Marina-Agapi Athanasouli, PhD

Bioinformatics researcher with interdisciplinary training in computational and molecular biology and experience with diverse large-scale datasets across multiple organisms. Proficient mainly in R, Python and Bash, with expertise in genomic, transcriptomic and metagenomic data analysis. I have a strong interest in the application of ML approaches to biomedical research.

Education

Ph.D in Bioinformatics. *University of Tübingen (DE).* **Apr 2019 - Dec 2024**

◇ Thesis title: Interspecies interactions between the nematode *Pristionchus pacificus* and bacterial food sources

◇ Analysis and integration of multi-omics data, Phylogenetics, Systems Biology, Comparative Genomics

MSc in Bioinformatics. *National and Kapodistrian University of Athens (GR).* **Oct 2016 - Mar 2019**

◇ Thesis title: *Evaluation of representations for the classification of genomic sequences*

◇ Computational Biology with a focus on sequence representation and ML algorithm implementation

Diploma (BSc/MSc) in Agriculture. *Agricultural University of Athens (GR).* **Sep 2009 - Jul 2016**

Specialization: Plant Breeding and Biometry

◇ Thesis title: *Preliminary evaluation of the genetic diversity in bitter vetch (V. ervilia L.) landraces with microsatellites*

◇ Agronomy, molecular plant breeding, phylogenetics

Research Experience

Postdoctoral researcher/Bioinformatician. **Apr 2025 - Present**

Translational Microbiome Research Group, Department of Inner Medicine I & M3 Institute, Universitätsklinikum Tübingen (DE).

◇ Metagenomic analysis and multi-omics integration.

Doctoral researcher. **Apr 2019 - Dec 2024**

Department for Integrative Evolutionary Biology, Max Planck Institute for Biology Tübingen (DE).

◇ Generation and analysis of NGS data, algorithm implementation and optimization, network construction to visualize and interpret relationships within large-scale multi-omics datasets, bacterial and nematode culturing.

MSc researcher. **Jun 2017 - Mar 2019**

Software and Knowledge Engineering Laboratory, NCSR "Demokritos" (GR).

◇ Implementation of representations for genomic sequences combined with supervised machine learning classification algorithms to determine their efficiency in distinguishing between coding and non-coding genomic elements

BSc researcher. *Laboratory of Plant Breeding, Agricultural University of Athens (GR).* **Sep 2013 - Apr 2016**

◇ Phylogenetic analysis of *Vicia ervilia* landraces

Skills

Computational biology: Extensive experience in NGS data analysis (genomic and transcriptomic), metagenomic analysis (Kneaddata, Metaphlan, HUMAnN, MaAsLin, HAllA), phylogenetics, comparative genomics and network analysis using the Markov Clustering Algorithm (MCL)

Programming and workflows: Extensive experience with R, Python, Bash, and LaTeX; additional experience with Java, SQL, Perl, and C; pipeline development using Nextflow and Bash scripting.

Computing: High-Performance Computing (Slurm, SGE-based HPC), Unix/Linux environment.

Molecular biology: Nucleic acid isolation, NGS library preparation, nematode and bacterial culture handling, bacterial transformation.

Research and communication: Scientific writing, project administration, and experimental design.

Additional education

7.QBWx: Quantitative biology workshop. *MITx, edX* **2021**
◇ Analysis of diverse types of data, such as single-cell or genomics data combined with online lectures

MCB63x: Principles of Biochemistry. *HarvardX, edX.* **2015**
◇ Biochemical foundations of biological concepts

7.00x: Introduction to Biology. *MITx, edX.* **2013**

Experimental Genome Science. *UPenn, Coursera.* **2013**
◇ Theoretical and practical aspects of genomics, proteomics, single-cell approaches and systems biology

Conferences

- "Interspecies interactions between the nematode *Pristionchus pacificus* and bacterial food sources reveal candidate pathways regulating gene expression, behaviour and survival", Quantitative biology to molecular mechanisms conference, EMBL, Heidelberg, Germany, November 2024.

Languages

- English (Fluent)
- German (B1)
- French (A2)
- Greek (Native)