

Elisse Magnuson

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EDUCATION

- 2023 Ph.D., Microbiology, **McGill University**
2017 M.A.Sc., Applied Chemistry, **University of Toronto**
2015 B.Sc., Biochemistry, **University of Toronto**

POSITIONS

- 2023 - present Postdoctoral Research Fellow, **School of Environmental Sciences, University of Guelph**

REFEREED PUBLICATIONS

7. **Magnuson, E.**, Altshuler, I., Freyria, N.J., Leveille, R.J., Whyte, L.G. Sulfur-cycling chemolithoautotrophic microbial community dominates a cold, anoxic, hypersaline Arctic spring. *Microbiome*. 2023;11(1):203. <https://doi.org/10.1186/s40168-023-01628-5>
6. Touchette, D., Maggiori, C., Altshuler, I., Tettenborn, A., Bourdages, L., **Magnuson, E.**, Blenner-Hassett, O., Raymond-Bouchard, I., Ellery, A., Whyte, L.G. Microbial characterization of Arctic glacial ice cores with a semiautomated life detections system. *Astrobiology*. 2023;23(7):756-68. <https://doi.org/10.1089/ast.2022.0130>
5. Durand, M., Touchette, D., Chen, Y.J., **Magnuson, E.**, Wasserscheid, J., Greer, C.W., Whyte, L.G. Effects of marine diesel on microbial diversity and activity in high Arctic beach sediments. *Marine Pollution Bulletin*. 2023;194(A). <https://doi.org/10.1016/j.marpolbul.2023.115226>
4. **Magnuson, E.**, Altshuler, I., Fernandez-Martinez, M.A., Chen, Y.J., Maggiori, C., Goordial, J., et al. Active lithoautotrophic and methane-oxidizing microbial community in an anoxic, sub-zero, and hypersaline High Arctic spring. *ISME J*. 2022;16(7):1798-808. <https://doi.org/10.1038/s41396-022-01233-8>
 - **Ranked by Altmetric in top 5% of ~35 million tracked research outputs**
 - **Results reported in 173 media outlets**
 - **Selected by Québec Science as one of Les 10 découverts de 2022 (top 10 discoveries by Québec scientists in 2022)**
 - **Selected by Coeur des Sciences—UQAM as subject for public lecture series as top discovery from Québec Science’s Les 10 découverts de 2022**
3. Altshuler, I., Raymond-Bouchard, I., **Magnuson, E.**, Tremblay, J., Greer, C.W., Whyte, L.G. Unique high Arctic methane metabolizing community revealed through in situ (13)CH(4)-

DNA-SIP enrichment in concert with genome binning. *Sci Rep.* 2022;12(1):1160.
<https://doi.org/10.1038/s41598-021-04486-z>

2. **Magnuson, E.**, Mykytczuk, N.C.S., Pellerin, A., Goordial, J., Twine, S.M., Wing, B., Foote, S.J., Fulton, K., Whyte L.G. *Thiomicrothabodus* streamers and sulfur cycling in perennial hypersaline cold springs in the Canadian high Arctic. *Environ Microbiol.* 2020;23(7):3384-400. <https://doi.org/10.1111/1462-2920.14916>
1. Altshuler, I., Hamel, J., Turney, S., **Magnuson, E.**, Lévesque, R., Greer, C.W., Whyte, L.G. Species interactions and distinct microbial communities in high Arctic permafrost affected cryosols are associated with the CH₄ and CO₂ gas fluxes. *Environ Microbiol.* 2019;21(10):3711-3727. <https://doi.org/10.1111/1462-2920.14715>

AWARDS AND RECOGNITION (\$300,190 CAD funded to date)

2023	NSERC Postdoctoral Fellowship (\$90,000)
2023	Canadian Society of Microbiologists Armand-Frappier Outstanding Student Award (\$500)
2022	Graduate Research and Travel Award, McGill University (\$350)
2021	Fonds de recherche du Québec – Nature et technologies (FRQNT) doctoral award (\$84,000)
2022	ISME-8 Travel Award, Canadian Society of Microbiologists (\$1,000)
2021	ISME-8 Award for best student oral presentation in microbial ecology, 70 th Annual Conference of the Canadian Society of Microbiologists (\$500)
2019-2021	NSERC Alexander Graham Bell Canada Graduate Scholarship- Doctoral (\$70,000)
2018-2021	Northern Scientific Training Program (\$10,940)
2019	Graduate Research and Travel Award, McGill University (\$350)
2017-2019	Graduate Excellence Award, McGill University (\$15,000)
2018	Graduate Mobility Award, McGill University (\$1,350)
2016	Queen Elizabeth II/William and Dorothy Palm Graduate Scholarship in Science and Technology, University of Toronto (\$15,000)
2015	St. Hilda's College Board of Trustees Leadership Award, Trinity College, University of Toronto (\$4,000)
2015	C.A. Ashley Award, Trinity College, University of Toronto
2011-2015	Dean's List, University of Toronto
2013	NSERC Undergraduate Research Award, University of Toronto (\$6,000)
2012	Trinity College Chancellor's Scholarship, University of Toronto (\$200)
2011	University of Toronto Scholars Award (\$1,000)

