

Hannah Dawson

SETI Institute
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Education

2022 PhD, Oceanography and Astrobiology

University of Washington, Seattle, WA

Dissertation: Microbial metabolomics in polar oceans: responses to temperature and salinity changes associated with sea ice.

Advised by Asst. Prof. Jodi N. Young

2019 MS, Oceanography

University of Washington, Seattle, WA

Thesis: Effects of temperature and salinity on the physiology of sea-ice algae.

Advised by Asst. Prof. Jodi N. Young

2013 BS, Biology

University of Virginia, Charlottesville, VA

Minor in Astronomy

Professional Experience and Research

2025-present Virtual Planetary Laboratory (VPL) Project Administrator, SETI Institute, Mountain View, CA

Supervisor: Dr. Victoria Meadows

2025 Postdoctoral Scholar, Virtual Planetary Laboratory (VPL) Program Administrator, University of Washington, Seattle, WA

Supervisor: Dr. Victoria Meadows

2024-2025 Arctic Activities Coordinator, NOAA Alaska Fisheries Science Center, Seattle, WA

Supervisor: Dr. Robert Foy

2023-2024 Postdoctoral Scientist, UW School of Oceanography, Seattle, WA

Supervisor: Dr. Jodi N. Young

2016-2022 Graduate Research Assistant, UW School of Oceanography, Seattle, WA

Supervisor: Dr. Jodi N. Young

2013-2016 Laboratory Specialist, Virginia Tech Marion DuPont Scott Equine Medical Center, Leesburg, VA

Supervisor: Dr. Jennifer Barrett

2012-2013 Undergraduate Independent Researcher, School of Medicine, University of Virginia, Charlottesville, VA

Supervisor: Dr. Benjamin Purow

Publications

- Rundell, S, Young, JN, Cooper, Z, **Dawson, HM**, Carpenter, SD, Ryan-Keogh, T, Rowland, E, Bertrand, E, Deming, JW. (2024) Teasing apart photosynthetic processes during the spring melt of Antarctic sea ice. *Limnol Oceanogr*.
- Dawson, HM**, Connors, E, Erazo, N, Sacks, JS, Mierzejewski, V, Rundell, S, Carlson, LT, Deming, JW, Ingalls, AE, Bowman, J, Young, JN. 2023. Metabolome responses in microbial communities along the western Antarctic Peninsula to changes in temperature and salinity. *ISME J*. DOI: <https://doi.org/10.1038/s41396-023-01475-0>
- Dawson, HM**, Heal, KR, Boysen, AK, Carlson, LT, Ingalls, AE and Young, JN. 2020. Potential of temperature and salinity-driven shifts in diatom compatible solute concentrations to impact biogeochemical cycling within sea ice. *Elem Sci Anth*, 8: 25. DOI: <https://doi.org/10.1525/elementa.421>
- Dawson, HM**, Heal, KR, Torstensson, A, Carlson, LT, Ingalls, AE, Young, JN. 2020. Large diversity in nitrogen- and sulfur-containing compatible solute profiles in polar and temperate diatoms. *Integr Comp Biol*. 2020;60(6):1401–13. DOI: <https://doi.org/10.1093/icb/icaa133>

Presentations

- Dawson, HM. Microbial metabolomics in polar oceans: responses to temperature and salinity changes associated with sea ice. Talk, PhD Defense, University of Washington, Seattle, WA, December 2022.
- Dawson, HM. Microbial metabolomics in changing polar oceans. Talk, Dissertations Symposium in Chemical Oceanography (DISCO XXVIII), Kailua-Kona, HI, October 2022.
- Dawson, HM. Seawater microbial communities along the Western Antarctic Peninsula: strong metabolome responses to short-term temperature and salinity perturbations. Talk, Biological Oceanography Seminar, University of Washington, Seattle, WA, June 2022.
- Dawson, HM, Connors, E, Erazo, N, Sacks, JS, Mierzejewski, V, Rundell, S, Carlson, LT, Deming, JW, Ingalls, AE, Bowman, J, Young, JN. Seawater microbial communities along the Western Antarctic Peninsula: strong metabolome responses to short-term temperature and salinity perturbations. Talk, Tvärminne Symposium on Polar Microbes and Viruses, Tvärminne, Finland, May 2022.
- Dawson, HM, Thamtracoln, K, Kranzler, C, Zelzion, U. Expanding the known marine virosphere via viromics: first measures of RNA viruses in sea ice. Talk, Astrobiology Colloquium, University of Washington, Seattle, WA, November 2021.
- Dawson, HM. Response of polar surface seawater community to change in temperature and salinity. Talk, Biological Oceanography Seminar, University of Washington, Seattle, WA, May 2021.
- Dawson, HM. Ecophysiology of sea-ice algae in changing polar oceans. Talk, Biological Oceanography Seminar, University of Washington, Seattle, WA, November 2020.
- Dawson, HM., Boysen, A, Heal, KR, Carlson, LT, Ingalls, AE, Young, JN. Using metabolomics as a method to probe the physiological adaptations of sea-ice algae. Talk, Astrobiology Science Conference, Bellevue, WA, July 2019.
- Dawson, HM. Effects of temperature and salinity on the physiology of sea-ice algae. Talk, Biological Oceanography Seminar, University of Washington, Seattle, WA, May 2019.

