Carly Moreno M.Sc. Ph.D.
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Education

University of North Carolina at Chapel Hill, Chapel Hill, NC
Doctor of Philosophy in Marine Sciences, October 2020 2016 – 2020
Master of Science in Marine Sciences 2012 – 2015

University of Washington, Seattle, WA 2006 – 2011
Bachelor of Science in Oceanography
Bachelor of Arts in Spanish

Research Experience

Postdoctoral Researcher, Laboratory of Shady Amin 2021 - present
Department of Biology, New York University Abu Dhabi, Abu Dhabi, UAE
Current project: Examining single cell symbioses between phytoplankton and bacteria across ocean provinces

Graduate Research Assistant, Laboratory of Adrian Marchetti 2012 – 2020
Department of Marine Sciences, UNC - Chapel Hill, Chapel Hill, NC, USA

Publications

Google Scholar: https://scholar.google.com/citations?hl=en&user=BzQPpmwAAAAJ

Moreno C. M., N. R. Cohen, M. Bernish, Y. Lin, Z. Li, N. Waite, N. Cassar, O. Schofield, A. Marchetti. Molecular physiology of Antarctic diatom natural assemblages reveals multiple strategies contributing to their ecological success. *In prep.*

Thibodeau P., B. Song, **C**. **M**. **Moreno**, and D. K. Steinberg. 2022. The feeding ecology and microbiome of the pteropod *Limacina helicina antarctica* as determined with next-generation sequencing. AME 88:19-24. doi.org/10.3354/ame01981

Lin Y., **C**. **M**. **Moreno**, A. Marchetti, H. W. Ducklow, O. M. Schofield, S. Chaffron, E. Delage, D. Eveillard, and N. Cassar. 2021. Decrease in plankton biodiversity and biological carbon fluxes with a reduction in sea ice extent at the western Antarctic Peninsula. Nat. Communication 12 (1), 4948. doi.org/10.1038/s41467-021-25235-w

Brown, M. S., J. S. Bowman, Y. Lin, C. J. Feehan, C. M. Moreno, N. Cassar, A. Marchetti, and O. M. Schofield. 2021. Low diversity of a key phytoplankton group along the West Antarctic Peninsula. Limnol. Oceanogr. 66 (6) 2470 – 2480. https://doi.org/10.1002/lno.11765

Moreno, **C**. **M**., W. Gong, N. R. Cohen, K. DeLong, and A. Marchetti. 2020. Interactive effects of iron and light limitation on the molecular physiology of the Southern Ocean diatom *Fragilariopsis kerguelensis*. Limnol. Oceanogr. 1–21. doi:10.1002/lno.11404

Cohen, N. R., E. Mann, B. Stemple, **C**. **M**. **Moreno**, S. Rauschenberg, J. E. Jacquot, W. G.Sunda, B.T. Twining and A. Marchetti. 2018. Iron storage capacities and associated ferritin gene expression among marine diatoms. Limnol. Oceanogr. 63: 1677–1691. doi:10.1002/lno.10800

Collins, J. R., H. F. Fredricks, J. S. Bowman, C. P. Ward, **C**. **M**. **Moreno**, K. Longnecker, A. Marchetti, C. M. Hansel, H. W. Ducklow, and B. A. S. Van Mooy. 2018. The molecular products and biogeochemical significance of lipid photooxidation in West Antarctic surface waters. Geochim. Cosmochim. Acta 232: 244–264. doi:10.1016/j.gca.2018.04.030

Moreno, **C**. **M**., Y. Lin, S. Davies, E. Monbureau, N. Cassar, and A. Marchetti. 2018. Examination of gene repertoires

and physiological responses to iron and light limitation in Southern Ocean diatoms. Polar Biol. 41: 679–696. doi:10.1007/s00300-017-2228-7

Ellis, K. A., N. R. Cohen, **C**. **Moreno**, and A. Marchetti. 2017. Cobalamin-independent Methionine Synthase Distribution and Influence on Vitamin B_{12} Growth Requirements in Marine Diatoms. Protist 168: 32–47. doi:10.1016/j.protis.2016.10.007

Lin, Y., N. Cassar, A. Marchetti, **C**. **Moreno**, H. Ducklow, and Z. Li. 2017. Specific eukaryotic plankton are good predictors of net community production in the Western Antarctic Peninsula. Sci. Rep. 7: 1–11. doi:10.1038/s41598-017-14109-1

Marchetti, A., **C**. **M**. **Moreno**, N. R. Cohen, I. Oleinikov, K. deLong, B. S. Twining, E. V. Armbrust, and others. 2017. Development of a molecular-based index for assessing iron status in bloom-forming pennate diatoms. J. Phycol. **53**: 820–832. doi:10.1111/jpy.12539

Conference Presentations

Moreno C. M., N. R. Cohen, M. Bernish, Z. Li, Y. Lin, N. Cassar, and A. Marchetti. Molecular physiology of Antarctic diatom natural assemblages reveals multiple strategies contributing to their ecological success. Molecular Life of Diatoms Meeting, Online. 2021. *Poster presentation*.

