

Ariel Mundo Ortiz

Postdoctoral Fellow

Centre de Recherches Mathématiques, Université de Montréal, Montréal, QC, Canada

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Education

University of Arkansas, PhD. Biomedical Engineering

May 2022

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

2009

Research Experience

Postdoctoral Fellow (Université de Montréal, Montréal, QC)

July 2022-Present

Working in the Nasri Lab at the School of Public Health (ESPUM) at L'Université de Montréal performing statistical analyses of longitudinal health data, and collaborating with different groups to perform high impact research at the interface of health and Statistics.

Postdoctoral Fellow (University of Arkansas, Fayetteville, AR)

May 2022-July 2022

Working at the Translational Biophotonics and Imaging Laboratory in the 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 Landívar

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, \approx 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 Abdussaboer, 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 in 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-reflectance 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/39epnpr6> 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

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 (\$30,000 in funding). *Proposal scored in the top 2 of all the individual research projects for the cycle.*