

## TRISTA J. VICK-MAJORS

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## EDUCATION

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Ph.D., Ecology and Environmental Sciences, Montana State University (2016)

Dissertation: *Biogeochemical processes in Antarctic aquatic environments: linkages and limitations*

M.S., Land Resources and Environmental Sciences, Montana State University (2010)

Thesis: *Bacterioplankton dynamics in stratified lakes of the Taylor Valley, Antarctica, during the transition to Polar Night*

B.A., Biology, Colorado College (2003)

## PROFESSIONAL EMPLOYMENT AND APPOINTMENTS

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2019-pres. Assistant Professor, Department of Biological Sciences, Michigan Technological University, USA

2017-2019. Postdoctoral Research Associate, University of Montana, Flathead Lake Biological Station, USA.

2016-2017. Postdoctoral Research Associate, Université du Québec à Montréal, Canada.

## GRANTS: EXTERNALLY FUNDED

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### Grants Recently Awarded & Currently Active:

2025-2026. **PI**: Supplemental Funding for “Collaborative Research: Advancing a comprehensive model of year-round ecosystem function in seasonally frozen lakes through networked science”. Division of Environmental Biology (Managed by OCE) – Ecosystem Science, National Science Foundation (NSF OCE 2306887). PI: T. Vick-Majors (Michigan Tech) \$51,931 award total.

2024-2027. **Co-PI**: “Measurement and Modeling of Processes Controlling pH in the Laurentian Great Lakes”. National Oceanic and Atmospheric Administration. PI: Noel Urban (Michigan Tech). Co-PIs: T. Vick-Majors (Michigan Tech), H. Henderson (Michigan Tech), Pengfei Xue (Michigan Tech), R. Errera (NOAA-GLERL). \$358,167 to co-PI Vick-Majors; \$1,306,441 to Michigan Tech; \$1,395,035 award total.

2024-2026. **PI**: “An Ecosystem-Scale Approach to Understanding Changing Winters in the Great Lakes”. National Oceanic and Atmospheric Administration – Michigan Sea Grant. PI: T. Vick-Majors (Michigan Tech). Co-PIs: G. Paterson (Michigan Tech), J. Doubek (Lake Superior State University), N. Wagner (Oakland University), H. Carrick (Central Michigan University), D. Uzarski (Central Michigan University). \$157,372 to PI Vick-Majors; \$173,058 to Michigan Tech; \$216,352 award total.

2024-2025. **PI**: “Vital year-round measurements on the world’s largest lake via cabled, under-ice observatories.” U.S. Dept. of Commerce/National Oceanic and Atmospheric Administration – Great Lakes Observing System. PI: T. Vick-Majors (Michigan Tech). Co-PIs: H. Henderson (Michigan Tech), R. Hildebrand (Lake Superior State University), D. Baumann (Lake Superior State University). \$80,102 to PI Vick-Majors; \$116,523 to Michigan Tech; \$124,664 award total.

2023-2027. **PI**: “Collaborative Research: Advancing a comprehensive model of year-round ecosystem function in seasonally frozen lakes through networked science”. Division of Environmental Biology

(Managed by OCE) – Ecosystem Science, National Science Foundation (NSF OCE 2306887). PIs: T. Ozersky (University of Minnesota), S. Hampton (Carnegie Institution for Science), H. Dugan (University of Wisconsin), S. Sadro (UC-Davis), & T. Vick-Majors (Michigan Tech). \$481,851 to PI Vick-Majors/Michigan Tech; \$2,447,412 award total.

2023-2025. **Co-PI:** “Ice Control Compounds from Bacterial Isolates and Functional Metagenomics”. US Dept of Defense/Defense Advanced Research Projects Agency (DARPA). PI: S. Techtmann (Michigan Tech). Co-PI’s: T. Vick-Majors (Michigan Tech), B. Christner (Univ. Florida). \$523,300 to co-PI Vick-Majors; \$1,190,479 to Michigan Tech; \$2,194,643 award total.

#### Past External Funding:

2021-2022. **PI:** “Shining a Light on Habitability: Biological and Organic Entrapment in Freshwater Ice”. University of Michigan-Michigan Space Grant Consortium. PI: T. Vick-Majors (Michigan Tech). \$5,000 to PI Vick-Majors.

2019. “Microbial Carbon Cycling and Community Ecology at the Three Poles”. Chinese Academy of Sciences. Awarded to T. Vick-Majors and Y. Liu (Chinese Academy of Sciences). \$0 to Vick-Majors/Michigan Tech; 80,000 Chinese Yuan to Y. Liu (~\$12,000).

2015. **Co-PI:** “Dark Energy in the Deep Cold Ecosystem of Subglacial Lake Whillans, Antarctica”. Census of Deep Life, Deep Carbon Observatory. PI: J. Priscu (Montana State U); Co-PIs: B. Christner (Louisiana State U), A. Achberger (Louisiana State U), A. Michaud (Montana State U), T. Vick-Majors (Montana State U). \$0 awarded; funded production of metagenomic data at the Joint Genome Institute.

2023-2024. **Co-PI:** “Supplement: A novel method for quantifying dreissenid veliger energetic contribution to Lake Huron zooplankton communities”. U.S. Dept. of Commerce/National Oceanic and Atmospheric Administration – Michigan Sea Grant. PI: G. Paterson. Co-PI’s: J. Olin (Michigan Tech), T. Vick-Majors (Michigan Tech). \$18,461 to co-PI Vick-Majors; \$50,000 award total.

2022-2024. **Co-PI:** “A novel method for quantifying dreissenid veliger energetic contribution to Lake Huron zooplankton communities”. U.S. Dept. of Commerce/National Oceanic and Atmospheric Administration – Michigan Sea Grant. PI: G. Paterson. Co-PI’s: J. Olin (Michigan Tech), T. Vick-Majors (Michigan Tech). \$26,997 to co-PI Vick-Majors; \$199,661 award total.

#### GRANTS: INTERNALLY FUNDED

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##### Past Internal Funding at Michigan Tech:

2023. **PI:** “REF-RS: Lake Ice as a Biogeochemical Integrator in Freshwater Systems”. Vice President for Research: Research Excellence Fund. Awarded to: T. Vick-Majors. \$22,473.

##### Past Fellowship and Conference Funding:

2015. “Stable isotopic investigation of subglacial carbon biogeochemistry”. Institute on Ecosystems Graduate Research Fellowship, Montana State University. \$750.

2015. American Society for Microbiology Travel Award. \$500.

2014-2015. American Association of University Women Dissertation Fellowship. \$20,000.

2014. “Stable isotopic investigation of nitrogen cycling in subglacial aquatic environments”. Institute on Ecosystems Graduate Research Fellowship, Montana State University. \$860.

2014. Scientific Committee on Antarctic Research Travel Award. \$2,250.

2010. American Geophysical Union Chapman Travel Award. \$1,000.

2009. “Microbial and carbon dynamics during the polar night transition in Antarctic lakes”. Montana Space Grant Consortium Graduate Fellow. \$7,500.

2009. Scientific Committee on Antarctic Research Travel Award. \$1,000.

2007-2008. Nevada STARS Fellowship. \$30,000.

