# **Curriculum Vitae**

#### Adam B. Hall, Ph.D. 433 Baker Street, West Roxbury, MA 02132 617-872-9070 adamhall@bu.edu December 1, 2019

# **Academic Training:**

5/2000 B.A.	Stonehill College, Easton, MA; Chemistry. Minor concentrations: Criminal Justice and
	Molecular Biology
5/2006 M.S.	Northeastern University, Boston, MA; Chemistry
5/2012 Ph.D.	Northeastern University, Boston, MA; Analytical Chemistry

# **Additional Training - Received:**

- Popular Botanical Drugs: 3 Hours (November 2019) 2019 NEAFS Annual Meeting, Lancaster, PA
- Analytical Approaches for Screening and Confirming Herbal and Synthetic Drugs in Multiple Matrices: 4 Hours (November 2019) 2019 NEAFS Annual Meeting, Lancaster, PA
- Statistics and Sampling in Forensic Science The Basics: 2 Hours (October 2018) 2018 NEAFS Annual Meeting, Bolton Landing, NY
- Shooting Reconstruction: 16 Hours (May 2018) Boston Police Department, Firearms Training Facility, Moon Island, Quincy, MA
- Agilent New Technologies in Mass Spectrometry and Spectroscopy Workshop: 8 Hours (November 2017)
- Shimadzu Cannabis Symposium: 8 Hours (June 2017)
- Agilent LC/MS MassHunter User Group Meeting: 8 Hours (June 2017)
- Agilent Forensic Workflow Solutions in Chromatography and Mass Spectrometry: 8 Hours (October 2016) 2016 NEAFS Annual Meeting, Atlantic City, NJ
- Agilent Workflows in Mass Hunter Software: A Common Platform for Analyzing Drugs of Abuse by GC/MS, LC/MS, and ICP-MS Workshop: 8 Hours (October 2015) 2015 NEAFS Annual Meeting, Hyannis, MA
- Clinical Research and Forensic Toxicology Seminar: 4 Hours (March 2014). AB Sciex, Framingham, MA
- Firearms Safety Training: 4 Hours (May 2013) MA Firearms, Holliston, MA
- Method Validation in Forensic Toxicology and Chemistry: 8 Hours (November 2012) FBI, 2012 NEAFS Meeting, Saratoga Springs, NY
- Designer Drugs 2011 (Cathinones, Steroids and Cannabinoids): 8 Hours (November 2011) DEA, 2011 NEAFS Meeting, Newport, RI
- Advanced Pyrotechnics and Explosives: 32 Hours (July 2011) Dr. John Conkling, Washington College, Chestertown, MD
- Advanced GC-MS System Optimization Agilent Technologies: 8 Hours (November 2009) 2009 NEAFS Annual Meeting
- Chemstation Productivity: 8 Hours (February 2008) Agilent Technologies American Academy of Forensic Sciences, Annual Meeting, Washington, DC
- Northeastern Association of Forensic Scientists (NEAFS) Annual Meeting: 8 Hours (October 2007) GC-MS Techniques – Perkin Elmer Corporation
- Massachusetts Continuing Legal Education (MCLE): 8 Hours (October 2007) "Forensic Testing and How to Use it in the Courtroom", Boston, MA
- Pre and Post Blast Detection of Explosives: 8 Hours (February 2007) American Academy of Forensic Sciences, Annual Meeting, San Antonio, TX

- Advanced Laboratory Analysis of Explosives: 40 Hours (January 2007) Western Forensic Law Enforcement Training Center (WFLETC), Colorado State University, Pueblo, CO
- Chemistry of Pyrotechnics: 40 Hours (July 2006) U.S. Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF&E), Washington College, Chestertown, MD
- The Best Kept Secrets of Modern HPLC and GC Separation Revealed: 8 Hours (November 2005) Agilent Technologies, Lexington, MA
- Arson Accelerant K9 Certification: 24 Hours (October 2005) Massachusetts State Police, Otis Air Force Base, Bourne, MA
- Explosives for Prosecutors: 8 Hours (October 2005) U.S. Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF&E), Federal Bureau of Investigation (FBI), MSP, Devens, MA
- Advanced Fire Debris Analysis: 32 Hours (September 2005) U.S. Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF&E), Maine State Police Crime Laboratory, Augusta, ME
- Basic Fire Debris Analysis: 32 Hours (August 2005) U.S. Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF&E), National Laboratory, Ammendale, MD
- NiteCrime Workshop: 8 Hours (February 2005) Analysis of trace elements and isotopes in forensic science. American Academy of Forensic Sciences, Annual Meeting, New Orleans, LA
- Hazardous Waste Operations and Emergency Response: 40 Hours (January 2005) Massachusetts State Fire Marshal's Office, Stow, MA. Federal Bureau of Investigation – Emergency Response Team, Wilmington, MA
- Bloodstain Pattern Analysis I: 40 Hours (November 2003) MA State Police Crime Laboratory Supplemental Training, Boylston, MA
- Homicide Investigation: 24 Hours (November 2002) Massachusetts State Police Supplemental Training, New Braintree, MA
- Forensic Microscopy: 40 Hours (October 2002) McCrone Research Institute, Chicago, IL

