

## *Undergraduate Mentoring Outcomes while at WVU*

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### **UNDERGRAD RESEARCHERS DIRECTED**

- 22) McKenna Oaks, 2022-present. McKenna joined my group as a freshman in the research apprenticeship program (RAP). She is currently completing her sophomore year at WVU and is finalizing her first manuscript as first author.
- 21) Sarah Mosinski, 2022-present. Sarah has been admitted to the MS program in FIS at WVU this fall.
- 20) Alexander Pfeffer, 2021-present. Alex also joined my group through the research apprenticeship program (RAP). He also completed a SURE program with me in the summer of 2022. He has given two presentations of his work at conferences, including at the 2023 Undergraduate Research Day at the Capitol. He has also drafted a manuscript as first author that I am currently editing. He plans to enrol in a PhD program in pharmaceutical Science this fall.
- 19) Jessica Orris, 2022. Jessica completed a summer REU program with me through Chemistry. Jessica is currently pursuing a PhD in Chemistry at Penn State University. She gave a poster presentation of her work at a conference and was a co-author on two additional presentations.
- 18) Jared George, 2020-2021. Jared is working on his PhD in Chemistry at the University of Virginia.
- 17) Hannah McMillen, 2020-2022. Hannah is completing her MS in FIS at WVU and has been admitted to the PhD program in FS in the fall of 2024. She gave an oral presentation of her work at the 2022 meeting of the American Academy of Forensic Sciences.
- 16) Ahna Kotula, 2019-2022. Ahna is a crime scene investigator in St. George's County, MD. She received both the 2021 George H. Robinson Memorial Scholarship and the 2021 Johnson-Whyte Memorial Foundation Scholarship. The scholarships recognize outstanding undergraduate students in forensic science and criminal justice programs in the US. She gave a poster presentation of her work at the CBD-IAI meeting in 2022.
- 15) Jacob King, 2021. Jacob completed a summer REU program with me through Chemistry He is currently pursuing a PhD in computational chemistry at Colorado State University. He was a co-author on two publications and more than three conference presentations. He won best poster presentation at the regional ACS meeting at Duquesne University in 2022.
- 14) Evan Ferweda, 2019-2021. Evan received the 2021 College Chemistry Award from the Society for Analytical Chemists of Pittsburgh (SACP). The award is given to "recognize the student's demonstrated excellence in performance and high achievements in the field of chemistry.
- 13) Samantha Mehnert, 2018-2020. Sam is currently pursuing a PhD in Chemistry at Purdue. Sam won a variety of awards in my group: In 2020, she was named a "WVU Foundation Outstanding Graduate" by the Honors College. In 2019, she won the 2019 Eastern Analytical Symposium (EAS) Student Research Award. She also received the 2019 ACS Division of Analytical Chemistry Award for an outstanding junior and the 2019 George H. Robinson Memorial Scholarship from the Chesapeake Bay

Division of the International Association for Identification (CDB-IAI), which recognizes outstanding undergraduate students in forensic science and criminal justice.

Sam is the primary author of one publication and co-author on a second. Sam has appeared on a total of 10 conference presentations: two as oral presenter, one as a poster presentation, and the rest as a co-author.

- 12) Emily Ruiz, 2018. Emily completed a summer REU program with me through Chemistry. She is currently pursuing a PhD in chemistry with me at WVU. Emily was a co-author on two peer-reviewed publications. Emily has also been a co-author on 7 conference presentations.
- 11) Brandon Lowe, 2018. Brandon completed a summer REU program with me through Chemistry. He is currently pursuing a PhD in Pharmaceutical Sciences at University of Maryland, Baltimore. Brandon was a co-author on two peer-reviewed publications. Brandon has also appeared as a co-author on 11 conference presentations.
- 10) Sarah Chaffman, 2017-2019. Sarah gave a poster presentation at a conference.
- 9) Isaac Willis, 2017-2019. In the summer of 2018, Isaac completed a SURE program with me through Chemistry. He is currently pursuing a Ph.D. in Chemistry at Michigan State U. In 2018, he won the American Chemical Society Analytical Chemistry Award, which is presented to an outstanding junior chemistry major at WVU. He was the primary author of a peer-reviewed publication, he presented a poster of his work at a conference and was a co-author on two additional conference presentations.
- 8) Emily Gleco, 2017. Emily completed a summer REU program with me through Chemistry. She currently works as a technician as CSL Plasma. Emily was a co-author on a peer-reviewed manuscript. She was also a co-author on a conference poster presentation.
- 7) Sierra Stinson, 2017. Sierra completed a summer REU program with me through Chemistry. She gave a poster presentation at a conference.
- 6) Gabriel Walkup, 2016-2017. Gabe is a Research Technician at Evonic. Gabe was a co-author on a conference poster.
- 5) Olivia Dodd, 2015-2016
- 4) Tyler Williams, 2015-2016. Tyler received a Ph.D. in Chemistry at Clemson U. He is currently employed at Los Alamos National Laboratory as a research scientist. Tyler was a co-author on a peer-reviewed publication. Tyler was a presenter on one presentation and co-author on three more presentations.
- 3) Ashley Cochran, 2014-2015. Ashley is a crime scene investigator in Raleigh, NC. Ashley also obtained an M.S. in FIS with me at WVU and worked as a researcher at RTI, before her current position as a crime scene investigator in Raleigh, NC. Ashley was a co-author on a peer-reviewed publication. Ashley was a co-presenter on two presentations.
- 2) Heather Birks, 2014-2015. Heather obtained an M.S. degree at VCU. Heather was primary author on a peer-reviewed publication. Heather was a co-presenter on two presentations.
- 1) Clayton Johnson, 2014-2014. Clayton received his PhD in Aqueous Chemistry and Microbiology from Notre Dame University, a postdoctoral fellowship at Northwestern University, and is now a quality manager at Bluestone Specialty Chemicals.

