

## ***Forensic Chemistry Research/Capstone Topics:***

### 2023-2024:

- Quantification of smokeless powder analytes using GCMS
- DNA recovery of burned human remains
- Analysis of variation of DNA Methylation between smokers, E-cigarette users, and occasional users and non-users employing PCR-HRM
- Analysis of disinfection byproducts in US drinking water by GCMS
- Carrier effects on compounds
- UV-Vis quantification of smokeless powder analytes
- (Capstone) Quantitative study of data sharing by authors in scientific journals

### 2024-2025:

- Analysis of Smokeless Powder using UV-visible spectroscopy with a focus on nitrated derivatives of DPA
- Analysis of smokeless powder using IR spectroscopy with a focus on nitrated derivatives of DPA
- Comparative analysis of brown beverage stains using ATR-FTIR
- Comparative analysis of brown beverage stains using UV-visible spectroscopy
- Analyzing and Tabulating Wrongful Convictions Exonerated by DNA (range of years 2019-2023)
- Identification Techniques of Mass Casualty Victims from Man-Made and Natural Disasters

### 2025-2026:

- Accuracy and Reliability of Human DNA Profiles Recovered From Dermestid Beetles Using NGS and CE
- How Accurate is ForenSeq UAS at Predicting Ancestry and Phenotype
- MTL DNA Extraction Validation Study of Swabs of Metal Surfaces
- Feasibility of Using ATR-FTIR and UV-visible Spectroscopy for Identification of Neat Analytes in Smokeless Powders
- Impact of Bleach on Forensic Evidence: Degradation, Persistence and Detection

- Allele Frequency Comparison of Alcohol Metabolism in SNPs in Forensic Dataset and Implications for Ancestry Inference
- Body Disposal Patterns in Homicide: Influences of Victim, Offender and Crime Characteristics

### ***Forensic Chemistry Internship Sites:***

#### **2023-2024:**

- Baltimore County Division of Forensic Science
- Baltimore City Division of Forensic Science
- New Jersey State Police Crime Lab
- Maryland State Police Division of Forensic Science

#### **2024-2025:**

- Baltimore County PD Division of Forensic Science

#### **2025-2026:**

- Frederick County States Attorney's Office,
- St. Mary's County Sherriff Office,
- Baltimore City PD Division of Forensic Science and Evidence Management,
- Baltimore County PD Division of Forensic Science