# **MENNA ARAFAT**

Mansoura, Egypt | +20 1094107444 mennaarafat@std.mans.edu.eg | https://github.com/Menna-Arafat



## **EDUCATION**

# $Bachelor\ of\ Medicine\ and\ Surgery\ Degree\ (M.B.B.Ch),$

Faculty of Medicine, Mansoura university. GPA [3.4/4].

2014 Sep – 2021 Feb

2024 May -

2025 Apr

## PROFESSIONAL EXPERIENCE

#### Bioinformatician & Statistician at El-Beltagy Therapeutics Company

Performing advanced statistical and computational analyses on genomic, transcriptomic, and proteomic datasets in oncology projects.

Applying integrative approaches, such as multi-omics data fusion and network-based modeling, and drug combination analysis for drug repurposing.

Supporting grant applications and research proposals.

#### Bioinformatics Research Assistant at 57357 Children Cancer Hospital Egypt

Developing and maintaining robust bioinformatics pipelines for high-throughput data processing.

Co-author on three research projects, contributing to WGCNA, time-series modeling, multiomics integration, functional enrichment, and data visualization in R.

Intern house officer, Mansoura University Hospitals

2021 Mar – 2022 Feb

2023 May -

2024 Apr

#### **PROJECTS**

Metabolomic Analysis of Gut Metabolites in Colorectal Cancer Patients (CRC), Raw data preprocessing, WGCNA and differential analysis, Functional enrichment analysis, and visualization with R.

Deciphering TNBC Molecular Landscape: Bridging Multi-omics and Network Medicine for Drug repurposing and Combination Therapy, Multi-Omics Integration, Network Modeling, Drug Combination Analysis for Targeted Therapy.

Enhanced Bone Regeneration in Rat Gingival Mesenchymal Stem Cells: A Comparative Study of Inductive Media, Polycaprolactone Nano Scaffold, and Low-Level Laser Therapy, Multi-Omics Factor Analysis (MOFA) for Temporal Data Analysis, Pathway Crosstalk Analysis and Inference of Common regulatory Transcription Factors, Single-cell Deconvolution to Identify Cell Subtype Proportions in Each Sample.

Proteomic Profiling of Pancreatic Cancer Patients: Time Series Study Before and After Whipple Surgery, Raw data preprocessing, time series analysis (GAM), WGCNA and hub-protein identification, and visualization with R.

Proteomic and Metabolomic Profiling of alveolar and embryonal Rhabdomyosarcoma patients: an Integrative Study, WGCNA and Protein-protein interaction and Key driver analysis.

#### **SKILLS**

- R Programming for data cleaning, visualization, and statistical analysis using Bioconductor.
- Python, command-line scripting, and Linux for high-throughput bioinformatics workflows.
- Downstream analysis of transcriptomics, genomics, methylome, proteomics, and metabolomics.
- Integration with public databases: TCGA, cBioPortal, CMAP, DepMap, KEGG, STRING.
- multi-omics integration (MOFA, DIABLO), Time-series analysis (GAM, GLMM)
- Advanced statistical modeling (regression, confounder detection, effect modification).
- Single-cell analysis pipelines; Niche detection, CCC, lineage analysis.
- Machine learning for supervised and unsupervised learning.

#### Courses

- Deep Learning Architecture for Single-Cell Genomics Data Abdelrahman Mahmoud,
- Integrative Systems Biology Mohamed Maysara, Nile University, Egypt
- CS224W: Machine Learning with Graphs Stanford University (Jure Leskovec)
- Applied Computational Genomics Aaron Quinlan
- Case Studies in Functional Genomics Rafael Irizarry
- Advanced Bioconductor Kasper Hansen
- Statistics for Genomics Rafael Irizarry
- Statistics and R Programming Mike Marin
- Systems Biology and Systems Medicine Uri Alon
- Design and Interpretation of Clinical Trials Coursera
- Writing in the Sciences Kristin Sainani (Coursera)

#### Volunteering & Community Work

- Coordinator of Foundation Year Conference- Pathways after graduation held in Mansura University founded by European council for continuing medical Education.
- Campaign assistant for raising awareness of covid19 and administering vaccines to patients in MUH.

## Languages

- Arabic (Mother Language)
- English (Intermediate)

## References

- Nouran Al-Shehaby, Junior Scientist, Basic Research Unit, Children's Cancer Hospital 57357, Egypt, nouran.alshehaby@57357.org
- Mohamed Helmy, PI, Vaccine and Infectious Disease Organization, Canda, helmv.sfc@gmail.com
- Islam M. Saadeldin, Senior Scientist King Faisal Specialist Hospital and Research Center, Saudia Arabia, imohamed@kfshrc.efu.sa
- Mustafa Nematallah, Professor of Molecular Genetics and Biochemistry, Mansoura Faculty of Medicine, Egypt, mneamatallah@mans.edu.eg.
- Abdelrahman Mahmoud, Post doc at Broad Institute, MIT, mohameda@broadinstitute.org