

SONER KARABULUT

PhD Student in Medical Biology

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PROFILE

PhD student in Medical Biology with research experience in hepatocellular carcinoma, molecular cancer biology, RAS/MAPK signaling, EMT plasticity, and rare disease-associated signaling. Skilled in mammalian cell culture, CRISPR/Cas9-based gene editing, recombinant DNA techniques, RNA and protein expression analysis, and functional *in vitro* assays, including proliferation, migration, invasion, and cell death studies. Interested in the molecular mechanisms underlying cancer progression, disease-associated variants, and signaling-based therapeutic targets.

EDUCATION

PhD in Medical Biology | 2024-Present

– Karadeniz Technical University, Institute of Health Sciences, Trabzon, Türkiye | GPA: 3.58/4.00

MSc in Medical Biology | 2020-2024

– Karadeniz Technical University, Institute of Health Sciences, Trabzon, Türkiye | GPA: 3.02/4.00 | Thesis: Investigation of the Transcriptional Effects of LZTR1 in Hep3B Hepatocellular Carcinoma Cell Line | Advisor: Assist. Prof. Dr. Gökhan Yıldız | Funding: Health Institutes of Turkey (TUSEB-A Project)

BSc in Biology | 2016-2020

– Karadeniz Technical University, Faculty of Science, Trabzon, Türkiye | GPA: 3.72/4.00 | Honors: Ranked 1st in the Department of Biology and 2nd in the Faculty of Science | Graduation thesis: Determination of insecticidal activities of cathepsin and chitinase proteins of *Malacosoma neustria nucleopolyhedrovirus* | Advisor: Prof. Dr. Remziye Nalcacıoğlu | Funding: TUBITAK-2209-A

RESEARCH INTERESTS

- Molecular cancer biology
- RAS-MAPK signaling
- Hippo signaling pathway
- Protein-protein interactions
- Genome editing
- Recombinant DNA technology
- Hepatocellular carcinoma (HCC)
- EMT and hybrid EMT plasticity
- Apoptosis and cell-cycle regulation
- Functional genomics and transcriptomics
- *In vitro* disease modeling
- Rare disease genetics

TECHNICAL SKILLS

Molecular Biology

CRISPR/Cas9n system • qRT-PCR • Restriction enzyme cloning • Gateway cloning • Sanger sequencing • DNA isolation (plasmid and genomic) • RNA isolation (mammalian cell lines)

Protein & Biochemistry

Protein isolation (bacterial and mammalian cells) • Protein expression and purification • SDS-PAGE • Western blot (semi-dry and dry) • Coomassie Brilliant Blue staining • Co-immunoprecipitation • Baculovirus expression system (Bac-to-Bac)

Cell Biology & Functional Assays

Mammalian cell culture • Stable cell line generation (HEK293 Flp-In system) • Recombinant lentivirus production • Wound healing assay • Migration and invasion assays • Colony formation assay • Cytotoxicity assays (MTT, NRU, WST-1) • Flow cytometry (cell cycle and Annexin V) • Immunofluorescence

RESEARCH EXPERIENCE

Department of Medical Biology, Faculty of Medicine, Karadeniz Technical University, Trabzon, Türkiye | 2020-Present

Pharmaceutical Toxicology and Cell Culture Laboratory, Faculty of Pharmacy, Karadeniz Technical University | 2020

Drug and Pharmaceutical Technology Application and Research Center (ILAFAR), Karadeniz Technical University | 2020

Mammalian Cell Culture Laboratory, Department of Molecular Biology and Genetics, Faculty of Science, Karadeniz Technical University | 2019-2020

Microbiology Research Laboratory, Department of Biology, Faculty of Science, Karadeniz Technical University | 2018-2020

PROJECTS

Years	Project	Funding	Role
2018-2020	Expression of the Iridovirus Iridoptin Gene (389L) in the Baculovirus Expression Vector System.	Higher Education Institutions Supported Project	Research Intern
2019-2020	Determination of insecticidal activities of cathepsin and chitinase proteins of <i>Malacosoma neustria nucleopolyhedrovirus</i> .	TUBITAK-2209-A	Executive and Researcher
2020-2022	Investigation of Non-immune Hydrops Fetalis Related Signaling Pathway and Drug Candidates.	Health Institutes of Turkey (TUSEB)	Project Assistant
2021-2022	Investigation of the Effect of BACK-2 Domain of LZTR1 Protein on RAS Signaling Pathway Associated with Non-immune Hydrops Fetalis Disease.	TUBITAK-3501	Scholarship Student
2023-2024	Investigation of the Transcriptional Effects of LZTR1 in Hepatocellular Carcinoma by Comparative RNA Sequencing Analysis in LZTR1 Gene Knockout and Parental Hep3B Cells.	Health Institutes of Turkey (TUSEB-A)	Scholarship Student
2023	Investigation of the Interactions of LZTR1 Protein with AIFM3 and NUA2 Proteins.	Higher Education Institutions Supported Project	Scholarship Student
2024-2025	Investigation of the Functional Effects of NHSL3 on Sorafenib Efficacy, RAS Signaling Pathway Activity, and Certain Neoplastic Cell Characteristics in Huh-7 Hepatocellular Carcinoma Cells.	Health Institutes of Turkey (TUSEB)	Project Assistant
2024-Present	Investigation of the Roles of LLGL1 in Huh-7 Cell Line and Its Interaction with Canonical RAS Proteins.	Higher Education Institutions Supported Project	Researcher
2024-Present	Investigation of the functional effects of the LZTR1 BACK-2 Domain on EMT and cell migration.	Higher Education Institutions Supported Project	Researcher
2024-Present	Investigation of the effects of LZTR1 on the intracellular localization patterns of SUZ12, ZBTB12, TRAF4, and ZSCAN30 proteins.	Higher Education Institutions Supported Project	Researcher
2025-Present	Deep Learning-Based Analysis of Sperm Functions and Molecular Biomarkers in Oligoasthenoteratozoospermia Syndrome.	TUBITAK-1001	Scholarship Student

