

Rachel Houston, Ph.D.
Assistant Professor, Forensic Science
College of Criminal Justice
Sam Houston State University

EDUCATION

Ph.D. in Forensic Science, Sam Houston State University, Huntsville, Texas, **2018**

- Dissertation: “Development of a Comprehensive Genetic Tool for Identification of Cannabis Sativa Samples for Forensic and Intelligence Purposes”

B.S. Biology, University of Texas at Dallas, Richardson, Texas, **2013**

- Minor: Criminology
- Cum Laude

WORK OR PROFESSIONAL EXPERIENCES

Assistant Professor, Forensic Science (2018 – present)

College of Criminal Justice, Sam Houston State University, Huntsville, TX

- Research focus on traditional human identification issues and the development of non-human DNA techniques
- Instructor for graduate level classroom and laboratory instruction, including Scientific Communications, Research Methods, Advanced Forensic DNA, Fundamentals of Criminalistics, and Forensic Biology
- Instructor for undergraduate level online courses, including Introduction to Forensic Science and Fundamentals of Forensic Biology
- Online Coordinator that oversees doctoral teaching fellows
- Oversee Masters and Doctoral level research projects

Graduate Assistant, Forensic Science (2014 – 2018)

College of Criminal Justice, Sam Houston State University, Huntsville, TX.

- Teaching Assistant for Forensic Biology, Advanced Forensic DNA, and Non-human forensics
- Lab maintenance, inventory, reagent preparation, administrative duties, instrument troubleshooting

Pathways Internship-Physical Scientist-1399 (2014 – 2015)

U.S. Customs and Border Protection Southwest Regional Science Center, Houston, TX.

- Student trainee with experience processing both drug and latent print cases
- Project analyzing the application of autosomal DNA profiling of marijuana samples with official MOU collaboration between SHSU and Department of Homeland Security

PEER-REVIEWED PUBLICATIONS

Articles

Ryan Gutierrez, Madeline G. Roman, **Rachel Houston**, Tim Kalafut. Detection and Analysis of DNA Mixtures with the MiSeq FGx®. *Science & Justice*, (2022). <https://doi.org/10.1016/j.scijus.2022.07.008>.

Kari Graham and **Rachel Houston**. Evaluation of chloroplast DNA barcoding markers to individualize *Papaver somniferum* for forensic intelligence purposes. *International Journal of Legal Medicine*, (2022). <https://doi.org/10.1007/s00414-022-02862-6>

Ryan Gutierrez, Madeline G. Roman, Michelle Harrel, Sheree Hughes, Bobby LaRue, **Rachel Houston**. Assessment of the ForenSeq mtDNA Control Region Kit and Comparison of Orthogonal Technologies. *Forensic Science International: Genetics*, (2022). <https://doi.org/10.1016/j.fsigen.2022.102721>

Madeline G. Roman, Ya-Chih Cheng, Sarah Kerrigan, **Rachel Houston**. Evaluation of tetrahydrocannabinolic acid (THCA) synthase polymorphisms for distinguishing between marijuana and hemp. *Journal of Forensic Sciences*, (2022). <https://doi.org/10.1111/1556-4029.15045>

Madeline G. Roman, Ryan Gutierrez, **Rachel Houston**. Massively parallel sequencing of *Cannabis sativa* chloroplast hotspots for forensic typing. *Journal of Cannabis Research*, 4(1) (2022). <https://doi.org/10.1186/s42238-022-00123-2>.

Cesar Cantu, Sibyl Bucheli, **Rachel Houston**. Comparison of DNA extraction techniques for the recovery of bovine DNA from fly larvae crops. *Journal of Forensic Sciences*, (2022). <https://doi.org/10.1111/1556-4029.15010>.

Coral Loockerman, Brittanie Miller, Rebecca Ramsey, Sheree Hughes, **Rachel Houston**. Collection and storage of DVI samples with microFLOQ® Direct swabs for direct amplification. *Forensic Science International: Genetics*, 55 (2021). <https://doi.org/10.1016/j.fsigen.2021.102588>.

Michelle Harrel, Carrie Mayes, **Rachel Houston**, Amy S. Holmes, Ryan Gutierrez, Sheree Hughes. The performance of quality controls in the Investigator® Quantiplex® Pro RGQ and Investigator® 24plex STR kits with a variety of forensic samples, *Forensic Science International: Genetics*, 55 (2021). <https://doi.org/10.1016/j.fsigen.2021.102586>.

