Albert Fradera Sola

Bioinformatician | Data Scientist | Proteomics & Genomics Scientist

I am a collaborative and adaptable scientist with a strong passion for interdisciplinary research. I thrive in dynamic, diverse environments and enjoy tackling complex challenges through creative data analysis. My enthusiasm for data visualization drives me to continually improve the communication of scientific insights. I value open-minded teamwork and take pride in fostering supportive, productive relationships with colleagues.

Education

2024 | 2018

PhD in Bioinformatics & Molecular Biology

JGU University — Mainz, Germany

- **PhD thesis**: Quantitative Mass Spectrometry-based Proteomics to Investigate RNA-protein Interactions

2017 | 2016

M.Sc. in Omics Data Analysis

University of Vic — Barcelona, Spain

- **Master thesis**: Scoring Function for Finding *Lolium perenne* DEGs

2016 | 2009

B.Sc. in Biochemistry

University of Barcelona — Barcelona, Spain

- **Bachelor thesis**: NMR Studies on Alpha-synuclein

Research Experience

Current | 2023

Postdoctoral Researcher

Friedrich Loeffler Institute — Heidelberg, Germany

- Postdoctoral researcher with Dr. Falk Butter (Falk.Butter@fli.de)
- **Publications**: 2 lead-author papers (in preparation), 1 co-author paper

2023 | 2018

PhD Candidate

Institute of Molecular Biology — Mainz, Germany

- PhD candidate with Dr. Falk Butter (Falk.Butter@fli.de)
- **Publications**: 1 lead-author papers, 6 co-author papers

2017

Master Student

Institute of Biological, Environmental and Rural Sciences — Aberystwyth, UK

- M.Sc. student with Dr. Narcis Fernandez-Fuentes (naf4@aber.ac.uk)
- **Publications**: 1 lead-author paper, 1 co-author paper

Contact

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My CV as a Network

Bullet points , , and are connected by year. Interactive version here.

Language Fluency

Catalan	5/5
Spanish	5/5
English	4.5/5
German	1.5/5

1 - Beginner *Native - 5*

Dry Lab Projects and Related Skills

Infectome Profiling of Three *Leishmania* Species

Keywords: Mass spectrometry-based Proteomics | Orthology | Clustering

- Analyzed proteome alterations in *M. musculus* following infection with three *Leishmania* species.
- Established protein orthology across *Leishmania* strains and compared expression profiles.
- Applied Self-Organizing Maps (SOMs) and Principal Component Analysis (PCA) for clustering and dimensionality reduction.

Network-based Assignment of RNA-Binding Proteins' Functionality

Keywords: Network biology | Functional analysis | R Shiny

- Predicted protein functions using annotation enrichment at the domain, molecular function, and pathway levels.
- Constructed interactive functional protein networks from quantitative proteomics data using R Shiny.

Embryonic Development Proteome Profiling of *Xenopus* Species

Keywords: Mass spectrometry-based Proteomics | SOM | PCA

- Compared proteomic profiles of *Xenopus laevis* and *X. tropicalis* across seven developmental stages.
- Used SOMs and PCA to identify expression patterns and stage-specific protein dynamics.

Scoring Function for RNA-Seq Differential Expression Assessment

Keywords: NGS | RNA-Seq | Quality control | DEGs

- Developed a unified scoring framework to benchmark gene expression results from DESeq2, edgeR, and limma+voom.

ChIP-Seq Characterization of a Novel ATPase in *T. brucei*

Keywords: NGS | ChIP-Seq | Genome tracks

- Mapped H2A.Z deposition via ChIP-Seq and visualized genomic localization using genome browser tracks.

Wet Lab Projects and Related Skills

Immunoprecipitation of RNA-binding Proteins in *S. cerevisiae*

Keywords: Yeast | Protein Immunoprecipitation | Experimental design

- Designed and executed protocols to map RNA-binding protein interactions via immunoprecipitation.

Mass Spectrometry Quantitative Proteomics

Keywords: Mass spectrometry | DML | LFQ | In-gel digestion

- Applied both dimethyl labeling (DML) and label-free quantification (LFQ) protocols to support proteomic analyses across multiple projects.

Key Skills

- MS-based Proteomics
- NGS-based Genomics
- Network Biology
- Statistical Data Analysis
- Data Visualization

Coding Skills

R	4.5/5
Bash	3.5/5
Markdown	3/5
css	2/5
Python	1.5/5
HTML	1/5

1 - Beginner *Expert - 5*

Proficient in R, including packages:

Proteomics Software Skills

MaxQuant	4/5
Proteinortho	3.5/5
InterPro	3.5/5

1 - Beginner *Expert - 5*

Genomics Software Skills

STAR	4.5/5
Bowtie	4/5
FastQC	4/5
MultiQC	4/5
fastqscreen	4/5
deepTools	3.5/5
HTSeq	3.5/5
MACS2	2.5/5
rMATS	2.5/5

1 - Beginner *Expert - 5*

Publications

Articles with Proteomics Analysis

1 lead-author | 4 co-author

- 2023 | Nucleic Acid Research | https://doi.org/10.1093/nar/gkad245
- 2023 | iScience | https://doi.org/10.1016/j.isci.2023.106778
- 2023 | PLoS Pathogens | https://doi.org/10.1371/journal.ppat.1011486
- 2021 | Journal of Cell Science | https://doi.org/10.1242/jcs.254300
- 2020 | RNA | https://doi.org/10.1261/rna.076281.120

Articles with Genomics Analysis

1 lead-author | 5 co-author

- 2025 | Communications Biology | https://doi.org/10.1038/s42003-025-07666-z
- 2023 | Nature Communications | https://doi.org/10.1038/s41467-023-43397-7
- 2022 | PLoS Pathogens | https://doi.org/10.1371/journal.ppat.1010514
- 2021 | Nature Comunications | https://doi.org/10.1038/s41467-021-22861-2
- 2021 | PLoS One | https://doi.org/10.1371/journal.pone.0249636
- 2019 | PLoS One | https://doi.org/10.1371/journal.pone.0220518

Conferences and Courses

Conferences

Where research meets community

- 2024 | EMBL: Quantitative biology to molecular mechanisms | Poster presentation
- 2022 | CSAMA: Statistical data analysis for genome-scale biology | Flash talk
- 2021 | CSH: Network biology | Plenary talk
- 2019 | FEBS advanced course: Chromatin proteomics| Poster presentation

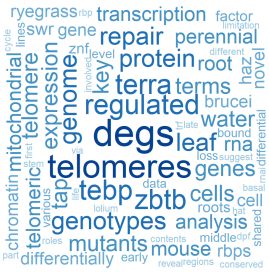
Courses

Learning beyond the lab

- 2022 | Data visualization for scientists
- 2021 | Scientific writing
- 2020 | Convincing scientific presentations
- 2020 | Regression Models | Coursera certificate
- 2020 | Statistical Inference | Coursera certificate

Abstract Word Cloud

Visual summary of research themes based on keywords extracted from the publications' abstracts.



Publication & Code Access

Access publications, source code, and author profiles at the following links.

- AFraderaSola
- 0000-0002-4780-9312
- Google Scholar

Document created with the R packages pagedown and datadrivencv.

The source code is available on github.

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