Gulnara Tagirdzhanova

Norwich, UK
gulnara.tagirdzhanova@tsl.ac.uk
metalichen.github.io

Research Interests

I study the evolution of fungal-algal symbioses, known as lichens. For my current project, I apply cutting-edge bioinformatics methods 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

Education

2022
University of Alberta
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
MSc in Biology
GPA 4.0 (4.0 max). *Diploma cum laude*
Advisor: Irina Stepanchikova
Thesis title: Globally endangered lichen Erioderma pedicellatum in Kamchatka

2015
St. Petersburg University
BSc in Biology
GPA 3.9 (4.0 max). *Diploma cum laude*
Advisor: Irina Stepanchikova
Thesis title: Epiphytic lichens of aspen in old growth forests of the Valday upland

2017
Additional education: Data Analysis
Online certificate program organized by the St. Petersburg Academic University and Bioinformatics Institute

Awards and Funding (total ~$102,000)

Scholarships:

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

Awards:

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 as a separate document)

1. **Tagirdzhanova G.,** Saary P., Cameron E.S., … & Spribille T. 2023. Evidence for a core set of microbial lichen symbionts from a global survey of metagenomes. *bioRxiv* doi.org/10.1101/2023.02.02.524463
2. **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.
3. **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.
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.
5. **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.

Invited Talks

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

Selected Conferences

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	3rd International Conference “Bioinformatics: from Algorithms to Applications”. *St. Petersburg, Russia* (poster presentation)
2019	30th Fungal Genetics Conference. *Pacific Grove, CA, USA* (poster presentation)
2018	International Symbiosis Society Congress. *Corvallis, OR, USA* (poster presentation)
2016	VIII Symposium of the International Association for Lichenology. *Helsinki, Finland* (poster presentation)
2014	II international conference “Lichenology in Russia: problems and perspectives”. *St. Petersburg, Russia* (poster presentation)
2014	XIX Symposium of the Baltic Mycologists and Lichenologists. *Šķēde, Latvia* (poster presentation)

Teaching and Supervising experience

2020–2021	**Co-supervisor** to an undergraduate student working on a research project. The student presented a poster at the 2020 CBA Virtual Meeting
2018–2019	**Teaching assistant**, University of Alberta. Taught labs for BIO108: Introduction to Biodiversity, BOT306: Biology of the Fungi
2014–2016	**Teaching assistant**, St. Petersburg State University. Taught labs for Biology of the fungi, lichens, and algae.

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)

Service

2021–2022	**CanFunNet 2022 Conference Organizing Committee,** *Member*
2019-2021	**Biology Graduate Students' Association UAlberta:** *President* (2020-2021)*, Co-organizer* of R.E. Peter Biology Conference, *Volunteer*
2019–2020	**EDI (Equity Diversity Inclusion) Committee at the BGSA,** *Member*
2020–2021	**Working Group for Respect, Equity, Accountability and Departmental Culture,** *Member and grad student representative*
2020–2021	**The Science Mentors,** *Mentor, Speaker:* TSM is a mentorship program for STEM undergraduate students.
2020–	**Journal peer reviewer** for The Lichenologist, Symbiosis, New Phytologist

Science Communication

2019	Member of Research Zone **Science Communication Program** organized by 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.,** Saary P., Cameron E.S., … & Spribille T. 2023. Evidence for a core set of microbial lichen symbionts from a global survey of metagenomes. *bioRxiv* doi.org/10.1101/2023.02.02.524463

II. Peer-reviewed Papers

1. 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.
2. 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.
3. Spribille T., Resl P., Stanton D., **Tagirdzhanova G.** 2022. Evolutionary biology of lichen symbioses. *New Phytologist* 234(5): 1566–1582.
4. **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.
5. **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.
6. 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.
7. **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.

8. 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.
9. 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.
10. 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.
11. 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.
12. Stepanchikova I. S., Gagarina L. V., **Tagirdzhanova G. M.,** Himelbrant D. E. 2015. The lichens of juniper communities of Shuryagsky Cape (Leningrad Region). *Vestnik Tverskogo Gosudarstvennogo Universiteta, Biology and Ecology series* 34: 121–126. (in Russian, English summary).
13. 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.
14. **Tagirdzhanova G. M.,** Kataeva O. A., Stepanchikova I. S. 2014. New lichen records from the Novgorod Region, Russia. *Folia Cryptogamica Estonica* 51: 103–107.
15. 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.
16. Sorokina I. A., Himelbrant D. E., Stepanchikova I. S., …, **Tagirdzhanova G. M.** 2013. Forest certification as a tool for detection and conservation of biologically valuable forests and scientific research in the eastern part of Leningrad Region. *Vestnik Tverskogo Gosudarstvennogo Universiteta, Biology and Ecology series* 32: 246–264. (In Russian, English summary).
17. 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.** Boreal Felt Lichen, an endangered cyanolichen Erioderma pedicellatum. In: DiPaolo D., Villella J. (Eds.). Imperiled: The Encyclopedia of Conservation. In press.
2. **Tagirdzhanova G. M.** 2018. Lobaria scrobiculata. In Geltman D. (Ed.). Red Data Book of Leningrad Region: Plants. P. 519-520. (in Russian).
3. **Tagirdzhanova G. M.** 2018. Lobaria pulmonaria. In Geltman D. (Ed.). Red Data Book of Leningrad Region: Plants. P. 781-782. (in Russian).