Ryan Gutierrez, Bobby LaRue, **Rachel Houston**. Novel Extraction Chemistry and Alternative Amplification Strategies for Use With Rootless Hair Shafts. *Journal of Forensic Sciences*, 66, 1929-1936 (2021). <https://doi.org/10.1111/1556-4029.14763>.

Ya-Chih Cheng and **Rachel Houston**. Evaluation of *trnK-matK-trnK*, *ycf3*, and *accD-psal* chloroplast regions to differentiate crop type and biogeographical origin of *Cannabis sativa*. *International Journal of Legal Medicine*, 135, 1235-1244 (2021). <https://doi.org/10.1007/s00414-021-02518-x>

Madeline G. Roman and **Rachel Houston**. Investigation of chloroplast regions of *rps16* and *clpP* for determination of *Cannabis sativa* crop type and biogeographical origin. *Legal Medicine*, 47 (2020). <https://doi.org/10.1016/j.legalmed.2020.101759>

Madeline G. Roman, David Gangitano, Alejandra Figueroa, Jaime Solano, Leonardo Anabalón and **Rachel Houston**. Use of Eucalyptus DNA Profiling in a Case of Illegal Logging. *Science & Justice*, 60(6), 487-494 (2020). <https://doi.org/10.1016/j.scijus.2020.09.005>

Blake Young, Madeline G. Roman, Bobby LaRue, David Gangitano, **Rachel Houston**. Evaluation of 19 short tandem repeat markers for individualization of *Papaver somniferum*, *Science & Justice*, 60(3), 253-262 (2020). <https://doi.org/10.1016/j.scijus.2019.12.002>

Madeline Roman, David Gangitano, **Rachel Houston**. Characterization of New Chloroplast Markers to determine biogeographical origin and crop type of *Cannabis sativa*. *International Journal of Legal Medicine*, 133(6), 1721-1732 (2019). <https://doi.org/10.1007/s00414-019-02142-w>

Michele Di Nunzio, Madeline G. Roman, Rachel Houston, Ciro Di Nunzio, David Gangitano, Carme Barrot-Feixat. European validation of a *Cannabis sativa* 13-locus STR multiplex kit for genetic identification: A preliminary study, *Forensic Science International: Genetics Supplement Series*, 7(1), 224-226 (2019). <https://doi.org/10.1016/j.fsigs.2019.09.086>

Carrie Mayes, **Rachel Houston**, Sarah Seashols-Williams, Bobby LaRue, Sheree Hughes-Stamm. The stability and persistence of blood and semen mRNA and miRNA targets for body fluid identification in environmentally challenged and laundered samples. *Legal Medicine*, 38, 45 – 50 (2019). <https://doi.org/10.1016/j.legalmed.2019.03.007>

Rachel Houston, Carrie Mayes, Jonathan L. King, Sheree Hughes-Stamm, David Gangitano. Massively parallel sequencing of 12 autosomal STRs in *Cannabis sativa*. *Electrophoresis*, 39 (22), 2906 – 2911 (2018). <https://doi.org/10.1002/elps.201800152>

Rachel Houston, Bobby LaRue, Matthew Birck, Sheree Hughes-Stamm, David Gangitano. Nuclear, chloroplast, and mitochondrial data of a US Cannabis DNA Database. *International Journal of Legal Medicine*, 132(3), 713 – 725 (2018). <https://doi.org/10.1007/s00414-018-1798-4>

Amy Sorensen Holmes, **Rachel Houston**, Kyleen Elwick, David Gangitano, Sheree Hughes-Stamm. Evaluation of four commercial quantitative real-time PCR kits with inhibited and degraded samples. *International Journal of Legal Medicine*, 132 (3), 691 – 701 (2018). <https://doi.org/10.1007/s00414-017-1745-9>

Rachel Houston, Matthew Birck, Sheree Hughes-Stamm, David Gangitano. Developmental and internal validation of a novel 13 loci STR multiplex for *Cannabis sativa* DNA profiling. *Legal Medicine*, 26, 33 – 40 (2017). <https://doi.org/10.1016/j.legalmed.2017.03.001>

Rachel Houston, Matthew Birck, Sheree Hughes-Stamm, David Gangitano. Evaluation of a 13-loci STR multiplex System for *Cannabis sativa* genetic identification. *International Journal Legal Medicine*, 130 (3), 635 –647 (2016). <https://doi.org/10.1007/s00414-015-1296-x>

Peer-Reviewed Presentations/Posters

Rachel Houston, Timothy Kalafut, Ryan Gutierrez. The Detection and Analysis of DNA Mixtures With the MiSeq® FGx™. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Accepted Oral Presentation, February 2022.

