. Bertrand**, D. Deng, R. S. Buzdygon, J.B. van Beilen, J. T. Groves. Cage escape competes with geminate recombination during alkane hydroxylation by the diiron oxygenase AlkB. **Angewandte Chemie**, 120, 28, 5310–5312. doi: [10.1002/anie.200801184](https://doi.org/10.1002/anie.200801184)

2007 E. M. Bertrand, M.A. Saito, J.M. Rose, C. R. Riesselman, M.C. Lohan, A. E. Noble, P.A. Lee, G. R. DiTullio. Vitamin B12 and iron co-limitation of phytoplankton growth in the Ross Sea. **Limnology and Oceanography**. 52 (3) 1079-1093 doi: [10.4319/llo.2007.52.3.1079](https://doi.org/10.4319/llo.2007.52.3.1079) (*Faculty of 1000 Biology "Recommended" article)

2007 E.A. Rozhkova-Novosad, J.C. Chae, G.J. Zylstra, **E.M. Bertrand**, M. Alexander- Ozinskas, D. Deng, L.A. Moe, J.T. Groves, R.N. Austin. Profiling mechanisms of alkane hydroxylase activity in vivo using the diagnostic substrate norcarane. **Chemistry and Biology**. 14: 165-172 doi: [10.1016/j.chembiol.2006.12.007](https://doi.org/10.1016/j.chembiol.2006.12.007)

2005 **E. Bertrand**, R. Sakai, E. Rozhkova-Novosad, L. Moe, B. G. Fox, J.T. Groves, R. N. Austin. Reaction mechanisms of non-heme diiron hydroxylases characterized in whole cells. **Journal of Inorganic Biochemistry**. 99: 1998–2006 doi: [10.1016/j.jinorgbio.2005.06.020](https://doi.org/10.1016/j.jinorgbio.2005.06.020)

MANUSCRIPTS IN PROGRESS

Prepared for submission. **E. M. Bertrand**, T. Kitching*, E. Rowland*, J. LaRoche, E. Devred. Protein indices for diatom growth in the Northwest Atlantic. **Frontiers in Marine Science**

Prepared for submission. C. Bannon,* M. Soto* E. Rowland, J. LaRoche, and **E. M. Bertrand**. Controls on pseudocobalamin production by *Synechococcus* on the Scotian Shelf. **Limnology and Oceanography**

Prepared for submission. R. Paerl, N. Curtis, M. Cohn, S. Gifford, C. Bannon*, E. Rowland, **E. M. Bertrand**. A newly recognized vitamin B1 degradation product in seawater and its use by cosmopolitan marine algae and bacterioplankton **MBio**.

PATENTS

2016 M. Saito, **E. Bertrand**. Cobalamin Acquisition Protein and Use Thereof. US Patent [9,234,012](https://patents.google.com/patent/9,234,012)

OUTREACH PUBLICATIONS

2011 **E. M. Bertrand**. Psychotherapy for Plankton: life can be stressful out there in the microscopic marine world [Oceanus Magazine](https://www.oceanusmagazine.com/issue-49-1). 49(1).

INVITED TALKS AND PRESENTATIONS (SINCE 2015) *NATIONAL OR INTERNATIONAL MEETING INVITATIONS

*Canadian Meteorological and Oceanographic Society, <i>Plenary Invited talk</i>	2021
Canadian National Proteomics Network National Seminar Series, <i>Invited talk</i>	2021
University of New Brunswick, Fredericton, Dept of Biology, <i>Invited talk</i>	2020
Nova Scotian Institute of Science, <i>Invited Talk</i>	2020
*Molecular Life of Diatoms, EMBO Symposium, Norwich UK <i>Invited talk</i>	2019
National Research Council, Halifax NS, <i>Invited talk</i>	2019
University of British Columbia Oceanography Seminar Series, <i>Invited talk</i>	2019
University of Alberta, Earth and Atmospheric Sciences Seminar series, <i>Invited talk</i>	2018
Montreal Microbial Ecology Seminar Series, Montreal Quebec, <i>Invited talk</i>	2018
St. Francis Xavier University, Department of Biology, Antigonish, NS, <i>Invited talk</i>	2018
*Ocean Carbon Biogeochemistry Meeting, Woods Hole, MA, <i>Plenary Invited talk</i>	2018
Ocean Sciences, Portland OR, <i>Contributed talk</i>	2018
Acadia University Department of Biology Seminar Series, <i>Invited Talk</i>	2018
*Chemical Oceanography Gordon Research Conference, New London NH, <i>Invited talk</i>	2017
*Canadian Society of Microbiologists, Annual Meeting, Waterloo ON, <i>Plenary Invited talk</i>	2017
*ASM Microbe Annual Meeting, New Orleans LA, <i>Plenary Invited talk</i>	2017
Marine Microbial Proteomics Working Group, Woods Hole MA, <i>Invited talk</i>	2017
Scripps Institution of Oceanography, Biological Oceanography Seminar, <i>Invited talk</i>	2017
St. Mary's University, Dept. of Biology, Halifax NS, <i>Invited talk</i>	2017
Princeton University EGGS Seminar, <i>Invited talk</i>	2016
Columbia University and Barnard College, <i>Invited talk</i>	2016
Dalhousie University, Chemistry Department, <i>Invited talk</i>	2016
Dalhousie University, Biochemistry and Molecular Biol. Dept, <i>Invited talk</i>	2015
Dalhousie University, Oceanography Department, <i>Invited talk</i>	2015
Mt. Allison University, Biochemistry Department, <i>Invited talk</i>	2015
Bedford Institute of Oceanography, <i>Invited talk</i>	2015
CIFAR Microbial Biodiversity Meeting, <i>Invited talk</i>	2015
Concordia University Biology Department, <i>Invited talk</i>	2015

CONFERENCE PRESENTATIONS (STUDENT AND POSTDOC* PRESENTERS)

2020 E. Rowland*, M. Soto*, T. Kitching*, J. LaRoche, **E. M. Bertrand**. *Targeted Mass Spectrometry-based investigations of cobalamin dynamics in the Northwest Atlantic*. Ocean Sciences 2020, San Diego, CA. **Contributed Talk**

2020 J. S. McCain*, E. Achterberg, A. Tagliabue, **E. Bertrand**. *Iron and manganese colimitation in the Southern Ocean examined with a proteomic allocation model*. Ocean Sciences 2020, San Diego CA. **Contributed Talk**

2020 L. Jabre*, A. E. Allen, D. A. Hutchins, **E. M. Bertrand**. *Iron and temperature interactions control the growth of *Fragilariopsis cylindrus**. Ocean Sciences 2020, San Diego CA. **Contributed Poster**

2019 P. Williams*, M. Roberts*, S. Waterman, E. Bertrand, D. Burgess, M. Bhatia. *Sverdrup glacier: impacts on marine biogeochemistry*. Arctic Change 2019, Halifax NS. **Contributed Talk**

2019 M. Roberts*, P. Williams*, S. Waterman, E. Bertrand, D. Burgess, M. Bhatia. *Responses of primary producers to tidewater glacier input in the Canadian Arctic Archipelago*. Arctic Change 2019, Halifax NS. **Contributed Poster**

2019 E. Bertrand, M. Roberts*, P. Williams*, S. Waterman, D. Burgess, M. Bhatia. *Biogeochemical impacts of tidewater glacier input in the Canadian Arctic Archipelago*. Arctic Change 2019, Halifax NS. **Contributed Talk**

2019 J. S. McCain*, E. Achterberg, A. Tagliabue, **E. Bertrand**. *Iron and manganese colimitation in the Southern Ocean examined with a proteomic allocation model*. Chemical Oceanography Gordon Research Conference, New Hampshire USA. **Contributed Poster**

2019 L. Jabre*, A. E. Allen, D. A. Hutchins, **E. M. Bertrand**. *Molecular response of two key Southern ocean diatoms to changes in iron and temperature*. Molecular Life of Diatoms, Norwich UK. **Contributed Poster**

2019 C. Albury* E. Rowland, **E. M. Bertrand**. *Interactions between cobalamin demand and temperature in the polar diatom *Fragilariopsis cylindrus**. Science Atlantic, Moncton NB. **Invited Talk**

2018 M. Soto*, D. Batista, J. LaRoche, **E. Bertrand** *Marine Microbial Diversity and Function in the Northwest Atlantic*. Ocean Frontier, St. John's Newfoundland. **Invited Poster**

2018 J. S. McCain*, J. McCrow, A. E. Allen, **E. M. Bertrand**. *Metaproteomic examination of microbial community metabolism at the Antarctic sea ice edge*. Marine Microbes Gordon Conference, Il Ciocco, Italy. **Contributed Poster**.

