FABRÍCIO ALMEIDA-SILVA

I am a computational biologist interested in developing and applying algorithms to understand how evolution shaped plant genomes and gene networks. Additionally, I am interested in developing biometrical and biostatistical frameworks to identify genes associated with quantitative traits of agronomical relevance in crop species, especially legumes.

EDUCATION

Current | 2020

Master's Candidate, Plant Biotechnology
State University of Northern Rio de Janeiro — RJ, Brazil

2019 | 2016

Undergraduate, Biological Sciences
State University of Northern Rio de Janeiro — RJ, Brazil

- Thesis: Analysis of soybean transcriptional regulation using gene coexpression networks

RESEARCH EXPERIENCE

Current | 2020

Graduate Researcher
Venancio Lab — State University of Northern Rio de Janeiro

- Development of an R package to infer and compare biological networks
- Development of an R package to integrate GWAS and RNA-seq data to mine candidate genes associated with agronomically important traits
- Development and optimization of pipeline to process and analyze large-scale RNA-seq data
- Genomic analysis of stress-related gene families in soybean

2019 | 2017

Undergraduate Researcher
Venancio Lab — State University of Northern Rio de Janeiro

- Analysis of large-scale RNA-seq data
- Construction of the largest soybean expression atlas

PUBLICATIONS

1 **F Almeida-Silva**, TM Venancio (2021). *Integration of genome-wide association studies and gene coexpression networks unveils promising soybean resistance genes against five common fungal pathogens*. **bioRxiv**.

2 DK Turquetti-Moraes, KC Moharana, **F Almeida-Silva**, F Pedrosa-Silva et al. (2021). *Integrating omics approaches to discover and prioritize candidate genes involved in oil biosynthesis in soybean*. **bioRxiv**.

3 **F Almeida-Silva**, TM Venancio (2021). *cageminer: an R/Bioconductor package to prioritize candidate genes by integrating GWAS and gene coexpression networks*. **bioRxiv**.

CONTACT

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PROGRAMMING SKILLS

- R
- Bash
- Python
- Perl
- SQL
- CSS

LANGUAGES

- Portuguese
- English
- Spanish
- French

Last updated on 2021-09-12.

4 **F Almeida-Silva**, TM Venancio (2021). *BioNERO: an all-in-one R/Bioconductor package for comprehensive and easy biological network reconstruction*. **bioRxiv**.

5 **F Almeida-Silva**, TM Venancio (2021). *Pathogenesis-related protein 1 (PR-1) genes in soybean: genome-wide identification, structural analysis and expression profiling under multiple biotic and abiotic stresses*. **bioRxiv**.

6 **F Almeida-Silva**, KC Moharana, TM Venancio (2021). *The state of the art in soybean transcriptomics resources and gene coexpression networks*. **in silico Plants**. 3 (1), diab005

7 S Sangi, PM Araújo, FS Coelho, RK Gazara, **F Almeida-Silva** et al. (2021). *Genome-Wide Analysis of the COBRA-Like Gene Family Supports Gene Expansion through Whole-Genome Duplication in Soybean (Glycine max)*. **Plants**. 10 (1), 167

8 **F Almeida-Silva**, KC Moharana, FB Machado, TM Venancio (2020). *Exploring the complexity of soybean (Glycine max) transcriptional regulation using global gene co-expression networks*. **Planta**. 252 (6), 1-12

9 KC Moharana, **F Almeida-Silva**, RK Gazara, F Pedrosa-Silva, FS Coelho et al. (2020). *Systematic analysis of 1,298 RNA-Seq samples and construction of a comprehensive soybean (Glycine max) expression atlas.*. **The Plant Journal: for Cell and Molecular Biology**.

R PACKAGES AND DATA PRODUCTS

F Almeida-Silva, TM Venancio (2021). *BioNERO: Biological Network Reconstruction Omnibus*. DOI: 10.18129/B9.bioc.BioNERO

F Almeida-Silva, TM Venancio (2021). *cageminer: Candidate Gene Miner*. DOI: 10.18129/B9.bioc.cageminer

F Almeida-Silva, TM Venancio (2021). *SoyFungiGCN: R/Shiny package to explore a gene coexpression network of soybean infected with pathogenic fungi.*
Package: github.com/almeidasilvaf/SoyFungiGCN
Web app: soyfungigcn.venanciogroup.uenf.br

AWARDS AND DISTINCTIONS

2021 — **Best oral presentation** — 6th Fluminense Graduate Congress — Brazil

2020 — **Honorable mention** — 3rd Symposium on Plant Biotechnology — Brazil

2020 — **Best poster presentation** — 5th Fluminense Graduate Congress — Brazil

2020 — **Undergraduate Honors** — State University of Northern Rio de Janeiro — Brazil

2015 — **Honorable mention** — Brazilian Maths Olympiad for Public Schools — Brazil

COMPLEMENTARY EDUCATION

2021	**Building Web Applications in Django** University of Michigan	Michigan, USA
2021	**Using Databases with Python** University of Michigan	Michigan, USA
2021	**Using Python to Access Web Data** University of Michigan	Michigan, USA
2020	**Integrated Analysis in Systems Biology** Icahn School of Medicine at Mount Sinai	New York, USA
2020	**Dynamical Modeling Methods for Systems Biology** Icahn School of Medicine at Mount Sinai	New York, USA
2020	**Network Analysis in Systems Biology** Icahn School of Medicine at Mount Sinai	New York, USA
2020	**Statistics for Genomic Data Science** Johns Hopkins University	Baltimore, USA
2020	**Developing Data Products** Johns Hopkins University	Baltimore, USA
2020	**Building Data Visualization Tools** Johns Hopkins University	Baltimore, USA
2020	**Regression Models** Johns Hopkins University	Baltimore, USA
2020	**Advanced R Programming** Johns Hopkins University	Baltimore, USA
2020	**Algorithms for DNA sequencing** Johns Hopkins University	Baltimore, USA
2020	**Python for Genomic Data Science** Johns Hopkins University	Baltimore, USA
2020	**Practical Machine Learning** Johns Hopkins University	Baltimore, USA
2020	**Statistical Inference** Johns Hopkins University	Baltimore, USA

2019 **Plant Bioinformatics**
Johns Hopkins University — Baltimore, USA

2019 **Bioinformatic Methods**
Johns Hopkins University — Baltimore, USA

SELECTED TALKS AND POSTERS

1. **F Almeida-Silva**. *cageminer: mining candidate genes by integrating GWAS and gene coexpression networks*. **BioC2021**. Virtual. (2021)

2. **F Almeida-Silva**, TM Venancio. *Prioritizing biotic stress-related genes in soybean by integrating GWAS and gene coexpression network analysis*. **5th Meeting on Genetics and Plant Breeding**. Viçosa, Brazil. (2020)

3. **F Almeida-Silva**, KC Moharana, FB Machado, RK Gazara, TM Venancio. *Global coexpression network analysis unveils important aspects of evolution and transcriptional regulation in soybean (Glycine max)*. **15th International Conference of the Brazilian Society for Bioinformatics and Computational Biology**. Campos do Jordão, Brazil. (2019)

4. **F Almeida-Silva**, FB Machado, KC Moharana, TM Venancio. *Gene coexpression networks uncover transcription factors that probably shape the transcriptional landscape during soybean germination*. **47th Annual Meeting of the Brazilian Society for Biochemistry and Molecular Biology**. Joinville, Brazil. (2018)

SERVICE

REVIEWER

- 2021 - current **Scientific Reports**
- 2021 - current **BMC Plant Biology**