Drew Budner

Curriculum Vitae

Work: Department of Chemistry
Coastal Carolina University
P.O. Box 261954
Conway, SC 29528
(843) 349-2395
dbudner@coastal.edu

Home: 8009 Pleasant Point Ln.
Myrtle Beach, SC 29579
(509) 638-9929

A. Professional Experience

Associate Professor, Department of Chemistry
Taught courses in Analytical Chemistry, Food Chemistry, General Chemistry
Coastal Carolina University, Conway, SC 2020–present

Assistant Professor, Department of Chemistry and Physics
Taught courses in Analytical Chemistry, General Chemistry Lecture and Lab
Coastal Carolina University, Conway, SC 2014–2020

Visiting Assistant Professor, Department of Chemistry and Physics
Taught courses in Analytical Chemistry, General Chemistry Lab
Coastal Carolina University, Conway, SC 2013–2014

Assistant Professor, Department of Chemistry
Taught courses in General Chemistry, Analytical Chemistry,
Environmental Chemistry, Chemistry of Modern Living (non-majors)
Whitworth University, Spokane, WA 2006–2013

B. Education

South Dakota State University, Brookings, SD
Ph.D. Chemistry
"Development of a continuous analysis system for ice cores using a melter with ion chromatography and an initial study of an electroanalytical technique for ice cores"
Advisor: Dr. Jihong Cole-Dai
Department of Chemistry and Biochemistry 2000 – 2006

Adams State College, Alamosa, CO
B.S. in Chemistry, minor in Geology 1995 – 2000

Research Publications and Presentations

Research

My research focuses on the development of analytical methods for the determination of chemical concentration of species of interest from complex aqueous solutions. I currently have three major research projects in my laboratory.

- Developing techniques to describe the flavor profiles of foods. This involves two different areas of focus, fermented beverages and honey. I am currently looking at the aroma profile differences between barley based and gluten-free beers, the analysis of kombucha, and development of terroir with honey. These projects rely heavily on solid phase microextraction fiber followed by separation and quantification using gas chromatography with mass spectrometry detection.
- The development of an electrochemical sensor for environmentally important chemicals. I am currently focusing on hydrogen peroxide. Sensors are being developed using a layer of Prussian blue, a metal complex known to catalyze hydrogen peroxide reduction. Major efforts have been aimed at the stabilization of these layers on the sensor surface, investigations of possible interferences present in environmental samples, and the deployment of these sensors in the detection of hydrogen peroxide in the surface water.

Publications – Submitted

Pitts, E.; Budner, D.; Jia, Z.; Zhang, B.; Carriglio, J.; Thompson-Witrick, K. A.. "Malted barley (*Hordeum vulgare*) of different origin and its metabolomic influence on *Saccharomyces cerevisiae* performance" MBAA Technical Quarterly – Submitted

Budner, D.; Thompson-Witrick, K. A.; Bell, L. "The BooZi device's effect on aroma compounds in distilled spirits**"** Journal of the South Carolina Academy of Science - Submitted

Publications – Published

Carriglio, J.; Budner, D.; Thompson-Witrick, K.A. Comparison Review of the Production, Microbiology, and Sensory Profile of Lambic and American Coolship Ales. Fermentation 2022, 8, 646. https://doi.org/10.3390/ fermentation8110646

Bishop, P.; Pitts, E. R.; Budner, D.; and Thompson-Witrick, K. A.. "Chemical Composition of Kombucha", B*everages* **2022**, *8*(3), 45; **https://doi.org/10.3390/beverages8030045**

Bishop, P.; Pitts, E. R.; Budner, D.; and Thompson-Witrick, K. A.. "Kombucha: Biochemical and Microbiological impacts on the Flavor Profile", Food Chemistry Advances **2022**, 1, 100025. https://doi.org/10.1016/j.focha.2022.100025

Budner, D.; Carr, J.; Serafini, B.; Tucker, S.; Dieckman-Meyer, E.; Bell, L.; Thompson-Witrick, K.A. “Statistical Significant Differences between Aroma Profiles of Beer Brewed from Sorghum”. Beverages **2021**, 7, 56. https://doi.org/10.3390/ beverages7030056

Thompson-Witrick, K.A.; Pitts, E.R.; Nemenyi, J.L.; Budner, D. “The Impact Packaging Type Has on the Flavor of Wine”. Beverages **2021**, 7, 36 https://doi.org/10.3390/beverages7020036

Budner, D. “My search for a highly flexible and adaptive course.” Journal of Research & Practice in College Teaching **2021**, 6, 2 https://journals.uc.edu/index.php/jrpct/article/view/4339/3554

Drew Budner, “The impact of regular use of integrated problems within a General Chemistry II course” *J. Chem. Ed*. **2020**, 97, 8, 2140 – 2146.