2018 **E. M. Bertrand**, M. Wu*, J. S. McCain*, R. Middag, A. E. Allen. *Proteomic signatures of Manganese and Iron Limitation in Southern Ocean Phytoplankton*. Marine Microbes Gordon Conference, Il Ciocco, Italy. **Contributed Poster**

2018 E. Rowland*, M. Soto*, T. Kitching*, K. More*, **E. M. Bertrand**. *Targeted Mass Spectrometry-based investigations of cobalamin dynamics in the Northwest Atlantic*. American Society for Mass Spectrometry Meeting, San Diego, CA. **Contributed Poster**

2017 J.S. McCain*, C. Kachuk*, **E. M. Bertrand**. *Investigating functional and taxonomic biases in mass spectrometry-based metaproteomics*. Chemical Oceanography Gordon Research Conference, Maine USA: **Contributed Poster**

2017 J.S. McCain*, C. Kachuk*, **E. M. Bertrand**. *End-to-end Metaproteomics: Advances in sample processing and mass spectrometry bioinformatics for environmental microbiology*, Canadian Society for Microbiologists 2017, Waterloo, Ontario: **Contributed Poster**

2016 E. M. Bertrand, J. McCrow, T. Delmont, D. Hutchins, A. Allen. *Multi-omic insights into the role of temperature and iron availability in shaping coastal Southern Ocean microbial dynamics*. Int. Soc. for Microbial Ecology (ISME), Montreal Quebec: **Contributed Talk**

2016 E. M. Bertrand, J. McCrow, D. Bronk, D. Hutchins, A. Allen. *Planktonic Responses to Simulated Warming and Elevated Iron Availability in McMurdo Sound: Community Composition and Microbial Interactions*. ASLO Ocean Science Meeting, New Orleans, LA: **Contributed Poster**

2014 E. Bertrand, J. McQuaid, D. Bronk, D. Hutchins, A. Allen. *Metatranscriptomic analysis of continuous flow experiments manipulating iron, CO₂, and temperature: controls on late season primary production in the Ross Sea*. ASLO Ocean Sciences meeting, Honolulu HI: **Contributed Poster**

INVITED PRESENTATIONS FOR NON-SCIENTISTS

Conference of the Association for Canadian Science Centers, <i>Invited Plenary Talk</i>	2019
“The Ocean Microbiome” panel for Science Literacy Week, <i>Invited Panelist</i>	2019

INVITED WORKSHOP PARTICIPATION

Biogeosciences International Planning Workshop, Woods Hole, MA <i>One of 24 invited participants, planning for future large-scale international program</i> <i>Seeking to map global ocean metabolism www.biogeosciences.org</i>	2018
Atlantic Canadian Cyanobacterial Workshop <i>National Research Council, Halifax NS</i>	2018
Science Meets Parliament <i>One of 29 Tier II Canada Research Chairs invited to Parliament</i> https://sciencepolicy.ca/science-meets-parliament	2018
CIFAR Microbial Metabolites in the Global Ocean Carbon Cycle <i>Invited participant, ‘Global Call for Ideas’ program finalist workshop</i> https://www.cifar.ca/cifarnews/2018/04/19/cifar-short-lists-12-proposals-in-global-call-for-ideas	2018
17th Annual Systems Biology Workshop, Bellairs Research Station, Barbados <i>The Reef Microbiome</i>	2018

- Marine Microbial Proteomics Working Group, Woods Hole Oceanographic Inst. MA, USA 2017
Best Practices meeting for Data Sharing of Ocean and Environmental Metaproteomics
- CIFAR Global Women in Science Leadership Workshop; Banff Centre, Alberta 2016
<https://www.cifar.ca/events/global-women-in-science-leadershipworkshop/>

MEETING, WORKSHOP AND SESSION LEADERSHIP

- Session Organizer: *Towards Biogeoscapes: Exploring molecular drivers of ocean metabolism and biogeochemistry. With Ben Twining, Martha Gledhill, Naomi Levine. Ocean Sciences Meeting* 2020
- Canadian Biogeoscapes Planning Workshop, co-organizer
 Co-convenor, *planning for future large-scale international program* 2019
Seeking to map global ocean metabolism www.biogeoscapes.org
- Session Organizer: *Microbial growth factors in the sea: Characterizing their importance at the molecular and ecosystem level. With Ryan Paerl. Ocean Sciences Meeting* 2014

