

CANAN KARAKOÇ

📍 Lennon Lab, Department of Biology, Indiana University, 1001 East 3rd Street, Bloomington, IN 47405 US

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EDUCATION

- Ph.D. in Biology, *magna cum laude*** 2013 – 2019
University of Leipzig🔗 , HIGRADE Graduate School🔗 Leipzig, Germany
Advisers: Hauke Harms🔗 and Antonis Chatzinotas🔗
Project title: "Context Dependency of Community Dynamics: Predator-Prey Interactions Under Ecological Disturbances"
- M.Sc. in Global Change Ecology** 2009 – 2012
University of Bayreuth🔗 , Elite Network Bavaria(ENB)🔗 Bayreuth, Germany
Advisers: Björn Reineking, Steffen Kolb
- M.Sc in Biology** 2005 – 2008
Cumhuriyet University🔗 Sivas, Turkey
- B.Sc in Biology (Minor: Molecular Biology)** 2000 – 2004
Akdeniz University🔗 Antalya, Turkey

PROFESSIONAL EXPERIENCE

- Lennon Lab🔗 Department of Biology, Indiana University** 2021 - ongoing
Postdoctoral researcher Bloomington, IN, US
· Microbial ecology and evolution. Adviser: Jay T. Lennon
- Helmholtz Centre for Environmental Research-UFZ**
German Centre for Integrative Biodiversity Research (iDiv)🔗 2019 - 2021
Postdoctoral researcher Leipzig, Germany
· Evolutionary ecology. Advisers: Antonis Chatzinotas and Stan Harpole🔗
- UFZ** 2013 - 2017
Research assistant Leipzig, Germany
· Experimental community ecology. WG Microbial Interactions Ecology🔗
- iDiv** 2015 - 2016
Guest research assistant Leipzig, Germany
· Experimental community ecology. WG Experimental Interactions Ecology🔗
- University of Thessaly** 2016 & 2014
Guest research assistant, DAAD Scholarship Larissa, Greece
· Applied microbial ecology. Department of Biochemistry and Biotechnology🔗
- Max Planck Institute for Developmental Biology** 2011
Intern, ENB travel grant Tübingen, Germany
· Evolutionary ecology. Department of Molecular Biology🔗
- Technical University of Munich** 2010
Intern, ENB travel grant Munich, Germany
· Microbial ecology. Technical University of Munich, Department of Soil Ecology🔗

University of Bayreuth*Technical assistant*

2010 – 2012

Bayreuth, Germany

- Field/lab work. University of Bayreuth, Department of Soil Physics; Department of Biogeography (EVENT); Department of Plant Physiology (TERRECO) and Agroecosystem Research.

Cumhuriyet University*Research & teaching assistant*

2005 – 2008

Sivas, Turkey

- Applied microbial ecology. Department of Molecular Biology and Genetics.

Antalya State Hospital*Laboratory assistant*

2003

Antalya, Turkey

- Laboratories of Microbiology, Immunology & Biochemistry.

PUBLICATIONS

- Zhao, Q., Van den Brink, P. J., Xu, C., Wang, S., Clark, A. T., **Karakoç, C.**, Sugihara, G., Widdicombe, C. E., Atkinson, A., Matsuzaki, S.-i., Shinohara, R., He, S., Wang, Y. X. G., and De Laender, F. (2023). Effects of temperature and biodiversity on stability of natural aquatic food webs. *Under review, Nature Communication*.
- Glidden, C., **Karakoç, C.**, Duan, C., Jiang, Y., Beechler, B., Jabbar, A., and Jolles, A. (2022). Distinct life history strategies underpin clear patterns of succession in microparasite communities infecting a wild mammalian host. *Under review, Molecular Ecology*. 10.22541/au.167032988.86806764/v1
- Jurburg, S. D., Buscot, F., Chatzinotas, A., Chaudhari, N. M., Clark, A. T., Garbowski, M., Grenié, M., Hom, E. F. Y., **Karakoç, C.**, Marr, S., Neumann, S., Tarkka, M., van Dam, N. M., Weinhold, A., and Heintz-Buschart, A. (2022). The community ecology perspective of omics data. *Microbiome*, 10(225). doi.org/10.1186/s40168-022-01423-8
- Clark, A., Mühlbauer, K., L., Hillebrand, H., and **Karakoç, C.** (2022). Measuring stability in ecological systems without static equilibria. *Ecosphere*, 13(12):e4328. doi.org/10.1002/ecs2.4328
- Clark, A., Arnoldi, J.-F., Zelnik, Y., Barabas, G., Hodapp, D., **Karakoç, C.**, König, S., Radchuk, V., Donohue, I., Huth, A., Jacquet, C., de Mazancourt, C., Mentges, A., Nothaaß, D., Shoemaker, L., Taubert, F., Wiegand, T., Wang, S., Chase, J., Loreau, M., and Harpole, S. (2021). General statistical scaling laws for stability in ecological systems. *Ecology Letters*, 24(7):1474–1486. doi/10.1111/ele.13760
- Saraiva, J. P., Worrlich, A., **Karakoç, C.**, Kallies, R., Chatzinotas, A., Centler, F., and Nunes da Rocha, U. (2021). Mining synergistic microbial interactions: A roadmap on how to integrate multi-omics data. *Microorganisms*, 9(4). doi.org/10.3390/microorganisms9040840
- **Karakoç, C.**, Clark, A. T., and Chatzinotas, A. (2020). Diversity and coexistence are influenced by time-dependent species interactions in a predator–prey system. *Ecology Letters*, 23(6). doi/pdf/10.1111/ele.13500
- **Karakoç, C.** (2019). Context dependency of community dynamics: Predator-prey interactions under ecological disturbances. *Ph.D. Thesis*, Leipzig University. <https://nbn-resolving.org/urn:nbn:de:bsz:15-qucosa2-341500>
- Sendek, A.*, **Karakoç, C.***, Wagg, C., Domínguez-Begines, J., Couto, Martucci de Couto, G., Van der Heijden, M. G., Naz, A. A., Lochner, A., Chatzinotas, A., Klotz, S., Gómez-Aparicio, L., and Eisenhauer, N. (2019). Drought modulates interactions between arbuscular mycorrhizal fungal diversity and barley genotype diversity. *Equal contribution. *Scientific Reports*, 9(1):1–15. doi.org/10.1038/s41598-019-45702-1