Lucio Avellaneda, Ryan Gutierrez, **Rachel Houston**. Evaluation of the ForenSeq MainstAY Kit with Challenging Samples. Proceedings from the International Symposium on Human Identification, Orlando, FL, Poster Presentation, September 2021.

Coral Loockerman, Sheree Hughes, **Rachel Houston**. Direct Polymerase Chain Reaction (PCR) using microFLOQ® direct swabs with a modified QIAGEN Investigator 24plex GO! protocol from decomposing remains for disaster victim identification (DVI) applications. Proceedings of the American Academy of Forensic Sciences, Anaheim, CA, Oral Presentation, February 2020.

Rachel Houston, David Gangitano, Madeline Roman. Development of *Cannabis sativa* autosomal and organelle genotyping methods for forensic and intelligence purposes. Proceedings of the Southeastern Regional Meetings of the American Chemical Society (SERMACS), Savannah, GA, Invited Speaker, October 2019.

Coral Loockerman, Sheree Hughes-Stamm, **Rachel Houston**. A modified direct PCR protocol for DVI applications using microFLOQ® direct swabs from decomposing human remains coupled with the QIAGEN Investigator 24plex GO! Kit. Proceedings of the International Symposium on Human Identification, Palm Springs, CA, Poster Presentation, September 2019.

Rachel Houston, Carrie Mayes, Jonathan L. King, Sheree Hughes-Stamm, David Gangitano. Massively parallel sequencing of 12 autosomal STRs in *Cannabis sativa*. Proceedings of the American Academy of Forensic Sciences, Baltimore, MD, Oral Presentation, February 2019.

Rachel Houston, Carrie Mayes, Jonathan L. King, Sheree Hughes-Stamm, David Gangitano. Massively parallel sequencing of 12 autosomal STRs in *Cannabis sativa*. Proceedings of the Association of Forensic DNA Analysts and Administrators, Houston, TX, Oral Presentation, August 2018.

Rachel Houston, Carrie Mayes, Jonathan L. King, Sheree Hughes-Stamm, David Gangitano. Innovative molecular approaches for *Cannabis sativa* DNA typing. Proceedings of the 7th QIAGEN Investigator Forum, San Antonio, TX, Oral Presentation, May 2018.

Rachel Houston, Sheree Hughes-Stamm, David Gangitano. Nuclear, Chloroplast, and Mitochondrial Data of a US Cannabis DNA Database. Proceedings of the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, FL, Poster Presentation, February 2018.

Rachel Houston, Sheree Hughes-Stamm, David Gangitano. Nuclear, Chloroplast, and Mitochondrial Data of a US Cannabis DNA Database. Proceedings of the American Academy of Forensic Sciences, Seattle, WA, Oral Presentation, February 2018.

Rachel Houston, Sheree Hughes-Stamm, David Gangitano. Nuclear, Chloroplast, and Mitochondrial Data of a US Cannabis DNA Database. Proceedings of the International Symposium on Human Identification, Seattle, WA, Poster Presentation, October 2017.

Rachel Houston, Sheree Hughes-Stamm, David Gangitano. Developmental Validation of a Novel 13-loci STR multiplex System for Cannabis sativa DNA Profiling. Proceedings for the American Academy of Forensic Sciences, New Orleans, LA, Oral Presentation, February 2017.

Rachel Houston, Matthew Birck, Sheree Hughes-Stamm, David Gangitano. Developmental Validation of a Novel 13-loci STR multiplex System for Cannabis sativa DNA Profiling. Proceedings for the International Symposium on Human Identification, Minneapolis, MN, Poster Presentation, September 2016.

Rachel Houston, Matthew Birck, Sheree Hughes-Stamm, David Gangitano. Evaluation of a 13-loci STR multiplex System for Cannabis sativa genetic Identification. Proceedings of the American Academy of Forensic Sciences, Las Vegas, NV, Oral Presentation, February 2016.

Rachel Houston, Matthew Birck, Sheree Hughes-Stamm, David Gangitano. Evaluation of a 13-loci STR multiplex System for Cannabis sativa genetic Identification. Proceedings of the International Symposium on Human Identification, Grapevine, TX, Poster Presentation, October 2015.