RESEARCH CRUISE PARTICIPATION AND FIELD WORK

- NWA-BCP Cruise, Labrador Sea (**co-chief scientist, not sailing due to maternity leave**) RV Celtic Explorer May-June 2022
- Atlantic Zone Offshore Monitoring Program Cruise; RV Atlantis May-June 2022
 (two Bertrand lab members)
- Metalgate Cruise, Irminger and Iceland Basins; RV Pelagia July-Aug 2021
 (two Bertrand lab members)
- Jones Sound Glacier-Ocean interface; RV Vagabond and Polar Continental Shelf-supported helicopter surveys and sampling July-Aug 2021
 (two Bertrand Lab members)
- Jones Sound Glacier-Ocean interface; RV Vagabond and Polar Continental Shelf-supported helicopter surveys and sampling July-Aug 2019
 (Bertrand and collaborators)
- 2019 ArcticNet cruise, leg 2B; CCGS Amundsen July-Aug 2019
 (two Bertrand lab members)
- Atlantic Zone Offshore Monitoring Program Cruise; CCGS Amundsen June 2019
 (two Bertrand lab members)
- Atlantic Zone Monitoring Program Cruise; R/V Coriolis II Spring 2019
 (two Bertrand lab members)
- PS117 Weddell Sea Expedition, R/V IB Polarstern Dec 2018-Feb 2019
 (Bertrand and one lab member)
- Atlantic Zone Monitoring Program Cruise; CCGS Hudson Fall 2018
 (two Bertrand lab members)
- Atlantic Zone Monitoring Program Cruise; CCGS Hudson Spring 2018
 (two Bertrand lab members)
- ANAO8A- Amundsen Sea Research Cruise, R/V IB Araon Jan- Feb 2018
 (two Bertrand Lab members)

Atlantic Zone Monitoring Program Cruise; R/V Coriolis II (two Bertrand lab members)	Spring 2017
Atlantic Zone Monitoring Program Cruise; CCGS Hudson (two Bertrand lab members)	Fall 2016
Atlantic Zone Monitoring Program Cruise; CCGS Hudson (Bertrand and one lab member)	Spring 2016
McMurdo Sound, Antarctica; Postdoctoral Research	2014-2015
West Antarctic Peninsula, Phantastic II Cruise, R/VIB N.B. Palmer; Postdoctoral Research	2014
McMurdo Sound, Antarctica; Postdoctoral Research	2013
Metzyme Cruise, Equatorial Pacific, R/V Kilo Moana; Postdoctoral Research	2011
Station Aloha, CMORE photoperiod cruise, R/V Kilo Moana; PhD research	2009
McMurdo Sound, Antarctica; PhD research	2009
Ross Sea, CORSACS II Cruise R/VIB N.B. Palmer; PhD research	2006
Ross Sea, CORSACS I Cruise R/VIB N.B. Palmer; research assistant	2005
Costa Rica Dome, R/V Knorr; summer student fellow	2005

SUPERVISORY EXPERIENCE

PhD Students

Scott Pollara, Dalhousie Biology	Jan 2021-current
Catherine Bannon, Dalhousie Biology	Sept 2019-current
Loay Jabre, Dalhousie Biology	Jan 2018- current
J. Scott McCain, Dalhousie Biology	Jan 2017- Dec 2021

Co-supervised PhD students

Sonja Rose, Dalhousie Biology	2019-current
Charlotte Eich, University of Amsterdam	2017-current
Wanxuan Yao, GEOMAR	2017-Dec 2021

Postdoctoral Fellows and Research Associates

Dr. Elden Rowland, Research Associate	2017-current
Dr. Insa Rapp, Postdoctoral Fellow	Sept 2019-Sept 2021
Dr. Miao Wu, Postdoctoral Fellow	2017-2019

MSc Students

Lena Beckley, Dalhousie Biology	Jan 2021-current
Megan Roberts, Dalhousie Biology	Sept 2019-current
Catalina Albury, Dalhousie Biology	Sept 2019-April 2021
Maria Soto, Dalhousie Biology	Sept 2017-May 2020

Co-supervised MSc students

Patrick White, University of Alberta	Sept 2020-current
Patrick Williams, University of Alberta	Sept 2018-Jan 2020
Charvanaa Dhoonmoon, University of Alberta	Sept 2019- Jan 2022

