Guilherme Zainotti Miguel Fahur Bottino

Department of Biological Sciences, Wellesley College
106 Central St, Wellesley, MA, USA 02481
gz101@wellesley.edu

EDUCATION:

Date	Course	Degree	Institution
2010-2013	Chemistry	B.Sc	University of Campinas (UNICAMP) - Brazil Supervisor: Prof. Dr. Oswaldo Luiz Alves
	Thesis: *Study of the Purification and Functionalization of Carbon Nanotubes with Biologically Interesting Amines*		
2017-2019	Chemistry	M.Sc	University of Campinas (UNICAMP) - Brazil Supervisor: Prof. Dr. Leandro Martínez
	Thesis: *Statistical methods of cross-linking constraint selection for assisted protein structure determination*		
2019-2023	Chemistry	Ph.D.	University of Campinas (UNICAMP) - Brazil Supervisor: Prof. Dr. Leandro Martínez
	Thesis: *Prediction of secondary structures of proteins by sequence processing employing an accessible and ultra-parallelized language model*		

POSTDOCTORAL TRAINING:

Date	Institution	Department	Appointment/Supervisor
2025-present	Wellesley College	Biological Sciences	Researcsh Scientist Prof. Dr. Vanja Klepac-Ceraj
2022-2025	Wellesley College	Biological Sciences	Postdoctoral Associate Prof. Dr. Vanja Klepac-Ceraj
	Joint-appointment with Prof. Dr. Curtis Huttenhower Department of Biostatistics, Harvard T.H. Chan School of Public Health		

NON-ACADEMIC APPOINTMENTS:

Date	Appointment/Position	Organization
2011-2015	High School Chemistry Teacher	Etapa Education Group São Paulo, SP, Brazil
2016-2020	Editorial Assistant	FTD Educational Press São Paulo, SP, Brazil
2016-2017	Project Management Officer, Lead Psychometrics Specialist	Laplace Center for Educational Excellence, SP, Brazil
2019-2025	Founder & CEO, Lead Data Scientist	Metazoid Technology and Data Science, SP, Brazil

SUPERVISION, TEACHING AND TRAINING:

Teaching in higher education courses:

Date	Role	Course
2013	Teaching Assistant	QG108 - General Chemistry and Chemical Structure *Institute of Chemistry, University of Campinas, Brazil*
2019	Teaching Assistant	QF935 - Special Topics in Physical Chemistry V: Computational Simulation of Chemical Systems *Institute of Chemistry, University of Campinas, Brazil*
2021	Teaching Assistant	QF331 - Physical Chemistry I *Institute of Chemistry, University of Campinas, Brazil*

Short-length teaching:

Date	Role	Course
2023	Main Instructor	Machine Learning for Multimodal Data Integration: Genetics, Epigenetics, Microbiome and Neurodevelopment *São Paulo University, São Paulo, Brazil (32h)*
2025	Course Helper	Biobakery Workshop *Broad Institute, Cambridge, MA, USA (40h)*

Advisory and supervisory responsibilities:

Date	Name of Trainee	Trainee Role	Type of supervision
2019	Alex Sandro M. Bonete	*High School Visiting Fellow*	*co-advisor*
2019	Michael M. Campos	*High School Visiting Fellow*	*co-advisor*
2023	Aeka Tomita	*Undergraduate Student*	*mentor*
2024	Trisha Rahman	*Undergraduate Student*	*mentor*
2024	Meredith Swanson	*Undergraduate Student*	*mentor*
2025	Jackleen Guo	*Undergraduate Student*	*mentor*
2025	Gahan Sabbir	*Undergraduate Student*	*mentor*

SERVICE:

Professional Societies:

Date	Role	Organization
2015-2017	Member	Royal Institution of Great Britain (RIGB)
2018-present	Member	International Society for Computational Biology (ISCB)
2024-present	Member	American Society for Microbiology (ASM)

Ad Hoc Reviews:

Communications biology *(Nature Publishing Group)*; Appetite *(Elsevier Editorial)*; Current research in microbial sciences *(Elsevier Editorial)*; Structure *(Cell Press)*; Proteins: Structure, Function, and Bioinformatics *(Wiley)*.