Rachel Houston, Sheree Hughes-Stamm, David Gangitano. Evaluation of a 13-loci STR multiplex System for Cannabis sativa genetic Identification. Proceedings of the Association of Forensic DNA Analysts and Administrators meeting, Dallas, TX, Oral Presentation, July 2015.

Additional Peer-Reviewed Abstracts

Julia Wang*, Grace Rutledge **Rachel Houston**, Sheree Hughes. The Y's and How's of Screening with QIAGEN Casework GO! Proceedings from the International Symposium on Human Identification, Washington D.C., Accepted Poster Presentation, November 2022.

Julia Wang*, Sheree Hughes, Brendan Chapman, Andrew Currie, **Rachel Houston**. If the Trap Fits: Immunomagnetic Isolation of Spermatozoa. Proceedings from the International Symposium on Human Identification, Washington D.C., Accepted Poster Presentation, November 2022.

Ya-Chih Cheng* and **Rachel Houston**. Development of a Next Generation Sequencing Panel Targeting Cannabinoid Synthase Genes to distinguish between marijuana and hemp. Proceedings from the International Society of Forensic Genetics, Washington D.C., Accepted Poster Presentation, August 2022.

Lucio Avellaneda*, Ryan Gutierrez, **Rachel Houston**. Plexity considerations for the ForenSeq MainstAY Kit. Proceedings from the International Society of Forensic Genetics, Washington D.C., Accepted Poster Presentation, August 2022.

Damani Johnson, Ryan Gutierrez, **Rachel Houston**, Tim Kalafut. Detection and analysis of DNA mixtures with the MiSeq FGx. Proceedings from the International Society of Forensic Genetics, Washington D.C., Accepted Poster Presentation, August 2022.

Natalia Czado*, **Rachel Houston**, Sheree Hughes. Evaluation of Metal Ion and DNA Recovery from the Surface of Brass Ammunition to Improve STR Profiling. Proceedings from the International Society of Forensic Genetics, Washington D.C., Accepted Poster Presentation, August 2022.

Jennifer Snedeker*, David Russell, Michelle Peck, Amy Holmes, Christina Neal, Carmen Reedy, Sheree Hughes, **Rachel Houston**. Investigation of downstream processing methods for challenging skeletal samples. Proceedings from the International Society of Forensic Genetics, Washington D.C., Accepted Poster Presentation, August 2022.

Cesar Cantu*, Sibyl Bucheli, **Rachel Houston**. Recovery of human DNA from maggots using different DNA extraction methods. Proceedings from the International Society of Forensic Genetics, Washington D.C., Accepted Poster Presentation, August 2022.

Julia Wang*, Grace Rutledge, **Rachel Houston**, Sheree Hughes. Mind Your X's and Y's: Screening with QIAGEN Casework GO! Proceedings from the Association of Forensic DNA Analysts and Administrators, Houston, TX, Oral Presentation, July 2022.

Natalia Czado*, **Rachel Houston**, Sheree Hughes. Evaluation of Metal Ion and DNA Recovery from the Surface of Brass Ammunition to Improve STR Profiling. Proceedings from the Association of Forensic DNA Analysts and Administrators, Houston, TX, Oral Presentation, July 2022.

Lucio Avellaneda*, Ryan Gutierrez, **Rachel Houston**. The Forensic Utility of the ForenSeq™ MainstAY Kit With Challenging Samples. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Oral Presentation, February 2022.

Kari Graham*, **Rachel Houston**. An Evaluation of Chloroplast DNA Barcoding Markers to Individualize Papaver Somniferum for Forensic Intelligence Purposes. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Poster Presentation, February 2022.

Ya-Chih Cheng*, **Rachel Houston**, Sarah Kerrigan, Madeline Roman. The Evaluation of Cannabinoid Synthase Polymorphisms for Distinguishing Between Marijuana and Hemp. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Poster Presentation, February 2022.

Michelle Peck*, Stephen Turner, V. Peter Nagraj, David Russell, Jessica Bouchet, Amy Holmes, **Rachel Houston**, Jennifer Snedeker, Carmen Reedy, Christina Neal. Internal Validation of the ForenSeq™ Kintelligence Kit for Application to Forensic Genetic Genealogy Cases. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Oral Presentation, February 2022.