- **Karakoç, C.**, Radchuk, V., Harms, H., and Chatzinotas, A. (2018). Interactions between predation and disturbances shape prey communities. *Scientific Reports*, 8:2968. doi.org/10.1038/s41598-018-21219-x
- Ozbayram, E. G., Akyol, c., Ince, B., **Karakoç C.**, and Ince, O. (2018). Rumen bacteria at work: bioaugmentation strategies to enhance biogas production from cow manure. *Journal of Applied Microbiology*, 124(2):491–502. doi/full/10.1111/jam.13668
- **Karakoç, C.**, Singer, A., Johst, K., Harms, H., and Chatzinotas, A. (2017). Transient recovery dynamics of a predator–prey system under press and pulse disturbances. *BMC Ecology*, 17:13. <https://bmcecol.biomedcentral.com/articles/10.1186/s12898-017-0123-2>
- **Karakoç, C.** (2012). Population response to fluctuating temperature regimes – an analysis with a model microorganism. *M.Sc. Thesis*, University of Bayreuth. Can be downloaded at <https://drive.google.com/open?id=1G1qFInk2tTqpVSJmXC6x6KkmmvJ8uILH>

PRESENTATIONS

Presentations

- Contributed presentation (2020). Diversity and coexistence are influenced by time-dependent species interactions in a predator–prey system. ESA Annual Meeting, virtual.
- Contributed presentation (2019). Diversity and stability are directly linked to fluctuating species interactions in a predator–prey system. GfÖ, Münster, Germany.
- Contributed presentation (2015). Understanding community assembly mechanisms through integrative approaches, EEf-SiTE - Ecology at the Interface, 2015, Rome, Italy.
- Contributed presentation (2014). Understanding the role of species interactions under environmental change: Microbial model systems as tools in ecological theory. YoMo Workshop - Ecological modeling across disciplines, Hann. Münden, Germany
- Invited presentation (2014/2016). Patterns and processes under environmental fluctuations: Experiments with microbial model systems. University of Thessaly, Department of Biochemistry and Biotechnology, Larissa, Greece.

Posters

- Poster (2021). Community constrains in adaptation to stressors. ESA Annual Meeting, virtual.
- Posters (2018). (a) Resolving Complex Microbial Community Dynamics: A causality analysis with microbial model systems. (b) Impact of Nutrient Levels and Stoichiometry on Microbial Freshwater Community and Functioning in Microcosm Experiments. ISME17, Leipzig, Germany.
- Poster (2014). Transient dynamics of trophically interacting species after disturbance. HETEROCLIM: The response of organisms to climate change in heterogeneous environments, Loches, France.

PROFESSIONAL SKILLS

Computer programs

Proficient	R programming language, tidyverse, L ^A T _E X
Familiar with	Python, Bash, NetLogo, QGIS/ArcGIS, ImageJ

Lab

Proficient	Microcosms consisting of viruses, bacteria, protozoa
Familiar with	Grassland & green house experiments

Illustration/Science communication

Pen & paper, InkScape, Adobe Illustrator/InDesign Procreate, Affinity Designer

Languages

English	Fluent speaking & writing
German	Fluent speaking & writing
Turkish	Fluent speaking & writing

ACADEMIC MENTORING & TEACHING

Primary supervision

- Internship (2022). Stability of metabolic exchange and dormancy, Melih Ç., Indiana University.
- B.Sc. project (2020 – 2021). Effect of environmental noise on antibiotic and bacteriophage resistance evolution, Klara-Isabell G., Leipzig University.
- B.Sc. project (2020 – 2021). Fitness costs of antibiotic resistance in various environments, Joanna S., Leipzig University.
- Internship (2018 – 2019) and Master Thesis (2019–2020). Evolutionary rescue in complex communities, Alla K., Leipzig University.
- Internship (2014). Predator–prey interactions under disturbances, Jana H., University of Kassel.

