

Ariel Mundo Ortiz

Postdoctoral Fellow

Centre de Recherche du CHUM

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Education

University of Arkansas, PhD. Biomedical Engineering

May 2022

Universidad Rafael Landivar (Guatemala), B.S. Chemical Engineering (*cum laude*)

2009

Research Experience

Postdoctoral Fellow, Centre de Recherche du CHUM (Montreal, QC)

January 2024- Present

Working at the NG lab at CRCHUM in projects at the intersection of personalized medicine using electronic health records, including vital signs and laboratory tests. In charge of developing data pre-processing pipelines, statistical analyses, and data visualization (all using R, including parallel computing and Git), manuscript writing and revision.

Postdoctoral Fellow, Département de médecine sociale et préventive et au centre de recherche en santé publique (Université de Montréal, Montreal, QC)

July 2022- December 2023

Worked at the Nasri Lab at the School of Public Health (ESPUM) doing research in infectious disease modelling, including mpox. Duties included writing, editing, and revising academic manuscripts, literature searches, contributing to ongoing grants, writing code to clean and analyze data (in R), and using version control software (Git) for collaborative projects. First year of postdoctoral fellowship was supported by a CRM-MfPH fellowship.

Graduate Research Assistant (University of Arkansas, Fayetteville, AR)

Aug 2017- May 2022

Designed and executed experiments in small animal models of cancer to study response to therapy. Wrote a manuscript on the use of statistical semi-parametric models (generalized additive models) in a reproducible manner, using R, to analyze longitudinal data (Published in Statistics in Medicine).

Other Relevant Experience

Universidad Rafael Landivar

Teaching Assistant Professor

2016-2017

Professor of Chemistry at the Environmental and Agricultural Sciences Department. Duties included developoing lectures, laboratory supervision, student mentoring, updating laboratory manuals to reduce expenses and minimize ecological impact, and communicating with faculty.

Adjunct Professor

2013-2017

Taught Introductory Chemistry in the Engineering, Environmental and Agricultural, and Health Sciences Departments. Duties included developoing lectures, laboratory supervision, student mentoring, updating laboratory manuals to reduce expenses and minimize ecological impact, and communicating with faculty.

Lacteos Balcanicos Glad

Assistant Plant Engineer

2012

In charge of the production of different dairy products of the company. Duties included personnel supervision, material inventory, production scheduling, and quality control reporting.

Publications

JOURNAL ARTICLES

Mundo Ortiz, Ariel I., Emond Jean-Philippe, Cheung Vincent Weng-Jy, Saeed Sahar, Desmarais Philippe, Larivière François, Héту Pierre-Olivier & Nguyen Quoc Dinh. "The impact of pathological fluctuations versus biological variation on the interpretation of laboratory values". *Practical Laboratory Medicine* (November 2025). <https://doi.org/10.1016/j.plabm.2025.e00511>.

Cheung Vincent Weng-Jy, Libotte Michaël, Nguyen Patrick Viet-Quoc, Minh Vu Thien-Tuong, Émond Jean-Philippe, **Mundo Ortiz Ariel I.**, Desmarais Philippe, Nguyen Quoc Dinh. "Preliminary feasibility and development of a heart rate-based mobility and activity scale for hospitalized older adults". *The Journals of Gerontology: Series A* (November 2025) <https://doi.org/10.1093/gerona/glaf212>

El-Mousawi Fatima, **Mundo Ortiz Ariel I.**, Berkat Rawda, Nasri Bouchra. "The Impact of Flood Adaptation Measures on Affected Population's Mental Health: A mixed method Scoping Review". *Disaster Medicine and Public Health Preparedness* (2024). <https://doi.org/10.1101/2023.04.27.23289166>

Mundo Ortiz Ariel I., Nasri Bouchra. "Socio-demographic determinants of COVID-19 vaccine uptake in Ontario: Exploring differences across the Health Region model". *Vaccine* (2024). <https://doi.org/10.1016/j.vaccine.2024.02.045>.

Molla Jeta, Sekkak Idriss, **Mundo Ortiz Ariel I.**, Moyles Iain, Nasri Bouchra. "Mathematical modeling of mpox: a scoping review". *One Health* (2023). <https://doi.org/10.1016/j.onehlt.2023.100540>

Mundo Ortiz Ariel I., Muhammad Abdussaboar, Balza Kerlin, Nelson Christopher E., Muldoon Timothy J. "Longitudinal examination of perfusion and angiogenesis markers in primary colorectal tumors shows distinct signatures for metronomic and maximum-tolerated dose strategies". *Neoplasia* (2022). <https://doi.org/10.1016/j.neo.2022.100825>

Mundo Ortiz Ariel I., Tipton John R., Muldoon Timothy J. "Generalized additive models to analyze non-linear trend sin biomedical longitudinal data using R: Beyond repeated measures ANOVA and Linear Mixed Models." *Statistics in Medicine* (2022). <https://doi.org/10.1002/sim.9505>

Mundo Ortiz Ariel I., Greening Gage, Fahr Michael J., Hale Lawrence N., Bullard Elizabeth, Rajaram Narasimhan, and Muldoon Timothy J. "Diffuse reflectance spectroscopy to monitor murine colorectal tumor progression and therapeutic response." *Journal of Biomedical Optics* (2020). <https://doi.org/10.1117/1.JBO.25.3.035002>