Glendon Parker*, Jennifer Snedeker, Trevor Borja, **Rachel Houston**. Proteomic Genotyping in Compromised Skeletal Remains. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Oral Presentation, February 2022.

Jennifer Snedeker*, David Russell, Michelle Peck, Amy Holmes, Elayna Ciuzio, Christina Neal, Carmen Reedy, Sheree Hughes, **Rachel Houston**. The Optimization of the InnoXtract™ Extraction and Purification System for DNA Extraction From Skeletal Samples and Analysis of Subsequent Downstream Processing Methods. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Oral Presentation, February 2022.

Samantha Davis*, Julia Wang, **Rachel Houston**, Sheree Hughes, Brendan Chapman, Andrew Currie. Magnetic Bead Capture of Sperm Cells by Sperm-Specific Antibodies. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Poster Presentation, February 2022.

Cesar Cantu*, Sibyl Bucheli, **Rachel Houston**. A Comparison of DNA Extraction Techniques for the Recovery of Bovine DNA From Maggot Crops. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Poster Presentation, February 2022.

Grace Rutledge*, Aaron Lynne, **Rachel Houston**, Sheree Hughes, PhD. Evaluating the Effectiveness of Microbial DNA Extraction Kits for Intimate Samples. Proceedings from the American Academy of Forensic Sciences, Seattle, WA, Poster Presentation, February 2022.

Badiah Hannon*, **Rachel Houston**, Tim Kalafut. Examining Partition Efficiency of Cell Types Following QIAcube/EZ1® Advanced XL Differential Extraction. Proceedings from the International Symposium on Human Identification, Orlando, FL, Poster Presentation, September 2021.

Lucio Avellaneda*, Ryan Gutierrez, **Rachel Houston**. Evaluation of the ForenSeq MainstAY Kit with Challenging Samples. Proceedings from the Association of Forensic DNA Analysts and Administrators, Virtual, Oral Presentation, July 2021.

Jennifer Snedeker*, Sheree Hughes, **Rachel Houston**. Optimization of InnoXtract™ Extraction and Purification System for DNA extraction from skeletal samples. Proceedings from the Association of Forensic DNA Analysts and Administrators, Virtual, Oral Presentation, July 2021.

Jennifer Snedeker*, Sheree Hughes, **Rachel Houston**. Optimization of InnoXtract™ Extraction and Purification System for DNA Extraction from Skeletal Samples. Proceedings from the QIAGEN Investigator Forum, Virtual, Poster Presentation, June 2021.

Jennifer Snedeker*, Trevor Borja, **Rachel Houston**, Glendon Parker. Application of Proteomic Genotyping to Forensic Science Applications in Challenging Skeletal Remains. Proceedings from the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Virtual, Poster Presentation, March 2021.

Kari Graham*, Javier Gomez, Todd Primm, **Rachel Houston**. Comparison of Nine Extraction Methods for Bacterial Identification using a Sequencer. Proceedings from the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Virtual, Poster Presentation, March 2021.

Ya-Chih Cheng*, Madeline Roman, **Rachel Houston**. An Evaluation of Hotspot Chloroplast Regions to Differentiate Crop Type and Biogeographical Origin of Cannabis sativa. Proceedings of the American Academy of Forensic Sciences, Virtual, Oral Presentation, February 2021.

Lucio Avellaneda*, Ryan Gutierrez, Damani Johnson, Bobby LaRue, **Rachel Houston**. The Development of a Five-Dye Insertion/Deletion (INDEL) Panel for Ancestry Determination. Proceedings of the American Academy of Forensic Sciences, Virtual, Oral Presentation, February 2021.

Ryan Gutierrez*, Michelle Harrel, Sheree Hughes, Bobby LaRue, **Rachel Houston**. Moving Forward: Applying Massively Parallel Sequencing to Achieve Quality Mitochondrial Sequencing Results. Proceedings of the International Symposium on Human Identification, Virtual, Oral Presentation, September 2020.

Ya-Chih Cheng*, Madeline Roman, **Rachel Houston**. Genetic differentiation of marijuana and hemp. Proceedings of the Association of Forensic DNA Analysts and Administrators, Virtual, Oral Presentation, August 2020.

Ryan Gutierrez*, Bobby LaRue, **Rachel Houston**. Alternative processing techniques for highly degraded samples. Proceedings of the Association of Forensic DNA Analysts and Administrators, Virtual, Oral Presentation, August 2020.