Research Assistants

Tor Kitching	2016-2018
Kiran More	2017-2018

Honours Students

Julia Cantelo, Dalhousie Biology	2021-2022
Julia Dugandzic, Dalhousie Biology	2020-2021
Lena Beckley, Dalhousie Biology	2019-2020
Mackenzie Valentine, Dalhousie Biology	2019-2020
Catalina Albury, Dalhousie Biology	2018-2019
Tor Kitching, Dalhousie Marine Biology	2018-2019
Megan Roberts, Dalhousie Biology and Chemistry	2016-2017
Hugo Arriojas, Dalhousie Marine Biology	2016-2017
Rebecca Aucoin, Dalhousie Biology and Sustainability	2015-2016
Meghan Chen, Dalhousie Biology and Sustainability	2015-2016

Visiting Graduate Student Fellows

Esther Barber, University of Vigo	2017-2018
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Graduate Student Committee Service

Rebecca Stevens Green (LaRoche PhD Student)	2021-current
Kelsey Williamson (Rodger, Simpson Labs PhD student, Biochemistry)	2020-current
Diana Hadar (LaRoche Lab, MSc Student, Biology)	2019- current
Brent Robicheau (LaRoche PhD student)	2017-current
Yana Eglit (Simpson PhD student)	2015-current
Jennifer Butler (Buchwald MSc Student, Oceanography)	2018-2020
Roksana Saleh (Gunawardena MSc student)	2018
Afrah Alothman (LaRoche MSc student)	2015-2017
Nathieli Schiavi (Stone MSc student)	2015-2018

Graduate Student External Examination Service

Angela Fuentes Pardo, Preliminary Exam (Supervisor: Ruzzante)	2018
Liam MacNeil, ATC Exam (Supervisor, LaRoche)	2020

STUDENT SCHOLARSHIPS AND AWARDS**Catherine Bannon**

NSERC Alexander Graham Bell Canada Graduate Scholarship (CGS-Doctoral; 2019)

Loay Jabre

Hugh Morris Fellowship ([2020](#))

Nova Scotia Graduate Scholarship (2018 – 2022)

12th Annual Lett Symposium, Best Session Talk 2018

Nova Scotia Institute of Science, Graduate Student Writing Competition, First place winner 2018

Maria Soto

Dalhousie Faculty of Graduate Studies A- Scholarship (2017 – 2021)

J. Scott McCain

Dalhousie University Doctoral Thesis Award ([2022](#))

Transatlantic Ocean System Science and Technology (TOSST) Student of the Year Award (2018)

Dalhousie President's Award (2017)
 Izaak Walton Killam Predoctoral Scholarship (Level 2, 2017)
 NSERC Alexander Graham Bell Canada Graduate Scholarship (CGS-Doctoral; 2017),
 Transatlantic Ocean System Science and Technology (TOSST) Doctoral Scholarship
 (2016 - 2020)
 Nova Scotia Graduate Scholarship (2016 – 2020; Honourary)

Dr. Insa Rapp

Ocean Frontier Institute Postdoctoral Fellowship 2019-2021

Dr. Miao Wu

Swedish Formas Mobility Fellowship

Tor Kitching

NSERC Undergraduate Student Research Award 2017
 NSERC Undergraduate Student Research Award 2018
 Sarah Lawson Undergraduate Student Research Award 2018

Catalina Albury

Sarah Lawson Undergraduate Student Research Award 2018
 Nova Scotia Graduate Scholarship (2019 – 2021)

Julia Dugandzic

Nancy Witherspoon Memorial Summer Research Scholarship 2020
 Dalhousie Faculty of Science Undergraduate Summer Research Contest, top three

TEACHING EXPERIENCE SINCE 2015

Biology Graduate Module: Classic Papers in Microbial Oceanography Developed and administered to Biology Department graduate students	Winter 2020
Life Rewritten: Applications and Implications of Gene Editing and Synthetic Biology Co-developed new class and administered to 40-60 3 rd and 4 th year undergraduates	Winter 2020-21
Hacking the Blue Planet: Scientific and Social Dimensions of Ocean Fertilization Developed and administered to 17-25 fourth year undergraduate and master's students	Fall 2016-20
Biology Graduate Module: Current trends in microbial community proteomics Developed and administered to Biology Department graduate students, involving practical experience in the lab and in-depth examinations of primary literature	Winter 2018
Diversity of Plants and Microorganisms Administered the microbial portion of the course to 224 students and made updates to the environmental and ecological content	Winter 2017
Undergraduate Honours Research and Thesis	2015-Current

Participate in Biology Honours course as one of 3-4 professors reviewing presentations and serving as mentor

