



Amanda Haymond Still, Ph.D

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EDUCATION

● May 2017 Ph.D, GEORGE MASON UNIVERISTY
Biochemistry, Dissertation Chair: Dr. Robin Couch
Dissertation Title: Novel Antimicrobial Development by Targeting the First Two Committed Enzymes in the Methyl Erythritol Phosphate Pathway, DXP Reductoisomerase and MEP Cytidylyltransferase

● May 2013 B.S, GEORGE MASON UNIVERSITY
Major in Chemistry; Minor in Physics; GPA: 3.94

RELEVANT SKILLS

- ✓ *Protein Expression and Purification:* PCR, transformation, expression, and affinity-purification of proteins (*E. coli* host systems)
- ✓ *Protein Characterization:* Bradford Assay, SDS-PAGE, Michaelis-Menton enzyme kinetics, association/dissociation kinetics, protein mass spectrometry
- ✓ *Structural Biology:* X-ray crystallography, familiarity with scanning/transmission electron microscopy
- ✓ *Microbiology:* BSL2 microbial culture, experience with *Yersinia pestis* A1122, *Francisella tularensis* ssp. *novicida* and *Francisella tularensis* ssp. *tularensis* NIH B-38
- ✓ *Synthetic Chemistry:* Normal and reverse phase chromatography, small molecule NMR
- ✓ *Data Analysis:* GraphPad Prism, ImageJ, USCF Chimera; some experience with Python

RESEARCH EXPERIENCE

Dec 2018 – Present

● RESEARCH ASSISTANT PROFESSOR
Center for Applied Proteomics and Molecular Medicine
George Mason University, Manassas, VA

- Improved in-house lab techniques for studying protein-protein interactions, optimizing dye chemistries and accounting for post-translational modifications
- Involved in two start-up companies based on research conducted

June 2017 – Dec 2018

● POST-DOCTORAL FELLOW
Center for Applied Proteomics and Molecular Medicine
George Mason University, Manassas, VA

- Identified protein-protein interaction hotspots with mass spectrometry using novel dye chemistry methods
- Developed structure-activity relationships to determine essential binding moieties of candidate dyes

May 2013 – May 2017

● GRADUATE RESEARCH ASSISTANT
Department of Chemistry and Biochemistry
George Mason University, Manassas, VA

- Performed enzyme activity assays with DXP reductoisomerase and MEP cytidylyltransferase
- Cultured *Yersinia pestis* A1122 and *Francisella tularensis* ssp. *Novicida*

Sept 2014 – May 2017

GRADUATE RESEARCH ASSISTANT

*Bacterial Disease Branch, Wound Infection Department
Walter Reed Army Institute of Research, Silver Spring, MD*

- Conducted crystal screening experiments with *Francisella tularensis* MEP cytidyltransferase and *Yersinia pestis* DXP reductoisomerase soaked with ligands or inhibitors

Summer 2012

UNDERGRADUATE RESEARCH ASSISTANT

*Department of Energy Nuclear Chemistry Summer School
Brookhaven National Laboratory, Upton, NY*

- Conducted laboratory experiments at Brookhaven National Laboratory to develop skills in handling radioactive material
- Attended nuclear chemistry lectures and presented current research on radioimmunotherapy for the treatment of lymphoma

Summer 2011

SOUTHERN OHIO COUNCIL FOR HIGHER EDUCATION CONTRACTOR

*Air Force Research Laboratory
Wright-Patterson Air Force Base, Dayton, OH*

- Worked in the Electronic and Optical Materials branch of the Materials and Manufacturing Directorate (RXPS)
- Determined the scattering loss of in-house manufactured Nd:YAG optical fibers and compared the losses to those of commercially available fibers

Summer 2010, 2009

PHILLIPS SCHOLAR ENGINEERING AIDE

*Air Force Research Laboratory
Kirtland Air Force Base, Albuquerque, NM*

- Worked in the Chemical Laser branch of the Directed Energy Directorate (RDLC)
- Performed feasibility testing for development of an optical parametric oscillator and diode pumped alkali laser utilizing cesium dimers as the gain medium

TEACHING EXPERIENCE

Aug 2015 – Present

GUEST LECTURER

George Mason University, Fairfax, VA

- Lecture on biochemistry and structural biology at the graduate and undergraduate level
- Guest-lectured for the Advanced Biomedical Sciences Certificate Program (BMED 601), Chemistry Department (CHEM 463), and School of Systems Biology (BIOS 743, BIOL 575) at George Mason University

Aug 2016 – Dec 2016

GRADUATE TEACHING ASSISTANT

George Mason University, Fairfax, VA

- Prepared experiments, lead class sessions, wrote exams, and graded laboratory reports for multiple sections of biochemistry laboratory (CHEM 465)