Budner, D and Simpson, B., “Project-based integrated lecture and laboratory quantitative analysis course” *J. Chem. Ed.* **2018**, 95, 9, 1533-1540.

Ferris, D., J. Cole-Dai, A. Reyes, and D. Budner, “South Pole ice core record of explosive volcanic eruptions in the First and Second Millennia A.D. and evidence of a large eruption in the tropics around 535 A.D.”, J. Geophys. Res., doi:10.1029/2011JD015916

J. Cole-Dai, D. Budner, and D. Ferris, “High Speed, High Resolution and Continuous Chemical Analysis of Ice Cores Using a Melter and Ion Chromatography” *Environ. Sci. Technol.* **2006**, 40, 6764 - 6769.

Budner, D., and J. Cole-Dai (2003), The number and magnitude of large explosive volcanic eruptions between 904 and 1865 A.D.: Quantitative evidence from a new South Pole ice core, in *Volcanism and the Earth's Atmosphere*, *Geophys. Monogr. Ser.*, vol. 139, edited by A. Robock and C. Oppenheimer, pp. 165–176, AGU, Washington, D. C., doi:10.1029/139GM10.

<u>Presentations</u>

Conference Poster 2022
*Caitlyn Hunt and Drew Budner, “*Initial Investigation of the Chemical Contribution of Hemp to Beer Aroma” 2022 Brewing Summit, August 14th-16th, Providence, RI

Conference Poster 2022
Santiago Cardenas Pinto, Eric Pitts, Drew Budner, Katherine Thompson-Witrick: “Malts of different origin influence the volatile compounds produced by Brettanomyces bruxellensis.” 2022 Brewing Summit, August 14th-16th, Providence, RI

Conference Talk *2022*
John Nemenyi, Brittney Rein, Drew Budner, Katherine Thompson-Witrick "Investigations of yeast profiles in mixed culture fermentations" 2022 Brewing Summit, August 14th-16th, Providence, RI

Conference Talk *2022*
Drew Budner, "In Search of Alternative Forms of Assessment" 2022 6TH annual Teaching, Learning and Technology Conference (TLTcon), May17-18th, Virtual Hosted by Medical University of South Carolina, Charleston, SC.

Conference Talk *2021*
Drew Budner, "Designing a highly flexible General Chemistry II course" 2021 South Carolina Conference on Innovations in Teaching and Learning in Higher Education (SCCITL) July 12th Virtual Hosted by Coastal Carolina University, Conway SC.

Conference Poster 2020
Pitts, E., Bolivar, A., Budner, D., and Thompson-Witrick, K**. "**Malts grown in different geographical regions and their impact on yeast metabolites." 2020**.** World Brewing Congress (American Society of Brewing Chemist (ASBC) and Master's Brewers Association of the Americas (MBAA) Joint Conference. Minnesota, MN.

Conference Poster 2020
Pitts, E., Bolivar, A., Budner, D., and Thompson-Witrick, K. **"**Malts grown in different geographical regions and their impact on yeast metabolites." 2020**.** Institute of Food Technologists (IFT) Annual Meeting. Chicago, IL.

Conference Poster 2020
English, D., Budner, D., Tucker, S. "Initial Geographic Investigation of Wildflower Honey using Headspace SPME with GC-MS" 2020 Pittsburg Conference (PittCon), March 1-5, Chicago, IL.