## PEER-REVIEWED PUBLICATIONS

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h-index: 25 | total citations: >2200

<sup>G</sup> graduate mentee | \* corresponding author | <sup>s</sup> senior author

- Pu, J., Ozersky, T., Carrick, H., **Vick-Majors, T. J.**, Rennie, M., Twiss, M., Chaffin, J., Bramburger, A., Zastepa, A., Eveleth, R., Shchapov, Kirill, <sup>G</sup>**Quintanilla, M.**, Doubek, J., Godwin, C., Munawar, M., Niblock, H., Fitzpatrick, M., Depew, D., Boegman, L., McKay, M., Cody, W., Xenopoulos, M., Pearce, N., Vanderploeg, H., Westrick, J., Coleman, M. The Great Lakes Winter Grab: Limnological Data from a Multi-Institutional Winter Sampling Campaign. (2025) *Limnology and Oceanography Letters*. 10:37-61.
- \*<sup>S</sup>**Vick-Majors, T.**, Michaud, A. B., Santibáñez, P. (2025) Biological Materials in Ice Cores. Book Chapter. *Encyclopedia of Quaternary Science 3<sup>rd</sup> Edition*.
- Peoples, L. M., Dore, J. E., Billbrey, E. M., **Vick-Majors, T. J.**, Ranieri, J. R., Evans, K. A., Ross, A. M., Devlin, S. P., Church, M. J. (2023). Oxic methane production from methylphosphonate in a large oligotrophic lake: limitation by substrate and organic carbon supply. *Applied and Environmental Microbiology*. 89:e0197-23.
- Turetta, C., Barbaro, E., Skidmore, M. L., Gambaro, A., Michaud, A. B., Mitchell, A. C., **Vick-Majors, T. J.**, Priscu, J. C., Barbante, C. (2023). Trace element, rare earth element, and trace carbon compounds in Subglacial Lake Whillans, West Antarctica. *Science of the Total Environment*. 892:20.
- Venturelli, R. A., Boehman, B., Davis, C., Hawkings, J. R., Johnston, S. E., Gustafson, C. D., Michaud, A. B., Mosbeux, C., Siegfried, M. R., **Vick-Majors, T. J.**, Galy, V., Spencer, R. G. M., Warny, S., Christner, B. C., Fricker, H. A., Harwood, D. M., Leventer, A., Priscu, J. C., Rosenheim, B. E. (2023). Constraints on the Timing and Extent of Deglacial Grounding Line Retreat in West Antarctica from Subglacial Sediments. *AGU Advances*. 4(e2022AV00846).
- Davis C. L., Venturelli R. A., Michaud A.B., Hawkings J. R., Achberger A. M., **Vick-Majors T. J.**, Rosenheim B. E., Dore J. E., Steigmeyer A., Skidmore M. L., Barker J. D., Benning L.G., Siegfried, M. R., Priscu, J. C., Christner, B. C. (2023). Biogeochemical and historical drivers of microbial community composition and structure in sediments from Mercer Subglacial Lake, West Antarctica. *ISME Comm*. 3:8.
- Elser, J. J., Devlin, S.P., Yu, J., Baumann, A., Church, M.J., Dore, J.E., Hall Jr., R.O., Hollar, M., Johnson, T., **Vick-Majors, T.J.**, White, C. (2022). Sustained stoichiometric imbalance and its ecological consequences in a large oligotrophic lake. *Proceedings of the National Academy of Sciences*. 119:30 e2202268119.
- Chen, Y., Liu, K., Liu, Y., **Vick-Majors, T.J.**, Wang, F., Ji, M. (2022). Temporal variation in bacterial community and nutrients in Tibetan glacier snowpack. *The Cryosphere*. 16:1265-1280. <https://doi.org/10.5194/tc-16-1265-2022>
- Alexander, J. K., Hendrix, A. R., Abbud-Madrid, A., Colaprete, A., Daly, M. J., Fidler, D. P., Gavit, S. A., Horchler, A. D., Karl, D. M., Levy, E. H., Lindberg, Jr., R. E., Marinova, M. M., Rogers, A. D.,

- Schwehm, G. H., **Vick-Majors, T. J.** (2022). Planetary Protection Considerations for Missions to Small Bodies in the Solar System. *National Academies Press*. Doi: 10.17226/26714
- Liu, K., Liu, Y., Hu, A., Wang, F., Zhang, Z., Yan, Q., Ji, M., **Vick-Majors, T.J.** (2021). Fate of glacier surface snow-originating bacteria in the glacier-fed hydrologic continuums. *Environmental Microbiology*. 23:6450-6462. <https://doi.org/10.1111/1462-2920.15788>
- Venturelli, R.A., **Vick-Majors, T.J.**, Collins, B., Gagnon, A., Kasic, K., Kurz, M.D., Li, W., Priscu, J.C., Roberts, M., Rosenheim, B.E. (2021). A Framework for Transdisciplinary Radiocarbon Research: Use of Natural-Level and Elevated-Level <sup>14</sup>C in Antarctic Field Research. *Radiocarbon*. 63:5. doi:10.1017/RDC.2021.55
- Priscu, J.C., Kalin, J., Winans, J., Campbell, T., Siegfried, M.R., **Vick-Majors, T.J.**, Elsworth, C., SALSA Science Team. (2021). Scientific access into Mercer Subglacial Lake: scientific objectives, drilling operations, and initial observations. *Annals of Glaciology*. 1-13. doi:10.1017/aog.2021.10
- Alexander, J. K., Hendrix, A. R., Abbud-Madrid, A., Colaprete, A., Daly, M. J., Fidler, D. P., Gavit, S. A., Horchler, A. D., Karl, D. M., Levy, E. H., Lindberg, Jr., R. E., Marinova, M. M., Rogers, A. D., Schwehm, G. H., **Vick-Majors, T. J.** (2021). Evaluation of Bioburden Requirements for Mars Missions. *National Academies Press*. Doi: 10.17226/26336
- Michaud, A.B., **Vick-Majors, T.J.**, Achberger, A.A., Skidmore, M.L., Christner, B.C., Tranter, M., Priscu, J.C. (2020). Environmentally clean access to Antarctic subglacial aquatic environments. *Antarctic Science*. 1-12. doi: 10.1017/S0954102020000231
- \***Vick-Majors, T.J.**, Michaud, A.B., Skidmore, M.L., Turetta, C., Barbante, C., Christner, B.C., Dore, J.E., Christianson, K., Mitchell, A.C., Achberger, A.A., Mikucki, J.A., Priscu, J.C. (2020). Biogeochemical connectivity between freshwater ecosystems beneath the West Antarctic Ice Sheet and the sub-ice marine environment. *Global Biogeochemical Cycles*. 34:e2019GB006446. doi:10.1029%2F2019gb006446
- Alexander, J. K., Abbud-Madrid, A., Colaprete, A., Daly, M. J., Fidler, D. P., Gavit, S. A., Hendrix, A. R., Horchler, A. D., Karl, D. M., Levy, E. H., Lindberg, Jr., R. E., Marinova, M. M., Rogers, A. D., Schwehm, G. H., **Vick-Majors, T. J.** (2020). Planetary Protection for the Study of Lunar Volatiles. *National Academies Press*. <https://doi.org/10.17226/26029>
- Santibáñez, P., Michaud, A.B., **Vick-Majors, T.J.**, D'Andrilli, J., Chiuchiolo, A., Hand, K.P., Priscu, J.C. (2019). Differential Incorporation of Bacteria, Organic Matter, and Inorganic Ions Into Lake Ice During Ice Formation. *Journal of Geophysical Research-Biogeosciences*. 124:585-600. doi: 10.1029/2018JG004825
- Vick-Majors, T.J.** and Priscu, J.C. (2019). Inorganic carbon fixation in lakes of the McMurdo Dry Valleys. *Antarctic Science*. 31:123-132. doi:10.1017/S0954102019000075
- Hindshaw R., Mariash, H., **Vick-Majors, T.J.**, Thornton, A.E., Pope, A., Zaika, Y., Lenz, J., Nielsen, H., Fugmann, G. (2019). A decade of shaping the futures of polar early career researchers: A legacy of the International Polar Year. *Polar Record*. 54:312-323. doi:10.1017/S0032247418000591
- Liu, Y., Priscu, J.C., Yao, T., **Vick-Majors, T.J.**, Michaud, A.B., Sheng, L. (2018) Culturable bacteria isolated from seven high altitude ice cores on the Tibetan Plateau. *Journal of Glaciology*. 65:29-38. doi:10.1017/jog.2018.86
- Stelmach, K.B., Neveu, M., **Vick-Majors, T.J.**, Mickol, R., Chou, L., Webster, K.D., Tilley, M., Zacchei, F., Escudero, C., Flores, Martinez, C.L., Labrado, A., Fernandez, E.J.G. (2018). Secondary electrons as an energy source for life. *Astrobiology*. 18:73-85. doi: 10.1089/ast.2016.1510
- Michaud, A.B., Dore, J.E., Achberger, A.M., Christner, B.C., Priscu, J.C., Skidmore, M.L., **Vick-Majors, T.J.** (2017). Microbial oxidation as a methane sink and energy source beneath the West Antarctic Ice Sheet. *Nature Geoscience*. 10:582-586. doi:10.1038/ngeo2992 (Alphabetical after first two).