PUBLICATIONS

- 1 **Haymond A**, Dey D, Carter R, Dailing A, Nara V, Nara P, Venkatayogi S, Paige M, Liotta L, Luchini A. Functionally relevant interfaces of PD-1/PD-L1 and Yap2/ZO-1 are revealed using an optimized mass spectrometry technique called protein painting. *Journal of Biological Chemistry*. 2019 July 19, 294 (29), 11180 – 11198. doi: 10.1074/jbc.RA118.007310.
- 2 **Haymond A**, Davis D, Espina V. Proteomics for cancer drug design. *Expert Review of Proteomics*. 2019 August, 16(8), 647-664. doi: 10.1080/14789450.2019.1650025.
- 3 Carter R, Luchini A, Liotta L, **Haymond A**. Next Generation Techniques for Determination of Protein-Protein Interactions: Beyond the Crystal Structure. *Current Pathobiology Reports*. 2019 September, 7(3), 61–71. doi.org/10.1007/s40139-019-00198-2
- 4 **Haymond A**, Dowdy T, Johny C, Johnson C, Ball H, Dailey A, Schweibenz B, Villarroel K, Young R, Mantooth C, Patel T, Bases J, Dowd C, Couch R. A high-throughput screening campaign to identify inhibitors of DXP reductoisomerase (IspC) and MEP cytidyltransferase (IspD). *Analytical Biochemistry*. 2018 Feb 1, 542, 63-75. doi: 10.1016/j.ab.2017.11.018.
- 5 **Haymond A**, Johny C, Dowdy T, Schweibenz B, Villarroel K, Young R, Mantooth C, Patel T, Bases J, San Jose G, Jackson E, Dowd C, Couch R. Kinetic Characterization and Allosteric Inhibition of the *Yersinia pestis* 1-Deoxy-D-Xylulose 5-Phosphate Reductoisomerase (MEP Synthase). *PLoS ONE*. 2014, 9 (8): e106243. doi:10.1371/journal.pone.0106243
- 6 Mueller C, **Haymond A**, Davis JB, Williams A, Espina V. Protein biomarkers for subtyping breast cancer and implications for future research. *Expert Rev Proteomics*. 2018 Feb, 15 (2), 131-152. doi: 10.1080/14789450.2018.1421071.
- 7 Wang X, Edwards RL, Ball H, Johnson C, **Haymond A**, Girma M, Manikkam M, Brothers RC, McKay KT, Arnett SD, Osbourn DM, Alvarez S, Boshoff HI, Meyers MJ, Couch RD, Odom John AR, Dowd CS. MEPicides: α,β -Unsaturated Fosmidomycin Analogues as DXR Inhibitors against Malaria. *J Med Chem*. 2018 Oct 11, 61 (19), 8847-8858. doi: 10.1021/acs/jmedchem.8b01026.
- 8 San Jose, G, Jackson E, **Haymond A**, Johny C, Edwards RL, Wang X, Brothers RC, Edelstien EK, Odom AR, Boshoff HI, Couch RD, Dowd CS. Structure-Activity Relationships of the MEPicides: N-Acyl and O-linked Analogs of FR900098 as Inhibitors of Dxr from *Mycobacterium tuberculosis* and *Yersinia pestis*. *ACS Infect Dis*. 2016 Dec 9, 2 (12), 923-935. doi: 10.1021/acsinfecdis.6b00125.
- 9 Chofor R, Sooriyaarachchi S, Risseeuw MD, Bergfors T, Pouyez J, Johny C, **Haymond A**, Everaert A, Dowd CS, Maes L, Coenye T, Alex A, Couch RD, Jones TA, Wouters J, Mowbray SL, Van Calenbergh S. Synthesis and Bioactivity of β -Substituted Fosmidomycin Analogues Targeting 1-Deoxy-d-xylulose-5-phosphate Reductoisomerase. *J Med Chem*. 2015, 58 (7), 2988-3001. doi: 10.1021/jm5014264. Epub 2015 Mar 31.
- 10 San Jose, G, Jackson E, Uh E, Johny C, **Haymond A**, Lundburg L, Pinkham C, Kehn-Hall K, Boshoff H, Couch R, Dowd C. Design of potential bisubstrate inhibitors against *Mycobacterium tuberculosis* (Mtb) 1-deoxy-D-xyulose 5-phosphate reductoisomerase (Dxr)—evidence of a novel binding mode. *Med Chem Comm*. 2013, 4, 1099-1104. doi: 10.1039/C3MD00085K
- 11 Jackson, E, San Jose G, Brothers R, Edelstein E, Sheldon Z, **Haymond A**, Johny C, Boshoff H, Couch R, Dowd C. The effect of chain length and unsaturation on Mtb Dxr inhibition and antitubercular killing activity of FR900098 analogs. *Bioorg Med Chem Lett*. 2013, 24 (2), 649-653. doi: 10.1016/j.bmcl.2013.11.06



PATENT APPLICATIONS

Provisional Patent, Application Number:
62/678,731: Inventor

Title: Organometallic Labels for the Detection of Biomolecules, Methods of Synthesis and Processes for Conjugating an Organometallic Label to a Biomolecules