Conference Talk 2019
Budner, D., "Initial targeted analysis of key aroma compounds from distinct barley and sorghum grain bills" *2018 ASBC Annual Meeting,* June 23-26, 2019, New Orleans, LA

Conference Poster 2019
Budner, D. "BooZi (molecular sieve) device's effect on aroma compounds in distilled spirits" *2019 Spring National Meeting of the American Chemical Society,* March 31- April 4, 2019, Orlando, FL

Conference Talk 2019

Budner, D., “Integrated lecture and laboratory structured project-based analytical chemistry curriculum.” *2019 Spring National Meeting of the American Chemical Society,* March 31- April 4, 2019, Orlando, FL

Conference Poster 2018
Budner, D. “Non-Targeted Investigation of Volatile and Semi-Volatile Aroma Compounds Originating From Grain Build” *Young Scientist Symposium,* September 12-14, 2018, Bitburg, Germany

Conference Talk 2018
Budner, D., “The effect of yeast strain on the aroma chemical profiles of barley and sorghum beers.” *2018 Brewing Summit,* August 12-14, 2017, San Diego, CA

Conference Talk 2017
Budner, D. and Fries, K., “Analysis of Fermentable Carbohydrates using High Performance Liquid Chromatography in Gluten and Gluten-free Beer”. *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017
Budner, D. Tucker, S, and Carr, J., “Initial investigation into gluten-free beer brewed from malted quinoa” *MBAA Annual Meeting,* October 12-14, 2017, Atlanta, GA

Conference Poster 2017
Budner, D. and Bell, L., “Statistically significant difference between the aroma profiles of beer brewed from sorghum and malt” *ASBC Annual Meeting,* June 4-7, 2017, Fort Myers, FL

Conference Poster 2017
Budner, D. and Fries, K., “Analysis of Fermentable Carbohydrates using High Performance Liquid Chromatography in Gluten and Gluten-free Beer” *ASBC Annual Meeting,* June 4-7, 2017, Fort Myers, FL

Conference Talk 2016
Budner, D. and Simpson, B., “Development of a Project Based Curriculum for a Single Semester Quantitative Analysis Course.” *Biennial Conference on Chemical Education*, July 31 – August 4, 2016, Greeley, CO

Conference Talk 2016
Simpson, B. and Budner, D., “Implementation of Common Components Across Multiple Sections of General Chemistry” *Biennial Conference on Chemical Education*, July 31 – August 4, 2016, Greeley, CO

Conference Talk 2016

Simpson, B. and Budner, D., “Integrating ALEKS as a Prerequisite for General Chemistry” *Biennial Conference on Chemical Education*, July 31 – August 4, 2016, Greeley, CO

Conference Poster 2016
Budner, D. “Characterization of difference between the aroma profiles of beer brewed from sorghum and barley malt.” *World Brewing Congress,* August 13-17, 2016, Denver, CO

Conference Poster 2012
Drew Budner and Deanna Ojennus, “Development of a chemical profile produced in the fermentation of gluten-free beverages”, Fall National Meeting of the American Chemical Society, August 19th – 23rd, Philadelphia, PA

Conference Talk 2011
Drew Budner and Devin Merrill, “Detection of Hydrogen Peroxide in Natural Waters using a Prussian Blue Modified Electrochemical Sensor”, 66th Northwest Regional Meeting of the American Chemical Society, June 26-29, Portland, OR

Conference Talk 2010
Deanna Ojennus and Drew Budner, “Service Learning in Chemistry at Whitworth University”, Washington College Chemistry Teacher’s Association (WCCTA) Fall Conference, October 7-9, Leavenworth, WA

Conference Poster 2010
Drew Budner, “Project Based Analytical Chemistry Laboratory Curriculum Involving Role-Playing Strategies”, Council on Undergraduate Research National Conference, June 19-22, Weber State University, Ogden, UT

Conference Poster 2010
Drew Budner, “Prussian Blue Modified Electrochemical Sensors for the Detection of Hydrogen Peroxide in Water”, Council on Undergraduate Research National Conference, June 19-22, Weber State University, Ogden, UT

Conference Talk 2009
Drew Budner, “Investigation of the Role of the Membrane Material in a Wire Based Electrochemical Sensor for the Detection of Hydrogen Peroxide.” 64th Northwest Regional Meeting of the American Chemical Society, June 29-July 1, Tacoma, WA

Conference Poster 2009
Drew Budner and John Hauck, “Development of a Prussian Blue Modified Electrochemical Sensor for the Detection of Hydrogen Peroxide”, Spring

