

RESEARCH INTERESTS

I study the evolution of fungal-algal symbioses, known as lichens. For my current project, I apply bioinformatics combined with wet-lab techniques to try to understand how microbial partners communicate in the symbiotic setting and what each of them contributes to the system.

ACADEMIC APPOINTMENTS

2022– **PostDoctoral Scientist**, Nick Talbot Group, The Sainsbury Laboratory (Norwich, UK)

EDUCATION

2022 University of Alberta <i>Edmonton AB, Canada</i>	PhD in Systematics and Evolution GPA 3.9 (4.0 max). Advisor: Toby Spribille Thesis title: How Lichens Work: Functional Aspects of Symbiosis Viewed through Metagenomics and other Culture-Free Methods
2017 St. Petersburg University <i>St. Petersburg, Russia</i>	MSc in Biology GPA 4.0 (4.0 max). <i>Diploma cum laude</i> Advisor: Irina Stepanchikova Thesis title: Globally endangered lichen <i>Erioderma pedicellatum</i> in Kamchatka
2015 St. Petersburg University <i>St. Petersburg, Russia</i>	BSc in Biology GPA 3.9 (4.0 max). <i>Diploma cum laude</i> Advisor: Irina Stepanchikova Thesis title: Lichens epiphytic on aspen in the old growth forests of the Valday upland

AWARDS AND FUNDING (TOTAL ~\$102,000)

Scholarships:

2021–2022	Alberta Graduate Excellence Scholarship (UAlberta, \$12,000)
2020–2021	Alberta Innovates Graduate Student Scholarship (UAlberta, \$62,000)
2020	Alberta Graduate Excellence Scholarship (UAlberta, \$12,000)
2013–2017	Increased State Scholarship for Academic Excellence (St.PU, \$10,000)

Awards:

2023	University of Alberta nominee for the CAGS/ProQuest Distinguished Dissertation Award
2022	Andrew Stewart Memorial Graduate Prize (\$5,000)
2020	Lionel Cinq-Mars Award for the best oral presentation (\$500)
2018	St. Petersburg Naturalist Society Award for the best MSc thesis (\$100)

SELECTED PUBLICATIONS (see the full list at the end of the document)

1. **Tagirdzhanova G.**, Saary P., Cameron E.S., ... & Spribille T. 2024. Microbial occurrence and symbiont detection in a global sample of lichen metagenomes. *PLOS Biology* 22(11): e3002862.
2. **Tagirdzhanova G.**, Saary P., Tingley J., Diaz Escandon D., Abbott W., Finn R., Spribille T. 2021. Predicted input of uncultured fungal symbionts to a lichen symbiosis from metagenome-assembled genomes. *Genome Biology and Evolution* 13(4): evab047.
3. **Tagirdzhanova G.**, Scharnagl K., Yan X., Talbot N. J. 2023. Genomic analysis of *Coccomyxa viridis*, a common low-abundance alga associated with lichen symbioses. *Scientific Reports* 13: 21285.
4. **Tagirdzhanova G.**, Scharnagl K., Sahu N., ... & Talbot N. J. 2024. Multipartite complexity of the lichen symbiosis revealed by metagenome and transcriptome analysis of *Xanthoria parietina*. *bioRxiv* doi.org/10.1101/2024.08.16.608140
5. Díaz-Escandón D., **Tagirdzhanova G.**, Vanderpool D., ... & Spribille T. 2022. Genome-level analyses resolve an ancient lineage of symbiotic ascomycetes. *Current Biology* 32: 1–10.

INVITED TALKS

2023	Seminar series of Oslo Mycology Group (University of Oslo, Norway)
2022	Seminar series of Royal Botanic Gardens in Kew (UK)
2022	Seminar series of the Finnish Museum of Natural History (University of Helsinki, Finland)
2021	Students Mycology Colloquium (Mycological Society of America)

SELECTED CONFERENCES

2024	12th International Mycological Congress (oral presentation)
2024	Gordon Research Conference on Cellular and Molecular Fungal Biology (oral presentation)
2023	EMBL Symposium: The cellular mechanics of symbiosis (oral presentation)
2022	Canadian Fungal Research Network Meeting (oral presentation)
2021	IX Symposium of the International Association for Lichenology (oral presentation)
2021	Canadian Fungal Research Network Meeting (oral presentation)
2021	The British Lichen Society Annual General Meeting (oral presentation)
2020	Canadian Botanical Association Virtual Meeting (oral presentation)
2019	30th Fungal Genetics Conference (poster presentation)
2018	International Symbiosis Society Congress (poster presentation)
2016	VIII Symposium of the International Association for Lichenology (poster presentation)
2014	XIX Symposium of the Baltic Mycologists and Lichenologists (poster presentation)

