Claudia Afonso

Lisbon, Portugal (willing to relocate)

linkedin.com/in/cfafonso github.com/cfafonso cfafonso.github.io

I'm a biomedical researcher and data scientist, specialized in developing chemical biology strategies for the modification of proteins, as well as in applying machine learning and statistical analysis to complex datasets. I'm currently seeking opportunities where I can apply my hybrid skill set to solve real-world problems, whether that's in pharmaceutical, biotechnology, or technology sectors. My GitHub portfolio showcases projects where I've applied programming and machine learning techniques to solve problems in various contexts.

Education

Faculty of Sciences, University of Lisbon

Sep. 2022 - 2025 (awaiting defense) Lisbon, Portugal

Master of Science in Data Science

Faculty of Medicine, University of Lisbon

Jan. 2018 - Oct. 2024 Lisbon, Portugal

Faculty of Sciences, University of Lisbon

Sep. 2022 - Jul. 2024

Minor in Computer Science

PhD in Biomedical Sciences

Lisbon, Portugal

NOVA School of Science and Technology, NOVA University of Lisbon

Sep. 2015 - Dec. 2017 Lisbon, Portugal

Master of Science in Bioorganic Chemistry

Faculty of Medicine, University of Lisbon

Sep. 2014 - Jul. 2017 Lisbon, Portugal

Master of Science in Neuroscience

Sep. 2011 - Jul. 2014

Faculty of Sciences, University of Lisbon

Lisbon, Portugal

Bachelor of Science in Chemistry with a Minor in Biology

Experience

Faculty of Sciences, University of Lisbon

Nov. 2023 - Apr. 2025

Research Scientist in Data Science

Lisbon, Portugal

- Preprocessed chemical datasets using RDKit to generate molecular fingerprints (Morgan, MACCS, topological) and Python to structure interaction data for sequential recommendation tasks
- Conducted experiments using SASRec (self-attention based sequential recommendation model) for chemical compound recommendation, evaluating performance across various hyperparameter configurations and molecular fingerprint types

Institute of Molecular Medicine

Jan. 2018 - Sep. 2022

Research Scientist in Biomedical Sciences

Lisbon, Portugal

- Developed novel chemical biology strategies for the site-specific and site-selective modification of proteins
- Conducted site-directed mutagenesis by PCR to generate protein sequences with precise cysteines at different positions for site-selective conjugation
- Performed plasmid DNA expansion, bacterial transformation, expression of proteins in E. coli and their purification by affinity and ion exchange chromatography using ÄKTA FPLC systems
- Conducted bioconjugation reactions on peptides and proteins (including antibodies), the purification of the resulting conjugates by ultrafiltration and size-exclusion chromatography and their characterization by LC-MS, SDS-PAGE, Western blot, ELISA and circular dichroism
- Conducted the synthesis of chemical reagents for protein modification and their characterization by NMR and LC-MS
- Performed sirtuin deacetylation activity assays on acetylated protein substrates
- Developed an ELISA assay to quantify protein acetylation levels

Yusuf Hamied Department of Chemistry, University of Cambridge

Sep. 2021 - Oct. 2021

Visiting Research Scientist in Biomedical Sciences

Cambridge, United Kingdom

Assisted in bioconjugation and LC-MS characterization experiments of an antibody

University Medicine Greifswald

Oct. 2017 - Nov. 2017

Research Intern in Biochemistry

Greifswald, Germany

• Performed cell culture, RNA isolation and RT-PCR experiments to evaluate the effect of cold atmospheric plasma treatment on human epithelial and tumor cell lines

NOVA School of Science and Technology, NOVA University of Lisbon

Sep. 2016 - Sep. 2017

Graduate Researcher in Bioorganic Chemistry

Caparica, Portugal

- Optimized expression of ¹³C and ¹⁵N isotope-labelled proteins in E.coli for NMR studies
- Conducted ${}^{1}\text{H}$ - ${}^{15}\text{N}$ HSQC NMR experiments to map the epitope of an anti-amyloid- β antibody using amyloid $A\beta(1-40)$ and $A\beta(1-42)$ peptides

Institute of Molecular Medicine

Sep. 2015 – Sep. 2016

Graduate Researcher in Neuroscience

Lisbon, Portugal

• Performed cell culture, immunofluorescence staining for proliferation, neural and oligodendrocyte markers, and confocal microscopy to evaluate the role of adenosine A2A receptors in subventricular zone-derived oligodendrogenesis

Faculty of Sciences, University of Lisbon

Mar. 2014 – Jul. 2014

Undergraduate Researcher in Chemistry

Lisbon, Portugal

• Performed the chemical synthesis of a psychoactive cathinone and its characterization by NMR, FTIR and GC-MS