Moreno C. M., M. Bernish, N. R. Cohen, and A. Marchetti. Elemental composition and molecular physiology of four Southern Ocean diatoms. Ocean Sciences Meeting, San Diego, CA. 2020. *Poster presentation*.

Moreno C. M., W. Gong, N. R. Cohen, K. DeLong, and A. Marchetti. Interactive effects of iron and light limitation on the molecular physiology of the Southern Ocean diatom *Fragilariopsis kerguelensis*. Molecular Life of Diatoms Meeting, Kobe, Japan. 2017. *Poster presentation*.

Moreno C. M., W. Gong, N. R. Cohen, K. DeLong, and A. Marchetti. Iron and light limitation in an ecologically important Southern Ocean Diatom *Fragilariopsis kerguelensis*. Aquatic Science Meeting, Honolulu, HI. 2017. *Poster presentation*.

Moreno, C. M., Y. Lin, S. Davies, E. Monbureau, N. Cassar, and A. Marchetti. Examination of gene repertoires and response to iron and light limitation in Southern Ocean diatoms. Palmer-LTER Annual Workshop. Rutgers University, NJ. 2016. *Oral presentation*.

Moreno, C. M., Y. Lin, S. Davies, E. Monbureau, N. Cassar, and A. Marchetti. Investigation of the physiology and genetic repertoires of seven Southern Ocean diatoms. UNC Academic Research Conference. Chapel Hill, NC. 2015. *Oral presentation*.

Honors & Awards

UNC MASC Service Award, UNC ($500) 2020
Chancellor's Doctoral Advancement Award, Graduate School, UNC ($9000) 2020
IME Proposal Defense Award, Initiative for Minority Excellence, UNC ($5000) 2019
Molecular Life of Diatom Travel Grant, Rutgers University ($1000) 2019
Gates Millennium Scholarship, UW; **Fellowship**, UNC (~$280,000) 2006 – 2018
Morrow Travel Grant, UNC ($1,000) 2017
Agouron Institute and Gordon and Betty Moore Foundation,
Center for Microbial Ocean Research and Education, UH-Manoa (~$3,000) 2014
Costco Diversity Scholarship, UW ($40,000) 2006 - 2010
Del Rio Endowed Scholarship for Environmental Studies, UW ($4,000) 2010

Leadership & Community Service

President, Society for the Advancement of Chicanos and Native Americans in Science UNC-CH Chapter 2018 – 2019
- Facilitated member meetings and delegated duties among board members
- Enhanced chapter visibility on campus, resulting in collaborations between two student groups
- Coordinated participation in multiple outreach events and seminar series

Secretary, Society for the Advancement of Chicanos and Native Americans in Science UNC-CH Chapter 2016 – 2018
- Assisted in the organization of meetings and agendas, created flyers for events
- Managed attendance and assisted with chapter website and budget

President, UNC Marine Sciences Graduate Student Action Group 2015 – 2016
- Graduate student representative and advocate at faculty meetings
- Coordinated planning of two department-wide graduate student events requiring lodging, food and transportation
- Coordinated student nominated invited speakers for department wide talks

Reviewer, *Geophysical Research Letters* 2020, *Frontiers in Marine Science 2022*
Graduate student panelist, Diverse Womxn of Worth Seminar, Q&A with graduate students on navigating graduate school and work/life balance – *UNC, Chapel Hill, NC*. 2019.
Graduate student panelist, Gates Millennium Undergraduate Scholars, Q&A with undergraduates on admission process for graduate school – *UNC, Chapel Hill, NC*. 2019.
Exhibitor, NC Science Expo, organized hands-on, marine science demonstrations for children and families – *UNC, Chapel Hill, NC*. 2015- 2019.
Judge and moderator, National Ocean Sciences Bowl Volunteer. Orca Bowl – *Seattle, UW* and Blue Heron Bowl – *UNC, Chapel Hill, NC*. 2007 – 2019.
Guest instructor, NC Science Olympiad, presented on polar food webs and phytoplankton, assisted with microscopy – *Guy B. Phillips Middle school, Chapel Hill, NC*. 2019 – 2020.
Guest instructor, Adventures in Antarctica, introduced 8th grade class (Ms. Kelly Sears) to life in Antarctica for phytoplankton and scientists – *Chapel Hill/Carrboro City School, NC*. 2016.
Guest instructor, Phytoplankton identification and diversity. 4th – 8th grade. *Harker Island Elementary School, Harker Island, NC*. 2014.

