Mohammad Reza Mohajeri

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Bioinformatics Profile

Technically savvy bioinformatics professional with advanced education and technical expertise in scripting, data integration and pathway / functional analysis to support complex bioinformatic analysis efforts.

In-depth technical savvy in areas such as high-throughput genomics and transcriptomics along with talents in designing, optimising and troubleshooting bioinformatic analyses and project pipelines. Strong theoretical understanding of epigenomics. Thorough and accurate communicator, exercising clarity and conciseness in authoring scientific reports and presenting complex scientific concepts to non-scientific audiences. Proven skills and knowledge in use of bioinformatics tools and biological systems for molecular biomarkers / diagnostics, treatments and drug discovery. Talent for operating independently and in partnership with senior team members. Able to adapt rapidly to new environments and employ academic research background to contribute to challenging pharmaceutical and biotechnology projects.

Areas of Expertise

- Data Integration & Meta-analysis
- Machine Learning / AI (Basic)
- Scripting & Programming
- Biological Data Statistical Analysis
- Next Generation Sequencing (NGS)
- Biomarker & Pathway Discovery
- Data Visualisation / Accessibility
- Data Analysis Workflow Development
- Biological Data Report Generation

Career Experience

Teesside University, Middlesbrough, UK 1/2022 – 6/2022
Dissertation Project

Planned and coordinated all facets of "Gene Expression Profiling for Aggressive Breast Cancer: A microarray meta-analysis approach in R" project. Conducted normalization and visualization processes. Facilitated batch effect correction. Performed in-depth analysis of various meta-analysis techniques, including REM meta-analysis method. Coordinated functional and pathway analyses.

- Devised R-based pipeline derived from comprehensive literature review and in-depth pre-analysis of data in NetworkAnalyst, determining optimal methodology for combining microarray datasets (4 datasets and 468 breast cancer tissue samples).
- Spearheaded in-depth literature review to gain insight for biological interpretation and identify potential biomarkers for diagnostic and screening purposes selected from the most differentially expressed genes.
- Successfully prepared and presented manuscript for publication in Breast Cancer Research and Treatment journal.

Teesside University, Middlesbrough, UK 9/2021 – 12/2021
Internship Project

Completed project entailing data collection, extraction and pre-analysis utilising GO2R and NetworkAnalyst to identify DEGs as biomarkers for differentiating between early stage (Grade I) and advanced stage (Grade III) of breast cancer. Conducted primary analysis to identify DEGs through GO2R and NetworkAnalyst platforms. Performed extensive literature review through GEO and PubMed databases. Screened all studies based on defined criteria. Coordinated data extraction and classified studies based on grades and subtypes.

- Selected four datasets containing Grade classification to conduct thorough meta-analysis for identifying DEGs; proceeded with meta-analysis for dissertation project.
- Successfully compiled and analysed data that was integral in ascertaining effectiveness of applying molecular subtypes and grading systems for differentiating between non-aggressive and aggressive breast cancer samples in microarray gene expression profiling.

Pasteur Institute of Iran, Tehran, Iran 1/2019 – 1/2020
Research Assistant

Contributed to whole-exome sequencing to identify mutation in NF1 gene responsible for overlapping clinical symptoms of Neurofibromatosis Type 1 and Bannayan–Riley–Ruvalcaba syndrome. Delivered key support in drafting project plan. Maintained and troubleshot computer / laboratory equipment utilised for research project. Delivered key input in informational meetings and interim progress reports. Leveraged research results to compose reports and papers.

- Integral contributor to workshops for MSc students in discussing project scope.

Pasteur Institute of Iran, Tehran, Iran 10/2017 – 12/2018
Research Assistant

Aided in research for project titled "Meta-analysis of the effects of palifermin and other interventions on the oral mucositis caused by chemotherapy, and radiotherapy in cancer patients receiving stem cell transplantation." Reviewed literature on technical and medical facets of project to establish baselines and monitor project progression. Delivered technical support during meta-analysis. Contributed to results interpretation and produced reports and posters for internal presentations.

