

EDUCATION

- University of Oklahoma**, Division of Organic Chemistry Norman, OK
- Ph.D. in Organic Chemistry
 - Dissertation: "Design and Synthesis of OSW-1 Analogs and Other Bioactive Small Molecule for Potential Therapeutic Applications"
<https://hdl.handle.net/11244/316780> December 2018
- Eastern Washington University** Cheney, WA
- B.S., Biochemistry May 2013
 - Summa Cum Laude
- Spokane Falls Community College** Spokane, WA
- Associate of Arts May 2010
 - Spokane Falls Community College President's Scholar Medal

RESEARCH EXPERIENCE

- University of Oklahoma** Norman, OK
- Graduate Student with Dr. Anthony W. G. Burgett* 2013-present
- Design, synthesis, characterization and evaluation of complex small molecules for therapeutic agent development
- Synthesis of natural product OSW-1, a steroidal glycoside, and its analogs for antiviral and anticancer treatment
 - Synthesis of vitamin A derivatives for degenerative myopia treatment
 - Synthesis of isotopically-labeled anticancer drugs (cisplatin and gemcitabine) for Single Cell Mass Spectrometry studies
 - Evaluation of cytotoxicity effects of synthesized compounds in mammalian cells
- Eastern Washington University** Cheney, WA
- Research Assistant with Dr. Travis T. Denton* 2011-2013
- Synthesis and characterization of functionalized Myosmine (an alkaloid compound) derivatives as acetylcholine binding protein's ligand
 - Synthesis and characterization of phosphonate analogues of α -Ketoacids as mechanistic probe of α -Ketoacid Dehydrogenase Complexes and Aminotransferases

SKILLS AND TECHNIQUES

- Organic synthesis: design synthetic routes to desired molecules; performance of organic reactions from gram-scale to milligram-scale; Schlenk-line techniques; purification and isolation of small molecules using chromatography equipment, column chromatography, recrystallization, distillation
- Analytical chemistry: analytical instrumentation techniques and spectroscopic analyses for compound identification and characterization such as mass spectrometry, liquid chromatography-mass spectrometry (LCMS), nuclear magnetic resonance (1D and 2D experiments), infrared spectrometry; maintenance and troubleshoot problems with Shimadzu LCMS system
- Molecular biology: transformation for cloning, mini-prep to isolate DNA, mammalian tissue culture, cytotoxicity assays on mammalian cell lines

PUBLICATIONS

- Harper, A.R., Le, A. T., Mather, T., Burgett, A., Berry, W., Summers, J. A.; “*Design, Synthesis, and Biological Evaluation of a Selective Inhibitor for Retinaldehyde Dehydrogenase Enzymes*” *Bioorg. Med. Chem.* **26**, 5766–5779 (2018)
- Brett L. Roberts, Zachary C. Severance, Ryan C. Bensen, Anh T. Le, Naga Rama Kothapalli, Juan I. Nuñez, Hongyan Ma, Si Wu, Shawna J. Standke, Zhibo Yang, William J. Reddig, Earl L. Blewett, Anthony W. G. Burgett, “*Transient Compound Treatment Induces a Multigenerational Reduction of Oxysterol-Binding Protein (OSBP) Levels and Prophylactic Antiviral Activity*”. *ACS Chem. Biol.*, **14**, 2, 276-287 (2019)

PRESENTATIONS

- American Chemical Society National Meeting (New Orleans, LA) March 2018
Design and Synthesis of Novel OSW-1 Scaffolds as Precision Cancer Therapeutic Agents (Poster)
- American Chemical Society Midwest Regional Meeting (Lawrence, KS) October 2017
Design and Synthesis of Novel OSW-1 Scaffolds as Precision Cancer Therapeutic Agents (Poster)
- OU-OUHSC Biomedical Engineering Symposium (Oklahoma City, OK) March 2017
OSW-1 Analogs for Anti-body Drug Conjugate (Poster)
- American Chemical Society Midwest Regional Meeting (Manhattan, KS) October 2016
Design and Synthesis of Novel Analogs of OSW-1, A Potent Anti-cancer Natural Product (Oral Presentation)
- American Chemical Society Southwest-Southeastern Regional Meeting (Memphis, TN) November 2015
Design and Synthesis of ORP4-Selective Compounds (Poster)
- Stephenson Cancer Center Research Symposium (Oklahoma City, OK) January 2015
A Novel Approach in Leukemia Therapeutics: Selective Inhibitor Targeting of OSBP-Related Protein 4 (ORP4) (Poster)
- Stephenson Cancer Center Research Symposium (Oklahoma City, OK) January 2014
Synthesis of Disaccharide Moiety of Anticancer Compound OSW-1 (Poster)
- National Conference of Undergraduate Research (Lacross, WI) April 2013
Preparation of Mono- and Dialkyl Acetyl Phosphonate: Synthesis, Isolation and Purification (Poster)
- EWU Symposium for Research and Creative Works (Cheney, WA) May 2012
Synthesis and Purification of Aldol Condensation Products Between the Nicotine Related Alkaloid Myosmine and Heterocyclic Aldehydes: Trials and Tribulations (Poster)

HONORS AND AWARDS

- Provost’s Certificate of Distinction for Outstanding Graduate Assistant Teaching, OU 2016
- Outstanding Senior of Department of Chemistry and Biochemistry, Eastern Washington University 2013
- John and JoAnn McKay Scholarship 2011-2013
- International Ambassador Scholarship 2011-2013
- Annual CRC Press Chemistry Award 2011