OCÉANE CASSAN

Currently searching for a Postdoctoral position

EDUCATION

2019 | 2018 — **University Claude Bernard (UCBL)**
MSc in Computer Science specialized in Artificial Intelligence
Lyon, France

2019 | 2014 — **National Institute of Applied Sciences (INSA)**
Engineering degree in Bioinformatics and Modelling Lyon, France

RESEARCH EXPERIENCE

2022 | 2019 — **PhD - Institute for Plant Sciences in Montpellier, SIRENE team**
Predictive biology to learn the regulatory pathways in plants under climate change
Montpellier, France

- **Statistical inference of the gene regulatory networks in Arabidopsis thaliana under elevated CO_2 and nutritional limitations**. Network reconstruction via ensembles of regression trees or penalized linear regression based using transcriptomic data and regulatory sequences information.
- **Computational and experimental validation** of network-derived hypotheses and candidate genes.
- **Genome Wide Association studies** to identify genetic determinants of mineral status repsonse under elevated CO_2
- **Developement of an interactive suite** for transcriptomic analyses and the inference of regulatory networks
- References : Antoine Martin and Sophie Lèbre

2019 — **6 months research internship - LIRMM, MAB team**
Supervised learning to predict chromosomic interactions in the human genome, based on CAGE data and 3C techniques
Montpellier, France

- Reference : Laurent Bréhélin

2017 — **1 month research internship - LIRMM, MAB team**
Sparse logistic regression to model transcription factor combinatorics for gene regulation in human
Montpellier, France

- Reference : Laurent Bréhélin

PROFESSIONAL EXPERIENCE

2018 — **Internship in quantitative biology - Nanolive SA**
Development of software tools for the 3D detection and tracking of biological objects in label free images
Lausanne, Switzerland

- Reference : Mathieu Frechin

CONTACT

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SKILLS

Transdisciplinarity : ability to understand and articulate biology, statistics and computer science to generate knowledge

Statistics : statistical learning models, regression, sparse regression, mixed models, machine learning, tree-based methods, feature selection.

Biology : gene regulation, plant systems biology, Next Generation Sequencing data analysis

Computer science : R (ggplot, tidyverse, package developement, Rmarkdown, Shiny), Python, LaTeX-beamer, Bash, calculation server administration and usage, web application deployment

TEACHING EXPERIENCE

2022 | 2021

Instructor of R for L3 plant biology students

Teaching material — University of Montpellier, France

- Good practices and scientific integrity around data analysis
- Data manipulation and visualisation in R

2022 | 2020

Instructor of Rmarkdown for M1 data science students

Teaching material — University Paul Valery of Montpellier, France

IPSiM, Montpellier, France

2022

2022

Regulatory network inference for M1 plant biology students

Statistical methods, and practical session

University of Montpellier, France

Student supervising

- M2 intern in biostatistics appied to gene regulation and transcriptomics
- 6 M1 stduents in data science for their annual project on Genome-Wide-Association studies

2021-2022

SELECTED PUBLICATIONS

2021

Inferring and Analyzing Gene Regulatory Networks from Multi-Factorial Expression Data: A Complete and Interactive Suite

Cassan, Océane, Sophie Lèbre, and Antoine Martin. 2021 BMC Genomics 22 (1). https://doi.org/10.1186/s12864-021-07659-2

2019

Probing Transcription Factor Combinatorics in Different Promoter Classes and in Enhancers

Vandel, Jimmy, Océane Cassan, Sophie Lèbre, Charles-Henri Lecellier, and Laurent Bréhélin. 2019 BMC Genomics 20 (1): 1–19. https://doi.org/10.1186/s12864-018-5408-0f

CONFERENCES AND WORKSHOPS

2022

Molecular responses of plants facing climate change

Organizer and presenter — Montpellier, France

- Poster presenting Genome Wide Association studies, linking genetic determinants to mineral status response under elevated CO2 in Arabidopsis populations

2021

JOBIM

Presenter — Virtual

- Poster presenting the Dashboard for the Inference and Analysis of Networks from Expression data

2021

International Plant Systems Biology

Presenter — Virtual

- Poster presenting Gene Regulatory Network inference of Arabidopsis under eCO2 and nutritional limitations

2020

Netbio

Speaker — Virtual

- Talk presenting the Dashboard for the Inference and Analysis of Networks from Expression data