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# G. OZAN BOZDAG

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<https://ozanbozdag.github.io>

## Education

2016 | Evolutionary Biology, PhD | Max-Planck Institute for Evolutionary Biology, Plön  
Germany

2010 | Molecular Biology and Genetics, MSc | Izmir Institute of Technology, Turkey

2006 | Biochemistry, BSc | Ege University, Izmir Turkey

## Experience

2024 – **Present** | Senior Research Scientist | Georgia Tech

2022 – **Present** | Adjunct Instructor | Georgia Tech

2020 – 2024 | Research Scientist II | Georgia Tech

2016 – 2020 | Postdoctoral Fellow | Georgia Tech

2008 – 2011 | Research/Teaching Assistant | Izmir Institute of Technology

## Research Interests

Origins of multicellularity, speciation genetics, evolution of selfish genetic elements,  
evolution of genome architecture, yeast genetics, experimental evolution.

## Computational Skills

Python, R, Unix bash, short and long-read genome and transcriptome data analysis.

## Major Prizes or Awards

### Prizes and Awards

2024 | Course Instructor Survey Honor Roll, Georgia Tech

2022 | Center for Microbial Dynamics and Infection Prize for Postdoc research, GTech

2019 | Best Talk in Evolution of Complex Life Conference, USA

2015 | Best Oral Presentation, EEBST Symposium, Turkey

2014 | Best Talk, EEBST Symposium, Turkey

2012-2016 | PhD Fellowship, Max-Planck Research School for Evo. Biology, Germany

## Membership in Professional Associations

Ecology and Evolutionary Biology Society | Member

## Participation as the Judge of the Work of Others

### Journal Reviews

Science Advances

eLife

Journal of Evolutionary Biology

Nature Communications

Genome Research

PLOS Genetics

Evolution

Molecular Biology Reports

### Conference Panels

2021 Ecology and Evolutionary Biology Symposium Chair

# Participation in Professional Meetings

## Invited Talks and Lectures (2018-present)

2024 Suddath Symposium, Georgia Tech: “A thousand days of change: Snowflake yeast’s path to multicellularity”

2023 Yildiz Technical University, Evolution 101 Seminars, “The evolution of multicellularity in a test tube”

2021 Aykut Kence Evolution Conference, METU: “Long-term evolution of multicellularity”

2021 Gregor Mendel Institute Weekly Seminars, Vienna Biocenter: “*De novo* evolution of macroscopic multicellularity”

2021 Evolutionary Genomics Winter School, Virtual Workshop: “Introduction to genome data analysis tools”

2019 Evolutionary Genomics Winter School, Ege University: “Introduction to bioinformatics”

2018 Evolutionary Genomics Winter School, Hacettepe University: “Introduction to Linux bash environment for genomics and transcriptomics”

## Conferences (2018-present)

2022 Evolution Meeting, Cleveland: “Experimental evolution of macroscopic multicellularity”

2019 Gordon Research Seminar, New Hampshire: “Oxygen and the experimental evolution of macroscopic multicellular size”

2018 Yeast Genetics Meeting at Stanford, California: “Oxygen and the evolution of multicellular size: hypothesis testing via long-term experimental evolution”

# Publications

## Journal Articles

Pineau R, Kahn PC, Lac DT, Denning M, Wong W, Ratcliff WC, Bozdag GO. Experimental evolution of multicellularity via cuboidal packing in fission yeast ***Evolution Letters*** (2024) [doi.org/10.1093/evlett/qrae024](https://doi.org/10.1093/evlett/qrae024)

Bozdag GO et al. Major biological innovations in the history of life on Earth. ***Astrobiology Journal*** (2024) <https://doi.org/10.1089/ast.2021.0119>

Pineau R, et al., Bozdag GO and Ratcliff WC. Emergence and maintenance of stable coexistence during a long-term multicellular evolution experiment. ***Nature Ecology & Evolution*** (2024) [doi.org/10.1038/s41559-024-02367-y](https://doi.org/10.1038/s41559-024-02367-y)

