Maria Toro-Moreno
mtoromor@fredhutch.org

EDUCATION

Duke University — Durham, NC
Ph.D. Chemistry — Summer 2021
- Advisor: Emily R. Derbyshire, Ph.D.
- Dissertation: Molecular interactions between apicomplexan parasites and their host cells.

Saint Louis University — St. Louis, MO
Bachelor of Science in Biochemistry — Spring 2015
- Advisor: James L. Edwards, Ph.D.
- Thesis: Derivatization of tricarboxylic acid cycle metabolites for enhanced LC-ESI/MS metabolic rofiling.

PUBLICATIONS

Research Articles
*co- authors

Bang S*, Donelly C*, Luo X*, **Toro-Moreno M*** , Tao X, Wang Z, Chandra S, Bortsov A, Derbyshire ER, Ji RR. GPR37 in Macrophages Protects Against Infection-induced Death, Inflammation, Hypothermia, and Pain. *Nat. Comms*. 2021;12: 1704. doi: 10.1038/s41467-021-21940-8.

Ganley JG, Pandey A, Sylvester K, Lu KY, **Toro-Moreno M**, Rütschlin S, et al. A Systematic Analysis of Mosquito-Microbiome Biosynthetic Gene Clusters Reveals Antimalarial Siderophores that Reduce Mosquito Reproduction Capacity. *Cell Chem Biol.* 2020;27: 817-826.e5. doi:10.1016/j.chembiol.2020.06.004.

Toro-Moreno M*, Sylvester K*, Srivastava T, Posfai D, Derbyshire ER. RNA-Seq Analysis Illuminates the Early Stages of *Plasmodium* Liver Infection. *mBio*. 2020;11. doi:10.1128/mBio.03234-19.

Raphemot R*, **Toro-Moreno M***, Lu KY, Posfai D, Derbyshire ER. Discovery of Druggable Host Factors Critical to *Plasmodium* Liver-Stage Infection. *Cell Chem Biol*. 2019;26:1253-1262.e5. doi:10.1016/j.chembiol.2019.05.011. Press and other mentions:
- "Malaria parasites hijack your genes to set up camp inside your liver", article by Duke Today, highlighted in Phys.org, and MedicalHealthNews.net.
- "Study finds malaria targets genes in the liver, discovery may help prevent the disease", article and radio interview by North Carolina Public Radio (WUNC 91.5).

Raphemot R, Eubanks AL, **Toro-Moreno M**, Geiger RA, Hughes PF, Lu KY, Haystead TAJ, et al. *Plasmodium* PK9 Inhibitors Promote Growth of Liver-Stage Parasites. *Cell Chem Biol*. 2019;26: 411-419.e7. doi:10.1016/j.chembiol.2018.11.003.

Huang T, **Toro M**, Lee R, Hui DS, Edwards JL. Multi-functional Derivatization of Amine, Hydroxyl, and Carboxylate Groups for Metabolomic Investigations of Human Tissue by Electrospray Ionization Mass Spectrometry. *Analyst*. 2018;143: 3408–3414. doi:10.1039/c8an00490k.

Reviews

Toro-Moreno M, Derbyshire ER. It's About Time: Insights into the Modes of Action of Antimalarials. *Cell Chem Biol*. 2020;27: 139–141. doi:10.1016/j.chembiol.2020.01.013.

Ganley JG*, **Toro-Moreno M***, Derbyshire ER. Exploring the Untapped Biosynthetic Potential of Apicomplexan Parasites. *Biochemistry.* 2018;57: 365–375. doi:10.1021/acs.biochem.7b00877.

PRESENTATIONS

Talks (Presenting author)

RNA-seq Illuminates the Early Stages of *Plasmodium* Liver Infection. Presented at the **Molecular Approaches in Malaria** meeting at Lorne, Australia. — May 2019

Dissecting the Role of Host ARFs during Apicomplexan Infection. Presented at the **Center for Host and Microbe Interactions** meeting at Duke University, Durham, NC. — May 2019

Exploring the Role of Host Vesicular Trafficking During Infection of Apicomplexan Parasites. Presented at the **Eukaryotic Pathogenesis Investigators Colloquia** at Duke University, Durham, NC. — February 2019

Plasmodium Exploits the Host Vesicular Pathway. Presented at the **FASEB Molecular Pathogenesis**: **Mechanisms of Infectious Diseases** conference at Snowmass, CO. — July 2017

Posters (Presenting author)

Exploring the Transcriptional Programs governing Development and Virulence of *Plasmodium berghei* Liver Stages. Poster presented at the **EMBL Symposium: New Approaches and Concepts in Microbiology** in Heidelberg, Germany. — July 2019

