



St. Olaf College

Chemistry Department

Friday, October 2, 2009

Regents Hall 150

*3:15 p.m. with refreshments
before the seminar*

Erin Hoffman '06

Forensic Scientist 1 – Nuclear DNA Section

MN Bureau of Criminal Apprehension

Forensic DNA profiling: from cells to jail cells

Forensic science analysis encompasses various biological, chemical, and physical methods to process evidence obtained from a criminal investigation. DNA profiling technology is at the forefront of forensic science and has an end goal of identifying the contributor of a DNA profile obtained from biological evidence. This is accomplished by first detecting and identifying bodily fluids, such as blood, saliva, or semen, deposited on the evidence, and is followed by the extraction and interpretation of the DNA profile contained within the biological evidence. DNA profiling utilizes several bioanalytical techniques, including: Real-Time PCR to quantify the amount of DNA present, multiplex PCR to amplify specific Short Tandem Repeat (STR) regions within the DNA, and capillary electrophoresis to separate and allow for interpretation of the STRs. Once a DNA profile is obtained, it is compared to either known DNA profiles obtained from individuals involved in a case or the CODIS database, which contains unidentified profiles from other cases and convicted offender profiles. Once a match has been made, a statistic is calculated to determine the coincidence that an unrelated person would by chance have the same DNA profile as that obtained from the evidence. If match is not obtained, unidentified profiles can be uploaded to the CODIS database for future comparisons or compared to known samples from pertinent individuals that are obtained at a later date.

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