Guilherme Marcelino Viana de Siqueira

Ribeirão Preto, SP, Brazil +55 16 99184-7365 gmvsiqueira@gmail.com

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 | SQLite | 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

During my PhD, I collaborated with Dr. Aindrila Mukhopadhyay at JBEI (Emeryville, CA, US) to develop *P. putida* strains with improved growth and biofuel production in mock hydrolysate culture media. Results deriving from this work were submitted for publication and are available as a preprint on bioRxiv.

Graduate Student

University of São Paulo (2018 - ongoing)

Project: Leveraging the genomic features of P. putida for robustness against abiotic stressors

In my PhD project, we intend to develop and characterize new tools for better manipulating *P. putida* as a host for bioproduction. In 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 curated a database of publicly available RNA-seq data of *P. putida*, which allowed our group to identify target genomic features, currently under further characterization.

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 processing 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 developing web apps using React and D3.

Selected publications

- **Guilherme Marcelino Viana de Siqueira**, Aparajitha Srinivasan, Yan Chen, Jennifer W Gin, Christopher J Petzold, Taek Soon Lee, María-Eugenia Guazzaroni, Thomas Eng and Aindrila Mukhopadhyay. 'Alternate routes to acetate tolerance lead to varied isoprenol production from mixed carbon sources in *Pseudomonas putida*'. bioRxiv Preprint (October 2024); https://doi.org/10.1101/2024.10.29.620962.

- **Guilherme Marcelino Viana de Siqueira** 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.

- **Guilherme Marcelino Viana de Siqueira**, 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.

- Lucca Bonjy Kikuti Mancílio, 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.

- **Guilherme Marcelino Viana de Siqueira**, 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).