

Melisa Medina-Rivera, PhD

Pronouns: She/her/hers

CONTACT INFORMATION:

Address: Cornell University
Division of Nutritional Sciences
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EDUCATION

Postdoctoral training - Cornell University	2022
Point-of-care diagnostics, Systematic Reviews	
Ph.D. State University of New York at Buffalo	2019
Biomedical Sciences, Biochemistry	
Coursework towards M.S. - Weill Cornell Medicine	2022
Clinical Translational Investigation	
B.S. University of Puerto Rico at Cayey	2013
Natural Sciences with Honors	
<i>Magna cum laude</i>	

CAREER/ACADEMIC APPOINTMENTS

Cornell University, Ithaca, NY

Lecturer in Molecular Nutrition	2023 - Present
Lecturer	2021-22
Postdoctoral Research Fellow	2020-22
Instructor	2021
Postdoctoral Associate	2018-20

SUNY at Buffalo, Buffalo, NY

Teaching Assistant, Biomedical Genetics	2018
Guest Lecturer, Protein Structure and Function	2018
Teaching Assistant, Dental Biochemistry	2017
Guest Lecturer, Protein Structure and Function	2017
Guest Lecturer, Introduction to Research	2016
Graduate Research Assistant	2013-18

TEACHING

Division of Nutritional Sciences, Cornell University, Ithaca, NY

NS 1150 Nutrition, Health, and Society	2023 - 24
NS 1400 Introduction to Human Biology, Health, and Society	2023
NS 3310 Human Nutrition and Nutrient Metabolism	2023 - 24
NS 3980 Research in Human Nutrition and Health	2022, 2024
NS 4990 Honors Problem	2022, 2024
NS 6310 Micronutrients: Function, Homeostasis, and Assessment (Vitamins)	2021-24

Biochemistry Department, State University of New York, Buffalo, NY

Teaching assistant, BCH 310 Biomedical Genetics	Spring 2018
Guest Lecturer, BCH 507 Protein Structure and Function	Spring 2017-18
Teaching assistant, BCH 500 Dental Biochemistry	Fall 2017
Guest lecturer, BCH 401 Intro to Life Science Research	Fall 2016
Graduate mentor, Biochemistry lab	Fall 2014-18
Guest lecturer, RISE Program	Fall 2016
Graduate tutor, Biochemistry	Fall 2015

RESEARCH

Point-of-care diagnostics, Cornell University, NY 2018 - 2022

Mentors: Saurabh Mehta, David Erickson, and Lars Westblade

Projects:

- Developed diagnostic tools for the point-of-care detection of Chagas disease and cytomegalovirus infection
- Developed and coordinated a series of systematic reviews of the transmission of viral pathogens through breast milk and breastfeeding practices

Biochemistry, SUNY at Buffalo, NY 2014 - 2019

Mentors: Jennifer A. Surtees and Mark D. Sutton

Project: Investigated the impact and mechanism of regulation of mismatch repair complexes when bound to 3' and 5' single-stranded DNA flap intermediates.

Molecular Biology and Genetics, The Scripps Research Institute, CA 2011

Mentor: Nathalie C. Franc

Summer internship project: Used genetic and classical molecular biology approaches to study apoptotic cell clearance and phagocytic mechanisms in *Drosophila*.

Microbiology and Viral Pathogenesis, UC Denver, CO 2010
Mentor: Thomas E. Morrison
Summer internship project: Studied the pathogenesis of mosquito-transferred RNA viruses (Chikungunya virus and Ross River virus)

Molecular Biology & Phylogenetic, University of Puerto Rico, PR 2009 - 2013
Honors Thesis Mentor: Michael Rubin
Project: Developed and carried out a molecular and phylogenetic analysis of primates genomic DNA to determine how the matrix metalloprotease (*MMPI*) gene shifted throughout evolution between closely related species

RESEARCH GRANTS

TL1 Training grant (NCATS TL1-TR-002386) 2020 -2022
Study: Develop an isothermal molecular-base tool for the assessment of cytomegalovirus infection
Role: Postdoctoral trainee

Diversity Supplement (NIH/NIGM R01GM066094) 2015-2017
Study: Regulation of mismatch repair proteins on pathways containing 5' flap DNA intermediates.
Role: Graduate trainee

IMSD (R25 GM095459) 2013 - 2015
Enabling Access to Cutting-Edge Biomedical and Behavioral Science
Role: Graduate trainee

INVITED SPEAKING ENGAGEMENTS, SELECTED PRESENTATIONS, SYMPOSIA & WORKSHOPS

2022 Oral and poster presentations, ACTS annual meeting, Chicago, IL
2021 Plenary Speaker, 2nd International Conference on Nutrition and Public Health Department of Nutrition Sciences, Faculty of Public Health Hasanuddin University, Indonesia
2021 e-Poster presentation, ACTS annual meeting
2021 Guest Speaker, Career Pathways Seminar Series, IMSD Program SUNY at Buffalo, NY
2018 Guest Speaker, ALANA Celebration of Achievement, SUNY at Buffalo, NY
2018 Oral presentation, DNA Replication and Repair meeting
2017 Poster presentation, Keystone symposia: DNA replication and recombination, NM
2016 Oral presentation, North East Regional Yeast Meeting, NY
2016 Oral presentation, DNA Replication and Repair meeting, NY
2016 Guest Speaker, Research Seminar, RISE Program