# Additional Training - Delivered:

- Introduction to GC and GCMS: 1-Hour (May 2018) Indiana Continuing Legal Education Forum (ICLEF). Introduction to Chemical Testing: The Science and the Law. Indianapolis, IN
- 2018 LRN-C Biannual Technical Meeting: 8-Hours (April 2018) Association of Public Health Laboratories. Fundamentals of Separation Science and Mass Spectrometry. Boston, MA
- Improvised Explosive Device Awareness for First Responders: 10-Hours ((5) 2-Hour Sessions, December 2017) Northeastern University Police Department. Boston, MA
- Forensic Science: From the Crime Scene to the Crime Lab and now the Academic Lab: An Insider's Perspective: 1-Hour (November 2015) Northeastern University, CJSAC. Boston, MA
- New Applications of Rapid Mass Spectrometry: Direct Analysis in Real Time Mass Spectrometry (DART-MS) for the Analysis of Plants, Powders and Projectiles: 1-Hour (February 2015) University of Rhode Island - Forensic Science Partnership Seminar Series. Kingston, RI
- Understanding GC-MS and Drug Chemistry for Attorneys: 2-Hours (October 2014) Barnett Institute of Chemical and Biological Analysis, Northeastern University
- Improvised Explosive Device Awareness for Law Enforcement Professionals: 3-Hours (November 2013) Boston University Police Department and Boston University Medical Center Security. Boston, MA
- Instrumental Methods for the Analysis of Forensic Evidence: 1-Hour (September 2013) 2011 College of the Holy Cross Dept. of Chemistry. Worcester, MA
- Improvised Explosive Device Awareness for Crime Scene Responders: 2-Hours (June 2013) Boston Police Department Forensic Services Group. Boston, MA

- An Introduction to Forensic Science: What is CSI and what is it not? 1-Hour (November 2012) Department of Chemistry and Chemical Biology – Northeastern University. Science from Scientists -CSI Day
- Instrumental Analysis of Evidence: 1-Hour (September 2011) 2011 University of Rhode Island -Forensic Science Partnership Seminar Series. Kingston, RI
- Analysis of Fire Debris and Explosives-Related Evidence Samples: 2-Hours (May 2011) Program in Applied Forensic Science and Criminal Investigations. Boston University School of Medicine and the Citizens CSI Academy, Holliston, MA
- Analysis of Controlled Substances and Arson-Related Evidence Samples: 3-Hours (April 2010) Program in Applied Forensic Science and Criminal Investigations. Boston University School of Medicine and the Citizens CSI Academy, Holliston, MA
- The Forensic Analysis of Arson and Explosives Evidence: A Practical Guide for the Prosecution and Defense: 2-Hours (January 2010) Forensics Summit: MA Continuing Legal Education (MCLE) Boston, MA
- Analytical Chemistry and GC-MS for Prosecutors: 4-Hours (November 2009) Biomedical Forensic Sciences Program, Boston University School of Medicine
- Analysis of Controlled Substances and Arson-Related Evidence Samples: 3- Hours (April 2009) Program in Applied Forensic Science and Criminal Investigations. Boston University School of Medicine and the Citizens CSI Academy, Holliston, MA

# Academic Appointments:

7/2019-Present	Assistant Professor, Biomedical Forensic Sciences Program, Anatomy and Neurobiology,
	Boston University School of Medicine
5/2007-1/2014	Instructor, Biomedical Forensic Sciences Program, Anatomy and Neurobiology, Boston
	University School of Medicine
9/2013-12/2018	Lecturer, Department of Chemistry and Chemical Biology, Northeastern University
9/2018-12/2018	Course Educator, Biomedical Forensic Sciences Program, Anatomy and Neurobiology,
	Boston University School of Medicine
1/2019-Present	Adjunct Instructor, Department of Chemistry and Physics, Emmanuel College

### **Other Employment:**

2/01-8/01	Immunogen, Inc., Clinical Drug Manufacturing Associate
8/01-3/02	Genzyme Corporation - Division of Molecular Oncology, Research Associate
3/02-5/07	Massachusetts State Police Crime Laboratory, Forensic Chemist
	Drug Analysis Unit (3/07-5/07)
	Arson and Explosives Unit (11/04-3/07)
	Crime Scene Response Unit (3/02-5/07)
	Criminalistics Unit (3/02-11/04)
5/07-5/14	Boston University School of Medicine, Instructor of Forensic Chemistry, Forensic
	Chemistry-Trace Evidence Analysis Track Advisor
1/14-12/18	Northeastern University – Department of Chemistry and Chemical Biology, Barnett
	Institute of Chemical and Biological Analysis
7/17-Present	Center for Advanced Research in Forensic Science (CARFS), Associate Director

#### Honors:

2013: American Academy of Forensic Sciences Regional Award Presented in Washington, DC, February 20, 2013. Award granted based upon recommendation of the Northeastern Association of Forensic Scientists Board of Directors.

2012: Boston University School of Medicine Educator of the Year Award Committee on Faculty Affairs, Division of Graduate Medical Sciences

2011: Dr. Peter DeForest Collegiate Competition Award. Rogers, C. and Hall, A.B. Further Studies Investigating Zeolites for the Recovery of Oxygenated Compounds from Fire Debris Samples. 37<sup>th</sup> NEAFS Meeting, Newport, RI

2008-2012: Nominated for the Boston University School of Medicine Educator of the Year Award. Committee on Faculty Affairs, BU School of Medicine

2009: Dr. Peter DeForest Collegiate Competition Award. Conklin, D.L., Hall, A.B. and Padula, F.J. Elemental Analysis of Float Glass Samples Using a 193nm Excimer Laser Inductively Coupled Plasma Mass Spectrometer to Identify Forensic Glass Evidence. 35<sup>th</sup> NEAFS Meeting. Long Branch, NJ

2000: Certificate of Achievement, the New England Institute of Chemists, a division of the American Institute of Chemists. Presented at Boston College April 27, 2000. Award granted based on academic performance and Department of Chemistry recommendation

1996: James R. Langevin Secretary of State (RI) Leadership Award Presented for dedication of services, community leadership work, and strong academic promise.