National Meeting of the American Chemical Society, March 22nd- 26th, Salt Lake City, UT

Conference Poster 2008
Drew Budner and Kerry Breno *"*Institutionalizing STEM Experiential Learning at Whitworth University*"* Council on Undergraduate Research 2008 National Conference. June 21 – 24th, College of Saint Benedict, MN

Conference Talk 2007
Drew Budner, "Inquiry-Based Analytical Lab Involving Role-Playing", Washington College Chemistry Teacher's Association (WCCTA) Fall Conference, October 18-20, Leavenworth, WA

Conference Poster 2005
Drew Budner, Jihong Cole-Dai, and David Ferris, *"*Ion chromatography as a measurement device in continuous flow analysis.*"* National AGU Fall Conference. December 5-10, San Francisco, CA

Conference Poster 2002
Drew Budner and Jihong Cole-Dai, *"*The Number and Magnitude of Large Explosive Volcanic Eruptions Between 1850 and 1175A.D.: Quantitative Evidence from a South Pole Ice Core*"* Chapman Conference on Volcanism and the Earth's Atmosphere,: June 17-21, Santorini, Greece

<u>Faculty-Directed Student Presentations</u>
Conference Poster 2022
*Caitlyn Hunt and Drew Budner, "*Initial Investigation of the Chemical Contribution of Hemp to Beer Aroma", 2022 *Annual CCU Undergraduate Research Competition*, April 12 – 13, 2022, Coastal Carolina University, Conway, SC

Conference Poster 2021
*Tyra Countiss and Drew Budner, "*Initial investigation of wildflower honey using headspace solid-phase microextraction coupled with gas chromatography-mass spectrometry for geographical information", 2021 South Carolina INBRE Science Symposium, January 23, 2021, Virtual Meeting.

Conference Poster 2021
Tyra Countiss and Drew Budner*, "*Initial Investigation of Wildflower Honey using Headspace Solid-phase microextraction coupled with gas Chromatography-mass spectrometry for Geographical Information", *Annual CCU Undergraduate Research Competition*, April 21 – 22, 2021, Coastal Carolina University, Conway, SC

Conference Poster 2021
Maura Bramlitt*, "*Initial Investigation of Select Pesticides Present in Wildflower Honey using Headspace Solid-phase microextraction coupled with Gas Chromatography-mass Spectrometry *Annual CCU*

Undergraduate Research Competition, April 21 – 22, 2021, Coastal Carolina University, Conway, SC

Poster Presentation 2018
Davis, S. and Budner, D., "Xerogel Composition and Formation Conditions on Electrodes: Working Towards Improved Response and Long-Term Stability**"** *Southeast Regional Meeting of the American Chemical Society (SERMACS)*, October 31 – November 2, 2018, Augusta, GA

Poster Presentation 2018
Davis, S. and Budner, D., "Xerogel Composition and Formation Conditions on Electrodes: Working Towards Improved Response and Long-Term Stability**"** *Annual CCU Undergraduate Research Competition*, April 11 – 12, 2018, Coastal Carolina University, Conway, SC

Poster Presentation 2018
Strohl, J.; Harvey, M.; Budner, D., "A Proof of Concept Study Incorporating Prussian Blue Beneath a Glucose Oxidase Xerogel**"** *Annual CCU Undergraduate Research Competition*, April 11 – 12, 2018, Coastal Carolina University, Conway, SC

Conference Talk 2018
Byrne, M. and Budner, D; "Polyaniline and nickel hexacyanoferrate modified Prussian Blue electrochemical sensors." *2018 Spring Nation Meeting of the American Chemical Society,* March 18-22, 2018, New Orleans, LA

Conference Poster 2018
Moreno Catapano, A.; Byrne, M.; Zhang, E.; Budner, D; "Incorporation of Prussian Blue into a Xerogel Based Glucose Sensor." *2018 Spring Nation Meeting of the American Chemical Society,* March 18-22, 2018, New Orleans, LA