- Liu, Y., **Vick-Majors, T.J.**, Priscu, J.C., Yao, T., Kang, S., Liu, K., Cong, Z., Xiong, J., Li, Y. (2017). Biogeography of cryoconite bacterial communities on glaciers of the Tibetan Plateau. *FEMS Microbiology Ecology*. 93:fix072. doi:10.1093/femsec/fix072
- Vick-Majors, T.J.**, Mitchell, A.C., Achberger, A.M., Christner, B.C., Dore, J.E., Michaud, A.B., Mikucki, J.A., Purcell, A.M., Skidmore, M.L. and Priscu, J.C. (2016). Physiological ecology of microorganisms in Subglacial Lake Whillans. *Frontiers in Microbiology*. 7:1705. doi: 10.3389/fmicb.2016.01705
- Bowman, J.S., **Vick-Majors, T.J.**, Morgan-Kiss, R., Takacs-Vesbach, C., Ducklow, H.W., Priscu, J.C. (2016). Contrasting carbon and microbial community dynamics in two polar extremes: The lakes of the McMurdo Dry Valleys and the West Antarctic Peninsula marine ecosystem. *Bioscience*. 66:829-847. doi:10.1093/biosci/biw103
- Achberger, A.M., Christner, B.C., Michaud, A.B., Priscu, J.C., Skidmore, M.L. and **Vick-Majors, T.J.** (2016). Microbial Community Structure of Subglacial Lake Whillans, West Antarctica. *Frontiers in Microbiology*. 7:1457. doi: 10.3389/fmicb.2016.01457 (Alphabetical after first author).
- Michaud, A.B., Skidmore, M.L., Mitchell, A.C., **Vick-Majors, T.J.**, Barbante, C., Turetta, C., vanGelder, W., Priscu, J.C. (2016). Solute sources and geochemical processes in Subglacial Lake Whillans, West Antarctica. *Geology*. 5:G37639.1. doi: 10.1130/G37639.1
- Liu, Y., Priscu, J., Xiong, J., Conrad, R., **Vick-Majors, T.**, Chu, H., Hou, J. (2016). Salinity drives archaeal distribution patterns in high altitude lake sediments on the Tibetan Plateau. *FEMS Microbiology Ecology*. 92(3):fiw033. doi: 10.1093/femsec/fiw033
- Liu, Y., Yao, T., Priscu, J.C., **Vick-Majors, T.J.**, Xu, B., Jiao, N., Santibáñez, P., Huang, S., Wang, N., Greenwood, M., Michaud, A.B., Kang, S., Wang, J., Gao, Q., Yang, Y. (2016). Bacterial responses to environmental change in the Tibetan Plateau over the past half-century. *Environmental Microbiology*. 18:1930-1941. doi: 10.1111/1462-2920.13115
- Mikucki, J.A., Lee, P.A., Ghosh, D., Purcell, A.M., Mitchell, A.C., Mankoff, K.D., Fischer, A.T., Tulaczyk, S., Carter, S., Siegfried, M., Fricker, H.A., Hodson, T., Coen, J., Powell, R., Scherer, R., **Vick-Majors, T.**, Achberger, A., Christner, B.C., Tranter, M., and the WISSARD Science Team (2016). Subglacial Lake Whillans biogeochemistry: A synthesis of current knowledge. *Philosophical Transactions of the Royal Society A*. 374:20140290 doi:10.1098/rsta.2014.0290.
- Vick-Majors, T.J.**, Achberger, A., Santibáñez, P., Dore, J.E., Hodson, T., Michaud, A.B., Christner, B.C., Mikucki, J., Skidmore, M.L., Powell, R., Adkins, W.P., Barbante, C., Mitchell, A., Scherer, R., Priscu, J.C. (2016). Biogeochemistry and microbial diversity in the marine cavity beneath the McMurdo Ice Shelf, Antarctica. *Limnology and Oceanography*. 61:572-586. doi:10.1002/lno.10234
- Christner, B.C., Priscu, J.C., Achberger, A., Barbante, C., Carter, S.P., Christianson, K., Mikucki, J.A., Michaud, A.B., Mitchell, A., Skidmore, M.L., **Vick-Majors, T.J.**, and the WISSARD Science Team (2014). A microbial ecosystem beneath the West Antarctic Ice Sheet. *Nature*. 512:310-313. (Alphabetical after first two authors).
- Xu, Y., **Vick-Majors, T.J.**, Morgan-Kiss, R., Priscu, J.C., Amaral-Zettler, L. (2014). Ciliate diversity, community structure, and novel taxa in lakes of the McMurdo Dry Valleys, Antarctica. *Biological Bulletins*. 227:175-190.
- Liu, Y., Priscu, J., Yao, T., **Vick-Majors, T.**, Michaud, A., Jiao, N., Hou, J., Tian, L., Hu, A., Chen, Z. (2014). A comparison of pelagic, littoral, and riverine bacterial assemblages in Lake Bangongco, Tibetan Plateau. *FEMS Microbiology Ecology*. 89:211-221.
- Purcell, A.M., Mikucki, J.A., Achberger, A., Alekhina, I., Barbante, C., Christner, B.C., Ghosh, D., Michaud, A.B., Mitchell, A.C., Priscu, J.C., Scherer, R., Skidmore, M., **Vick-Majors, T.J.**, and the WISSARD

Science Team (2014). Microbial sulfur transformations in Subglacial Lake Whillans sediments. 19:594. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2014.00594 (Alphabetical after first two authors).

**Vick-Majors, T.J.**, Priscu, J.C., Amaral-Zettler, L. (2014). Modular structure suggests community plasticity during the transition to polar night in ice-covered Antarctic lakes. *The ISME Journal*. 8:778-789. doi:10.1038/ismej.2013.190.

Priscu, J.C., Achberger, A.M., Cahoon, J., Christner, B., Edwards, R.L., Jones, W., Michaud, A.B., Siegfried, M.R., Skidmore, M., Siegel, R.H., Switzer, G., Tulaczyk, S., **Vick-Majors, T.J.** (2013). A microbiologically clean strategy for access to the Whillans Ice Stream Subglacial Environment. *Antarctic Science*. 25:637-647. doi:10.1017/S0954102013000035 (Alphabetical after first author).

**Vick, T.J.** and Priscu, J.C. (2012). Bacterioplankton responses to the polar night transition in lakes of the Taylor Valley, Antarctica. *Aquatic Microbial Ecology*. 68:77-90. doi:10.3354/ame01604

Thurman, J., Parry, J., Hill, P., Priscu, J., **Vick, T.**, Chiuchiolo, A., Laybourn-Parry, J. (2012). Microbial dynamics and flagellate grazing during transition to winter in Lakes Hoare and Bonney, Antarctica. *FEMS Microbiology Ecology*. 82:449-458. doi:10.1111/j.1574-6941.2012.01423.x

**Vick, T.J.**, Dodsworth, J.A., Costa, K.C., Shock, E.L., Hedlund, B.P. (2010). Microbiology and geochemistry of Little Hot Creek, a hot spring environment in the Long Valley Caldera. *Geobiology*, 8:140-154. doi:10.1111/j.1472-4669.2009.00228.x

## OTHER PUBLICATIONS

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**Vick-Majors, T.J.**, Singh, S.M., Singh, P.K. (2024). Editorial: Microorganisms in Polar Regions: Understanding Their Survival Strategies for a Sustainable Future. *Frontiers in Microbiology*. 15:1442926. doi: 10.3389/fmicb.2024.1442926

Hampton, S., Dugan, H., Sadro, S., **Vick-Majors, T.J.**, Ozersky, T. (2024). Winter Limnology on the Rise. *Limnology and Oceanography Bulletin*. <https://doi.org/10.1002/lob.10643>

**Vick-Majors, T.J.**, Patterson, M., Schmidt, B., Makinson, K., Hewagama, T., Mikucki, J., Harwood, D., Winebrenner, D., Siegfried, M.R., Michaud, A.B., Tulaczyk, S. Access Drilling Priorities in the Ross Ice Shelf Region. Ice Drilling Program Subglacial Access Working Group Science Planning Workshop, March 29-30, 2019, Herndon, Virginia, USA, 1-8. White paper.

Alexander, J.K., Fidler, D.P., Hubbard, G.S., Lopes, R.M., Marinova, M., Melosh, H.J., Siebach, K., Smith, C., **Vick-Majors, T.J.**, Young, A.T. Assessment of the Report of NASA's Planetary Protection Independent Review Board. National Academies Press, 2020. Consensus report. <https://doi.org/10.17226/25773>

**Vick-Majors, T.J.**, Achberger, A.M., Michaud, A.B., Priscu, J.P. Metabolic and biological diversity in Antarctic subglacial environments. in: *Life in Extreme Environments: Insights into Biological Capability*. British Ecological Society/Cambridge University Press. 2019. Book chapter.

