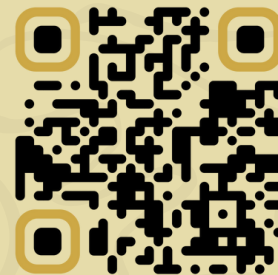# Shayan Jalali

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europass

👤 About Me

Master's student in Medical Biotechnology (Italy), graduating with 110/110 cum laude. Completed Erasmus+ thesis at the Department of Biophysics, Royal College of Surgeons in Ireland (RCSI), Dublin, where I modeled erythropoiesis in AML using Julia, R, and Python. Bring 6+ years of international research experience in bioinformatics, systems biology, and laboratory work across Ireland, Italy, and Iran: sugarcane biotechnology, COVID-19 diagnostics, regenerative medicine at UPO-CAAD, and computational biology at RCSI. Co-author of several scientific papers (including first-author) on transcriptomics and biomarker discovery using bulk and single-cell data with machine learning methods. Proficient in Python, R, Julia, Bash, Git, LaTeX, EndNote, Cytoscape, Galaxy, GEO2R, RapidMiner, and advanced tools for omics and systems biology.

💼 Experience

Visiting Scientist at Royal College of Surgeons in Ireland (RCSI), at Department of Biophysics and Systems Biology
Dublin, Ireland | Feb 2025 - Sep 2025

Master's Thesis and Erasmus plus Researcher under Dr. Marc Sturrock:
- Investigated how AML disrupts erythroblastic islands (EBIs) and nurse macrophages in hematopoiesis.
- Developed ODE-based models in Julia (DifferentialEquations.jl) and created toy models for Global Sensitivity Analysis (Sobol, Morris).
- Ran simulations, explored M-CSF treatment strategies, and contributed to manuscript preparation using Overleaf and EndNote.
- Conducted literature review, data analysis, and collaborated within an interdisciplinary research team (RCSI).

Graduate Teaching Assistant & Research Trainee in Systems Biology at Università degli Studi del Piemonte Orientale (UPO) – CAAD Center – theinnovationlab
Novara, Italy | Oct 2023 - Feb 2025

Performed data analysis in cancer research under Professors Lia Rimondini and Andrea Cochis (UPO | CAAD | Innovation Lab), using R and Python with systems biology and machine learning approaches to identify potential biomarkers and study molecular mechanisms relevant to treatment strategies.

Laboratory Assistant – PCR Diagnostics (COVID-19 Response)
Tehran, Iran | 2022 - 2023

Volunteered at the PCR Laboratory of Golestan Hospital (Tehran) during the COVID-19 pandemic, assisting with PCR-based diagnostics, sample preparation, workflow organization, and biosafety compliance, while gaining experience in molecular diagnostics, teamwork, and crisis response (Golestan Hospital).

- **Intern at Plant Biotechnology Laboratory (Sugarcane Biotechnology Research), Iranian Sugarcane and By-Products Research and Training Institute (ISCRTI)**

  Ahvaz, Iran | Sep 2020 - Mar 2021

  - Analyzed molecular markers and genetic variation in sugarcane using gamma mutagenesis to support development of higher-yield varieties.
  - Maintained sterile culture environments (agar-based jars) and operated laboratory instruments including centrifuges, microscopes, and autoclaves.
  - Developed skills in experimental design, data interpretation, and scientific reporting within an interdisciplinary research setting (ISCRTI).

🎓 Education

- **Master's degree in "Medical Biotechnologies"**
  Università del Piemonte Orientale

  Oct 2023 - now

  - Final Grade (ongoing): 110/110 cum laude – awarded Top Student of the Year
  - Thesis: Mathematical Modeling and Sensitivity Analysis of Nurse Macrophage-Driven Erythropoiesis Disruption in Acute Myeloid Leukemia (Royal College of Surgeons in Ireland, Department of Biophysics, Dublin)

- **Bachelor's degree in "Cellular and Molecular Biology – Biotechnology"**
  IAU University

  2020 - 2023

  - Final grade: 78% (Very Good)

🌐 English Skills

overall level: Advanced

Listening C1 | Reading C1 | Writing C1 | Spoken Production C1 | Spoken Interaction C1
- Master's degree in Italy and Erasmus plus research in Ireland, both conducted entirely in English.

