

Anthony Burgett, Ph.D.

Assistant Professor

Department of Chemistry and Biochemistry

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Education:

2007-2010: Harvard University, Susan G. Komen Postdoctoral Fellow, Research Advisor: Matthew D. Shair, Ph.D., Project: Discovery of the ORPphilin Class of Natural Products

2006: UT-Southwestern Medical Center, Ph.D. in Biological Chemistry, Doctoral Advisors: Patrick G. Harran, Ph.D. and Michael G. Roth Ph.D., Dissertation: Synthesis and Molecular Pharmacology of the Diazonamides

1999: University of Oklahoma, B.S. in Microbiology

1999: University of Oklahoma, B.S. in Biochemistry

Academic Appointments:

2012-current: Assistant Professor, Department of Chemistry and Biochemistry, University of Oklahoma

2012-current: Member, Stephenson Cancer Center

2010-2012: Research Associate, Harvard University, Department of Chemistry and Chemical Biology Laboratory of Professor Matthew D. Shair, Ph.D.

2012-2017: Director, Four-Year Research Engagement (FYRE) Program

2017-present: Associate Director, Four-Year Research Engagement (FYRE) Program

2014-present: Co-founder, Center for Bioanalysis (CBA) at the University of Oklahoma

2015-2019: Organizer/Mentor, NSF Research Experience for Teachers (RET)

2015-2019: Organizer/Mentor, NSF Research Experience for Teachers (RET)

2016-present: Faculty Sponsor, Student Research Discovery and Discussion Organization

2014-2016: Co-PI NSF Research Experience Undergraduate (REU) in Structural Biology

2013-2015: Director of Chris T. Memorial Scholarship for Undergraduate Research

Awards and Honors:

2017: University of Oklahoma Faculty Leadership Academy Graduate

2015: Paul G. Risser Innovative Teaching Fellow (University of Oklahoma)

2007-2010: Susan G. Komen for the Cure Foundation Postdoctoral Fellow

2003-2004: UT-Southwestern Medical Center Department of Basic Science NIH Graduate Fellowship Recipient

2002-2003: American Chemical Society Medicinal Chemistry Fellowship Recipient (sponsored by Aventis Pharmaceuticals)

1999: Phi Beta Kappa, *magna cum laude*, Distinguished Graduate, University of Oklahoma

1999: G.L. Cross Outstanding Microbiology Major, University of Oklahoma

1995-1999: National Merit Finalist Scholar, University of Oklahoma

Research Support:

Current:

- 2017-2020: OCAST Health Award, *Synthesis and Drug Development of ORP4 Protein Inhibitors: A New Route to Precision Anti-Cancer Therapeutics (HR-17-116)*. PI, Awarded: \$135,000.
- University of Oklahoma Start-up Package Fund.

Past:

- 2014: Junior Faculty Summer Fellowship, University of Oklahoma, Awarded: \$7,000.
- 2014: Faculty Improvement Program, University of Oklahoma, Awarded: \$15,000.
- 01/2014-06/2014 Oklahoma Translation and Clinical Science Resource Pilot Award, Awarded: \$50,000.
- 2014 Junior Faculty Summer Fellowship, University of Oklahoma, \$7,000.
- 2015-2017: NSF, *Research Experience for Undergraduates (REU) in Structural Biology (Award #1359457)*, co-PI (Sims PI), 2015-2017, Awarded: \$179,000.
- NIH, NIGMS R01, *From Single Cells to Tissues: A Novel Mass Spectrometry Approach for Bioanalysis (R01GM116116-03)*, Collaborator (Yang PI), 2015-2020, Awarded: \$90,950.
- 2016-2018: NCI IMAT R21, *Mass Spectrometry Detection of Drugs in Single Bladder Cancer Cells From Patients (R21CA204706)*. PI, Awarded: \$598,648.
- NSF, *Identifying the Critical Factors and Mindsets in College STEM Development Using a Multi-Disciplinary Longitudinal Cohort*. Co-PI (Kothapalli PI), 2017-2022, Awarded: \$586,011.
- Oklahoma Center for Respiratory Disease (OCRID) Pilot Award. *Investigation and Potential Drug Targeting of Oxysterol-Binding Protein (OSBP) in Viral Respiratory Disease*. co-PI. Awarded: \$25,000.
- Oklahoma Health Sciences Center/Presbyterian Health Foundation Team Science Grant, *Oxygenase JMJD4 and its Role in Breast Cancer*, co-PI, Awarded: \$20,000.

