Ariel Mundo Ortiz

Postdoctoral Fellow
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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 bioinformatics, vital signs, and personalized medicine. In charge of developing data analysis pipelines, statistical analyses, manuscript writing and revision. Postdoctoral research published in *Practical Laboratory Medicine* and *The Journals of Gerontology: Series A*.

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, incluiding spatial analyses. Duties included writing, editing, and revising academic manuscripts, doing literature searches, collaborating with different research groups, contributing to ongoing grant projects from the lab, writing code to clean and analyze data. First year of postdoctoral fellowship was supported by a CRM-MfPH fellowship. Postdoctoral research published in *Vaccine* and *One Health*.

Graduate Research Assistant (University of Arkansas, Fayetteville, AR)   Aug 2017- May 2022

Developed research questions to study tumor response to chemoterapy. Collected data, wrote code for statistical analyses. Writing duties included as well a grant proposal in collaboration with the main supervisor. Manuscripts of PhD research were published in *Statistics in Medicine*, *Neoplasia*, and *Journal of Biomedical Optics*.

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.

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Assistant Plant Engineer   2012

In charge of the production of the main product (yogurt, $\approx$ 3000 L per week). Duties included personnel supervision, material inventory, production scheduling, quality control reporting.

Publications

JOURNAL ARTICLES

Mundo Ortiz, Ariel I., Emond Jean-Philippe, Cheung Vincent Weng-Jy, Saeed Sahar, Desmarais Philippe, Larivière François, Hétu Pierre-Olivier & Nguyen Quoc Dinh. "The impact of pathological fluctuations versus biological varia-

tion 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 Abdussaboor, 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 forin-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=Fvkp2oX5xwA

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/39epnrp6 Repository (slides and data): https://aimundo.rbind.io/talks/gams-biomedical/

Mundo Ortiz, Ariel I., Abdussaboor 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