#### **Licenses and Certification:**

4/2010-Present Diplomate of the American Board of Criminalistics (D-ABC): Fire Debris Analysis

#### **Departmental and University Committees:**

5/2007-1/2014 Admissions Committee, Biomedical Forensic Sciences Program, Boston University School of Medicine
 1/2017-12/2018 University Core Oversight Committee, Provost's Office, Northeastern University

# **Teaching Experience and Responsibilities:**

- 1/2019-5/2019 Emmanuel College, Department of Chemistry and Physics. Introduction to Forensic Chemistry (lecture and laboratory)
- 1/2012-12/2018 Northeastern University, Department of Chemistry and Chemical Biology. Instrumental Methods of Analysis (lecture and laboratory) and Introduction to Forensic Science (lecture)
- 9/2013-5/2014 Boston University School of Medicine, Department of Anatomy and Neurobiology, Biomedical Forensic Sciences Program. Forensic Chemistry (lecture) Forensic Instrumental Analysis (laboratory) Analysis of Ignitable Liquids and Explosives (lecture and laboratory) and Advanced Forensic Chemistry (lecture)

# Major Mentoring Activities (53 M.S. Thesis Students, 2007-Present):

# <u>2007:</u>

Katherine Kopeikina: The Methamphetamine Epidemic: A Review of the Problem with an Eye to the Future

# <u>2008:</u>

<u>Amanda Harvey</u>: Forensic Analysis of Smokeless Powders Using Gas Chromatography – Mass Spectrometry <u>Kulu'ua Rapoza</u>: Clandestine Laboratory Extraction of Opium Alkaloids from Poppy Seeds <u>Ashley Tondu</u>: The Forensic Analysis of Biodiesel in Fire Debris Samples <u>Mariko Fonseca</u>: An Examination of Hallucinogenic Seeds Through Historical, Chemical, and Qualitative Instrumental Analysis Methods

# <u>2009:</u>

<u>Michelle Call</u>: The Effects of Four Tape Lift Adhesives on Architectural and Automotive Paint Chip Samples Using FTIR Analysis with Attenuated Total Reflectance.

<u>Andrea Feldman</u>: Differentiation of Cosmetic Foundation and Blush Using PLM and FTIR for Forensic Trace Evidence Analysis

<u>Patty Hampf</u>: Forensic Implications of Soil Microbial Degradation on the Analysis and Identification of Gasoline in the Greater Boston Area

<u>Alison Klotz</u>: Gas Chromatography – Mass Spectrometry of Cocaine in Tissues Exposed to Elevated Temperatures

<u>Caitlin Lim</u>: *Effect of Adulterants on the Detection of PCP and Cocaine Metabolite Benzoylecgonine by GC/MS* <u>Christy Mancuso</u>: *Examination of Human Hair for Identification Using Stable Isotope Analysis* 

<u>Diana Nguyen</u>: Forensic Analysis of Isopar H in Armstrong Vinyl Flooring Using Gas Chromatography – Mass Spectrometry

Brian Cawrse: Forensic Identification of Salvinorin A in Salvia Divinorum

# <u>2010:</u>

<u>Danielle Conklin</u>: Elemental Forensic Assay of Float Glass Using 193nm Gas Phase Excimer Laser Inductively Coupled Plasma Mass Spectrometry

Jessica Gleba: Forensic Characterization of Mitragynine in Kratom Extracts

<u>Lisa Tozier:</u> Evaluation of Commercially Available Presumptive Drug Testing Kits for the Forensic Analysis of Salvia Divinorum

# <u>2011:</u>

Kristine Cavicchi: Discrimination Between Different Automotive Scratch Repair Kits and the Painted Surface on which they are applied

<u>Chris Finn</u>: Forensic Extraction and Identification of Salvinorin A in Burnt Salvia Divinorum Samples <u>Breahna Giles</u>: Forensic Analysis of Synthetic Cannabinoids

Kathryne St. Pierre: Evaluation of a Novel Methodology for the Recovery of Acetone from Fire Debris Samples

# <u>2012:</u>

<u>Alison Gugliotta</u>: The Recovery and Analysis of Oxygenated Ignitable Liquids by Competitive Adsorption Utilizing Zeolites and Activated Carbon

<u>Corissa Rodgers</u>: Improving Oxygenated Ignitable Liquid Recovery by Dual Mode Heated Passive Headspace Extraction Using Zeolites and Activated Charcoal Strips

<u>Abigail Brown</u>: The Study of Volatile Organic Compounds Associated with Decomposition of Pig Tissue as a Model for Human Decomposition

<u>Keri Labelle</u>: Development of Presumptive Macroscopic, Microscopic, and Colorimetric Tests for Salvia Divinorum, Salvinorin A, and Salvinorin B

# <u>2013:</u>

Heather Mowatt: Different Extraction Efficiencies Observed from Synthetic Cannabinoid Analysis Due to Burning and Matrix Effects

<u>Anna Tverdovsky</u>: Microbial Biodegradation of Various Classes of Ignitable Liquids in Forensic Soil Samples <u>James Joseph</u>: Identification of the "Legal High" Phenylalkylamine Analogues: 5-Iodo-2-Aminoindane (5-IAI) and 5, 6-Methylenedioxy-2-Aminoindane (MDAI) by Colorimetric Tests and GC-MS <u>Claire Rimkus</u>: The Effect of Weathering on the Forensic Comparison of Disposable Gloves

<u>Kristen Row</u>: Strontium Isotopes and Geolocation: The Pathway for Identification of Victims in Medellin, Colombia

<u>Nancy Murphy</u>: Variation Between Laboratory Procedures for the Microscopic Examination of Human Hair <u>Sarrah Hannon</u>: Analysis of Cocaine Adulterants and their Metabolites in Real Patient Urine Samples <u>Alex Thompson</u>: Forensic Analysis of the Psychoactive Alkaloids Harmine and Harmaline in Peganum Harmala Seeds

