

DIMITRA BAIRA

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EDUCATION

PhD Candidate

Sep 2026 – Present

*Department of Biotechnology, School of Applied Biology and Biotechnology
Agricultural University of Athens, Greece*

- Research: In silico discovery of therapeutic targets and pathogenic mechanisms in pulmonary fibrosis, and drug discovery

MSc in Biochemistry

2026

Ludwig-Maximilians-Universität Munich, Germany

- Thesis: “Effects of Dexamethasone on Human Testicular Peritubular Cells: A Multiomics Analysis of Treatment and Recovery”

BSc in Chemistry and Biochemistry

2023

Ludwig-Maximilians-Universität Munich, Germany

- Thesis: “The Biological Effect of Nanostructured Titanium Dioxide on Cancer and Normal Cells”

RESEARCH EXPERIENCE

Ludwig-Maximilians-Universität Munich

Sep 2025 – Apr 2026

Mayerhofer Lab (Cell Biology) & Fröhlich Lab (Proteomics) – MSc Researcher & Research Assistant

- Designed and executed a multi-omics study on human testicular peritubular cells (HTPCs) treated with dexamethasone; pending first-author publication (2026)
- Performed LC–MS/MS analytical workflows including sample preparation, data acquisition, and validation
- Processed and integrated scRNAseq and proteomics datasets using Python, R, and Perseus
- Performed extensive bioinformatic analysis and visualisation including dimensionality reduction (PCA, UMAP, t-SNE), differential expression, GO enrichment, Proteomaps, and a wide range of additional multiomics outputs
- Post-thesis: continued as Research Assistant for two months for in-depth data evaluation and analysis
- Presented at DVG Meeting, Munich, Feb 2026 (Flashtalk + Poster)

Hellenic Pasteur Institute

Jun 2024 – Aug 2024

Laboratory of Immunology

- Characterised cell-penetrating natural antibodies (CPAbs) — a subpopulation of natural IgG antibodies — and tested their biological functions on benign and malignant mesothelial cell lines
- Analysed cell penetration capacity by immunofluorescence using confocal microscopy; assessed apoptotic effects via Annexin-V/PI double staining and FACS analysis
- Full documentation under controlled laboratory conditions ensuring reproducibility and traceability

Hellenic Pasteur Institute

Apr 2024 – May 2024

Laboratory of Molecular Genetics

- Studied demyelination and glial responses in the cuprizone mouse model using indirect immunofluorescence for MBP, Iba1, and GFAP on whole-brain sections
- Acquired and analysed high-resolution confocal images (SP8 Leica) using ImageJ/Fiji to quantify myelin loss, microgliosis, and astrogliosis across brain regions
- Performed genotyping of transgenic mouse lines via DNA isolation, PCR amplification, and gel electrophoresis

Ludwig-Maximilians-Universität Munich

Nov 2023 – Dec 2023

Heilbronner Lab – Microbiome Integration and Virulence of Pathogens

- Standardised in-vitro assays investigating interaction of nasal commensals with human surface proteins
- Quantitative data evaluation and accurate documentation of experimental procedures

Max Planck Institute

May 2023 – Jul 2023

Research Group “DNA Hybridnanomaterials”

- Investigated endosomal escape of DNA origami nanostructures through perforin-2 pores in HeLa cells using confocal live-cell imaging
- Prepared and characterised silicified DNA origami rods using TEM, agarose gel electrophoresis, and multi-fluorophore intracellular tracking; prepared samples for AFM analysis
- Assessed cytotoxicity and endosomal compartmentalisation using live/dead staining and organelle trackers

Max von Pettenkofer-Institute

Oct 2021 – Mar 2023

Assistant in Virological Diagnostics

- Routine diagnostic testing under strict SOPs and GMP-aligned procedures
- Controlled handling of biological samples with full documentation in a regulated environment

National Medical School & Kapodistrian University

Mar 2022 – Oct 2022

Histology-Embryology Lab, Molecular Carcinogenesis Group

- Synthesised silver-modified TiO₂ nanoparticles (Ag/TiO₂ NPs) via sol-gel and hydrothermal methods and characterised their physicochemical properties using dynamic light scattering and micro-Raman spectroscopy
- Investigated anticancer potential by assessing cytotoxicity and cell proliferation across multiple cancer (HeLa, A549, MDA-MB-231) and normal cell lines (FF95, HEK293) using MTT assay and Neubauer hemocytometer cell counting

SKILLS

Computational & Data Analysis

- Python, R, Perseus – proteomics and multiomics data processing, statistical analysis
- scRNAseq data analysis: quality control, clustering, differential expression, pathway analysis
- Volcano plots, GO enrichment, Proteomaps, multi-omics data integration
- Microsoft Office (Word, Excel, PowerPoint), MATLAB

Languages

- Greek (Native) | English (Full professional proficiency) | German (Full professional proficiency)