PRESENTATIONS

- 2023 **Magnuson, E.**, Thakar, J., Lappan, R., Trembath-Reichart, E., Bradley, J., Greening, C., Goordial, J. Characterization of microbial activity in the atmosphere. Poster

presentation, CIFAR E4D: Subsurface Science and Exploration Winter School. November 5-7, 2023. Toronto, Canada.

Magnuson, E., Altshuler, I., Chen, Y., Fernández-Martínez, M.Á., Maggiori, C., Goordial, J., Whyte, L.G. Active lithoautotrophic and methane-oxidizing microbial community in an anoxic, sub-zero, and hypersaline High Arctic spring. Oral presentation, 72nd Annual Conference of the Canadian Society of Microbiologists. June 20-28, 2023. Halifax, Canada.

- **Invited speaker as winner of the 2023 Armand Frappier Outstanding Student award**

Magnuson, E., Altshuler, I., Chen, Y., Fernández-Martínez, M.Á., Maggiori, C., Goordial, J., Whyte, L.G. Active lithoautotrophic and methane-oxidizing microbial community in an anoxic, sub-zero, and hypersaline High Arctic spring. **Invited oral presentation**, The Open University AstrobiologyOU Mars group. April 17, 2023.

2022 **Magnuson, E.**, Altshuler, I., Chen, Y., Fernández-Martínez, M.Á., Maggiori, C., Goordial, J., Whyte, L.G. Active lithoautotrophic and methane-oxidizing microbial community in an anoxic, sub-zero, and hypersaline High Arctic spring. Poster talk (oral presentation), 18th International Symposium on Microbial Ecology. August 14-19, 2022. Lausanne, Switzerland.

Magnuson, E., Altshuler, I., Chen, Y., Fernández-Martínez, M.Á., Maggiori, C., Goordial, J., Whyte, L.G. Active lithoautotrophic and methane-oxidizing microbial community in an anoxic, sub-zero, and hypersaline High Arctic spring. Poster presentation, 18th International Symposium on Microbial Ecology. August 14-19, 2022. Lausanne, Switzerland.

Magnuson, E., Mykytczuk, N.C.S., Pellerin, A., Goordial, J., Twine, S.M., Wing, B., Foote, S.J., Fulton, K., Whyte L.G. *Thiomicrothrix* streamers and sulfur cycling in perennial hypersaline cold springs in the Canadian high Arctic. Poster presentation, 71st Annual Conference of the Canadian Society of Microbiologists. June 26-29, 2022. Guelph, Canada.

2021 **Magnuson, E.**, Altshuler, I., Chen, Y., Fernández-Martínez, M.Á., Maggiori, C., Whyte, L.G. Microbial diversity and activity within a sub-zero, hypersaline Arctic spring. Oral presentation, 70th Annual Conference of the Canadian Society of Microbiologists. June 14-17, 2021. Virtual.

- **Competitively elected for participation in student symposium competition**
- **Winner of ISME-8 Award for best student oral presentation in microbial ecology**

Magnuson, E., Altshuler, I., Fernández-Martínez, M.Á., Maggiori, C., Whyte, L.G. Methane oxidation and sulfur cycling in an Arctic cold saline spring. Poster presentation, World Microbe Forum 2021. 20-24 June 2021. Virtual.