Conference Poster 2017
Zhang, E.; Byrne, M.; Moreno Catapano, A.; Budner, D; "Impact of Structured Deposition of Prussian Blue on Electrode Performance." *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017
Byrne, M.; Moreno Catapano, A.; Zhang, E.; Budner, D; "Development of Prussian Blue Modified Electrochemical Sensors Incorporating Both Polyaniline and Nickel Hexacyanoferrate." *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017

Moreno Catapano, A.; Byrne, M.; Zhang, E.; Budner, D; “Incorporation of Prussian Blue into a Xerogel Based Glucose Sensor.” *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017
Carr, J; Serafini, B.; Tucker, S.; Budner, D. “Initial investigation into gluten-free beer brewed from malted quinoa.” *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017
Tucker, S.; Serafini, B.; Carr, J; Budner, D. “Initial investigation into the effect of yeast strain (Ameican Wheat vs Belgian Abbey) on the aroma profiles of barley and sorghum beers.” *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017
Serafini, B.; Tucker, S.; Carr, J; Budner, D. “Initial investigation into the difference between American and British ale yeast strains on the aroma profiles of barley and sorghum beers.” *2017 Southeast Regional Meeting of the American Chemical Society (SERMACS),* November 7-11, 2017, Charlotte, NC

Conference Poster 2017
Serafini, S. and Budner, D., “Initial investigation into the effect of yeast strain on the aroma profiles of barley and sorghum beers.” *MBAA Annual Meeting,* October 12-14, 2017, Atlanta, GA

Conference Poster 2017
Bell, H. and Budner, D., “”Investigations into the effects of freeze concentration on beer aroma” *MBAA Annual Meeting,* October 12-14, 2017, Atlanta, GA

Conference Poster 2017
Zhang, E.; Byrne, M.; Moreno Capatano, A.; Budner, D.; *"Impact of Structured Deposition of Prussian Blue on Electrode Performance"* 2nd Annual CCU – INBRE SCoRE Summer Research Poster Session, Conway, SC

Conference Poster 2017
Byrne, M.; Zhang, E.; Moreno Capatano, A.; Budner, D.; *"Development of Prussian Blue Modified Electrochemical Sensors Incorporating Both Polyaniline and Nickel Hexacyannoferrate"* 2nd Annual CCU – INBRE SCoRE Summer Research Poster Session, Conway, SC

Conference Poster 2017

Moreno Catapano, A.; Byrne, M.; Zhang, E.; Budner, D.; *"Incorporation of Prussian Blue into a Xerogel Based Glucose Sensor"* 2nd Annual CCU – INBRE SCoRE Summer Research Poster Session, Conway, SC
Conference Poster 2017

Serafini, B.; Carr, J.; Tucker, S.; Budner, D.; *"Comparison between Beers Brewed from Barley and Sorghum Malt Extract"* 2nd Annual CCU – INBRE SCoRE Summer Research Poster Session, Conway, SC
Poster Presentation 2017

Byrne, M. and Budner D., "Development of Prussian Blue Modified Electrochemical Sensors Stabilized with Nickel Hexacyanoferrate" South Carolina Academy of Sciences, March 25th, 2017 Coastal Carolina University, Conway, SC

Poster Presentation 2016

Stafford, N. and Budner, D., "Comparison of Aroma Profiles Between Gluten-free and Gluten- containing Beers Using SPME in Combination with GCMS**"** *8th Annual CCU Undergraduate Research Competition*, April 12 – 14, 2016, Coastal Carolina University, Conway, SC

Poster Presentation 2016

Stafford, N. and Budner, D., "Comparison of Aroma Profiles Between Gluten-free and Gluten- containing Beers Using SPME in Combination with GCMS**"** *2016 Southeast Regional Meeting of the American Chemical Society (SERMACS),* October 23-26, 2016, Columbia, SC

Poster Presentation 2013

Ryan Lyski and Drew Budner, **"**Co-Deposition of Prussian Blue with Aniline for the Improvement of Operational Stability and Sensitivity of Hydrogen Peroxide Sensors", 11th Annual Spokane Intercollegiate Research Conference, April 27, Spokane WA

Poster Presentation 2013

Sheridan Cooper and Drew Budner, **"**Operational Stability and Sensitivity of Prussian Blue Layered Peroside-Detecting Electrodes with Sacrificial Membranes of Aniline and Nickel Hexacyanoferrate", 11th Annual Spokane Intercollegiate Research Conference, April 27, Spokane WA