<u>Adam Hayward</u>: Retention Capabilities of Different Genera of Wood for Common Ignitable Liquids <u>Hannah Moody</u>: Detection of Condom Lubricants and Starches in the presence of Biologicals by Diffuse Reflectance Infrared Fourier Transform Spectroscopy and Polarized Light Microscopy

<u>Adeline Lustig</u>: Using Strontium Isotope Analysis on Modern Populations to Determine Geolocation Reliability in a Forensic Context

<u>Rhiannon Carter</u>: Characterization and Colorimetric Analysis of Semi-Synthetic Salvia Divinorum Analogues <u>Arielle Burdulis</u>: A Statistical Evaluation of Six Classes of Hydrocarbons to Determine their Suitability for Future Biodegraded Ignitable Liquid Research

# <u>2014:</u>

<u>Amanda Forni</u>: An Evaluation of Commercially Available Solid Phase Extraction Cartridges for the Isolation of Synthetic Cannabinoid Metabolites from Urine

<u>Brittany Fox</u>: Recovery of Oxygenated Ignitable Liquids from Mock Fire Debris Utilizing Zeolite 13X <u>Dan Cosby</u>: Adulterants and Interpretive Challenges in Forensic Science: Effects on Colorimetric Spot Tests for Presumptive Drug Identification and Adverse Side Effects in the Body

<u>Vernon Chan:</u> Evaluation of Commercial Products as Possible Sources of Oxygenates in Fire Debris Samples <u>Drew Horsley</u>: High-Throughput Analysis of Contrived Cocaine Mixtures by Direct Analysis in Real

Time/Single Quadrupole Mass Spectrometry and Post Acquisition Chemometric Analysis

Heidi Tincher: Evaluation of the Volatile Organic Profile Generated from Thermally Degraded Tissue:

Analysis by Solid Phase Microextraction and Gas Chromatography/Mass Spectrometry

Crystal Hart: Forensic Analysis of Plant Based Drugs of Abuse by DART-MS

Katie Thompkins: Development and Optimization of Two Applications in Fire Debris Analysis: The Characterization of Environmentally Friendly Commercial Products and Fast GC/MS

<u>Will Edison</u>: Trajectory Reconstruction by Analysis of Trace Evidence on Spent Bullets Fired Through Building Materials: Analysis by Microscopy and Direct Analysis in Real Time

<u>Emily Palmer:</u> The Detection and Discrimination of Sunless Self-Tanners Containing Dihydroxyacetone on Clothing Using Instrumental Techniques

Erin Miller: An Evaluation of Freezing and Soil Presence on Volatile Organic Compounds Emitted by Decomposing Pig Tissues Using SPME GC/MS

# <u>2015:</u>

<u>Fred Li:</u> Rapid Dynamic Headspace Concentration and Characterization of Smokeless Powder Using Direct Analysis in Real Time – Mass Spectrometry and Offline Chemometric Analysis <u>Ashley Davis:</u> Acquiring Chemical Attribute Signatures for Gasoline: Differentiation of Gasoline Utilizing Direct Analysis in Real Time – Mass Spectrometry and Chemometric Analysis

### <u>2017:</u>

<u>Ariel Lising</u>: Evaluating the Feasibility of Implementing Direct Analysis in Real Time – Mass Spectrometry for the Forensic Examination of Post-Blast Debris <u>Amanda Dell'Olio</u>: SPME-GC/MS Analysis of Volatile Organic Compounds Produced by Oral Cavity Streptococci

#### <u>2018:</u>

<u>Sanjana Phatak</u>: Utilizing Liquid Chromatography Tandem Mass Spectrometry and Direct Analysis in Real Time to Assess the Metabolism of Fentanyl Derivatives

#### Major Administrative Responsibilities:

- 2014-2018 Director, Mass Spectrometry Facility, Barnett Institute of Chemical and Biological Analysis in the Department of Chemistry and Chemical Biology at Northeastern University
  2007-2014 Program Advisor, Biomedical Forensic Sciences Program, Department of Anatomy and
  - 007-2014 Program Advisor, Biomedical Forensic Sciences Program, Department of Anatomy and Neurobiology, Boston University School of Medicine

### **Other Professional Activities:**

#### Professional Societies: Memberships, Offices, and Committee Assignments:

2011-Present	Member, Northeastern Association of Forensic Scientists (NEAFS)
2015-Present	Board of Directors, Northeastern Association of Forensic Scientists (NEAFS)
2015-2018	Member, National Institute of Science and Technology, Organization of Scientific Area Committees (OSAC), Fire Debris and Explosives Subcommittee
2015-2018	Chair, Research and Training Task Group, National Institute of Science and Technology, Organization of Scientific Area Committees (OSAC), Fire Debris and Explosives Subcommittee

#### **Editorial Boards:**

2017-Present	Reviewer, Journal of Forensic Chemistry (JFC)
2019-Present	Reviewer, Journal of Forensic Science (JFS)

#### **Major Committee Assignments:**

#### **Private/Foundation:**

2014-Present The Richard Saferstein Foundation and Lecture Series, Northeastern University

#### **Other Support:**

### **Current:**

7/2017-Present NSF I/UCRC: Center for Advanced Research in Forensic Science. PI for Affiiate Site: Adam Hall, Total Cost: 150,000 (2017 and 2018). 75,000 per year for three additional years of Phase I totalling 375,000 (2017-2021). Phase II = 5 years and Phase III = 5 years. Opportunity for an additional 150,000 per year once we can become a fully funded Site within the Center. Role: Co-Investigator

### Past:

# National Institutes of Health

04/2016 – 03/2018 1R21DE025355-01A1 PI: Slava Epstein and Adam Hall, Interspecies interactions among oral Streptococci: ecology through air, Total Cost: \$419,195 Role: Co-Investigator