Mentoring

- High school project (2021-2022). Complexity Effects Structural Stability: Using Protist Microcosms and Mathematical Modeling to Navigate Realism in Theoretical Ecology, Sylvia, G., OPRFHS IRDI, Chicago, IL.
- B.Sc. project (2021). Effect of environmental noise on microbial evolution, Philipp K., Leipzig University.
- PhD chapter (2019 – 2020). Mechanisms promoting co-existence of blood born parasites in African buffalo, Caroline G., Oregon State University.
- PhD project (2018 – 2020). Microbial communities of amphibian skin microbiomes, spread of pathogenic chytrid fungus, Adriana C., University of Toulouse.
- PhD project (2018 – 2021). Microbial communities and their interactions across trophic levels in mountain lakes, Judit L., Leipzig University.

Teaching

- Graduate course (2021-2023). Quantitative Biodiversity [↗](#) . Indiana University.
- Practical research training (2022-present). Microbiology graduate program rotation students, Biology undergraduates, Indiana University.
- Literature seminar (2020 – 2021). Microbial Ecology, Leipzig University.
- Practical training (2018 – 2021). Measuring microbial diversity, experimental evolution, R for data science, Leipzig University.

- Practical courses (2005 – 2008). General biology, Genetics, Molecular Genetics, Biochemistry, Animal Physiology, Microbiology, Introduction to Molecular Biology, Molecular Cell Biology, Cumhuriyet University.

RELEVANT ACTIVITIES

Symposium: Incorporating Dormancy and Rarity to Predict Community Dynamics and Stability Under Environmental Change 2023

Organizer *Accepted for ESA Annual Meeting 2023, Portland, OR*

Course: Origin of Life 2022

Participant *Complexity Explorer, Santa Fe Institute*

Workshop: GEMS Biology Integration Institute Bioinformatics 2022

Participant *Urbana, IL*

Workshop: Trait-Based Eco-Evolutionary Modeling 2019

Participant, led by Prof. Klausmeier *Leipzig, Germany*

Workshop: Filling in gaps in global understanding of ecological stability and coexistence 2019

Invited participation *Leipzig, Germany*

Workshop: an introduction to Bayesian statistics 2019

Participant, FlexPool travel grant *Münster, Germany*

Course: Introduction to regression models with spatial and temporal correlation R-INLA 2018

Participant, Highland Statistics Ltd., UFZ DEVELOP training grant *Leipzig, Germany*

Workshop: Eco-evolutionary dynamics in experimental microbial communities 2018

UFZ Controlling Chemicals' Fate invited speaker (Prof. Teppo Hiltunen) grant *Leipzig, Germany*

Minisymposium: Experimental evolution & community dynamics 2018

Participant, FlexPool travel grant *Tvärminne, Finland*

Winter school: Marine evolution – patterns and processes, Centre for Marine Evol. Bio. 2011

Participant, Swedish Royal Acadademy of Sciences travel award *Tjärnö, Sweden*

Modelling the fate of microbes in aquatic habitats and assessment of their associated risks 2010

Participant, ENB travel grant *Vienna, Austria*

Other graduate school activities 2013-2018

Courses, soft skill trainings [Link to file](#) *Leipzig, Germany*

Other graduate school activities 2009-2012

Courses, soft skill trainings [Link to file](#) *Bayreuth, Germany*

OUTREACH/SERVICE

Mentorship

- Science Olympiad Mentor (2022–present). Bloomington South High School, Bloomington, IN

Administrative

- Leadership (2022–present). IU Postdoc association Career Development Board.

Media interviews

- Interview (2018). Ökosystemforschung im Labor. Norddeutscher Rundfunk NDR.

Voluntary work

- Event organization (2022). Future faculty preparation conference, Indiana University.
- Community outreach (2021, 2022). Bacterial viruses, Science Fest, Indiana University.

- Social development (2020). Diversity, inclusion and equity working group, UFZ.
- Nature conservation activities (2000-2005) Biodiversity monitoring, Doga (BirdLife International partner), Turkey.
- Voluntary teaching (2004-2005). English, arts. Educational volunteers foundation of Turkey.
- Science philosophy and ethics (2004). Workshop, panel and public survey. Akdeniz University.
- Astronomy seminar series for non-astronomers (2000-2003) Physics department, Akdeniz University.

Memberships

- Ecological Society of America.

Peer reviews for Journals (20/year)

- American Naturalist, Applied and Environmental Microbiology, Biology Letters, Biology Communications, Communications Biology, Ecology, Ecology Letters, eLife, Frontiers in Microbiology, PLoS Biology, Scientific Reports.