Teaching & Mentorship

Teaching Assistant, Department of Marine Sciences, UNC - Chapel Hill 2014 – 2019
Biological Oceanography (Spr. 2016, Spr. 2019)
- Taught weekly lab and discussion sections on relevant literature for 20 graduate and undergraduate students.
- Held weekly office hours and graded student problem sets.
- Instructed students on oceanography field work design and execution to explore Neuse River Estuary, NC.

The Marine Environment (Fall 2015, Spring 2020)
- Taught Biological Oceanography module, three lectures, one lab and one recitation section. Created exam questions and rubric for module.

Marine Phytoplankton (Fall 2014)
- Instructed five lab practical sections on measuring phytoplankton physiological parameters, held office hours and graded student problem sets.

Graduate Research Consultant, Department of Marine Sciences, UNC - Chapel Hill 2014 – 2019
Marine Phytoplankton (Fall 2014, Fall 2019)
- Facilitated student generated research questions and hypothesis on phytoplankton physiology and experimental design.
- Instructed five lab practical sections on measuring phytoplankton physiological parameters.

Biological Oceanography (Spr. 2017)

- Helped students design research questions and hypotheses for field work in the Neuse River, NC.
- Assisted in the instruction of oceanography field work, boat handling, equipment deployment, sample collection and sample processing.

Invited Speaker

Marine Microbiology, Department of Marine Sciences, UNC - Chapel Hill 2018 – 2020

- Created presentations and facilitated class conversation on polar oceanography and phytoplankton physiology

Marine Biology: Near Shores and Oceans, Duke TIP, Duke Marine Labs 2016 – 2018

- Created presentations and facilitated class conversation on polar oceanography and phytoplankton physiology for three classes taught by Wilton Burns, Jamie Brown and Natalie Cohen.

Energy in a Sustainable Environment *2015*

- Presented on the feasibility of algal biofuels as a replacement for biodiesel.

Undergraduate mentor, Laboratory of Adrian Marchetti 2013 – 2019

- Mentored nine undergraduate student projects in culturing, microscopy, molecular biology or library preparation
- Trained students on techniques, communicated expectations and encouraged students to explore research options

o Margaret Bernish (2017 – 2019): TagSeq and 18S library preparation. MS Marine Science, USC.
o Gustavo Hernandez (2018): Culturing and physiology of polar diatoms. Lab technician biomedical research.
o Doug Rouse (2017): Culturing and RNA extractions for metatranscriptome sequencing. Vet tech.
o Emily Pierce (2017 - present): Culturing and molecular biology techniques. PhD student, NC State.
o Ernesto Velazquez (2016): 18S library preparation and culturing. Business and marketing analyst, Durham, NC.
o Spencer Nelson (2015): Algal culturing and physiology of polar diatoms, Professional Staff Member at U.S. Senate Committee on Energy & Natural Resources.
o Jacob Dixon: Isolating and quantifying Antarctic diatoms. MS Clinical Laboratory Science, UNC.
o Maritza Mendoza (2014): Culturing and physiology of polar diatoms, MS Marine Resource Management, OSU.
o Jamal Benjamin (2013): Culturing and molecular biology techniques.

Field Experience & Training (over 180 days at sea)

- *R/V Weatherbird II*, ECOHAB cruise, eastern Gulf of Mexico. Chief Scientist: Cindy Heil. Dec. 2021.
- Learn to Code Python Course, Initiative for Training in Biomedical Life Sciences. *UNC Chapel Hill*. July 2018.
- *R/V Laurence M. Gould*, Palmer LTER cruise, Western Antarctic Peninsula. Chief Scientist: Doug Novacek. Jan. 2018.
- NGS Workshop, hands-on *de novo* assembly practice and raw sequence preparation. *UNC*. Aug. 2016.
- *R/V Laurence M. Gould*, Palmer LTER cruise, Western Antarctic Peninsula. Chief Scientist: Hugh Ducklow. Jan. 2016.
- Genomes to Biomes Course. Center for Microbial Oceanography, *UH Manoa*. May 2015.
- *R/V Kilo Moana*. CMORE cruise, Station ALOHA, Northern Pacific Ocean. Chief Scientist: Grieg Steward. May 2015.
- *R/V Guadalupe River*, USFQ and UNC Center for Galapagos Studies cruise. Chief Scientists: Luis Vinueza. Oct. 2014.

Skills & Affiliations

Computer/Technical: Unix, R, MATLAB, Adobe Photoshop & Illustrator
Other: Conversational Spanish, PADI Advanced Open Water Diver
Affiliations: American Geophysical Union (AGU), Association of the Sciences of Limnology and Oceanography (ASLO), Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), Phycological Society of America (PSA)