# National Science Foundation / National Institute of Justice

3/2016 – 3/2017 G00004713. PI: Adam Hall, Planning Grant: I/UCRC for I/UCRC for Instrumentation Development for Security and Resilience: Collaborative Research and Community Outreach within Forensic Science. \$14,785 Role: Principal Investigator

# <u>TIER I Award – Northeastern University</u>

072015 – 06/2016 PI: Slava Epstein and Adam Hall, Odor in Real Time, Total Cost: \$50,000 Role: Co-Investigator

# DHS S&T Chemical Forensics Program

7/2013-6/2014 BAA 13-007-TFA-2-001-I HSHQDC-13-C-B0025 PI: Brian Musselman, IonSense, Inc., Sample Collectors for Rapid Direct Ionization in Real Time (DART), Total Cost: \$110,000 Role: Co-Investigator

# **Invited Lectures and Conference Presentations:**

# **Regional/Local:**

- September, 2011 "Applying Differential Mobility Mass Spectrometry to Pharma: A perspective from the forensic and biomarker communities." **Hall, A.B.** and Vouros, P. 2011 Applied Pharmaceutical Analysis Meeting. Boston, MA [Invited Lecture]
- September, 2015 "Chemometric Approaches for the Analysis of Chemical Attribute Signatures Generated from Forensically Relevant Samples." **Hall, A.B.,** Pavlovich, M.J., Horsley, D., Li, F., Davis, A., LaPointe, J., and Musselman, B. 2015 FACSS SCIX Conference, Providence, RI [Invited Lecture]
- September, 2015 "Mobilized Open Air Ionization: Detection of Explosives and Dangerous Supplements with a Compact DART-MS" Li, F., LaPointe, J., Tice, J., **Hall, A.B.**, and Musselman, B. 2015 FACSS SCIX Conference, Providence, RI [Invited Lecture]

# National:

February, 2012	"Exploring DMS-MS as a High Throughput Method for Forensic and Bio-Organic Analysis." Vouros, P., <b>Hall, A.B.</b> et al. 2012 Annual Pittsburgh Conference (PittCon), Orlando, FL [Invited Lecture]
February, 2013	"High Throughput Analytical Separations of Drugs of Abuse and their Metabolites by Differential Mobility Spectrometry – Mass Spectrometry (DMS-MS)." <b>Hall, A.B.</b> , Coy, S.L., Nazarov, E.G. & Vouros, P. 2013 Annual Pittsburgh Conference, Philadelphia, PA [Invited Lecture]
May, 2014	"Dynamic Headspace Sampling Utilizing Sorbent Coated Mesh for the Characterization and Differentiation of Energetic Materials: Analysis by DART." <b>Hall, A.B.</b> , Li, F., Horsley, D., Tice, J., LaPointe, J., & Musselman, B. 2014 DART Users Forum - American Society for Mass Spectrometry (ASMS) Meeting. Baltimore, MD [Invited Lecture]
January, 2015	"Accelerated Analysis of Trace Evidence by DART-MS: Propellants and Projectiles." Hall, A.B., Edison, W., Li, F., Pavlovich, M., Diaczuk, P., LaPointe, J. and Musselman, B. 2015 DART Users Forum, University of Tampa, Tampa, FL [Invited Lecture]
January, 2015	"New Approaches in Fire Debris Analysis: Rapid Dynamic Headspace Concentration followed by DART-MS and Chemometric Analysis." <b>Hall, A.B.</b> , Davis, A., Pavlovich, M., Goguen, R., LaPointe, J. and Musselman, B. American Society for Mass Spectrometry (ASMS) -Sanibel Conference, Clearwater Beach, FL [Invited Lecture]
October, 2015	"An Update on the Activities of the OSAC Chemistry and Instrumental Analysis SAC." Hall, A.B. and Desiderio, V. 42 <sup>nd</sup> Annual NEAFS Meeting, Atlantic City, NJ [Invited Lecture]
March, 2016	"Profiling Metabolites of Drug Adulterants: What can we learn about source attribution for controlled substances that we're currently missing in the analysis of forensic toxicology samples?" <b>Hall, A.B.</b> , and Hannon, S. Fifth Annual Forensic Science Symposium – International Forensic Research Institute, Florida International University, Miami, FL [Invited Lecture]
October, 2016	"Next Generation Detection Technologies in Forensic Science. First Annual Florida Forensic Science Conference: Strengthening Forensic Science: From the Scene to the Courtroom." <b>Hall, A.B.</b> National Center for Forensic Science (NCFS) Orlando, FL [Invited Lecture]
January, 2017	"Vacuum Ultraviolet (VUV) Absorption Spectroscopy: a novel method in the forensic analysis of fire debris evidence." <b>Hall, A.B.,</b> Pina, S., Diekmann, J., Steen, T. and Johnson, P. 2017 Gulf Coast Conference. Houston, TX [Invited Lecture]
November, 2018	"Forensic Mass Spectrometry: The past, present and future – A discussion honoring the immeasurable contributions of Dr. Richard Saferstein to the field of forensic science." Hall, A.B. Eastern Analytical Symposium. Princeton, NJ [Invited Lecture]

#### International:

May, 2012	"Extending the Dynamic Range of the Ion Trap by Differential Mobility Filtration." <b>Hall,</b> <b>A.B.</b> , Coy, S.L., Kafle, A., Glick, J., Nazarov, E.G. & Vouros, P. 2012 American Society for Mass Spectrometry (ASMS) Meeting. Vancouver, B.C. Canada [Invited Lecture]
August, 2017	"A New Dimension in Fire Debris Analysis: Gas Chromatography – Vacuum Ultraviolet (GC-VUV) Absorption Spectroscopy." Pina, S., Johnson, P., James Diekmann, J., <b>Hall</b> , <b>A.B.</b> 21 <sup>st</sup> Triennial Meeting of the International Association of Forensic Sciences (IAFS) 2017. Toronto, Ontario [Invited Lecture]