Projects

Ecommerce Data Warehouse | Python, Pandas, SQL, PostgreSQL, PowerBI | GitHub 📢

• Developed an end-to-end ETL (Extract, Transform, Load) pipeline and designed the schema to create an ecommerce data warehouse in PostgreSQL, with business intelligence reporting through SQL querying and PowerBI dashboards

Birth Plan Manager | Python | GitHub (7)

• Developed a command-line tool in object-oriented Python to manage childbirth assistances in hospital settings

Database Performance Analysis | Python, SQLite, MongoDB | GitHub

 Developed a comparative analysis tool using flight delay data to create SQLite and MongoDB databases and benchmark their indexing performance for comparative analysis

Network Fastest Path Finder | Python | GitHub 📢

• Developed a command-line tool in object-oriented Python to find the fastest path between stations in a network using depth-first search (DFS) algorithm

Machine Learning Portfolio | Python, scikit-learn | GitHub 📢

• Applied classification and regression algorithms using scikit-learn and implemented the Q-learning reinforcement learning algorithm in Python

Skills

- Programming: Python, SQL, SAS, R, HTML, CSS, data analysis and scientific computation libraries (Pandas & NumPy),
 machine learning (scikit-learn) and cheminformatics libraries (RDKit)
- Developer Tools: Visual Studio Code
- Technologies & Software: PostgreSQL, MongoDB, PowerBI, Git, GitHub, LaTeX, Microsoft Office, Adobe Illustrator
- Laboratory: Peptide and protein (including antibody) bioconjugation techniques, conjugate purification by ultrafiltration and size-exclusion chromatography and characterization by LC-MS, ELISA, SDS-PAGE, Western blot and CD, chemical synthesis of conjugation reagents and their characterization by NMR and LC-MS, protein expression and purification by FPLC, mammalian cell and tissue culture, PCR, RT-PCR, immunofluorescence, confocal microscopy
- Equipment: Waters Acquity UHPLC systems coupled to QDa detectors, ÄKTA purification systems, Bruker NMR spectrometers
- Languages: Portuguese, English (IELTS 8.0/9.0), German (B1)

Publications

- Afonso CF, Marques MC, António JPM, Cordeiro C, Gois PMP, Cal PMSD, Bernardes GJL. Cysteine-Assisted Click-Chemistry for Proximity-Driven, Site-Specific Acetylation of Histones. Angewandte Chemie International Edition 2022, 61, e202208543 (DOI: 10.1002/anie.202208543)
- Laserna V, Abegg D, Afonso CF, Martin EM, Adibekian A, Ravn P, Corzana F, Bernardes GJL. Dichloro Butenediamides as Irreversible Site-Selective Protein Conjugation Reagent. Angewandte Chemie International Edition 2021, 60, 23750–23755 (DOI: 10.1002/anie.202108791)
- Posado-Fernández A, Afonso CF, Dória G, Flores O, Cabrita EJ. Epitope Mapping by NMR of a Novel Anti-Aβ Antibody (STAB-MAb). Scientific Reports 2019, 9(1), 12241 (DOI: 10.1038/s41598-019-47626-2)

Certifications

SAS Certified Associate: Programming Fundamentals Using SAS 9.4 Lisbon, Portugal	Nov. 2024
Courses	
14 th Lisbon Machine Learning School (LxMLS2024) Lisbon, Portugal	Jul. 2024
The Hitchhiker's Guide to single-cell RNA-sequencing Lisbon, Portugal	Jul. 2024
Gulbenkian Training Program in Bioinformatics – Proteomics Data Analysis Oeiras, Portugal	Sep. 2022
Communications	
II Symposium of the Portuguese Glial Network Braga, Portugal	May 2017
XLVII Annual Meeting of the Portuguese Society of Pharmacology Coimbra, Portugal	Feb. 2017
Conferences	
3 rd European Fourier Transform Mass Spectrometry School Lisbon, Portugal	Jul. 2022
4 th European Fourier Transform Mass Spectrometry Workshop Lisbon, Portugal	Jul. 2022
XLIV Meeting of the Portuguese Society for Immunology Lisbon, Portugal	Jun. 2018
Scholarships and Awards	
Scholarship to attend the Lisbon Machine Learning School 2024 (LxMLS2024) Lisbon, Portugal	Jul. 2024
Research Fellowship in Data Science Lisbon, Portugal	Nov. 2023
Research Fellowship in Biomedical Sciences Lisbon, Portugal	Jul. 2022
FCT Doctoral Studentship Lisbon, Portugal	Jan. 2018
IAESTE Internship Greifswald, Germany	Oct. 2017