PUBLICATIONS

1. **Karabulut, S.**, & Celik Uzuner, S. (2020). A Preliminary Study: The Selective Effect of Bee Venom on Inhibition of Cell Migration in Metastatic Breast Cancer Cells Over Normal Cells in Comparison with Cisplatin. *Journal of Apitherapy and Nature*, 3(2), 87-98. doi.org/10.35206/jan.835042
2. Atak, M., Yigit, E., Huner Yigit, M., Topal Suzan, Z., Yılmaz Kutlu, E., & **Karabulut, S.** (2024). Synthetic and non-synthetic inhibition of ADAM10 and ADAM17 reduces inflammation and oxidative stress in LPS-induced acute kidney injury in male and female mice. *European Journal of Pharmacology*, 983, 176964. doi.org/10.1016/j.ejphar.2024.176964
3. Yigit, E., Yigit, M. H., Atak, M., Suzan, Z. T., **Karabulut, S.**, Yıldız, G., & Deger, O. (2024). Kaempferol reduces pyroptosis in acute lung injury by decreasing ADAM10 activity through the NLRP3/GSDMD pathway. *Food Bioscience*, 62, 105140. doi.org/10.1016/j.fbio.2024.105140
4. Erdem, M., Erdem, S., Karahan, S. C., Alver, A., **Karabulut, S.**, & Yıldız, G. (2025). The brain-derived neurotrophic factor mimetic 7,8-dihydroxyflavone mitigates NLRP3 inflammasome activation and GSDMD-mediated pyroptosis and enhances the negative regulatory pathways of pyroptosis in microglia. *Journal of Neuroimmunology*, 406, 578684. doi.org/10.1016/j.jneuroim.2025.578684
5. Yıldız, G., **Karabulut, S.**, Dincer, T., Toraman, B., & Kalay, E. (2025). LZTR1 interacts with AIFM3 protein and negatively regulates Ras signaling by downregulating SHOC2 and phosphorylated p90RSK protein levels in apoptosis. *Interdisciplinary Medical Journal*, 16(55), 92-99. doi.org/10.17944/interdiscip.1659191
6. Yıldız, G., **Karabulut, S.**, Dincer, T., Toraman, B., & Kalay, E. (2025). AIFM3 Has Pro-apoptotic, Whereas LZTR1 Has Bilateral Functions in the Intrinsic Apoptosis Pathway. *Gumushane University Journal of Health Sciences*, 14(3), 932-937. doi.org/10.37989/gumussagbil.1665825
7. Huner Yigit, M., Okcu, O., Atak, M., **Karabulut, S.**, Yıldız, G., & Yigit, E. (2025). Modulation of Oxidative and ER Stress Pathways by the ADAM17 Inhibitor GW280264X in LPS-Induced Acute Liver Injury. *Life*, 15(12), 1877. doi.org/10.3390/life15121877
8. Yıldız, G., **Karabulut, S.**, Uzun, U., Obut, O., Eldem, V., Dincer, T., & Toraman, B. (2026). LZTR1 Loss Reduces Vimentin Expression and Motility in Hep3B Hepatocellular Carcinoma Cells. *International Journal of Molecular Sciences*, 27(4), 1866. doi.org/10.3390/ijms27041866
9. Yıldız, G., **Karabulut, S.**, Dincer, T., & Toraman, B. (2026). Loss of LLGL1 Elevates EGFR/RAS/MAPK Signaling and Remodels EMT Markers in Huh-7 Hepatocellular Carcinoma Cells. *International Journal of Molecular Sciences*, 27(7), 2959. doi.org/10.3390/ijms27072959

PRESENTATIONS

1. **Karabulut, S.**, Yıldız, G. The resistance-conferring effect and mechanism of the Noonan syndrome-associated homozygous LZTR1 p.I821T mutation against hydrogen peroxide-induced apoptosis in HEK293 cells. Oral presentation, 25th National Biology Congress, 13-15 July 2023, Izmir, Türkiye.
2. **Karabulut, S.**, Yıldız, G. Interaction of LZTR1 and NUA2 Proteins and Their Effects on Mitochondrial Apoptosis Pathway. Oral presentation, XVIII Medical Biology and Genetics Congress, 26-29 October 2023, Ankara, Türkiye.

SCHOLARSHIPS & FELLOWSHIPS

- TUBITAK 2211-A National PhD Scholarship Program, 2024-Present.
- TUBITAK 2250 Graduate Scholarships Performance Program, 2026.

PROFESSIONAL MEMBERSHIPS

- Medical Biology and Genetics Society of Turkey, 2023-Present.
- Biologists Association of Turkey, 2022-Present.

AWARDS

- Best Oral Presentation Award (1st Place), XVIII Medical Biology and Genetics Congress, Ankara, Türkiye (October 2023).

CERTIFICATES

- Certificate on the Use of Laboratory Animals, Karadeniz Technical University, Trabzon, Türkiye (2022).