#### **Bibliography:**

#### **Original, Peer Reviewed Articles:**

- 1. Anzivino B, Tilley L, Ingalls L, and **Hall A.B.**, Drugan, John E. Got a Match? Ion Extraction GC/MS Characterization of Accelerants Adsorbed in Charcoal Using Negative Pressure Dynamic Headspace Concentration. J. Chem. Educ. 2009, 86, 55.
- Hall A.B., Coy S, Nazarov E, and Vouros P. Rapid Separation and Characterization of Cocaine and Cocaine Cutting Agents by Differential Mobility Spectrometry – Mass Spectrometry J Forensic Sci. DOI: 10.1111/j.1556-4029.2011.02033.x
- 3. Hall, A.B., Coy, S.L., Nazarov, E.G. and Vouros, P. Development of Rapid Methodologies for the Isolation and Quantitation of Drug Metabolites by Differential Mobility Spectrometry Mass Spectrometry. IJIMS. DOI 10.1007/s12127-012-0111-3
- 4. Kafle, A., Klaene, J., **Hall, A. B.**, Glick, J., Coy, S. L., and Vouros, P. (2013). A differential mobility spectrometry/mass spectrometry platform for the rapid detection and quantitation of DNA adduct dG-ABP. Rapid Communications in Mass Spectrometry, 27(13), 1473-1480
- 5. Hall, A.B., Coy, S.L., Kafle, A., Glick, J., Nazarov, E.G. and Vouros, P. Extending the Dynamic Range of the Ion Trap by Differential Mobility Filtration. J. Am. Soc. Mass Spectrom. (2013) 24:1428-1436
- St. Pierre, K.A., Desiderio, V., and Hall, A.B. Recovery of oxygenated ignitable liquids by zeolites, Part I: Novel extraction methodology in fire debris analysis. Forensic Science International. (2014) 240: 137-143
- 7. Rodgers, C.L., St. Pierre, K.A., and **Hall, A.B**. Recovery of oxygenated ignitable liquids by zeolites, Part II: Dual-mode heated passive headspace extraction. Forensic Science International. (2014) 240: 144-150
- 8. Pavlovich, M.J., Musselman, B., and Hall, A.B. Review: Direct Analysis in Real Time Mass Spectrometry (DART-MS) in Forensic and Security Applications. Mass Spectrometry Reviews, 2016, 9999, 1–17
- 9. Pavlovich, M.J., Dunn, E.E., and **Hall, A.B**. Chemometric Brand Differentiation of Commercial Spices using DART-MS. Rapid Communications in Mass Spectrometry. (2016) 30: 1123-1130

- Li, F., Tice, J., Musselman, B.D., and Hall, A.B. A Method for Rapid Sampling and Characterization of Smokeless Powder using Sorbent-Coated Wire Mesh and Direct Analysis in Real Time – Mass Spectrometry (DART-MS). Science and Justice 56 (2016) 321–328
- 11. Chen, Z., Coy, S.L., 1 Pannkuk, E.L., Laiakis, E.C., Hall, A.B., Fornace Jr., A.J., and Vouros, P. Rapid and High-Throughput Detection and Quantitation of Radiation Biomarkers in Human and Nonhuman Primates by Differential Mobility Spectrometry-Mass Spectrometry. J. Am. Soc. Mass Spectrom. (2016) DOI: 10.1007/s13361-016-1438-5

#### Web Publications and Videos:

- 1. The New Yorker Magazine. Stories in the Smoke: What a Bomb Expert Sees by Paige Williams. April 2013
- 2. The Boston Globe. Bomb Specifics are Telltale Clues by Carolyn Y. Johnson. April 2013
- 3. Fox News International with Bill Hemmer. FBI Investigating Blast Remnants in Boston. April 2013
- 4. NPR Interview with Phillip Martin on the Boston Marathon Bombing. June 2015
- 5. NECN Interview with Ally Donnelly on the March 2016 Brussels, Belgium Bombings. March 2016
- 6. CNN. The Radical Story of Patty Hearst. Episode 5 of 6. Details of the pipe bombs utilized by the SLA. February 2018
- 7. CBS Austin, TX. Analyst on Austin package bomber: 'This person is not an amateur' by Stephen Loiaconi. <u>http://cbsaustin.com/news/nation-world/analyst-on-austin-package-bomber-this-person-is-not-an-amateur March 2018</u>
- 8. Time Magazine. How Bomb Investigators Piece Together the Clues After an Explosion by W.J. Hennigan. http://time.com/5209610/austin-bombing-investigation/ March 2018
- 9. The Associated Press with Lisa Marie Pane. Bomber likely left behind trove of forensic clues. October 2018
- 10. CNN Live with Anderson Cooper (AC360). Interview following the delivery of package bombs to multiple high-profile targets. October 25, 2018

#### Case Reports, Reviews, Chapters, and Editorials:

#### **Proceedings of Meetings and Invited Papers:**

- Borg, S. and Hall, A.B. Gasoline Brand Differentiation by Direct Analysis in Real Time Mass Spectrometry. 2018 Research, Innovation and Scholarship Exposition (RISE) Northeastern University. Boston, MA
- 2. Medik, V., Hall, A.B. and Epstein, S. Sniffing out bacterial interactions. How the bacteria in your mouth communicate via volatile compounds. American Society for Microbiology. Microbe 2017.