Madeline G. Roman*, Ryan Gutierrez, Carrie Mayes, Bobby LaRue, **Rachel Houston**. An evaluation of the Investigator® 26plex QS STR kit and comparison with two commercially available STR kits. Proceedings of the American Academy of Forensic Sciences. Anaheim, CA, Poster Presentation, February 2020.

Ryan Gutierrez, LeAnn M. Harrel, Sheree Hughes, **Rachel Houston**, Bobby LaRue*. Mitochondrial analysis of challenging samples utilizing the ForenSeq™ mtDNA control region solution on the MiSeq® FGx. Proceedings of the American Academy of Forensic Sciences, Anaheim, CA, Oral Presentation, February 2020.

Michelle Harrel, Carrie Mayes, **Rachel Houston**, Amy S. Holmes, Ryan Gutierrez, Sheree Hughes-Stamm*. Effectiveness of STR quality sensors to inform rework strategies for challenging database and casework samples using a semi-automated workflow. Proceedings of the International Symposium on Human Identification, Palm Springs, CA, Poster Presentation, September 2019.

Madeline G. Roman*, Ryan Gutierrez, Carrie Mayes, Bobby LaRue, **Rachel Houston**. Evaluation of the Investigator® 26plex QS STR kit and comparison with two commercially available STR kits. Proceedings of the International Symposium on Human Identification, Palm Springs, CA, Poster Presentation, September 2019.

Ryan Gutierrez, **Rachel Houston**, Bobby LaRue*. Improved mitochondrial control region analysis of degraded bone and hair samples utilizing a new small overlapping amplicon library preparation method for the MiSeq FGx. Proceedings of the International Symposium on Human Identification, Palm Springs, CA, Poster Presentation, September 2019.

Coral Loockerman, Sheree Hughes-Stamm*, **Rachel Houston**. Direct PCR using microFLOQ™ direct swabs with a modified QIAGEN Investigator 24plex GO! protocol from decomposing human remains for DVI applications. Proceedings of the International Society of Forensic Genetics, Prague, Czech Republic, Poster Presentation, September 2019.

Madeline Roman, Michele Di Nunzio*, **Rachel Houston**, Bobby LaRue, David Gangitano. Characterization of new chloroplast polymorphisms to determine biogeographical origin and crop type of *Cannabis sativa* samples. Proceedings of the International Society of Forensic Genetics, Prague, Czech Republic, Poster Presentation, September 2019.

Michele Di Nunzio*, **Rachel Houston**, Madeline G. Roman, Ciro Di Nunzio, David Gangitano, Carme Barrot Feixat. European validation of a *Cannabis sativa* 13-locus STR multiplex kit for genetic identification: a preliminary study. Proceedings of the International Society of Forensic Genetics, Prague, Czech Republic, Poster Presentation, September 2019.

Michelle Harrel*, Carrie Mayes, **Rachel Houston**, Amy S. Holmes, Ryan Gutierrez, Sheree Hughes-Stamm. Evaluation of a Semi-Automated Workflow and Effectiveness of STR Quality Sensors to Inform Rework Strategies for Challenging Database and Casework Samples. Proceedings of the Association of Forensic DNA Analysts and Administrators, Houston, TX, Oral Presentation, August 2019.

Carrie Mayes*, **Rachel Houston**, Bobby LaRue, Sarah Seashols-Williams, Sheree Hughes-Stamm. The application of targeted mRNA massively parallel sequencing for body fluid identification on challenging and mock casework-type samples. Proceedings of the Human Identification Solutions Conference, Kobe, Japan, Poster Presentation, June 2019.

Carrie Mayes*, **Rachel Houston**, Bobby LaRue, Sarah Seashols-Williams, Sheree Hughes-Stamm. Evaluating the stability and persistence of mRNA and miRNA for body fluid identification in forensic samples. Proceedings of the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Philadelphia, PA, Poster Presentation, March 2019.

Madeline G. Roman*, **Rachel Houston**, Bobby LaRue, David Gangitano. The characterization of new chloroplast markers to determine the biogeographical origin and crop type of cannabis sativa samples. Proceedings of the American Academy of Forensic Sciences, Baltimore, MD, Oral Presentation, February 2019.

Madeline G. Roman*, **Rachel Houston**, Bobby LaRue, David Gangitano. Investigation of Ancestry Markers in the *Cannabis sativa* Chloroplast Genome for Determination of Biogeographical Origin and Crop Type. Proceedings of the Association of Forensic DNA Analysts and Administrators, Houston, TX, Oral Presentation, August 2018.