- Dawson, HM., Boysen, A, Heal, KR, Carlson, LT, Ingalls, AE, Young, JN. Metabolic response of sea-ice diatoms to shifting temperature and salinity. Poster, POLAR2018 SCAR Open Science Conference, Davos, Switzerland, June 2018.
- Dawson, HM., Boysen, A, Heal, KR, Carlson, LT, Ingalls, AE, Young, JN. Characterization of compatible solute use in a cultured sea-ice alga, *Nitzschia lecointei*, and in the environmental algal community of Utqiagvik (Barrow), AK using a metabolomics approach. Poster, Ocean Sciences Meeting, American Geophysical Union, Portland, OR, February 2018.
- Dawson, HM. Metabolic response of sea-ice algae to changes in temperature and salinity. Talk, Biological Oceanography Seminar, University of Washington, Seattle, WA, January 2018.
- Dawson, HM. Metabolic response of sea-ice algae to shifting temperature and salinity. Talk, Oceanography Second Year Symposium, University of Washington, Seattle, WA, November 2017.

Field Experience

- 10/26/2019 – 12/15/2019 Ice Breaker *Nathanial B. Palmer*, Antarctica. Participated in the planning and execution of a 2-month field season with the NSF United States Antarctic Program along the Western Antarctic Peninsula as acting PI. Collected samples of seawater for study of microbial responses to temperature and salinity shifts during seasonal transitions. Included extensive laboratory component in addition to field collection.
- 10/19/2018 – 12/4/2018 Palmer Station, Antarctica. Participated in the planning and execution of a 2-month field season with the NSF United States Antarctic Program on the Western Antarctic Peninsula as acting PI at Palmer Station. Collected samples of seawater for study of microbial responses to temperature and salinity shifts during seasonal transitions. Included extensive laboratory component in addition to field collection.
- 05/04/2017 – 05/11/2017 Utqiagvik (Barrow), Alaska. Collected samples of sea-ice cores for the study of sea-ice algal metabolism. Included extensive laboratory component in addition to field collection.

Teaching

- 2022 Guest Lecture, Biogeochemical cycling, University of Washington, School of Oceanography. Carbon capture geoengineering challenge.
- 2022 Teaching Assistant, Biogeochemical cycling, University of Washington, School of Oceanography. Instructed two weekly quiz sections, wrote problem set and exam questions, held weekly office hours, and graded student coursework.
- 2017 Teaching Assistant, Introduction to Oceanography of the Pacific Northwest, University of Washington, School of Oceanography. Instructed twice-weekly lab sections, held weekly office hours, and graded student coursework.
- 2013 Teaching Assistant, Organic Chemistry II, University of Virginia. Held office hours, led weekly discussions, and graded student coursework.
- 2013 Biology Lab Peer Teacher, Organismal and Evolutionary Biology Laboratory, University of Virginia. Served as an assistant to a graduate instructor as a resource for students during the labs and aided in lab coordination and preparation outside lab time.
- 2012 Teaching Assistant, Organic Chemistry I, University of Virginia. Held office hours, led weekly discussions, and graded student coursework.