- 3. Medik, V., Hall, A.B. and Epstein, S. Sniffing out bacterial interactions. How the bacteria in your mouth communicate via volatile compounds. Boston Bacterial Meeting 2017.
- 4. Medik, V., Hall, A.B. and Epstein, S. Volatile Mediated Interactions of the Human Oral Microbiota. Boston Bacterial Meeting 2016.
- Dunn, E.E., Pavlovich, M.J., and Hall, A.B. Analysis of Spices and Burned Spice-Oxidizer Mixtures Using Mass Spectrometry. 2016 Research, Innovation and Scholarship Exposition (RISE) Northeastern University. Boston, MA
- 6. Pavlovich, M.J., Medik, V., Epstein, S. and Hall, A.B. Microbial communication through the air: Analyzing volatile bacterial compounds by comparative GC-MS and DART-MS approaches. 2015 American Society for Mass Spectrometry (ASMS) Meeting. St. Louis, MO
- 7. Davis, A., Pavlovich, M.J., Musselman, B.D. and Hall, A.B. Acquiring Chemical Attribute Signatures for Gasoline: Ambient Ionization and Chemometric Analysis of Headspace Concentrates. 2015 American Society for Mass Spectrometry (ASMS) Meeting. St. Louis, MO
- 8. Li, F., Tice, J., Musselman, B., and Hall, A.B. Discrimination of Smokeless Powders using Sorbent-Coated Wire Mesh with DART-MS and Offline Statistical Analysis. American Society for Mass Spectrometry (ASMS) - Sanibel Conference, Clearwater Beach, FL
- Li, F., Horsley A., Tice, J., Musselman, B.D., & Hall, A.B. Detection and Characterization of Chemical Attribution Signatures from Smokeless Powders by Dynamic Headspace Concentration and DART-MS. 2014 American Society for Mass Spectrometry (ASMS) Meeting. Baltimore, MD
- 10. Hall, A.B., Kafle, A., Thompson, A., Li, F., Duffy, K., Glick, J., Coy, S.L., & Vouros, P. Rapid Identification of β-carboline Hallucinogens: Harmine and Harmaline by Pressure Cycling Technology (PCT) and DMS-MS. 2014 American Society for Mass Spectrometry (ASMS) Meeting. Baltimore, MD
- Hall, A.B. Rapid, Quantitative, Forensic Analysis of Drug Metabolites, Adulterants and Diluents by Differential Mobility Spectrometry - Mass Spectrometry. American Society for Mass Spectrometry (ASMS) 59<sup>th</sup> Annual Meeting. Denver, CO
- Hall A.B., Coy S, Nazarov E, Vouros P. Ultra Rapid Separation of Cocaine and Cocaine Adulterants by Differential Ion Mobility Spectrometry – Mass Spectrometry American Society for Mass Spectrometry (ASMS) 58<sup>th</sup> Annual Meeting. Salt Lake City, UT
- 13. Tozier, L.R. and Hall, A.B. Evaluation of Commercially Available Presumptive Drug Testing Kits for the Forensic Analysis of *Salvia Divinorum* 35<sup>th</sup> NEAFS Meeting, Long Branch, NJ
- 14. Hall, A.B., Pavlovich, M., Davis, A, Lapointe, J., and Musselman, B. Chemometric Analysis of Gasoline Samples Utilizing Direct Analysis in Real-Time Mass Spectrometry (DART-MS). American Academy of Forensic Sciences (AAFS) 68<sup>th</sup> Annual Meeting. Las Vegas, NV
- 15. Hall, A.B. and Pavlovich, M., Beyond Quadrupole Time-of-Flight (Q-TOF) and Tandem Mass Spectrometry (MS/MS): Next Generation MS Techniques for Forensic Analysis. American Academy of Forensic Sciences (AAFS) 68<sup>th</sup> Annual Meeting. Las Vegas, NV
- 16. Hall, A.B., Pavlovich, M.J., Horsley, D., Li, F., Davis, A., LaPointe, J., and Musselman, B. Non-Chromatographic and Chemometric Approaches for the Analysis of Forensically Relevant Samples. 41<sup>st</sup> Annual NEAFS Meeting, Hyannis, MA