Provisional Patent, Application Number:
62/661,193: Inventor

Title: Collapsible Fluid Collection System for Point-of-Care Diagnostics

Provisional Patent, Application Number:
29/687,483: Inventor

Title: Sample Holder



RESEARCH GRANTS

Funding Agency: Center for Innovative Technology (CIT)

Role: Research Associate on project; Author of proposal

Project Title: From Unidentifiable and Undruggable to the Future of Pharmaceuticals: Protein Painting Reveals High-Value Protein-Protein Interactions as Drug Targets

Budget, Duration: \$100,000, 12 months

PROFESSIONAL SOCIETIES

- 1 AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY
Member since 2018
- 2 NATIONAL POSTDOCTORAL ASSOCIATION
Member since 2018
- 3 AMERICAN SOCIETY OF CELL BIOLOGY
Member since 2017
- 4 AMERICAN ASSOCIATION CANCER RESEARCHERS
Member since 2017
- 5 AMERICAN CHEMICAL SOCIETY
Member since 2013

ACADEMIC AWARDS

May 2017



2017 GMU DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY GRADUATE STUDENT AWARD

Department of Chemistry and Biochemistry

George Mason University, Fairfax, VA

May 2014



DEAN'S OUTSTANDING ACHEIVEMENT AWARD

College of Science

George Mason University, Fairfax, VA

April 2013



DEAN'S UNDERGRADUATE RESEARCH AWARD

College of Science

George Mason University, Fairfax, VA

POSTER PRESENTATIONS AND TALKS

- 
- April 2019 AACR ANNUAL MEETING 2019
Atlanta, GA
"Functionally important hotspot interfaces between immune-oncology targets PD-1 & PD-L1 and between Hippo pathway targets YAP2 & tight junction protein ZO-1 are identified using a protein-protein interaction technique optimized with novel dye chemistries"
- Dec 2018 IMAT NCI ANNUAL MEETING 2018
Bethesda, MD
"Protein Painting: Identification of Protein-Protein Interfaces for Drug Discovery"
- Dec 2017 ASCB-EMBO ANNUAL MEETING 2017
Philadelphia, PA
"Identification of Protein-Protein Interaction Hotspots in the Hippo Signaling Pathway"
- Sept 2017 IST ANNUAL COMMONWEALTH OF VIRGINIA CANCER RESEARCH CONFERENCE
University of Virginia, Charlottesville, VA
"Protein Painting: Discovering the Druggable Contact Regions Between Protein Binding Partners"
- January 2017 25th ENZYME MECHANISMS CONFERENCE
St. Pete's Beach, FL
"Antibacterial Drug Discovery: Rationally-Designed Inhibitors of MEP Synthase"
- Feb 2015 3rd ANNUAL HOST PATHOGEN INTERACTIONS IN BIODEFENSE AND EMERGING INFECTIOUS DISEASES CONFERENCE
George Mason University, Manassas, VA
"Antibacterial Drug Discovery: Rationally-Designed Inhibitors Targeting the MEP Pathway"
- April 2013 COLLEGE OF SCIENCE UNDERGRADUATE RESEARCH COLLOQUIUM
George Mason University, Fairfax, VA
"Yersinia pestis IspC as a Target for Novel Antibiotics"
- May 2012 COLLEGE OF SCIENCE UNDERGRADUATE RESEARCH COLLOQUIUM
George Mason University, Fairfax VA
"Inhibition of the Enzyme IspC in Mycobacterium tuberculosis"
- August 2010 PHILLIPS SCHOLARS POSTER SESSION,
Air Force Research Laboratory, Kirtland Air Force Base, NM
"Alkali Characterization Experiments: Cesium Optical Parametric Oscillator and Rubidium Behavior in NIR"
- July 2009 PHILLIPS SCHOLARS POSTER SESSION,
Air Force Research Laboratory, Kirtland Air Force Base, NM
"The Cesium Dimer Laser: Is It Possible?"

SCIENTIFIC OUTREACH AND MENTORSHIP

Summer 2013- Present

ASPIRING SCIENTISTS SUMMER INTERNSHIP PROGRAM (ASSIP)
George Mason University, Manassas, VA

- Helped orient and teach high school/undergraduate students how to work in an academic research lab, and assisted them in completing a short research project.
- Aided in preparing a poster to showcase the student's work to the rest of the ASSIP students, their mentors, and their parents

Personally mentored students at diverse academic levels:

- 1 *Ph.D Students:* Rachel Carter, Haley Ball, Marissa Howard
- 2 *Master's Students:* Douglass Dey, Sravani Venkatayogi, Ruth Zhang
- 3 *Undergraduate Students:* Claire Johnson, Pranavi Nara, Jessica Bases
- 4 *High-School Students:* Varun Kota, Vaishnavi Nara, Shivam Singh, Joseph Liu, Siri Nikku, Keertana Gunnam

PROFESSIONAL REFERENCES AVAILABLE UPON REQUEST