Selected Publications:

1. Zachary C. Severance, Juan I. Nuñez, Ryan C. Bensen, Anh T. Le, Cori A. Malinky, Gianni W. Manginelli, Sophia Sakers, Hailee Rau, Anthony W. G. Burgett*. "Structure-Activity Relationships of Ligand Binding to Oxysterol-binding Protein (OSBP) and OSBP-Related Protein 4(ORP4)", **2019**, In preparation.
2. Ryan C. Bensen, Shawna J. Standke, Devon H. Colby, Naga Rama Kothapalli, Anh T. Le, Abishek Tripathi, Jonathan E. Heinlen, Anthony W. G. Burgett¹* (**co-corresponding author**)*, Zhibo Yang*(**co-corresponding author**)*. "Quantitative Single Cell Mass Spectrometry Measurements of Chemotherapy Drug in Individual Patient Cancer Cells". **2019**, In preparation.
3. Chandrasekhar Bandari, Erin M. Scull, Tejaswi Bevineni, Susan L. Nimmo, Eric D. Gardner, Ryan C. Bensen, Anthony W. G. Burgett, Shanteri Singh. "FgaPT2, a biocatalytic tool for alkyl-diversification of indole natural products." *MedChemComm*, **2019**. 10: 1465-1475. [DOI: 10.1039/C9MD00177H](https://doi.org/10.1039/C9MD00177H)

