

# OCÉANE CASSAN

Currently searching for a postdoctoral position



## EDUCATION

- 2019  
|  
2018 • **University Claude Bernard (UCBL)**  
MSc in Computer Science - 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**  
Predictive biology to learn the regulatory pathways in plants under climate change, **SIRENE** team 📍 Montpellier, France
  - **Statistical inference of the gene regulatory networks in *Arabidopsis thaliana* under elevated CO<sub>2</sub> 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 response under elevated CO<sub>2</sub>
  - **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

✉ [oceane.cassan@cnrs.fr](mailto:oceane.cassan@cnrs.fr)

🌐 [github.com/OceaneCsn](https://github.com/OceaneCsn)

📞 +33 6 79 42 48 89

## 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 development, 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 Valéry of Montpellier, France
- 2022
- **Regulatory network inference for M1 plant biology students**  
Statistics and regression techniques for network inference.  
 University of Montpellier, France
  - **Student supervision**  
IPSiM, Montpellier, France  2021-2022
    - M2 intern in biostatistics applied to gene regulation and transcriptomics
    - 6 M1 students in data science for their annual project on Genome-Wide-Association studies

## 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). [See article](#)
- 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.  
[See article](#)

## CONFERENCES AND WORKSHOPS

- 2022
- **Molecular responses of plants facing climate change**  
Organizer and presenter  Montpellier, France
    - Poster presenting genetic determinants to mineral status response under elevated CO<sub>2</sub> 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 eCO<sub>2</sub> and nutritional limitations
- 2020
- **Netbio**  
Speaker  Virtual
    - Talk presenting the Dashboard for the Inference and Analysis of Networks from Expression data