- 2012 Biology Lab Peer Teacher, Cellular Biology and Genetics Laboratory, University of Virginia. Served as an assistant to a graduate instructor as a resource for students during the labs and aided in lab coordination and preparation outside lab time.
- 2012 Biology Lab Peer Teacher, Organismal and Evolutionary Biology Laboratory, University of Virginia. Served as an assistant to a graduate instructor as a resource for students during the labs and aided in lab coordination and preparation outside lab time.
- 2011 Biology Lab Peer Teacher, Cellular Biology and Genetics Laboratory, University of Virginia. Served as an assistant to a graduate instructor as a resource for students during the labs and aided in lab coordination and preparation outside lab time.

Workshops

- 01/24/2022 – 01/28/2022 UW Astrobiology Workshop, Mission to Detect Life (Virtual). Worked with scientists from University of Washington (lead by Dr. Brook Nunn) and Astrobiology graduate students to design a lander and orbiter mission to detect life on a hypothetical icy moon, Kwiya. Included instrument payload design, data interpretation, and debate.
- 10/15/2019 – 10/20/2019 UW Astrobiology Workshop, Friday Harbor Laboratories. Worked with scientists from University of Washington (lead by Dr. Roger Buick) and Astrobiology graduate students to trawl on the R/V *Rachel Carson* and performing dissections of invertebrate specimens to focus the evolution and success of invertebrate body plans.
- 09/11/2016 – 09/14/2016 UW Astrobiology Workshop, Mt. Rainier National Park. Worked with scientists from Georgia Tech (lead by Dr. Amanda Stockton) and Astrobiology graduate students to sample snow from the Muir Snowfield as an astrobiological analog environment for Mars.

Awards, Honors, and Funding

- 2021 Hall Conservation Genetics Award, UW College of the Environment (\$7,500)
- 2019 Congressional Antarctic Service Medal
- 2018 NSF Travel Award SCAR Open Science Conference (\$1,200)
- 2016–2017 Top Scholar Award, University of Washington, School of Oceanography (full coverage of tuition, benefits, and stipend)
- 2016 Beatrice Crosby Booth Endowed Fellowship, School of Oceanography (\$4000)
- 2016 Astrobiology Scholar Award, University of Washington, Astrobiology Program (\$3000)
- 2012 Junius Pendleton Wilson Memorial Scholarship, University of Virginia (\$3000)
- 2011 University of Virginia College of Arts and Sciences Intermediate Honors
- 2009–2013 University of Virginia Dean's List

Mentoring

- 2022 Mentor to undergraduate CICOES intern Bailee Porter, University of Washington, School of Oceanography.
- 2022 Mentor to undergraduate researcher Dominic Eastburn, University of Washington, School of Oceanography.
- 2021 Mentor to undergraduate researcher Ashlee Somol, University of Washington, School of Oceanography.
- 2020–2021 Mentor to post baccalaureate research consultant Veronica Mierzejewski, University of Washington, School of Oceanography.

2017 Mentor to undergraduate researcher Rebecca Schmidt, University of Washington, School of Oceanography.

2016–2017 Mentor to undergraduate senior thesis student Viviana Castillo, University of Washington, School of Oceanography.

Outreach and Volunteering

2021 Graduate Application Mentorship Program (GAMP) mentor, University of Washington, School of Oceanography. Assisted a prospective graduate student in the application process in order to help demystify the graduate application process and provide tips and guidance for submitting an application.

2017–2020 Polar Science Weekend (annual), Pacific Science Center. Co-led a tabletop hands-on outreach activity that demonstrated how life can evolve in extremely cold environments, like sea ice brines. Included development of new activity and visuals for children.

2018–2019 Sammamish High School Antarctica outreach. During the Young lab 2018 field season on the Western Antarctic Peninsula interacted with high school students at Sammamish High School in Lisa Neshyba's science classes via video chat and email correspondence. Upon returning from field work, visited their classes to present a summary of our Antarctic field work and the applications to Astrobiology.

2017–2019 SeaTalk, University of Washington. Aided in the design and planning of quarterly workshops for anti-harassment training aimed at issues relevant for field-going scientists.

2017 Science Communication Fellow, Pacific Science Center. Participated in a six-week science communication course focused on building skills to effectively engage public audiences in research-oriented conversations. Developed a planetarium show related to my area of work in polar science for public presentation to audiences of all ages.