

DROPLETS OF JUSTICE – TRACE METAL ANALYSIS OF SWEAT AND SALIVA SAMPLES TO DETERMINE SEX, ETHNICITY, AND AGE IN FORENSIC SCIENCE USING INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY (ICP-MS). **Aimee Williams**, Madison Smith and Nausheen Sadiq. Mount Royal University, Department of Chemistry and Physics, 4825 Mount Royal Gate, Calgary, AB T3E 6K6, Canada. ([awill623@mtroyal.ca](mailto:awill623@mtroyal.ca)).

Is all evidence created equal? For decades, analytical tools have been used to analyze forensic evidence [1]. Past studies have used hair to determine sex and ethnicity while utilizing the power of ICP in forensic research [1]. This study aims to investigate the use of trace metal analysis of sweat and saliva samples as a viable and reliable forensic identification tool. This study uses ICP-MS to analyze elements present in sweat and saliva samples, and uses multivariate statistics for the determination of sex, ethnicity, and age. Preliminary testing (n=30) has shown success rates of 70-96% in determining age, ethnicity, and sex. Age is a variable that has not yet been tested in this context. This study focuses on improving past results by increasing sample size, optimizing sample collection, and assessing sample stability. This will be done by collecting from a larger pool of participants and working to enhance signals across elements of interest. Finally, the stability of samples will be tested on various surfaces to determine the extent of degradation, over a period of time, equivalent to what may be seen at a crime scene.

[1] Huang, L.; Beauchemin, D. J. *Anal. At. Spectrom.* 29 (2014) 1228-1232.