

JACOB MICHAEL MATTINGLY

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EDUCATION

- Emory University – Atlanta, GA** 2018 – Present
Graduate Student, Biochemistry, Cell, and Developmental Biology (BCDB)
Cumulative GPA: 4.0/4.0
- University of Kentucky – Lexington, KY** 2012 – 2016
Bachelor of Science, Chemistry (with Biochemistry Option), Philosophy, Magna Cum Laude
Minor: Mathematics
Cumulative GPA: 3.711/4.0

RESEARCH

- Emory University, Department of Biochemistry (Dr. Christine Dunham) – Graduate Research 2019 – Present
I am currently performing research to determine the mechanism of macrolide-induced ribosomal frameshifting, a translational control mechanism by which bacteria can regulate their resistance to macrolide antibiotics, using biochemical techniques and molecular structure determination via single-particle cryo-electron microscopy. This project will generate important new knowledge related to the biochemical activity of macrolides, a critical class of clinical antibiotics, as well as revealing new information about the regulation of antibiotic resistance and the ability of cellular protein synthesis machinery to sense and respond to chemical conditions within the cell.
- University of Chicago, Department of Medicine (Dr. Emily Curran) – Research Technician 2016-2018
As a technician, I studied the role of the cytoplasmic DNA-sensing protein STING, the stimulator of interferon genes, in the immune response to acute myeloid leukemia using cultured cell and transgenic mouse models. I evaluated the potential viability of STING agonists for use as immune-stimulating drugs conferring anticancer activity and measured changes in gene expression following STING agonist treatment in mice and cultured cell lines. In addition to my role as an experimenter, I also managed the laboratory's mouse colony.
- University of Kentucky, Department of Chemistry (Dr. Yinan Wei) – Undergraduate Research 2014 – 2015
I generated, purified, and studied the thermal stability properties of mutant variants of the bacterial multidrug efflux pump component protein AcrB using a fluorescent dye-based thermal denaturation assay. Additionally, I studied the effects of C-terminal amino acid tags on post-translational protein degradation in *E. coli*.
- University of Louisville, Brown Cancer Center (Dr. Chi Li) – Summer Internship 2013
As an intern, I studied the role of the plasma membrane receptor protein toll-like receptor 4 on the cellular uptake and toxicity of free heme molecules in cultured human cell lines as a contribution to a project studying the mechanisms and prevention of iron toxicity.
- University of Louisville, Brown Cancer Center (Dr. Wenke Feng) – Summer Internship 2012
As an intern, I studied the effects of chemically induced hypoxia responses in cultured human liver cells as part of a project on the mechanisms and prevention of alcohol-related fatty liver diseases.

PUBLICATIONS

- Hassan, et al. Ratchet, swivel, tilt, and roll: a complete description of subunit rotation in the ribosome. *Nucleic Acids Research* [Online] **2022**. <https://doi.org/10.1093/nar/gkac1211> 2022
- Lanceta L.; Mattingly J.M.; Li C.; Eaton J.W. How Heme Oxygenase-1 Prevents Heme-Induced Cell Death. *PLOS ONE* [Online] **2015**, *10*, <https://doi.org/10.1371/journal.pone.0134144> 2015

CONFERENCE PRESENTATIONS/POSTER SESSIONS

GA RNA Salon (An RNA Society Salon) Fall 2022 Symposium (Poster) Emory University Graduate Division of Biological and Biomedical Sciences	2022
Spring 2022 Symposium (Poster)	2022
American Chemical Society, National Meeting & Exposition, Successful Student Chapters (Poster)	2016
University of Kentucky, <i>Investigation of a Method for the Study of Membrane Protein Stability</i> (Poster)	2014
University of Louisville, <i>Mechanism of Heme-Induced Cell Death</i> (Poster)	2013
University of Louisville, <i>Chemical Hypoxia Up-regulates Hepatic Fibroblast Growth Factor 21 Expression Through Enhancing Adipose Tissue Lipolysis</i> (Poster)	2012

TEACHING

Emory University, Mentor, Laney Graduate School Summer Opportunity for Academic Research (LGS-SOAR) Program	2022
Emory University, Tutor (Biochemistry, Cell, and Developmental Biology Program)	2020
Emory University, Graduate Teaching Assistant (<i>Foundations in Biochemistry, Cell, and Developmental Biology</i>)	2019

GRANTS

NIH T32 GM008367-30: <i>Training Program in Biochemistry, Cell, and Developmental Biology</i>	2019 – 2020
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HONORS, AWARDS AND SCHOLARSHIPS

National Science Foundation Graduate Research Fellowship Program Honorable Mention	2019
Emory University, Biochemistry, Cell, and Developmental Biology Graduate Program, Margaret and Thomas Lew First Year Achievement Award in Biomedical Sciences	2019
Emory University, Laney Graduate School Fellowship	2018 – Present
University of Kentucky, Department of Chemistry, Hammond Undergraduate Service Award	2016
University of Kentucky, Gaines Fellowship for the Humanities	2014 – 2016
University of Kentucky, Chellgren Center for Undergraduate Excellence, Fellow	2013 – 2014
University of Kentucky, Patterson Scholarship Recipient	2012 – 2016
University of Kentucky, College of Arts and Sciences Dean's List	2012 – 2015
University of Kentucky, Honors Program	2012 – 2016

ACTIVITIES & LEADERSHIP

Event planning: Emory Biochemistry, Cell, and Developmental Biology 2020 Spring Symposium (invited speaker: Thomas Perkins, Ph.D., Professor, University Of Colorado Boulder; Fellow, JILA)	2019 – 2020
Event planning: Emory Biochemistry, Cell, and Developmental Biology 2019 Fall Symposium ("Navigating Careers in Academia", with BCDB program alumni)	2019
Vice President, University of Kentucky Students of the American Chemical Society	2014 – 2016
Outreach Officer, University of Kentucky Students of the American Chemical Society	2013 – 2014

SERVICE

Member, Emory University BCDB PhD Program Rotations Committee (read, graded, and provided written feedback on reports from first-year graduate students' laboratory rotations)	2019-2023
Community Outreach, University of Kentucky Students of the American Chemical Society	2013 – 2016