




# CLAUDIA AFONSO

Lisbon, Portugal (willing to relocate)

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I'm a chemical biologist and data scientist with a strong research background. I have specialized in developing chemical biology strategies for the modification of proteins, as well as in applying machine learning and statistical analysis to complex datasets. What excites me most is solving problems that require domain knowledge and computational thinking. I'm currently seeking opportunities where I can apply this hybrid skill set, whether that's in pharmaceutical research and development, cheminformatics, biotech data analysis, or broader data science applications in healthcare and life sciences. My GitHub portfolio showcases projects where I've applied programming and machine learning to solve problems in various contexts.

## Education

<b>Faculty of Sciences, University of Lisbon</b> Master of Science in Data Science	<b>Sep. 2022 – 2025 (awaiting defense)</b> <i>Lisbon, Portugal</i>
<b>Faculty of Sciences, University of Lisbon</b> Minor in Computer Science	<b>Sep. 2022 – Jul. 2024</b> <i>Lisbon, Portugal</i>
<b>Faculty of Medicine, University of Lisbon</b> PhD in Biomedical Sciences	<b>Jan. 2018 – Oct. 2024</b> <i>Lisbon, Portugal</i>
<b>NOVA School of Science and Technology, NOVA University of Lisbon</b> Master of Science in Bioorganic Chemistry	<b>Sep. 2015 – Dec. 2017</b> <i>Lisbon, Portugal</i>
<b>Faculty of Medicine, University of Lisbon</b> Master of Science in Neuroscience	<b>Sep. 2014 – Jul. 2017</b> <i>Lisbon, Portugal</i>
<b>Faculty of Sciences, University of Lisbon</b> Bachelor of Science in Chemistry with a Minor in Biology	<b>Sep. 2011 – Jul. 2014</b> <i>Lisbon, Portugal</i>

## Experience

<b>Faculty of Sciences, University of Lisbon</b> Research Scientist in Data Science	<b>Sep. 2023 – Apr. 2025</b> <i>Lisbon, Portugal</i>
<ul style="list-style-type: none"><li>Preprocessed chemical datasets using RDKit to generate molecular fingerprints (Morgan, MACCS, topological) and Python to structure interaction data for sequential recommendation tasks.</li><li>Conducted experiments using SASRec (self-attention based sequential recommendation model) for chemical compound recommendation, evaluating performance across various hyperparameter configurations and molecular fingerprint types.</li></ul>	

<b>Institute of Molecular Medicine</b> Research Scientist	<b>Jan. 2018 – Sep. 2022</b> <i>Lisbon, Portugal</i>
<ul style="list-style-type: none"><li>Developed novel chemical biology strategies for the site-specific and site-selective modification of proteins.</li><li>Conducted site-directed mutagenesis by PCR to generate protein sequences with precise cysteines at different positions for site-selective conjugation.</li><li>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</li><li>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</li><li>Conducted the synthesis of chemical reagents for protein modification and their characterization by NMR and LC-MS</li></ul>	

<b>Yusuf Hamied Department of Chemistry, University of Cambridge</b> Visiting Research Scientist	<b>Sep. 2021 – Oct. 2021</b> <i>Cambridge, United Kingdom</i>
<ul style="list-style-type: none"><li>Assisted in bioconjugation and LC-MS characterization experiments of an antibody.</li></ul>	

<b>University of Greifswald</b> Research Scientist	<b>Oct. 2017 – Nov. 2017</b> <i>Greifswald, Germany</i>
<ul style="list-style-type: none"><li>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.</li></ul>	

- Conducted  $^1\text{H}$ - $^{15}\text{N}$  HSQC NMR experiments to map the epitope of an anti-amyloid- $\beta$  antibody.

## Institute of Molecular Medicine

Sep. 2015 – Sep. 2016

Research Scientist

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.

## Projects

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**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](#) 

- 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

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- **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, 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

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- **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](https://doi.org/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](https://doi.org/10.1002/anie.202108791))
- Posado-Fernández A, **Afonso CF**, Dória G, Flores O, Cabrita EJ. Epitope Mapping by NMR of a Novel Anti-A $\beta$  Antibody (STAB-MAb). *Scientific Reports* 2019, 9(1), 12241 (DOI: [10.1038/s41598-019-47626-2](https://doi.org/10.1038/s41598-019-47626-2))

## Certifications

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## Courses

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<b>14<sup>th</sup> Lisbon Machine Learning School (LxMLS2024)</b>   Lisbon, Portugal	<b>Jul. 2024</b>
<b>The Hitchhiker's Guide to single-cell RNA-sequencing</b>   Lisbon, Portugal	<b>Jul. 2024</b>
<b>Gulbenkian Training Program in Bioinformatics – Proteomics Data Analysis</b>   Oeiras, Portugal	<b>Sep. 2022</b>

## Communications

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<b>II Symposium of the Portuguese Glial Network</b>   Braga, Portugal	<b>May 2017</b>
<b>XLVII Annual Meeting of the Portuguese Society of Pharmacology</b>   Coimbra, Portugal	<b>Feb. 2017</b>

## Conferences

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<b>3<sup>rd</sup> European Fourier Transform Mass Spectrometry School</b>   Lisbon, Portugal	<b>Jul. 2022</b>
<b>4<sup>th</sup> European Fourier Transform Mass Spectrometry Workshop</b>   Lisbon, Portugal	<b>Jul. 2022</b>
<b>XLIV Meeting of the Portuguese Society for Immunology</b>   Lisbon, Portugal	<b>Jun. 2018</b>

## Scholarships and Awards

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<b>Scholarship to attend the Lisbon Machine Learning School 2024 (LxMLS2024)</b>   Lisbon, Portugal	<b>Jul. 2024</b>
<b>Research Fellowship in Data Science</b>   Lisbon, Portugal	<b>Nov. 2023</b>
<b>Research Fellowship in Biomedical Sciences</b>   Lisbon, Portugal	<b>Jul. 2022</b>
<b>FCT Doctoral Studentship</b>   Lisbon, Portugal	<b>Jan. 2018</b>
<b>IAESTE Internship</b>   Greifswald, Germany	<b>Oct. 2017</b>