

# Fredis (Frederick) Mappin, Ph.D.

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## Bioinformatics Research Scientist

### PROFESSIONAL PROFILE

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Self-motivated bioinformatics research scientist with over 8 years of experience conducting research across a broad range of topics in bioinformatics, pharmacology, and genetic engineering. Proven ability to quickly master new techniques, tools, and scientific domains to support complex, hypothesis-driven research programs. **Technical Skills include:**

- **Sequencing Modalities:** Experienced with Variant Analysis, CRISPR gene editing analysis, Methyl-seq, bulk RNA-seq, Shape-seq, scRNA-seq, PacBio and Nanopore sequencing for AAV analysis, and more.
- **Computer-Aided Drug Design Techniques:** ADMET protein modeling, protein structural comparisons, QSAR, ligand pocket prediction, molecular docking, and molecular dynamic simulations, ligand exposure assays, fingerprints analyses.
- **Machine Learning:** Experienced in developing and implementing ML pipelines for biological data analysis, including data preprocessing, feature engineering, model selection, training, and performance evaluation.
- **Pipeline Development:** Proficient at the utilization of the pipeline workflow manager Nextflow, Docker containers, and Git version control, to conduct reproducible analyses from custom built pipelines.
- **High-Performance Computing:** Linux-based systems (SLURM and LSF); as well as AWS S3 and EC2. Experience with Jupyter Notebooks, GitPod and Google Colab for cloud computing and collaboration.
- **Languages:** Python, R, and Bash scripting for data manipulation, statistical analysis, machine learning, visualization and tool development.
- **Molecular Techniques:** Working knowledge of the most used molecular techniques for the engineering, extraction, analysis, amplification, and sequencing of DNA and RNA.

### EXPERIENCE

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**Bioinformatic Scientist (Contract) | ElevateBio | Waltham, MA** **01/2024 - 07/2024**

- Member of the NGS team under R&D, responsible for deploying established bioinformatic pipelines as well as developing custom in-house analyses to aid lab scientists in conducting research, testing hypotheses, quality assessments, and evaluation of ElevateBio R & D products.

**Key Tasks included:** NGS Data Transfer & Quality Control | RNA-seq analysis | Methyl-seq analysis | Editing Analysis | Variant analysis | Shape-Seq pipeline development | AAV pipeline development

**Postdoctoral Fellow | Laboratory of Tropical Genetics | Miami, FL** **08/2023 - 01/2024**

- Developed machine learning models for predicting ligand-receptor relationships across Dipteran.

**Key Tasks included:** Machine Learning development

**Graduate Research Assistant | Laboratory of Tropical Genetics | Miami, FL** **08/2016 - 08/2023**

- Used RNA-seq experiments to generate an odor-evoked transcriptome (OET), which allowed for the genome-wide survey of the transcriptional response to prolonged exposure to chemical ligands, with a focus on receptor and xenobiotic gene families. Performed protein structural comparisons of AlphaFold2 generated models to improve structure-activity relationship prediction in Dipteran.

**Key Tasks included:** Dose-response bioassay | qRT-PCR analysis | RNA-seq analysis | Data mining and interpretation | Visualization of large databases | Protein structure prediction | Protein structural comparisons | QSAR analysis | Machine Learning | Interpretation and visualization

**Graduate Teaching Assistant | Florida International University | Miami, FL** **08/2020 - 08/2023**

- Taught molecular biology/ genetic engineering and bioinformatics technologies to undergraduate students.

**Key Tasks included:** DNA extraction | gel-electrophoresis | PCR | Sanger sequencing | restriction digest | design of CRISPR sgRNA | protein modeling | homolog prediction | sequence analysis | NCBI BLAST | variant polymorphism detection | CRISPR editing analysis.

### EDUCATION

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Ph.D. Biology   Florida International University, Miami, FL	2023
M.S. Biology   Florida International University, Miami, FL	2019
B.S. Biology   Florida International University, Miami, FL	2016