## PUBLICATIONS WITH UNDERGRADUATE STUDENTS AS AUTHORS OR COAUTHORS (HIGHLIGHTED)

### *West Virginia University*

- 5) **S.A. Mehnert**, J. T. Davidson, A. Adeoye, **B. D. Lowe**, **E. A. Ruiz**, **J.R. King**, G. P. Jackson, "Expert Algorithm for Substance Identification (EASI) using Mass Spectrometry: Part II. Application to the Identification of Cocaine on Different Instruments using Binary Classification Models," *J. Am. Soc. Mass Spectrom.* **2023**, 34(7), 1248-1262.
- 4) G. P. Jackson, **S.A. Mehnert**, J. T. Davidson, **B. D. Lowe**, **E. A. Ruiz**, **J. R. King**, "Expert Algorithm for Substance Identification (EASI) using Mass Spectrometry: Part I. Statistical Foundations in Unimolecular Reaction Rate Theory," *J. Am. Soc. Mass Spectrom.* **2023**, 34(7), 1235-1247.
- 3) **I. C. Willis**, Z. Fan, J. T. Davidson, G. P. Jackson, "Weathering of Ignitable Liquids at Elevated Temperatures: A Thermodynamic Model, Based on Laws of Ideal Solutions, to Predict Weathering in Structure Fires," *Forens. Chem.*, **2020**, 100215.
- 2) M. K. Santos, **E. Gleco**, J. T. Davidson, D. B. J. Neves, G. P. Jackson, R. P. Limberger, L. E. Arroyo, "DART-MS/MS Screening for the Determination of 1,3-Dimethylamylamine (DMAA) and Undeclared Stimulants in Seized Dietary Supplements from Brazil," *Forens. Chem.*, **2018**, 8, 134–145.
- 1) **H. L. Birks**, **A. R. Cochran**, **T. J. Williams**, G. P. Jackson, "The Surprising Effect of Temperature on the Weathering of Gasoline," *Forens. Chem.*, **2017**, 4, 32–40.

## CONFERENCE PRESENTATIONS (PRESENTER LISTED FIRST) WITH UNDERGRADUATE STUDENTS AS AUTHORS OR COAUTHORS (HIGHLIGHTED)

*\*Denotes Invited Lecture*

### *Work conducted at West Virginia University*

- 32) **J. Orris**, A. Adeoye, S. Hokanson, G. P. Jackson, "Application of the Expert Algorithm for Substance Identification (EASI) to Mass Spectra of Synthetic Cathinones" at the Spring ACS Meeting, Indianapolis, IN, 2023. (Poster)
- 31) \*G. P. Jackson, J. T. Davidson, A. Adeoye, **E. Ruiz**, **B. Lowe**, **J. King** "Expert Algorithm for Substance Identification (EASI) Applied to the Mass Spectra of Structurally Similar Fentanyl Analogs," at the Pittsburgh Conference, Philadelphia, PA, 2023. (Oral)
- 30) \*G. P. Jackson, A. Adeoye, **J. Orris**, S. Hokanson, "Application of the Expert Algorithm for Substance Identification (EASI) to Mass Spectra of Synthetic Cathinones," at the Pittsburgh Conference, Philadelphia, PA, 2023. (Oral)
- 29) G. P. Jackson, A. Adeoye, **J. Orris**, S. Hokanson, "B83 The Application of the Expert Algorithm for Substance Identification (EASI) on Synthetic Cathinones Using Mass Spectrometry (MS)," at the American Academy of Forensic Sciences Meeting, Orlando, FL, 2023. (Oral)
- 28) **A. Pfeffer** and G. P. Jackson, "B116 The Application of the Expert Algorithm for Substance Identification (EASI) on N-Alkanes," at the American Academy of Forensic Sciences Meeting, Orlando, FL, 2023. (Poster)
- 27) \*G. P. Jackson, J. T. Davidson. A. Adeoye, **S. Mehnert**, **E. Ruiz**, **J. King**, "Expert Algorithm for Substance Identification (EASI): A New Paradigm for Mass Spectral Identifications," presented at SciX Conference, Providence, RI, Oct 2022. (Oral)