⚙️ Skills

Languages & Tools
python / Julia / R (tidyverse, caret, ggplot2, WGCNA, clusterProfiler, plotly, dplyr, limma) / Platforms: GEO, TCGA , ArrayExpress, UniProt / Modeling Tools: DifferentialEquations.jl (Julia) & Cytoscape / Collaboration & Version Control: Git, GitBash, GitHub

Computer Skills
machine learning / computational biology / biostatistics / Systems Biology

Scientific Writing & Research Skills
Visualization (ggplot2, plotly, Cytoscape) / LaTeX-BibTeX / Reference management software (Zotero, EndNote) / Overl eaf / Mind map with XMind / literature review / write scientific publications

Bioinformatics & Data Analysis
Data Integration / Data Cleaning / Data Normalization / Feature Selection (e.g., Gini Index, Chi-squared, Relief, Information Gain) / Statistical Testing (t-tests, Chi-squared, Correlation Analysis) / Differential Expression Analysis (limma) / Global Sensitivity Analysis (Sobol, Morris, etc) / Parameter Optimization / External Dataset Validation (GEO) / Simulation / Microsoft Excel

Omics Technologies

Pathway Enrichment (Enrichr, Reactome, GSEA) / miRNA Target Analysis (miRTarBase) / Transcriptomics Analysis / Mi croarray / Single-cell RNA-seq / Multi-omics Integration / RNA-seq

Machine Learning & Modeling

Systems Biology & Modeling / ODE Modeling (Ordinary Differential Equations) / Model Tuning & Cross-validation / Pre dictive Modeling / K-Nearest Neighbors (KNN) / Decision Trees / Logistic Regression / Random Forest / Support Vector Machines (SVM) / Naive Bayes

Lab & Clinical Skills

DNA Extraction / Clinical Data Interpretation / Immunohistochemistry / PCR / Tissue Culture (Plant & Human Cells) / Flow Cytometry

📋 Publications

1. **Peritoneal Metastasis Prediction in Gastric Cancer: A Machine Learning Approach** (2025)
Manuscript in preparation · First Author – Shayan Jalali
2. **Remodeling of Nurse Macrophages and Erythroblastic Islands Contributes to the Loss of Bone Marrow Erythropoiesis in Acute Myeloid Leukemia** (2025)
Submitted · Contributing Researcher – Erasmus+ project & Master's thesis
3. **Identification of Circulating MicroRNA Biomarker Panels for Early Gastric Cancer Detection Using Integrated Transcriptomic and Machine Learning Approaches** (2025)
Manuscript in preparation · Contributing Researcher
4. **Investigating the Use of Nanobodies and Biotechnology Methods in Cancer Treatment** (2023)
Published & Presented · First Author & Presenter

🖼️ Courses and Certificates

1. Mastering Git, GitHub, and GitLab: Your Ultimate Guide to Version Control
2. Artificial Intelligence Foundations
3. Foundations of Working with Database in Python
4. Julia Scientific Programming
5. Fundamentals of R
6. Machine Learning
7. Supervised Machine Learning: Regression and Classification
8. Regenerative Medicine
9. Data Mining
10. Regression
11. Anatomy of the Chest, Neck, Abdomen, and Pelvis
12. The Science of Stem Cells
13. Drug Commercialization
14. Drug Development
15. Drug Discovery
16. Genes and the Human Condition (From Behavior to Biotechnology)
17. Industrial Biotechnology

👥 References

1. **Dr. Marc Sturrock** – Royal College of Surgeons in Ireland (RCSI): marcsturrock@rcsi.com
2. **Dr. Lia Rimondini** – Università del Piemonte Orientale (UPO): lia.rimondini@med.uniupo.it
3. **Dr. Andrea Cochis** – Università del Piemonte Orientale (UPO): andrea.cochis@med.uniupo.it
4. **Dr. Mohammadreza Azimi** – Royal College of Surgeons in Ireland (RCSI): mohammadrezaazimi@rcsi.com
5. **Dr. Mohammad Kazem Mohammadi** – IAU, Ahvaz: mohammadi@iauahvaz.ac.ir, mkmohamadi@gmail.com