Achberger, A.M., Michaud, A.B., **Vick-Majors, T.J.**, Christner, B., et al. Microbiology of Subglacial Environments. in *Psychrophiles: from biodiversity to biotechnology*. Springer-Verlag. 2017. Book chapter.

**Vick-Majors, T.J.**, Engelbertz S., Fugmann G. (2016). Focus on the Future of Polar Research. *Eos*. 97, doi:10.1029/2016EO042993. Commentary.

## REFEREED PUBLICATIONS AND BOOK CHAPTERS (IN PROCESS)

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- Peoples, L., Giersch J., Tappenbeck, T., Vanderwall, J., Ranieri, J., **Vick-Majors, T. J.**, Elser, J., Church, M. Microbial Communities in Glacial Lakes of Glacier National Park, MT, USA. *In revision for FEMS Microbiology Ecology*.
- Kelly, M.C.<sup>G</sup>, Bigcraft, I., Kokate, P., Brown, L.E., Kane, E.S., Techtmann, S. **Vick-Majors, T. J.**, Marcarelli, A.M. Incubation Assay Metrics Describe Different Aspects of Dissolved Carbon Degradation. *In revision for Limnology and Oceanography: Methods*.
- Stern, J., Graham, H., Spear, J., Whelley, P., Howells, A., Lawrence, J., **Vick-Majors, T. J.**, and others. A Comprehensive Framework for Assessing Terrestrial Analogue Field Sites for Ocean Worlds. *In revision for Journal of Geophysical Research – Planets*.
- Stadler, M., Guillemette, F., **Vick-Majors, T.J.**, del Giorgio, P. Identifying reactive components of microbes and organic matter reveals unique links along aquatic networks. *In preparation for Nature Communications*.
- <sup>G</sup>Cubillos, V., Leland, M.<sup>G</sup>, \***Vick-Majors, T. J.** Over-Winter Primary Production in the Keweenaw Waterway. *In preparation for Journal of Great Lakes Research*.
- \***Vick-Majors, T. J.**, Davis, C. D., Christner, B. C., Li, W., Michaud, A. B., Achberger, A. M., Priscu, J. C. Microbial Community Assembly in Antarctic Aquatic Environments. *In preparation for The ISME Journal*.

## TEACHING

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### Instructor:

2024 (Summer). **Arctic REU Greenland**. Mentor and instructor for undergraduate students focused on microbiology of glacial lakes in Greenland; includes field and lab components.

2024. Instructor, Winter Limnology Field School. As part of the Winter Lakes Network. <https://winter-ice.github.io/winter-ice/>

2022. Instructor, **Senior Capstone Experience** (BL 4510). Michigan Technological University.

2021-present. Instructor, **General Microbiology** (BL 3210). Michigan Technological University. Fall Semesters.

2020-present. Instructor, **Limnology** (BL 4450). Michigan Technological University. Spring Semesters.

*\*Received recognition from Provost for excellence in transitioning this course to online learning during the Covid-19 pandemic.*

2020-present. Instructor, **Microbial Ecology** (BL 4400/BL5440/BL4100). I developed and teach this course for upper-level undergraduates and graduate students. Fall Semesters, alternating years. *\*Received recognition for being in the top 10% of instructors at Michigan Tech for this course in Fall 2020 and top 1% in Fall 2024.*

### Invited Guest Lectures:

2025. **Data Analysis** (BL 3003). Lecture: *An experimental approach to studying a complex environmental system*, Michigan Technological University.

2021, 2022, 2024. **Data Analysis** (BL 3003). Lecture: *Use of multivariate statistics in Ecology*, Michigan Technological University.

2021, 2023, 2024. **Field Methods** (BL 2003). Lecture: *Sampling microorganisms in water and ice*, Michigan Technological University.

2022. **Lake Superior Exploration** (BL 4421). *Guest scientist for one ship-day and one classroom lecture, focused on water sampling for microorganisms and dissolved organic matter in Lake Superior.*
2018. **Principles and Applications of Genetics**. Lecture: *Microbial ecology in Antarctica: Taking molecular biology to the extreme*, Salish Kootenai College.
2018. **Microbial Ecology, Diversity and Evolution**. Lecture: *Life under ice: Microbial ecology in Antarctic subglacial environments*. University of Montana.
2013. **Study Abroad in Antarctica Program**. Lecture: *Microbial processes and biogeochemistry in Antarctica*. University of Georgia (online).
2012. **Nutrient Cycling**. Lecture: *The Nitrogen Cycle*. Montana State University.
2011. **Examining Life in Extreme Environments**. Lecture: *Microbial life in Antarctic lakes*. Master of Science in Education Program, Montana State University.

#### Teaching Assistant:

2012. Graduate Teaching Assistant, **Nutrient Cycling** (ENSC 351). Montana State University.
- 2007-2008. Teaching Assistant, **Microbial Ecology**, University of Nevada, Las Vegas.

#### CONFERENCE PRESENTATIONS

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<sup>G</sup> graduate mentee | <sup>U</sup> undergraduate mentee | \* invited | presenter is underlined

- Cureton, A.<sup>U</sup>, Shafi, K M<sup>G</sup>, **Vick-Majors, T.J.** (2025). Testing the Capacity of Environmental Bacteria to Control Ice Formation. *Michigan Branch for the American Society for Microbiology Spring 2025 Meeting*, Dearborn, MI. Poster
- Pothoven, A., Carrick, H., Doubek, J., O'Loughlin, C.<sup>G</sup>, Paterson, G., Smith, J., Uzarski, D. **Vick-Majors, T. J.**, Wagner, N. (2025). Crustacean zooplankton and rotifer community dynamics during a warm winter in the Laurentian Great Lakes. *Michigan AFS Conference*, Marquette, MI. Poster
- Vick-Majors, T. J.**\* (2024). Under the Ice: Drivers of Microbial Community Assembly in Polar Lakes Through Space and Time. *American Geophysical Union Fall Meeting*, Washington, D.C.
- <sup>G</sup>Lukosavich, G., **Vick-Majors, T. J.** (2024). Effects of Freshwater Freezing on Microbial Habitability. *ASLO Summer Meeting*, Madison, WI. Poster
- <sup>G</sup>Kehne, M., Junker, J.R., Olin, J. A., **Vick-Majors, T. J.** Paterson, G. P. (2024). Assessing the Nutritional Quality and Fate of Saginaw Bay Dreissenid Mussel Veligers. *LAGLR 2024*, Windsor, Ontario. Poster (Best presentation award).
- <sup>G</sup>Kehne, M., Paterson, G. P., Olin, J. A., **Vick-Majors, T. J.** (2023). Quantifying energetic contributions of zebra mussel veligers to the Saginaw Bay food web. *Ecosystem Science Center Research Symposium*, Michigan Technological University. Poster
- Vick-Majors, T. J.**, Davis, C. L., Christner, B. C., Li, W., Priscu, J. (2023) Microbial Community Assembly in Antarctic Aquatic Environments. *Association for the Sciences of Limnology and Oceanography meeting*, Palma de Mallorca, Spain.
- Rosenheim, B., Venturelli, R., Davis, C., Michaud, A., Boehman, B., Christner, B., Galy, V., Harwood, D., Leventer, A., Li, W., Liu, Z., **Vick-Majors, T. J.**, Siegfried, M., Priscu, J. (2023). Millennial scale marine incursion into an isolated environment fuels a contemporary subglacial microbial community beneath the West Antarctic Ice Sheet. *Goldschmidt 2023*, Lyon, France.