4. Ning Pan, Shawna J. Standke, Naga Rama Kothapalli, Mei Sun, Ryan C. Bensen, Anthony W. G. Burgett, Zhibo Yang*. "Quantification of Drug Molecules in Live Single Cells Using the Single-probe Mass Spectrometry Technique." *Analytical Chemistry*. **2019**, 91(14):9018-9024. <https://doi.org/10.1021/acs.analchem.9b01311>.
5. Brett L. Roberts, Zachary C. Severance, Ryan C. Bensen, Anh T. Le, Cori A. Malinky, Evan M. Mettenbrink, Juan I. Nuñez, William J. Reddig, Earl L. Blewett, Anthony W. G. Burgett*. "Differing Activities of Oxysterol-binding Protein (OSBP) Targeting Anti-Viral Compounds." *Antiviral Research*. **2019**, 170: 104548 <https://doi.org/10.1016/j.antiviral.2019.104548>.
6. Shawna J. Standke, Devon H. Colby, Ryan C. Bensen, Anthony W. G. Burgett* (**co-corresponding author**), Zhibo Yang(**co-corresponding author**)*. "Integrated Cell Manipulation Platform Coupled with Single-probe Mass Spectrometry for the Analysis of Single Suspension Cells." *J. Vis. Exp.* **2019**. Issue 148. DOI: [10.3791/59875](https://doi.org/10.3791/59875)
7. Shawna J. Standke, Devon H. Colby, Ryan C. Bensen, Anthony W. G. Burgett* (**co-corresponding author**), and Zhibo Yang(**co-corresponding author**)*. "Mass Spectrometry Measurement of Single Suspended Cells using Combined Cell Manipulation System and the Single-probe Device." *Analytical Chemistry*. **2019**: 91 (3): 1738-1742. DOI: 10.1021/acs.analchem.8b05774.
8. 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 Chemical Biology*. **2019**, 14(2): 276-287. doi:10.1021/acschembio.8b00984. **ACS Editors' Choice Selection**
9. Angelica R. Harper, Anh T. Le, Timothy Mather, Anthony W. G. Burgett, William Berry and Jody A. Summers. "Design, synthesis, and ex vivo evaluation of a selective inhibitor for retinaldehyde dehydrogenase enzymes." *Bioorganic and Medicinal Chemistry*. **2018**, 26(22): 5766-5779.
10. Stefan Wilhelm, Ryan C. Bensen, Naga Rama Kothapalli, Anthony W. G. Burgett, Ruth Merrifield, Chady Stephan. "Quantification of Gold Nanoparticle Uptake into Cancer Cells using Single Cell ICP-MS." *PerkinElmer Application Note*, **2018**:1-4.
11. **Simon S. Terzyan, Anthony W.G. Burgett, Annie Heroux, Clyde A. Smith, Blaine H. M. Mooers, Marie H. Hanigan.** "Human g-Glutamyl Transpeptidase 1: Structures of the Free Enzyme, Inhibitor-Bound Tetrahedral Transition States, and Glutamate-Bound Enzyme Reveal Novel Movement Within the Active Site During Catalysis." *Journal of Biological Chemistry* 2015, 290(28): 17576-86.
12. Ning Pan, Wei Rao, Naga Rama. Kothapalli, Re Liu, Anthony W.G. Burgett*(co-corresponding author), Zhibo Yang (co-corresponding author)*, "The Single-probe: A Miniaturized Multifunctional Device for Single Cell Mass Spectrometry Analysis." *Analytical Chemistry*. 2014, 86 (19): 9376–9380
13. Anthony W. G. Burgett, Thomas B. Poulsen, Kittikhun Wangkanont, D. Ryan Anderson, Chikako Kikuchi, Kousei Shimada, Shuichi Okubo, Kevin C. Fortner, Yoshihiro Mimaki, Minpei Kuroda, Jason P. Murphy, David J. Schwalb, Eugene C. Petrella, Ivan Cornella-Taracido, Makrus Schirle, John A. Tallarico, Matthew D. Shair. "Natural Products Reveal Cancer Cell Dependence on Oxysterol-Binding Proteins." *Nature Chemical Biology*. **2011**, 7: 639-647. doi: [10.1038/nchembio.625](https://doi.org/10.1038/nchembio.625).
14. Noelle S. Williams, Anthony W. G. Burgett, Ashley S. Atkins, Xiaodong Wang, Patrick G. Harran, Steven L. McKnight. "Therapeutic Anticancer Efficacy of a Synthetic Diazonamide Analog in the Absence of Overt Toxicity." *PNAS*. **2007**, 104(7): 2074-2079.
15. Gelin Wang, Libing Shang, Anthony W. G. Burgett, Patrick G. Harran, Xiadong Wang. "Diazonamide Toxins Reveal an Unexpected Function for Ornithine g-Amino Transferase in Mitotic Cell Division." *PNAS*. **2007**, 104 (7): 2068-2073.
16. Anthony W. G. Burgett, Qingyi Li, Qi Wei, Patrick G. Harran. "A Concise and Flexible Total Synthesis of Diazonamide A." *Angewandte Chemie. Int. Ed.* **2003**, 42(40): 4961-4966.
17. Jing Li, Anthony W. G. Burgett, Lothar Esser, Carlos Amezcua, Patrick G. Harran. "Total Synthesis of Nominal Diazonamides—Part 2: On the True Structure and Origin of Natural Isolates." *Angewandte Chemie Int. Ed.* **2001**, 40(24): 4770-4773.
18. Jing Li, Xin Chen, Anthony W. G. Burgett, Patrick G. Harran. "Synthetic seco Forms of (-)-Diazonamide A." *Angewandte Chemie Int. Ed.* **2001**, 40(14): 2682-2685.

Patents:

1. Jody A. Summers, Angelica R. Harper, Tim Mather, Anthony W.G. Burgett, Anh Thi Quynh, "Inhibitors of Retinaldehyde Dehydrogenases and Methods of Use."*U.S. Patent Application. Published Sept. 13, 2018.
2. Matthew D. Shair and Anthony W.G. Burgett "OSW-1 Analogs and Conjugates, and Uses Thereof." **2017**, U.S. Patent # 9,790,253. Issued October 17th, 2017.
3. Patrick G. Harran, Noelle Williams, Anthony W.G. Burgett. "Diazonamide A Analog." **2009**, U.S. Patent #: 7,538,129. Issued May 26th, 2009.