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Summary

I am a bioinformatician with experience in Genomics, Molecular Biology, Structural Biology, Protein Design and Machine Learning. I have expertise in advanced computational methods, including generative neural networks and data pipelines, to transform complex biological information into practical solutions. I have hands-on experience in molecular modeling, analyzing large datasets and developing bioinformatics tools. My goal is to drive innovation in diagnostics and personalized therapies, with a focus on accurate diagnosis and tailored treatment approaches.

Education

PhD in Bioinformatics (ongoing)
Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil
- Focus on machine learning for the identification of antimicrobial compounds and analysis of biological interactions.

MSc in Genetics and Molecular Biology (2024)
Federal University of Pernambuco (UFPE), Recife, Brazil
- Development of AMP-Identifier, a machine learning-based tool for genome mining aimed at discovering bioactive molecules.

Postgraduate in Data Science and Analytics (ongoing)
Pontifical Catholic University of Rio de Janeiro, Rio de Janeiro, Brazil
- Advanced machine learning, data engineering and governance, strategic analysis.

BSc in Biomedical Sciences (2022)
Federal University of Pernambuco (UFPE), Recife, Brazil
- Research in clinical and hospital settings focusing on bioinformatics and genetics.

Professional Experience

Researcher and Development Analyst
October 2020 - August 2022

PickCells
- Developed IoT solutions and validated clinical systems using computer vision.
- Implemented MVPs and gathered feedback for continuous improvements.
- Created machine learning models applied to clinical diagnostics.
- Collaborated with multidisciplinary teams to optimize hospital workflows and drive technological innovation.

Academic Researcher
2015 – Present

FIOCRUZ – Oswaldo Cruz Foundation
- Molecular modeling of proteins for diagnostics and vaccines.
- Development of computational methods for characterizing viral proteins.

LIKA – Keizo Asami Immunopathology Laboratory
- Research in Human Genetics and Bioinformatics, focusing on Forensic Genetics, ancestry markers and phenotype prediction.

- Conducted molecular analyses in collaboration with the Forensic Genetics Institute of Pernambuco for establishment of protocols for forensic analysis.

DGen - Department of Genetics, Federal University of Pernambuco
- Developed bioinformatics tools for discovering antimicrobial peptides and characterizing molecules in plant species.
- Conducted omics analyses to identify plant defense mechanisms against pathogens.

ICB - Institute of Biological Sciences, Federal University of Minas Gerais
- Works on machine learning and computational modeling applied to the discovery of antimicrobial compounds and develops pipelines for analyzing genomic and structural data.
- Performs biomolecular modeling and simulation of proteins, synthetic peptides and various types of pathogen membranes to describe action mechanisms and develop enhanced workflows for reinforced generative models in protein design using deep learning.

Technical Skills

Bioinformatics: Development of pipelines, NGS analysis, transcriptomics analysis, biomarker prediction and genome mining.
Machine Learning: Linear models, generative neural networks, supervised and unsupervised learning.
Programming: Bash, Python, Java & C.
Data Management: Integration of omics data, cleaning, and transformation of large datasets.
Operating Systems: Advanced knowledge in Linux/Unix (MacOS, Debian, Ubuntu & RedHat).
Computational Structural Biology: Theorical chemistry, biomolecular modeling, protein design, molecular dynamics simulations and docking.

Certifications and Licenses

Principles in Vaccinology (Butantan Institute, Jan 2025)
Skills: Viral-like Particle, Rational Vaccine Design, Biopharmaceuticals.
The Data Science of Healthcare and Public Health (LinkedIn Learning, Jan 2025)
Skills: Biological and Health Data Management, Epidemiology, Data Analysis.
Advanced Gemini for Developers (Google DeepMind, Dec 2024)
Skills: Generative Neural Networks, Patterns, Market Research, Google Gemini.
GitHub Professional Certificate (GitHub, Dec 2024)
Skills: Continuous Integration, Python, Versioning, Backlog Management.
Project Management: Preventing Scope Creep (PMI, Dec 2024)
Skills: Agile Management, Product Development, Lifecycle Analysis.
Certified Peer Reviewer
(Certificate of Excellence of Researcher Academy) (Elsevier, Nov 2024)
Skills: Scientific Writing and Review, Technical Reports.
Python Programming from Basic to Advanced (Udemy, Jun 2022)
Skills: Computational Genomics, Generative Networks, Bioinformatics.
Bioinformatics with Python (Udemy, May 2022)
Skills: Structural Bioinformatics, Machine Learning, Computational Chemistry.
Biomolecular Simulation: Protein Engineering (Oswaldo Cruz Foundation, Aug 2029)
Skills: Cheminformatics, Computational Chemistry, Protein Design, Bioengineering, Molecular Dynamics, Structural Bioinformatics, Modeling and Simulation, Computational Biology **Protein Engineering (National Laboratory of Scientific Computation or the National Laboratory for Scientific Computing, Aug 2019)**
Skills: Cheminformatics, Computational Chemistry, Bioengineering.
Molecular Modeling for Biological Systems (National Laboratory of Scientific Computation or the National

Laboratory for Scientific Computing, Aug 2018)
Skills: Structural Bioinformatics, Computational Biology, Bioinformatics.
Environment Effects in Biosimulations: Quantum/Molecular Mechanics (QM/MM) (Federal University of ABC, Aug 2017)
Skills: Quantum Chemistry Basics, Classical Molecular Dynamics, QM/MM Software and Tools, Parameterization and Force Field Development.
NGS Data Analysis (Next-Generation Sequencing) (UFPE, Sep 2016)
Skills: Computational Genomics, Biotechnology.