Poster Presentation 2013

Joseph Regalado and Drew Budner, **"**Development of a Prussian Blue Modified Electrode with Improved Hydrogen Peroxide via Current-free and Simultaneous Deposition of Aniline and Insertion of Ni^{2+} ions.", 11th Annual Spokane Intercollegiate Research Conference, April 27, Spokane WA

Poster Presentation 2013

Anita Wang and Drew Budner, **"**Analysis of Volatiles Involved in Ageing of Beer between Gluten-Free and Regular Beer through Gas Chromatography and Mass Spectroscopy", 11th Annual Spokane Intercollegiate Research Conference, April 27, Spokane WA

Poster Presentation 2013
Eric Wonn and Drew Budner, **"**Optimization of Parameters for Hydrogen Peroxide Detection Using Polymer-Prussian Blue Layered Electrodes", 11th Annual Spokane Intercollegiate Research Conference, April 27, Spokane WA

Poster Presentation 2012
Amber Johnson and Drew Budner, **"**Optimizing Electrodes for use in Biosensors through Deposition of Prussian Blue and Nickel Hexaferrocyanide in Various Layers", 10th Annual Spokane Intercollegiate Research Conference, April 21, Spokane WA

Poster Presentation 2012
Russell Quamme and Drew Budner, **"**HPLC Analysis of Coffee", 10th Annual Spokane Intercollegiate Research Conference, April 21, Spokane WA

Poster Presentation 2012
Philip Inouye, Erick Huntley, and Drew Budner, **"**Classification of Gluten-Free Beer by Headspace Solid Phase Microextraction and High Performance Liquid Chromatography", 10th Annual Spokane Intercollegiate Research Conference, April 21, Spokane WA

Poster Presentation 2012
Tom Kang and Drew Budner, **"**Method Development for Aroma Profiles of Volatiles Produced in the Fermentation of Gluten-Free Beverages", 10th Annual Spokane Intercollegiate Research Conference, April 21, Spokane WA

Poster Presentation 2011
Shawn De Lappe and Drew Budner, **"**Development of an Atomic Absorption Method for the Determination of Sodium Hexametaphosphate", 66th Northwest Regional Meeting of the American Chemical Society, June 26-29, Portland, OR

Poster Presentation 2011
Janell Talbot and Drew Budner, **"**Improvement of the Operational Lifetime of a Prussian Blue Modified Electrode", 66th Northwest Regional Meeting of the American Chemical Society, June 26-29, Portland, OR

Poster Presentation 2011

Allyssa Thompson and Drew Budner, **"**Investigation of Possible Interferences to a Prussian Blue Modified Electrochemical Sensor in the Detection of Hydrogen Peroxide", 66th Northwest Regional Meeting of the American Chemical Society, June 26-29, Portland, OR

Poster Presentation 2011
Tom Kang, Deanna Ojennus, and Drew Budner, **"**Method Development for Aroma Profiles of Volatiles Produced in the Fermentation of Gluten-Free Beverages", 66th Northwest Regional Meeting of the American Chemical Society, June 26-29, Portland, OR

Poster Presentation 2010
Rebecca Johnson and Drew Budner, "Detection of Hydrogen Peroxide", Spokane Intercollegiate Research Conference, Spokane WA

Poster Presentation 2009
Devin Merrill, Emilio Sulpizio, John Hauck, and Drew Budner, "Investigation of Some Possible Ionic Interference to a Prussian Blue Modified Electrochemical Sensor in the Detection of Hydrogen Peroxide in Natural Waters", Northwest Regional Meeting of the American Chemical Society. June 29-July 1, Tacoma, WA

Poster Presentation 2009
"Optimization of a Prussian Blue Based Electrochemical Sensor for the Detection of Hydrogen Peroxide", John Hauck and Drew Budner Spokane Intercollegiate Research Conference, Spokane WA

Poster Presentation 2009
James Lagucik and Drew Budner, "Electrochemical Detection of Hydrogen Peroxide", Spokane Intercollegiate Research Conference, Spokane WA