TEACHING EXPERIENCE

- 2023–2024 Data Science (MSc course), The Sainsbury Laboratory. **Co-Instructor**
- 2018 BOT306: Biology of the Fungi (BSc course), UAlberta. **Teaching assistant**
- 2018, 2019 BIO108: Introduction to Biodiversity (BSc course), UAlberta. **Teaching assistant**
- 2014, 2016 Fungi, Lichens, and Algae (BSc course), St. Petersburg University. **Teaching assistant**

Guest lectures:

- 2021 BIO46: Introduction to research in ecology and evolutionary biology (Stanford University)
- 2020 BOT306: Biology of the Fungi (UAlberta), MATH322: Introduction to Graph Theory (UAlberta)
- 2019 BOT306: Biology of the Fungi (UAlberta), BIOL322: Microbial Diversity and Evolution (UAlberta), BIOL430: Experimental Biology (UAlberta)

SUPERVISING AND MENTORING

- 2024–2025 Jasper Raistrick (BSc student, University of East Anglia): **1-year work placement**, TSL
- 2024 Benjamin Adjei (MSc student, The Sainsbury Laboratory): **MSc thesis project**, TSL. Benjamin received Royal Society of Biology Master's Accreditation Top Project Award
- 2023 Flurin Lauchli (MSc student, University of Zurich): **3-month research internship**, TSL
- 2020–2021 Samantha Pedersen (BSc student, UAlberta): **two term research projects and a summer internship** (12 months in total), UAlberta
- 2020–2023 **Mentor, Speaker** at The Science Mentors, a career mentorship program for STEM undergraduate students. Mentored four students

BOARD MEMBERSHIP AND SERVICE

- 2023–2024 **Postdoc Committee**, The Sainsbury Laboratory, *Member*
- 2021–2022 CanFunNet 2022 **Conference Organizing Committee**, *Member*
- 2020–2021 **Department Council**, UAlberta Department of Biological Sciences, *Member*
- 2020–2021 **Working Group for Respect, Equity, Accountability and Departmental Culture**, UAlberta Department of Biological Sciences, *Member*
- 2019–2021 **Biology Graduate Students' Association UAlberta:** *President* (2020-2021), *Co-organizer* of R.E. Peter Biology Conference, *Member* of EDI (Equity Diversity Inclusion) Committee
- 2019– **Journal peer reviewer** for Nature Communications, New Phytologist, eLife, FEMS Microbiology Ecology, Microbial Ecology, The Lichenologist, Symbiosis, American Journal of Botany

ADDITIONAL EDUCATION

- 2023 **Instructor Training Program with [The Carpentries](#)**. Covers evidence-based teaching practices applied to the teaching of data science and programming
- 2017 **Data Analysis**. Online certificate program, St. Petersburg Academic University

SCIENCE COMMUNICATION

- 2019 Member of Research Zone **Science Communication Program**, Telus World of Science
- 2019 **Invited speaker** at The Great Alberta Mushroom Foray
- 2018 **Lichen expert** at the Tombstone Park BioBlitz in Yukon, Canada (BioBlitz is an event bringing together biologists and nature enthusiasts from public, and focused on describing biodiversity of a certain area)
- 2017 Presented at the **workshop** “Lichen Revival III: Rediscovering Macrolichens in the Canadian Rockies”
- 2017 Co-teacher at the **field seminar** for students and NGO volunteers “Nature Conservation and biologically valuable forests”
- 2011–2017 Co-organizer and judge for **biological conferences** and contests for high school students (Student conference “Future Scientists” 2011, 2017; Biology Olympiad 2011–2017; Youth Biology Tournament 2011–2013).

NATURE CONSERVATION EFFORTS

- 2017 **Contributed** to project of Valhalla Wilderness Society dedicated to the protection of Inland Temperate Rainforests in British Columbia
- 2012–2017 Participated in research leading to establishment of several **Nature Reserves** in Russia, Participated in monitoring of **endangered species**

PUBLICATIONS

I. Preprints

1. **Tagirdzhanova G.**, Scharnagl K., Sahu N., ... & Talbot N. J. 2024. Multipartite complexity of the lichen symbiosis revealed by metagenome and transcriptome analysis of *Xanthoria parietina*. *bioRxiv* doi.org/10.1101/2024.08.16.608140

II. Peer-reviewed Papers

1. **Tagirdzhanova G.**, Saary P., Cameron E.S., ... & Spribille T. 2024. Microbial occurrence and symbiont detection in a global sample of lichen metagenomes. *PLOS Biology* 22(11): e3002862. doi.org/10.1371/journal.pbio.3002862

