SEMA NUR BOZDAG

PERSONAL INFORMATION

ADDRESS: İstanbul, Türkiye

EMAIL: Semanurboz00@gmail.com **PHONE:** +905541751538

LinkedIn: www.linkedin.com/in/sema-nur-bozdağ-159ba9203

GitHub: SNB-bioinfo (Sema Nur Bozdağ)

Blog: SciPeak — Bilimi okunur, kodu görünür kılıyoruz

EMPLOYMENT

2023-2024 Molecular Biologist, **Sapiens Genetics**, İstanbul, Türkiye

EDUCATION

2024-2026 Master of Science (M.Sc.) in Bioinformatics and System Biology, **İstanbul University,** İstanbul, Türkiye
Assessment of *in vitro* Mouse Embryo Development with Deep Learning | Advisor's: Asst. Prof. Ali Cihan Taskın, Asst. Prof. Murat Gezer

2018-2022 Bachelor of Science (B.Sc.) in Molecular Biology and Genetics, **Balıkesir University,** Balıkesir, Türkiye
Silecing of KLK4 Gene with shRNA | Advisor: Prof. Feray Kockar

RESEARCH INTEREST

Computational Biology, Artificial Intelligence for Science, Machine Learning, Embryology, Molecular Dynamics, Developmental Biology, Omic Data, Biophysical Modelling, Biological Simulation.

AWARDS & ACHIEVEMENTS

May 2026 1st Place, Sabancı University & InsiderOne Hackathon

- Developed NeuroPass: an end-to-end ML system for predicting blood–brain barrier permeability and ADMET properties from molecular data.
- Designed a two-layer architecture combining ensemble ML models with rule-based explainability and LLM integration.
- Achieved AUC-ROC: 0.94 with dynamic consensus ensemble and toxicity screening.
- Built and deployed containerized FastAPI services with real-time inference.

Tech Stack: Python, FastAPI, scikit-learn, LangChain, Docker

RESEARCH EXPERIENCE

Graduate Researcher | Assessment of *in vitro* mouse embryo development with deep learning, Istanbul University (2025 – Present)

- Developing a deep learning-based framework for non-invasive assessment of in vitro mouse embryo development.
- Designing a multi-stage workflow that performs embryo image segmentation followed by quality classification using microscopy images.
- Developing fusion deep learning models to integrate complementary image-derived features for embryo quality assessment.
- Evaluating morphological characteristics of preimplantation mouse embryos to classify developmental quality and competence.
- Applying Explainable AI (XAI) techniques to interpret model predictions, visualize decision-making processes, and improve model transparency.
- Contributing to the development of reliable and interpretable AI-assisted embryo assessment systems for assisted reproductive technologies.

Graduate Researcher | Collaborative Research Projects (2024-2025)

Project 1 – Boron-Supplemented Culture Media & Gene Expression

- Investigated the biological effects of boron supplementation on tissues of offspring born following embryo transfer.
- Conducted RNA isolation from mouse tissue samples followed by gene expression analysis using qPCR.
- Performed weekly monitoring and systematic weight measurements of mice to track developmental growth.

Project 2 – Assisted Reproduction & Embryo Collection

- Contributed to a graduate thesis by supporting mouse hormone injections and embryo retrieval procedures.
- Assisted in *in vitro* mouse embryo collection and handling for reproductive experiments.

Project 3 – IVF and HomeCage Behavioral Analysis

- Coordinated weekly experimental workflows, covering hormone injections, embryo retrieval, and culture media preparation.
- Tracked *in vitro* embryo development stages and monitored the growth of IVF-born offspring.
- Conducted longitudinal behavioral monitoring using the HomeCage system, performing daily video recording and data analysis.

Undergraduate Researcher | Gene Silencing (RNAi) Balikesir University (2022)

- Designed shRNA sequences to target and silence the KLK4 gene.
- Performed molecular cloning, transformation, and cell culture experiments to validate gene knockdown.
- Performed statistical analysis of gene expression levels post-transfection.

Employment | Dec 2023 – Sep 2024 | Molecular Biologist Sapiens Genetics, Istanbul, Türkiye

- Conducted genetic analysis for hereditary cancers using MLPA, Single Gene testing, and CES methods.
- Analyzed genetic data and prepared clinical diagnostic reports.

Internships | Jan 2022 – Feb 2022 | Gene and Cell Therapy Center Akdeniz University, Antalya, Türkiye

- Investigated obesity-induced blindness using adenovirus vectors in experimental animal models.
- Performed cell culture techniques including iPSC (Induced Pluripotent Stem Cell) culture.
- Assisted in tissue fixation and immunohistochemistry protocols.

CERTIFICATES

Dec 2025	Cryopreservation in Assisted Reproductive Technologies, RBMO
Nov 2025	Fundamental principles in cryopreservation, Marc Van den Bergh, QUARTEC
Sep 2025	Mature Thinking: Innovations in IVM, RBMO
Sep 2025	6.Natıonal Laboratuary Animals Congree, Aksaray University
July 2025	AI: New World, TRIA
Jan 2025	Certificate of Use of Experimental Animals, Acıbadem University
Sep 2024	Genetic Treatment Approaches Training- Cihan Taştan, Udemy
May 2024	XIV. HORIZONS, Bilkent University
Aug 2022	Introduction to Python, Global AI Hub
Jul 2021	Online internship participation certificate, KUBİYOGEN
May 2021	1st Genetics Congress, Genetikce
Apr 2021	2nd National Molecular Biology and Genetics Student Congress, BAUNGEN
Apr 2021	Biotech izmir, IEEE EGE Engineering in Medicine & Biology Society
Mar 2019	Bartın Project Market, Bartın University

LABORATORY SKILLS

Molecular Biology & Reproductive Biology Techniques:
Embryo collection, embryo transfer (N-set), embryo vitrification, RNA isolation, qPCR, tissue fixation and paraffin embedding, solution preparation, animal handling and hormone administration (superovulation).

Cell and Molecular Techniques:
Cell culture, recombinant DNA cloning, Western blot analysis, iPSC culture.

COMPUTATIONAL SKILLS

Programming & Data Analysis:
Python

Artificial Intelligence & Machine Learning:
Deep learning, image classification, PyTorch, explainable AI (XAI)

Bioimage Analysis & Tools:
ImageJ, GraphPad Prism, GitHub, MS Office Suite

LANGUAGE SKILLS

TURKISH: Native ENGLISH: B2