University of Puerto Rico, PR
2016 Guest lecturer, Introduction to research, RISE Program
University of Puerto Rico, PR
2015 Poster presentation, GRC conference: Chromosome dynamics, NH
2015 Poster presentation, DNA Replication and Repair meeting, NY
2012 Poster presentation, SACNAS, WA
2010 Poster presentation, ABRCMS, NC

MANUSCRIPTS UNDER REVIEW OR IN PREPARATION

Medina-Rivera M, Erickson D, Westblade LF, Mehta S. Development of LAMP assay for clinical diagnosis of CMV in urine samples. *In preparation*.

PUBLICATIONS

*Medina-Rivera M, *Phelps S, Sridharan M, Becker J, Lamb NA, Kumar C, Sutton MD, Bielinsky A, Balakrishnan L, Surtees JA. Elevated MSH2 MSH3 expression interferes with DNA metabolism in vivo. *Nucleic Acids Res.* 2023 Dec 11;51(22):12185-12206. doi: 10.1093/nar/gkad934. ***co-first authors**

Medina-Rivera M, Cárdenas WB, Erickson D, Mehta S. Gold Nanoshells-Based Lateral Flow Assay for the Detection of Chagas Disease at the Point-of-Care. *Am J Trop Med Hyg.* 2022 Jun 27;107(2):323-327. doi: 10.4269/ajtmh.21-1119.

*Medina-Rivera M, *Centeno-Tablante E, Finkelstein JL, Rayco-Solon P, Peña-Rosas JP, Garcia-Casal MN, Rogers L, Ridwan P, Martinez SS, Andrade J, Layden AJ, Chang J, Zambrano MP, Ghezzi-Kopel K, Mehta S. Presence of Ebola virus in breast milk and risk of mother-to-child transmission: synthesis of evidence. *Ann N Y Acad Sci.* 2021 Mar;1488(1):33-43. doi: 10.1111/nyas.14519. ***co-first authors**

*Centeno-Tablante E, *Medina-Rivera M, Finkelstein JL, Rayco-Solon P, Garcia-Casal MN, Rogers L, Ghezzi-Kopel K, Ridwan P, Peña-Rosas JP, Mehta S. Transmission of SARS-CoV-2 through breast milk and breastfeeding: a living systematic review. *Ann N Y Acad Sci.* 2021 Jan;1484(1):32-54. doi: 10.1111/nyas.14477. ***co-first authors**

*Centeno-Tablante E, *Medina-Rivera M, Finkelstein JL, Herman HS, Rayco-Solon P, Garcia-Casal MN, Rogers L, Ghezzi-Kopel K, Zambrano Leal MP, Andrade Velasquez JK, Chang Asinc JG, Peña-Rosas JP, Mehta S. Update on the Transmission of Zika Virus Through Breast Milk and Breastfeeding: A Systematic Review of the Evidence. *Viruses.* 2021 Jan 18;13(1):123. doi: 10.3390/v13010123. ***co-first authors**

*Eichmiller R, *Medina-Rivera M, DeSanto R, Minca E, Kim C, Holland C, Seol J, Schmit M, Oramus D, Smith J, Gallardo IF, Finkelstein IJ, Lee SE, and Surtees JA. Coordination of Rad1-Rad10 interactions with Msh2-Msh3, Saw1 and RPA is essential for functional 3' non-homologous tail removal. *Nucleic Acids Research* 2018, 46 (10). <https://doi.org/10.1093/nar/gky254>. ***co-first authors**

Seol JH, Holland C, Li X, Kim C, Li F, Medina-Rivera M, Eichmiller R, Gallardo IF, Finkelstein IJ, Hasty P, Shim EY, Surtees JA, Lee SE. Distinct roles of XPF-ERCC1 and Rad1-Rad10-Saw1 in replication-coupled and uncoupled inter-strand crosslink repair. *Nat Commun*. 2018 May 23;9(1):2025. doi: 10.1038/s41467-018-04327-0. PMID: 29795289; PMCID: PMC5966407.

Jupille HJ, Medina-Rivera M, Hawman DW, Oko L, Morrison TE. A tyrosine-to-histidine switch at position 18 of the Ross River virus E2 glycoprotein is a determinant of virus fitness in disparate hosts. *J Virol*. 2013 May;87(10):5970-84. doi: 10.1128/JVI.03326-12. Epub 2013 Mar 20. PMID: 23514884; PMCID: PMC3648194.

GenBank Submissions (2012)

BankIt1573376 Ateles_geoffroyi_PartialMMP1GenomicSequence JX946726

BankIt1573388 Pongopygmaeus_PartialMMP1GenomicSequence JX946727

Medina-Rivera M, and Rubin, M. PCR Amplification, Cloning, Sequence Determination, and Bioinformatics Analyses of Collagenase (MMP1) Domains Cloned from Primate Genomic DNAs. Honors Thesis. September 2012.