- Instrumental in compiling data that gauged efficacy of palifermin for use in pharmaceuticals.
- Successfully prepared and delivered workshops on meta-analysis for master's students and scheduled meetings for master's students and junior researchers to meet and discuss project tasks.
- Gained knowledge in meta-analysis, etiology of cancers and treatments.

Pasteur Institute of Iran, Tehran, Iran 1/2017 – 9/2017
Research Assistant

Supported research project focused on identification of mutations titled "Evaluation of genetic variations among patients suffering from Ventricular Septal Defect utilizing Whole Exome Sequencing technique." Contributed to literature review on VSD and WES techniques, and on genetic causes of the disease. Drafted project reports and prepared posters and progressive presentations.

Pasteur Institute of Iran, Tehran, Iran 5/2016 – 12/2016
Research Assistant

Performed literature review on prostate cancer, drug resistant, and role of epigenetics. Attended and presented at institutional seminars on epigenetics Generated posters and presentations.

Pasteur Institute of Iran, Tehran, Iran 1/2016 – 4/2016
Research Assistant

Assisted in translation of "RNA-seq Data Analysis-a practical Approach" book from English to Persian.

Additional Experience

Plant Propagation & Growth Project Assistant, Research Institute of Forests and Rangelands (RIFR), Tehran, Iran
Assistant Manager & Supervisor, Startup Landscape Business, Tehran, Iran
Founder / Operations Manager, Various Startup Businesses, Tehran, Iran

Education

MSc Bioinformatics (with advanced practice) (Distinction 75/100)
Teesside University, Middlesbrough, UK

MSc Agricultural engineering (GPA: 89.15/100)
SRB University, Tehran, Iran

BSc Plant Products Engineering (GPA: 76.35/100)
Karaj University, Karaj, Iran

Associate Degree, Plant Products Technology (76.9/100)
Varamin University, Varamin, Iran

Bioinformatics Training

Real-time PCR (16 hours) | Bioinformatics & NGS Methodologies, Bio-Linux, SNP Discovery & Analysis, RNA-Seq Data Analysis, Predict New Transcript/Isoforms, Clinical Applications & Diagnostics (24 hours) | Gene Cloning (RNA Extraction, cDNA Synthesis, Primer Designing, PCR, DNA Extraction, Cloning, Gene Transformation, Electrophoresis, Protein Expression & Purification, SDS-PAGE, Western blot) (32 hours) | Next-generation Sequencing Data Analysis: RNA Seq and Small RNA Seq (2 days) | Meta-analysis of High-throughput Sequencing data (2 days) | Computational Systems Biology: Network Analysis, Gene Ontology and Promoter analysis (2days) | Next-generation Sequencing Data Analysis: Metagenomics (2 days) | Epigenomic Data Analysis (ChIP-seq & Genome-wide Methylation) (2 days) | Data Mining and Machine Learning in Bioinformatics (2 days) | NGS Analysis and Clinical Report Writing (1 day) | Introduction to Genomic Technologies (Johns Hopkins University; Coursera)

Technical Proficiencies

R, Python, Data Integration, NetworkAnalyst, GitHub, Galaxy, NCBI, UCSC, Ensembl, Blast, GEO, GEO2R, DAVID, Weka, SPSS

Publications

1. E. S. Rahmani, H. Azarpara, M. F. Abazari, M. R. Mohajeri, M. Nasimi, R. Ghorbani, A. Azizpour & H. Rahimi. 2020. Novel Mutation C.7348C>T in NF1 Gene Identified by Whole-Exome Sequencing in Patient with Overlapping Clinical Symptoms of Neurofibromatosis Type 1 and Bannayan–Riley–Ruvalcaba Syndrome, Cytol Genet. vol. 54, no. 4, pp. 353–362; DOI: 10.3103/S0095452720040106.
2. Mohajeri, M. R., Ghamari Zare, A., Naderi Shahab M. A., Kalateh Jari S., 2014. Seed Germination of Lilium Iedebourii (Baker) Boiss after Cryopreservation. Journal of Rangeland Science, 4 (4): 279- 286.