Poster Presentation 2008
James Lagucik and Drew Budner, "Electrochemical Detection of Hydrogen Peroxide", Seventeenth Regional Conference on Undergraduate Research of Murdock College Science Program, Tacoma, WA

Poster Presentation 2008
John Hauck and Drew Budner, "Optimization of a Prussian Blue Based Electrochemical Sensor for the Detection of Hydrogen Peroxide", Seventeenth Regional Conference on Undergraduate Research of Murdock College Science Program, Tacoma, WA

Poster Presentation 2008

John Hauck and Drew Budner, “Prussian Blue Based Electrochemical Sensor for Hydrogen Peroxide”, Spokane Intercollegiate Research Conference, Spokane WA

Poster Presentation 2008
Xander Knight and Drew Budner, “Optimization of a Prussian Blue-Modified Electrode for the Electrochemical Detection of Hydrogen Peroxide”, Spokane Intercollegiate Research Conference, Spokane WA

Poster Presentation 2008
Chris Fenton and Drew Budner “Wire Based electrochemical cell for the analysis of Hydrogen Peroxide” Spokane Intercollegiate Research Conference, Spokane WA

Poster Presentation 2007
John Hauck and Drew Budner “Prussian Blue Based Electrochemical Sensor for Hydrogen Peroxide”, Sixteenth Regional Conference on Undergraduate Research of Murdock College Science Program, Salem, OR

Poster Presentation 2007
Chris Fenton and Drew Budner “Wire Based electrochemical cell for theanalysis of Hydrogen Peroxide”, Sixteenth Regional Conference on Undergraduate Research of Murdock College Science Program, Salem, OR

<u>Grants Awarded</u>

External Grant (Awarded 10,000) *2022*
Drew Budner (PI), Undergraduate Analytical Research Program (UARP) Committee of the Society for Analytical Chemists of Pittsburgh (SACP) – Investigation of Water Chemistry on the Fermentation of Kombucha

Internal Grant (Awarded 4,500) 2019
Drew Budner (PI), Professional Enhancement Grant – Research Enhancement. Determination of the chemical contribution of hemp to beer aroma.

External Grant (Awarded 2,000) *2019*
Drew Budner (PI), South Carolina EPSCoR/IDeA Program
MADE in SC Research Experience for Teachers (RET) Program – Mentoring David English a teacher from Carolina Forest High School. A project to investigate the potential to elucidate the concept of terroir in wildflower honey.

Internal Grant (Awarded 20,000) 2019
Drew Budner (PI), SCoRE Program – CCU INBRE

Development of Prussian Blue Modified Biosensors – Award funded a summer research program for two undergraduates and one high school student to work in the research laboratory.

Internal Grant (Awarded 2,500) 2018
Drew Budner (PI), Signature Pedagogies Learning Communities - The impact of regular use of integrated problems within a General Chemistry II course.

Internal Grant (Awarded 6,000) 2018
Drew Budner (PI), Professional Enhancement Grant – Research Enhancement. Development of Prussian Blue Modified Glucose Oxidase Impregnated Xerogel Glucose Biosensor.

Internal Grant (Awarded 7,200) 2017
Brett Simpson (PI), Drew Budner (CO-PI), Amber McWilliams (CO-PI), COOL Online Development Grant. Development of Hybrid sections of General Chemistry II lecture and laboratory.

Internal Grant (Awarded 20,000) 2017
Drew Budner (PI), SCoRE Program – CCU INBRE
Development of Prussian Blue Modified Biosensors – Award funded a summer research program for two undergraduates and one high school student to work in the research laboratory.

Internal Grant (Awarded 7,200) 2016
Brett Simpson (PI), Drew Budner (CO-PI), Amber McWilliams (CO-PI), COOL Online Development Grant. Development of Hybrid sections of General Chemistry I lecture and laboratory.

Internal Grant (Awarded 3,900) 2015
Drew Budner (PI), COOL Online Development Grant.
Development of completely online course, Kitchen Chemistry. This is a non-major science course lecture and lab that is delivered completely online.

External Grant (Awarded, $10,000) 2008
Drew Budner (PI), Deanna Ojennus (CO-PI), Whitworth University
Pittsburgh Conference grant proposal entitled “Use of High Performance Liquid Chromatography in Chemistry at Whitworth University” to purchase an HPLC system for the chemistry department.