- Alexander, J. K., Hendrix, A. R., Abbud-Madrid, A., Colaprete, A., Daly, M. J., Fidler, D. P., Gavit, S. A., Horchler, A. D., Karl, D. M., Levy, E. H., Lindberg, Jr., R. E., Marinova, M. M., Rogers, A. D., Schwehm, G. H., **Vick-Majors, T. J.** (2022). The Committee on Planetary Protection: Bioburden Requirements for Mars Missions. *Committee on Space Research (COSPAR) Meeting*, Athens, Greece.
- Vick-Majors, T.J.,** Davis, C.L., Christer, B.C., Li, W., Dore, J.E., Tranter, M., Barker, J., Siegfried, M., Skidmore, M., Priscu, J.C. (2022). Physicochemical drivers of microbial ecosystems in Antarctic subglacial aquatic environments. *Joint Aquatic Sciences Meeting*, Poster.
- <sup>G</sup>Quintanilla, M., **Vick-Majors, T.J.,** (2022). Impact of ice-cover on organic carbon biogeochemistry in a temperate freshwater system. *Joint Aquatic Sciences Meeting*, Poster.
- <sup>G</sup>Cubillos Tellez, V.,<sup>G</sup>Baker, A., **Vick-Majors, T.J.,** (2022). Under ice photosynthetic primary production and dark carbon fixation in a temperate freshwater system. *Joint Aquatic Sciences Meeting*, Poster.
- <sup>G</sup>Quintanilla, M., <sup>G</sup>Baker, A., **Vick-Majors, T.J.,** (2021). Carbon Fixation Under Ice in a Temperate Freshwater System. *Association for the Sciences of Limnology and Oceanography-Aquatic Sciences Meeting*, Virtual due to Covid-19. Poster.
- Hawkings, J., Skidmore, M., Priscu, J., Troein, E.S., Davis, C., Christner, B., Kim, O-S., Sieber, M., Conway, T., Gardner, C., **Vick-Majors, T.J.,** Michaud, A., Tranter, M., Benning, L.G., Spencer, R. (2021). A ferrous wheel beneath the Antarctic Ice Sheet. *Goldschmidt 2021*, Virtual due to Covid-19.
- Li, W., Davis, C., Christner, B., Achberger, A., **Vick-Majors, T.J.,** Michaud, A., Priscu, J. (2020). Viruses in Subglacial Antarctic Environments. *American Geophysical Union Fall Meeting*, Virtual due to Covid-19.
- Bodmer, P., Rust, F., Casas-Ruiz, J.P., Couturier, M., Gerardin, M-L., Hotchkiss, E.R., Stadler, M., **Vick-Majors, T.J.,** del Giorgio, P. (2020). Processes contributing to the maintenance of CO<sub>2</sub> super-saturation in a large boreal river. *American Geophysical Union Fall Meeting*, Virtual due to Covid-19.
- Vick-Majors, T.J.,** Li, W., Barker, J., Skidmore, M.L., Dore, J.E., Davis, C.L., Christner, B.C., Priscu, J.C. (2019). Physiological ecology of microbial communities in Antarctic subglacial aquatic environments. *American Geophysical Union Fall Meeting*, San Francisco, CA. Poster.
- Li, W., **Vick-Majors, T.J.,** Barker, J., Dore, J.E., Steigmyer, A.J., Skidmore, M.L., Davis, C.L., Christner, B.C., Priscu, J.C. (2019). New insights into microbial ecosystems in Antarctic subglacial lake environments. *American Geophysical Union Fall Meeting*, San Francisco, CA.
- Bodmer, P. Rust, F., Casas Ruiz, J. P., Couturier, M., Gérardin, M.L., Hotchkiss, E.R., Stadler, M., **Vick-Majors, T.J.,** del Giorgio, P.A. (2019). Processes contributing to the maintenance of CO<sub>2</sub> and CH<sub>4</sub> super-saturation in a large boreal river. *Symposium for European Freshwater Sciences*, Zagreb, Croatia.
- Vick-Majors, T.J.,** Ruiz-Gonzalez, C., Guillemette, F., del Giorgio, P. (2018). Linkages between microbial communities and dissolved organic matter along a boreal aquatic continuum. *Association for the Sciences of Limnology and Oceanography*. Victoria, BC.
- Vick-Majors, T.J.,** Ruiz-Gonzalez, C., Guillemette, F., del Giorgio, P. (2017). Functional perspectives on community assembly along a boreal aquatic continuum. *Society for Aquatic Microbial Ecology*. Zagreb, Croatia.
- Vick-Majors, T.J.,** Guillemette, F., del Giorgio, P. (2017). Dissolved organic matter transformations along a boreal aquatic continuum. *Groupe de Recherche Interuniversitaire en Limnologie et en environnement aquatique (GRIL): Symposium Annuel*. Jouvence, QC.
- Vick-Majors, T.J.,** Michaud, A., et al., (2016). Subglacial carbon and nutrient fluxes fertilize the Southern Ocean under the Ross Ice Shelf. *Association for the Sciences of Limnology and Oceanography*, Santa Fe, NM.

- Vick-Majors, T.J.**, Achberger, A., et al., (2016). Microbial physiology in subglacial aquatic environments: an unexplored part of the low-energy biosphere. *International Society for Microbial Ecology 16*, Montréal, QC.
- Vick-Majors, T.J.**, Michaud, A., et al., (2015). Limitations on heterotrophic activity in Subglacial Lake Whillans, West Antarctica. *Microenergy 2015*, Sandbjerg, DK. Poster.
- Vick-Majors, T.J.**, Achberger, A., et al., (2015). Sources and sinks of carbon and nitrogen in Antarctic subglacial aquatic environments. *American Society for Microbiology Meeting*, New Orleans, LA. Poster.
- Vick-Majors T.J.**, Priscu, J., Achberger, A., et al., (2014). Microbial nutrient cycling and physiology in Subglacial Lake Whillans, Antarctica. *Scientific Committee on Antarctic Research Open Science Conference*, Auckland, NZ.
- Vick-Majors T.J.**, Michaud, A., Priscu, J., et al. (2013). Physiological Ecology of Bacteria in the water column of Subglacial Lake Whillans, Antarctica. *Polar and Alpine Microbiology Conference*, Big Sky, MT.
- Vick-Majors T.J.**, Achberger, A., Priscu, J., et al., (2013). Biogeochemical characteristics of sub-Ross Ice Shelf waters near McMurdo Sound, Antarctica. *Polar and Alpine Microbiology Conference*, Big Sky, MT. Poster.
- Vick, T.**, Amaral-Zettler, L., Priscu, J. (2012). Variations in Bacterial, Archaeal, and Eukaryal Communities during the Polar Night Transition in Lakes of the McMurdo Dry Valleys, Antarctica. *Scientific Committee on Antarctic Research Open Science Conference*, Portland, OR.
- Kelly, S.**, Michaud, A., **Vick, T.**, Priscu, J. (2012). Science is cool: The Crow Education Partnership. *Scientific Committee on Antarctic Research Open Science Conference*, Portland, OR. Poster.
- Vick, T.**, Amaral-Zettler, L., Priscu, J. (2012). Microbial Diversity during the Polar Night Transition in Lakes of the McMurdo Dry Valleys, Antarctica. *International Polar Year Conference*, Montréal, QC.
- Vick, T.J.**, Priscu, J.C. (2011). Life in the Cold and Dark: Carbon-cycling in a permanently ice-covered Antarctic Lake. *Montana Space Grant Consortium Symposium*, Bozeman, MT.
- Vick, T.**, Amaral-Zettler, L., Priscu, J. (2010). Microbial diversity during the polar night transition in lakes of the McMurdo Dry Valleys. *McMurdo LTER Meeting*, Fort Collins, CO. Poster.
- Vick, T.J.**, Priscu, J.C. (2010). Microbial responses during the transition to polar night in permanently ice-covered Antarctic lakes. *AGU Chapman Conference on the Exploration of Antarctic Subglacial Environments*, Baltimore, MD. Poster.
- Vick, T.J.**, Priscu, J.C. (2009). The response of microplankton in Antarctic lakes during the transition to polar night. *LTER All Scientists Meeting*, Estes Park, CO. Poster.
- Vick, T.J.**, Priscu, J.C., Mikucki, J.A. (2009.) Microbial dynamics in lakes of the McMurdo Dry Valleys during the transition to polar night. *SCAR Biology Symposium*, Sapporo, Japan.
- Vick, T.J.**, Hedlund, B.P. (2008). Microbiology and Geochemistry at Little Hot Creek. *Thermal Biology Institute Symposium*, Bozeman, MT.
- Vick, T.J.**, Costa, K.C., Shock, E.L., Hedlund, B.P. (2007). Geochemical and Microbiological Characterization of Little Hot Creek. **Best presentation award.** *BIOS Symposium*, Las Vegas, NV.
- Vick, T.J.**, Costa, K.C., Shock, E.L., Hedlund, B.P. (2007). Microbiology and Geochemistry of Little Hot Creek Hot Springs, Long Valley Caldera, California. *General Meeting of the American Society for Microbiology*, Toronto, ON. Poster.
- Vick, T.J.**, Costa, K.C., Shock, E.L., Hedlund, B.P. (2007). Microbiology and Geochemistry of Little Hot Creek Hot Springs, Long Valley Caldera, California. *Arizona/Nevada Regional Meeting for the American Society for Microbiology*, Flagstaff, AZ.

