

Caio Matheus Prates Batalha Faria

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A final year PhD candidate with a research background in molecular biology and systems biology. My main research interests are in the biology of aging and systems biology fields.

Education

University of São Paulo (ongoing)

PhD

Used a systems biology approach, particularly network science and causal discovery, to analyze age-related patterns in gene expression data of humans during aging, and find potential candidate genes for interventions aimed at modulating age related alterations. Currently writing thesis. Joint supervisors: Professor Nadja Cristhina de Souza Pinto, Department of Biochemistry, Chemistry Institute (University of São Paulo), and Professor André Fujita, Institute of Mathematics and Statistics (University of São Paulo).

University of São Paulo (2018)

MSc

Explored the relationship between the mTOR protein, a known modulator of longevity in model organisms, and DNA repair, using molecular biology techniques. Supervisor: Professor Nadja Cristhina de Souza Pinto, Department of Biochemistry, Chemistry Institute (University of São Paulo).

Federal University of the ABC (2013)

BSc Industrial Engineering

BSc Science and Technology

Joint BSc, with high interdisciplinary content, focusing on STEM, with a few credits in humanities.

Federal Institute of Cubatão (2008)

High school.

Teaching/supervising experience

Teaching assistant, University of São Paulo

- Teaching assistant 3 times for the Experimental Biochemistry course and 2 times for the Molecular Biology course
- Assisting with programme development and student assessment
- Assisting in wet lab experiments and bioinformatics assignments
- Delivering teaching sessions

Guest lecturer, MSc Health Sciences, Albert Einstein Hospital - São Paulo

- Delivered lectures on the “Aspects of the Research on Aging” course by invitation for 3 years
- Student assessment

Molecular biology summer school lecturer, University of São Paulo (2017)

- Coordinating summer school programme
- Devising and delivering interactive wet lab experiments

Publications

- Alencar RR, Batalha CMPF, Freire TS, de Souza-Pinto NC. Enzymology of mitochondrial DNA repair. *Enzymes*. 2019;45:257-287. doi: 10.1016/bs.enz.2019.06.002.
- Batalha CMPF, Vercesi AE, Souza-Pinto NC. The Many Roles Mitochondria Play in Mammalian Aging. *Antioxid Redox Signal*. 2022 May;36(13-15):824-843. doi: 10.1089/ars.2021.0074.
- Welsh H, Batalha CMPF, Li W, Mpye KL, Souza-Pinto NC, Naslavsky MS, Parra EJ. A systematic evaluation of normalization methods and probe replicability using infinium EPIC methylation data. *Clin Epigenetics*. 2023 Mar 11;15(1):41. doi: 10.1186/s13148-023-01459-z.
- Batalha CMPF, Fujita A, de Souza-Pinto NC. Combination of differential expression and co-expression network analyses identify novel conserved age-associated changes among different tissues. *bioRxiv* 2023.05.26.542445; doi: <https://doi.org/10.1101/2023.05.26.542445>.
- Rowies FT, Batalha CMPF, Nakahara TS, Malnic B, de Souza-Pinto NC. Expression of DNA repair genes is modulated during differentiation of olfactory sensory neurons. *bioRxiv* 2023.04.06.535865; doi: <https://doi.org/10.1101/2023.04.06.535865>.

Research skills

- Application of systems biology and bioinformatics techniques: differential expression analysis, network science, causal discovery, mendelian randomization, enrichment analysis, differential methylation analysis, linear models (simple and mixed), genome alignment, among others.

- Application of wet lab molecular biology and biochemistry techniques: western blot, RT-PCR, enzyme assays, Searhorse analyzer, flow cytometry, cell culture, mitochondria isolation, agarose DNA electrophoresis, among others.
- Programing languages: R and Python.

Other qualifications

- English (fluent)
- Spanish (intermediate)

Employment

Consultant, KPMG Structured Finance, São Paulo (2012-2014)

- Structuring projected finances of infrastructure projects
- Market research for infrastructure projects
- Business valuation
- Other types of financial modeling

Intern, Novelis/Aditya Birla, São Paulo (2011-2012)

- Market research
- Writing a monthly newsletter about the Brazilian market in some specific sectors of interest of the company
- Prospecting engineering companies