- 26) **J. King**, G. P. Jackson, “Multivariate Analysis of Variance to Identify Instrumental Parameters Affecting Tandem Mass Spectra Reproducibility,” presented at the ACS Regional Meeting at Duquesne University, Pittsburgh, PA, Mar 2022. (Poster)
- 25) **J. King**, G. P. Jackson, “Expert Algorithm for Substance Identification (EASI) from Mass Spectra,” presented at the 35<sup>th</sup> Annual ACS Regional Symposium, (virtual due to COVID) Apr 2022. (Poster)
- 24) **A. Kotula**, G. P. Jackson, “The Weathering of Ignitable liquids at Elevated Temperatures,” presented at the Chesapeake Bay Division of the International Association for Identification (CBD-IAI), Gettysburg, PA, Mar 2022. (Poster)
- 23) \*G. P. Jackson, **S. Mehnert**, J. T. Davidson, **B. Lowe**, A. Adeoye, **E. Ruiz**, “Expert Algorithm for Substance Identification (EASI) from Mass Spectra,” presented at the NIJ Forensic Science Research and Development Symposium, (virtual due to COVID) Mar 2022. (Oral)
- 22) **H. L. McMillen**, G. P. Jackson, “Evaluation of a Thermodynamic Model to Predict the Weathering of Ignitable liquids at Elevated Temperatures,” at the 74<sup>th</sup> Meeting of the American Academy of Forensic Sciences, Seattle, WA, Feb 2022. (Oral)
- 21) \*G. P. Jackson, **S. Mehnert**, J. T. Davidson, “New Algorithm for Mass Spectral Identifications,” at Pacifichem, Honolulu, HI, (Virtual due to COVID), Dec 2021. (Oral)
- 20) \*G. P. Jackson, **S. Mehnert**, J. T. Davidson, “Expert Algorithm for Substance Identification (EASI): A New Paradigm for Mass Spectral Identifications,” presented in the Innovation Award Session at SciX Conference, Providence, RI, Sept 2021. (Oral)
- 19) \*G. P. Jackson, A. Adeoye, J. T. Davidson, **E. Ruiz**, **B. Lowe**, “A New Mass Spectral Identification Algorithm to Discriminate Between Structurally Similar Fentanyl Analogs,” at SciX Conference, Providence, RI, Sept 2021. (Oral)
- 18) G. P. Jackson, J. T. Davidson, Z. J. Sasiene, **B. Lowe**, Y. Abiedalla, C. R. Clark, E. L. Piacentino, V. Ryzhov, “Mass Spectrometric Characterization of Emerging Synthetic Drugs and an Algorithm for Confident Identifications,” at the 72<sup>nd</sup> Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, (virtual due to COVID), Mar 2021. (Oral)
- 17) G. P. Jackson, J. T. Davidson, Z. J. Sasiene, **B. Lowe**, Y. Abiedalla, C. R. Clark, E. L. Piacentino, V. Ryzhov, “Towards an Improved Understanding of the Mass Spectrometric Identification of Cathinones and Fentologs,” at the 71<sup>st</sup> Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, Mar 2020. (Oral)
- 16) C. Wensel, **I. C. Willis**, Z. Fan, J. T. Davidson, G. P. Jackson, “Thermodynamic and Kinetic Predictions of the Evaporation Patterns of Ignitable Liquids at Elevated Temperatures,” at 71<sup>st</sup> the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, Mar 2020. (Oral)
- 15) **S. A. Mehnert**, **B. D. Lowe**, **E. Ruiz**, J. T. Davidson, G. P. Jackson, “A Regression-Based Algorithm to Maximize the Confidence in Mass Spectral Identifications,” at the 72<sup>nd</sup> Meeting of the American Academy of Forensic Sciences, Anaheim, CA, Feb 2020. (Oral)
- 14) C. Wensel, **I. C. Willis**, Z. Fan, J. T. Davidson, G. P. Jackson, “The Effects of Elevated Temperatures and Substrates on the Weathering of Ignitable Liquids” at the 72<sup>nd</sup> Meeting of the American Academy of Forensic Sciences, Anaheim, CA, Feb 2020. (Oral)
- 13) \***S. A. Mehnert**, **B. D. Lowe**, **E. Ruiz**, J. T. Davidson, G. P. Jackson, “Development of a Flexible Algorithm for Substance Identification Using Mass Spectrometry,” at Eastern Analytical Symposium, Plainsboro NJ, Nov 2019. (Poster)