- 2019 **Magnuson, E.**, Whyte, L.G. Microbial genome characterization in an Arctic cold saline spring. Oral presentation, American Society for Microbiology Microbe 2019. June 20-24, 2019. San Francisco, United States.
- Magnuson, E.**, Whyte, L.G. Microbial genome characterization in an Arctic cold saline spring. Poster presentation, American Society for Microbiology Microbe 2019. June 20-24, 2019. San Francisco, United States.
- 2018 **Magnuson, E.**, Mykytczuk, N.C.S., Pellerin, A., Goordial, J., Twine, S.M., Wing, B., Foote, S.J., Fulton, K., Whyte L.G. Meta-analyses of S-oxidizing biofilms from anoxic hypersaline springs in the Canadian high Arctic. Poster presentation, 17th International Symposium on Microbial Ecology. August 12-17, 2018. Leipzig, Germany.
- 2017 **Magnuson, E.**, Luo, F., Edwards, E.A. Microbial community dynamics in nitrate-reducing benzene-degrading cultures. Poster presentation, Industrial Biocatalysis Network Annual General Meeting. May 30-31, 2017. Toronto, Canada.
- 2016 **Magnuson, E.**, Luo, F., Edwards, E.A. Microbial community dynamics in nitrate-reducing benzene-degrading cultures. Poster presentation, 16th International Symposium on Microbial Ecology. August 21-26, 2016. Montreal, Canada.
- Magnuson, E.**, Luo, F., Edwards, E.A. Microbial community dynamics in nitrate-reducing benzene-degrading cultures. Poster presentation, Industrial Biocatalysis Network Annual General Meeting. May 18-19, 2016. Montreal, Canada.

TEACHING EXPERIENCE

Guest Lecturer

- 2023 Invited Lecturer, Special Topics in Life, Medical and Biophysics (PHYS491), University of Waterloo
- 2022 Selected Topics in Biotechnology (BIOT505), McGill University

Teaching Assistant

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| McGill University | Microbial Ecology (MICR331), 2021
Bacterial Molecular Genetics (MICR338), 2020
Evolution and Phylogeny (AEBI212), 2020
Science Literacy (AEHM205), 2018-2019 |
| University of Toronto | Engineering Strategies and Practice II (APS112), 2017
Engineering Strategies and Practice I (APS111), 2016
Environmental Chemistry (CHE230), 2016 |

Student Supervision

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| 2023-present | Jordan Thakar (Undergraduate researcher), University of Guelph |
| 2021 | Gabriel Villiard (Undergraduate researcher), McGill University |

2017 Rebecca Hough (Undergraduate researcher), University of Toronto

PROFESSIONAL SERVICE

Journal peer review

2023 *Environmental Microbiome*
2021 *Applied and Environmental Microbiology*
2020 *Soil Biology and Biochemistry*

Proposal review

2023 UK Space Agency Mars Exploration funding call

Institutional committees

2022 Team member, NASA/Canadian Space Agency Deep Space Food Challenge, McGill University. Led testing and optimization of microalgal growth in a photobioreactor designed for usage in deep space missions. Coordinated with engineering, food science, and management teams.

2018-2019 Committee member, Macdonald Campus Graduate Student Society, McGill University. Also held seats on the Macdonald Student Services Engagement Board, McGill Advisory Committee on International Students, and McGill Committee on Development of Teaching Excellence.

2016-2017 Council member, BioZone Leadership Council, University of Toronto. Organized professional development and recreational events for graduate students and managed communications with student body and university administration.

2011-2015 Undergraduate campus leadership, University of Toronto. Held leadership roles in the student government of Trinity College at the University of Toronto, Trinity College Dramatic Society, and Biochemistry Undergraduate Student Society. Received two awards in recognition of outstanding student leadership (St. Hilda's Board of Trustees Leadership Award and C.A. Ashley Award).

PUBLIC OUTREACH

2018-2019 Lead coordinator with Let's Talk Science at McGill University's Macdonald Campus. Organized science outreach programs including biweekly labs for homeschooled elementary school students, in-class science demonstrations in high schools, and the 24 Hours of Science community outreach day.

2015-2016 Organization committee member for Science Rendezvous at the University of Toronto, a public science outreach event with over 15,000 attendees.

FIELD EXPERIENCE

2023 Aerobiology and permafrost sampling, Inuvik, Northwest Territories, Canada

- 2023 Aerobiology of high elevation Arizona forests, Tucson, Arizona, USA
- 2021 Field team lead, Microbial ecology of cold springs, McGill Arctic Research Station, Axel Heiberg Island, Nunavut, Canada
- 2019 Microbial ecology of cold springs, McGill Arctic Research Station, Axel Heiberg Island, Nunavut, Canada
- 2018 Sampling around Polar Continental Shelf Project Arctic Logistics Hub, Resolute, Nunavut, Canada