2. **Tagirdzhanova G.**, Scharnagl K., Yan X., Talbot N. J. 2023. Genomic analysis of *Coccomyxa viridis*, a common low-abundance alga associated with lichen symbioses. *Scientific Reports* 13: 21285. doi.org/10.1038/s41598-023-48637-w.
3. Scharnagl K., **Tagirdzhanova G.**, Talbot N. J. 2023. The coming golden age for lichen biology. *Current Biology* 33(11): PR512–R518. doi.org/10.1016/j.cub.2023.03.054.
4. Díaz-Escandón D., **Tagirdzhanova G.**, Vanderpool D., ... & Spribille T. 2022. Genome-level analyses resolve an ancient lineage of symbiotic ascomycetes. *Current Biology* 32: 1–10. doi.org/10.1016/j.cub.2022.11.014.
5. Resl P., Bujold A. R., **Tagirdzhanova G.**, ... & Spribille T. 2022. Large differences in carbohydrate degradation and transport potential in the genomes of lichen fungal symbionts. *Nature Communications* 13: 2634 doi.org/10.1038/s41467-022-30218-6.
6. Spribille T., Resl P., Stanton D., **Tagirdzhanova G.** 2022. Evolutionary biology of lichen symbioses. *New Phytologist* 234(5): 1566–1582. doi.org/10.1111/nph.18048.
7. **Tagirdzhanova G.**, McCutcheon J. P., Spribille T. 2021. Lichen fungi do not depend on the alga for ATP production: a comment on Pogoda et al. (2018). *Molecular Ecology* 30(17): 4155–4159 doi.org/10.1111/mec.16010.
8. **Tagirdzhanova G.**, Saary P., Tingley J., Diaz Escandon D., Abbott W., Finn R., Spribille T. 2021. Predicted input of uncultured fungal symbionts to a lichen symbiosis from metagenome-assembled genomes. *Genome Biology and Evolution* 13(4): evab047, doi.org/10.1093/gbe/evab047.
9. Spribille T., **Tagirdzhanova G.**, Goyette S., Tuovinen V., Case R., Zandberg W. 2020. 3D biofilms: in search of the polysaccharides holding together lichen symbioses. *FEMS Microbiology Letters* 367(5): p.fnaa023.
10. **Tagirdzhanova G.**, Stepanchikova I., Himelbrant D., Vyatkina M., Dyomina A., Dirksen V., Scheidegger C. 2019. Distribution and assessment of the conservation status of *Erioderma pedicellatum* in Asia. *Lichenologist* 51(6): 575–585.
11. Himelbrant D. E., Stepanchikova I. S., Motiejūnaitė J., Kuznetsova E. S., **Tagirdzhanova G.**, Frolov I. V. 2019. New records of lichens and allied fungi from the Leningrad Region, Russia. X. *Folia Cryptogamica Estonica* 56: 23–29.
12. Motiejunaite J., Chesnokov S. V., Czarnota P., ..., **Tagirdzhanova G.**, Thell A., Stepanchikova, I. 2016. Ninety-One Species of Lichens and Allied Fungi New to Latvia with a List of Additional Records from Kurzeme. *Herzogia* 29(1): 143–163.
13. Himelbrant D. E., Stepanchikova I. S., **Tagirdzhanova G. M.** 2016. The lichens and allied fungi of the Oranienbaumsky Prospective Protected Area (St. Petersburg). *Novitates systematicae plantarum non vascularum* 50: 210–230.

14. Himelbrant D. E., Stepanchikova I. S., Motiejūnaitė J., Vondrak J., **Tagirdzhanova G. M.**, Gagarina L. V., Kuznetsova E. S. 2015. New records of lichens and allied fungi from the Leningrad Region, Russia. VI. *Folia Cryptogamica Estonica* 52: 21–28.
15. Stepanchikova I. S., Himelbrant D. E., Dyomina A. V., **Tagirdzhanova G. M.** 2015. The lichens and allied fungi of the Zapadny Kotlin protected area and its vicinities (Saint Petersburg). *Novitates systematicae plantarum non vascularum* 49: 265–281.
16. **Tagirdzhanova G. M.**, Kataeva O. A., Stepanchikova I. S. 2014. New lichen records from the Novgorod Region, Russia. *Folia Cryptogamica Estonica* 51: 103–107.
17. Himelbrant D. E., Motiejūnaitė J., Stepanchikova I. S., **Tagirdzhanova G. M.** 2014. New records of lichens and allied fungi from the Leningrad Region, Russia. V. *Folia Cryptogamica Estonica* 51: 49–55.
18. Stepanchikova I. S., **Tagirdzhanova G. M.**, Himelbrant D. E. 2013. The lichens and allied fungi of the Smorodinka River valley (Leningrad Region). *Novitates systematicae plantarum non vascularum* 47: 262–278.

III. Book Chapters

1. **Tagirdzhanova G.** 2022. Boreal Felt Lichen, an endangered cyanolichen *Erioderma pedicellatum*. In: DiPaolo D., Villella J. (Eds.). *Imperiled: The Encyclopedia of Conservation*.
2. **Tagirdzhanova G. M.** 2018. *Lobaria scrobiculata*. In Geltman D. (Ed.). *Red Data Book of Leningrad Region: Plants*. P. 519–520.
3. **Tagirdzhanova G. M.** 2018. *Lobaria pulmonaria*. In Geltman D. (Ed.). *Red Data Book of Leningrad Region: Plants*. P. 781–782.