

MUHAMMED FATİH KARAKAYA

PhD Student | GPCR Structural Biology and Drug Discovery

Istanbul, Türkiye | +90 537 772 3646 | edu.mfatih@gmail.com
github.com/karakayafm | linkedin.com/in/glutamicacid



PROFILE

PhD student in molecular biology and genetics with research experience in GPCR structural biology, computational drug discovery, and experimental receptor characterization. Current work focuses on orphan receptor deorphanization using complementary in silico and in vitro methods.

EDUCATION

ONGOING

PhD Student, Molecular Biology and Genetics

Boğaziçi University, Istanbul, Türkiye

- Advisors: Assoc. Prof. Dr. Necla Birgül-Iyson and Prof. Dr. Serdar Durdağı

2020

Master of Science, Neurophysiology

Eskişehir Osmangazi University, Institute of Health Sciences, Türkiye

2017

Bachelor of Science, Biology

Anadolu University, Faculty of Science, Türkiye

CURRENT RESEARCH AND AFFILIATIONS

CURRENT

Researcher, Boğaziçi University Center for Targeted Therapy Technologies (Boğaziçi CT³)

Boğaziçi University, Istanbul, Türkiye

- Doctoral research on orphan receptor deorphanization using in silico and in vitro methods.

CURRENT

PhD Student and Member, Cancer Signaling Laboratory

Department of Molecular Biology and Genetics, Boğaziçi University

CURRENT

PhD Student, Durdağı Lab

Computational medicinal chemistry and drug discovery using protein structures

FUNDED RESEARCH PROJECTS

2025–

Deorphanization of an Orphan Receptor Expressed in the Brain Using In Silico and In Vitro Methods

Researcher | Boğaziçi University BAP Doctoral Project 25B01D1 | PI: Necla Birgül-Iyson

2024–

Identification of Asian Tiger Mosquito Receptors Interacting with Cry4Ba and Cry11Aa Toxins

Project Scholar | TÜBİTAK 1001, Project 123Z928 | PI: Gökhan Gün

2023–

Functional Characterization of the Orphan GPCR GPR141

Project Scholar | TÜBİTAK 1001, Project 122Z988 | PI: Necla Birgül-Iyson

ORAL PRESENTATIONS

- 25–26 JUN 2026** **Evaluating AI Docking Performance for Drug Discovery in Aminergic GPCRs**
Oral presentation | 10th IBB-PAN PhD Students' Symposium, Warsaw, Poland
- JUL 2019** **Computational Approaches Towards Tyrosine Receptor Kinase-B Agonists**
FENS Regional Meeting, Belgrade, Serbia

TRAINING AND WORKSHOPS

Selected EuroCC Türkiye / EuroCC4SEE and TÜBİTAK ULAKBİM training activities

- 27 MAR 2026** **Dialogues in the Midst: Accessing Long Time and Large Length Scales: Coarse-Grained Simulations**
Intermediate practical training | Sabancı University Altunizade Digital Campus, Istanbul
- 18 MAR 2026** **Computational Fluid Dynamics (CFD) Simulations on TRUBA**
Online workshop | TÜBİTAK ULAKBİM and Middle East Technical University
- 17 FEB 2026** **Applications of Molecular Modeling and Simulations in Polymer Science**
Online workshop
- 14 OCT 2025** **De Novo Peptide Design with RFdiffusion, a Generative Model**
Intermediate and advanced online training | TÜBİTAK ULAKBİM and İTÜ-UHeM
- 9–10 APR 2025** **Exploring Biomolecular Modeling and Simulations**
Lecture and practical training | Sabancı DX Digital Campus, Istanbul / hybrid
- 14 OCT 2024** **Dialogues in the Midst: Computational Design of Fluorescent Biosensors**
Practical training | Sabancı University Altunizade Digital Campus, Istanbul
- 20 MAR 2024** **Dialogues in the Midst: Mapping the Protein Landscape with Metadynamics**
Theory and practical training | Sabancı University Altunizade Digital Campus, Istanbul

THESES

- M.Sc.** **Investigation of the Pharmacokinetic Properties and Theoretical Chemical Activities of 7,8-Dihydroxyflavone and 4'-Dimethylamino-7,8-Dihydroxyflavone**
Eskişehir Osmangazi University
- B.Sc.** **Inducibility of the Tetrahymena thermophila MTT-1 Promoter During 24 Hours at pH 5**
Anadolu University

CERTIFICATE

- **Certificate of Attendance, 7th FENS Regional Meeting (FENS FRM 2019)**, Belgrade, Serbia

PREVIOUS RESEARCH PROJECTS

RESEARCH ASSISTANT	Effects of Vasoactive Intestinal Peptide on α-Synuclein Accumulation and Neurogenesis <i>Experimental Parkinson's disease models induced by rotenone and 6-OHDA; striatum and substantia nigra</i>
RESEARCH ASSISTANT	Effects of VIP and PACAP Against Amyotrophic Lateral Sclerosis Pathology <i>Early and progressed disease stages</i>
RESEARCH ASSISTANT	Pharmacokinetic and Theoretical Chemical Analysis of 7,8-DHF and 4'-DMA-7,8-DHF <i>Integrated experimental and computational investigation</i>

RESEARCH INTERESTS AND COMPUTATIONAL SKILLS

GPCR biology deorphanization of orphan receptors; receptor activation; G protein signaling	Drug discovery using protein structures molecular docking; virtual screening; analysis of protein and ligand interactions
Molecular simulation molecular dynamics; enhanced sampling; conformational and trajectory analysis	Scientific computing Linux and HPC workflows; data analysis with Python; tools for reproducible research

LABORATORY TECHNIQUES

- Immunohistochemical analysis
 - Genotyping
 - Western blotting
 - Basic neurophysiology and molecular biology laboratory workflows
- Microdialysis and microinjection
 - Rodent surgery
 - Electrophoretic techniques

LANGUAGES

English: B2 to C1 (CEFR)

REFEREES

Assoc. Prof. Dr. Necla Birgül-Iyison Department of Molecular Biology and Genetics Boğaziçi University birgul@bogazici.edu.tr +90 212 359 7284	Prof. Dr. Serdar Durdağı Dean, Faculty of Pharmacy Bahçeşehir University serdar.durdagi@bau.edu.tr +90 216 579 8217
--	---