- 12) \*G. P. Jackson, **S. A. Mehnert, B. D. Lowe, E. Ruiz**, J. T. Davidson, “A Regression-Based Algorithm to Maximize the Confidence in Mass Spectral Identifications,” at Eastern Analytical Symposium, Plainsboro NJ, Nov 2019. (Oral)
- 11) \*G. P. Jackson, **S. A. Mehnert**, J. T. Davidson, **B. D. Lowe**, “A Regression-Based Algorithm to Maximize the Confidence in Mass Spectral Identifications,” at SciX Conference, Palm Springs, CA, Oct 2019. (Oral)
- 10) \*G. P. Jackson, **S. A. Mehnert, B. D. Lowe**, J. T. Davidson, “The Development of a Flexible Algorithm for Substance Identification Using Mass Spectrometry,” at the 70<sup>th</sup> Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Philadelphia, PA, Mar 2019. (NIJ Poster session).
- 9) **I. C. Willis**, Z. Fan, J. T. Davidson, G. P. Jackson, “The Influence of Elevated Temperatures on the Weathering of Ignitable Liquids” at the 70<sup>th</sup> Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Philadelphia, PA, Mar 2019. (NIJ Poster session)
- 8) **S. A. Mehnert, B. D. Lowe**, J. T. Davidson, G. P. Jackson, “The Development of a Flexible Algorithm for Substance Identification Using Mass Spectrometry,” at the 71<sup>st</sup> Meeting of the American Academy of Forensic Sciences, Baltimore, MD, Feb 2019. (Oral)
- 7) **S. E. Chaffman, T. Williams**; J. T. Miller, J. T. Davidson, G. P. Jackson, “Identification of an Ultraviolet (UV) -Induced Promethazine Dimer,” at the 71<sup>st</sup> Meeting of the American Academy of Forensic Sciences, Baltimore, MD, Feb 2019. (Poster)
- 6) M. K. dos Santos, **E. Gleco**, G. P. Jackson, R. P. Limberger, J. Cox, L. E. Arroyo, “Screening and Confirmation of Stimulants Drugs in Seized Dietary Supplements by DART-MS and Liquid Chromatography Triple Quadrupole Mass Spectrometry (LC-QQQ-MS),” at the Midwestern Association of Forensic Sciences Meeting, Cincinnati, OH, Sept 2017. (Poster)
- 5) **A. Cochran**, G. P. Jackson, “The Analysis of the Fatty Acid Content of Fingerprint Residues Using Gas Chromatography/Mass Spectrometry (GC/MS),” at the 69<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA, Feb 2017. (Poster)
- 4) **S.M. Stinson, G. M. Walkup**, G. P. Jackson, “Do Hygiene Products Cause False Positives in Arson Investigations?” at the 69<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA, Feb 2017. (Poster)
- 3) **A. Cochran, H. Birks, T. Williams**, G. P. Jackson, “The Surprising Effect of Temperature on the Weathering of Gasoline,” at the 68<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences, Las Vegas, NV, Feb 2016. (Oral)
- 2) **T. Williams**, J. T. Miller, G. P. Jackson, “The Prevalence of Promethazine Dimerization in Forensic Samples of Purple Drank,” at the 68<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences, Las Vegas, NV, Feb 2016. (Oral)
- 1) **A. Cochran, H. Birks, T. Williams**, G. P. Jackson, “The Surprising Effect of Temperature on the Weathering of Gasoline,” SciX Conference, Providence, RI, Oct 2015. (Poster)

## GRANT FUNDING THAT INCLUDED UNDERGRADUATE SUPPORT

### *West Virginia University*

2022–23 “Expert Algorithm for Substance Identification (EASI),” Department of Justice, National Institute of Justice, **\$327,405**. Function: PI. 15PNIJ-21-GG-04179-COAP

- 2018–21 “Investigating the Kinetic and Thermodynamic Approaches to Predict Evaporation of Gasoline at Elevated Temperatures for Fire Debris Applications,” Department of Justice, National Institute of Justice, **\$466,769**. Function: Co-PI, ~35% effort (PI, Ruth Smith, MSU). 2018-DU-BX-0225
- 2018–21 “Structural Characterization of Emerging Synthetic Drugs,” Department of Justice, National Institute of Justice, **\$368,415**. Function: PI (w/ Co-PI, Randall Clark, Auburn U). 2018-75-CX-0033
- 2014–16 “Biometrics from the Isotopic Analysis of Amino Acids in Human Hair,” Department of Justice, National Institute of Justice, **\$283,484**. Function: PI. 2013-DN-BX-K007