Gulnara Tagirdzhanova

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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.

Education

2017– **University of Alberta** *Edmonton AB, Canada*
PhD candidate in Systematics and Evolution
GPA 3.9 (4.0 max). Expected graduation: Aug 2022

2015–2017 **St. Petersburg State University** *St. Petersburg, Russia*
MSc. in Biology GPA 4.0 (4.0 max). *Diploma cum laude*
2011–2015 *BSc. in Biology* GPA 3.9 (4.0 max). *Diploma cum laude*

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

Research experience

2017– **Spribille Lab, University of Alberta**
Supervisor: Dr. Toby Spribille
Projects: Metagenomics of lichen symbiosis (PhD project), Lichens of Alberta

2008–2017 **Department of Botany, St. Petersburg State University**
Supervisor: Dr. Irina Stepanchikova
Projects: Globally endangered lichen Erioderma pedicellatum in Kamchatka (MSc. Thesis), Epiphytic lichens of aspen in old growth forests of the Valday upland (BSc. Thesis), Lichens of Leningrad region and Saint-Petersburg

Awards and Funding (total ~$86,000)

Scholarships:

2020– 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.PSU, $10,000)

Awards:

2020 Lionel Cinq-Mars Award for the best oral presentation ($500)

2019 Second prize at the departmental 3Minute Thesis Competition ($100)

2018 St. Petersburg Naturalist Society Award for the best MSc thesis ($100)

Grants:

2018 Genetics Society of America Travel Grant ($400)

2018 International Symbiosis Society Congress Travel Grant ($300)

2014 St. Petersburg State University Travel Grant ($400)

PUBLICATIONS

Preprints and manuscripts under review/revision

1. **Tagirdzhanova G.,** McCutcheon J. P., Spribille T. 2021. Lichen fungi do not depend on the alga for ATP production. *Preprint on bioRxiv*, doi.org/10.1101/2021.03.17.435722.

I. Papers

1. **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.

2. 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.

2. **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.

3. 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.

4. Motiejunaite J., Chesnokov S. V., Czarnota P., Gagarina L. V., Frolov I., Himelbrant D., Konoreva L., Kubiak D., Kukwa M., Moisejevs R., Suija A., **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.

5. 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.

6. 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.

7. 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).

8. 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.

9. **Tagirdzhanova G. M.,** Kataeva O. A., Stepanchikova I. S. 2014. New lichen records from the Novgorod Region, Russia. Folia Cryptogamica Estonica 51: 103–107.

10. 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.

11. Sorokina I. A., Himelbrant D. E., Stepanchikova I. S., Spirin V. A., Efimov P. G., Kushnevskaya E. V., Kuznetsova E. S., Chirkova G. A., Gagarina L. V., Liksakova N. S., Bol'shanin A. A., **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).

12. 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.

II. 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).

III. Published Conference Abstracts

Tagirdzhanova G., Spribille T. 2019. Genome heterogeneity affecting binning of complex fungal communities. BMC Bioinformatics 20 (Suppl 17): P7.

Selected Conferences

2021	The British Lichen Society Annual General Meeting (oral presentation)
2020	Canadian Botanical Association Virtual Meeting (oral presentation)
2020	Dr. R. E. Peter Biology Conference. *Edmonton, AB, Canada* (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)
2018	Dr. R. E. Peter Biology Conference. *Edmonton, AB, Canada* (oral presentation)
2017	International Conference “The use of modern information technologies in botanical investigations”. *Apatity, Russia* (oral 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– **Co-supervisor** to an undergraduate student working on a research project (BIOL398, BIOL498). 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)

2020 MATH322: Introduction to Graph Theory (UAlberta)

2019 BOT306: Biology of the Fungi (UAlberta)

2019 BIOL322: Microbial Diversity and Evolution (UAlberta)

2019 BIOL430: Experimental Biology (UAlberta)

Service

Biology Graduate Students' Association UAlberta

2020–2021 *President*:
- Coordinating and overseeing the work of the BGSA.
- Planning and organizing events and workshops for the graduate students.
- Recruiting and managing volunteers.
- Managing the online presence.
- Serving as a graduate student representative at the Departmental Council.
- Co-organizing Dr. Richard E. Peter Biology Conference (UAlberta).

2019–2020 *Volunteer*: Co-organizer of the weekly BGSA Coffee Hour.

2019– **EDI (Equity Diversity Inclusion) Committee at the BGSA,** *Member:*
Together with other members,
- Designed and administered a survey on the EDI issues for graduate students and postdocs. Communicated the results of the survey to the departmental and faculty.
- Prepared a list of resources on the EDI to be displayed on the BGSA website

2020– **Working Group for Respect, Equity, Accountability and Departmental Culture**
Member and grad student representative

2020– **The Science Mentors,** *Mentor, Speaker:*
TSM is a mentorship program for STEM undergraduate students.

2020– **Journal peer reviewer** for The Lichenologist, Symbiosis

2017 **Volunteer** at the 1st International Conference "Bioinformatics: from Algorithms to Applications".

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
2012–2017	Participated in monitoring survey of **endangered species** in several regions of Russia