Montrose K, Lac DT, Burnetti AJ, Tong K, Bozdag GO, Hukkanen M, Ratcliff WC, Saarikangas J. Proteostatic tuning underpins the evolution of novel multicellular traits. ***Science Advances*** (2024) DOI: 10.1126/sciadv.adn27

Day TC, Zamani-Dahaj SA, Bozdag GO, et al. Entanglement in living systems. ***Physical Review X*** (2024) [doi.org/10.1103/PhysRevX.14.011008](https://doi.org/10.1103/PhysRevX.14.011008)

Bozdag GO, Zamani-Dahaj SA, et al. *De novo* evolution of macroscopic multicellularity. ***Nature*** (2023) [doi.org/10.1038/s41586-023-06052-1](https://doi.org/10.1038/s41586-023-06052-1)

Bozdag GO and Ono J. Evolution and Molecular Basis of Reproductive Isolation. ***Current Opinion in Genetics & Development*** (2022) [doi.org/10.1016/j.gde.2022.101952](https://doi.org/10.1016/j.gde.2022.101952)

Tong K and \*Bozdag GO, Ratcliff WC, Selective Drivers of Simple Multicellularity. ***Current Opinion in Microbiology*** (2022) [doi.org/10.1016/j.mib.2022.102141](https://doi.org/10.1016/j.mib.2022.102141)

Bozdag GO, Libby E, Pineau R, Reinhard C, Ratcliff WC, Oxygen suppression of macroscopic multicellularity. ***Nature Communications*** (2021).

Bozdag GO, Ono J, Denton J, Karakoc E, Hunter N, Leu JY, and Greig D. Breaking a species barrier by enabling hybrid recombination. ***Current Biology*** (2021) <https://doi.org/10.1016/j.cub.2020.12.038>

Pentz JT, Márquez-Zacarías P, Bozdag GO, Burnetti A, Yunker PJ, Libby E, & Ratcliff WC. Ecological advantages and evolutionary limitations of aggregative multicellular development. ***Current Biology*** (2020)

Telli M, Kulkoyluoglu O, Bozdag GO, Yavuzatmaca M. Comparative phylogenetic analyses of cave- and surface-water Ostracoda from northwest Anatolia based on mitochondrial CO-I. ***Cave and Karst Science*** (2016) 43(2):65-74

Bozdag GO & Greig D. The genetics of a putative social trait in natural populations of yeast. ***Molecular Ecology*** (2014) 23:5061-5071. DOI: 10.1111/mec.12904

Bozdag GO, Kaya A, Koc A, Noll GA, Prüfer D, Karakaya HC. Characterization of a cDNA from *Beta maritima* that confers nickel tolerance in yeast. ***Gene*** (2014) 538(2):251-7. doi: 10.1016/j.gene.2014.01.052.

Erbasol I, Bozdag GO, Koc A, Pedas P, Karakaya HC. Characterization of two genes encoding metal tolerance proteins from *Beta vulgaris* subspecies *maritima* that confers manganese tolerance in yeast. ***Biometals*** (2013) 26(5):795-804. doi: 10.1007/s10534-013-9658-7.

Atik AE, Bozdag GO., Akinci E, Kaya A, Koç A, Yalcin T. and Karakaya HC, 2011. Proteomic changes during boron tolerance in barley (*Hordeum vulgare*) and the role of vacuolar proton- translocating ATPase subunit E. ***Turkish Journal of Botany*** 35(4), pp.379-388.

Bozdag GO, Uluisik I, Gulculer GS, Karakaya HC, Koc A. Roles of ATR1 paralogs YMR279c and YOR378w in boron stress tolerance. ***Biochemical and Biophysical Research Communications*** (2011) 409(4):748-51. doi: 10.1016/j.bbrc.2011.05.080.

\* co-first authorship

## Preprints under review or accepted

Tong K, Datta S, et al., Bozdag GO, Ratcliff WC. Whole-genome duplication in the Multicellularity Long Term Evolution Experiment ***bioRxiv*** (2024) <https://doi.org/10.1101/2024.04.18.588554> (*Under revision for Nature*).