Amy Sorensen, **Rachel Houston**, Kyleen Elwick, Carrie Mayes, Kayla Ehring, David Gangitano, Sheree Hughes-Stamm*. Alternate methods for the collection, preservation, & processing of DNA samples from decomposing human cadavers; A DVI strategy. Proceedings for the 6th QIAGEN Investigator Forum, Prague, Czech Republic, Oral Presentation, April 2017.

Esiri Tasker, Kyleen Elwick, Bobby LaRue, Charity Beherec, **Rachel Houston**, David Gangitano, Sheree Hughes-Stamm*. HID & MPS for Post-blast bomb fragments and highly inhibited samples. Proceedings for the Summit Forum of Forensic Technology and Applications, China Association for Forensic Science and Technology, Foshan, Guangzhou, China, Invited Speaker, November 2016.

Esiri Tasker, Charity Beherec, **Rachel Houston**, Sheree Hughes-Stamm*. Bodies, Bones and Bombs; Human Identification. Proceedings of the Human Identification University Series, Office of the Chief Medical Examiner, New York City, NY, Invited Speaker, July 2016.

Esiri Tasker, Charity Beherec, **Rachel Houston**, Sheree Hughes-Stamm*. Bodies, Bones and Bombs; Human Identification. Proceedings of the 2nd Human Identification Solutions (HIDS) Conference, Barcelona, Spain, Oral Presentation, May 2016.

CONTINUING EDUCATION

STRmix™ Training Workshop **2020**
October 26 – 29, 2020; Virtual

Forensic Genealogy and its Application in Solving Cold Cases **2020**
3.5 hours; September 14, 2020; International Symposium on Human Identification, Virtual

Validation Principles, Practices, Parameters, Performance Evaluations, and Protocols **2020**
3.75 hours; September 14, 2020; International Symposium on Human Identification, Virtual

RESEARCH MONOGRAPHS AND TECHNICAL REPORTS

Carrie Mayes, Michelle Harrel, **Rachel Houston**, Ryan Gutierrez, Sheree Hughes-Stamm. The effectiveness of STR Quality Sensors to inform rework strategies and improve STR success of challenging samples. QIAGEN® Application Note for Investigator 24plex QS Kit (April 2019).

Carrie Mayes, Michelle Harrel, **Rachel Houston**, Amy Sorensen Holmes, Ryan Gutierrez, Sheree Hughes-Stamm. 2018. Application of QIAGEN workflow with Quality Sensors and interpretation: database and casework samples. Webinar QIAGEN Human Identity and Forensics. (2018). <https://www.qiagen.com/us/resources/elearning/webinars/webinars%20on-demand/human-identity-and-forensics/>

Amy Sorensen, **Rachel Houston**, Kyleen Elwick, David Gangitano, Sheree Hughes-Stamm. Comparison of four commercial qPCR kits for analyzing inhibited and degraded forensic samples. QIAGEN® Application Note for Investigator Quantiplex® Pro Kit (2018).

Amy Sorensen, **Rachel Houston**, Kyleen Elwick, David Gangitano, Sheree Hughes-Stamm. Evaluation of four commercial quantitative real-time PCR (qPCR) kits with inhibited and degraded samples. Forensic Magazine. Webinar QIAGEN Human Identity and Forensics. (2018). https://learn.forensicmag.com/20190222_qiagen_mobius_kit_comparison_for_lp

FUNDED GRANTS

Rachel Houston. Utilizing the genetic variation of cannabinoid synthesis genes to differentiate cannabis crop type. Center for Advanced Research in Forensic Science. Jan 2022-Dec 2022. \$25,000. Principal Investigator.

Rachel Houston. Evaluation of DNA Extraction Methods for Bone for Use with Downstream Investigative and Genome-wide SNP Genotyping. Center for Advanced Research in Forensic Science. Jan 2021-Dec 2021. \$25,000. Principal Investigator.

Samantha Davis, **Rachel Houston**. Optimization of a Sperm Capture Method Using Three Antibodies in Conjunction with Immunomagnetic Beads Forensic Science Foundation Lucas Research Grant Program. 2020-2021. \$6,000. Faculty Advisor.

Rachel Houston. Development of a universal extraction and PCR method for bacterial pathogens. Sam Houston State University Individual Grant Scholarship. 2019-2020. \$5,000. Principal Investigator.