GRANTS, AWARDS AND FELLOWSHIPS:

Date	Grant/Fellowship
2011	Undergraduate **research grant** 161473/2011-3, National Institutes of Science and Technology (Ed152008 INCTs DI FC), Brazil
2017	Graduate **research grant** (M.Sc.) 134502/2017-5, National Council for Scientific and Technological Development (CNPq), Brazil
2018	CELFI-Datos (Centro Latinoamericano de Formación Interdisciplinaria) **travel fellowship** (Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCyT), Argentina
2019	Graduate **research grant** (Ph.D.) 140317/2019-8, National Council for Scientific and Technological Development (CNPq), Brazil
2019	20th Brazilian Symposium on Theoretical Chemistry **poster award** *("Structural discrimination-based selection of experimental constraints for assisted biomolecular modeling")*
2022	ISMB 2022 **travel fellowship**, International Society for Computational Biology
2025	ASM 2025 Student and Postdoctoral **travel fellowship**, American Society of Microbiology

TALKS, SEMINARS AND PRESENTATIONS:

Date	Title/Event
2018	Invited: **Cross-linking Mass Spectrometry constraint selection and Modeling for protein structure determination.** Structural Bioinformatics Unit, Institut Pasteur and the Centre National de la Recherche Scientifique (CNRS).
2019	**Statistical learning tools for constraint analysis in data-assisted protein modeling.** SPSAS Learning from Data.
2022	**TintiNet.jl: a language model for protein 1D property estimation.** JuliaCon 2022
2023	Invited: **Investigating neurocognitive development in early infancy with the aid of microbial-based age estimators.** MEWG (Microbiome and Ecology Working Group) seminar, HCMPH Microbiome Center.
2024	**Charting Trajectories of Gut Microbiome, Cognition and Behavior Development.** Flux Congress 2024 Symposium.
2025	**Global Patterns of Early-Life Gut Microbial Succession: A High-Resolution Microbiome Age Model for Infants.** ASM Microbe 2025

PEER-REVIEWED PUBLICATIONS:

1. Bonham, K. S., Margolis, E. T., **Fahur Bottino, G.**, Sobrino, A., Patel, F., McCann, S., ... & Klepac-Ceraj, V. (2025). Co-development of gut microbial metabolism and visual neural circuitry over human infancy. *mBio*, e00835-25.
2. **Fahur Bottino, G.**, Bonham, K. S., Patel, F., McCann, S., Zieff, M., Naspolini, N., ... & Klepac-Ceraj, V. (2025). Early life microbial succession in the gut follows common patterns in humans across the globe. *Nature Communications* 1(1): 660.
3. Bonham, K. S., **Fahur Bottino, G.**, McCann, S. H., Beauchemin, J., Weisse, E., Barry, F., ... & Klepac-Ceraj, V. (2023). Gut-resident microorganisms and their genes are associated with cognition and neuroanatomy in children. *Science Advances*, *9*(51), eadi0497.
4. **Bottino, G. F.**, Ferrari, A. J., Gozzo, F. C., & Martínez, L. (2021). Structural discrimination analysis for constraint selection in protein modeling. *Bioinformatics*, *37*(21), 3766-3773.
5. Dos Santos, R. N., **Bottino, G. F.**, Gozzo, F. C., Morcos, F., & Martínez, L. (2020). Structural complementarity of distance constraints obtained from chemical cross‐linking and amino acid coevolution. *Proteins: Structure, Function, and Bioinformatics*, 88(4), 625-632.

Manuscripts in Review:

1. Amso, D., **Fahur Bottino, G.**, Forest, T., Bonham, K. S., Zieff, M., ... & Klepac-Ceraj, V. (2025). Microbiome-behavior coupling shapes infant adaptation to early maternal unpredictability *(in review)*

Software Packages:

1. Fahur Bottino, G. **ZedXL: a package for cross-linking mass spectrometry constraint analysis.** R package; *https://github.com/Hugemiler/ZedXL*
2. Fahur Bottino, G. **RDCA: an R implementation of Weight's DCA protocol.** R package; *https://github.com/Hugemiler/RDCA*
3. Fahur Bottino, G. **TintiNet.jl: Implementation of the TintiNet (Topological Inference by Neural Transformer-Inceptor Network) architecture for Julia.** Julia package. *https://github.com/Hugemiler/TintiNet.jl*

POSTER ABSTRACTS:

Date	**Title/Event**
2018	**Statistical methods for constraint selection from cross-linking mass spectrometry for protein structure determination**. ECCB 2018 – 17th European Conference on Computational Biology.
2019	**Structural discrimination-based selection of experimental constraints for assisted biomolecular modeling.** XX Brazilian Symposium on Theoretical Chemistry.
2021	**Ultrafast protein secondary structure prediction from single sequences employing deep neural networks.** XXI Brazilian Symposium on Theoretical Chemistry.
2022	**Estimation of protein topological properties from single sequences using a highly parallelized minified language model.** ISMB 2022.
2024	**Gut-microbial age derived from globally sampled gut metagenomes.** MIT Microbiome Meeting 2024.
2024	**Gut-microbial age derived from globally sampled gut metagenomes.** Boston Bacterial Meeting 2024.