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

2024 – 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, Georgia Tech

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

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”

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

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

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

Bozdag GO, Zamani-Dahaj SA, *et al*. *De novo* evolution of macroscopic multicellularity. ***Nature*** (2023) 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

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

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)

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

Telli M, Kulkoyluoglu O, Bozdag GO, Yavuzatmaca M. Comparative phylogenic 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, 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 review for Nature*).

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 (*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)

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)

Teaching Activity

Institution, year	**Course title**	**Number of students**	**Student evaluations score for Dr. Bozdag**
Georgia Tech, Spring 2024	Evolutionary Biology (BIOS 3600/BIOL6600)	66 students	4.85/5
Georgia Tech, Fall 2023	Evolutionary Biology (BIOS 3600/BIOL6600)	70 students	4.7/5
Georgia Tech, Spring 2023	Evolutionary Biology (BIOS 3600/BIOL6600)	98 students	4.7/5
Georgia Tech, Fall 2022	Communicating Biological Research (BIOS4460-D)	9 students	4.6/5

PhD Committee Membership

Rozenn Pineau, Quantitative Biosciences Program (2018-2023)

Autumn Peterson, Quantitative Biosciences Program (2020-present)

Sayantan Datta, Quantitative Biosciences Program (2022-present)

Maryam Heiri, Quantitative Biosciences Program (2023-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

Mia Denning, School of Biological Sciences, Georgia Tech