## INTERNAL COLLOQUIA AND SYMPOSIA PRESENTATIONS

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<sup>G</sup> graduate mentee | <sup>U</sup> undergraduate mentee | presenter is underlined

Lukosavich, G.<sup>G</sup>, **Vick-Majors, T.J.** (2025). Life in Ice: Variation in Microbial Communities Across Snow, Ice, and Water. *Graduate Research Colloquium*, Michigan Tech. Poster (**Winner Great Lakes Research Center Presentation Contest 2<sup>nd</sup> Place**).

Leland, M.<sup>G</sup>, **Vick-Majors, T.J.** (2025). Beyond the Freeze: The Year-Round Importance of Winter for Organic Matter and Microbial Life in the Keweenaw Waterway. *Graduate Research Colloquium*, Michigan Tech. Poster

O'Loughlin, C.<sup>G</sup>, Paterson, G., Wagner, N., Carrick, H., Doubek, J., Uzarski, D., **Vick-Majors, T.J.** (2025). Winter Severity Influences Nutrient Availability and Microbial Activity in the Great Lakes. *Graduate Research Colloquium*, Michigan Tech. Poster

Cureton, A.<sup>U</sup>, Shafi, K M<sup>G</sup>, **Vick-Majors, T.J.** (2025). Environmental Controls on Bacterial Ice Nucleation. *Undergraduate Research and Scholarship Symposium*, Michigan Tech. Poster (**Winner Great Lakes Research Center Presentation Contest 3<sup>rd</sup> Place**).

Leland, M.<sup>G</sup>, **Vick-Majors, T.J.** (2025). Beyond the Freeze: The Year-Round Importance of Winter for Organic Matter and Microbial Life in the Keweenaw Waterway. *Ecosystem Science Center Research Colloquium*, Michigan Tech. Poster

Shafi, K M<sup>G</sup>, Techtmann, S.M., Christner, B.C., **Vick-Majors, T.J.** (2025). Traversing Habitats: Microbial Dynamics from Ice to Sediment in Arctic Thermokarst Lakes. *Ecosystem Science Center Research Colloquium*, Michigan Tech. Poster

## INVITED PRESENTATIONS AND SEMINARS (\*PUBLIC)

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2025, University of Minnesota, Department of Earth and Environmental Sciences Seminar Series, “Microbial Dynamics in a Changing Cryosphere”, Minneapolis Minnesota.

2024, Miami University, Department of Microbiology Seminar Series, “Microbial Dynamics Through Space and Time in a Changing Cryosphere”, Oxford, OH.

2024, University of Minnesota, Duluth, Department of Biological Sciences Seminar Series, “Driven by Ice: Microbial Dynamics in a Changing Cryosphere”, Duluth, MN.

2024. biodiversity, bIogeochE Mistry and Ecology of gLacial ecosYstems (TIMELY XV Seminar Series), “Life in the cold and dark: subglacial microbiomes in West Antarctic lakes”, virtual.

2023. Michigan Technological University College of Forest Resources and Environmental Sciences Seminar Series, “Microbial Life in the Cryosphere from the Keweenaw to the Poles”, Houghton, MI.

2022. University of Wisconsin, Madison, Center for Limnology Seminar Series, “Ecology of Subglacial Systems”, Madison, WI (virtual).

2021. Montana State University Department of Land Resources and Environmental Sciences Seminar Series, “Seasonal Dynamics of Microbial Processes in Lake Superior’s Keweenaw Waterway”, Bozeman, MT (virtual).

2020. Michigan Technological University College of Forest Resources and Environmental Sciences Seminar Series, “Subglacial Lake Ecosystems under the West Antarctic Ice Sheet”, Houghton, MI (virtual).

2019. Michigan Technological University Environmental Engineering Seminar Series., “Life Under Ice”. Houghton, MI.

2019. Subglacial Access Working Group (NSF-IDPO) Meeting, Washington, D.C.
2016. University of Quebec at Montréal, Department of Biological Sciences, Ecology and Evolution Seminar Series, Montréal, QC.
2016. University of Quebec at Montréal, Department of Biological Sciences, Aquatic Seminar Series, Montréal, QC.
2015. National Radio Astronomy Observatory Lecture Series, Greenbank, WV.
2015. Montana Tech. Department of Chemistry and Biochemistry Seminar Series, Butte, MT.
- \*2015. Colorado Springs Science Festival, Colorado Springs, CO.
- \*2013. Colorado Springs Science Festival, Colorado Springs, CO.
- \*2007. Clark County School District Summer Science Teachers Institute, Las Vegas.

## STUDENTS SUPERVISED (GRADUATE)

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### Current Students:

- An Nguyen, Michigan Technological University, Biological Sciences. Ph.D. Student (2025-present).  
Dissertation Topic: *Biological aspects of acidification in the Laurentian Great Lakes.*
- Mari Leland, Michigan Technological University, Biological Sciences. Ph.D. Student (2024-present).  
Dissertation Topic: *Response of microbial communities to winter severity across North American lakes.*
- Connor O'Loughlin, Michigan Technological University, Biological Sciences. M.S. Student. (2024-present).  
Thesis Topic: *Ecosystem approach to understanding changing winters in the Laurentian Great Lakes.*
- K.M. Shafi, Michigan Technological University, Biological Sciences, Ph.D. Student (2024-present).  
Dissertation Topic: *Microbial control of ice formation.*
- Garrett Lukosavich, Michigan Technological University, Biological Sciences. M.S. Student. (2023-present).  
Thesis Topic: *Microbial interactions with lake ice.*

### Past Students:

- Maci Quintanilla, Michigan Technological University, Biological Sciences, Graduate Student (2020-2024).  
Thesis Topic: *Microbial ecology in the cryosphere.* GEM Associate Awardee.
- Vanessa Cubillos, Michigan Technological University, Biological Sciences, Graduate Student (2021-2023).  
Thesis: *Under Ice Photosynthetic Primary Production and Dark Carbon Fixation in a Temperate Freshwater System.*  
McNALMS Fellowship Awardee. Current Position: Aquatic Analysis Lab Technician, Michigan Tech.

## STUDENTS SUPERVISED (UNDERGRADUATE)

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- Matthew Brovont, Michigan Technological University, Biological Sciences, Undergraduate Research Assistant (2023-2025) Topic: *ATP production by microbial communities overwinter in freshwater environments*
- Allen Cureton, Michigan Technological University, Biological Sciences (2024-2025) Topic: *Ice nucleation by novel microorganisms*
- Kaylee Hoffman, Michigan Technological University, Biological Sciences (2024) Topic: *Microbiology of lake ice*
- Garrett Aud, Michigan Technological University, Biological Sciences (2024) Topic: *Microbial communities in lake-associated snowpack*
- Christopher Downey, Michigan Technological University, Biological Sciences (2024) Topic: *Growth of psychrophilic microorganisms*

Rebekah Hoehne, Michigan Technological University, Biological Sciences (2024) Topic: *Snowpack and ice microbiology*

Garrett Lukosavich, Michigan Technological University, Biological Sciences, Undergraduate Research Assistant (2023) Topic: *Partitioning of organic matter and microorganisms during freshwater ice formation*

Kali Kater, Michigan Technological University, Biological Sciences, Undergraduate Research Assistant (2023) Topic: *Snowpack microbiology and flow cytometric characterization*

Rachel Anguish, Michigan Technological University, Environmental Engineering, Research Assistant (2023) Topic: *Flow Cytometry Methods Development*

Aleksander Milosevic, Michigan Technological University, Biological Sciences, Undergraduate Research Assistant (2021-2022) Topic: *Characterization of heterotrophic bacteria derived from snow-algal cultures from Austrian Alps snowfields*

Halle Hill, Michigan Technological University, Biological Sciences (Summer 2022) Topic: *Abundance of microorganisms over winter in freshwater systems*

Neve Badalow, Michigan Technological University, Biological Sciences (Summer 2022) Topic: *Utilization of dissolved organic matter by microbial communities after freeze-induced stress*

Christopher Downey, Michigan Technological University, Biological Sciences (Summer 2022) Topic: *ATP concentration as a physiological indicator in and under lake ice*

Melia Austin, Michigan Technological University, Biological Sciences, Lab Assistant (2021-2022).