- 17. Pavlovich, M.J., Hall, A.B. Chemometric Approaches in Forensic Mass Spectrometry. 41<sup>st</sup> Annual NEAFS Meeting, Hyannis, MA
- 18. Hall, A.B., Hart, C., Edison, W., Pavlovich, M., Diaczuk, P., Underwood, R., LaPointe, J. and Musselman, B. From Plants to Projectiles: New Analytical Approaches to the Utility of DART Technology in Forensic Cases. American Academy of Forensic Sciences (AAFS) 67th Annual Meeting, Orlando, FL
- 19. Li, F., Hart, C., Horsley, D., Hall, A.B., Tice, J., Goguen, R., Musselman, B. Headspace SPME-DART for Rapid Detection and Characterization of Explosives. SCIX Conference, Reno, NV
- 20. Horsley D., Hall, A.B., Musselman, B., Tice, J.P., LaPointe, J.J. High Throughput Analysis of Street-Quality Drug Mixtures by DART<sup>®</sup> Analysis and Analyze IQ<sup>TM</sup> Post Acquisition Characterization. American Academy of Forensic Sciences (AAFS) 66<sup>th</sup> Annual Meeting, Seattle, WA
- 21. Thompkins, K. and Hall, A.B. The Emergence of Environmentally Friendly Commercial Products and Their Impact on Fire Debris Analysis. American Academy of Forensic Sciences (AAFS) 66<sup>th</sup> Annual Meeting. Seattle, WA
- 22. Lustig, A., Bethard, J.D., and Hall, A.B. The Analysis and Variance of Strontium Isotopes in a Forensic Context: Determination of Geolocation Reliability for a Modern New England Population. American Academy of Forensic Sciences (AAFS) 66<sup>th</sup> Annual Meeting. Seattle, WA
- 23. Row, K., Bethard, J.D., and Hall, A.B. Strontium Isotopes and Geolocation: The Pathway for Identification of Victims in Medellin, Columbia. American Academy of Forensic Sciences (AAFS) 66<sup>th</sup> Annual Meeting. Seattle, WA
- 24. Carter, R., Labelle, K., Tozier, L. and Hall, A.B. Colorimetric Analysis of *Salvia divinorum* Utilizing Ehrlich's Reagent. 39<sup>th</sup> Annual NEAFS Meeting, Cromwell, CT
- 25. Kafle, A., Coy, S.L., Hall, A.B., Yadav, S., Glick, J., Vouros, P. Exploring nanoESI-DMS-MS/MS as a rapid quantitative platform. American Society for Mass Spectrometry (ASMS) 61<sup>st</sup> Annual Meeting. Minneapolis, MN
- 26. Joseph, J. and Hall, A.B. Identification of the "Legal High" Phenylalkylamine Analogues: 5-Iodo-2-Aminoindane (5-IAI) and 5, 6-Methylenedioxy-2-Aminoindane (MDAI) by Colorimetric Tests and GC-MS. 38<sup>th</sup> Annual NEAFS Meeting, Saratoga Springs, NY
- 27. Rogers, C. and Hall, A.B. Improving Oxygenated Ignitable Liquid Recovery by Dual-Mode Heated Passive Headspace Extraction with Zeolites and Activated Charcoal Strips. American Academy of Forensic Sciences (AAFS) 64<sup>th</sup> Annual Meeting, Atlanta, GA
- 28. Rogers, C. and Hall, A.B. Further Studies Investigating Zeolites for the Recovery of Oxygenated Compounds from Fire Debris Samples. 37<sup>th</sup> Annual NEAFS Meeting, Newport, RI
- 29. Hall, A.B. Development of Rapid Analytical Methods for Drugs of Abuse and their Metabolites by Differential Mobility Spectrometry Mass Spectrometry. 37<sup>th</sup> Annual NEAFS Meeting, Newport, RI
- Coy, S.L., Hall, A.B., Glick, J., Nazarov, E.G. & Vouros, P. Selection of Transport Gas Modifiers in Differential Mobility Spectrometry - Mass Spectrometry (DMS-MS). American Society for Mass Spectrometry (ASMS) 59<sup>th</sup> Annual Meeting. Denver, CO

- 31. Hall, A.B. Ultra Rapid Separation of Cocaine and Cocaine Adulterants by Differential Mobility Spectrometry-Mass Spectrometry American Academy of Forensic Sciences (AAFS) 63<sup>rd</sup> Annual Meeting, Chicago, IL
- 32. St. Pierre, K.A., Desiderio, V. and Hall, A.B. Evaluation of a Novel Methodology for the Recovery of Volatiles from Fire Debris Samples. American Academy of Forensic Sciences (AAFS) 63<sup>rd</sup> Annual Meeting, Chicago, IL
- 33. Hall, A.B. Ultra Rapid Drug Profiling by DMS-MS. 36th Annual NEAFS Meeting, Manchester, VT
- 34. St. Pierre, K.A., Desiderio, V. and Hall, A.B. Evaluation of a Novel Methodology for the Recovery of Acetone from Fire Debris Samples. 36<sup>th</sup> Annual NEAFS Meeting, Manchester, VT
- 35. St. Pierre, K.A. and Hall, A.B. Acetone in Fire Debris Analysis: Case Discussion, Prevalence and Thresholds? American Academy of Forensic Sciences (AAFS) 62<sup>nd</sup> Annual Meeting. Seattle, WA
- 36. Hall, A.B. Understanding the Millennial Generation: Strategies for the Incorporation of Technology into the Forensic Science Classroom. Adam B. Hall. 35<sup>th</sup> Annual NEAFS Meeting, Long Branch, NJ
- 37. Conklin, D.L., Hall, A.B. and Padula, F.J. Elemental Analysis of Float Glass Samples Using a 193nm Excimer Laser Inductively Coupled Plasma Mass Spectrometer to Identify Forensic Glass Evidence 35<sup>th</sup> Annual NEAFS Meeting. Long Branch, NJ
- 38. Cawrse, B.C. and Hall, A.B. Forensic Chemical Analysis and Characterization of *Salvia Divinorum* and Salvinorin A 34<sup>th</sup> Annual NEAFS Meeting, White Plains, NY

#### **Editorials and Critical Reviews:**

1. Pavlovich, M.J., Musselman, B., and Hall, A.B. Review: Direct Analysis in Real Time – Mass Spectrometry (DART-MS) in Forensic and Security Applications. Mass Spectrometry Reviews, 2016, 9999, 1–17

#### **Textbook Chapters:**

1. **Hall A. B.** and Saferstein, R. for the Forensic Science Handbook, Volume I, 3<sup>rd</sup> Edition (in press), Forensic Mass Spectrometry: Analytical Advancements and Casework Applications.

#### **Textbooks and Monographs:**

- 1. Saferstein, R. and Hall, A.B. Forensic Science Handbook Volume I, 3<sup>rd</sup> Edition (in press) 2020.
- 2. Saferstein, R. and Hall, A.B. Forensic Science Handbook Volume II, 3<sup>rd</sup> Edition (in press) 2020.

#### **Court Testimony:**

#### 2002-Present:

I have been qualified as an expert witness in the areas of fire debris, explosives, controlled substances, sexual assault, assault and battery, and crime scene investigation within the following counties in the Commonwealth of MA: Suffolk, Essex, Worcester, Middlesex, Norfolk, Plymouth, Bristol, and Barnstable. I have consulted with and testified for both the prosecution and the defense within various criminal cases and have pending cases in New York, Pennsylvania and Indiana.