Greening Gage, **Mundo Ortiz Ariel I.**, Rajaram Narasimhan, Muldoon Timothy J. "Sampling depth of a diffuse re-flectance spectroscopy probe for in-vivophysiological quantification of murine subcutaneous tumor allografts". *Journal of Biomedical Optics* (2018). <https://doi.org/10.1117/1.JBO.23.8.085006>

CONFERENCE PRESENTATIONS

Mundo Ortiz, Ariel I. "Reproducible papers in the life sciences using R". CANSSI Statistical Software Conference. November 2022. Recording: <https://www.youtube.com/watch?v=4yRAR9fS3pg>

Mundo Ortiz, Ariel I. "Statistics and Reproducibility in Biomedical Research". 2022 Toronto Workshop on Reproducibility. Toronto, ON. February 2022. Recording: <https://www.youtube.com/watch?v=Fvvp20X5xwA>

Mundo Ortiz, Ariel I., Muldoon, Timothy J. "Longitudinal optical and molecular quantification provides insight into the effect of different dosing strategies in colorectal cancer". 2022 Biophotonics Congress: Biomedical Optics, Fort Lauderdale, FL, USA, April 2022.

Mundo Ortiz, Ariel I. "Statistics and Reproducibility in Biomedical Research: Why we need both". Toronto Workshop on Reproducibility, University of Toronto, February 2022. Recording available [here](#).

Mundo Ortiz, Ariel I. "Using generalized additive models for biomedical longitudinal data. *When linear models don't work*". RMedicine 2021 Conference. Recording: <https://tinyurl.com/39epnnp6> Repository (slides and data): <https://aimundo.rbind.io/talks/gams-biomedical/>

Mundo Ortiz, Ariel I., Abdussaboar Muhammad, and Timothy J. Muldoon. "Optical and molecular longitudinal tracking of primary colorectal murine tumors shows differences in the angiogenic response to maximum-tolerated and metronomic approaches." In *Label-free Biomedical Imaging and Sensing (LBIS) 2021*, vol. 11655, p. 116551C. *International Society for Optics and Photonics*, 2021. <https://doi.org/10.1117/12.2576906>

Mundo Ortiz, Ariel I., Elizabeth Bullard, Kyle P. Quinn, and Timothy J. Muldoon. "Optical spectroscopic and imaging biomarkers of ulcerative colitis disease progression and remission (Conference Presentation)." In *Multiscale Imaging and Spectroscopy*, vol. 11216, p. 1121605. *International Society for Optics and Photonics*, 2020. <https://doi.org/10.1117/12.2543369>

Mundo Ortiz, Ariel I., Gage J. Greening, and Timothy Muldoon. "Characterization of a multimodal endoscopically deployable veterinary spectroscopy and imaging probe to determine therapeutic response in a murine orthotopic tumor model." In *Label-free Biomedical Imaging and Sensing (LBIS) 2019*, vol. 10890, p. 108901L. *International Society for Optics and Photonics*, 2019.

Awards and Recognition

Fields Institute: Mathematics for Public Health Festival (MfPHFest)

October 2022

Received funding to attend the MfPHFest conference and present postdoctoral work done in the field of Statistics. (CAD 1,500)

Centre de recherches mathématiques (CRM) MfPH-CRM Postdoctoral Fellowship

July 2022

Received postdoctoral fellowship for one year to analyze public health and behavioral data (CAD 50,000)

BME Rising Scholar

June 2022

Selected by the committee of the BME Scholars Program at Washington University in St. Louis to receive mentorship about pathways and professional success in academic careers. Award included paid travel, conference attendance and honorarium.

Professional Awareness, Advancement, and Development (PADD) Scholar

2020-2021

Received funding and participated in the PAAD program to supplement my graduate education in persuasive speaking, commercialization, and data science (USD 1,500).

OMNI Endowed International Scholarship

2020

Granted as a scholar fulfilling the mission of the OMNI Center in Fayetteville (USD 500)

Fulbright Faculty Development Scholarship

2017-2019

Scholarship covered all costs of my PhD for the first two years. Only two scholarships awarded for that period in the whole country. (USD 78,000)

Grants

Canada Institutes of Health Research (CIHR)

2023

Co-investigator in the grant “epidemiological modelling of behavioural impact on mpox mitigation strategies” lead by Prof. Nasri from Université de Montréal. Involved in the writing of the grant proposal, performing literature review, communicating with team members, and revising the final grant draft. Funding secured: CAD 412,000. The proposal was in the 50% rank within the competition. Record of the grant can be found in the [CIHR funding decision database](#).

Arkansas Biosciences Institute 2021 seed grant competition

2021

Main author on a proposal co-submitted with Dr. Timothy Muldoon to examine gene expression and optically derived markers in a mouse model of colorectal cancer. Funding secured: USD 30,000. The proposal scored in the top 2 of all the individual research projects for the cycle.

Languages

Spanish: Native speaker

English: Full professional competency

French: Full professional competency