Publications

M. V. F. Ferraz et al., **Association strength of E6 to E6AP/p53 complex correlates with HPV‐mediated oncogenesis risk**, Biopolymers, vol. 113, no. 10, p. e23524, 2022.
L. M. B. Vilela et al., **Approaches for Identification and Validation of Antimicrobial Compounds of Plant Origin: A Long Way from the Field to the Market, in Eco-Friendly Biobased Products Used in Microbial Diseases**, CRC Press, 2022, pp. 183–222.
R. C. C. da Silva et al., **Omics-driven bioinformatics for plant lectins discovery and functional annotation – A comprehensive review**, International Journal of Biological.

Macromolecules, p. 135511, 2024.

Teaching Experience

Teaching Assistant (Federal University of Pernambuco) - Molecular Tools Applied to Clinical Diagnosis (2017-2018**)**
Teaching Assistant (Federal University of Pernambuco) - Human Genetics
Invited Teacher (Federal University of Vale do São Francisco) - Molecular Modeling with Machine Learning Techniques (2025)
Invited Teacher (Federal University of Vale do São Francisco) - Bioinformatics: A Theoretical-Practical Approach (2024)
Invited Teacher (Catholic University of Pernambuco) - Introduction to Bioinformatics: From DNA to Proteins: Databases, Annotation and Protein Modeling Techniques (2022)

Conference Presentations & Invited Talks

Pairing Up for Plant Protection: An In Silico Look at *R. communis* Defensins Dimerization (Congress)
AMP-Identifier: A Machine Learning–Based Tool for Identifying Antimicrobial Peptides in Genomic Data (Conference)
Structural Assessment of *Ricinus communis* Defensins and Insights into Their Dimerization Dynamics (Conference)
Mining AMPs and Insights into Their Dynamics (Congress)
AMP-Identifier: A Machine Learning–Based Tool for Identifying Antimicrobial Peptide Sequences in Genomic Data (Congress)
Structural Prediction of the eIF4E and eIF4G in the Leish-eIF4F Complex (Conference)
Molecular Basis of E6/E6AP/P53 in HPV-Mediated Oncogenesis Provides Insights into Inhibitory Strategies (Congress)
Designing Inhibitors for the E6/E6AP/P53 Complex (Conference)
Assessing the Conformational Dynamics and Stability of E6/E6AP/P53 in HPV-Mediated Oncogenesis (Conference)
Structural Analysis of the E6/E6AP/P53 Ternary Complex Associated with HPV-Mediated Oncogenesis (Conference)
Applications of Bioinformatics Tools in Forensic Genetics: Predicting Phenotype and Biogeographic Ancestry in 1000 Genomes Populations (Symposium)
Extraction and Characterization of Human mtDNA Haplogroup from Whole Genome Sequencing Data (Symposium)
Characterization of Mitochondrial DNA and Inference of Maternal Ancestry in Individuals from Pernambuco (Congress)
Genetic Association between IL1B Polymorphism and Lower Susceptibility to Photosensitivity in Systemic Lupus Erythematosus Patients (Congress)
Mitochondrial DNA Analysis and Inference of Maternal Ancestry in Admixed Individuals from Pernambuco, Brazil

(Congress)
Analysis of Mitochondrial Inheritance and Maternal Ancestry in Admixed Individuals from Pernambuco (Conference)
Prevalence of the Sickle Cell Disease Allele in 1000 Genomes Populations and Its Relationship with Skin Color and Genetic Ancestry (Symposium)
Interactive Seminars in a Biochemistry Course for Undergraduate Biomedicine: Benefits and Problems of Carbohydrates in Modern Life (Congress)
Evaluation of the Efficacy of the MiSeq FGx Forensic System in 1000 Genomes Populations (Symposium) – 2015

Awards, Recognitions & Achievements

Honorable Mention – *Human and Forensic Genetics (CNPq/UFPE)*
Young Geneticist Award of the Northeast *(XXI Northeast Genetics Meeting - ENGNE)*
Honorable Mention – *Postgraduate Genetics Journey (UFPE)*
Best Poster Award – *XIII Journey of the Genetics and Molecular Biology Program*
Travel Grant Award*, AI for Protein Design (AI4PD) – The Protein Society*
Certificate of Excellence *in the Peer Reviewing – Elservier*
Highest Admission Score, *Ranked first overall among all accepted applicants to the Master's Program in Genetics and Molecular Biology at the Federal University of Pernambuco (UFPE)*
Highest Admission Score, *Ranked first overall among all accepted applicants to the PhD Program in Bioinformatics at the Federal University of Minas Gerais (UFMG)*

Languages

Portuguese (Native)
Spanish (Basic)
English (Intermediate/Professional)