Ariel Mundo Ortiz

Postdoctoral Fellow
Département de médecine sociale et préventive and CReSP, Université de Montréal
ariel.mundo.ortiz@umontreal.ca +1 438 875 9203 aimundo.rbind.io | *Updated:* Jul. 11, 2023

Education

University of Arkansas, PhD. Biomedical Engineering May 2022

Universidad Rafael Landivar (Guatemala), B.S. Chemical Engineering (*cum laude*) 2009

Research Experience

Postdoctoral Fellow, Département de médecine sociale et préventive et au centre de recherche en santé publique (Université de Montréal, Montreal, QC) June 2023-Present

Working on ongoing projects of public health, disease modelling and infectious diseases in the Nasri Lab.

Worked at the Nasri Lab at the School of Public Health (ESPUM) doing research in infectious disease modelling, collaborated with different groups research groups, and contributed to grant applications from the lab.

Postdoctoral Fellow, Centre de Recherches Mathématiques (Université de Montréal, Montreal, QC) July 2022-June 2023

Worked at the Nasri Lab at the School of Public Health (ESPUM) doing research in infectious disease modelling, collaborated with different groups research groups, and contributed to grant applications from the lab.

Postdoctoral Fellow (University of Arkansas, Fayetteville, AR) May 2022-July 2022

Working at the Translational Biophotonics and Imaging Laboratory in de Department of Biomedical Engineering to analyze longitudinal optical and molecular data.

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

Designed and executed experiments in an animal model of colon cancer using optics and molecular biology to longitudinally quantify changes in perfusion and gene expression in response to therapy. Implemented Statistical semi-parametric models (generalized additive models) to analyze longitudinal data.

Other Relevant Experience

Universidad Rafael Landivar

Teaching Assistant Professor 2016-2017

Professor of Chemistry at the Environmental and Agricultural Sciences Department
Prepared lectures, supervised labs, mentored students, wrote lab manuals

Adjunct Professor 2013-2017

Taught Introductory Chemistry in the Engineering, Environmental and Agricultural, and Health Sciences Departments

Lacteos Balcanicos Glad

Assistant Plant Engineer 2012

In charge of the production of the main product (yogurt, ≈ 3000 L per week)

Publications

Journal Articles

Molla Jeta, Sekkak Idriss, **Mundo Ortiz Ariel I.**, Moyles Iain, Nasri Bouchra. "Mathematical modeling of mpox: a scoping review". Submitted to BMC Public Health in December 2022.

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=Fvkp20X5xwA

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 with the writing of the grant, communicating with team members, performing literature reviews, and grant objective development. Funding secured: CAD 824,000. 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.