Ethan Miller, Michigan Technological University, Biological Sciences, Lab Assistant (2021-2022).

Alayna Merten, Michigan Technological University, Statistics, Lab Assistant (2020-2022).

Andrew Jazdyk, Michigan Technological University, Biological Sciences, Lab Assistant (2020-2021).

Lydia Nicholas, Michigan Technological University, Biological Sciences, Undergraduate Research Assistant (2020-2021). Topic: *Microbial cell enumeration and characterization under ice.*

Vanessa Cubillos, Michigan Technological University, Biological Sciences, Lab Assistant (2019-2021).

Madylyn Sherman, Michigan Technological University, Undergraduate Research Internship Program, (2019-2020). Topic: *Quality of dissolved organic matter under ice in a north-temperate bog.*

Madeline Glad, University of Montana, (Summer 2018; co-supervised with M. Church). Topic: *Methane oversaturation in oxygenated waters of an oligotrophic lake.*

Kimberly Rousch, Montana State University, Lab Technician, (2015-2016; co-supervised with J. Priscu).

Courtney Thurner, Montana State University, (2011). Topic: *Genetic investigation of chemoautotrophic carbon-fixation in permanently ice-covered Antarctic lakes.*

Hayden Wilson, Montana State University, Lab Technician, (2010-2012; co-supervised with A. Chiuchiolo).

Andrew Baber, Montana State University, Lab Technician, (2008; co-supervised with J. Priscu).

Cameron Ball, University of Nevada, Las Vegas, REU student, (2007; co-supervised with B. Hedlund).

## STUDENT ADVISORY COMMITTEE MEMBER

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*Note: Dates indicate my period of involvement on the committee and may not include the students' entire time in the program.*

**Current Committee Member:**

Fawad Ullah: M.S. (2024-present), Biological Sciences, Michigan Tech. Thesis Topic: Computational methods for the detection of microbial functions in metagenome data. Chair: S. Techtmann.

Abigail Blackwell: M.S. (2023-present), Biological Sciences, Michigan Tech. Thesis Topic: Role of plant genome size and nutrient availability in arbuscular mycorrhizal fungi relationships. Chair: E. Hersch-Green.

Emma Shedd: Ph.D. (2023-present), College of Forest Research and Environmental Sciences, Michigan Tech. Dissertation Topic: Temperature responses of root trait syndromes and mycorrhizal dependence in *Quercus rubra* across a Midwest temperature gradient and common garden experiment. Chair: M. Cavaleri.

Yogita Warkhade: Ph.D. (2020-present), Biological Sciences, Michigan Tech. Dissertation topic: *Investigating the diversity of Carbon monoxide dehydrogenases and hydrocarbon-degrading genes from the natural environments*. Chair: S. Techtmann.

#### Past Committee Member:

Mitchell Kehne: M.S. (2022-2024), Biological Sciences, Michigan Tech. Thesis Topic: Quantifying energetic contributions of zebra mussel veligers to the Saginaw Bay food web. Chair: G. Paterson.

Michelle Kelly: Ph.D. (2020-2024), Biological Sciences, Michigan Tech. Dissertation topic: *Stream energy budgets*. Chair: A. Marcarelli.

Samuel Mensah Opoku: Ph.D. (2021-2023), College of Forest Resources and Environmental Sciences, Michigan Tech. Dissertation Topic: *Tracing Wood Carbon into Soil Using a Unique Isotopic Signature*. Chair: A. Burton.

Laura Schaerer: Ph.D. (2020-2023), Biological Sciences, Michigan Tech. Dissertation topic: *Participation of naturally occurring microorganisms in recycling plastic*. Chair: S. Techtmann.

Isaac Bigcraft: M.S. (2020-2022), Biological Sciences, Michigan Tech. Thesis Topic: *Diversity of microbial carbon monoxide dehydrogenase genes in environmental samples using publicly available metagenomic data*. Chair: S. Techtmann.

Emily Byrne: M.S. (2020-2021), Biological Sciences, Michigan Tech. Thesis Topic: *Hydrocarbon biodegradation and microbial community composition in freshwater systems and enrichment cultures*. Chair: S. Techtmann.

#### WORKING GROUPS, PANELS, AND WORKSHOPS

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2021-pres. Great Lakes Winter Limnology working group member.

2020-2022. Cooperative Institute for Great Lakes Research working group. “Oil spills under ice – challenges and solutions”.

2019-2020. National Academies of Sciences *ad hoc* Committee of the Space Studies Board. “Review of the Report of the NASA Planetary Protection Independent Review Board”.  
<https://www.nationalacademies.org/our-work/review-of-the-report-of-the-nasa-planetary-protection-independent-review-board>

2019. Invited panelist, Workshop: Understanding and responding to global health security risks from microbial threats in the Arctic. Sponsored by: *United States National Academies of Sciences, Engineering, and Medicine* in cooperation with the InterAcademy Partnership and the European Academies Science Advisory Council. Hanover, Germany.

2019. Invited representative (early-career, Biology), Workshop: Subglacial Access Working Group. Sponsored by: *Ice Drilling Program Office Subglacial Access Working Group*. Washington, DC.

## SHORT COURSES AND PROFESSIONAL DEVELOPMENT

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2023. Empowering Women to be Leaders in Science and Engineering, Women in the Academy workshop, Michigan Tech.
2023. Safe and Inclusive Off-Campus Research workshop, Michigan Tech Vice President for Research Office.
2023. Inclusive STEM Teaching Project. edX, 7-week course.
2022. Bioinformatics of Single Cells, Bigelow Laboratory for Ocean Sciences.
2021. Project Biodiversify: Teaching Sex and Gender in Biology.
2020. De-escalation in the Classroom, Michigan Tech Center for Teaching and Learning.
2020. Educational Technology Organization of Michigan Online Teaching Certification.
2019. Course Design Training, Michigan Tech Center for Teaching and Learning.
2014. NASA Astrobiology Institute International Astrobiology summer school, Spanish National University, Santander, Spain.
2012. Center for Microbial Oceanography Summer Course, Honolulu, HI.
2011. Bioinformatics Programming with Python, Montana State University.
2010. Teaching in Biology, Montana State University.

## SERVICE

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### National or International Committees:

- 2020-present. Science Advisory Board Member (invited), U.S. Ice Drilling Program.
- 2020-2024. Member (invited), National Academies of Sciences, Space Studies Board Committee on Planetary Protection.
- 2019-2020. Member (invited), National Academies of Sciences, Space Studies Board, *ad hoc* committee for the Review of the Report of the NASA Planetary Protection Independent Review Board.

### University and Department Committees:

- 2025-pres. Climate Change Curriculum Working Group, Michigan Technological University. Development of introductory climate change course curricula for university-wide program.
2023. Department Chair Search Committee, Michigan Technological University, Department of Biological Sciences.
2023. Postdoctoral Scientist Search Committee, Michigan Technological University, Department of Biological Sciences.
2023. Scientist Search Committee, Michigan Technological University, Great Lakes Research Center.
2023. Committee Member, Great Lakes Research Center Safe and Inclusive Fieldwork Working Group, Michigan Technological University.
- 2022-present. Graduate Committee, Michigan Technological University, Department of Biological Sciences.
- 2020-present. Charter Review Committee, Michigan Technological University, Department of Biological Sciences.
- 2021-2022. Curriculum Committee, Michigan Technological University, Department of Biological Sciences.

2021. Great Lakes Research Center Strategic Planning effort, Michigan Technological University, Great Lakes Research Center.

2019-2021. Undergraduate Enrollment Committee, Michigan Technological University, Department of Biological Sciences.

**Other University Service:**

2022 & 2023. Judge, Ecosystem Science Center Research Forum, Michigan Tech.

2021, 2023, 2024. Leading Scholars Faculty Chat, College of Arts and Sciences, Michigan Tech.

**Committees prior to Michigan Tech:**

2014-2015. Secretary/Treasurer, Graduate Employee Organization, Montana State University.

2012-2013. Vice President, Graduate Employee Organization, Montana State University.

2011-2012. President, Women in Science and Engineering, Montana State University.

2009-2011. Chair and founder of Land Resources and Environmental Sciences Graduate Student Organization, Montana State University.