Narayanasamy, N, Bingham E, Fadero T, Bozdag GO, et al. Metabolically-driven flows enable exponential growth in macroscopic multicellular yeast. ***bioRxiv*** (2024) [doi.org/10.1101/2024.06.19.599734](https://doi.org/10.1101/2024.06.19.599734) (*Under revision for Science Advances*).

Bozdag GO, Ono J, Denton J, Karakoc E, Hunter N, Leu JY, and Greig D. Engineering recombination between diverged yeast species reveals speciation genes. ***bioRxiv*** (2019) [doi.org/10.1101/755165](https://doi.org/10.1101/755165) (*Under revision for Genes*).

## Press Coverage About My Work

**The New York Times** (2023): An experiment repeated 600 times finds hints to evolution's secrets (<https://www.nytimes.com/2023/05/10/science/yeast-evolution-cells-snowflakes.html>)

**The Atlantic** (2023): One of evolution's biggest moments was re-created in a year (<https://www.theatlantic.com/science/archive/2023/05/multicellular-organism-evolution-yeast-experiment/674030/>)

**Science Daily** (2023): A journey to the origins of multicellular life (<https://www.sciencedaily.com/releases/2023/05/230510120531.htm>)

**NPR All Things Considered** (2023): A science news roundup with Short Wave (<https://www.npr.org/2023/05/18/1176967382/a-science-news-roundup-with-short-wave>)

**National Geographic** (2021): Evolving globs of yeast may unlock mysteries of multicellular life (<https://www.nationalgeographic.co.uk/science-and-technology/2021/09/evolving-globs-of-yeast-may-unlock-mysteries-of-multicellular-life>)

**Quanta Magazine** (2021): Single cells evolve large multicellular forms in just two years (<https://www.quantamagazine.org/single-cells-evolve-large-multicellular-forms-in-just-two-years-20210922/>)

**Science Daily** (2021): Did Earth's early rise in oxygen help multicellular life evolve? (<https://www.sciencedaily.com/releases/2021/05/210518205459.htm>)

**NASA Research Highlight** (2021): A rise in oxygen may not be linked to large, multicellular life (<https://astrobiology.nasa.gov/news/a-rise-in-oxygen-may-not-be-linked-to-large-multicellular-life/>)

## PhD Committee Membership

Rozenn Pineau, Quantitative Biosciences Program (2018-2023)

Autumn Peterson, Biological Sciences (2020-present)

Sayantana Datta, Quantitative Biosciences Program (2022-present)

Maryam Heiri, Quantitative Biosciences Program (2023-present)

Luis Perez, Quantitative Biosciences Program (2024-present)

## Faculty Mentorship for BIOS 4690 Manuscripts

Vivian Cheng, School of Biological Sciences, Georgia Tech

Daniella Haas, School of Biological Sciences, Georgia Tech

Rishi Nair, School of Biological Sciences, Georgia Tech

Li Ying, School of Biological Sciences, Georgia Tech

Prerna Kotil, School of Biological Sciences, Georgia Tech

Kristine Yin, School of Biological Sciences, Georgia Tech

Mia Denning, School of Biological Sciences, Georgia Tech

## Teaching Activity

<b>Institution, year</b>	<b>Course title</b>	<b>Number of students</b>	<b>Student evaluations score for Dr. Bozdog</b>
Georgia Tech, Fall 2024	Microbiology Lab (BIOS-3381)	48 students	ongoing
Georgia Tech, Spring 2024	Evolutionary Biology (BIOS-3600 / BIOL-6600)	66 students	4.85/5
Georgia Tech, Fall 2023	Evolutionary Biology (BIOS-3600 / BIOL-6600)	70 students	4.7/5
Georgia Tech, Spring 2023	Evolutionary Biology (BIOS-3600 / BIOL-6600)	98 students	4.7/5
Georgia Tech, Fall 2022	Communicating Biological Research (BIOS-4460)	9 students	4.6/5