Start-up Award (Awarded, $50,000) 2006
M. J. Murdock Charitable Trust Start-up grant, a one to one match including research space remodeling, lab equipment supplies, and two summer stipend for both two students and myself.

Internal Grant (Awarded, $400) 2011
Sponsored Programs Office Mini-Grant for purchase of research laboratory supplies.

Internal Grant (Awarded, $5500) 2011
STEM (Science, Technology, Engineering, and Mathematics) Faculty Research Program for continued work on the development of Prussian blue modified electrode for the determination of hydrogen peroxide in natural waters as well as preparation of a manuscript for submission to a peer-reviewed journal.

Internal Grant (Awarded, $1750) 2011
STEM (Science, Technology, Engineering, and Mathematics) Faculty Research Program to investigate the differences in aroma profiles of between gluten-free and barley based beers in collaboration with Dr. Ojennus.

Internal Grant (Awarded, $14000) 2011
Science, Technology, & Math Student and Faculty Summer Research Fellowships of $3500 each for four student researchers (three for Prussian Blue work and one for aroma profiles) during a 9 week summer research experience.

Internal Grant (Awarded, $551) 2011
Mr. and Mrs. Robert McDonald Opportunity Scholar award for a student Analytical Chemistry Research Assistant for fall semester.

Internal Grant (awarded, $4000) 2010
STEM Faculty Research Program for continued work on the development of Prussian blue modified electrode for the determination of hydrogen peroxide in natural waters as well as preparation of a proposal for external funding.

Internal Grant (Awarded, $7000) 2009
Science, Technology, & Math Student and Faculty Summer Research Fellowships of $3500 each for two student researchers and their research advisor during a 10 week summer research experience.

Internal Grant (Awarded, $750) 2009
Faculty Research and Development summer research award for summer research supervising students.

Internal Grant (Awarded, $1000) 2007

Mr. and Mrs. Robert McDonald Opportunity Scholar award for a student researcher to continue development of electrochemical detector for hydrogen peroxide.

Other Professional Activities

Session Moderator 2019
Drew Budner, Analytical Session #3, American Society of Brewing Chemists Annual Meeting, New Orleans, LA

Workshop Attendance 2015
Drew Budner, cCWCS Implementing iPads in the Chemistry Curriculum mini-workshop, Hilton Atlanta Airport Hotel, Atlanta, GA.

Workshop Attendance 2011
Drew Budner, POGIL Northwest Regional Meeting, Linfield College

Invited Speaker 2011
Drew Budner, “Climate Change”, Good Deeds for Trees Whitworth University Sustainability Week Event

Workshop Attendance 2010
Drew Budner, CUR Beginning a Research Program at a Predominately Undergraduate University Workshop, Calvin College

Invited Speaker 2010
Drew Budner, "The Development of Electrochemical Sensors for the Detection of Hydrogen Peroxide", Research talk at University of Idaho, January 19, Moscow, ID

Invited Speaker 2008
Drew Budner, “Research in Antarctica”, Spokane Astronomical Society, April Monthly Meeting, Spokane, WA

Faculty Talk 2007
Drew Budner, “Research in Antarctica” Faculty Scholarship Forum, April 30, Whitworth University, Spokane, WA

<u>Community Service - Science Outreach and Mentoring</u>

Elementary School Assemblies 2007–2013
I helped provided science assemblies for local elementary schools to increase student interest in the sciences. These assemblies involved Whitworth students as part of a service learning experience.

Spokane MESA Science Competition 2007
I judged the 10th grade science written and oral reports as well as the finalist’s presentations. Eastern Washington University, Cheney, WA

MESA Presentations 2007

I provided college chemistry experiences for local high school students as part of a Whitworth servicelearning course and in collaboration with Washington State University's MESA (Mathematics, Engineering, Science Achievement) program.

Professional Service

Member 2006-Present

American Chemical Society

Member 2016-Present

American Society of Brewing Chemists

Consultant 2007-2013

I served as a consultant and product tester for Artisan Industries

Reviewer 2006-

Present

I served as a reviewer for the Journal of Geophysical Research – Atmospheres, the Journal of Chemical Education, Beverages, Food Chemistry, and McMillian Publishing