Rachel Houston. Application of Proteomic Genotyping to Forensic Science Applications in Bone. Sam Houston State University External Grant Application Development System. 2019. \$3,000. Principle Investigator.

Rachel Houston, David Gangitano. Development of a Comprehensive Genetic Tool for Identification of Cannabis Sativa Samples for Forensic and Intelligence Purposes. National Institute of Justice. Award: 2015-R2-CX-0030. \$140,923. Principle Investigator.

INVITED REFEREE FOR PEER-REVIEWED LITERATURE

Journal of Forensic Sciences
Journal of Cannabis Research
Forensic Science International: Genetics
International Journal of Legal Medicine
Forensic Sciences Research
Science & Justice
Electrophoresis
Mitochondrial DNA Part B
Scientific Reports
BMC Plant Biology
Frontiers in Plant Science
Genes

THESIS & DISSERTATION MENTORING

Kari Graham. (2022). Forensic Applications of DNA Sequencing to Combat Drug Trafficking and Biothreats. PhD Dissertation, Sam Houston State University. *Dissertation Committee Chair*.

Julia Wang. (2022). Characterizing Magnetic Bead Capture of Spermatozoa by Sperm-specific Biomolecules. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

Sabrina Hodge. (2022). The Efficiency of Three Swab Types and a Direct Lysis Approach for the Recovery of Touch DNA. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

Rachel Last (2022). Evaluation of the Casework Direct Kit and Investigator Casework GO! Kit for Direct Lysis Processing of Challenging Samples. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

Ryan Gutierrez. (2021). Alternative Sample Processing Techniques for Rootless Hair Shafts and Other Challenging Samples. PhD Dissertation, Sam Houston State University. *Dissertation Committee Chair*.

Cesar Cantu. (2021). Comparison of DNA extraction techniques for the recovery of bovine DNA from maggots. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

Badiah Hannon (2021). Examining Partition Efficiency of Cell Types Following QIAcube/EZ1® Advanced XL Differential Extraction. Master's Capstone, Sam Houston State University. *Capstone Committee Co-Chair*.

Mah-ro Khan (2021). A More Effective, Automatable Differential Extraction Method for Processing Sexual Assault Samples. Master's Capstone, Sam Houston State University. *Capstone Committee Co-Chair*.

Samantha Davis (2021). Optimization of a sperm capture method using three antibodies in conjunction with magnetic beads. Master's Capstone, Sam Houston State University. *Capstone Committee Co-Chair*.

Jennifer Snedeker (2021). Optimization of InnoXtract™ Extraction and Purification System for DNA extraction from skeletal samples. Master's Capstone, Sam Houston State University. *Capstone Committee Co-Chair*.

Madeline G. Roman. (2020). Applications of Forensic Plant Science in Drug Trafficking and Environmental Crimes. PhD Dissertation, Sam Houston State University. *Dissertation Committee Chair*.

Ya-Chih Cheng (2020). Evaluation of the trnK-matK-trnK, ycf3, and accD-psal chloroplast regions to differentiate crop type and biogeographical origin of *Cannabis sativa*. Master's Capstone, Sam Houston State University. *Capstone Committee Co-Chair*.

Rebecca Cotterman. (2020). Evaluation of Three Swab Types for the Collection of Touch DNA. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

Leann M. Harrel. (2019). Alternate DNA Extraction and STR Profiling Strategies for Skeletal and Other Challenging Samples. PhD Dissertation, Sam Houston State University. *Dissertation Committee Co-Chair*.

Coral Loockerman. (2019). Collection and storage of DVI samples with MicroFLOQ® swabs for direct amplification. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

Blake Young. (2019). Development of a STR multiplex for forensic identification of *Papaver somniferum*. Master's Capstone, Sam Houston State University. *Capstone Committee Chair*.

HONORS & AWARDS

3 Minute Thesis – People's Choice Award, Sam Houston State University (2017).

LTC Michael A. Lytle '77 Academic Prize in Forensic Science Scholarship Fund, Sam Houston State University (2015).

PROFESSIONAL MEMBERSHIPS

Association of Forensic DNA Analysts and Administrators

- General Member, 2015 – present.

American Academy of Forensic Sciences

- Student Affiliate, 2014 – 2019.
- Trainee Affiliate, 2019 – 2021.
- Associate Member, 2021 – present.