GUEST LECTURES

BIOL/MARI 3221: Diversity of Algae (Instructor- B. Hynes) “Antarctic phytoplankton and their response to global change” 25 students, May 2016

OCEA 1000: Conversations with Ocean Scientists (Instructor- C. Buchwald) “Phytoplankton need their vitamins too” 60 students, Feb 2017

OCEA 4140: Biological Oceanography (Instructor- C. Algar) “Molecular approaches in Biological Oceanography” 30 students, March 2017

MARI 4350 / 5350: Cutting edge in Marine Sciences (Instructor- H. Lotze) “Marine microbes and global change” 30 students, March 2017

BIOL/MARI 3221: Diversity of Algae (Instructor; B. Hynes) “Antarctic phytoplankton and their response to global change” 8 students, May 2017

OCEA 1000: Conversations with Ocean Scientists (Instructor- C. Buchwald) “Phytoplankton need their vitamins too” 60 students, Feb 2018

OCEA 4140: Biological Oceanography (Instructor- C. Algar) “Molecular approaches in Biological Oceanography” 30 students, March 2018

MARI 4350 / 5350: Cutting edge in Marine Sciences (Instructor- H. Lotze) “Marine microbes and global change” 30 students, March 2018

BIOL/MARI 3221: Diversity of Algae (Instructor- B. Hynes) “Antarctic phytoplankton and their response to global change” 15 students, May 2018

OCEA 1000: Conversations with Ocean Scientists (Instructor- L. deGelleke) “Phytoplankton need their vitamins too” 60 students, Feb 2019

BIOL/MARI 3221: Diversity of Algae (Instructor- B. Hynes) “Antarctic phytoplankton and their response to global change” 14 students, May 2019

COURSES TAKEN

“Introduction to Anti-racist and Anti-oppressive Education” (Instructor T. Ewart) Dalhousie Centre for Learning and Teaching, Fall 2020

SERVICE

Manuscript Reviewer

Oceanography, Marine Chemistry, Limnology and Oceanography, Limnology and Oceanography Methods, Journal of Plankton Research, Environmental Microbiology, Proteomics, Journal of Proteome Research, ISME Journal, Biogeosciences, Rapid Communications in Mass Spectrometry, Metallomics, Frontiers in Microbiology,

Proceedings of the National Academy of Sciences, Plant Physiology, Current Biology,
Nature Microbiology, Nature Geoscience, Protist, Science

Proposal reviewer

Canadian National Science and Engineering Council	2016-current
U.S. National Science Foundation	2015-current
European Research Council	2015-current
Nova Scotia Discovery Awards Judging committee	2019-present

Panel Participant

Roundtable for Canada's Fundamental Science Review (Naylor report), Sept 2016
Roundtable for Canada's Athena Swan Initiative, Nov 2018

Departmental Service

Search Committee, Cell Biologist, member	2020
Biology Department Graduate Admissions Committee- member	2017-present
Dalhousie Biology Department Representative, Science Atlantic	2016-present
Biology Department Seminar Committee- Chair	2015-2018
Search Committee CRC Tier II in Marine Quantitative Ecology- Member	2016

University Service

Dalhousie Undergraduate Research Committee	2019-present
Steering Committee, Centre for Comparative Genomics and Evolutionary Bioinformatics (CGEB)	2019-present
CGEB Equity Diversity and Inclusion Working Group	2019-present
Member, Dalhousie Women in Research Caucus (WiRC)	2018-present
Member, Dalhousie Biological Mass Spectrometry CORE Facility Advisory Committee member	2018-present
Search committee for Associate Vice President and Scientific Director of the Ocean Frontier Institute- member	2017-2018
Search Committee for Chair, Department of Chemistry- Member	2016

SOCIETY MEMBERSHIPS

Association for the Sciences of Limnology and Oceanography
Canadian Society of Microbiologists
American Society for Mass Spectrometry

CERTIFICATIONS

Advanced Wilderness and Remote First Aid, Canadian Red Cross
WHMIS
Dalhousie Biosafety Certification

POPULAR PRESS COVERAGE (HIGHLIGHTS SINCE 2015)

August 2019 [Radio Interview](#)- PhD student J. Scott McCain re: Wu, McCain et al 2019
Summer 2019 Canadian National Film Board- Instagram campaign for young women in STEM
Fall 2017 [Dalhousie Magazine](#)
Spring 2017 [Dalhousie News](#)
Summer 2015 Phys.org