Plasmodium Exploits the Host Vesicular Pathway in the Liver Stage. Poster presented at:

- **FASEB Molecular Pathogenesis: Mechanisms of Infectious Diseases** Snowmass, CO. — July 2017
- **The Future of Malaria Research Conference**, Rockville, MD. — October 2017
- **Southeastern Chemical Biology Symposium**, Athens, GA. — April 2018

Small Molecule Inhibitors of Host Factors Impair Malaria Liver Stage Infection. Poster presented at:

- **The Future of Malaria Research Conference**, Rockville, MD. — October 2016
- **Southeastern Chemical Biology Symposium**, Athens, GA. — April 2017
- **Eukaryotic Pathogenesis Investigators Colloquia**, Durham, NC. — May 2017

Investigating the Role of Host Pathways in the Malaria Liver Stage. Poster presented at **the International Chemical Biology Society Conference**, Madison, WI. — October 2016

Toro-Moreno, M., Edwards, J.L. Chemical Derivatization of TCA Cycle Analytes for Enhanced Electrospray Ionization Efficiency. Poster presented at the **Leopold Marcus Award competition**, St. Louis, MO. — April 2015

AWARDS/HONORS

Burroughs Wellcome Fellowship: Awarded to an outstanding graduate student in the Department of Chemistry. Provides full stipend support and tuition remission for the academic year. — 2019 – 2020

C.R Hauser Memorial Fellowship: Awarded to a fourth year graduate student who has shown an aptitude for research, both by their own experimental abilities in the laboratory and by their ability to think logically and creatively about chemistry. Provides full stipend support and tuition remission for a semester. — Spring 2019

BioCoRE Scholar: A diverse pool of Scholars who embrace the goal of increased diversity in the biosciences are selected annually from a competitive pool of applicants. — Fall 2015

Hypercube Scholar: Presented to an outstanding undergraduate student who aspires to attend graduate school in the chemical sciences. — Spring 2015

Intercollegiate Tennis Association Scholar – Athlete: distinction given to NCAA DI student-athletes having a GPA of at least 3.5 during the academic year. — 2013 – 2014, 2014 – 2015

Travel Awards

Mitchell Meritorious Research Travel Award — Summer 2019

EMBO | EMBL Symposia Fellowship — Summer 2019

MENTORSHIP/SERVICE/OUTREACH

Mentorship

Mentor - Undergraduate Independent Study. Mentored 5 undergraduate students completing thesis projects in the Derbyshire Lab. — 2016 – 2021

- Rechel Geiger. Duke '18. University of Washington MD/PhD program — 2016 – 2018
  Thesis: "Probing Pathogen and Host Proteins in *Plasmodium* Infection"
- Xiaoyu Cai. Duke '18. University of Virginia MD program — 2016 – 2018
  Thesis: "Exploring the Role of Human GGA1 in Malaria Infection"
- Alyssa Carter. Duke '20. — 2018 – 2020
  Thesis: "Uncovering the Role of Host ARFs in *Toxoplasma* Infection"
- Tamanna Srivastava. Duke '21 — 2018 – 2021
- Olivia Liu. Duke '21. — 2018 – 2021

Mentor – Rotation students. Supervised 5 graduate students completing three-month rotations in the Derbyshire Lab. — 2017 – 2021

Mentor - Duke B-SURF. Mentored an awardee of the Biological Sciences Summer Undergraduate Research Fellowship conducting research in the Derbyshire Lab. — 2016

Mentor - Summer Research Opportunity Program (BioCoRE). Provided help for preparing posters and oral presentations and procured to be a steady source of support throughout the summer and academic year to 2 undergraduate scholars starting research in a biomedical lab at Duke. — 2016 – 2017

Service

Recruiter - SACNAS. Selected to assist with Duke Graduate School recruitment efforts at the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) research conference in Long Beach, CA. — 2016

Hill Lecture Co-Chair. Coordinated the nomination, selection, advertisement and the visit of a speaker for the annual Douglas G. Hill Memorial Lecture. — 2016 – 2018

Outreach

Volunteer - FEMMES. Participated in the one-day outreach program introducing students from Durham to math, science and engineering through hands-on demonstrations and experiments. 2016 – 2018

Volunteer - Science Under the Stars. Durham and surrounding communities attend and participate in science activities presented by Duke's undergraduate and graduate students. 2016 – 2018

TEACHING EXPERIENCE

Teaching Assistant

Department of Chemistry, Duke University

CHEM110L: Core Concepts in Chemistry (Honors). Fall 2015

CHEM210L: Modern Applications of Chemistry. Spring 2016

HIS235: Drugs, Chemicals & Health Fall 2020
Invited Lecture: “Malaria Biology and Drug Discovery”