Guilherme Marcelino Viana de Siqueira

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Google Scholar   Github   Linkedin

Summary

I am a motivated doctoral candidate with more than eight years of hands-on experience in Molecular Biology, Microbiology, and Bioinformatics. I expect to defend my thesis in the spring of 2025 and am eager to continue developing my skills and gaining experience as a bioinformatician and data scientist after graduation.

Key skills & techniques

Agarose electrophoresis · Bacterial transformation · Bash scripting · Biopython · D3.js · dada2 · DESeq2 · Flow cytometry · flowCore · Gibson assembly · Git · Guppy · JavaScript · Kallisto · Matplotlib · Minimap2 · Nucleic acid extraction · NumPy · Pandas · Python · PCR · Quarto · R · R Shiny · Restriction cloning · RSEM · Tidyverse · Trimmomatic · vegan

Education

	Year
University of São Paulo, Ribeirão Preto - São Paulo, Brazil **PhD in Molecular Biology**	2020 - current
University of São Paulo, Ribeirão Preto - São Paulo, Brazil **MSc. in Biochemistry**	2018 - 2020
University of Brasília, Brasília - Distrito Federal, Brazil **BSc. in Biotechnology**	2014 - 2017

Experience

Research Associate

Lawrence Berkeley National Laboratory | Joint BioEnergy Institute (JBEI) (2023 - 2024)

Project: Improving biofuel production from lignocellulosic biomass in Pseudomonas putida

I collaborated with Dr. Aindrila Mukhopadhyay at JBEI (Emeryville, CA, US) to develop tolerized *P. putida* strains with enhanced growth and biofuel production metrics in mock hydrolysate culture media. Results deriving from this work are being compiled in a manuscript to be submitted for publication later this year.

Graduate Student

University of São Paulo (2018 - ongoing)

Project: Searching for new molecular tools to enhance P. putida robustness to abiotic stresses

In my PhD project, we intend to develop and characterize new tools for better manipulating *P. putida* as a host for bioproduction. During this project:

- I have designed and validated the pVANT family of vectors, based on the Standard European Vector Architecture (SEVA). This work has been published in ACS Synthetic Biology in 2023.

- I compiled a transcriptomic database from publicly available RNA-seq data of *P. putida*, identifying novel stress-responsive promoters and tolerance-promoting proteins currently under further characterization in our group.

Project: Expanding acid resistance in bacteria using synthetic circuits

During my Master's degree, I led a project in which we designed synthetic operons, aiming to build optimized gene clusters that conferred *Escherichia coli* the ability to thrive in under extremely acidic conditions. This work was published in ACS Synthetic Biology in 2020.

Other interests

I am passionate about data visualization and tools that simplify biological data analysis and improve reproducibility. I am currently developing my first two R packages: mipreadr, a package for the analysis of microbial growth data from microplate readers, and fitnessbrowseR, a package for programmatic retrieval of data from the Fitness Browser database. I also recently began teaching myself JavaScript for the development of web apps using React and D3.

Selected publications

- **de Siqueira, Guilherme Marcelino Viana** and María-Eugenia Guazzaroni. 'Host-Dependent Improvement of GFP Expression in *Pseudomonas Putida* KT2440 Using Terminators of Metagenomic Origin'. ACS Synthetic Biology 12, no. 5 (May 2023): 1562–66. https://doi.org/10.1021/acssynbio.3c00098.

- Mancilio, Lucca Bonjy Kikuti, Guilherme Augusto Ribeiro, Erica Janaina Rodrigues de Almeida, **Guilherme Marcelino Viana de Siqueira**, Rafael Silva Rocha, María-Eugenia Guazzaroni, Adalgisa Rodrigues De Andrade, and Valeria Reginatto. 'Adding Value to Lignocellulosic Byproducts by Using Acetate and *p*-Coumaric Acid as Substrate in a Microbial Fuel Cell'. Industrial Crops and Products 171 (November 2021): 113844. https://doi.org/10.1016/j.indcrop.2021.113844.

- **de Siqueira, Guilherme Marcelino Viana**, Felipe Marcelo Pereira-dos-Santos, Rafael Silva-Rocha, and Maria-Eugenia Guazzaroni. 'Nanopore Sequencing Provides Rapid and Reliable Insight into Microbial Profiles of Intensive Care Units'. Frontiers in Public Health 26 (August 2021). https://doi.org/10.3389/fpubh.2021.710985.

- Mancílio, Lucca Bonjy Kikuti, Guilherme Augusto Ribeiro, Erica Mendes Lopes, Luciano Takeshi Kishi, Leonardo Martins-Santana, **Guilherme Marcelino Viana de Siqueira**, Adalgisa Rodrigues Andrade, María-Eugenia Guazzaroni, and Valeria Reginatto. 'Unusual Microbial Community and Impact of Iron and Sulfate on Microbial Fuel Cell Ecology and Performance'. Current Research in Biotechnology 2 (November 2020). https://doi.org/10.1016/j.crbiot.2020.04.001.

- **de Siqueira, Guilherme Marcelino Viana**, Rafael Silva-Rocha, and María-Eugenia Guazzaroni. 'Turning the Screw: Engineering Extreme pH Resistance in *Escherichia coli* through Combinatorial Synthetic Operons'. ACS Synthetic Biology 9, no. 6 (June 2020): 1254–62. https://doi.org/10.1021/acssynbio.0c00089.

Grants and awards

2023. Research Internship Abroad (BEPE) fellowship awarded by the São Paulo Research Foundation (FAPESP)

2020. Research highlight in Nature Chemical Biology: *'Turning the Screw: Engineering Extreme pH Resistance in* Escherichia coli *through Combinatorial Synthetic Operons'*

2019. "Best poster" category award in the III National Meeting of Biotechnological and Agroindustrial Chemistry. EnqBiotec. Brazil.

2015. "Young talents for Science" fellowship by the Brazilian federal funding agency CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior).