LAURA SUDUPE

Bioinformatician

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PROFILE

Bioinformatics professional deeply engaged in exploring spatial transcriptomics and omic data to advance our understanding of critical health issues like bone marrow cancer and heart diseases.

Proficient in statistical methods and computational techniques to complex biological data to gain insights into complex diseases. Extensive academical journey enabling a broad spectrum of analytical tools, to tackle multifaceted research questions.

I am particularly passionate about leveraging my interdisciplinary knowledge to uncover new insights into disease mechanisms. Committed to collaborative research, I strive to synthesize and communicate scientific findings effectively, aiming to contribute to groundbreaking discoveries in biomedical research.

EMPLOYMENT HISTORY

Doctoral Researcher, KAUST (King Abdullah University of Science and Technology)

Mar 2021 — Present

KAUST, Saudi Arabia

- Led in-depth analysis of spatial transcriptomics within the bone environment, applying advanced statistical methods to unravel complex tissue information. Engaged in weekly interdisciplinary meetings to communicate findings and foster collaborative research.
- Conducted comprehensive studies on the bone marrow spatial microenvironment using multi-omics approaches, focusing on the intricate cell-to-cell interactions within healthy and multiple myeloma samples. This involved a holistic view of single-cell sequencing and spatial data analysis to illuminate underlying disease mechanisms.
- Developed and optimized analytical workflows, prioritizing robust data interpretation and leveraging a variety of computational tools for enhanced tumor analysis.

Key Technologies Utilized:

- Statistical Analysis Tools, Spatial Transcriptomics Analysis, Multi-Omics Data Integration, Single Cell Sequencing, Machine Learning

Visiting Researcher, Okinawa Institute of Science and Technology

Aug 2023 — Nov 2023

Okinawa, Japan

Participated in a pivotal research project aimed at exploring the applications of graph neural networks to enhance our primary research objectives. This exploration was grounded in the investigation of novel computational models to analyze complex biological data structures, with a special focus on their potential to advance our understanding of cellular interactions in disease contexts. Fostered significant collaborations with researchers from the university, contributing to an enriching exchange of ideas and methodologies across disciplines.

Key Areas of Focus:

- Graph Neural Networks, Computational Model Development, Image Analysis, Interdisciplinary Collaboration

Research Assistant, NavarraBiomed

Sep 2021 — Mar 2022

Pamplona, Spain

- Conducted advanced spatial profiling to delve into the myocardial infarction environment, with a particular emphasis on deciphering the role of fibroblasts in tissue response and recovery processes. This work was pivotal in enhancing our understanding of cellular dynamics post-infarction.
- Engaged in regular weekly reporting and collaborative meetings, where I presented scientific findings to team members and supervisors. These sessions were instrumental in driving forward the research agenda through critical discussion and planning of future actions.

- Leveraged cutting-edge techniques in single-cell sequencing and spatial transcriptomics to analyze and interpret complex biological data, contributing to a deeper insight into the cellular architecture of the heart under stress conditions.

Key Techniques Utilized:

- Spatial Profiling, Single-Cell Sequencing, Spatial Transcriptomics

Chemist Intern, TECNALIA Research & Innovation
Apr 2019 — Mar 2020
Donostia / San Sebastián, Spain

Engaged in rigorous testing and analysis of polymeric materials to understand their properties and behaviors. This involved:

- Performing detailed evaluations and creating comprehensive reports on the characteristics and performance of polymeric materials, leveraging advanced analytical techniques.
- Contributing to the understanding of material science through the successful completion of my bachelor's thesis titled "Study of the evolution of compounds based on cellulose and thermoplastic materials during their service life". This work focused on investigating the degradation and stability of cellulose-based compounds and thermoplastics, providing insights into their longevity and service life under various conditions.

Key Techniques Utilized:

- Fourier Transform Infrared Spectroscopy (FTIR), Differential Scanning Calorimetry (DSC), Thermogravimetric Analysis (TGA)

Computational Chemistry Intern, Computational Chemistry Group, UPV - DIPC
Jul 2018 — Oct 2018
Donostia / San Sebastián, Spain

During this brief but intensive internship, I focused on the exploration and characterization of nano-materials, specifically:

- Conducting detailed investigations into the optimal adsorption sites for Pt nanoclusters on pristine graphene surfaces, aiming to understand the interaction dynamics at the nanoscale.
- Pioneering in the field of graphene modification, by doping with various elements, notably from the main group, to assess the stability and reactivity of these enhanced materials. This included evaluating the effects of doping on both flawless and defective graphene structures.
- Characterizing the resulting complexes through a comprehensive analysis of adsorption energies, projected density of states (PDOS), and charge distributions, contributing to the understanding of their potential applications in nanotechnology.

Key Focus Areas:

- Nano-materials Characterization, Graphene Doping and Modification, Nanocluster Adsorption Studies

EDUCATION

KAUST (King Abdullah University of Science and Technology)
Jan 2022 — Dec 2024
KAUST, Saudi Arabia

Doctor of Philosophy - PhD in Biosciences

UNIR
Oct 2023 — Oct 2024
Logroño, Spain

Master's Degree in Artificial Intelligence

Universitat Oberta de Catalunya
Sep 2020 — Sep 2021
Barcelona, Spain

Master's Degree in Bioinformatics and Biostatistics

UPV/EHU
Sep 2015 — Jul 2020
Donostia / San Sebastián

Bachelor's Degree in Chemistry

LANGUAGES

English

Spanish

Euskera