2008. Secretary, BIOS Club, University of Nevada, Las Vegas.

2007-2008. Secretary and Co-founder, Las Vegas Student Chapter of the American Society for Microbiology.

**Scientific Societies:**

2017-2018. Council Ex-officio, Association of Polar Early Career Scientists.

2016-2017. Executive Committee Ex-officio, Association of Polar Early Career Scientists.

2015-2016. Executive Committee Member, Association of Polar Early Career Scientists.

2014-2015. Executive Committee Member, Association of Polar Early Career Scientists.

2012-2016. Council Member, Association of Polar Early Career Scientists.

2012. Co-chair, Research Activities Council, Association of Polar Early Career Scientists.

**Conference Special Sessions and Organizing Committees:**

2024. Co-Convener, *Influence of Changing Winters on Inland Waters from Organisms to Ecosystems*, Association for the Sciences of Limnology and Oceanography Summer Meeting, Madison, WI. (with primary convener Isabella Oleksy and co-convener Ana Morales-Williams).

2021\*. Convener, *Limnological processes beneath ice cover*, Association for the Sciences of Limnology and Oceanography Aquatic Sciences Meeting. (with co-conveners J. Priscu and A. Michaud). *\*virtual meeting due to COVID-19.*

2020\*. Co-convener, *Biogeochemical dynamics in glacial ecosystems driven by climate change*, Fall Meeting of the American Geophysical Union (with primary convener M. Winkel and co-conveners T. Hamilton and J. Hawkings). *\*virtual meeting due to COVID-19.*

2020\*. Convener, *Limnological processes beneath ice cover*, Society for Freshwater Science and Association for the Sciences of Limnology and Oceanography joint meeting, Madison, USA. (with co-conveners J. Priscu and A. Michaud). *\*meeting cancelled due to COVID-19.*

2018. Co-convener, *Linkages between microorganisms and carbon biogeochemistry along aquatic continuums*, Association for the Sciences of Limnology and Oceanography Summer Meeting, Victoria, Canada. (with primary convener S. Crevecoeur and co-convener P. Reis).



2016. Co-convener, *Subglacial Aquatic Environments*. Scientific Committee on Antarctic Research Open Science Conference, Kuala Lumpur. (with primary convener M. Siebert and co-convener I. Alekhina).
2014. International Scientific Organizing Committee Member, Scientific Committee on Antarctic Research Open Science Conference, Auckland, NZ.
2013. Local Organizing Committee, Polar and Alpine Microbiology International Conference (PAM5). Bozeman, USA.
2012. Co-convener, *Polar Microbes, Genetics and Molecular Biology*. International Polar Year Conference, Montréal, Canada.

#### Editorial Service:

**Peer Reviews:** Nature Communications, Astrobiology, ISME Journal, Biogeochemistry, Nature Scientific Reports, Proceedings of the National Academy of Sciences, Environmental Research Letters, FEMS Microbiology Ecology, Microorganisms, Climate of the Past, Hydrobiologia, Soil Biology and Biochemistry, Environmental Microbiology, Antonie van Leeuwenhoek, Applied Soil Ecology, Science of the Total Environment, Frontiers in Microbiology, Annals of the Brazilian Academy of Sciences

**Guest Editor:** Frontiers in Microbiology (2022-2024)

#### Peer Review, Research Grant Proposals:

Panel Reviewer, Joint Genome Institute, DOE, USA  
 Panel Reviewer, National Aeronautics and Space Administration (NASA), USA  
 Ad Hoc Reviewer, National Science Foundation, Office of Polar Programs, USA  
 External Reviewer, Australian Antarctic Division (AAS), Australia  
 External Reviewer, Chilean Antarctic Institute (INACH), Chile

#### Community Education and Outreach:

2024. Microbiology of the Cryosphere. Soup and Science event, Utqiagvik, AK.
2021. Panel Moderator for The Space Foundation New Generation Leaders Symposium. Panel title: “Life in the Extreme: The Fundamentals of Thriving and Surviving.” Virtual.
2015. Wrote and performed the piece “Life in Antarctica” for the podcast, “Out There: A Podcast About the Outdoors”. <https://goo.gl/Bz4gkS>
2015. Presenter, Polar Regions and Climate Workshop. Workshop for Montana science teachers.
2015. Colorado Springs Science Festival. Presented in public lecture series and gave presentations for >100 students, grades 5-12. Colorado Springs, CO.
2014. JASON Learning, STEM Mentoring program. Video E&O sessions about Antarctica and Microbiology with elementary schools.
2014. JASON Learning Mentor. Live Role Model Program. <http://goo.gl/sVv2uQ>
2013. Scientific Advisor for Montana Space Public Outreach Teams “Life in the Universe”.
2013. Colorado Springs Science Festival. Presented in public lecture series and school visits with grades K-12. Colorado Springs, CO.
2013. Peaks and Potentials Summer Camp. School group mentor. Montana State University.
- 2012-2013. Exploring Antarctica. I designed a series of E&O presentations for grades 5-8 at Montana schools.
2012. Teaching the Environmental Literacy Framework (NOAA). Presenter at Climate Education Workshop for teachers. Montana State University.

2012. Climate Change Student Summit (C2S2). Student mentor. Hardin, MT.
2011. Clues to the Cryosphere: Lessons from the Ice. National Science Teachers Association Symposium, San Francisco, CA. Workshop for teachers.
2011. Montana Regional Science Fair Mentor. Bozeman, MT.
2010. Peaks and Potentials Summer Camp. School group mentor. Montana State University.
2010. Science Olympiad Judge. Montana State University.

#### MEDIA (SELECTED)

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2024. TV interview on my Great Lakes winter research.  
[https://www.uppermichiganssource.com/2024/03/12/researchers-explore-this-winters-lack-snow-ice-upper-michigan/?fbclid=IwAR3KNNlt\\_hafiVYHHBFmpp1U\\_zGOKfeCPRL6v3ru8-2DqoBO6sN8eLdpQU](https://www.uppermichiganssource.com/2024/03/12/researchers-explore-this-winters-lack-snow-ice-upper-michigan/?fbclid=IwAR3KNNlt_hafiVYHHBFmpp1U_zGOKfeCPRL6v3ru8-2DqoBO6sN8eLdpQU)
2024. Associated Press story focusing on my Great Lakes winter research (picked up by >300 national news outlets). <https://apnews.com/article/great-lakes-iceless-research-warm-winter-fda6844a8cf860067b35f20055bfd9e0>
2022. TV interview and print piece on my winter research on the Great Lakes.  
<https://www.uppermichiganssource.com/2022/02/18/michigan-tech-university-conducts-winter-research-lake-superior/>
2022. Press release on “Winter Grab” winter sampling across the Great Lakes.  
<https://news.umich.edu/winter-grab-dozens-of-great-lakes-scientists-join-rare-february-sampling-campaign-to-study-the-changing-face-of-winter/>
2021. Featured in the film, “The Lake at the Bottom of the World”, about research on Antarctic subglacial lakes, which screened at multiple film festivals including 41 North Film Festival, where I held a live Q&A session with the audience after the film.
2021. My work on Antarctic subglacial lakes was covered by Michigan Tech Research Magazine, “Research in Brief” <https://www.mtu.edu/magazine/research/2021/stories/brief/>
2020. News stories (*EOS*, *Scientific American*, *Phys.org*) about peer-reviewed journal article published in *Global Biogeochemical Cycles*, “Biogeochemical connectivity between freshwater ecosystems beneath the West Antarctic Ice Sheet and the sub-ice marine environment”. <https://eos.org/articles/a-subglacial-lake-in-antarctica-churns-out-nutrients>
2020. A Michigan Tech News piece covered my peer reviewed article “Biogeochemical connectivity between freshwater ecosystems beneath the West Antarctic Ice Sheet and the sub-ice marine environment” and associated research. <https://www.mtu.edu/news/stories/2020/march/almost-alien-antarctic-subglacial-lakes-are-cold-dark-and-full-of-secrets.html>
2020. I was interviewed for a piece by Vice News on how to handle life in isolation.  
<https://www.vice.com/en/article/z3bjdy/polar-explorers-advice-on-coping-with-coronavirus-pandemic-isolation>
2016. Wikipedia profile published by Antarctic community [https://en.wikipedia.org/wiki/Trista\\_Vick-Majors](https://en.wikipedia.org/wiki/Trista_Vick-Majors)